COMPREHENSIVE WASTEWATER MANAGEMENT PLAN (CWMP) UPDATE /SEIR

FINAL
CWMP
AND
SINGLE
ENVIRONMENTAL
IMPACT REPORT

Final CWMP/SEIR

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COMMITMENT & INTEGRITY DRIVE RESULTS

231802.00
Town of Sudbury, MA
October 2022

Final Comprehensive Wastewater Management Plan
and
Single Environmental Impact Report

Sudbury, Massachusetts

Prepared for:

Sudbury Department of Public Works

In Coordination With
Sudbury Select Board and Town Administration

275 Old Lancaster Road
Sudbury, Massachusetts 01776

9/8/2022

Prepared by:

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September 2022

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October 2022

Dear Project Reviewer:

Enclosed please find the Report entitled, "Final Comprehensive Wastewater Management Plan Update and Single Environmental Impact Report (CWMP/SEIR), completed in compliance with the Massachusetts Department of Environmental Protection's "Guide to Wastewater Management Planning" and the Town of Sudbury's Expanded Environmental Notification Form submission through the Massachusetts Environmental Policy Act Office. The review of the CWMP/SEIR is through the submission of documents including: (1) Draft CWMP and Draft EIR submitted with the EENF filed December 2021 and this Final CWMP/SEIR filed with the SEIR.

This CWMP/SEIR is consistent with the general requirements of the MEPA regulations including being circulated per MEPA regulations at 301 CMR 11.16 (3). Appendix N of the Report contains a copy of the Distribution List, including Environmental Justice and Native American communities per new protocol. In addition, three (3) hard copies will be available for public review at the Town of Sudbury in the Town Department of Public Works Office, Town Clerk Office and the Select Board Offices.

The 30-day public comment period on this Report will be initiated by a notice of availability for review in the Environmental Monitor on October 24, 2022. Comments received will be added to the final public record for this Project. If you have comments, please send them before the close of the public comment period, November 23, 2022, to:

Secretary of Environmental Affairs
100 Cambridge Street, Suite 900
Boston, MA 02114
ATTN: MEPA Unit, EOEEA #16510

If you have questions or concerns regarding this Project, please do not hesitate to call the MEPA Office at 617-626-1000.

Sincerely,

WOODARD & CURRAN INC.

Rosemary T. Blacquier, Senior Consultant

231802.00

Enclosure(s)

TABLE OF CONTENTS

SECTION PAGE NO.

EXECUTIVE SUMMARY ES-1

1. INTRODUCTION 1-1
   - 1.1 General/Background 1-1
   - 1.2 History of Wastewater Planning 1-1

2. ASSESS CURRENT CONDITIONS – REVIEW AND UPDATE NEEDS AREAS FROM 2010 REPORT 2-1
   - 2.1 Existing Conditions in Planning Area 2-1
   - 2.2 Data from Board of Health 2-1
   - 2.3 Demographic, Population and Economic Projections - Master Plan Reviews 2-9
   - 2.4 Municipal Drinking Water Supply 2-11
   - 2.5 Existing Environmental Considerations 2-15
     - 2.5.1 Air Quality 2-15
     - 2.5.2 Wetlands and Flood Plains 2-15
     - 2.5.3 Natural Heritage and Endangered Species Program (NHESP) Rare and Endangered Species and Priority Habitats 2-15
     - 2.5.4 Parklands and Recreational and Conservation Land Resources 2-16
     - 2.5.5 Historical and Archaeological Resources 2-16
   - 2.6 Nutrients 2-19
   - 2.7 Soil and Groundwater Conditions 2-22
   - 2.8 Flow Estimation 2-23
     - 2.8.1 Land Use Code Flows 2-23
     - 2.8.2 Zoning Flows 2-23
     - 2.8.3 Water Use Flows 2-24
     - 2.8.4 Selection Basis for Near Term and Buildout 2-25

3. ASSESS FUTURE CONDITIONS 3-1
   - 3.1 Planning Period 3-1
   - 3.2 Update of On-Site Wastewater Disposal Systems 3-1
   - 3.3 Water Conservation Benefits 3-2
   - 3.4 Water Conservation Benefits – Flow and Waste Reduction- Massachusetts Water Conservation Standards – July 2018 3-2
     - 3.4.1 General 3-2
     - 3.4.2 Water Supply System Management 3-10

4. UPDATED WASTEWATER NEEDS/PROBLEMS IDENTIFICATION 4-1
   - 4.1 On-Site Wastewater Disposal Problems & Expanded Study Area 4-1
   - 4.2 Needs Analysis Summary and Development of Study Areas 4-1
     - 4.2.1 Prioritization Approach – Data Development and Review 4-2
   - 4.3 Description of Study Areas 4-3
     - 4.3.1 Dutton Road / Wayside Inn Road Study Area 4-3
     - 4.3.2 Goodman Hill Study Area 4-4
     - 4.3.3 Landham Road Study Area 4-6

4.3.4 North Sudbury Study Area 4-7
4.3.5 Peakham Road Study Area 4-10
4.3.6 Pine Lakes Study Area 4-12
4.3.7 Pratts Mill Road Study Area 4-12
4.3.8 Raymond Road Study Area (North and South) 4-15
4.3.9 Route 20 Study Area 4-16
4.3.10 Route 20 East Study Area 4-17
4.3.11 Summary of Study Areas 4-19
4.4 Wastewater Flow Projections 4-22

5. ALTERNATIVES FOR WASTEWATER COLLECTION, TREATMENT AND DISPOSAL 5-1

5.1 Optimization, Operation and Maintenance of Existing On-Site Systems 5-1
5.2 Innovative/Alternative Solutions 5-4
5.3 Collection System Solutions 5-5
5.3.1 Conventional Gravity Sewers 5-5
5.3.2 Low Pressure Sewers 5-5
5.3.3 Vacuum Sewers 5-6
5.4 Local Treatment Solutions – Design and Build a Wastewater Treatment Facility and Groundwater Discharge Beds 5-8
5.4.1 Treatment Process 5-12
5.5 Regional Solutions (Treatment & Disposal) 5-13
5.5.1 Framingham (MWRA) 5-13
5.5.2 Wayland 5-14
5.5.3 Marlborough Easterly Wastewater Treatment Plant 5-14

6. UPDATE OF 2012 REPORT RECOMMENDED SITES FOR WWTF AND DISCHARGE / UPDATED FINAL RECOMMENDED PLAN 6-1

6.1 Updated Needs Areas 6-1
6.2 Conceptual Layout of Collection System 6-3
6.3 Updated Groundwater Discharge Hydrogeological Evaluation at Curtis Middle School and DPW 6-3
6.4 Final Recommended Wastewater Treatment Technology 6-9
6.5 Revised Location for New Wastewater Treatment Facility at DPW Location 6-11
6.6 Opinion of Probable Costs 6-11
6.7 Recommended Plan 6-12
6.8 Capital Improvement Plan 6-12

7. SECTION 61 FINDINGS - FINAL SINGLE ENVIRONMENTAL IMPACT REPORT AND PROPOSED MITIGATION MEASURES 7-1

7.1 Preliminary Environmental Review for each Needs Area and Collection System Infrastructure 7-1
7.2 Direct Impacts 7-1
7.2.1 Historical, Archaeological, Cultural, Conservation and Recreation 7-1
7.2.2 Wetlands, Flood Plains, and Agricultural Lands 7-8
7.2.3 Zones of Contribution of Existing and Proposed Water Supply Sources 7-14
7.2.4 Surface and Groundwater Resources 7-14
7.2.4.1 Natural Heritage and Endangered Species Program (NHESP) Rare and Endangered Species and Priority Habitats 7-17
7.2.5 Displacements of Households, Businesses, and Services 7-26
7.2.6 Noise Pollution, Air Pollution, Odor and Public Health Issues Associated with Construction and Operation 7-26

7.2.7 Violation of Federal, State, or Local Environmental and Land Use Statutes or Regulations and Plans Imposed by Such Statues and Regulations 7-26
7.3 Indirect Impacts 7-26
7.3.1 Changes in Development and Land Use Patterns 7-26
7.3.2 Pollution Stemming from Changes in Land Use 7-26
7.3.3 Damage to Sensitive Ecosystems 7-27
7.3.4 Socioeconomic Pressures for Expansion 7-27

8. GREENHOUSE GAS EMISSIONS POLICY 8-1

8.1 Greenhouse Gas Emissions Policy and Sustainable Design 8-1
8.2 Design Standards 8-1
8.2.1 Building Design and General Site Selection 8-1
8.2.2 Equipment/Process Design 8-2
8.3 Maintenance and Public Policy 8-2
8.4 GHG Emissions Quantification 8-2
8.4.1 Baseline GHG Emissions 8-3
8.4.2 Projected GHG Emissions 8-4
8.5 Conclusions 8-4

9. FUTURE FINANCIAL AND ORGANIZATIONAL CONSIDERATIONS 9-1

9.1 Institutional Arrangements 9-1
9.1.1 Develop Sewer User Rules and Regulations and Construction Standards 9-1
9.1.2 Develop Sewer User Charge System 9-1
9.1.3 Develop Sewer System Expansion Control Policy 9-1
9.1.4 Review and Develop Sewer System Staffing and Operations Plan 9-1
9.2 Permits and Funding 9-1
9.3 Financing Plan 9-2
9.3.1 State Revolving Fund Loan Program 9-2
9.3.2 Recommended Finance Plan 9-2
9.4 Cost Recovery Planning 9-3
9.4.1 Individual Property Costs 9-3
9.4.2 Capital Costs 9-3
9.4.3 Individual Grinder Pumps 9-3
9.4.4 Operation and Maintenance Costs 9-3
9.4.4.1 Connection Fees 9-4
9.4.4.2 Individual Sewer Connections (Private Property) 9-4
9.4.4.3 Plumbing / Electrical Upgrades 9-4
9.4.4.4 Septic System Abandonment 9-4
9.4.4.5 Capital Cost Recovery Considerations 9-4
9.4.5 Property Taxes / General Funds / Expenditures 9-4
9.5 Betterments / Sewer Assessments 9-5
9.5.1 Frontage Method (also called Fixed Uniform Rate Method) 9-5
9.5.2 Uniform Unit Method 9-5
9.6 Privilege Fees 9-6
9.7 Climate Change / Resiliency 9-8

10. PUBLIC PARTICIPATION 10-1

10.1 Develop Public Participation Program 10-1
10.2 Environmental Justice Policy 10-4

TABLES

Table 2-1 Sudbury MA, Potable Well Details
Table 2-2 Growth in Aquifer Areas
Table 2-3 Reference Documents
Table 2-4 Zoning Code Flow Factors
Table 3-1 Sudbury Water District Billing Structure
Table 3-2 Sudbury Water District Billing Structure for Municipal Parcels
Table 3-3 Sudbury Water District Billing Structure for Commercial Parcels
Table 4-1 Dutton Road / Wayside Inn Road Streets
Table 4-2 Goodman Hill Street
Table 4-3 Landham Road Streets
Table 4-4 North Sudbury Study Area Streets
Table 4-5 Peakham Road Study Area Streets
Table 4-6 Pine Lakes Study Area Streets
Table 4-7 Pratts Mill Road Study Area Streets
Table 4-8 Raymond Road Study Area Streets
Table 4-9 Route 20 Study Area Streets
Table 4-10 Route 20 East Study Area Streets
Table 4-11 Study Area Near Term Flows and Pollutant Loads[1]
Table 4-12 Recommendations for Study Areas and Needs Areas
Table 4-13 Needs Areas Near Term Flows and Pollutant Loads[1]
Table 4-14 Projected Buildout Flows and Loads for Recommended Plan[1]
Table 5-1 MBR Typical Groundwater Discharge Permit Limits
Table 5-2 MassDEP Groundwater Discharge Permits in Sudbury
Table 6-1 MBR Typical Discharge Permit Limits
Table 6-2 Opinion of Probable Costs
Table 6-3 Final Recommended Plan[1]
Table 6-4 Final Recommended Plan – Capital Improvements Plan[1,2,4]
Table 8-1 Greenhouse Gas Emissions Factors
Table 8-2 Baseline GHG Emissions
Table 8-3 Expanded GHG Emissions
Table 9-1 Permitting Requirements
Table 9-2 Template of Estimated Range of Annual Costs Per Year

FIGURES

Figure ES-1 Final Wastewater Needs Recommended Plan
Figure 2-1 Study Areas
Figure 2-2 Existing Groundwater Discharge Permit/WWTF Locations
Figure 2-3 Aquifers
Figure 2-4 Townwide Wetlands and Floodplains
Figure 2-5 Water District Limits
Figure 2-6 Water District Well Locations
Figure 5-1 Gravity Sewer Schematic
Figure 5-2 Low Pressure Sewer Schematic
Figure 5-3 Vacuum Sewer Schematic
Figure 5-4 DPW WWTF Site Plan

Figure 5-5 Curtis Middle School Groundwater Discharge Site
Figure 5-6 WWTF Treatment Process Flow Diagram
Figure 6-2 Conceptual Sewer Layout
Figure 6-3 Route 20 Conceptual Sewer Layout
Figure 6-4 Raymond Road South Needs Area Conceptual Sewer Layout
Figure 6-5 Goodman Hill Needs Area Conceptual Sewer Layout
Figure 6-6 Raymond Road North Needs Area Conceptual Sewer Layout
Figure 6-7 WWTF – Treatment Process Flow Diagram
Figure 7-1 Route 20 Needs Area Historical Resources
Figure 7-2 Raymond Road South Needs Area Historical Resources
Figure 7-3 Goodman Hill Needs Area Historical Resources
Figure 7-4 Raymond Road North Needs Area Historical Resources
Figure 7-5 Route 20 Needs Area Wetlands, Floodplains, & Zones of Contribution
Figure 7-6 Raymond Road South Needs Area Wetlands, Floodplains, & Zones of Contribution
Figure 7-7 Goodman Hill Needs Area Wetlands, Floodplains, & Zones of Contribution
Figure 7-8 Raymond Road North Needs Area Wetlands, Floodplains, & Zones of Contribution
Figure 7-9 Route 20 Needs Area NHESP and Vernal Pools
Figure 7-10 Raymond Road South Needs Area NHESP and Vernal Pools
Figure 7-11 Goodman Hill Needs Area NHESP and Vernal Pools
Figure 7-12 Raymond Road North NHESP and Vernal Pools
Figure 7-13 Route 20 Needs Area AUL & 21 E Sites
Figure 7-14 Raymond Road South Needs Area AUL & 21 E Sites
Figure 7-15 Goodman Hill Needs Area AUL & 21 E Sites
Figure 7-16 Raymond Road North Needs Area AUL & 21 E Sites
Figure 10-1 Environmental Justice Populations Search Results
Figure 10-2 Environmental Justice Populations Proximity Map

APPENDICES

Appendix A: Contract and Scope of Work
Appendix B: Wastewater Reports
Appendix C: Updated Board of Health, Census Data, Land Use Codes
Appendix D: Water District Data
Appendix E: NRCS Datasets
Appendix F: Master Plan 2021
Appendix G: Nutrients and 303(d) List
Appendix H: Massachusetts Historical Project Notification Form
Appendix I: Septage Management Plan, Flows and Loads
Appendix J: Hydrogeological Report
Appendix K: Green House Gas
Appendix L: RMAT Climate Adaptation Tool (Beta)
Appendix M: Public Outreach Materials
Appendix N: Distribution List

EXECUTIVE SUMMARY

This Comprehensive Wastewater Management Plan (CWMP) Report is the result of the study the Town voted to complete at its May 7, 2019 Annual Town Meeting. This Report is the culmination of the CWMP effort and includes a Final Recommended Plan to address the history of wastewater issues/concerns the Town of Sudbury has been studying for decades. The most prevalent concern to date is the preservation and protection of the Town's drinking water aquifers, which the Final Recommended Plan herein addresses. Woodard & Curran was selected as the Town's consultant to conduct the CWMP Study with a contract on August 19, 2019. Refer to Appendix A for the executed contract and CWMP Scope of Work.

The CWMP Final Recommended Plan includes the plan to design and construction of the Town's first municipal Wastewater Treatment Facility, associated groundwater discharge and collection system infrastructure to support removing failing and/or improperly operating septic systems to preserve public health, as well as environmental resources, specifically nutrient degradation to the Town's major drinking supplies in the Raymond Road and Hop Brook Aquifer areas.

Approximately 383 acres in Sudbury are currently zoned commercial or are currently being utilized as a typical commercial use. With the exception of a few acres in other parts of Town, the commercial districts are located in and around the Route 20 corridor. In addition to the economic concerns of providing adequate wastewater disposal systems in this commercial district, protection of the Town's water supply is also of concern since the central portion of the Route 20 business district is within Zone II of the Town's main drinking water wells at the Raymond Road Aquifer. There has been a concerted effort for years to remove this area from on-site wastewater disposal to preserve and protect this water resource, but to date there has not been success. While public wastewater system will certainly aid in promoting economic development within the Town's current zoning, it is imperative to re-evaluate the preservation and protection of the Raymond Road drinking water wells.

Review of all data in the CWMP confirmed that the top priority was a combination of properties along the Route 20/Union Avenue area and Raymond Road South Study Areas . This area directly abuts the Raymond Road Aquifer-the Town's major drinking water wells- and includes both residential and non-residential properties all currently on on-site wastewater systems. The Needs Area encompasses the Zone II for the Raymond Road Aquifer . Removing the on-site wastewater systems from within this sensitive area will serve to preserve and protect the drinking water supplies from potential threat of degradation of wastewater from on-site wastewater systems and the pollutants it contains. In support of this, a review of groundwater and soil conditions was completed utilizing the National Resources Conservation Service (NRCS) soils and groundwater maps, as well as any data found during the Board of Health file review, such as percolation rates and soils and groundwater data on any existing plans and are shown on the several of the attached figures and clearly detail fast percing soils, groundwater, and environmental resources throughout the Needs Area.

The CWMP Final Recommended Plan for Needs Areas of constructing a Wastewater Treatment Facility, groundwater discharge beds and associated collection system infrastructure will reduce violations of water quality standards in and around the water resources of Town . Most notable are from the "Massachusetts Year 2016 Integrated List of Waters, which documents Hop Brook Segments MA82A-05 and MA82A-06 (these waters include Allowance Brook, Stearns Mill Pond, Carding Mill Pond, sections of the Sudbury River and Wash Brook) with the following impairments:

- Algae
- Non-native aquatic plants and aquatic plants
- Dissolved Oxygen
- E. Coli

- Phosphorus, Total
- Turbidity
- NUTRIENTS* (major contribution from septic systems)

The CWMP plan to remove on-site wastewater systems, as proposed in this CWMP Final Recommended Plan, will eliminate degradation to the water resources in these areas and serve to reduce the nutrient loading . The elimination of all on-site wastewater systems in these areas will restore water quality and designated uses in the named water bodies by reducing the overall degradation in the resource areas . Removal of septics will also reduce the impacts to sensitive and environmental resources documented in the area, which includes two major Zone II Areas-Hop Brook and Raymond Road. Sewering, removing all on-site wastewater from leaching into all of the water resources, will greatly reduce the E. Coli, as well as a host of pollutants not included in the 303(d) List-most notably personal care products, hosts of pharmaceuticals and in today's world, COVID 19 and its variants. These areas are well documented with fast percolating soils and high groundwater conditions, which afford wastewater from on-site wastewater systems to travel faster and potentially uncleansed, to the water resources contributing to the degradation. Refer to the following figures for mapping of all resources.

Septic to sewer will ensure that public health threats from on-site wastewater will be eliminated . Even an on-site that is considered "properly operating and maintained" could degrade water resources with the documented soil and groundwater conditions affording faster transport of improperly cleansed wastewater to water resources.

With the removal of the on-site wastewater systems in the proposed "Needs Areas", determined in this CWMP as not long-term sustainable with on-site wastewater systems, the threat of continued degradation to the water resources is eliminated. The preservation and protection of the drinking water supplies is the major goal, with the overall surrounding environmental resources benefiting as well.

The physical constraints of the land area, lot sizes, soil, and groundwater conditions, in conjunction with Board of Health discussions and file review, determine this Needs Area as the Town's top priority for removal of on-site wastewater systems.

Not only is the proposed wastewater system a means to the long-term sustainability of the Town's major drinking water supplies but is also vital to the economic development in this Route 20 corridor of Town. The Project locale is a gateway to not only the Town, but the region as well. This Project meets the Town's current Master Plan initiative, with sustainable growth targeted to areas where zoning is in place.

The Final Recommended Plan contained herein, is supported in the Town's recent Master Plan. The Route 20 Corridor is identified in the Master Plan Volume III Action Plan as the top priority for implementation, as a "Big Idea" Action. While the overall plan includes a number of recommendations including urban design, development strategies, traffic management, etc., implementing a wastewater plan is at the top of the list . Benefits of constructing wastewater infrastructure in these areas include preservation and protection of drinking water supplies, as well as economic development, which is defined as a booster of tax revenue, housing supply and transformer of commercial lands.

The Final Recommended Plan contained in this Report is a culmination of studies that Sudbury has undertaken over the years, updated to not only meet todays' needs of the Town itself, but also to consider the environment, economic development, fiscal, and political drivers . This Report details the methodologies utilized to determine the priority areas deemed not long-term sustainable with current on-site wastewater systems, as well as those areas that are managing well with existing on-site wastewater systems .

The Final Recommended Plan in the CWMP evaluated datasets relative to the entire geographical area of Town. The Town was delineated into eleven geographically located Study Areas. Once all the data for each Study Area was reviewed and evaluated as to the potential for sustaining existing wastewater practices over the long-term, areas were

short-listed into four Needs Areas, a fifth to be reviewed in the future, and the remaining six to be considered for management under a Septage Management Plan (SMP). This Report recommends the following Needs Areas for inclusion in a future municipal sewer program:

- Route 20 Corridor (Sub - Areas A and B)
- Raymond Road South (Sub – Area A)
- Raymond Road North Sub – Area A)
- Goodman Hill (Sub – Area A)

The Final Recommended Plan contained herein recommended the Town design and construct an expandable Membrane Bioreactor (MBR) Wastewater Treatment Facility at the current Department of Public Works site at 275 old Lancaster Road. This will afford the Town the ability to design and construct the municipal sewer system in phases, for both need and affordability. The CWMP recommended that the highly treated effluent from the MBR Facility be discharged to the ground at the existing Curtis Middle School, again completed in phases to support the Town's needs.

This CWMP recommends the Town manage the following under a SMP. Route 20 East, abutting the Wayland Town line, will be further evaluated in the future if the need arises with this group. Until such time, this Study Area will be recommended for inclusion in a future SMP along with the following Study Areas:

1. Dutton Road/Wayside Inn
2. Landham Road
3. North Sudbury
4. Peakham Road
5. Pratts Mill Road
6. Pine Lakes

The subsequent Sections of this Report summarize the entire process evaluated in order to arrive at the Final Recommended Plan contained herein. Sections delve into greater detail on the process, as well as the conceptual recommended plan. Each Section is devoted to bring the reader to the full depth of the CWMP Study in order to arrive at the recommendations contained herein. Figures and Tables further detail the entire Final Recommended Plan.

Figure ES-1 details the areas studies and how delineated, highlighting the Priority Needs Areas short-listed for servicing off site with a proposed new Wastewater Treatment Facility (WWTF) at the current Department of Public Works Facility and groundwater discharge of the highly treated effluent under the existing ball fields at the Curtis Middle School.

As part of the CWMP Scope of Services, The Town filed an Expanded Environmental Notification Form (EENF) with the Massachusetts Environmental Policy Act Office (MEPA) on December 30, 2021. On behalf of the Massachusetts Secretary of the Executive Office of Environmental Affairs (EEA), the MEPA Office conducts reviews of environmental impacts of development projects and other activities that require one or more state agency action. The MEPA Office is responsible for the day-to-day administration of the MEPA review process, including to:

- Solicit comments from the general public and state agencies
- Represent the Secretary at public consultation session on projects

- Coordinate project review with proponents, consultants, and interested agencies and citizens, and
- Make recommendations to the Secretary regarding the adequacy of environmental documentation submitted for a project.

Projects filing with MEPA are advertised as a public notice state-wide through publication in The Environmental Monitor (EM). Sudbury's CWMP EENF was publicized in the January 7, 2022 edition of the EM to start the public comment period. The Town extended the comment period to March 11, 2022 in order to provide sufficient time for comments. The Town received its MEPA Certificate on April 1, 2022, which contains the full review of the Final CWMP, including all entities that submitted comments. The Secretary of Environmental Affairs then issued the MEPA Certificate, which drives the scope for the Final CWMP and Single Environmental Impact Report (CWMP/SEIR) that this document contains. The EENF requested this be done in a Single Environmental Impact Report (SEIR), which the Secretary approved. New MEPA protocols require the Town to address Environmental Justice (EJ) protocols, as well as climate change and adaptation. These two new protocols are fully addressed in the EENF and are carried over to this Final CWMP/SEIR. Appendix A contains the full Response to MEPA Comments, most of which are incorporated into this Final Report. Appendix N details a full Distribution List for all parties that receive copies of all Project information, including the EJ and Native American entities.

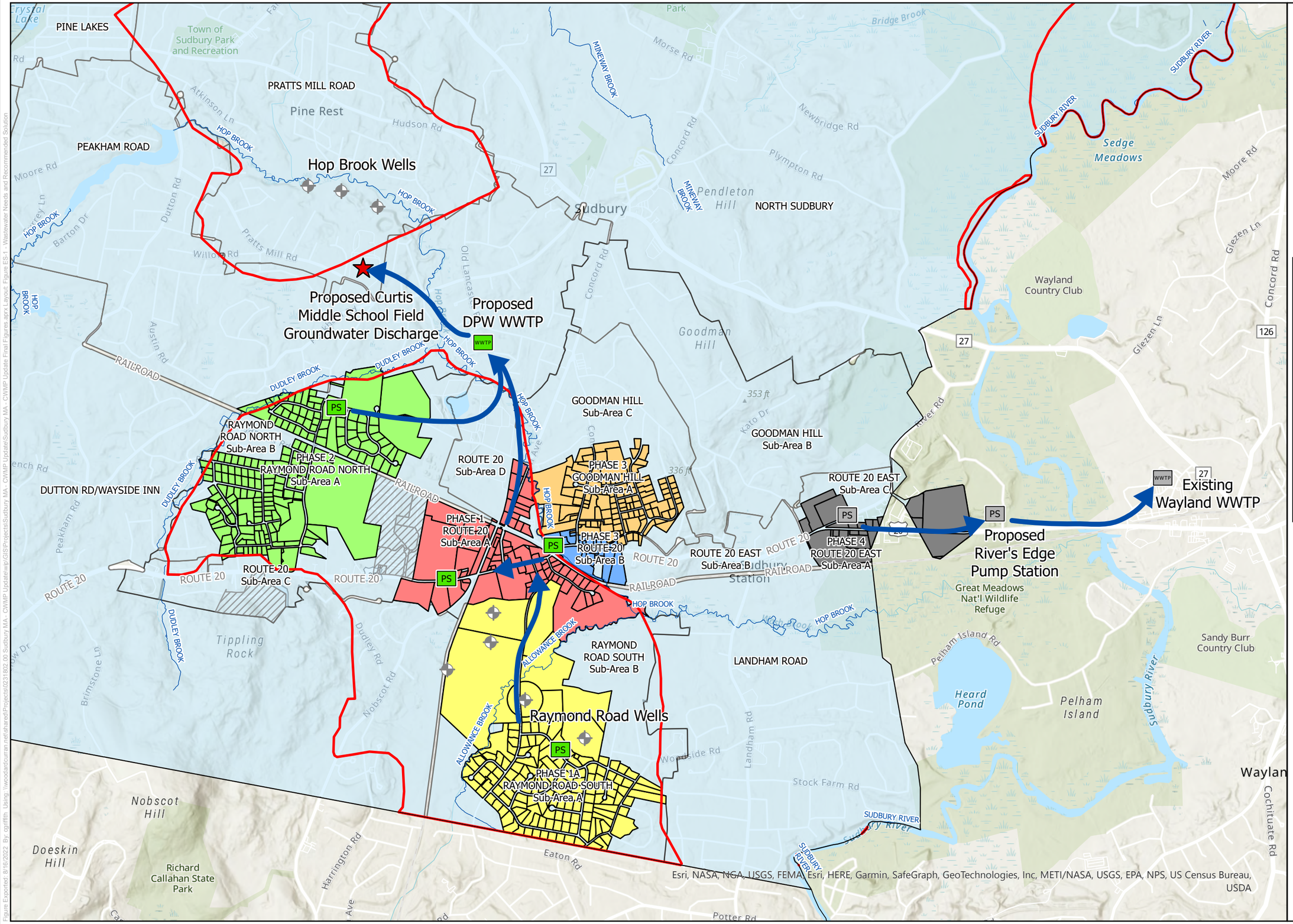
The Town will continue its outreach/education efforts with the general public, regulators and interested parties with the goal of maintaining communication until the Town moves towards implementation. Once implementation begins, a new outreach plan will be developed to run the duration of all future work. The Town will address additional hydrogeological work for the proposed groundwater discharge at the Curtis Middle School, historical/archaeological surveys on proposed Project areas deemed significant resources, topographical and environmental survey in proposed Project areas, while continuing outreach efforts as part of Preliminary Design efforts.

All current, past and future efforts are noticed on the Town's web page at https://sudbury.ma.us/dpw/cwmp, as well as posted in public areas of Town Hall.

Final Wastewater Needs and Recommended Plan

CWMP Update
Town of Sudbury, MA

N



Legend

- Groundwater Discharge
- Wastewater Treatment Plant
- Pump Station
- Public Wells
- Public Water Supply - Zone 2
- Existing GWD Properties
- Streams
- Goodman's Hill Project Area
- Raymond Road North Project Area
- Raymond Road South Project Area
- Route 20 Sub-Area A Project Area
- Route 20 Sub-Area B Project Area
- Septage Management Plan Areas

Figure ES-1

0 500 1,000 2,000 Feet

WOODARD & CURRAN

Project #: 0231802.00
Map Created: August 2022

Third Party GIS Disclaimer: This map is for reference and graphical purposes only and should not be relied upon by third parties for any legal decisions. Any reliance upon the map or data contained herein shall be at the users' sole risk. **Data Sources:**

Figure Exported: 8/16/2022 By: cgriffith Using: \\woodardcurran.net\shared\Projects\0231802.00 Sudbury MA - CWMP Update Final Figures.aprx Layout: Figure ES-1 - Wastewater Needs and Recommended Solution

1. INTRODUCTION

1.1 General/Background

The Town of Sudbury, Massachusetts is located in Northern Middlesex County with a population of 19,655 (July 2019). The Town is approximately 24.6 square Miles, of which 24.4 is land and 0.3 is water. Sudbury is bordered by Wayland to the east, Framingham to the south, Hudson/Maynard/Marlborough and Stow to the west, Concord to the northeast, Acton to the north and a tip touches the Town of Lincoln. The Town's major economic development area is along Route 20, which traverses through the Town along the southern border. As of this Report writing, the Town relies solely on on-site wastewater disposal systems save for a few developments that have a package Wastewater Treatment Plant that supports the individual parcels.

Discussions with the Town's Board of Health confirms that on-site wastewater disposal issues are not a widespread problem throughout the entire Town, but the lack of public wastewater infrastructure limits commercial property owners from fully developing properties, specifically those larger water users, thus limiting economic development potential and restrains helping defray some of the residential tax burden in Town. Commercial parcels that want to develop to full potential are finding it increasingly difficult to treat and dispose of wastewater in as economically feasible manner due to physical and regulatory constraints (e.g. soil conditions, depth to groundwater, aquifer protection, Title 5 regulations, etc).

Approximately 383 acres in Sudbury are currently zoned commercial or are currently being utilized as a typical commercial use. With the exception of a few acres in other parts of Town, the commercial districts are located in and around the Route 20 corridor. In addition to the economic concerns of providing adequate wastewater disposal systems in this commercial district, protection of the Town's water supply is also of concern since the central portion of the Route 20 business district is within Zone II of the Town's main drinking water wells at the Raymond Road Aquifer. There has been a concerted effort for years to remove this area from on-site wastewater disposal to preserve and protect this water resource, but to date there has not been success. While public wastewater system will certainly aid in promoting economic development within the Town's current zoning, it is imperative to re-evaluate the preservation and protection of the Raymond Road drinking water wells.

1.2 History of Wastewater Planning

The Town has been looking at wastewater options for the Route 20 Business District for decades. Septic systems have been and continue to be a limiting factor to business expansion and or actual relocation, as well as an environmental concern due to the proximity of these septics to the Town's Municipal Water Supply on Raymond Road. Additionally, identified high groundwater conditions pose a constraint for locating on-site systems in the geographic area. The Town previously looked at options using the former Raytheon Wastewater Treatment Facility (WWTF), which was located across from the Star Market Plaza on Route 20 (this is now being utilized by the Avalon development and areas of commercial entities located within the redeveloped plaza), as well as sending wastewater to the Marlborough Easterly Facility with none of these options working out.

The Town has spent considerable efforts with planning studies in the past, which are briefly summarized here:

1. 1995, "Sudbury Wastewater Disposal Options, Route 20 Business District"
2. June 2001, Assessment of Wastewater Needs for the Route 20 Business District, Weston & Sampson
3. August 2010, "Route 20 Business District Wastewater Management Plan Update"
4. June 2010, "Project Evaluation Report"

Summaries of 1995, 2001, 2010 and 2013 Studies:

1995

The most significant statement in this Study was that the septic systems in the Route 20 Business District pose a threat to the Town's main potable water supply, the Raymond Road Aquifer.

2001

June 2001, Assessment of Wastewater Needs for the Route 20 Business District, Weston & Sampson. Highlights of this Report:

- Town looking at wastewater in this area for over 20 years
- Septic systems are limiting factor for economic development
- Town's major drinking water supply, the Raymond Road Aquifer, is located within the Central Needs Area, with a major part of the Zone II located along this area
- Three Needs Areas defined; West, East & Central
- Central is defined as critical area-top priority

Report Recommendation:

Pursue decentralized wastewater option to treat and discharge flow from Central Needs Area.

2010

2010 Update to the 2001 Study, Route 20 Business District Wastewater Management Plan Update, August 2010. Highlights of this Report:

- Reaffirmed that the Route 20 Business District's largest concentration of properties is in the Town's main drinking water supply area
- Central Needs Area in the Zone II of the Raymond Road Aquifer
- Re-evaluated parcels to be included in the Analysis based on MassDEP comments
    - Included previously eliminated residential parcels within limits of defined Needs Areas
    - Increased flows in the Central and West Needs Areas due to addition of residential parcels
    - Looked at potential Groundwater Discharge Sites
- Looked at Town-owned parcels
    - Eventually short-listed to three sites:
        - Haskell Field
        - Town-owned parcels along Old Lancaster Road
        - Curtis Middle School
- Preliminary borings recommend Curtis Middle School. A preliminary review of environmental, in addition to borings, show promise for this location. This location was NOT officially confirmed with the required hydrogeological testing required

- Report recommends that groundwater discharge be located beneath athletic fields at the Curtis Middles School. Flows will be limited to handle the West and Central Needs Areas. The East Needs area is eliminated from this Report
- Identifies the Bushy Parcel on Boston Post Road be the location of a new Wastewater Treatment Facility (WWTF). Parcel is Town-owned, 1.6 acres in size and in close proximity to Central and West Needs Areas
- Conceptual Plan includes:
- WWTF with MBR Technology
- Gravity sewers for all Central Needs Area, Union Avenue and Station Road
- Low Pressure Sewer for West Needs Area (grinder pumps for property owners)

Report Recommendation:

Pursue decentralized wastewater option to treat and discharge flow from Route 20 Business District.

2013

2013 Update to the 2001 Study, Route 20 Business District Wastewater Management Plan Update, August 2012. Highlights of this Report:

- Reaffirmed that the Route 20 Business District's largest concentration of properties is in the Town's main drinking water supply area
- Central Needs Area in the Zone II of the Raymond Road Aquifer
- Looked at potential Groundwater Discharge Site at Curtis Middle School
- Hydrogeological Testing Completed
- Report recommends that groundwater discharge be located beneath athletic fields at the Curtis Middles School
- Reaffirms the Bushy Parcel on Boston Post Road be the location of a new Wastewater Treatment Facility (WWTF). Parcel is Town-owned, 1.6 acres in size and in close proximity to Central and West Needs Areas

Report Recommendation:

Pursue decentralized wastewater option to build a Wastewater Treatment Facility at the Town-owned Bushy property and discharge treated effluent at the Curtis Middle School.

All past and current wastewater Reports can be accessed using the Town's link here, https://sudbury.ma.us/dpw/cwmp. Covers and Tables of Contents are included in Appendix B.

Current Discussions

The Town met with staff at the Massachusetts Department of Environmental Protection's (MassDEP) Northeast Regional Office in late October 2019 to discuss the benefits of efforts Sudbury has expended to date on its wastewater planning and what will be required to move the Town's wastewater planning efforts to date to a fully compliant Comprehensive Wastewater Management Plan / Environmental Impact Report (CWMP/EIR). MassDEP suggested that once the Town agrees on moving forward, a detailed scope be presented to them for review and comment. This

ensures that any and all efforts expended by the Town will be in line with the state's Guide to Wastewater Management Planning. This was done with approval of the updated CWMP/SEIR Scope of Services contained herein and the state subsequently approved the Town for a low interest loan through the Massachusetts State Revolving Fund (SRF) Loan Program managed by the Massachusetts Clean Water Trust (MCWT).

This Report is the result of the development of an updated Scope of Services to bring the 2012 Report up to date as a full CWMP/SEIR per MassDEP Guidelines for Town review and eventual approval. Completion of a CWMPS/EIR will afford the Town with a comprehensive, Town-wide plan for its wastewater systems for the next 20 years. Benefits include wastewater planning for ALL of Sudbury (not just a small geographic area), economic development and environmental planning efforts, comprehensive public outreach/education plan implementation, Regulatory and environmental consensus-building throughout Project with MEPA filings, higher ratings when applying for state and/or federal funding, as well as meeting state grant requirements on a multitude of programs.

2. ASSESS CURRENT CONDITIONS – REVIEW AND UPDATE NEEDS AREAS FROM 2010 REPORT

2.1 Existing Conditions in Planning Area

The following existing conditions were reviewed for properties in the Town of Sudbury in preparation of this Report:

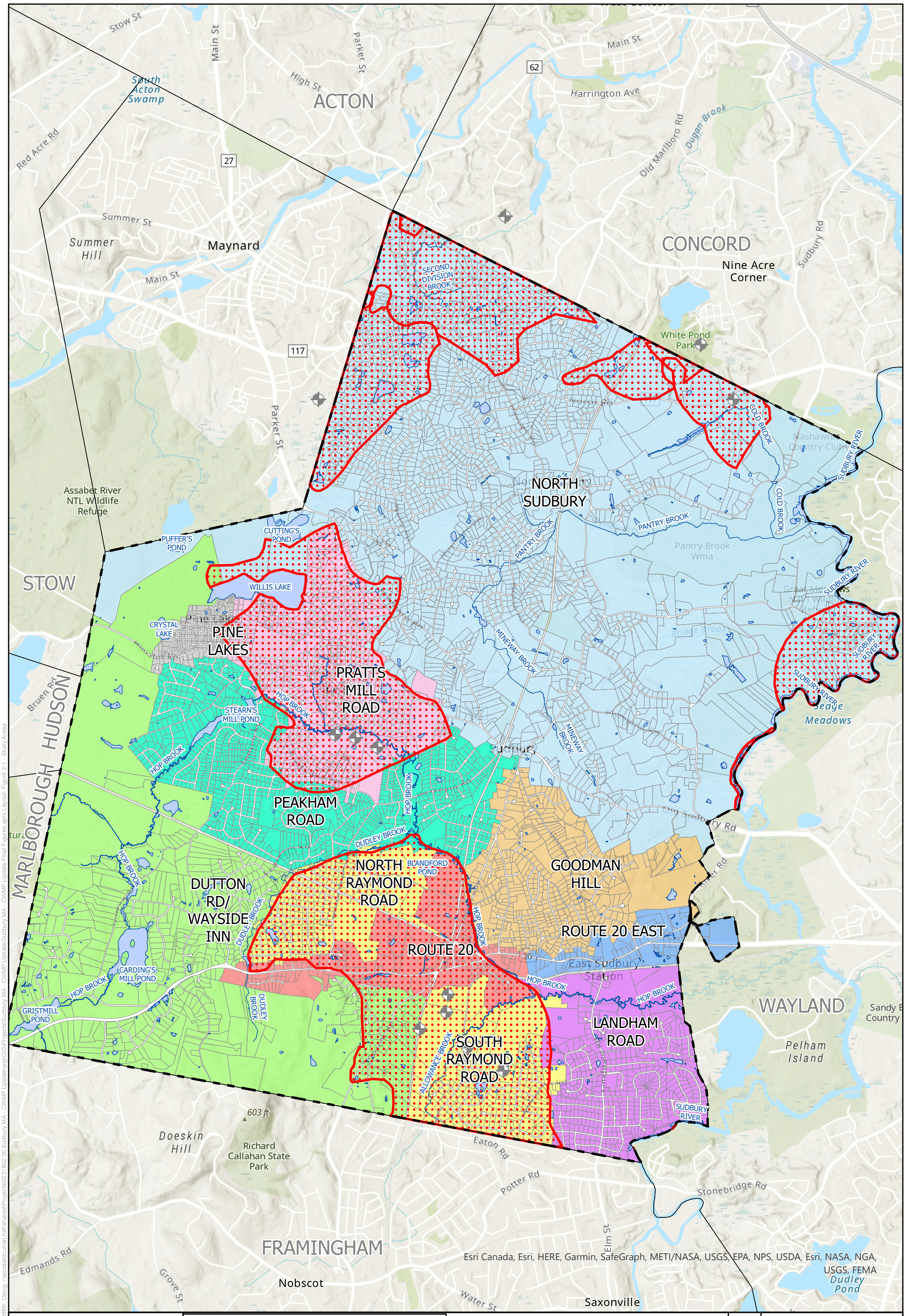
- Data from Board of Health including age of septic systems, septic system failures or other reported septic system issues, and input from the Board of Health and the Sudbury Health Agent in helping to identify areas that have or likely will have poorly performing on-site wastewater systems during the 20-year planning period.
- Location of Municipal Drinking Water Supply
- Environmental Considerations
- Assessor's data, including lot size (density of development), land use, building size, age of construction in areas where Board of Health data is unavailable, and property ownership (public vs. private)
- Water usage data
- Population data – Census Tract
- Lot size (density of developments)
- Assessor's data including land use and building size
- Zoning
- Geotechnical conditions

These pieces of data were utilized to develop study area boundaries, prioritize areas, and estimate sewer flows. Refer to Appendix C for supporting information.

2.2 Data from Board of Health

A review of the Board of Health files was completed, and this section documents the full, historic chronic septic system issues in Town. Due to time constraints and site visit/file availability, the day was concentrated on the highest priority Study Areas based on discussions with the Board of Health Agent, previously documented issues, and property data on the matrix criteria developed for the Comprehensive Wastewater Management Plan (CWMP) in progress. An overall review was conducted with major concentration on the areas deemed to be problematic by the Board of Health, either on an environmental or public health level. These Study Areas are shown on Figure 2-1 and include the encompass the entire Town of Sudbury.

The information referenced above relative to Board of Health data includes Title 5 failures, major repairs, soil and groundwater conditions, all factors determining long-term sustainability of on-site systems throughout Sudbury.



Study Areas

CWMP Update
Town of Sudbury, MA

Figure 2-1

Legend

- Town Boundaries
- Sudbury
- Public Wells
- Public Water Supply - Zone 2

Study Areas

- Dutton Rd/Wayside Inn
- Goodman Hill
- Landham Road
- North Sudbury
- Peakham Road
- Pine Lakes
- Pratts Mill Road
- Raymond Road
- Route 20
- Route 20 East

N

0 875 1,750 3,500 Feet

WOODARD & CURRAN

Project #: 0231802.00
Map Created: January 2022

Figure Exported: 1/23/2022 By: cgriffith Using: \\woodardcurran.net\shared\Projects\0231802.00 Sudbury MA - CWMP Update Final Figures.aprx Layout: Figure 2-1 - Study Areas

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The Town has experienced on-site wastewater system failures, additionally in areas of severe soils and/or groundwater, improperly operating systems throughout Town. Reports dating back to the 1990s confirm this-refer to Appendix B for previous reports documenting historic issues. The Route 20 Business District continues to operate utilizing on-site systems within the Zone II of the Raymond Road wells, which pose a severe threat to the Town's major drinking water supply. Refer to Appendix D for Water District information.

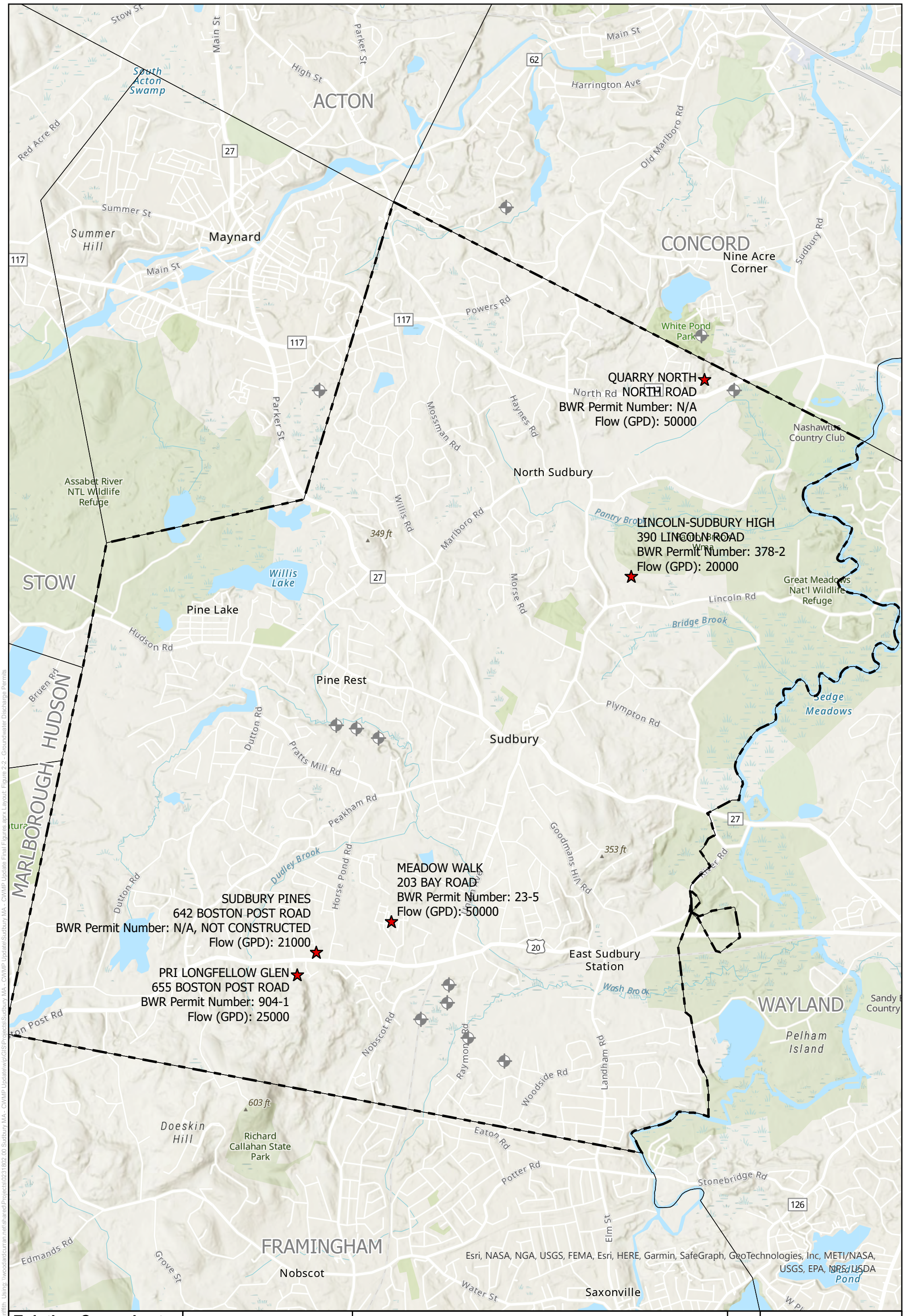
The Board of Health records were reviewed to confirm the Title 5 failures, major repairs/replacements, variances, and Certificate of Compliances records on properties located in the CWMP Study Areas. Information in Board of Health files included Title 5 Inspection Reports, information on septic system repairs, including Certificate of Compliance documents for repairs. These repairs encompassed minor repairs, that if noted in a Title 5 Inspection Report, would have rendered a "conditional pass". The Certificates also documented major repairs/replacements, such as full system replacements and replacement of Soil Absorption Systems-these would have rendered Title 5 Fails had a full Title 5 Inspection been done. All of the information reviewed, together with the matrix data of lot size, age of system, soil and groundwater data, density of systems, environmental and public health constraints have all been taken into account in determining areas of Town that are not considered long-term sustainable with current on-site wastewater systems. It is also noted that there were a considerable number of files that did not contain any documents relating to the septic system. In these cases, these properties were assumed to be serviced by the original system built with the property and if built before 1995, we determined that they were not currently fully Title 5 compliance.

Additional information, such as locations of existing cesspools, Innovative/Alternative systems and properties serviced by small, packaged Wastewater Treatment Facilities (WWTF) with groundwater discharges were also reviewed and noted. WWTF locations are included on Figure 2-2 and are at the following locations:

- Lincoln-Sudbury High School –20,000 Gallons Per Day – North Sudbury Study Area
- Meadow Walk Bay Road – 50,000 Gallons Per Day – Raymond Road North
- PRI Longfellow Glenn – 25,000 Gallons Per Day – Dutton Road/Wayside Inn Road Study Area
- Cold Brook Crossing – 49,755 Gallons Per Day – North Sudbury Study Area
- Sudbury Pines Extended Care – 21,000 Gallons Per Day – 642 Boston Post Road (not constructed)

Notes relating to system pump outs were reviewed to determine additional information relative to the opportunity or constraint for the on-site wastewater systems' operation. After review of the files, there was no clear indication that properties were pumping more than four times a year, which would categorize this as a Title 5 Fail.

Percolation rates were reviewed to confirm the physical site characteristics of systems' locations. These varied widely in geographic areas. The largest concentration of fast percing soils were located in the Raymond Road Study Area, directly abutting the Raymond Road Aquifer.



Existing Groundwater Discharge Permits

CWMP Update
Town of Sudbury, MA

Figure 2-2

Legend

- Public Wells
- Town Boundaries
- Sudbury
- Existing Groundwater Discharge Permits

0 800 1,600 3,200 Feet

N

WOODARD & CURRAN

Project #: 0231802.00
Map Created: August 2022

Figure Exported: 8/12/2022 By: cgriffith Using: \\woodardcurran.net\shared\Projects\0231802.00 Sudbury MA - CWMP Update\wip\GIS\Projects\Sudbury MA - CWMP Update Final Figures.aprx Layout: Figure 2-2 - Groundwater Discharge Permits

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There were some diverse percolation rates in the Goodman Hill Study Area, from very fast of <2 minutes per inch (mpi) to some very slow at >60 mpi. This confirms our discussions with the Board of Health that this Study Area has concern with long-term sustainability of on-site wastewater systems due to both fast percing rates that may not fully cleanse the wastewater before it reaches groundwater, as well as some very slow percing that could result in surface ponding resulting in a public health issue.

An additional review of soils and groundwater conditions that we used to supplement what was on file with the Board of Health, were the National Resource Conservation Service (NRCS) maps. Although more general in defining the soils and groundwater, these maps that we included in the Appendices section of this Report, confirmed data found in the Board of Health files, especially in areas noted as having variances for depth to groundwater on repairs/replacements. Refer to Appendix E for NRCS datasets.

The NRCS map was referenced for the Raymond Road Aquifer area and surrounding Route 20 area with very shallow depths to groundwater. More detailed data was obtained through MassGIS mapping layers and actual Board of Health files. Data reviewed support the potential threat of leaching septic systems to the drinking water supplies located within the area." This data is well documented in reports dating back to the 1980s. Refer to Appendix E for NRCS Datasets.

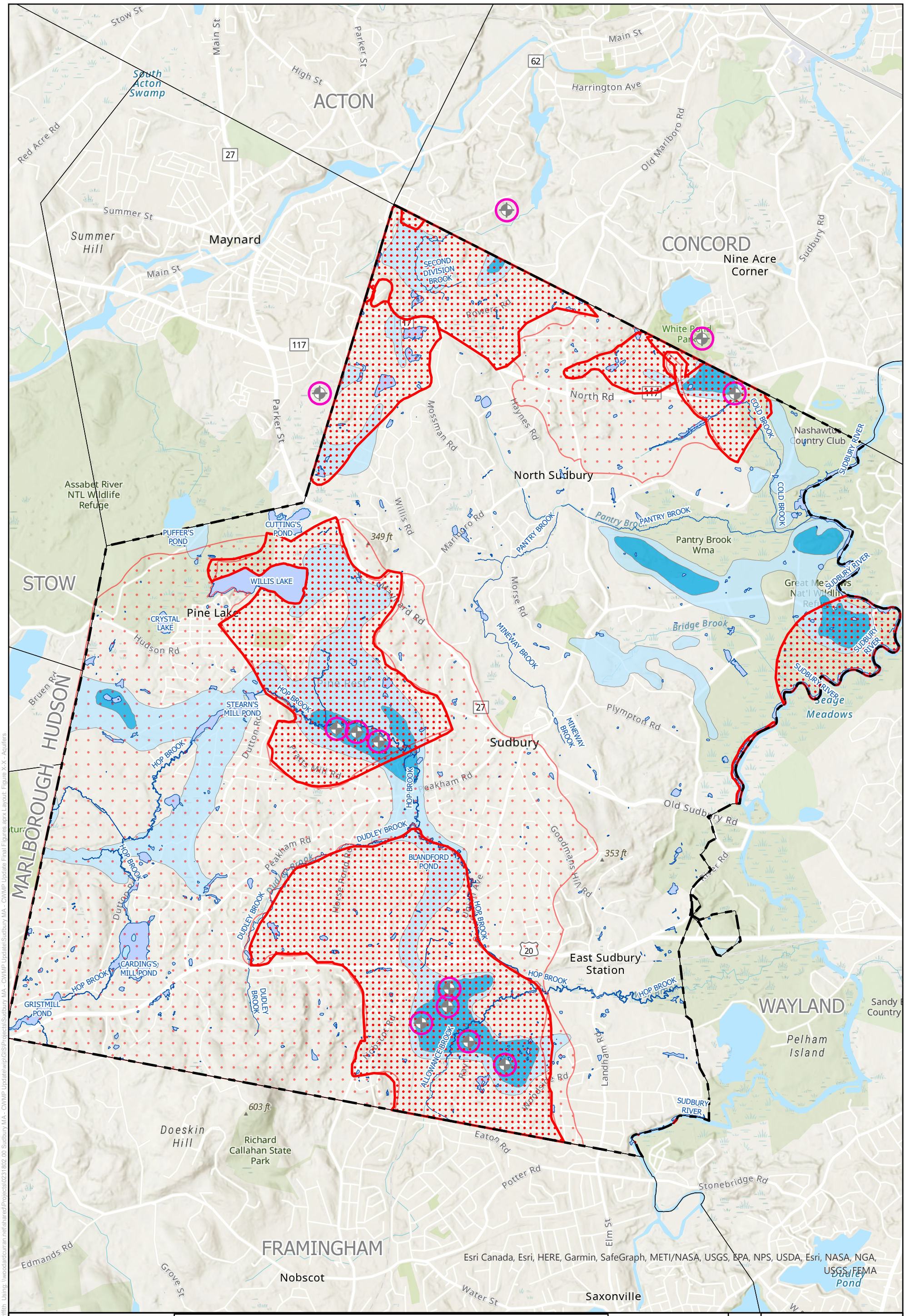
Surface water and wetland resources were also reviewed. The general area has water resources throughout the Needs Area and together with high groundwater conditions provide opportunity to transport wastewater to environmentally sensitive resources before fully cleansed. Refer to Figures 2-3 and 2-4 for locations of aquifers, water resources, wetlands, and floodplains.

As a general note, all on-site wastewater systems, whether denoted with actual Title 5 Inspection Reports on file or not, are at risk of impacting environmental resources and public health, if they are located in high groundwater areas. Many times, systems that are considered "properly operating" because they do not show visible signs of malfunction, are a threat due to the groundwater conditions present that do not afford a full cleanse of wastewater before reaching the water resources.

There were a large number of files reviewed that did not contain any Title 5 information, which we assumed to translate to the original on-site wastewater system is still in use . Many of these properties were built well before the 1995 Title 5 Update, thus receiving a determination of "Title 5 Non-Compliant". Refer to Appendix C.

Review of all data confirmed that the top priority was a combination of properties along the Route 20/Union Avenue area and Raymond Road South Study Areas. This area directly abuts the Raymond Road Aquifer-the Town's major drinking water wells- and includes both residential and non-residential properties all currently on on-site wastewater systems. The area of this Hybrid Needs Area, as shown on the Study Areas Figure attached hereto, details the areas limits with portions from two larger Study Areas. The Hybrid Needs Area, shown on Figure ES-1, encompasses the Zone II for the Raymond Road Aquifer, shown on Figure 5. Removing the on-site wastewater systems from within this sensitive area will preserve and protect the drinking water supplies from potential threat of degradation of wastewater and the pollutants it contains. In support of this, a review of groundwater and soil conditions was completed utilizing the National Resources Conservation Service (NRCS) soils and groundwater maps, as well as any data found during the Board of Health file review, such as percolation rates and soils and groundwater data on any existing plans and are shown on the several of the attached figures and clearly detail fast percing soils, groundwater, and environmental resources throughout the Hybrid Needs Area.

The physical constraints of the land area, lot sizes, soil, and groundwater conditions, in conjunction with Board of Health discussions and file review, determine this Hybrid Needs Area as the Town's top priority for removal of on-site wastewater systems. Refer to Appendix C.



Aquifer Areas

CWMP Update
Town of Sudbury, MA

Figure 2-3

Legend

- Sudbury
- Town Boundaries
- Public Wells
- Public Water Supply - Zone 1
- Public Water Supply - Zone 2
- Zone 3

Transmissivity (sqft/day)
- 1400-4000
- >4000

0 800 1,600 3,200 US Feet

N

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Project #: 0231802.00
Map Created: January 2022

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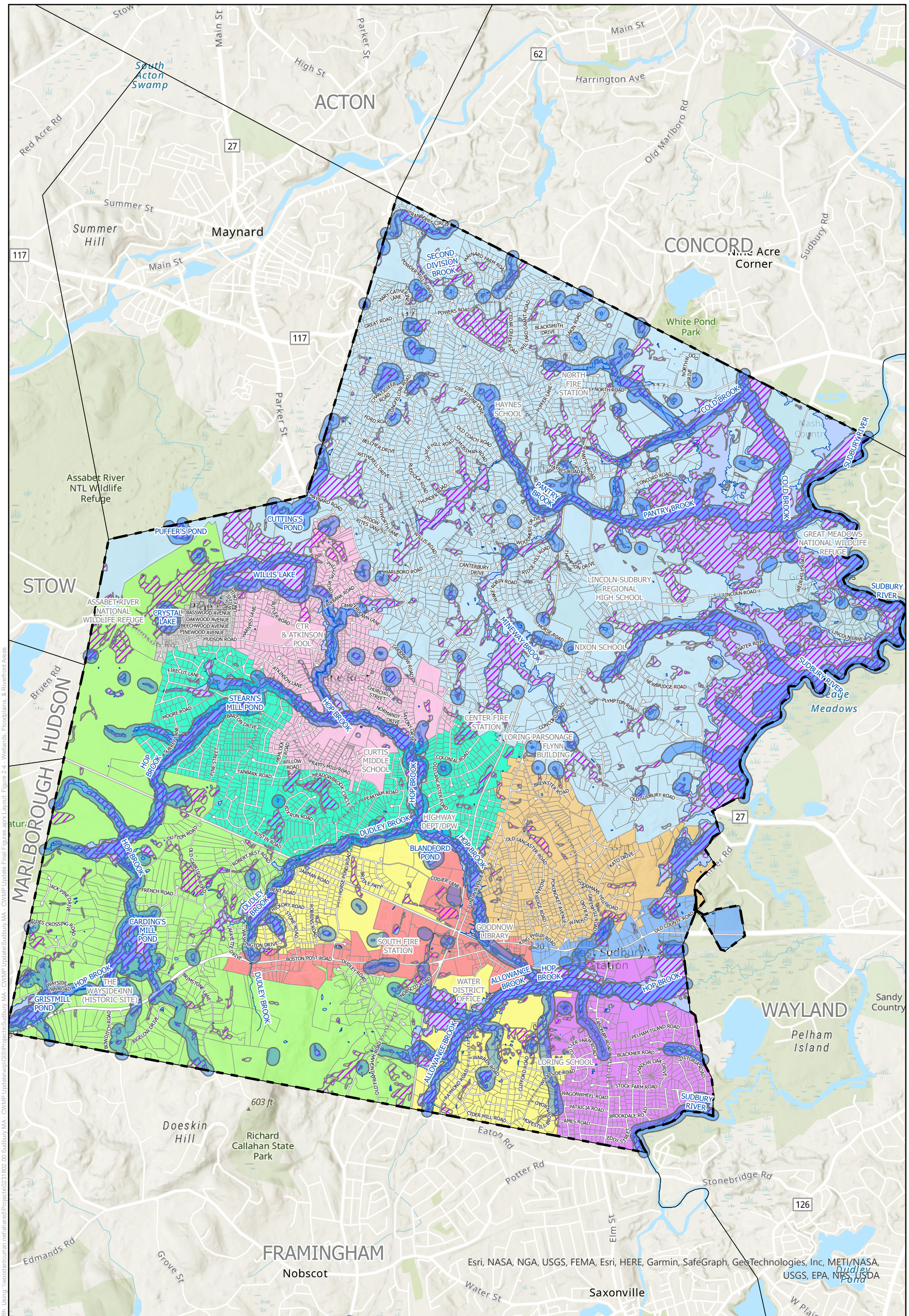
Figure Exported: 1/23/2022 By: cgriffith Using: \\woodardcurran.net\shared\Projects\0231802.00 Sudbury MA - CWMP Update\wip\GIS\Projects\Sudbury MA - CWMP Update\Sudbury MA - CWMP Update Final Figures.aprx Layout: Figure X-X - Aquifers



Wetlands, Floodplains, & Riverfront Areas

CWMP Update
Town of Sudbury, MA

Figure 2-4

Legend

- Town Boundaries
- Sudbury
- Riverfront Areas
- MassDEP Wetlands
- 100-Year Floodplain

Study Areas

- Dutton Rd/Wayside Inn
- Goodman Hill
- Landham Road
- North Sudbury
- Peakham Road
- Pine Lakes
- Pratts Mill Road
- Raymond Road
- Route 20
- Route 20 East

0 800 1,600 3,200 Feet

N

WOODARD & CURRAN

Project #: 0231802.00
Map Created: August 2022

Figure Exported: 8/15/2022 By: cgriffith Using: \\woodardcurran.net\shared\Projects\0231802.00 Sudbury MA - CWMP Update\wip\GIS\Projects\Sudbury MA - CWMP Update Final Figures.aprx Layout: Figure 2-4 - Wetlands, Floodplains, & Riverfront Areas

Third Party GIS Disclaimer: This map is for reference and graphical purposes only and should not be relied upon by third parties for any legal decisions.
Any reliance upon the map or data contained herein shall be at the users' sole risk. **Data Sources:**

After comprehensive review of all data, the Study Areas were identified as either long-term sustainable with on-site wastewater systems or recommended as Needs Areas with the intention of providing municipal sewer. The priority Needs Areas are as follows:

- Route 20 Sub - Area A – Needs Area 1
- Raymond Road South Sub - Area A – Needs Area 1A
- Raymond Road North Sub - Area A – Needs Area 2
- Goodman Hill Sub - Area A,
- Route 20 Sub - Area B – Needs Area 3

Areas deemed long-term sustainable with existing on-site wastewater systems and recommended for Septic management Plans (SMP) at this time. Recommend managing the following Study Areas under a SMP and watch for any future on-site issues and or potential impacts to the Zone II for the following Study Areas :

- Dutton Road/Wayside Inn
- Landham Road
- North Sudbury
- Peakham Road
- Pratts Mill Road
- Pine Lakes
- Route 20 East*

*If the Town moves forward to address on-site wastewater in this Study Area in the future, it will proceed as a Notice of Project Change with MEPA.

Refer to Figure ES-1 for a map of all Final Study/Needs Areas Wastewater Solutions.

It is important to note, that the Route 20 Business District, which is the major commercially zoned area in Sudbury, is operating on septic systems, (with the exception of a couple of small package treatment plants), which pose imminent threats to the Raymond Road Aquifer and limits the economic development potential in Town. The Title 5 failure rate in this area alone is 23 percent. The major land use is non-residential, which could relate to a higher wastewater load. In addition, many of the commercial uses are located within business condos, which are much more densely developed than in typical uses, thus more heavily discharging areas.

A review of Board of Health files determined septic system failure rates in the Study Areas is based on actual Title 5 Inspection Reports, as well as documented System repairs/replacements where a Certificate of Compliance was issued. Refer to Appendix C for a breakdown by street/Study Area of failures noted.

The Route 20 Study Area alone documents a 23 percent failure rate. This Study Area is included in the top priority areas for sewer and has been delineated into phases, with the highest rating along the Route 20/Union Avenue corridor directly in the Zone II for the Raymond Road Aquifer. Refer to Appendix C for Board of Health data.

The top priority for sewer, Needs Area 1, is a Hybrid Needs Area encompassing a combination of properties from the Route 20 Study Area and all of Raymond Road South. This Needs Area documents a 22 percent failure rate utilizing existing Board of Health records. Study Areas Town-wide reviewed averaged a 16.5 percent failure rate.

The CWMP Final Recommended Plan for Needs Areas detailed herein, will reduce violations of water quality standards in and around the water resources of Town. Most notable are from the “Massachusetts Year 2016 Integrated List of

Waters, which documents Hop Brook Segments MA82A-05 and MA82A-06 (these waters include Allowance Brook, Stearns Mill Pond, Carding Mill Pond, sections of the Sudbury River and Wash Brook) with the following impairments:

- Algae
- Non-native aquatic plants and aquatic plants
- Dissolved Oxygen
- E. Coli
- Phosphorus, Total
- Turbidity
- Nutrients* (major contribution from septic systems)

The CWMP plan to remove on-site wastewater systems, as proposed in the CWMP Final Recommended Plan, will eliminate degradation to the water resources in these areas and serve to reduce the nutrient loading. The elimination of all on-site wastewater systems in these areas will restore water quality and designated uses in the named water bodies by reducing the overall degradation in the resource areas. Removal of septics will also reduce the impacts to sensitive and environmental resources documented in the area, which includes two major Zone II Areas-Hop Brook and Raymond Road. Sewering, removing all on-site wastewater from leaching into all the water resources, will greatly reduce the E. Coli, as well as a host of pollutants not included in the 303(d) List-most notably personal care products, hosts of pharmaceuticals and in today's world, COVID 19 and its variants. These areas are well documented with fast percolating soils and high groundwater conditions, which afford wastewater from on-site wastewater systems to travel faster and potentially uncleansed, to the water resources contributing to the degradation.

Septic to sewer will ensure that public health threats from on-site wastewater will be eliminated. Even an on-site that is considered "properly operating and maintained" has the ability to degrade water resources with the documented soil and groundwater conditions affording faster transport of improperly cleansed wastewater to water resources.

The most notable benefit of the CWMP Final Recommended Plan is to eliminate the potential threat of polluting the Raymond Road Aquifer, which is the Town's major drinking water supply.

With the removal of the on-site wastewater systems in the proposed area, the threat of continued degradation to the water resources is eliminated. The preservation and protection of the drinking water supplies is the major goal, with the environmental benefiting as well.

The 303(d) List included in Appendix G addresses a host of issues, including nutrient degradation.

2.3 Demographic, Population and Economic Projections - Master Plan Reviews

The Town of Sudbury recently completed a new Master Plan. This was completed through the issuance of three volumes:

- Volume I - Baseline Report
- Volume II - Master Plan
- Volume III - Action Plan

Volume I - Final Baseline Report was released in February 2020 and is a summary of existing conditions, including inventories of households, neighborhoods, parks, roadways, public facilities, details of the local economy, history and natural assets. The Final Report also includes population statistics, as well as build-out projections from a number of sources, including the U.S. Census Bureau Decennial Census (1990 to 2010), the American Community Survey (ACS), as well as the University of Massachusetts Donohue Institute (UMDI). Additional resources include regional planning projections from the Metropolitan Area Planning council (MAPC). All detail continued growth in Sudbury.

One additional resource this Report reviewed, The U.S. Census QuickFacts breaks down Sudbury's statistical population data as of July 1, 2019, as follows:

- Total Population July 2018 – 19,627
- Total Population April 2010 – 17,675

These statistics alone show a ten percent growth, with July 2018 numbers already exceeding projections from

The Town of Sudbury developed a Housing Production Plan with the state. According to the Final Master Plan, the Town's Housing Production Plan (HPP)[1] was approved by the Massachusetts Department of Housing and Community Development (DHCD) in 2016. It is the Town's strategy to plan for and develop affordable housing to meet needs in the community in a manner consistent with the Chapter 40B statute and associated regulations. Massachusetts communities are mandated to meet the 10 percent affordable housing threshold, which is measured by the number of eligible Subsidized Housing Inventory (SHI) units as a portion of total year-round housing in 2010. Through the HPP, annual housing production goals are established, increasing units at a minimum of 0.5 percent of the total units per year for five years (the timeframe of the HPP). Sudbury has reached and actually exceeds its 10 percent affordable housing threshold at the time of the writing of this Report. As a result of this accomplishment, the Town has been awarded a half percent discount on all state funding, including the SRF Loan funding the CWMP/EIR.

Volume II Master Plan and Volume III Action Plan were released in February 2021. These built on the Final recommendations in the Volume I Baseline with the second volume, as well as detailed in Volume III an Action Plan for implementation of the recommendations.

Volume II Master Plan identifies opportunities, challenges, and needs as part of the Town-wide, overall Master Plan intent. The Route 20 Corridor is identified as an area that has been studied for over 20 years (as a side bar, wastewater studies go back over 40 years in this geographic area). The Master Plan identifies "strengths" in the Route 20 Area as opportunities for infrastructure investments and states that this CWMP Report as "On-going Town-wide wastewater planning will be important to encourage and support public and private investments on Route 20".

While the Master Plan identifies the opportunity for wastewater as a "strength", it also defines the lack of wastewater service as a "weakness" in this area. It details that the lack of wastewater infrastructure limits the full development potential for the corridor.

There are a multitude of opportunities in the Route 20 area for high-density housing, mixed use development, as well as the potential for the commercial and industrial zoned areas to fully develop and utilize their properties while bringing tax relief to the residential areas of Town.

Of major concern in the Master Plan Volume II is the continued threats of development in the Route 20 Corridor to potentially degrade the Town's major drinking water supplies. The Route 20 Corridor lies within the Water Resources Protection Overlay District. This CWMP details this threat in various sections of this document and deems it the priority goal to preserve and protect this vital resource. All other goals are secondary. The recommended plan for municipal sewering contained herein serves to meet this goal. This plan, as well as a comprehensive Land Use Control Policy will serve to ensure a safe and productive drinking water supply for decades to come.

[1] https://sudbury.ma.us/housingtrust/2016/04/21/sudburys-2016-housing-production-plan-approved/sudbury-housing-production-plan/

The Master Plan Volume III Action Plan details how Volumes I and II recommendations are to be implemented over the 20-year planning period. Recommended actions are prioritized with identified advocates.

The Route 20 Corridor is identified in the Volume III Action Plan as the top priority for implementation, as a "Big Idea" Action. While the overall plan includes a number of recommendations including urban design, development strategies, traffic management, etc., implementing a wastewater plan is at the top of the list. Benefits of constructing wastewater infrastructure in this areas include preservation and protection of drinking water supplies, as well as economic development, which is defined as a booster of tax revenue, housing supply and transformer of commercial lands.

The 2021 Master Plan fully supports the CWMP Final Recommended Plan contained herein. Refer to Appendix F for copies of the Covers and Table of Contents of all three Master Plan Volumes. For the full Reports, refer to: https://sudbury.ma.us/masterplan/2021/02/19/master-plan'available/.

2.4 Municipal Drinking Water Supply

The Sudbury Water District has nine (9) active gravel packed wells that supply the entire water system. A combined capacity of 7.6 MGD of water is available to pump from the nine wells; however, the system is not designed to operate all the wells simultaneously. The wells are located within the Raymond Road Aquifer (Well Nos. 2A, 4, 6, 7 and 9), Hop Brook Aquifer (Well Nos. 3A, 8A, 10), and an aquifer located in the northeast part of Town (Well No. 5).

Refer to Figure 2-6 for well locations. Well No. 2 and Well No. 9 are located directly behind the Water District office building at 199 Raymond Road. Well No. 6 is also located on Raymond Road, just past Feeley Field. Well No. 4 is located on Warren Road. Well No. 7 is located on Nobscot Road. Well No. 5 is located on North Road (near the Concord line). Well No. 3A, Well No. 8A, and Well No.10 are all located off of Pratts Mill Road. Refer to Figure 2-6 for a map showing these locations. In addition to the nine wells, Sudbury has four storage tanks. There is a 375,000 gallon tank located on Goodman Hill Road, a 1 million gallon tank located on Bigelow Drive, and two tanks located on Willis Hill (one 2 million gallon tank and one 3 million gallon tank). Because Sudbury Water District operates under one large distribution system, it is not possible to pinpoint an individual's water supply to one specific well. All water eventually mixes within the water mains. In addition, it would depend on which wells were being run. In the fall, winter, and early spring months the Town generally runs two or three wells per day. In the summer months the Town runs all of our wells at all times to keep up with the demand. The following Table 2-1 details the source ID, type and location of each of the nine wells.

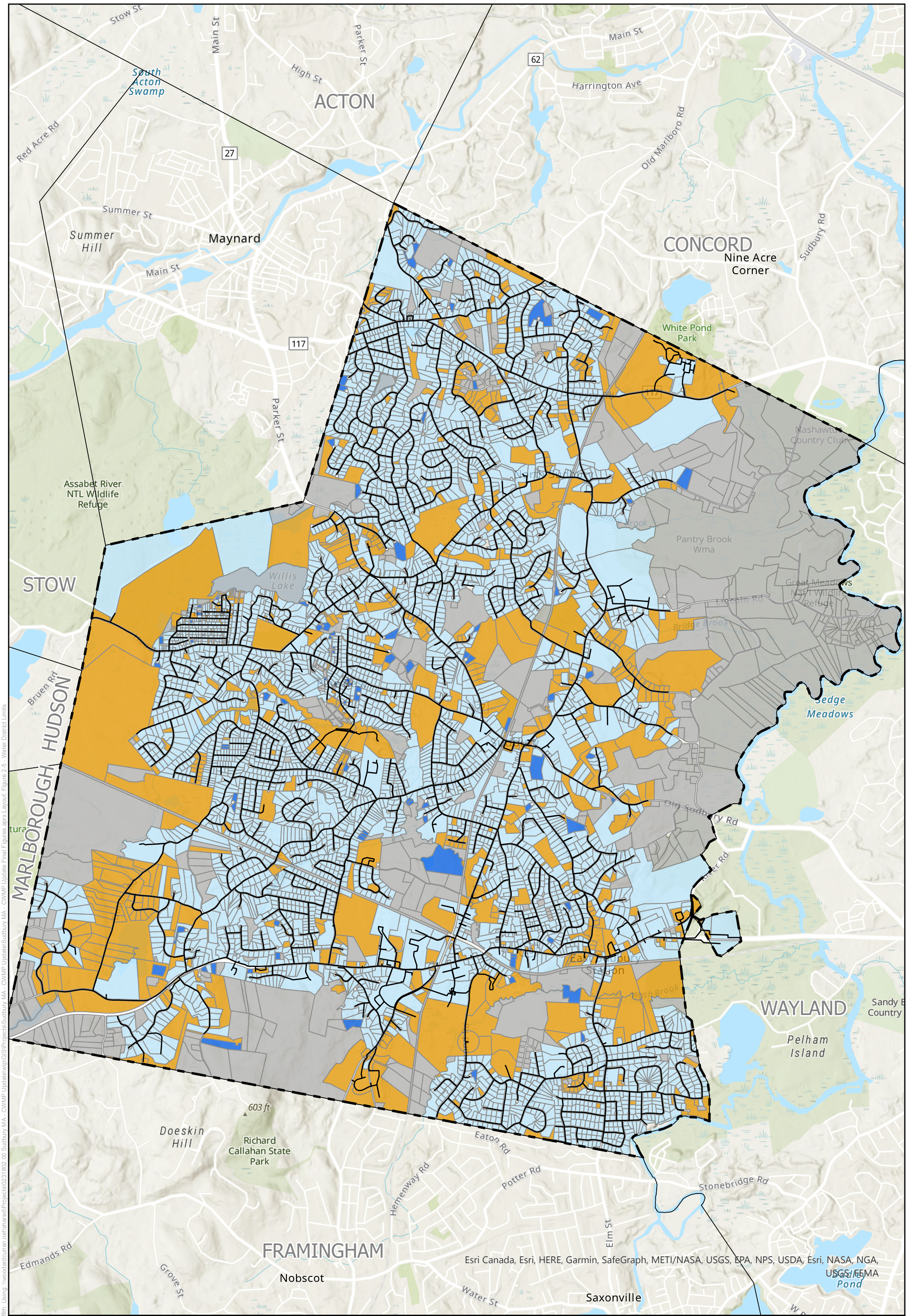
Table 2-1 Sudbury MA, Potable Well Details

Source Name	Mass DEP Source ID #	Source Type	Location of Source
GP Well No 2A	328800002G	Groundwater	Raymond Road
P Well No 3A	328800011G	Groundwater	Pratt's Mill Road
GP Well No 4	328800004G	Groundwater	Warren Road
GP Well No 5	3288000-05G	Groundwater	North Road
GP Well No 6	3288000-06G	Groundwater	Raymond Road
GP Well No 7	3288000-07G	Groundwater	Nobscot Road
GP Well No 8A	3288000-12G	Groundwater	Pratt's Mill Road
GP Well No 9	3288000-09G	Groundwater	Raymond Road
GP Well No 10	3288000-10G	Groundwater	Pratt's Mill Road

Refer to Figure 2-5 for a map of the existing Water District service area.

The Water District promotes water conservation regularly with information on its website located at https://www.sudburywater.com/water-conservation-tips/, as well as through flyers inserted in user bills.

The Zones of Contribution for the Raymond Road and Hop Brook Aquifers each extend not developed areas, with the Raymond Road Wells of great concern due to the number of non-residential developed properties contained within these sensitive areas. This CWMP Report discusses this topic throughout the document.



Water District Limits

CWMP Update
Town of Sudbury, MA

Figure 2-5

Legend

- Water Mains
- Town Boundaries
- Sudbury

Water Account Match Status

- Matched, in buffer
- Matched, not in buffer
- Not matched, in buffer
- Not matched, not in buffer

0 800 1,600 3,200 Feet

N

WOODARD & CURRAN

Project #: 0231802.00
Map Created: January 2022

Figure Exported: 1/23/2022 By: cgriffith Using: \\woodardcurran.net\shared\Projects\0231802.00 Sudbury MA - CWMP Update\wip\GIS\Projects\Sudbury MA - CWMP Update Final Figures.aprx Layout: Figure 2-5 - Water District Limits

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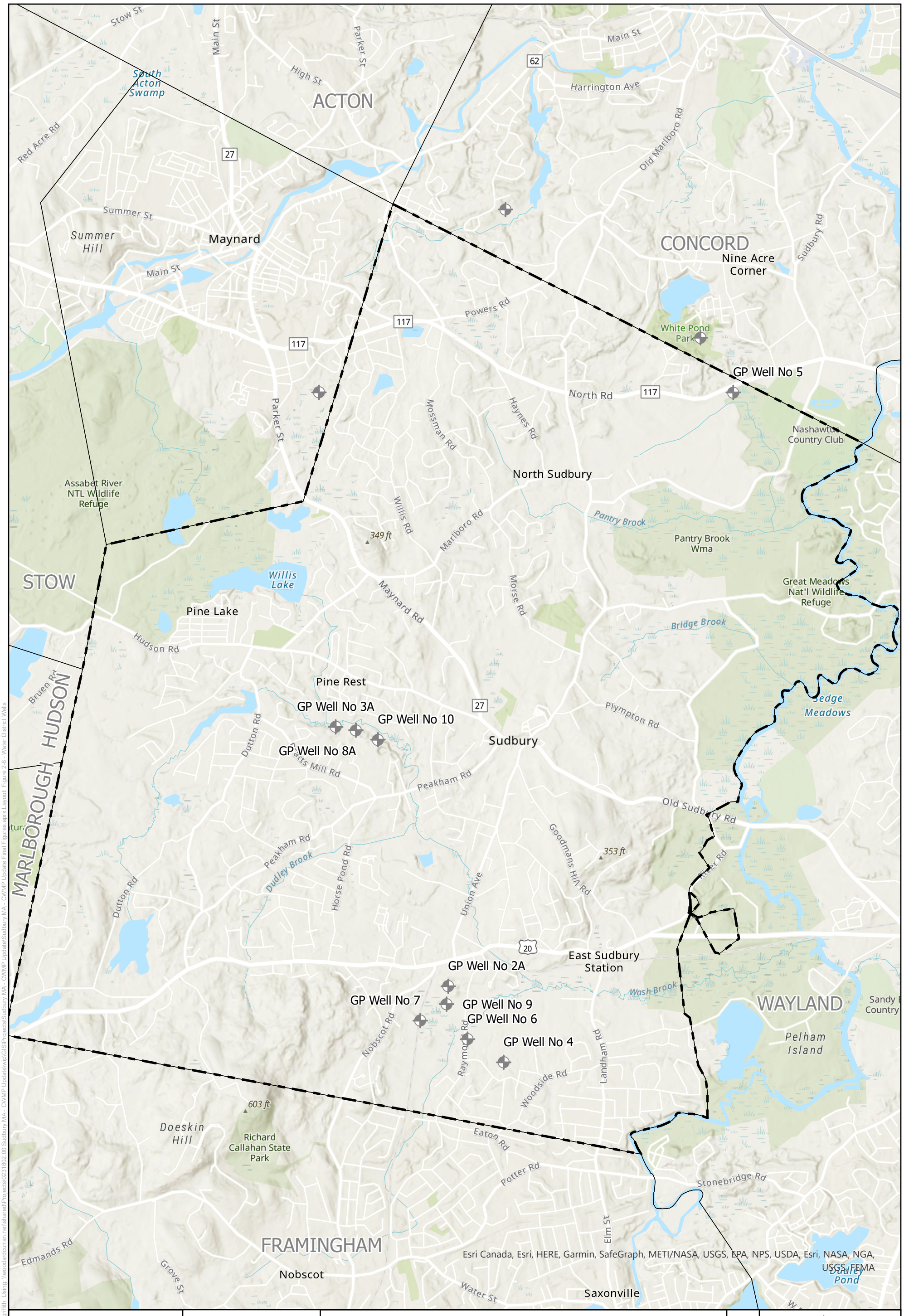

Water District Wells

CWMP Update
Town of Sudbury, MA

Figure 2-6

Legend

- Sudbury
- Town Boundaries
- Public Wells

0 800 1,600 3,200 US Feet

N

WOODARD & CURRAN

Project #: 0231802.00
Map Created: January 2022

Figure Exported: 1/23/2022 By: cgriffith Using: \\woodardcurran.net\shared\Projects\0231802.00 Sudbury MA - CWMP Update\wip\GIS\Projects\Sudbury MA - CWMP Update Final Figures aprx Layout: Figure 2-6 - Water District Wells

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Any reliance upon the map or data contained herein shall be at the users' sole risk. **Data Sources:**

There are areas of Town that maintain on-site drinking water wells, as well as on-site wastewater disposal systems. These areas are mostly in the north Sudbury area where the majority of the lots are large and can support the systems, maintaining Title 5 Regulations. The Needs Areas, as shown on Figure 2-1, are serviced with municipal water. The areas with private wells are the areas shown on Figure 2-5 not shown with public water supply, mostly located in the North Sudbury area. The private wells are under the jurisdiction of the Board of Health and any outreach and/or maintenance suggestions are addressed there. Refer to Figure 2-5 for a map of locations where public water is available. The area outside of the public are assumed to be on private wells.

Municipal water use records were used to estimate sewer flows; this is discussed further in the Flows and Loads, in Section 3.

2.5 Existing Environmental Considerations

2.5.1 Air Quality

The Massachusetts Department of Environmental Protection (MassDEP), Air Assessment Branch (AAB), which collects representative samples of ambient air for a number of pollutants at monitoring stations located across the Commonwealth, completes the Massachusetts Air Quality Reports on an annual basis. The most recent, for 2019 and dated May 2020, details the results of the samples collected and analyzed. All samples are collected in a precise and scientifically sound manner in order to properly characterize the quality of the air in the Commonwealth. The 2019 data did not have any samples collected at locations within Sudbury. Various indicators detailed Sudbury's air quality as generally good. There are no major industries in Sudbury that discharge major pollutants into the air to impact air quality.

The full report can be accessed at https://www.mass.gov/doc/2019-annual-air-quality-report/download

2.5.2 Wetlands and Flood Plains

A significant portion of the land in Sudbury contains wetland resources. There are numerous wetland areas located throughout the entire Town Study area, with a significant amount in and around the Route 20 Business District area. The majority of the wetlands are associated with the Hop, Dudley and Allowance Brooks. There are also some isolated wetlands in the Chiswick Industrial Park

All of the Brooks detailed above have a floodplain area associated with them and are mapped in Figure 2-4 using the MassDEP Wetland and Floodplain GIS layers. The Federal Emergency Management Agency (FNMA) has delineated the major floodplains within the Town. Thera is a significant floodplain area associated with Hop Brook. As the CWMP has progressed and the Town has approved the priority Needs Areas, which this Report is concentrating on. The original CWMP evaluated 10 Study Areas encompassing the entire Town. These Study Areas have since been prioritized for future sewering as "Needs Areas" and are shown on Figure 2-1. All potential impacts, the majority of which are temporary during construction, to wetland resource areas in the Needs Areas are identified in Section 7 of this Report as part of the Section 61 Findings / Final Environmental Impact Report. Potential impacts, as well as mitigation measures are further detailed in the Section 61 Findings / Final Environmental Impact Report. Appropriate permitting protocols are also spelled out here. Refer to Figure 2-4 for a map of wetlands and Flood Plain areas.

2.5.3 Natural Heritage and Endangered Species Program (NHESP) Rare and Endangered Species and Priority Habitats

The Natural Heritage and Endangered Species (NHESP) Program maps Rare and Endangered Species and Priority Habitats. Figure 2-6 identifies areas where rare and endangered species and habitats are mapped within the Town's borders and in relation to identified Needs Areas. In addition, MassGIS was used to identify locations where certified vernal pools, as well as potential vernal pools are located in Town.

These areas include estimated habitats of rare wildlife, certified vernal pools and priority sites of rare species habitats are mapped Town-wide, as well as included in each Needs Area section on Figures 7-9 through 7-12 in the Section

61 Findings / Final Environmental Impact Report in Section 7 included herein. This enabled identification of potential impact within each Phase of the proposed sewer. These resource areas are all outside of targeted Needs Areas, so there is no impact with NHESP under the proposed plan, which the figures clearly show.

2.5.4 Parklands and Recreational and Conservation Land Resources

There are multiple areas of Town under Parkland and Conservation Land Use Codes. These lands remain open and specific to uses as determined on either Deeds and/or local restrictions. All parcels within these State land Use designations have been reviewed on a lot-by-lot basis with the Town. Vacant lands have been eliminated from consideration for future sewer infrastructure as a Smart Growth measure in the methodology utilized to calculate flows and loads. If a specific parcel's use is a Town Park and has restroom facilities, i.e. currently has toilets, sinks, showers, those parcels have been identified and designated on a lot-by-lot basis for inclusion in the sewer Needs Areas.

2.5.5 Historical and Archaeological Resources

There are a significant number of historical/archaeological resources inventoried in Sudbury. A Project Notification Form (PNF) was filed with the Massachusetts Historical Commission in April 2021 to identify areas within Sudbury of historical and/or archaeological significance in relation to the identified Needs Areas The Massachusetts Historical Commission PNF response received on April 22, 2021, concluded that due to the significant number of sensitive historical and archaeological resources located throughout the Town, a Reconnaissance Survey, conducted under 950 CMR 70, be conducted ahead of any proposed construction. As this CWMP provides a conceptual, planning level effort, we would propose to coordinate with the Massachusetts Historical Commission during Preliminary Design when more detailed information on where infrastructure, as well as staging and all construction related activities would be planned, and use this more defined information to support a Survey. As part of preliminary design, a full survey would be conducted, which will afford a more detailed plan of the area and surrounding resources in relation to proposed construction. While we reviewed existing resource information, including those noted in the paragraphs below, Sudbury's historic resources are plentiful and well noted. The overall goal of the CWMP Final Recommended Plan contained herein is to meet all technical and environmental goals, while also striving to eliminate any potential impact to historical/archaeological resources. We are confident we can meet these goals with coordination with the Sudbury Historical Commission, Sudbury Historical District Commission and the Massachusetts Historical Commission. The complete PNF can be found in Appendix H.

A comprehensive review of the "Inventory of Historic Buildings, Structures and Places 200726" contains over 458 historic, pre-1940 buildings and structures, with 403 of these being houses. The National Register of Historic Places inventories buildings, places, as well as a number of Milestone Markers located in Sudbury. There are four identified Historic Districts located within Sudbury:

5. King Phillip Historic District
6. George Pitts Tavern Historic District
7. Sudbury Centre Historic District
8. Wayside Inn Historic Districts

Only two of the Historic Districts are included in the "National Register of Historic Places":

1. Sudbury Centre Historic District*
2. Wayside Inn Historic Districts*

**None of the CWMP Needs Areas are proposed to be located within either of these Historic Districts.*

The CWMP Final Recommended Plan has sewer infrastructure proposed within two of the four Historic Districts:

- King Philip Historic District – This area was the site of the Indian Wars of 1676 where Captain Samuel Wadsworth and his troop were killed in an ambush and later buried in the Wadsworth Cemetery. The

Wadsworth Monument was erected in 1852 in memory of the gallant men who fought the Battle of Green Hill and appears on the Town Seal of Sudbury. Also in the District is the Goodnow Library, included in the National Register of Historic Places, as well as homes of 17th and 18th century construction, including the Goulding House, Sudbury's oldest existing home, 1720. In the area of Mill Village is the site of the west-side Grist Mill, erected in 1659.

- George Pitts Tavern Historic District – In 1721 at the George Pitts Tavern (located on Maple Avenue) a meeting was held to petition the Colonial Legislature for permission to erect a meeting house west of the Sudbury River, thereby separating the towns of Sudbury and Wayland. The outcome of this historic gathering effectively created the Town of Sudbury. According to maps of the 1800s, even the Old Boston Post Road passed along a portion of this street. Today, the architecture and structure of Maple Avenue showcases Sudbury's evolution throughout time. Many of the homes standing today were built between 1882 and 1920.

The CWMP Final Recommended Plan in response to historical/archaeological resources in Town is as follows with no expected impacts due to sewer implementation:

Sewer Piping and Pump Stations

The CWMP overall recommended Plan, as shown in PNF Figure 1 (Appendix H contains all PNF Figures), details the proposed areas of sewer infrastructure. All sewer pipe is proposed within existing pre-disturbed, roadways- areas. There are five proposed pump stations included in the overall plan. The pump stations' locations as detailed below, were all checked with the "Inventory of Historic Buildings, Structures and Places-200726", as well as the "National Register of Historic Places" to ensure none were located on an historic resource area. All pump proposed stations are located outside of historic resource areas and are shown on PNF Figures 4 through 8. Proposed pump station locations are as follows:

1. Route 20 Pump Station: MBL K07-0018, 490 Boston Post Road
2. Raymond Road South Pump Station: MBL M08-0126, 82 Warren Road
3. Raymond Road North Pump Station: MBL J06-0500, Tall Pine Drive (no number)
4. Route 20 East Pump Station: MBL K11-0052, 26 Goodman Hill Road
5. Goodman Hill / Route 20 Sub-Area B Pump Station: MBL K08-0037, 378 Boston Post Road

All historic locations from the Inventory are shown on PNF Figures 4-8, which identifies all historic properties, building and markers in Town and clearly show all proposed pump stations outside of any inventoried properties.

Wastewater Treatment Facility

The recommended Municipal Wastewater system proposes to design and construct a Wastewater Treatment Facility (WWTF) at the existing Department of Public Works at 275 Old Lancaster Road. This location was checked with the "Inventory of Historic Buildings, Structures and Places-200726", as well as the "National Register of Historic Places", to ensure the parcel was not included in an historic resource area. The facility will be housed with the existing land use departments including Highway Department. This area is also outside of any of the four historic districts noted in Town and at a pre-disturbed location. See PNF Figure 2.

Groundwater Discharge Beds

The groundwater discharge beds are proposed to be located subsurface to the ball fields at the Curtis Middle School at 22 Pratts Mill Road. This location was checked with the "Inventory of Historic Buildings, Structures and Places-200726", as well as the "National Register of Historic Places", to ensure the parcel was not included in an historic resource area. This area is pre-disturbed, cleared land currently being utilized as ball fields. This area is also outside of any of the four historic districts noted in Town and at a pre-disturbed location. See PNF Figure 3.

Review of all data in the CWMP confirmed that the top priorities are a combination of properties along the Route 20/Union Avenue area and Raymond Road South Study Areas. These four Needs Areas directly abut the Raymond Road Aquifer- the Town's major drinking water wells- and includes both residential and non-residential properties all currently on on-site wastewater systems. The Needs Areas encompass the Zone II for the Raymond Road Aquifer.

The following summarizes the Needs Areas within noted historic districts:

- The George Pitts Tavern Historic District is along Maple Avenue with three parcels included along Route 20. This District is within the Route 20 Needs Area as shown on PNF Figures 4 and 7. All proposed sewer infrastructure in the Historic District is within pre-disturbed , existing roadway / right of way areas.
- The King Phillip Historic District is along portions of the Route 20 Needs Area and the Goodman Hill Needs Area. Refer to PNF Figures 4 and 7 for a map of this location. All proposed sewer infrastructure in the Historic District is within pre-disturbed , existing roadway / right of way areas.
- PNF Figure 5 details the Raymond Road North Needs Area. This area is not within a defined Historic District. All proposed sewer infrastructure is within pre-disturbed , existing roadway / right of way areas.
- PNF Figure 6 details the Raymond Road South Needs Area. All proposed sewer infrastructure is within pre-disturbed , existing roadway / right of way areas.
- PNF Figure 8 details the Route 20 East Needs Area. All proposed sewer infrastructure in the Historic District is within pre-disturbed , existing roadway / right of way areas.

It is noted that a positive impact to the myriad of historic buildings and places with the design and construction of Municipal Wastewater infrastructure is that all properties within the Needs Areas limits can be serviced with Municipal sewer and avoid failing septic systems, many of which fail due to high groundwater and require a mounded system. These mounded systems raise the on-site wastewater system above groundwater and create a negative aesthetic to the property. Location could be in the front yard, side yard or back yard with the mound clearly visible. A mounded system many times decreases the overall property values. Parcels located along Union Avenue and Goodman Hill Road detail high groundwater and severe soil conditions for long-term sustainability of on-site systems. Municipal sewer in these areas will offer these historic resources a pleasing alternative to a failed septic that would otherwise require a mounded system and avoid structures that impact the overall aesthetics of these valuable areas.

In addition to positively impacting aesthetics to the historic resources, removing the on-site wastewater systems from within this sensitive area will preserve and protect the drinking water supplies from potential threat of degradation of wastewater and the pollutants it contains. A fifth Needs Area, Route 20 East, Phase 4, is located along the Wayland Town border. This Needs Area is outside of any historic districts. Refer to PNF Figures 4 through 8 for maps of Needs Areas in relation to historic districts.

Septic to sewer will ensure that public health threats from on-site wastewater will be eliminated. Even an on-site that is considered "properly operating and maintained" has the ability to degrade water resources with the documented soil and groundwater conditions affording faster transport of improperly cleansed wastewater to water resources.

With the removal of the on-site wastewater systems in the proposed areas, the threat of continued degradation to the water resources is eliminated. The preservation and protection of the drinking water supplies is the major goal, with the overall environmental benefiting as well. This positive approach also benefits the historical resources.

With the CWMP under the jurisdiction of Town Administration and Public Works, every effort will be expended to work with the local Historical Commission during Preliminary Design to avoid noted historical resources.

Other Environmentally Sensitive Areas

Major surface waters within the Town borders are Hop Brook, Dudley Brook, Allowance Brook and Blanford Pond. The Massachusetts 303(d) List of Impaired Surface Waters lists Hop Brook as suffering from nutrients, pathogens, organic enrichment/low dissolved oxygen, suspended solids, and noxious aquatic plants. Most of these conditions can be attributed to wastewater discharge from the Marlborough Easterly Wastewater Treatment Plant., although failing and/or improperly operating on-site wastewater systems within the Watershed through non-point source may a be contributing cause. A thorough review of Board of Health records was completed with notations on failing and or improperly operating septic systems. The general area has water resources throughout the identified Needs Area and together with high groundwater conditions provide opportunity to transport wastewater to environmentally sensitive resources before fully cleansed.

The "Massachusetts Year 2016 Integrated List of Waters, which documents Hop Brook Segments MA82A-05 and MA82A-06 (these waters include Allowance Brook, Stearns Mill Pond, Carding Mill Pond, sections of the Sudbury River and Wash Brook) with the following impairments:

1. Algae
2. Non-native aquatic plants and aquatic plants
3. Dissolved Oxygen
4. E. Coli
5. Phosphorus, Total
6. Turbidity
7. Nutrients* (major contribution from septic systems)

The Massachusetts Year 2016 List of waters can be found in Appendix G as well as accessed at https://www.mass.gov/files/documents/2020/01/07/16ilwplist.pdf.

It is noted that the CWMP Final Recommended Plan for septic/on-site wastewater disposal systems removal will eliminate many of these pollutants in the areas noted above.

2.6 Nutrients

The Town has been looking at Nutrient issues, specifically Nitrogen, in relation to its potable water sources for decades. Reports dating back as far as 1963 document the findings of various studies to determine the potential impact of various influences to the Town's major drinking water supplies-most specifically the Hop Brook Aquifer and Raymond Road Aquifer.

Nutrients are a major concern in and around the Zones of Contribution to the drinking water wells. Reports detail, "typical groundwater contaminants and their sources include nitrates from septic systems and fertilizers" as a major item of concern. "The goal is to have wells located as far away from these types of sources as possible, which is clearly a difficult task in Sudbury". This was direct from a January 1985 Report. At this time, the goal was to limit land development in close proximity to drinking water resources. At this time, development in Town was very different than we see in 2021. At the time of the 1985 Report, there were 4,293 developed parcels in Town. The Assessor data shows today there are 6,258 developed parcels. This is a 46 percent growth rate on developed parcels. In looking closer at the identified Needs Areas for this CWMP, with specific attention to the Zone I and Zone II for the Hop Brook Aquifer and the Raymond Road Aquifer, we found the following growth statistics: The following Table 2-2, details the overall percentage of new development in the two major Aquifer areas.

Table 2-2 Growth in Aquifer Areas

Aquifer Area	Needs Area(s)	1985 Developed Parcels	2021 Developed Parcels	Growth Percentage
Hop Brook	Pratts Mill Road	407	660	62%
Raymond Road	Raymond Road/Route 20	526	784	49%

In addition to the overall growth, the new development takes into account both new residential, as well as non-residential growth. There is significant new non-residential development growth included within the zone of contribution for the Raymond Road Aquifer, which all rely on on-site wastewater systems (with a few exceptions including the Meadow Walk Development at the former Raytheon site, which is serviced with a package treatment plant).

In the Route 20 Needs Area alone, which is where the major non-residential development in Town is located and is within the Zone II for the Raymond Road Aquifer, there are 89 new residential units and over 117 new non-residential (commercial and industrial uses). With the major portions of these on on-site wastewater systems, the potential threat to nutrient and other pollutants to the aquifer are a continued threat.

The following is a direct quote from the 2021 Sudbury Master Plan:

THREATS • The greatest threat to the Town from the Route 20 area would be a poorly researched, developed and executed vision and plan for the area. Without new regulations that are smartly crafted, future development would not improve circulation, aesthetic, and historic appeal, nor the overall vibrancy of the corridor. Further, because much of the corridor lies in the Water Resource Protection Overlay District, without the proper development standards and enforcement, new development could pose threats to the Sudbury Water District Water Supply

The following are key issues with potential impact to the aquifer areas:

- All lots are serviced by septic systems
- Many lots are less than ½ acre or multiple units on same lot
- Many of the commercial uses along Route 20 are in strip malls, with high-density of use a concern
- Antiquated onsite wastewater disposal systems-high failure rates. Many Board of Health records show original systems still in use
- Severe soil conditions for onsite wastewater management-fast percolating rates at less than 2 minutes per inch, as well as very slow perc rates in other areas.
- Multiple Board of Health variances required for upgrade/repairs that add additional compromises to the environment
- Located within Zone II of Municipal Water Supplies of both Hop Brook and Raymond Road

Sudbury has documented nutrient issues dating back to 1985 with the “Report on Raymond Road Aquifer” by H2O Engineering. This Report concluded that typical groundwater contaminants and their sources include nitrates from septic systems” are a continued threat to potable water supplies. The Report also stated that “it is possible in the future some of the wells at Raymond Road complex might be contaminated due to septic tank effluent (nitrates) or other sources of pollutants.” The Report also concluded that it is far more economical to design and build a wastewater treatment plant BEFORE groundwater becomes contaminated and the wells are impacted. It will be far more costly to react versus be proactive. Considering this was stated in 1985 and given the contaminants that we are seeing in 2021, including COVID-19, there are a multitude of reasons to remove on-site wastewater from these environmentally sensitive areas.

In May of 1994, the "Report on Nitrogen Loading Analysis for Groundwater Supplies for The Sudbury Water District" was completed by H2O Engineering. The summary of this Report was that the Town must manage its land use in areas surrounding the Town's drinking water wells to limit the amount of Nitrogen coming from septic systems. Table 2-2 above clearly shows development has grown. In coordination with H2O Engineering, Horsley & Witten, Inc. completed build-out analyses to determine the level of Nitrogen load in these areas. The Report states, "disposal of sewage through septic systems or individual sewage disposal systems is commonly a dominant source of nitrogen in groundwater". At this time in 1994, the loading was below the EPA acceptable level, but again, the Report warned of future development increasing the potential for degradation of the water supply.

In August 1995, Woodard & Curran completed a Report entitled, "Sudbury Wastewater Disposal Options Route 20 Business District", this stated the potential impact of septic systems to the Raymond Road Aquifer. The Report noted that the area is majorly serviced by individual on-site wastewater systems, some systems are in excess of 30 years old and that many systems were at maximum use given the site conditions, size of lots, shallow groundwater and low permeability of soils.

Each Report has a fairly long Reference Document List of other Reports that also spoke to the issue of on-site wastewater to the wells. This appears to be a long standing concern and with the growth and uses in today's world, coupled with the contaminants of today, nutrient degradation is a very real threat to the Town's drinking water supplies.

Removal of the septic systems/on-site wastewater systems for a municipal sewer system with enhanced treatment technology will preserve and protect the water supply for decades to come.

As this CWMP continues evaluating potential sources of degradation to the Town's drinking water supplies, onsite wastewater disposal systems lead the list of sources of nutrient loading to watersheds. The density of systems, fast percing soils, high groundwater conditions, proximity to the wells and overall land uses in the identified CWMP Needs Areas, all contribute to this nutrient problem. The wastewater currently being discharged via onsite wastewater disposal systems has very little time in the soil before reaching groundwater and the wells themselves thus contributing the largest source of nutrients to an already over-enriched watershed.

The Town's 2021 Master Plan also details the existing and growing nutrient issues related to the water resources from non-point sources, including septic systems, in its section on the Natural Environment. Specific references to nutrient degradation in the Sudbury River and its tributaries is detailed on page 68.

The following Table 2-3 is a list of the Reference Documents listed in each of the above-referenced Reports with dates going back as far as 1963. Nutrient degradation is an on-going concern for the Town, with septic/individual on-site wastewater systems the dominant concern.

Table 2-3 Reference Documents

Surficial Geologic Map of the Framingham Quadrangle, Middlesex and Worcester Counties, Massachusetts by Arthur E. Nelson, 1984
Hydrology and Ground Water Resources of Sudbury, Massachusetts by Ward S. Motts, 1977
Well Construction Record for Wells Nos. 6 and 7 by R.E. Chapman Co., 1968, 1973
Report of Seismic Survey, Sudbury, Massachusetts by Weston Geophysical Engineers, Inc., 1984, 1967
Effects of proposed Leading Field on Raymond Road Water Supply Well, Sudbury, Massachusetts by Haley & Aldrich, Inc. 1963
Report Relative to the Water Needs and Long Range Water Resource Plan for Sudbury Water District, Sudbury, Massachusetts by H2O Engineering, March 1986
Hop Brook Ponds System Study, Sudbury, Massachusetts for Sudbury Board of Health by Whitman & Howard, Inc. July 1989
Hydrology and Groundwater Resources of Sudbury Massachusetts for Sudbury Planning Board by Ward S. Motts, February 1977

Report on Nitrogen Loading Analysis for Groundwater Supplies for Sudbury Water District by H2O Engineering, December 1993
Briggs, J.C. and Silvey, W.D. 1984. "Source, Movement and Effects of Nitrogen and Phosphorus in Three Ponds in the Headwaters of Hop Brook, Marlborough, Massachusetts". US Geological Survey WRI 84-4017, 55p.
Dorfman, R.S., 1988, "The Sudbury River Basin Water Quality Management Plan", Division of Water Pollution Control, Massachusetts Department of Environmental Quality Engineering.[1]
Hogan, P.M., 1975, "Concord and Sudbury Rivers Water Quality Analysis", Division of Water Pollution Control, Massachusetts Water Resources Commission.[1]
Frimpter, M.H., Donohue, J.J. IV and Rapacz, M.V., 1990, "A Mass-Balance Model for Predicting Nitrate in Ground Water" New England Water Works Association Journal, Vol. CIV, No. 4, pp219-232.
Whitman & Howard, 1993, "Hop Brook Ponds System Study, Sudbury, MA", Tables 14-16 revised May 1993.
Town of Sudbury Master Plan Volume III, Natural Environment, page 68

[1] Currently Massachusetts Department of Environmental Protection (MassDEP)
Refer to Appendix G for supporting nutrient and 303(d) List Information.

2.7 Soil and Groundwater Conditions

The National Resources Conservation Service (NRCS) Soils Database was reviewed in the preparation of this Report to assess overall, general soil conditions throughout the Town. Generally, the NRCS soils database suggests that options for on-site disposal in the Town of Sudbury are limited. While the NRCS data is useful for a high level review, its information was used carefully with significant limitations due to its broad scope; this careful use primarily involves reviewing NRCS data alongside other more reliable information, such as history of successfully implemented on-site disposal, which may supersede any conclusions drawn from NRCS data. The Board of Health file review confirmed that the NRCS data was very general and that a more careful review of local conditions was in order. The file review confirmed that the overall soil and groundwater conditions in Sudbury were more conducive to the siting of on-site wastewater disposal systems throughout the majority of Town. This Report depended more heavily on Board of Health records for specific soil and groundwater conditions and discussions with the Board of Health agent. As is typical in many New England regions, soil and groundwater conditions varied greatly from lot to lot. We utilized the NRCS data to initiate discussions with the Board of Health and as general information.

In addition to the NRCS data, Board of Health files were reviewed for soils and groundwater information related to the siting of on-site wastewater system. In general, the soils were conducive to on-site systems Town-wide. In the majority of areas the lots were larger and able to overcome any constraints sub-par soil and groundwater conditions may pose. For example, most of North Sudbury's parcels are larger than two acres, which gives property owners discretion on locating on-site wastewater systems. These larger areas, in combination of lack of environmental concerns, were eliminated from further consideration for Municipal sewer.

There were site specific areas where soils were found to be severe, either too fast percing or long percolation rates. One such Needs Area, the Raymond Road Aquifer area and surrounding Route 20 area is detailed with very shallow depths to groundwater. These maps support the potential threat of leaching septic systems to the drinking water supplies located within the area." This data is well documented in reports dating back to the 1980s.

Percolation rates were also reviewed to confirm the physical site characteristics of systems' locations and to discern any concerns with soil and/or groundwater conditions. These varied widely in geographic areas. The largest concentration of fast percing soils were located in the Raymond Road Study Area, directly abutting the Raymond Road Aquifer. There were some diverse percolation rates in the Goodman Hill Study Area, from very fast of <2 minutes per inch (mpi) to some very slow at >60 mpi. This confirms our discussions with the Board of Health that this Study Area has concern with long-term sustainability of on-site wastewater systems due to both fast percing rates that may not fully cleanse the wastewater before it reaches groundwater, as well as some very slow percing that could result in surface ponding, resulting in a public health issue. NCRS datasets can be accessed in Appendix E.

2.8 Flow Estimation

Sanitary sewer flows were estimated based on three approaches, which were Land Use Code, Zoning, and Municipally metered water use. These methodologies were then applied for an estimation of near term flow (existing uses) and a second approach was then selected for an estimation of buildout flow (existing and future).

Three approaches to estimate potential sewer flows utilized the following:

- State Land Use Codes
- Zoning
- Current Municipal Water Usage

The first methodology evaluated, State Land Use Code (LUC) is a property classification from the Massachusetts Department of Revenue for each parcel that is intended to assist Town/City Assessors in classifying properties for use and tax purposes. Every parcel has an LUC, for example a single family residential property is classified as a 101.

The second, Zoning, is Sudbury's local regulations that govern how real property can and cannot be used in specific geographic areas. Every parcel is included in a Zoning District and dictates how that parcel can be used. For example, some areas restrict uses, such as commercial in a residentially zoned area. The Zoning comes with specific set of regulations that define not only the land use, but also the requirements of land area, setbacks, and such. Zoning is used to determine not only the land use, but also how many parcels land can be subdivided into for future use.

The third, Municipal Water usage, is a desired dataset as it has already set the water use that the property has typically used over a specific period of time. For this exercise, we look at least two years' worth of water use data to determine how much water a property has used and can look at entire areas and determine water use averages Town-wide. This is the preferred method to estimate wastewater flows, as it more accurately predicts water in and water out.

These methodologies are further detailed below.

2.8.1 Land Use Code Flows

Land use code flows are intended to conservatively estimate the near-term flow (flow for properties as they sit now) for each property by assigning a flow estimation approach based on the State Land Use Code as detailed for each parcel on the Assessor database. This details the parcels as either Residential or Non-Residential. The flow estimation approaches used include:

- "Residential Units": This approach is used for residences and includes assigning a number of residential units to each property based on use (single family equals one, two-family equals two units, etc.), and then multiply this by the average daily water usage from at least two years' worth of metered, public water usage data. Residential units are generally taken directly from the Assessor's database. The residential unit flow is based on water use data, which is further detailed below in the Water Use Flows section.
- "Building Area" for Non-Residential: This approach is used for businesses and industrial applications calculates flow based on finished building area multiplied by a flow factor. The flow factor used was 100 gpd per 1,000 sf of finished building area. Finished building area was taken from the information on file in the Assessor database.
- "No Flow" is used for undeveloped parcels.

2.8.2 Zoning Flows

Zoning flows are intended to conservatively estimate the buildout flow for each property based on the zoning code of each parcel, and the buildable land area. The approached varied as follows:

1. Residential Zones: The number of potential residential units was calculated by dividing the buildable land area by the minimum lot size per the Town zoning bylaw, and rounding down. This number of units was multiplied by the residential unit flow, which is based on water use data and discussed below in the Water Use Flows section.
2. Business Zones: 1,700 gpd per acre.
3. Industrial Zones: 1,000 gpd per acre.

Buildable land area used was calculated using GIS software, by taking the gross area of each parcel and subtracting wetland areas to arrive at a net buildable area.

Table 2-4 below summarizes what factors were used for each zone.

Table 2-4 Zoning Code Flow Factors

Zone	Description	Minimum Lot Size per Zoning Bylaw		Flow Inputs	
		sf	acre	Size of Unit, s.f.	Flow per Unit, gpd
RESA	Single Residence "A" / A-Res.	40,000	0.92	40,000	174
RESC	Single Residence "C" / C-Res.	60,000	1.38	60,000	174
WI	Wayside Inn Historic Preservation	217,800	5.00	217,800	174
BD	Business	-	-	43,560	1,700
LBD	Limited Business	-	-	43,560	1,700
VBD	Village Business	-	-	43,560	1,700
ID	Industrial	-	-	43,560	1,000
LID	Limited Industrial	100,000	2.30	43,560	1,000
IP	Industrial Park	100,000	2.30	43,560	1,000
RD	Research	348,480	8.00	43,560	1,700
OSD	Open Space District	--	--	--	0

2.8.3 Water Use Flows

The Sudbury Water District services approximately 82 percent of the parcels in Town, including approximately 96 percent of single-family homes, with the remainder relying on private wells. See Figure 2-4 for a map of the existing water distribution areas and parcels with associated water service accounts. Woodard & Curran worked with the Sudbury Water District to obtain recent water data, which, in order to separate out irrigation or other outdoor water uses from indoor water uses, was pared down to winter period usage only. The winter period was defined as November 1 to May 1, and data for 2016-2017, 2017-2018, and 2018-2019 was used. Readings which did not fall entirely inside the winter period were weighted accordingly, based on the number of days of the reading interval overlapping with the winter period. Accounts marked as service types “sprinkler” and “water2” were also disregarded, as these were understood to generally be for irrigation, thus not released through drains to be counted as usage.

Water use data indicated single family homes (identified by land use code 101) in Sudbury have an average winter water usage of 174 gpd. This water usage was then divided by the United States Census data of persons per household for Sudbury of 2.95 to arrive at a flow per person per household. With an average per capita census of 2.95 (see Section 2.3), the flow per capita was estimated as 59 gpd/capita average daily flow winter water use.

Average winter water use for condos (identified by land use code 102) was on average at 97 gpd. This varied based on condo sizes and on-site amenities (common area kitchens, bathrooms, pools, etc.). Based on a more conservative approach, condos were detailed at 116 gpd for the purposes of this Report to account for all water used.

Water use was the basis of the flow estimation and therefore maximum days flows were determined consistent with Title 5 by using two times the average water use. This is the standard design flow for groundwater discharges and small treatment facilities once flows are equalized at the head of the wastewater plant. Peak hourly design flows were calculated using a peaking factor of 5.6. Peak hourly design flows are utilized for conveyance design such as pipe and pumping station sizing. Infiltration and Inflow was estimated at 250 gpd/in. diameter /mile of sewer per TR-16. I/I was added to each of the peaked flows.

2.8.4 Selection Basis for Near Term and Buildout

For near term flows, the following order of priority was used:

1. Water use was selected wherever available.
2. For developed properties where water use was unavailable, Land Use Code flows were used for that property.
3. For undeveloped, but developable properties, Zoning Code flows were used for the near term.

This methodology was applied for all of the Study Areas and once short-listed, the identified Needs Areas in this CWMP. The following Section 3 summarizes the results of the methodologies applied Town-wide.

The 2012 Report, as discussed in previous sections, only concentrated on the Route 20 area. This CWMP Report reviewed all data from the 2012 Report and updated all based on current conditions. This included evaluating conditions Town-wide, so there is no common data to compare 2012 to 2021.

Moving forward, the CWMP refers to the entire Town and not just one specific geographic area.

3. ASSESS FUTURE CONDITIONS

3.1 Planning Period

The CWMP planning period is a 20-year look-ahead for the Town's wastewater planning. The Capital Improvement Plan in Section 6 details the 20-year planning period by Needs Area, as well as initial budget estimates for the Town to incorporate into the overall capital planning budget.

3.2 Update of On-Site Wastewater Disposal Systems

An extensive review of Board of Health (BOH) records was completed during preparation of the 2012 Report for the targeted wastewater area on Route 20. This resulted in a map showing a summary of on-site systems with problems. This map has been updated to include Town-wide conditions-soils and groundwater-refer to Appendix C for supporting information.

The Board of Health records were reviewed and updated to confirm the Title 5 failures, major repairs/replacements, variances, and Certificate of Compliances records on properties located in the CWMP Study Areas. Information in Board of Health files included Title 5 Inspection Reports, information on septic system repairs, including Certificate of Compliance documents for repairs. These repairs encompassed minor repairs, that if noted in a Title 5 Inspection Report, would have rendered a "conditional pass". The Certificates also documented major repairs/replacements, such as full system replacements and replacement of Soil Absorption Systems-these would have rendered Title 5 Fails had a full Title 5 Inspection been done. All of the information reviewed, together with the matrix data of lot size, age of system, soil and groundwater data, density of systems, environmental and public health constraints have all been taken into account in determining areas of Town that are not considered long-term sustainable with current on-site wastewater systems. It is also noted that there were a considerable number of files that did not contain any documents relating to the septic system. In these cases, these properties were assumed to be serviced by the original system built with the property and if built before 1995, we determined that they were not currently fully Title 5 compliance. Refer to Section 2.2 for a detailed discussion of Board of Health file review.

Based on the data reviewed, both previous and updated where appropriate, the determination of areas needing an off-site wastewater solution remains consistent throughout all of the studies. The drivers of an off-site solution remain with the primary goal of preservation and protection of drinking water resources, with a secondary benefit of economic development throughout the Route 20 commercial zoned areas.

There are significant areas Town-wide that are recommended to remain with the current on-site wastewater systems, as conditions and files confirm that there are no existing circumstances to warrant an off-site solution. It is recommended that these areas be managed under a Septic Management Plan (SMP). The Community Septic Betterment Program run by the MassDEP can offer financing options to those properties recommended for long-term sustainability with on-site wastewater system, as well as those parcels in the Needs Areas due to be implemented at a later date. The state's website at The Community Septic Management Program | Mass.gov has various aspects of the Program available. This Report recommends that the Town implement a SMP for all areas of Town that are identified as sustainable on existing on-site wastewater systems in Section 2 of this Report. Appendix I contains information on the Community Septic Betterment Program Manual.

3.3 Water Conservation Benefits

As discussed in the above sections, approximately four years of actual water use records were reviewed to determine historical usage in the Project areas. Evaluations were performed to project future wastewater demands-both near term and build-out conditions. Work was coordinated with the Sudbury Water District on all historical water use, as well as reviewing water conservation efforts Town-wide. The District has implemented a number of the Massachusetts Water Conservation Standards as noted in each section below.

3.4 Water Conservation Benefits – Flow and Waste Reduction- Massachusetts Water Conservation Standards – July 2018

3.4.1 General

Sudbury understands the significance of limiting its wastewater flows to those identified as Needs Areas in this CWMP. The Town understands that while protection and preservation of environmental resources, as well as economic development needs will require an off-site wastewater solution that Sudbury does not yet have in place, there are other considerations that must be taken into account to ensure long-term sustainability of a number of resources. By evaluating multiple criteria to determine true "need" for an offsite wastewater solution, Sudbury can come to terms with these while understanding that less water use means lower costs overall. This CWMP Report evaluated areas for connection to a municipal wastewater system based on actual water use records, which are much closer to actual need versus using Title 5 calculations. One of the ways to ensure this minimization of flows is to abide by implemented and potential water conservation measures to reduce overall water use. There are currently nine wells in operation at the Sudbury Water District, which are all groundwater supplied. The Town understands the importance of maintaining water conservation in order to reduce overall costs, as well as maintain long-terms sustainability of the physical sources.

The Sudbury Water District provides public educational materials on a multitude of sources including Consumer Drinking Water Quality Reports, which include Restrictions on Outdoor Water Use (Mandatory Water Conservation Program); Opportunities for Public Participation, Leak Detection, Cross Connections, Watershed Protection/Resource Management, and various links to homeowner sites that provide information on billing, tips on finding land fixing leaks and other Town information.

All water conservation materials are included in Appendix D. In addition, the Sudbury Water District supports a website at disseminates information relative to the water system, including water conservation measures, billing and pricing and a Frequently Asked Questions section. All are invited to participate in the District meetings and have set up electronic means to do so during COVID.

Massachusetts established Water Quality Standards in 1992, which were intended to assist water suppliers meet efficiencies, as well as understand and embrace water conservation. These 1992 Standards were updated in 2006 and incorporated the use of audits, comprehensive planning strategies and agricultural water use. It was in these Standards that numeric standards used today were established and included the following:

- Residential Water Consumption not to exceed 65 Gallons Per Day Per Capita
- Unaccounted for Water in a system to be under 10 percent

The 2006 Standards were updated with new citations in 2012 and then in July 2018 were substantively updated to the Standards we adhere to today. The Standards set state-wide goals for water use and conservation efforts, as well as provide guidance to help meet the goals. The Standards apply a "Best Practice' model to follow that governs overall water use in the Commonwealth. These Standards form a baseline/foundation for communities to adopt to ensure not only quality, but also quantity of water resources.

The efficient use of water resources is tantamount to the long-term sustainability of not only the water resources, but the ecosystems that co-exist in the natural environment. Through thoughtful and deliberate management, the quality

and quantity of the water resources can be maintained. The 2018 Ten Standards address key areas of water supply planning, management, and are further detailed in the paragraphs below and each outline how the Sudbury Water District applies each to its management. These are also posted on the District's webpage at https://www.sudburywater.com/massachusetts-water-conservation-standards/.

Comprehensive Planning and Drought Management Planning

Water withdrawals, wastewater discharge and land use decisions that impact stormwater all impact a Watershed's hydrological cycle. Planning, within a community, regionally and overall Watershed has the potential to greatly offset and mitigate impacts that these activities cause. Preplanning efforts have the ability to put plans in place to proactively address impacts rather than be placed in a reactive position after the fact. Comprehensive planning with water or wastewater or Integrated Planning with a combination or all three contribute to the proactive approach to heading off issues before they arise.

Drought Management Planning specifically addresses supply and demand. Proactive planning can offset low rainfall events, as well as reduced recharge cycles within a watershed. With the use of water conservation measures of reducing daily and peak demands and development of an emergency response plan, times of reduced water cycles can be offset and mitigated.

The Town, under the direction of the Department of Public Works is in the process of completing this Comprehensive Wastewater Management Plan (CWMP) that will result in a 20-year planning document for the Town's wastewater. The CWMP will address water balance, aquifer recharge and provide mitigation measures for any potential impacts as a result of off-site wastewater management.

The Town also developed and maintains a comprehensive stormwater management plan, which is updated each year per MS4 mandates. This defines all practices over the ensuing five years to maintain compliance, as well as schedules for completion. This includes provisions for local land use to maintain erosion sediment control. Provisions are in place for new and redevelopment mechanisms to ensure stormwater BMPs. In addition, street design and parking lot guidelines mandate creation of impervious cover is minimized. All of these will work towards water conservation measures, as well as water quality standards.

The Sudbury Water District recently completed a Water Master Plan. The first part included a Water Distribution and Treatment System Analysis. The District does not plan on any water main replacements for at least three years, bringing any potential upgrade work to be coordinated to the 2024 timeframe. Like many Massachusetts communities, PFAS is now the priority concentration. In addition, SCADA upgrades are on the priority list. Once the CWMP begins preliminary design, coordination of any work to be done in the streets, rights of ways, etc. will be coordinated with the District's planning efforts.

The Town of Sudbury's water, wastewater and stormwater planning is in place and meeting the following Standards:

Standards:

- Develop a drought management plan – *included in District Regulations*
- Develop emergency response plans - *included in District Regulations*
- Develop a written program to comply with these Conservation Standards - *included in District Regulations*
- Make the above documents readily available – readily available at the Water District and on the District's website at https://www.sudburywater.com/.

Refer to Appendix D for Sudbury Water District Materials.

Water Loss Control

Water loss through leak detection and repair is intended to reduce the amount of water lost via leaks in the water distribution system. This maintenance activity is considered most important in older water systems. Leak detection programs can vary, but should be carried out regularly by the water suppliers. The full-cost pricing structure described below should include the costs for leak detection surveys and repairs. The District offers a Leak Detection program for customers to identify and repair leaks. In 2019, the District completed a survey of the entire water system to identify and eliminate leaks. Additionally, the District completed replacement of multiple areas of old water mains with new ductile iron pipe to eliminate leaks. The District also implemented a new software billing system that will serve to identify leaks in systems early.

The Town of Sudbury's water loss control is in place and meeting the following Standards:

Standards:

- Develop and Implement a Water Loss Control Program - *on-going, see* https://www.sudburywater.com/
- Minimize real and apparent losses by meeting or demonstrating steady progress towards an unaccounted-for-water (UAW) percentage of 10% or less as calculated on the Annual Statistical Report form and approved by Massachusetts Department of Environmental Protection (MassDEP) as soon as practicable. *Sudbury is currently meeting 10 percent unaccounted for water two out of three years per WMA Permit March 2021.*
- Conduct complete system-wide leak detection at least every three years – *on-going, see* https://www.sudburywater.com/
- Repair all found leaks as expeditiously as possible – *on-going repairs completed during leak detection investigations.*

Refer to Appendix D for all Water District information.

Metering

Complete system metering lets customers know how much water they are using, provides the Water District with valuable knowledge of customer use patterns, assists in demand management programs, and enables the Water Division to bill the customer accurately. With accurate knowledge about current demand, the District can more effectively identify potential water savings, assist specific users to implement water saving measures, determine unaccounted for water, and thereby provide the opportunity to reduce overall system demand and plan efficiently for system growth. Metering costs should be recovered through water rates, and include not only the costs for the metering equipment, but also the costs associated with reading the meters regularly.

The Town of Sudbury's metering is in place and meeting the following Standards:

Standards:

- Meter water sources to measure and record withdrawals of both groundwater and surface water and measure and record purchased water. – *currently in place, refer to Water District webpage* https://www.sudburywater.com/
- Ensure 100% metering of all water uses, including all indoor and outdoor water use. - *currently in place, refer to Water District webpage* https://www.sudburywater.com/
- Implement a water meter repair/replacement policy and program, including a budget for the calibration, repair, and replacement of all sources of supply and distribution network water metering systems. - *currently in place, refer to Water District webpage* https://www.sudburywater.com/

- Seal all water account metering systems against tampering and periodically inspect - *currently in place, refer to Water District webpage* https://www.sudburywater.com/
- Calibrate source, raw, treatment, and finished water master meters at least annually, regardless of meter specification. - *currently in place, refer to Water District webpage* https://www.sudburywater.com/
- Calibrate and or replace all meters according to their type and specification. - *currently in place, refer to Water District webpage* https://www.sudburywater.com/
- Properly size meters to handle required water flow rate and ensure a high level of metering accuracy - *currently in place, refer to Water District webpage* https://www.sudburywater.com/
- Meter Reading and Billing frequency. If billing frequency is less than quarterly (i.e. annual or biannual), implement quarterly or more frequent meter reading and billing as soon as practicable. - *currently in place, refer to Water District webpage* https://www.sudburywater.com/

Refer to Appendix D for additional information.

Pricing

Full-cost pricing refers to price levels, which recover all the direct and indirect costs associated with providing water. For all sectors of water use, knowing the costs associated with providing water and sewer services creates an appreciation of the importance of conserving water and promotes greater understanding of the direct relationship and environmental implications of individual water use and community water resources, especially during seasonal or drought shortages.

The pricing structure for water should include the complete cost to run the system. These costs include pumping, maintenance, electricity/fuel, treatment, distribution system operation and maintenance, watershed/well site purchase/protection, capital replacement fund, capital depreciation account, and debt service, purchase and installation of water conservation retrofit equipment, public education program, staff and benefits, and leak detection and repair. The yearly Water Quality Reports detail this information to the customers. In 2020, the Sudbury Water District adjusted the 2020 Water Rates to account for improvements needed within the system including repairing and replacing old pipes, looping dead-end water mains, upgrading pumps to bring water from its source to your home, while making every effort to provide safe and pure drinking water. The tiered rate allows the residential consumer to use less and pay less or vice versa.

The Town of Sudbury's pricing is in place and meeting the following Standards:

Standards:

- Recover the Full Cost of Water Service - currently *in place, refer to Water District webpage* https://www.sudburywater.com/
- Do not use decreasing block rates – *Refer to increasing rate structure below.*
- Residential Water Use
    - Residential water uses from public water suppliers in Massachusetts amounts to approximately 450 million GPD. Increasing efficiency of use and implementing conservation measures can realize significant savings for consumers and suppliers, both in energy and water costs. Indoor use typically includes toilets, clothes washers, showers, faucets, dishwashers, and other domestic uses including cleaning and cooking. Residential users should be encouraged to use the following water saving devices: low-flow showerheads, faucet aerators, toilet displacement devices and/or low-flow toilets, and toilet leak detection kits.

The Town bills residential on a tiered rate structure as shown in the following Table 3-1.

Table 3-1 Sudbury Water District Billing Structure

RESIDENTIAL		
Gallons Used Quarterly	Previous Rate	New Rate
Base Charge per Quarter	$25.00	$28.00
< 10	$5.00	$5.15
10-20	$6.00	$6.18
20-30	$8.00	$8.24
30-40	$9.00	$9.27
40-50	$11.00	$11.33
50-60	$13.00	$13.39
> 60	$16.00	$16.48

The Town of Sudbury's residential water use planning is in place and meeting the following Standards:

Standards:

- Use Residential Water Efficiently - *currently in place, refer to Water District webpage* https://www.sudburywater.com/
- Meet the residential performance standard of 65 RGPCD - Per WMA Permit #9P314288.01, Sudbury is at 63 RGPCD and in conformance with Standards.
- Implement a comprehensive residential water conservation program - *currently in place, refer to Water District webpage* https://www.sudburywater.com/
- Public Sector Water Use
    - Public municipal and state buildings and facilities should serve as demonstrations of water saving techniques and concepts. The public should be aware that the state and municipalities are not only doing their part, but also leading the way. Government facilities (schools, hospitals, public offices, etc.) should be built or retrofitted with water conservation devices such as faucet aerators, low flow showerheads, toilet displacement devices or low-flow toilets, and self-closing faucets. Other public sector policies should include charging contractors for using fire hydrants for pipe flushing and other construction purposes.

The Town bills municipal parcels as shown in the following Table 3-2.

Table 3-2 Sudbury Water District Billing Structure for Municipal Parcels

MUNICIPAL		
Gallons Used Quarterly	Previous Rate	New Rate
Base Charge per Quarter	$25.00	$28.00
Per 1,000 gallons	$5.00	$5.15

The Town of Sudbury's public sector water use planning is in place and meeting the following Standards:

Standards:

- Conduct indoor and outdoor audits - *refer to Water District webpage* https://www.sudburywater.com/
- Analyze existing water-use data - *refer to Water District webpage* https://www.sudburywater.com/
- Identify greatest efficiencies - *refer to Water District webpage* https://www.sudburywater.com/
- Focus on replacing/retrofitting - *refer to Water District webpage* https://www.sudburywater.com/
- Practice good, efficient lawn and landscape water-use - *refer to Water District webpage* https://www.sudburywater.com/
- Meter or estimate contractor use of water - *refer to Water District webpage* https://www.sudburywater.com/
- Strictly apply plumbing codes - *refer to Water District webpage* https://www.sudburywater.com/
- Industrial, Commercial and Institutional Water Use
    - The bulk of industrial, commercial, and institutional water use is for heating, cooling, and processing, but often includes an appreciable sanitary and landscaping component. Conservation measures must be tailored to reflect the type of water use and characteristics of individual facilities. The implementation of source reduction programs often is accompanied by a reduction in facility water uses as well as a reduction in pollutant discharge. Water conservation can be built into an industry's strategy to comply with sewer and discharge requirements and often results in monetary savings following short payback periods. All industrial, commercial, and institutional water users should be required to develop and implement a written water policy addressing at a minimum demand management, leak detection and repair, a program of preventive maintenance, and a program of employee education. They should also be required to perform water audits to determine the location and amount of water used for heating, cooling processing, sanitary use, and outdoor use. This information could then be used to determine areas to conserve water. Industrial, commercial, and institutional users should also be required to install water saving sanitary devices. The Water Master Plan will address this in the report. The Water District has a tiered level of rates to promote conservation-the less you use, the less you pay.

The Town bills Industrial, Commercial, and Institutional parcels as shown in the following Table 3-3

Table 3-3 Sudbury Water District Billing Structure for Commercial Parcels

COMMERCIAL		
Gallons Used Quarterly	Previous Rate	New Rate
Base Charge per Quarter	$25.00	$28.00
< 20	$6.00	$6.18
20-30	$8.00	$8.24
30-40	$9.00	$9.27
40-50	$11.00	$11.33
50-60	$13.00	$13.39
60-150	$16.00	$16.48
> 150*	$11.00	$11.33

*Currently only available to two agricultural users

The Town of Sudbury's Industrial, Commercial and Institutional water use planning is in place and meeting the following Standards:

Standards:

- Carry out a water audit - *refer to Water District webpage* https://www.sudburywater.com/
- install separate meters for process water - *refer to Water District webpage* https://www.sudburywater.com/
- Develop and implement a water savings strategy - *refer to Water District webpage* https://www.sudburywater.com/
- Use the best available technologies for water conservation, and reuse treated wastewater - *refer to Water District webpage* https://www.sudburywater.com/
- Practice good lawn and landscape water-use techniques - *refer to Water District webpage* https://www.sudburywater.com/
- Agricultural Water Use
    - Commercial agriculture is highly water dependent and economically sensitive to water availability and quality. Water is essential to the success and livelihood of an agricultural operation, and it is in the operator's best interest to protect and maintain water resources. In Massachusetts, agricultural water users tend to be self-suppliers with wide-ranging needs for water. Water is used i) for irrigation of crops and nursery stock; ii) for harvesting of crops (cranberries); iii) as the medium for aquaculture; iv) for washing and processing of commodities; v) as a drinking source for livestock; and vi) for cleaning and cooling of animals.

- Agricultural needs for water vary by type of enterprise and on a seasonal basis. Water demands are site specific and, depending on the enterprise, affected by multiple factors, including climate and weather, number and type of animals, the water-holding capacity and infiltration rate of the soil, and crop needs.
- Any conservation approach to agriculture should strike an appropriate balance between both agricultural needs for water and the need to conserve water. Examples of conservation approaches include proper irrigation scheduling, in both timing (daily and seasonal) and volume; control of runoff; the uniform application of water; irrigation technologies, such as drip irrigation (where appropriate) and automated irrigation systems; and the use of tailwater recovery systems for cranberry operations.
- The standards and recommendations in this chapter reflect general agricultural water conservation approaches that growers are encouraged to adopt. Agricultural water conservation practices frequently change as new technologies are developed and as efficiencies are improved. The University of Massachusetts maintains industry specific best management practices that include the most accepted water conservation technologies and practices available. Agricultural entities should adopt practices that are environmentally and economically appropriate for their specific operation and site conditions.

The Town of Sudbury's Agricultural water use planning is in place and meeting the following Standards:

Standards

- Use water in a planned and efficient manner with appropriate amounts and frequency to meet needs of the crop without excessive water loss - *refer to Water District webpage* https://www.sudburywater.com/
- When applicable, develop a soil health management system to improve the health and function of the soil - *refer to Water District webpage* https://www.sudburywater.com/
- Outdoor Water Use
  - Outdoor water use includes irrigation of lawns and gardens, filling and refilling swimming pools, car washing, and other cleaning. The Sudbury Water District maintains outdoor water use in its Rules and Regulations, specifically at nos. 21-23. Per MassDEP mandate, from May 1 through September 30 mandatory non-essential outdoor water use restrictions are in place. Outdoor water use is limited to before 9:00am and after 5:00pm-reducing peak hours of use. There is no irrigation of lawns via sprinklers or irrigation systems, vehicle washing, building washing, driveways/park lots washing is forbidden. The District has set fines for policy violations.

The Town of Sudbury's outdoor water use planning is in place and meeting the following Standards:

Standards:

- Minimize lawn or landscape water needs by following established water-smart principles - *refer to Water District webpage* https://www.sudburywater.com/
- Maximize efficiency of irrigation - *refer to Water District webpage* https://www.sudburywater.com/
- During a drought or extended period of dryness, all users should follow state guidance for limiting nonessential40 outdoor water use during droughts - *refer to Water District webpage* https://www.sudburywater.com/
- Public Education and Outreach
  - Public education involves the dissemination of information and getting public support by providing a basic understanding of sound water resources management. One of the three main areas of emphasis that should be included in an educational program is explaining to water

users the various costs that are associated with providing water. These costs include planning, engineering, construction, operation, maintenance, treatment, wastewater facilities costs, piping, leak detection, compliance costs, salaries and benefits, protection costs, training, and public education. Other areas of emphasis include providing water system users with tangible evidence of the cost savings and environmental benefits that can be attained through water conservation. The Town, through the Sudbury Water District, has an on-going Water Conservation Program where it distributes information through a variety of sources, including bi-weekly Commission meetings, dissemination of yearly Water Quality Reports and updates on the District's website at https://www.sudburywater.com/.

The Town of Sudbury's public outreach/education program is in place and meeting the following Standards:

Standards:

- Develop and implement an education plan
- Billing: Help customers track, compare, and make meaning of their use through their water bills (see Chapters 3 and 4 for specific billing suggestions). Specialized billing software is available to help track individual customer use and even target outreach to customers who may have a leak or who are using significantly more water than similar customers.
- Indoor Retrofit/Rebate Programs: Offering indoor low-flow retrofit devices or rebates for water efficient appliances provides opportunities to educate customers on the financial and environmental benefits of water conservation.
- Lawn and Landscaping Programs: Information on "water-wise landscaping", gardening, efficient irrigation, and lawn care practices can be provided through model landscapes, workshops, online information, and partnerships with local garden clubs, lawn and landscape retailers, and environmental organizations.
- Local Schools: Partnering with teachers and school administrators to develop age-appropriate curricula on the local water system and the importance of water conservation can help bring these messages back home and integrate them into the community.
- Diverse Outreach Tools: Use social media, online tools, public service announcements, local events, etc. to communicate water conservation messages and alerts, incorporating multilingual materials as needed.
- Partnerships: Partner with garden clubs, farmers' markets, environmental organizations, energy utilities, and others on campaigns promoting wise water use. *refer to Water District webpage* https://www.sudburywater.com/

Refer to Appendix D for outreach materials.

3.4.2 Water Supply System Management

Sudbury Water District offers many options for improving the efficiency of its operations and encouraging water conservation by consumers. The Massachusetts Water Conservation Standards provide a framework for implementing these standards and establishing long-term priorities and plans for system maintenance, source protection, and as necessary, new source development.

Summary: Adoption and/or compliance with the majority of these suggestions have already been undertaken in the Town. Sudbury's Water District has initiated and maintains an aggressive water conservation program. Refer to Appendix D for more information, as well as the *Water District webpage* https://www.sudburywater.com/

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4. UPDATED WASTEWATER NEEDS/PROBLEMS IDENTIFICATION

4.1 On-Site Wastewater Disposal Problems & Expanded Study Area

As detailed in the 2012 Project Evaluation Report (PER), a defined geographic area, the Route 20 Business District, was determined unable to sustain long-term with on-site wastewater systems. The PER dealt with just this one geographic area. The PER recommended a municipal sewer system to address the on-site constraints in this area. The main criteria supporting this recommendation included both water resource protection of the Town's Raymond Road drinking water wells and potential economic development. This CWMP Update is expanding the evaluation to review conditions on a Town-wide basis looking at the physical characteristics of soil and groundwater conditions, lot sizes (density of systems), environmental constraints and economic development potential and includes updating the defined Route 20 Business District. A major consideration in this analysis is the preservation and protection of the Zone I and II areas (drinking water supplies) located throughout Town. The Town was delineated into eleven (11) geographic areas herein referred to as "Study Areas" as shown in Figure 2-1 for the evaluation purposes encompassing the entire Town.

4.2 Needs Analysis Summary and Development of Study Areas

A Town-wide Needs Analysis was performed for this CWMP Update to determine whether conventional Title 5 on-site systems will be effective in disposing of wastewater within a given Study Area throughout and beyond the 20-year planning period. The Town was delineated into ten Study Areas based on each's geographic area and similarity of developed parcels, sizes and locations of parcels in relation to water resources and overall zoning. The ten Study Areas are shown on Figure 2-1 and include the following:

- Dutton / Wayside Inn Roads Study Area
- Goodman Hill Study Area
- Landham Road Study Area
- North Sudbury Study Area
- Peakham Road Study Area
- Pine Lakes Study Area
- Pratts Mill Road Study Area
- Raymond Road North Study Area
- Raymond Road South Study Area
- Route 20 Study Area
- Route 20 East Study Area

For each Study Area we collected and evaluated data that provides a closer look into how an on-site wastewater system performs given the specific Study Area's physical characteristics. The major items evaluated are the soil and groundwater conditions in the overall area and whether they provide an opportunity or constraint for long-term sustainability of on-site wastewater disposal systems. In addition, we look at lot sizes, density of systems in particular neighborhoods and potential impacts of and to water resources in the area. After an analysis of the collected data within each Study Area is complete, a review of this data, in addition to all other data review, was done to determine the need to evaluate an off-site wastewater alternative given the "need" for a more conducive long-term wastewater disposal system. At this point in time, if the data shows the need to evaluate an alternative, the "Study Area" is denoted as a "Needs Area"-an area needing additional evaluation.

A "Needs Area" is defined as a Study Area where a majority of the developed or developable properties located within the Study Area will not be able to utilize a conventional Title 5 on-site wastewater disposal system to effectively dispose of wastewater throughout and beyond the 20-year planning period. Data obtained from Board of Health records, Assessor's files, United States Geological Survey (USGS), Mass GIS and soil surveys of Sudbury performed by the U.S. Department of Agriculture (USDA) were used to ascertain current land uses, associated soil and groundwater conditions, and to identify wastewater disposal problem areas. The objective of this updated Needs Analysis is to determine the specific Study Areas where conventional Title 5 wastewater disposal systems are inadequate or conversely, where existing on-site wastewater disposal systems can remain and be effective for wastewater disposal over the 20-year planning period.

4.2.1 Prioritization Approach – Data Development and Review

Prioritization was done by evaluating the following datasets including Assessor Database, Mass GIS mapping and data, Board of Health records and general soils supplemented with groundwater conditions through NRCS datasets.

The following elements were evaluated for each of the initial Study Areas:

- Title 5 Regulations' mandates
- Soil limitations
- Groundwater limitations
- Environmental limitations:
    - Distance of each parcel from Zones of Contribution of drinking water supplies
    - Wetland Resource Areas
    - Natural Heritage and Endangered Species Habitats / Protected Habitat
    - Topography
- Size of the lot
- Board of Health Records
- Assessor database for:
    - Lot Size
    - Year Built
    - Density of Systems

Each of these conditions were mapped for each Study Area to determine physical constraints. There were multiple discussions with the Board of Health Agent who was instrumental in helping identify problematic areas-areas where there were or continue to be issues with either on-site wastewater performance, repair or replacement of systems and noted specific areas where either high groundwater or severe soil conditions plague the area.

As was discussed in previous sections, there were multiple criteria evaluated for the Study Areas to help determine those geographic areas that were not long-term sustainable with on-site wastewater systems. Major criteria reviewed included determining soil and groundwater conditions in the Study Area. These two physically characterize how an on-site wastewater system will perform. Initial investigations looked at the NRCS data sets, which again, gave us general conditions throughout the Town. Determining the soil classifications in geographic areas gives us data as to the severity to locating on on-site wastewater disposal systems. Different types of soils have associated groundwater conditions characteristics that both determine how well an on-site system can percolate into the ground and at what point the effluent reaches groundwater and where it travels from there. For example, a soil that is made up of clay will percolate far slower than a soil made up of sand. Sandy soils tends to percolate faster down through the soils rather than pond. Some sandy soils percolate far too fast and while the effluent percolates, it may do so too fast without enough time in the soil to properly cleanse. Groundwater that is high, such as less than four feet from ground level, will not afford the effluent sufficient time in the soil to properly be treated (cleanse) before reaching a groundwater source to be carried wherever the groundwater travels, thus taking pollutants to water resources before it is properly cleansed. We look at hydraulic conductivity, which is basically the rate at which water flows through soil as a major criteria in determining long-term sustainability of on-site wastewater systems. This data was found in characterized soil classifications in each Study Area, but more importantly, found through the Board of Health records review. The actual performance of on-site wastewater (septic) systems, as shown in the Board of Health files, was the final factor in determining where throughout the Town, on-site systems are and are not long-term sustainable. The following is a discussion of each Study Area and those Study Areas that have progressed to a Needs Area based on the qualifying criteria.

The above datasets were evaluated further during the Board of Health file reviews in each of the Study Areas. We further refined and dissected the Study Areas based on the Board of Health data to accurately reflect the soil and groundwater conditions throughout. This resulted in identifying more accurate areas of “Need” where on-site wastewater systems were not long-term sustainable and were not reflected throughout the entire geographic area. We developed more defined areas within Needs Areas where records support removal of on-site systems, thus having Needs Areas within geographically delineated areas-what we define as a Hybrid Needs Area. The following sections further detail these areas and the datasets that were utilized to confirm as a “Need” or to be managed under a Septic Management Plan. This affords the Town the ability to phase sewer construction, as well as add areas in the future should the conditions change.

4.3 Description of Study Areas

4.3.1 Dutton Road / Wayside Inn Road Study Area

This Study Area is located in the southwest corner of Sudbury abutting the Towns of Framingham, Marlborough, Hudson, Stow and a small section in Maynard-the green color on Figure 2-1. It includes the most westerly section of Boston Post Road (Route 20) that flows into Marlborough. This Study Area encompasses approximately 3,100 acres in total land area, with a total of 616 parcels. Of the total parcels, the land use is 90 percent residential with the remaining 10 percent a mixture of small commercial, mixed use, US Government, municipal and a mix of other tax exempt parcels. Of the total number of parcels, over 62 percent is developed, with 38 percent undeveloped with a mix of developable, but the majority of the undeveloped land area is conservation/recreation/open. There are a number of condominiums within this Study Area where all land is communal, so the actual numbers may vary slightly.

The average lot size in this Study Area out of 408 developed parcels is in excess of three acres, not including any condominium developments due to the shared land area.

This Study Area’s soils and groundwater conditions were reviewed using the Web Soil Survey at the National Resources Conservation Services (NRCS). The predominant soils in this Study Area consist of the Paxton Fine Sandy Loams, Hinkley Loamy Sands, Deerfield Fine Loamy Sands, and Windsor Loams. All are fairly well drained soils with groundwater up to 80 inches below the ground surface. The Windsor Loams end to be excessively drained and may give a faster percolation in those areas. There is a mix of other soils in this Study Area, as well as some water, but there is no indication that soils would be a severe constraint for long-term sustainability with on-site wastewater systems in the majority of areas.

Board of Health records confirm that on-site systems were generally conducive to physical land areas, as well as environmentally sensitive resources. Per records reviewed, this geographic area is recommended to maintain sufficiently with on-site wastewater systems.

Environmental resource areas were mapped in Figures 2-3 through 2-6, and show water bodies, wetland resources and flood plains associated with Hop Brook and Dudley Brook, certified vernal pools and mapped Natural Heritage and Endangered Species.

Table 4-1 details the streets that are partially or fully within the Dutton Road / Wayside Inn Study Area.

Table 4-1 Dutton Road / Wayside Inn Road Streets

ADAMS RD	BENT RD	BIGELOW DR	BOSTON POST RD
BOWDITCH RD	BRIMSTONE LN	CARDING MILL RD	CARRIAGE WAY
COLBURN CIR	CURTISS CIR	DUDLEY RD	DUTTON RD
FRENCH RD	GARRISON HOUSE LN	HAMMOND CIR	HAYDEN CIR
HENRY`S MILL LN	HUDSON RD	JACK PINE DR	JARMAN RD
LAFAYETTE DR	NOBSCOT RD	OLD FRAMINGHAM RD	OLD GARRISON RD
PEAKHAM RD	PINE HILL LN	PRIDES CROSSING RD	RED HORSE PATH
RED OAK DR	REVERE ST	ROBERT BEST RD	SHADY HILL LN
SOUTH MEADOW DR	SOUTHWEST CIR	TIPPLING ROCK RD	WASHINGTON DR
WAYSIDE INN RD	WOODLAND RD		

4.3.2 Goodman Hill Study Area

This Study Area is located on the eastern border of Sudbury and directly abuts the Town of Wayland to the east. It includes the area just north of Boston Post Road (Route 20) and the area south of the North Sudbury Study Area-gold color on Figure 2-1. This Study Area encompasses approximately 742 acres in total land area, with a total of 485 parcels. Of the total parcels, the land use is 87 percent residential with the remaining 13 percent a mixture of small commercial, US Government, municipal and a mix of other tax-exempt parcels. Of the total number of parcels, over 71 percent is developed, with 29 percent undeveloped with a mix of developable, undeveloped land devoted to conservation/recreation/open and a number of tax-exempt parcels.

The average lot size in this Study Area out of 436 developed parcels is 1.2 acres. There are no condominium developments in this Study Area.

This Study Area's soils and groundwater conditions were reviewed using the Web Soil Survey at the NRCS. This Study Area showed a significant amount of Hollis Rock / Charlton Hollis Rock Outcrops, which would be indicative of the Goodman Hill area. There were some Saco Silty Mucks found along the Landham Brook area, which would be expected abutting the water body. The mapping also showed some Windsor Sandy Loams, Deerfield Loams and Merrimac Urban Land Complex.

The Deerfield Loams tend to have high groundwater conditions, with water appearing at 15-37 inches below surface, but this area accounted for only 11 percent of the total land area. The Merrimac Urban Land Complex was up to 34 percent of the total Study Area-showed a significant amount of the developed land area here. This soil is conducive to on-site wastewater conditions with groundwater greater than 80 inches below surface with no flooding/ponding conditions. There are a mixture of soil conditions throughout this Study Area. Some areas will have no constraints in siting and operating on-site wastewater systems, but there are areas that may not be long-term sustainable with on-site wastewater due to the soil and groundwater conditions. Both the Board of Health Director, as well as records on file, confirmed this.

Board of Health records detail a mixture of areas suitable for long-term sustainability, with the western portion of this Study Area detailing on-site issues. There was a mixture of geographic areas where records detail on-site wastewater systems are long-term sustainable, as well as a limited areas where there are chronic issues with both severe soils and groundwater conditions. This Study Area was delineated further with both a western portion of the geographic area deemed a Needs Area where conditions for on-site wastewater systems are not long-term sustainable, as well as a delineation where the area outside of the western portion is recommended for maintenance under a Septic Management Plan (SMP) with on-site wastewater systems as the long-term recommendation. Refer to Figure ES-1 for this delineation.

Environmental resource areas were mapped in Figures 2-3 through 2-6 and show a certified vernal pool and areas of mapped Natural Heritage and Endangered Species.

Table 4-2 details the streets that are partially or fully within the Goodman Hill Study Area.

Table 4-2 Goodman Hill Street

ALLEN PL	ANTIQUE CIR	BOSTONIAN WAY	BRADLEY PL
BREWSTER RD	CHURCH ST	CLARK LN	CLIFTON RD
CODJER LN	CONCORD RD	CONFIDENCE WAY	FRANKLIN PL
GOODMAN HILL RD	GREEN HILL RD	HILLSIDE PL	INDIAN RIDGE RD
KATO DR	KATO SUMMIT	KING PHILIP RD	MASSASOIT AVE
METACOMET WAY	NASHOBA RD	OLD COUNTY RD	OLD LANCASTER RD
OLD SUDBURY RD	PENNYMEADOW RD	PHEASANT AVE	PILGRIMS PATH
PLANTATION CIR	POKONOKET AVE	PURITAN LN	RIVER RD
SINGLETARY LN	TAYLOR RD	UNION AVE	WALKER FARM RD
WALKUP RD	WINSOR RD	WOLBACH RD	

4.3.3 Landham Road Study Area

This Study Area is located in the most southeastern corner of Sudbury and directly abuts the Towns of Framingham to the north and Wayland to the east. It is shown as the lavender color on Figure 2-1. This Study Area encompasses approximately 711 acres in total land area, with a total of 475 parcels. Of the total parcels, the land use is 95 percent residential with the remaining 5 percent a mixture of US Government, municipal and a mix of other tax-exempt parcels. Of the total land area, over 88 percent is developed, with 12 percent undeveloped with a mix of developable, undeveloped land devoted to conservation/recreation/open and a number of tax-exempt parcels.

The average lot size in this Study Area is just over an acre out of the 431 developed parcels. There are no condominium developments in this Study Area.

This Study Area's soils and groundwater conditions were reviewed using the Web Soil Survey at the NRCS. This Study Area includes over a third of its land area, a significant portion of the developed land area, as Merrimac Urban Land Complex, which is conducive to on-site wastewater systems. This soil association is well drained with groundwater shown to be in excess of 80 inches below the surface. There is no flooding/ponding associated with this soils. Other soils found in this Study Area include Saco Silty Mucks found along Landham Brook, Windsor Loams, which tend to be fast percolating and Deerfield Loams, which tend to have higher groundwater conditions of 15-37 inches below the surface. As a whole, the major soils appear to be conducive to long-term sustainability with on-site wastewater systems.

Board of Health records did not detail chronic on-site issues in this Study Area. Per records reviewed, this geographic area is recommended to maintain sufficiently with on-site wastewater systems. This Study Area is recommended for maintenance under a Septic Management Plan (SMP) with on-site wastewater systems as the long-term recommendation

Environmental resource areas were mapped in Figures 2-3 through 2-6, and show water resources, wetland areas, floodplain areas and mapped areas of Natural Heritage and Endangered Species. The western areas include a small section of the Zone II for the Raymond Road Aquifer, which appears to be managing fine with on-site wastewater systems. This

Table 4-3 details the streets are that are partially or fully within the Landham Road Study Area.

Table 4-3 Landham Road Streets

AMES RD	ANSELM WAY	BECKWITH ST	BLACKMER RD
BOSTON POST RD	BROOKDALE LN	BROOKDALE RD	BROOKS RD
BROOKSIDE FARM LN	CHRISTOPHER LN	COOLIDGE LN	CUTLER FARM RD
DAWSON DR	EDDY ST	FRAMINGHAM TOWN LINE	GRISCOM RD
GUZZLE BROOK DR	HAWTHORNE DR	JASON DR	JOAN AVE
KAY ST	LANDHAM RD	LETTERY CR	LYNNE RD
MURRAY DR	OLD ORCHARD RD	PATRICIA RD	PELHAM ISLAND RD
READ RD	RUSSET LN	SHADOW OAK DR	STAGECOACH DR
STOCKFARM RD	VICTORIA RD	WAGONWHEEL RD	WOODSIDE RD

4.3.4 North Sudbury Study Area

This Study Area is located on the northern border of Sudbury and directly abuts the Towns of Wayland to the east, Concord to the north, Maynard and Stow to the west. It encompasses the major portion of North Sudbury, where lot sizes are fairly large and there is a considerable amount of open land-light blue color on Figure 2-1. This Study Area encompasses approximately 7,193 acres in total land area, with a total of 2,520 parcels. Of the total parcels, the land use is 50 percent residential with the remaining 50 percent a mixture of small commercial, US Government, municipal, US Fish and Wildlife, considerable conservation, a Housing Authority and a mix of other tax exempt parcels Of the total number of parcels, approximately 50 percent is developed, with 50 percent undeveloped with a mix of developable, undeveloped land, land devoted to conservation/recreation/open, utility transmission lines, golf course and a number of tax exempt parcels.

The average lot size in this Study Area out of 2,011 developed parcels is in excess of two acres. All condominium developments were excluded from the calculation due to the density of development on common land area.

This Study Area's soils and groundwater conditions were reviewed using the Web Soil Survey at the NRCS. This Study Area detailed a number of soil associations including Freetown Mucks found along Hop Brook. These wet, poorly draining soils would be expected abutting the water resource. Most of the soils are Windsor Loams, which show groundwater up to 80 inches below surface, well drained with no flooding/ponding. There are also some Hinkley Loams, which are also well drained with groundwater up to 80 inches below the surface. As a whole, the major soils, as well as large lot sizes, appear to be conducive to long-term sustainability with on-site wastewater systems.

Board of Health records did not detail chronic on-site issues in this Study Area. Per records reviewed, this geographic area is recommended to maintain sufficiently with on-site wastewater systems.

Environmental resource areas were mapped in Figures 2-3 through 2-6, and show certified vernal pools, significant areas of wetland areas and floodplains along the Sudbury River and mapped resources areas with the Natural Heritage and Endangered Species Program. There are Zone II areas for the water supply along the north, east and west borders of the Study Area.

Table 4-4 details the streets that are partially or fully within the North Sudbury Study Area.

Table 4-4 North Sudbury Study Area Streets

ANTHONY DR	ARROWHEAD RD	AUSTIN DR	BALCOM RD
BALDWIN DR	BARNET RD	BELCHER DR	BISHOP LN
BITTERSWEET CIR	BLACKSMITH DR	BLANDFORD DR	BOWEN CIR
BOWKER DR	BREWSTER RD	BRIANT DR	BUCKMASTER DR
CAIL FARM RD	CAKEBREAD DR	CAMPERDOWN LN	CANDY HILL LN
CANDY HILL RD	CANTERBURY DR	CEDAR CREEK RD	CHANTICLEER RD
CHECKERBERRY CIR	CLARK RD	COBBLESTONE PL	CODMAN DR
CONCORD RD	CONCORD TOWN LINE	CRAIG LN	CRANBERRY CIR
CRESCENT LN	CROWN POINT RD	CUDWORTH LN	CURRY LN
CUTTING LN	DAKIN RD	DARVELL DR	DEACON LN
DEER POND RD	DUNSTER RD	ELAINE RD	ELSBETH RD
EMERSON WAY	ENGLISH RD	FARM LN	FERN TRL
FIELD RD	FIELDSTONE FARM RD	FLINTLOCK LN	FORD RD
FOX HILL DR	FROST LN	GOODNOW RD	GREAT RD
GREENWOOD RD	GREYSTONE LN	GRIFFIN LN	HADLEY RD
HAMBLIN LN	HAMPSHIRE ST	HARVARD DR	HARVEYS FARM LN
HAWES RD	HAYNES RD	HERMITAGE ST	HILLTOP RD

HUDSON RD	HUNT RD	HUNTERS RUN	IRONWORKS RD
JULIAN`S WAY	JUNIPER RD	KENDRA LN	LEDGE RD
LIBERTY LEDGE	LINCOLN LN	LINCOLN RD	LOKER RD
LONGFELLOW RD	MARK LN	MARLBORO RD	MARTIN DR
MARY CATHERINE LN	MAYBURY RD	MAYNARD FARM CIR	MAYNARD FARM RD
MAYNARD RD	MAYNARD TOWN LINE	MEACHEN RD	MICHAEL LN
MINEBROOK RD	MINUTEMAN LN	MORSE RD	MOSSMAN RD
MUNNINGS DR	MUSKET LN	NEW BRIDGE RD	NORLUND CIR
NORTH RD	NORTHWOOD DR	OAKRIDGE RD	OLD COACH RD
OLD SUDBURY RD	PADDOCK WAY	PANTRY RD	PEAKHAM RD
PENDLETON RD	PETERS WAY EXT	PHILEMON WHALE LN	PLYMPTON RD
POSSUM LN	POWDER MILL RD	POWERS RD	PUFFER LN
RICE RD	RIDGE HILL RD	ROSE WAY	RUDDOCK RD
SAUNDERS RD	SAWMILL LN	SILVER HILL RD	SINGING HILL CIR
SKYVIEW LN	SNOWBERRY LN	STARVIEW DR	STONE ROOT LN
SUFFOLK RD	SUNSET PATH	SYLVAN WAY	TAINTOR DR
TANTAMOUSE TRL	TAVERN CIR	THOMPSON DR	THOREAU WAY
THUNDER RD	TWILLINGATE LN	TWIN POND LN	VILLAGE RD
VIRGINIA RIDGE RD	WADSWORTH RD	WAKE ROBIN RD	WARD RD
WATER ROW	WEIR HILL RD	WHITE HALL CIR	WHITETAIL LN
WIDOW RITES LN	WILLARD GRANT RD	WILLIS RD	WINDMILL DR
WITHERELL DR	WOLBACH RD	WOODMERE DR	WYMAN DR

4.3.5 Peakham Road Study Area

This Study Area is located in the center of Sudbury and does not about any surrounding towns. It is bordered by the Raymond Road Study Area to the south, Pratts Mill Road Study Area to the north, Goodman Hill Study Area to the east and the Dutton Road / Wayside Inn Road Study Area to the east-turquoise color on Figure 2-1. This Study Area encompasses approximately 1,140 acres in total land area, with a total of 986 parcels. Of the total parcels, the land use is approximately 95 percent residential with the remaining 5 percent a mixture of municipal, including Housing Authority lands and other tax-exempt parcels. Of the total number of parcels, over 97 percent is developed, with 3 percent undeveloped with a mix of parcels devoted to conservation/recreation/open and a number of tax-exempt parcels.

The average lot size in this Study Area out of 940 developed parcels is greater than one acre. All condominium developments were excluded from the calculation due to the density of development on common land area.

This Study Area's soils and groundwater conditions were reviewed using the Web Soil Survey at the NRCS. The majority of the soils are Windsor Loams, which show groundwater up to 80 inches below surface, well drained with no flooding/ponding. There are some Freetown Mucks along Hop Brook areas, which are poorly drained, wet soils as would be expected abutting the water resource. There are also Hinkley Sandy Loams shown, which are similar to Windsor soils in that they are well drained, no flooding/ponding and groundwater conditions 80 inches below surface. As a whole, the major soils appear to be conducive to long-term sustainability with on-site wastewater conditions.

Board of Health records did not detail chronic on-site issues in this Study Area. Per records reviewed, this geographic area is recommended to maintain sufficiently with on-site wastewater systems.

Environmental resource areas were mapped, Figures 2-3 through 2-6, and show certified vernal pools, wetland areas and floodplain along Hop Brook, Stearns Mill Pond and Dudley Brook. Areas in the northern portion of the Study Area are in the Zone II for the Hop Brook wells.

Table 4-5 details the streets that are partially or fully within the Peakham Road Study Area.

Table 4-5 Peakham Road Study Area Streets

AARON RD	AMANDA RD	AUSTIN RD	AUTUMN ST
AXDELL RD	BARBARA RD	BARTON DR	BENT BROOK RD
BLUEBERRY HILL LN	BROOK LN	BROWNSTONE LN	BULKLEY RD
CANDLEWOOD CIR	COLONIAL RD	CONCORD RD	DEMARCO RD
DRUM LN	DUTTON RD	FIRECUT LN	FOREST ST
FOX RUN	GERRY DR	GLEN LN	HEMLOCK RD
HOBART RD	HOMESTEAD ST	HOP BROOK LN	HORSE POND RD
HUCKLEBERRY LN	HUDSON RD	KENDALL RD	LAUREL CIR
MAGNOLIA RD	MARKED TREE RD	MEADOW DR	MEADOWBROOK CIR
MEADOWBROOK RD	MIDDLE RD	MILLPOND RD	MOORE RD
NEWTON RD	NOYES LN	OAK HILL RD	OAK ST
OLD LANCASTER RD	PARTRIDGE LN	PEAKHAM CIR	PEAKHAM RD
PENNYMEADOW RD	PETERSEN CIR	PHEASANT AVE	PINE RIDGE RD
PINE ST	PIPSISSEWA CIR	PONDVIEW RD	POPLAR ST
PRATTS MILL RD	RAYNOR RD	RONALD RD	SADDLE RIDGE RD
SPRING ST	STEARNS LN	SUMMER ST	SURREY LN
SYCAMORE RD	TANBARK RD	WASH BROOK RD	WHISPERING PINE RD
WHITE OAK LN	WILDWOOD LN	WILLOW RD	WILSON RD
WINTER ST	WOODBERRY RD		

4.3.6 Pine Lakes Study Area

This Study Area is located on the central/western border of Sudbury and abuts the Town of Stow to the east and Town of Maynard to the north. It includes the area just north of Peakham Road Study Area and west of Pratts Mill Road Study Area-lilac color on Figure 2-1. This Study Area encompasses approximately 96 acres in total land area, with a total of 283 parcels. Of the total parcels, the land use is approximately 92 percent residential with the remaining 8 percent two small commercial properties and a mixture of municipal and Housing Authority parcels. Of the total land area, over 83 percent is developed, with the remaining 17 percent undeveloped with a mix of undeveloped and undevelopable residential and vacant tax title lands.

The average lot size in this Study Area out of 235 developed parcels is less than one half acre. All lots are serviced by public water.

This Study Area's soils and groundwater conditions were reviewed using the Web Soil Survey at the NRCS. The majority of the soils are associated with the Merrimac Urban Land Complex, which are well drained, no flooding/ponding with groundwater up to 80 inches below the surface. There are some Freetown Mucks shown along Chrystal Lake and Rum Brook areas, which are poorly drained, wet soils, which would be expected abutting these water resources. There are also Windsor Loams, which are well drained with no flooding/ponding and groundwater up to 80 inches below the surface. As a whole, the major soils appear to be conducive for long-term sustainability with on-site wastewater conditions.

Board of Health records did not detail chronic on-site issues in this Study Area. Per records reviewed, this geographic area is recommended to maintain sufficiently with on-site wastewater systems. This Study Area is recommended for maintenance under a Septic Management Plan (SMP) with on-site wastewater systems as the long-term recommendation.

Environmental resource areas were mapped in Figures 2-3 through 2-6 and show wetland and flood plain areas in and around Willis Lake and small areas of mapped resources from the Natural Heritage and Endangered Species Program. In addition, there are areas within the Zone II of the Hop Brook wells.

Table 4-6 details the streets that are partially or fully within the Peakham Road Study Area.

Table 4-6 Pine Lakes Study Area Streets

ARBORWOOD RD	BASSWOOD AVE	BEECHWOOD AVE	BIRCHWOOD AVE
CRYSTAL LAKE DR	ELMWOOD AVE	GREAT LAKE DR	HUDSON RD
LAKE SHORE DR	LAKEWOOD DR	LEE ANNE CIR	MAPLEWOOD AVE
OAKWOOD AVE	PINEWOOD AVE	RONALD RD	SPRUCE LN
WILLIS LAKE DR			

4.3.7 Pratts Mill Road Study Area

This Study Area is located on the central/western border of Sudbury and abuts the Pine Lakes Study Area to the west, Peakham Road Study Area to the south, Raymond Road North Study Area to the south and Goodman Hill and North Sudbury Study Areas to the east – pink color on Figure 2-1. This Study Area encompasses approximately 880 acres in total land area, with a total of 733 parcels. Of the total parcels, the land use is approximately 94 percent residential with the remaining 6 percent comprising a mixture of municipal, tax title and Housing Authority parcels. Of the total number of parcels, over 90 percent is developed, with the remaining 10 percent undeveloped with a mix of undeveloped and undevelopable residential and vacant tax title lands.

The average lot size in this Study Area out of 660 developed parcels is approximately one acre. There are no condominium developments in this Study Area.

This Study Area's soils and groundwater conditions were reviewed using the Web Soil Survey at the NRCS. The majority of the area is associated with the Windsor Loams soils, which are well drained with no flooding/ponding and groundwater up to 80 inches below the surface. There are also Hinkley Loams that are well drained soils, with no flooding/ponding and groundwater and groundwater up to 80 inches below surface. There are also some Swansea and Freetown Mucks shown along Run Brook, which is to be expected abutting water resources. As a whole, the major soils appear to be conducive for long-term sustainability with on-site wastewater conditions.

Board of Health records did not detail chronic on-site issues in this Study Area. Per records reviewed, this geographic area is recommended to maintain sufficiently with on-site wastewater systems. This Study Area is recommended for maintenance under a Septic Management Plan (SMP) with on-site wastewater systems as the long-term recommendation.

Environmental resource areas were mapped in Figures 2-3 through 2-6, and show certified vernal pools, considerable wetland and flood plain associated with Hop Brook and Run Brook, portions within the resources mapped by the Natural Heritage and Endangered Species Program. In addition, there is considerable portion of this Study Area within the Zone II for the Hop Brook wells.

Table 4-7 details the streets that are partially or fully within the Pratts Mill Road Study Area.

Table 4-7 Pratts Mill Road Study Area Streets

ABBOTTSWOOD	ALLAN AVE	ALLENE AVE	ARBORETUM WAY
ATKINSON LN	AUGUST RD	BABE RUTH DR	BLUEBERRY HILL LN
BRENTWOOD RD	BRIAR PATCH LN	BUTLER PL	BUTLER RD
CAMPERDOWN LN	CENTER ST	CHURCHILL ST	CORTLAND LN
COUNTRY VILLAGE LN	CRESTVIEW DR	CUTTING LN	DEMARCO RD
DOROTHY RD	DRUM LN	DUTTON RD	EAST ST
ELDERBERRY CIR	EVERETT ST	FAIRBANK RD	FAIRHAVEN CIR
FRYE ST	GOODNOW RD	GRINDSTONE LN	HARNESS LN
HEMLOCK RD	HOLLOW OAK DR	HOP BROOK LN	HOWE ST
HUDSON RD	INTERVALE RD	JULY RD	LILLIAN AVE
LINDEN RD	LOUIS AVE	MACDONALD AVE	MAGNOLIA RD
MAYNARD RD	MCLEAN DR	MONTAGUE ST	NELSON RD
NORMANDY DR	OCTOBER RD	OLD FORGE LN	OLD LANCASTER RD
PARMENTER RD	PEAKHAM RD	PERRY CIR	PETERSEN CIR
PHILLIPS RD	POPLAR ST	PRATTS MILL RD	PRIEST RD
REEVES ST	RICHARD AVE	RUN BROOK CIR	SAXONY DR
SCOTTS WOOD DR	SEXTON ST	SPILLER CIR	STUART ST
STUBTOE LN	TEAKETTLE LN	THORNBERRY LN	TRILLIUM WAY
TUDOR RD	TWILLINGATE LN	TWIN MEADOW LN	WARD RD
WATT ST	WEBSTER CIR	WEST ST	WILLOW RD
WILSON RD			

4.3.8 Raymond Road Study Area (North and South)

This Study Area encompasses two sections; Raymond Road North and Raymond Road South and is divided through the middle by the Route 20 Study Area. It includes the Raymond Road South where the Town's major potable wells and Raymond Road Aquifer area lies, as well as the portion to the north, which is within the Zone II of the Raymond Road wells. The southern portion is where the Zone I for the wells are located - yellow color on Figure 2-1. This Study Area encompasses approximately 895 acres in total land area, with a total of 519 parcels. Of the total parcels, the land use is 90 percent residential with the remaining 10 percent a mixture of municipal, agricultural and a mix of other tax exempt parcels. Of the total number of parcels, over 87 percent is developed, with 13 percent undeveloped with a mix of developable, undevelopable residential, undeveloped land devoted to agriculture and a number of tax exempt parcels.

The average lot size in this Study Area out of 406 developed parcels is 1.1 acres All condominium developments were excluded from the calculation due to the density of development on common land area.

This Study Area's soils and groundwater conditions were reviewed using the Web Soil Survey at the NRCS. Raymond Road North Study Area maps the majority soil association as Windsor Loams soils, which are well drained with no flooding/ponding and groundwater up to 80 inches below the surface and Udorthent Urban Land that are developed lands with groundwater shown up to 80 inches below surface. There are small areas of Freetown Mucks that run along Dudley Brook. Soil conditions appear suitable for on-site wastewater systems in limited geographic areas. Other geographic areas, together with environmental resources in the area are determined not long-term sustainable with on-site wastewater systems.

Raymond Road South Study Area are a mixture of Windsor Loams, which are well drained with no flooding/ponding and groundwater up to 80 inches below the surface. A significant portion of the land area is mapped as Deerfield Loam and is non-developed land masses in the Zone I and II for the Raymond Road Aquifer. The majority of this area is determined as not long-term sustainability with on-site wastewater systems.

Board of Health records detail severe soil and groundwater conditions throughout the Study Areas. There are areas of this Study Area that are of concern due to Title 5 failures, ages of existing systems and location to the Raymond Road wells. Soils in the general area support fast percolations, which remain a threat to the Raymond Road Aquifer. Records detail these, as well as major on-site system replacements, as well as many properties still maintaining original systems. Records indicated ages of systems dating back to the 1950s, far before Title 5 was enacted. On-site system records also showed tight tanks, I/As and small package WWTF located throughout the Study Area adjacent to the Raymond Road Aquifer. There are some areas within this Study Area that records show are long-term sustainable with on-site wastewater systems and are located further from the wells, thus this Study Areas has been further delineated to recommend both off-site and on-site wastewater as long-term recommendations as a Hybrid Needs Area. Figure ES-1 details the geographic areas recommended for offsite wastewater, as well as that that is recommended for a Septic Management Plan (SMP). With the proposed phasing of the sewer implementation, if any of those areas under a SMP change conditions, additional sewer phases can be added. Based on records in the files, the overall Title 5 Failure rate in this overall Study Area is approximately 23 percent.

Environmental resource areas were mapped in Figures 2-3 through 2-6, and show certified vernal pools, wetland and flood plain areas associated with the Sudbury River in the southern portion and Hop Brook in the northern section of the Study Area. The major environmental resource in this area are the Town's major drinking water wells in the Raymond Road Aquifer.

Table 4-8 details the streets that are partially or fully within the Raymond Road Study Area.

Table 4-8 Raymond Road Study Area Streets

ALTA RD	BENT RD	BOSTON POST RD	BRIDLE PATH
CIDER MILL RD	CLIFFORD RD	CODJER LN	COOLIDGE LN
CUTLER FARM RD	DOUGLAS DR	ELLIOT RD	EVERGREEN RD
HICKORY RD	HOPESTILL BROWN RD	HORSE POND RD	HOWELL RD
JARMAN RD	LANDHAM RD	LANDS END LN	LOMBARD LN
MAPLE AVE	MORAN CIR	NOBSCOT RD	OLD FRAMINGHAM RD
OLD MEADOW RD	QUAKER LADY LN	RAMBLING RD	RAYMOND RD
REVOLUTIONARY RD	ROBBINS RD	ROBERT FROST RD	ROLLING LN
STONE RD	STONEBROOK RD	TALL PINE DR	TRAILSIDE CIR
UNION AVE	WARREN RD	WASHINGTON DR	WILSHIRE ST
WOODSIDE RD	WRIGHT RD		

4.3.9 Route 20 Study Area

This Study Area is located along the southern border of Sudbury, north of the Town of Framingham and east of the City of Marlborough. It contains the largest number of non-residential parcels in Town and has been the subject area of sewer discussion for decades. It is shown as the dark pink color on Figure 2-1. This Study Area includes a total of 370 parcels. Of the total parcels, the land use is 50 percent residential with the remaining 50 percent a mixture of small commercial, industrial, US Government, municipal and a mix of other tax exempt parcels. Of the total number of parcels, over 90 percent is developed, with 10 percent undeveloped with a mix of developable, undeveloped land devoted to residential, commercial, industrial, some agricultural and a number of tax exempt parcels.

The average lot size in this Study Area out of 293 developed parcels is 1.5 acres. This includes a mixture of residential and non-residential, with multiple commercial parcels / business condominiums sharing land area in strip malls and office buildings. A closer look at density of systems detailed that within the commercial zoning, there are several individual businesses along the Route 20 corridor set up on common/shared land areas-similar to business condominiums. Thus, the density of systems is greater than those commercial entities located on a separate parcel and not shared space. More important than trying to figure an average lot size, is looking at the non-residential uses located here and the fact that many are operating on shared parcels, thus the density of systems supports a higher density wastewater currently going into the ground from on-site wastewater systems.

This Study Area's soils and groundwater conditions were reviewed using the Web Soil Survey at the NRCS. The major soil associations in this Study Area are Windsor Loams and Udorthents Urban Lands, which are developed lands with groundwater up to 80 inches below surface. There are also some Hollis Rock Outcrops shown on the mapping, which are

not suited for on-site wastewater systems. The soils may be suited for limited on-site wastewater systems, but considering the commercial zoning and location to the Raymond Road Aquifer, may be better suited for long-term sustainability and environmental preservation and protection with off-site wastewater systems.

Board of Health records detail this Study Area as having some areas long-term sustainable with on-site wastewater systems and other geographic locations closer to the Raymond Road Aquifer as not long-term sustainable with on-site wastewater systems-a Hybrid Needs Area. Records detailed areas where on-site systems are conducive to long-term sustainability on the western side of the Study Area and the central portion that is closets to the Raymond Road wells as not long-term sustainable with on-site wastewater systems. With the sewer implementation planned in phases, the priority Hybrid Needs Area will be addressed first, with the remainder of the area recommended for maintenance under a Septic Management Plan (SMP) with on-site wastewater systems as the long-term recommendation.

Environmental resource areas were mapped in Figures 2-3 through 2-6 and show sections of this Study Area within the Zone II for the Raymond Road wells. This is a major environmental concern as the area is zoned for commercial use and many on-site systems currently sit in the Zone II resource area.

Table 4-9 details the streets that are partially or fully within the Route 20 Study Area.

Table 4-9 Route 20 Study Area Streets

ADAMS RD	BAY DR	BOSTON POST RD	CODJER LN
CONCORD RD	DUDLEY RD	EASY ST	FARMSTEAD LN
HIGHLAND AVE	HORSE POND RD	KING PHILIP RD	MAPLE AVE
NOBSCOT RD	NOKOMIS RD	RAYMOND RD	ROADWAY
STATION RD	STONE RD	TREVOR WAY	UNION AVE
UPLOOK DR	WOODLAND RD		

4.3.10 Route 20 East Study Area

This Study Area is located along the southern border of Sudbury along Route 20 closest to the Wayland Town line. It includes a mix use of land uses from residential, commercial, industrial, municipal and tax exempt. This Study Area is reflected in the blue color on Figure 2-1. This Study Area with a total of 171 parcels. Of the total parcels, the land use is 63 percent residential with the remaining 37 percent a mixture of mixed use, small commercial, industrial, a nursing home, municipal and other tax-exempt parcels. There are several office buildings, as well as condominiums located within this Study Area. Of the total number of parcels, over 87 percent is developed, with 13 percent undeveloped with a mix of developable and undevelopable parcels in commercial, industrial, and municipal land uses.

The average lot size in this Study Area out of 80 developed parcels (mix of residential and non-residential along Route 20 to the Wayland Town line) is approximately 1.64 acres. All condominium developments were excluded from the calculation due to the density of development on common land area.

This Study Area's soils and groundwater conditions were reviewed using the Web Soil Survey at the NRCS. The majority soils are Udorthents Urban Lands with a mixture of Montauk Fina Sandy Loams and Canton Loams. The Udorthents, which are developed lands have groundwater up to 80 inches below surface. The soils may be suited for limited on-site wastewater

systems, but considering the commercial zoning, may be better suited for long-term sustainability and environmental preservation and protection with off-site wastewater systems.

Board of Health records detailed ages of systems dating back to the 1950s- far before Title 5 was enacted. Systems throughout the Study Area include tight tanks, I/As and WWTF. While not an immediate priority, this Study Area is recommended for off-site wastewater management. Until this area is sewered, this Study Area is recommended for maintenance under a Septic Management Plan (SMP) with on-site wastewater systems.

Environmental resource areas were mapped in Figures 2-3 through 2-6 and show some small areas of wetlands and flood plains associated with the Sudbury River and a small section in the southeast corner mapped with resources from the Natural Heritage and Endangered Species Program.

Table 4-10 details the streets that are partially or fully within the Route 20 East Study Area.

Table 4-10 Route 20 East Study Area Streets

BOSTON POST RD (ROUTE 20)	GOODMAN HILL RD	GREEN HILL RD	KING PHILIP RD
OLD COUNTY RD	RAILWAY	RIVER RD	SINGLETARY LN

It is important to note, that the Town is deferring including Route 20 East as a Needs Area until a future date. This Study Area has the potential for sewer through the Town of Wayland. At the time of this Report writing, this Study Area was deferred from further evaluation and if necessary, at a future date can be added through a Notice of project Change (NPC) through the Massachusetts Environmental Policy Act Office (MEPA).

4.3.11 Summary of Study Areas

The Study Areas were evaluated based on multiple criteria to determine which locations can sustain long-term with existing on-site wastewater disposal systems. These areas are all recommended to be included in a Septic management Plan to promote the effective operation and management of these systems over the long-term. Conditions can be monitored and if in the future it appears that on-site systems are not conducive to existing conditions, the Town can determine if connection to the sewer is warranted. The Study Areas that are considered Needs Areas/Hybrids, the plan is to phase a plan to remove the on-site systems with an off-site wastewater solution. The following sections of this CWMP report speak to the off-site alternatives investigated, as well as technical aspects, costs and Final plans.

As a means to assist the Town with the SMP, the Massachusetts State Revolving Fund (SRF) Program offers a Community Septic Betterment Program. This Program is to provide funding of up to $200,000 in the form of low-cost loans to allow communities to devise a Community Inspection Plan or a Local Septic Management Plan. This is further detailed in Section 5 of this CWMP Report.

The following Table 4-11 identifies the proposed wastewater flows established during the Study Areas Evaluation.

Table 4-11 Study Area Near Term Flows and Pollutant Loads[1]

Study Area	Property Count	Near Term Wastewater Flows				Near Term Average Daily Wastewater Strength[2] (lbs/day)			
		Average Day Flow (gpd)	Max Daily Flow (gpd)	Peak Hour Flow (gpd)	Peak Hour (gpm)	BOD	TSS	TN	TP
Area 1 - Dutton Rd/Wayside Inn	617	133,358	267,000	747,000	519	309	364	73	11
Area 2 - Goodman Hill	486	71,124	143,000	399,000	277	244	287	57	9
Area 3 - Landham Road	476	74,509	150,000	418,000	290	239	281	56	8
Area 4 - North Sudbury	2,524	496,887	994,000	2,783,000	1,933	1,266	1,489	298	45
Area 5 - Peakham Road	988	160,974	322,000	902,000	626	495	583	117	17
Area 6 - Pine Lakes	283	33,331	67,000	187,000	130	142	167	33	5
Area 7 - Pratts Mill Rd	733	126,360	253,000	708,000	492	368	432	86	13
Area 8 - Raymond Rd	496	74,630	150,000	418,000	290	249	293	59	9
Area 9 - Route 20	402	143,565	288,000	804,000	558	202	237	47	7
Area 10 - Route 20 East	174	46,075	93,000	259,000	180	87	103	21	3
Total	7,179	1,360,813	2,727,000	7,625,000	5,295	3,600	4,236	847	127

1. Table presents existing flows by Study Area and does not include allowances for I/I that will be incorporated in the project flows and loads in Table 4-13 and Table 4-14.
2. Wastewater strength is based on TR-16 recommended loading rates for residences.

The following Table 4-12 identifies the results of evaluation for each of the afore-mentioned Study Areas to Needs Areas.

Table 4-12 Recommendations for Study Areas and Needs Areas

STUDY AREA	*NEEDS AREA*	RECOMMENDATION
Dutton Road / Wayside Inn Road		Maintain On-Site Wastewater Under SMP
Goodman Hill	*Goodman Hill (Sub-Area A)*	Hybrid Needs Area for Off-Site Solution with northern portion on SMP
Landham Road		Maintain On-Site Wastewater Under SMP
North Sudbury		Maintain On-Site Wastewater Under SMP
Peakham Road		Maintain On-Site Wastewater Under SMP
Pine Lakes		Maintain On-Site Wastewater Under SMP
Pratts Mill		Maintain On-Site Wastewater Under SMP
Raymond Road North and South	*Raymond Road North Sub - Area A and South Sub - Area A*	Hybrid Needs Area for Off-Site Solution with eastern portion on SMP
Route 20	*Route 20 Sub - Area A and Sub - Area B*	Hybrid Needs Area for Off-Site Solution with Western portion on SMP
Route 20 East		Maintain On-Site Wastewater Under SMP . Potential for future NPC

4.4 Wastewater Flow Projections

The following tables detail the estimated buildout flows and loads for the entirety of Study Areas that were identified as Needs Areas (Table 4-13), and all Needs Areas/Sub Areas not remaining on a Septage Management Plan (Table 4-14) based on the approach for calculating flows for each property discussed in Section 2.8, Flow Estimation.

Table 4-13 Needs Areas Near Term Flows and Pollutant Loads[1]

Needs Area	Property Count	Near Term Flows						Near Term Average Daily Nutrient Loading (lbs/day)			
		Average Day Wastewater Flow (gpd)	Estimated I/I Flow (gpd)	Total Average Day Flow (gpd)	Max Daily Flow (gpd)	Peak Hour Flow (gpd)	Peak Hour (gpm)	BOD	TSS	TN	TP
Route 20 Sub-Area A	119	38,692	4,356	43,048	82,000	222,000	154	60	70	14	2
Raymond Road South (Sub-Area A)	148	25,857	6,960	32,818	59,000	152,000	106	74	87	17	3
Raymond Road North (Sub-Area A)	218	39,548	7,907	47,455	88,000	230,000	160	109	129	26	4
Goodman Hill (Sub-Area A)	114	17,315	2,746	20,061	38,000	100,000	69	57	67	13	2
Route 20 (Sub-Area B)	76	10,168	2,746	12,914	24,000	60,000	42	38	45	9	1
Subtotal	675	131,579	24,716	156,295	291,000	764,000	531	339	398	80	12
Route 20 East	41	25,033	1,847	26,879	52,000	143,000	99	21	24	5	1
Total	716	156,612	26,563	183,174	343,000	907,000	630	359	422	84	13

1. Wastewater strength is based on TR-16 recommended loading rates for residences. Buildout flow are presented and include allowances for Infiltration and Inflow.

Table 4-14 Projected Buildout Flows and Loads for Recommended Plan[1]

Needs Area	Property Count	Buildout Flows						Buildout Average Daily Nutrient Loading (lbs/day)			
		Average Day Wastewater Flow (gpd)	Estimated I/I Flow (gpd)	Total Average Day Flow (gpd)	Max Daily Flow (gpd)	Peak Hour Flow (gpd)	Peak Hour (gpm)	BOD	TSS	TN	TP
Route 20 Sub-Area A	119	146,150	4,356	150,506	297,000	823,000	572	60	70	14	2
Raymond Road South (Sub-Area A)	148	34,283	6,960	41,243	76,000	199,000	138	74	87	17	3
Raymond Road North (Sub-Area A)	218	49,366	7,907	57,274	107,000	285,000	198	109	129	26	4
Goodman Hill (Sub-Area A)	114	22,394	2,746	25,140	48,000	129,000	90	57	67	13	2
Route 20 Sub-Area B	76	32,196	2,746	34,942	68,000	184,000	128	38	45	9	1
Subtotal	675	284,389	24,716	309,105	596,000	1,620,000	1,125	339	398	80	12
Route 20 East	41	54,227	1,847	56,074	111,000	306,000	213	21	24	5	1
Total	716	338,617	26,563	365,179	707,000	1,926,000	1,338	359	422	84	13

1. Buildout flows are presented and include allowances for Infiltration and Inflow. These flows are used for the ultimate sizing of the treatment facility.

5. ALTERNATIVES FOR WASTEWATER COLLECTION, TREATMENT AND DISPOSAL

A variety of wastewater alternatives were investigated in the Town's 2012 Project Evaluation Report (PER) to determine the appropriate wastewater facilities to meet the needs of the Route 20 Business District. This investigation was limited in that it fully concentrated on a limited geographic area where the majority of the zoning/land uses were non-residential. This CWMP Update Report reviewed the findings completed in the PER and expanded the investigation to encompass the entire Town as shown on Figure 2-1. The evaluation of alternatives herein accommodates the information compiled on the recommended Needs Areas shown in Figure ES-1, environmental screening ratings, and preliminary engineering and technical criteria. This also supplements the alternatives evaluation initiated in the PER. This Report finalizes evaluating the environmental, technical design and institutional costs associated with each alternative and recommends the final appropriate long-term solution to the wastewater disposal problems in the Town of Sudbury. This section presents the following short-listed alternatives:

3. Optimization of existing on-site wastewater disposal systems;
4. Innovative/Alternative (I/A) solutions;
5. Collection Systems
6. Local Solutions; including satellite treatment facility with groundwater discharge, and;
7. Regional Solutions (Treatment & Disposal)

Excerpts from the 2012 PER Report are included in Appendix B. and can be fully accessed at https://sudbury.ma.us./dpw/cwmp.

5.1 Optimization, Operation and Maintenance of Existing On-Site Systems

This alternative consisted of rehabilitation of existing on-site systems and using the trucking of septage to an out-of-town treatment facility. This alternative was not considered viable for the entire Town due to restrictions against successful rehabilitation of on-site systems due to small lot size (inability to repair/replace due to inadequate lot area), poor soils conditions that are not conducive to proper percolation of wastewater effluent to thoroughly cleanse the wastewater before reaching groundwater and high groundwater conditions found throughout Town. These conditions provide sever constraints to the proper operation and maintenance of on-site wastewater disposal systems.

A comprehensive update of existing Board of Health records for this Report Update, found these conditions continue to be present in multiple areas of Town. There are, however, areas of Town that are considered long-term sustainable with on-site wastewater disposal systems. These are recommended for management under a Septic management Plan (SMP), which is further detailed in this section.

The CWMP evaluation looked at where conventional Title 5 systems will be effective in disposing of wastewater within a defined Study Area throughout and beyond the 20-year planning period. Refer to Figure 2-1 for the Study Area boundaries/locations. The Needs Analysis completed as part of this CWMP Update concluded that a majority of the developed or developable properties located within the Study Area will be able to utilize a conventional Title 5 septic system to effectively dispose of wastewater throughout and beyond the 20-year planning period. Data obtained from BOH records, assessor's files, USGS and soil surveys of Sudbury performed by the USDA were used to ascertain current land uses, associated soil and groundwater conditions, and to identify wastewater disposal problem areas. The objective of the Needs Analysis was to determine the specific Study Areas where conventional Title 5 wastewater disposal systems are inadequate or conversely, where existing on-site wastewater disposal systems can remain and be effective for wastewater disposal.

If Alternative 1, maintain all properties in Sudbury on on-site wastewater disposal systems, were pursued, all developed lots and future developable lots in Sudbury would remain dependent on on-site wastewater disposal systems. As previously shown, there are substantial documented failures, severe soil and groundwater conditions town-wide, disposal systems with imminent problems, environmental constraints and concerns with the preservation and protection of drinking water

supplies in Sudbury. In addition, the potential to capitalize on economic development growth in the Town's designated commercial/industrial zoning districts, specifically the Route 20 business corridor, would be severely limited.

The chronic issues with on-site wastewater disposal systems in Sudbury is chronicled in Reports dating back to the 1980s timeframe and beyond and have had no major changes up to this point in time. The 2012 Facility Plan further details issues with on-site wastewater disposal systems mostly in the Route 20 business corridor where the Town's major potable drinking water supply is located.

The documented failing on-site wastewater disposal systems may be contributing to the degradation of water quality in surface water bodies such as the Sudbury River, Hop Brook, Wash Brook, Cold Brook and other unnamed tributaries. The 2016 Massachusetts List of Impaired Waters lists dissolved Oxygen, Nutrient/Eutrophication Biological Indicators, E. Coli and Fecal Coliform as impairments. and other various water resources located within the Town's borders and beyond. Water resources that are within and/or downstream of the areas of wastewater disposal need are threatened by existing on-site disposal systems (both properly operating as well as malfunctioning systems) which discharge effluent into the groundwater with little or no treatment. As is evidenced by the local and regional reports, degradation is not only a threat in Sudbury, but the entire Sudbury Watershed as well.

It can be expected that as time passes, on-site systems will only become less adequate and will continue to contribute to the degradation of water bodies and the aquifer. Documents reviewed at the BOH detail consistent failures of on-site systems in areas identified throughout the Town's long-term wastewater planning as unsustainable in the long range with on-site systems. Even a properly installed and operating Title 5 system will still discharge high levels of pollutants, which will impact the quality of the groundwater and adjacent water resources. These on-site wastewater disposal systems combined with severe soils with poor filterability and high groundwater levels are both a water quality and health hazard. If the water quality of surface water bodies continues to decline, Sudbury could potentially lose very important recreational resources.

As more on-site wastewater disposal systems fail within the Town, individual property owners will be required to upgrade their systems to conventional Title 5 or I/A systems. If they are unable to do so, a tight tank could potentially be required. The cost of frequently pumping these tight tanks would be a financial burden for those property owners. Property owners would not be able to expand their homes or even use their existing facilities to the fullest extent. Property values could potentially decline. With the increased potential of the degradation of both the water quality in the surface water bodies and potentially the drinking water supply from the aquifer, Sudbury is obligated to provide acceptable wastewater disposal for the areas of need.

With most of the identified Study/Needs Areas deemed "long-term unsustainable" with on-site systems based on soil and groundwater conditions, as well as having the opportunity to collect, treat and discharge wastewater utilizing the Town's existing infrastructure, continued use and optimization of on-site systems is not deemed the most feasible alternative at this time for the entire Town. As a result, this alternative is eliminated from further discussion.

However, the alternative of optimizing existing on-site disposal systems is a viable option for those areas of Sudbury that are outside the areas of wastewater disposal need and where the use of on-site systems is recommended to continue. For these areas, the Town should consider implementing a Septic management Plan (SMP). The SMP is also extremely valuable for properties in the Needs Areas where the SMP would prolong effective use of on-site systems until connection to the municipal sewer is available. The purpose of a SMP is to maintain the operation of on-site disposal systems, which will protect the groundwater and reduce the expansion of the areas of wastewater disposal need, which require structural solutions. Such a plan should include such items as recommended septage pump-out frequencies and maintenance of on-site wastewater disposal systems.

The overall goals of a SMP are to maintain public health, ensure the protection of groundwater and surface water resources, maintain water resources as recreational, aesthetic and economic assets, improve the environment and prevent degradation and to protect private investments with regards to property values. The overall long-term sustainability of on-site wastewater systems is dependent on properly operating and maintaining these on-site systems and preventing environmental degradation. A SMP is intended to work in conjunction with the Town's municipal wastewater system for the

proper collection and disposal of septage in Town. All properties that are not considered as Needs Areas in the CWMP and are intended to be long-term sustainable with on-site wastewater treatment, as well as those properties not yet connected to the Town's municipal wastewater system, should be included in the SMP. With proper operation, management and oversight of on-site wastewater disposal systems, areas not identified as Needs Areas in this CWMP, will avoid needing an off-site solution in the future. This is commonly referred to as Sewer Avoidance – avoiding having to extend costly municipal infrastructure to areas not previously considered Needs Areas. It is recommended that the DPW work with the BOH to develop a SMP and establish the form of government or specific entity that will regulate and enforce the provisions of any SMP. Additional benefits of a SMP include the following:

- Groundwater conservation – a properly operating and managed on site wastewater disposal system through a SMP contributes to recharge of the groundwater resources.
- Preservation of the Town's tax base- a properly operating and managed on site wastewater disposal system through a SMP serves to eliminate the Town of Sudbury from having to finance the high cost of extending municipal sewers into areas not designated as Need Areas in the CWMP.
- Life cycle costs savings-previous cases indicate that a properly managed SMP has the potential to pay for itself in terms of lower Title 5 failures and premature on-site system replacements.
- Preservation of growth control/Smart Growth/Sustainability- a well-managed SMP has the potential to provide the means to prevent areas in Town from overdevelopment/sprawl due to the construction on infrastructure and utilities in areas previously not serviced by such, as well as preserving the present community structure.

The Massachusetts Community Septic Betterment Loan Program provides funding in the form of low interest loans to property owners for the repair or replacement of their on-site wastewater disposal systems. The loans are provided through a betterment process that loans property owners an approved amount that is paid back over a 20-year period to the Town. This program acts in similar fashion to a "revolving fund" whereby amounts paid back to the Town on betterments afford additional funds to be loaned to other property owners in need of funding assistance. MassDEP was contacted for information relative to the community Septic Betterment Program. The Town is in receipt of information from MassDEP relative to this program. This information includes the benefits of the Community Septic Betterment Loan Program and how it could service the Town. The Town is reviewing information relative to the Community Septic Betterment Loan Program for use with a future SMP.

Public education should be at the forefront of whatever type and or level of SMP the Town chooses to implement. The education part serves to provide property owners with the basic knowledge of how on-site wastewater disposal systems work, as well as what operation and management components are a beneficial means of prolonging the life of these systems. Education may also serve to reeducate and train the local governing jurisdiction. SMPs undertaken by municipal agencies require knowledge of not only the state and local regulations, but also institutional techniques and methods in order to achieve the overall objectives of the program. The success or failure of the SMP is dependent on the relationship building of a number of players, including the governing municipal jurisdiction responsible for establishing and enforcing policy, agency staff, and impacted property owners-all working together for an effective and proactive approach to on-site system management.

As part of the CWMP, a routine maintenance program of the system pump outs could be coordinated and offered to those areas intended to remain with on-site systems long-term, as well as those areas identified as Needs Areas in the CWMP not yet connected to the municipal sewer system.

The following are items for the Town to consider when developing a SMP for Sudbury:

- Level of Management
- Planning Objectives
- Performance Requirements
- Site Evaluation

- Design Criteria
- Operation and Maintenance Requirements/Responsibilities
- Pumping Requirements
- Certification/Licensing/Jurisdiction
- Public Education and Training
- Water Conservation
- Corrective Actions/Enforcements
- Record Keeping and Reporting-Database Design and Implementation
- Financial Assistance (i.e. Community Septic Betterment Program)
- Required Town Meeting Action for Adoption
- Required Legislative Review procedures, if required
- Schedule of Implementation
- Estimated Costs
- Level of Conformance With Town Goals
- Identification of Required Permits
- Environmental Impacts

Each of these items could potentially range from an educational program to a very aggressive program. It is ultimately up to the Town on the type and level of management program it feels will be successful. Coordination with town departments serves to promote a more stable and implementable plan.

5.2 Innovative/Alternative Solutions

An on-site wastewater disposal system is a system or mechanical device used to collect, treat, and discharge or reclaim wastewater from an individual dwelling without the use of community-wide sewers or a centralized treatment facility. A conventional on-site system includes a septic tank and a leach field. Types of alternative on-site systems include at-grade systems, mounded systems, media filters, small aerobic units and pressure distribution systems. On-site systems now include a number of alternatives that surpass conventional septic tank and leach field systems in their ability to treat wastewater. Alternative on-site processes, such as sand filters, aerobic treatment units, pressure distribution systems, and disinfection systems can be employed in a wide range of soil and site conditions.

Alternative systems require more monitoring and maintenance, making a strong case for these systems to be managed. In addition, they must be approved by MassDEP. The three main categories of on-site systems are:

1. Standard septic systems;
2. Mounded septic systems; and
3. Innovative/Alternative or home wastewater treatment systems.

I/A treatment and disposal systems tend to be modular and can be scaled from individual properties to serve clusters of properties at larger flows. Generally, I/A systems are smaller versions of conventional treatment system technologies, using either suspended or fixed media, or a combination of both. The specific mechanical and operational systems make them more conducive to individual or cluster systems and can reduce operation and maintenance requirements while performing at levels much higher than conventional Title 5 systems.

The alternatives analysis completed in this Report, concluded that the key language "these systems can be used anywhere a conventional Title 5 system can be installed" was a determining factor in considering I/A systems as a long term solution in Sudbury. Most of the identified High Priority Needs Areas are deemed "long-term unsustainable" with on-site systems. Based on soil and groundwater conditions identified in the Needs Areas, as well as having a feasible solution to collect, treat and discharge wastewater, I/A systems are not deemed the preferable alternative at this time for the High Priority Needs Areas.

Should areas outside of the High Priority Needs Areas where a SMP is proposed require wastewater solutions in the future, I/A systems could be considered. Also areas where the density of systems and soils and groundwater conditions are conducive, I/A systems will be reviewed through the local jurisdiction-Board of Health.

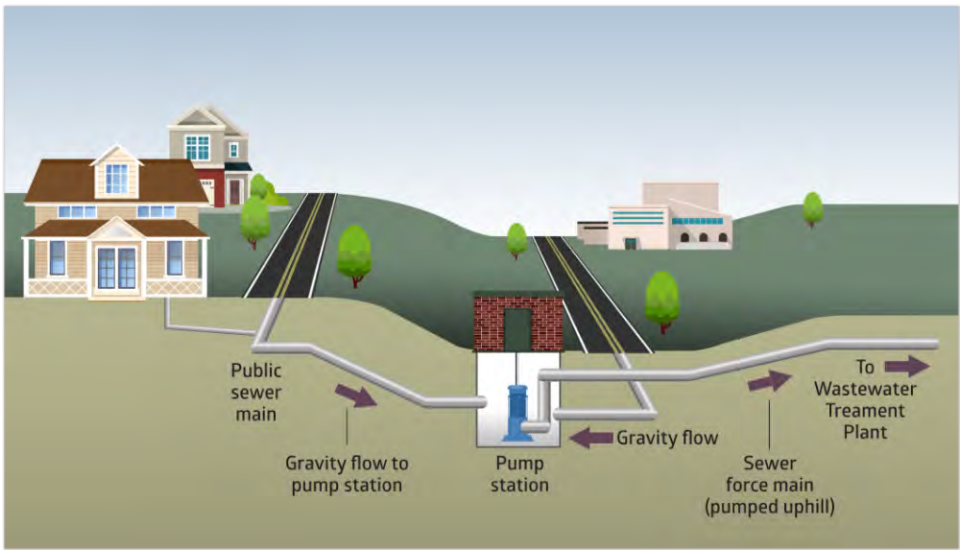
MassDEP maintains a current list of approved I/A systems on their website at https://www.mass.gov/guides/approved-title-5-innovativealternative-technologies#-overview-.

5.3 Collection System Solutions

5.3.1 Conventional Gravity Sewers

This alternative consists of a system that relies on gravity flow to collect wastewater at pumping stations in low lying areas which then pump it through a force main to a to wastewater treatment facilities. This system was favored in 2012 and again in this Update Report. The gravity system has a proven track record for performance, costs and maintenance with an overall 50-year service life or greater. With all options on the table, the gravity sewer system continues to provide the Town with the options it needs to meet all requirements. This Update Report recommends specific Needs Areas' limits with gravity sewer. The following summarizes the various types of sewer configurations evaluated for Sudbury. Figure 5-1 details a typical gravity sewer schematic.

Figure 5-1 Gravity Sewer Schematic



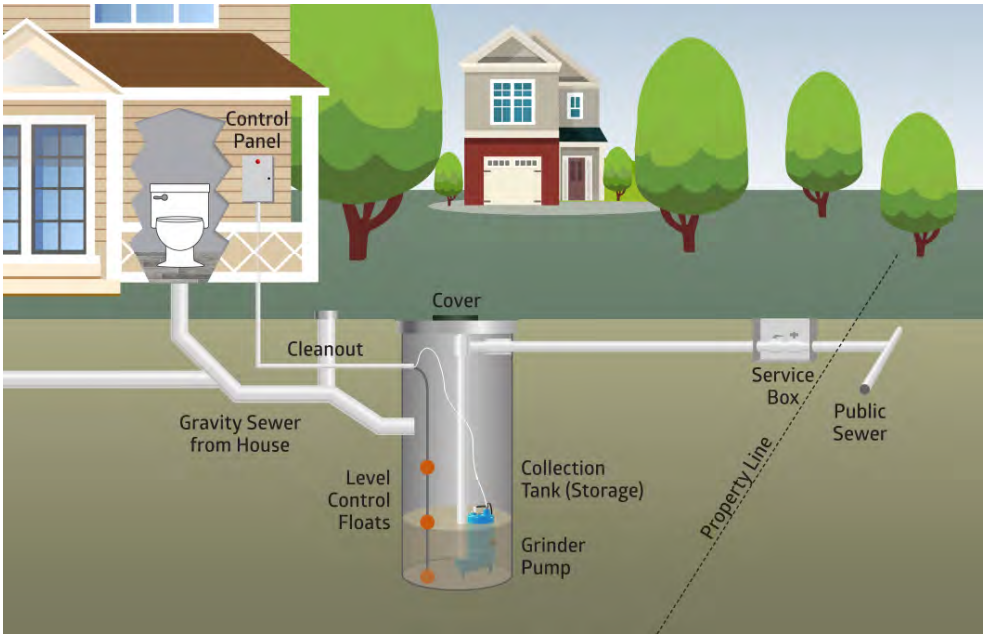
5.3.2 Low Pressure Sewers

A Low-Pressure sewer consists of a small diameter pipe that is connected to each house and has an individual grinder pump as part of the system. Low Pressure systems are typically utilized in areas where deep gravity sewers are too costly or site prohibitive, coastal areas as well as areas where topography is variable. This type of system is often eliminated due to the overall costs and maintenance required where homeowners typically own the individual small grinder pump stations. However, these Low-Pressure systems have been greatly updated and this alternative is viable for many types of collection

areas. Further, low pressure sewers can be used in combination with gravity sewers to reduce the overall project cost without the burden of every property owner having an onsite grinder pump. Figure 5-2 details a typical low-pressure schematic.

Low Pressure sewers may be utilized in specific areas and will be determined after survey is completed and preliminary design is started.

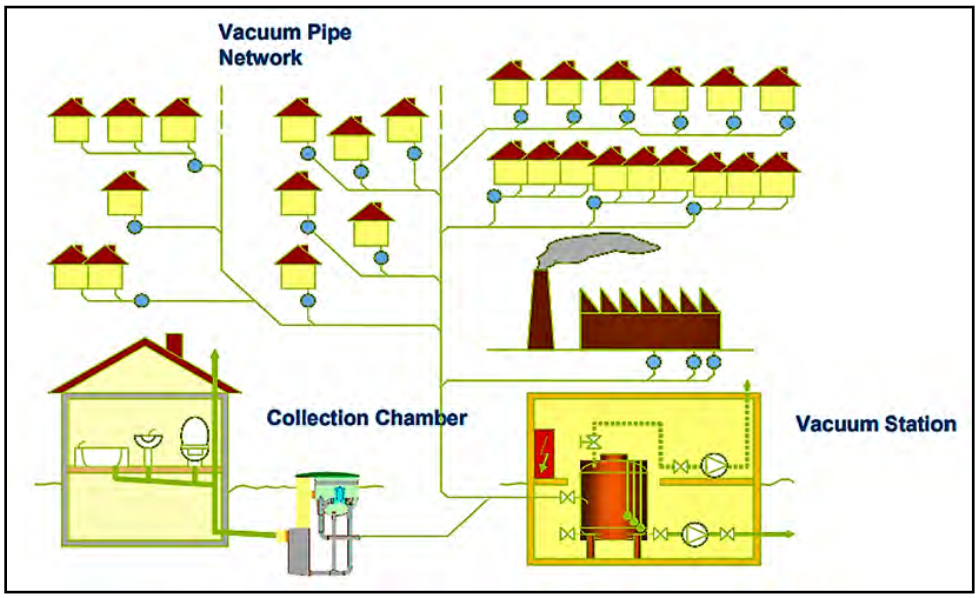
Figure 5-2 Low Pressure Sewer Schematic



5.3.3 Vacuum Sewers

Vacuum sewers are similar to the Low-Pressure sewer, except that the system operates on suction versus pressure. A single vacuum tank can service several homes, thus offering the potential to require fewer pumps per dwelling. Vacuum sewers do not require property owners to have electrically powered pumps or vacuums as the system is typically public infrastructure located offsite aside from the individual collecting pipes. This system was ruled out due to potentially high operation and maintenance costs, as well as operational difficulties during periods of low flows. This Update Report concluded that use of the Low-Pressure sewers in specific areas outweighed use of vacuum sewers. Figure 5-3 details a typical vacuum sewer schematic.

Figure 5-3 Vacuum Sewer Schematic



5.4 Local Treatment Solutions – Design and Build a Wastewater Treatment Facility and Groundwater Discharge Beds

Multiple sites have been evaluated for potential wastewater treatment facilities (WWTF) to house both a future Wastewater Treatment Facility and associated groundwater discharge of highly treated effluent. In the 2012 Report, 86 sites were initially screened for both a WWTF and groundwater discharge. After review and shortlisting based on a number of criteria, there were nine sites remaining that showed potential. At that time, they tested nine sites, which included:

- The Maeder Property – Horse Pond Road
- The Sykes Property – 625 Boston Post Road
- Former Bushey Property – 641 Boston post Road
- The Mahoney Property – Old Farm Road
- The Young Property – 804 Boston Post Road
- The Department of Public Works – 275 Old Lancaster Road
- Haskell Field – Fairbank Road
- The Johnson Property – 293/301 Old Lancaster Road
- Curtis Middle School – Pratts Mill Road

The testing eliminated six parcels to end up with three final sites for evaluation:

- Haskell Field
- Johnson Property
- Curtis Middle School

The 2012 Report concluded with the following recommendation for a site to design and construct a WWTF, as well as groundwater discharge beds:

- Former Bushey Property – WWTF
- Curtis Middle School – Groundwater Discharge of up to 350,000 gallons per day

It is important to note that the 2012 Report was only evaluating alternatives for the Route 20 area, so the sites were all concentrating on proximity to Route 20.

A comprehensive review of the sites identified in the 2012 Report were re-reviewed for potential use with the results of this CWMP, as well as a few new locations that are more relevant to the Needs Areas Town-wide versus concentrating on the Route 20 area alone and include:

<u>Wastewater Treatment Facility</u>

- Bushey Parcel – 641 Boston Post Road
- Department of Public Works – 275 Old Lancaster Road

<u>Groundwater Discharge Beds</u>

- Department of Public Works
- Curtis Middle School
- Haskell Field

- Johnson Property

All of the above sites were re-evaluated to address the needs identified in this CWMP Report, which differed from those in 2012. Priorities for location of facilities changed somewhat given the wider range of evaluating on-site systems throughout the entire Town. We also had differing priority areas with different flows.

Former Bushey Property – location for WWTF

Given its location, it did not make sense to try to utilize the Former Bushey Property located at 641 Boston Post Road as our CWMP Needs/Hybrid Needs were now located along Route 20, as well as beyond, so this site was no longer central to the proposed service area. With alternative sites that were more technically feasible, this site was eliminated from further consideration.

Department of Public Works Site – Location for WWTF and Groundwater Discharge

With some of the same rating criteria in hand as was used in 2012, a search for Town-owned land in appropriate locations to site wastewater infrastructure was completed. It made sense to evaluate the Department of Public Works at 275 Old Lancaster Road as the property was centrally located, owned by the Town (eliminates land acquisition costs) and currently operates under similar scenarios. The site has sufficient land area to locate a WWTF and would be staffed and run through the Department of Public Works Director. Coordinating this, as well as all other Department of Public Works activities at the same site, made sense technically, financially and politically. This site also offers areas of soils conducive to groundwater discharge, but on a far smaller scale than the needs for the full CWMP plan. This site, however, could be considered a future back-up site for groundwater discharge of some level. Initial CWMP investigations looked at the topography, as well as the wetland buffer areas from Hop Brook that posed limitations for groundwater discharge of significant amounts. Refer to Figure 5-4 for a conceptual layout for this site.

Johnson Property

In 2012 this parcel was vacant and showed promising soil and groundwater conditions for groundwater discharge. Since the 2012 Report was completed, this land has been development as a residential cul-de-sac and is no longer available for us. This site was permanently eliminated from further consideration.

Haskell Field

Preliminary evaluation from the 2012 Report short-listed this site as a potential for groundwater discharge. The final determination from 2012 after review of data collected concluded that Haskell Field was not suitable mostly due to lack of sufficient groundwater permeability and conductivity. With this data in hand, this site was permanently eliminated from further consideration.

Curtis Middle School Site

The Curtis Middle School site was re-evaluated for groundwater discharge with a full hydrogeological investigation to review all of the work completed and reported in 2012 to ensure that current conditions met today's permitting standards. The site looked at the ball field locations, which are outside of the Town's Zone II for Hop Brook and a short distance from the DPW. All previous hydrogeological evaluations were reviewed and proved to be a continued opportunity for the CWMP needs. There is opportunity for up to 350,000 GPD to be discharged at several locations in and around the existing ball fields. After thoughtful review of all sites, the Curtis Middle School site was determined to be the area most suitable for groundwater discharge. More detailed information on the hydrogeological evaluation is included in Section 6. The full Hydrogeological Report can be found in Appendix J. Refer to Figure 5-6 for a conceptual plan for this site.

22x34
PLOT SCALE: 1:8.2593

Woodard & Curran
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PE SEAL:

CLIENT INFO:

CWMP UPDATE
TOWN OF SUDBURY, MA

REV	MM/DD/YY	DESCRIPTION

JOB NO:	0231802.00
DATE:	AUGUST 2022
SCALE:	1" = 20'
DESIGNED BY:	CG
DRAWN BY:	CG
CHECKED BY:	JT
FILENAME:	SUDBURY CWMP UPDATE WWT*.dwg

DRAWING TITLE:

DPW SITE
WWTF SITE PLAN

DRAWING NO:

FIGURE 5-4

SHEET: 1 OF 1

\\woodardcurran.net\shared\Projects\0231802.00 Sudbury MA - CWMP Update\wip\Drawings\Sudbury CWMP Update WWTF Figures.dwg, Aug 25, 2022 - 11:18am CGRIFFITH

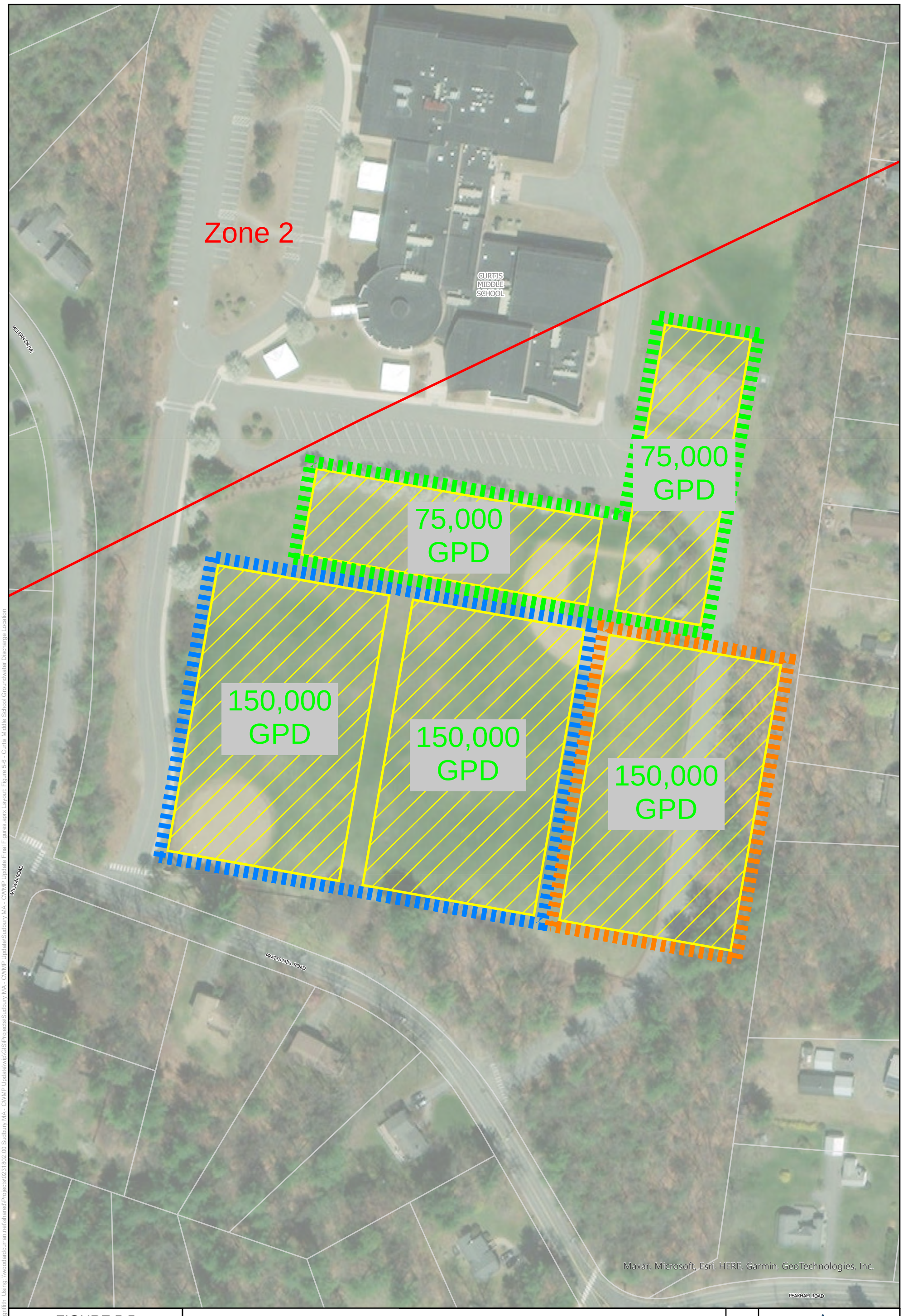

FIGURE 5-5:
Curtis Middle School Groundwater Discharge Location
CWMP Update
Town of Sudbury, MA

Legend

- Public Water Supply - Zone 2
- Parcels
- Proposed Wastewater Disposal Fields
- Base Phase (300K GPD)
- Intermediate Phase (450K GPD)
- Final Phase (600K GPD)

0 25 50 100 Feet

N

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Project #: 0231802.00
Map Created: May 2022

Figure Exported: 5/24/2022 By: cgriffith Using: \\woodardcurran.net\shared\Projects\0231802.00 Sudbury MA - CWMP Update\wip\GIS\Projects\Sudbury MA - CWMP Update Final Figures aprx Layout: Figure 5-6 - Curtis Middle School Groundwater Discharge Location

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5.4.1 Treatment Process

Although not definitive as the Town has not yet started a preliminary design, there were several processes looked at, which is discussed here and in Section 6. There are multiple treatment alternatives that could be employed within the proposed wastewater treatment facility. The appropriateness and cost-effectiveness of these systems vary based on size of system, use, and effluent limits (such as in the case of potential reuse of wastewater). Based on Woodard & Curran's recent experience with Membrane Bioreactor (MBR) facilities we believe this treatment technology is a good fit for Sudbury's needs and uses on the existing Department of Public Work's site. The facility can be designed as a modular / scalable facility, ready for expansion with a limited increase in cost allowing installation of some additional equipment, additional membranes, and pretreatment tanks to be completed at a later date. Woodard & Curran recently designed and constructed a 50,000 gpd facility in the Town of Easton, MA with multiple recharge fields in a drinking water Zone II area. In addition, we assisted the Town in reviewing and providing periodic construction monitoring for a 78,000 gpd MBR facility expandable to 150,000 gpd. Facilities of this size are typically constructed to convey the maximum daily flow using equalization tanks to trim of the peak hourly flows.

MBR is the combination of a membrane process utilizing microfiltration or ultrafiltration with a biological wastewater treatment process, the activated sludge process. It is now widely used for municipal and industrial wastewater treatment including reuse projects. The filtration step provides a robust solids removal process protecting downstream facilities which is typically the groundwater recharge system. There are many membrane manufacturers that sell "package systems" that could serve as the core of the WWTF. These include Kubota, US Filter. Suez Zeeweed amongst others. Membranes can be hollow fiber style or flat sheet style either of which would be applicable to this project. Figure 5-6 below presents a typical process flow diagram for the proposed treatment facility. Potential effluent limits are presented in Table 5-1 assuming the discharge is not designed for re-use.

Figure 5-6 WWTF Treatment Process Flow Diagram

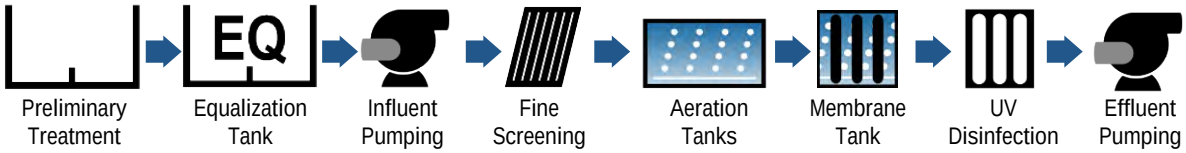

Table 5-1 MBR Typical Groundwater Discharge Permit Limits

Parameter	Potential Effluent Limits*
Flow (MGD)	Case by Case per design
pH	6.5-8.5
Fecal Coliform (é/100 mL)	200
UV Intensity	Case-by-case
BOD (mg/L)	30
TSS (mg/L)	30
Turbidity (NTU)	NA — not within Zone II
TOG (mg/L)	NA — not within Zone II
Total Nitrogen (mg/L)	10
Nitrate Nitrogen (ng/L)	10
Total Phosphorous (mg/L)	Case-by-case
Orthophosphate	Case-by-case
Oil & Grease	15 mg/l
VOGs (EPA 624/	Monitor & report
Other Constituents	Case-by-case

*Typical permit limits are based on the Guidelines for the Design, Construction, Operation and Maintenance of Small Wastewater Treatment Facilities With Land

Disposal, revised July 2018 outside of Zone II areas and with no re-use.

There are currently five wastewater systems with MassDEP Ground Water Discharge permits in Sudbury (one Draft). These five facilities are presented in Figure 2-2 and are included in Table 5-2. Of particular note is the Meadow Walk site which is a large mixed use site that was constructed in 2018.

Table 5-2 MassDEP Groundwater Discharge Permits in Sudbury

Site	Use	Location	Permit No.	Permitted Capacity (MDF)
PRI Longfellow Glen	Condominiums	655 Boston Post Rd	904-1	25,000 gpd
Meadow Walk	Mixed Use	203 Bay Rd	23-5	50,000 gpd
Lincoln-Sudbury High School	School	390 Lincoln Rd	378-2	20,000 gpd
Cold Brook Crossing	Apartment-Residential	101 Cold Brook Drive	996-0	49,755 gpd
Sudbury Pines Extended Care	Extended Care Facility	462 Boston Post Road	Draft Permit	21,000 gpd

5.5 Regional Solutions (Treatment & Disposal)

Several regional solutions were considered for treatment and disposal of Sudbury's wastewater. As the Needs Areas with high priorities are located more to the south of Sudbury, on potential connections to Framingham, Wayland, and Marlborough were considered. A connection to another community would require an Inter-Municipal Agreement (IMA) to define the connection (capacity purchase) and ongoing operational cost structure. Typically, both communities benefit with such an agreement because the cost burden of various utility assets and fixed costs are shared. Negotiating an inter-municipal connection is typically on the order of a few years from beginning to end and requires active participation at the leadership of both communities. Political challenges can be a hurdle to establishing such a connection. The following outlines the viability of these three connections.

5.5.1 Framingham (MWRA)

The 2012 PER contemplated and subsequently eliminated a potential sewer connection to Framingham which is connected to the MWRA system. This connection would be immediately to the south off of Raymond Road or Nobscot Road depending on Framingham's system capacities in those location. This would be the closest regional alternative connection for the highest priority Needs Area. Jim Barsanti, Framingham's Water and Sewer Director at the time was contacted regarding a sewer connection and confirmed that WSI's conclusions for this alternative are still appropriate. Even though this alternative would provide future expansion flexibility, it was eliminated for the following reasons (Refer to Section 5.4 of the PER, at https://sudbury.ma.us/dpw/cwmp):

- Complexity of the legislative approval process
- Up-front connection costs of the I/I mitigation
- The need to purchase water for the sewer district properties (or Inter-basin Transfer)
- Uncertainty of future capital improvements to the complex Framingham/MWRA transport network

5.5.2 Wayland

A connection to Wayland was not considered in the 2012 PER. The Town of Wayland has a very small sewer system which includes NPDES Surface Water and MassDEP Groundwater Discharge Permits. Connecting to Wayland would include infrastructure along Wayland's Route 20 commercial corridor. Wayland's Town Engineer was contacted and he indicated there may be some capacity available but there are several moving parts including the new development, potential plant expansion and potential additional groundwater recharge construction. At the time of this Report writing, Wayland was in the process of planning, design, and construction of a new connection and associated pumping station located off Route 20 in the western section of Town directly abutting the Town of Sudbury. This location directly abuts the Route 20 East Study Area. The early discussions between the Towns were positive for a potential future Intermunicipal Agreement for Wayland to service Sudbury's Route 20 East area. If this were to be considered at a future date, Sudbury would file a Notice of Project Change with MEPA. Important to note that this is not a consideration for this CWMP and the Route 20 East Study Area is recommended for on-site wastewater system management.

5.5.3 Marlborough Easterly Wastewater Treatment Plant

The 2012 PER considered a connection to the Marlborough Easterly Wastewater Treatment Plant (WWTP) which is located at 860 Boston Post Road in Marlborough and includes estimates for such a connection. Discussions with the City detailed that the maximum design flow to Marlborough's East Plant is 5.5 MGD and there are periods of the year that they meet that capacity. The discussions concluded that there currently is no extra capacity to consider taking Sudbury on as an Inter-municipal customer and therefore this solution was eliminated from further consideration

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6. UPDATE OF 2012 REPORT RECOMMENDED SITES FOR WWTF AND DISCHARGE / UPDATED FINAL RECOMMENDED PLAN

After a comprehensive review of all work done in 2012 Report and addressing changes from a 2012 Project Evaluation Report (PER) that concentrated only on the Route 20 geographic area, to a full 2021/2022 Comprehensive Wastewater Management Plan (CWMP), this section presents a Final Recommended Plan that includes the design and construction of a WWTF at the existing DPW location at 275 Old Lancaster Road, groundwater discharge and wastewater collection system at the Curtis Middle School under existing ballfields to support the Hybrid Needs Plan as shown on Figure 6-1. Figure 6-1 details the full evaluated Final Recommended Plan with The Needs Areas, as well as prioritized phases with each's Near Term flows (as currently existing) and Build Out flows. Areas recommended for septage management plan are also shown. This Section includes process, size, siting location and updated costs as a new, revised Final Recommended Plan.

6.1 Updated Needs Areas

The Town of Sudbury is completing its Comprehensive Wastewater Management Plan (CWMP) after years of study to determine the long-term sustainability of on-site wastewater systems and their potential impact to environmental resources, but most notably the potential threat to the Town's major drinking water supplies. The Town is proposing to remove on-site wastewater disposal systems from five geographic areas of Town, identified as Needs Areas in this Report, in order to provide resource protection in areas where physical site conditions prohibit the proper operation and maintenance of these systems. The major goal is to remove on-site wastewater systems in areas where there is a threat to degrade the Town's major drinking water supplies in the Raymond Road and Hop Brook Aquifers. The Final recommended plan is to connect these Needs Areas on a phased basis to a new, proposed MBR Wastewater Treatment Facility (WWTF) to be constructed at the existing Department of Public Works site. The wastewater will be treated at the new WWTF and then transported to new groundwater discharge beds located under existing ball fields at the Curtis Middle School. The recommended plan includes approximately 17 miles of sewer collection system and five pumping stations. The sewer is proposed in the CWMP to be designed and constructed over a 20-year planning period, with each Needs Area phased from highest priority to lowest priority throughout the period. The 20-year Project proposes constructing approximately 17 miles of sewer over the planning period. Conceptual designs look to construct all new sewer in existing roadways/rights-of-ways, thus eliminating potential impacts to virginal land areas. A map of the five geographic areas, Needs Areas, shown over the Town's base mapping, "Wastewater Needs and Recommended Solutions", is shown on Figure 6-1. It is important to note that in the Final Recommended Plan, several individual Needs Areas were combined as a Hybrid Needs Area based on potential impact to water resources. Another Needs Area, Route 20 East, is being precluded from the CWMP for further evaluation at a future time through a MEPA Notice of Project Change. So while five geographic areas were identified as needing an off-site solution, actual "Needs Areas" are combined into four named priority areas:

- Phase 1 - Route 20 (Sub-Area A), Phase 1A - Raymond Road South (Sub-Area A)
- Phase 2 – Raymond Road North (Sub-Area A)
- Phase 3 – Goodman Hill (Sub-Area A) & Route 20 (Sub-Area B)
- Phase 4 – Route 20 East*

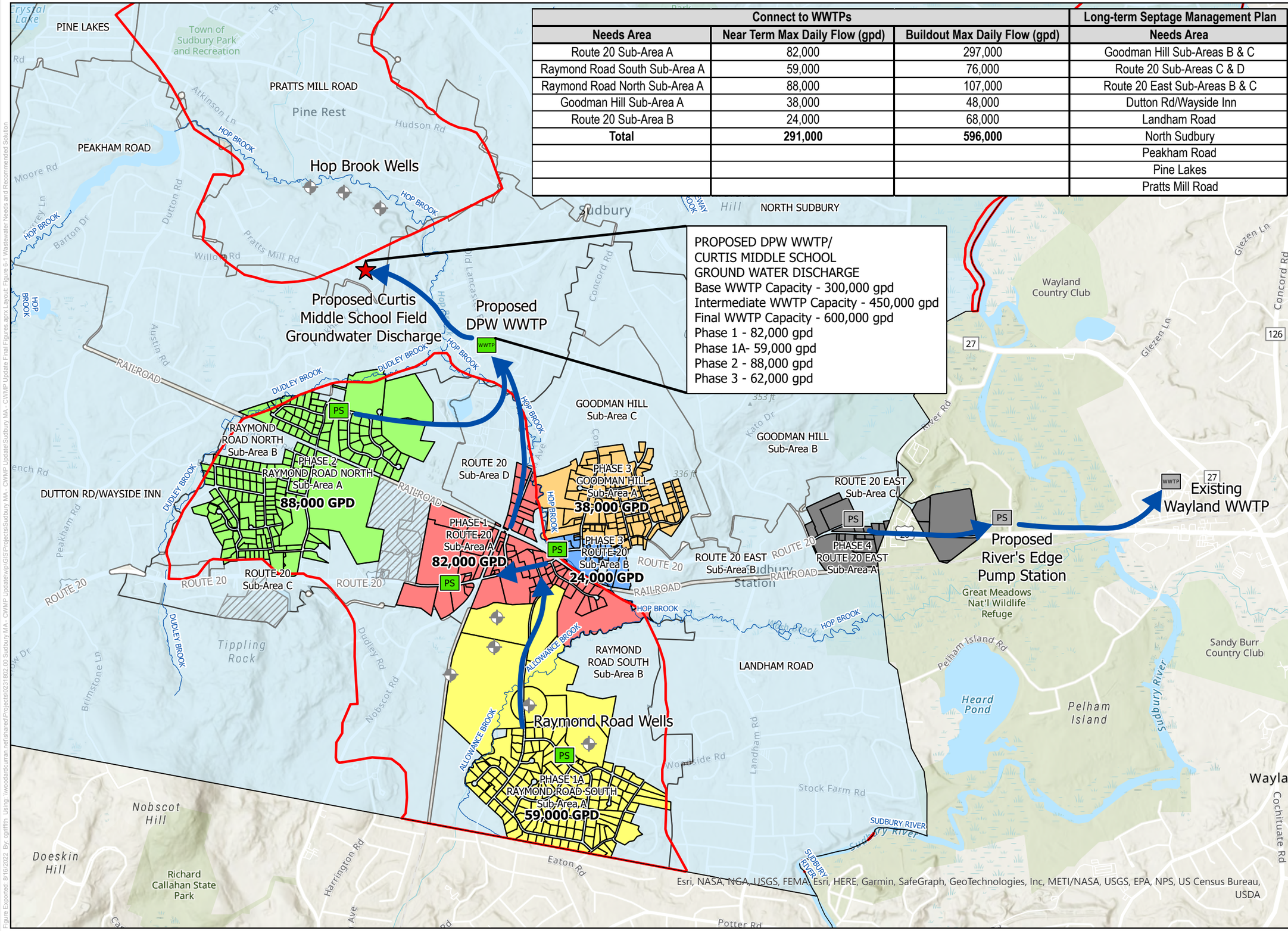
* Route 20 East, abutting the Wayland Town line, will be further evaluated in the future if the need arises with this group. Until such time, this Study Area will be recommended for inclusion in a future SMP

Based on a comprehensive data review, criteria such as soils, groundwater, lot size, environmental constraints pose constraints to the long-term sustainability on on-site wastewater in six geographic areas of Town. Changes in land use, development densities and new development and the continual hardships faced by property owners to adapt on-site systems to severe constraints continue to pose issues in most areas. In addition to reviewing data including soils, groundwater, on-site system records, Assessor, Planning Department, multiple Town Department meetings were held to vet the need for off-site wastewater solutions. These meetings proved invaluable in finalizing the Needs Area delineations. The CWMP/SEIR recommends a plan for removal of the on-site wastewater disposal systems for resource preservation and protection, again, most notably for preservation and protection of the Town's major drinking water supplies.

Final Wastewater Needs and Recommended Plan

CWMP Update
Town of Sudbury, MA

Connect to WWTPs			Long-term Septage Management Plan
Needs Area	**Near Term Max Daily Flow (gpd)**	**Buildout Max Daily Flow (gpd)**	**Needs Area**
Route 20 Sub-Area A	82,000	297,000	Goodman Hill Sub-Areas B & C
Raymond Road South Sub-Area A	59,000	76,000	Route 20 Sub-Areas C & D
Raymond Road North Sub-Area A	88,000	107,000	Route 20 East Sub-Areas B & C
Goodman Hill Sub-Area A	38,000	48,000	Dutton Rd/Wayside Inn
Route 20 Sub-Area B	24,000	68,000	Landham Road
Total	**291,000**	**596,000**	North Sudbury
			Peakham Road
			Pine Lakes
			Pratts Mill Road



Legend

- Groundwater Discharge
- Wastewater Treatment Plant
- Pump Station
- Public Wells
- Public Water Supply - Zone 2
- Existing GWD Properties
- Streams
- Goodman's Hill Project Area
- Raymond Road North Project Area
- Raymond Road South Project Area
- Route 20 Sub-Area A Project Area
- Route 20 Sub-Area B Project Area
- Septage Management Plan Areas

Figure 6-1

0 500 1,000 2,000 Feet

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Map Created: March 2022

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Figure Exported: 8/16/2022 By: cgriffith Using: \\woodardcurran.net\shared\Projects\0231802.00 Sudbury MA - CWMP Update Final Figures.aprx Layout: Figure 6-1 Wastewater Needs and Recommended Solution

6.2 Conceptual Layout of Collection System

The update from 2012 on the conceptual layout is evident in that the Needs Areas encompass a wider geographic area, as well as the proposed site selection for the Wastewater Treatment Facility is changed to be more central to the revised Needs Areas. Each Needs Area Phase is anticipated to utilize a single pumping station to either pump to the proposed WWTF or pump to the centrally located Route 20 Sub-Area A pump station that would then relay wastewater to the treatment facility (Figure 6-2). Individual collection systems are comprised primarily of gravity sewers to their respective pumping stations but may use low pressure sewers as determined in final design based on site topography. Specifically, a few low pressure sewers are anticipated in Raymond Road North. Consideration for future Phases will be made during design of each prior phase.

Refer to Figures 6-3 through 6-6 to detail conceptual infrastructure layouts for each Needs Area, as well as locations of proposed WWTF and groundwater discharge. The conceptual collection system contains a mixture of low-pressure and gravity sewer. While topographical survey has not been completed, the layouts have been shown as proposed in conceptual layout Figures 6-3 through 6-6.

6.3 Updated Groundwater Discharge Hydrogeological Evaluation at Curtis Middle School and DPW

A comprehensive review of all hydrogeological work completed as part pf the 2012 PER was initiated as part of this CWMP. Refer to https://sudbury.ma.us/dpw/cwmp for the full 2012 PER for sections of the previous hydrogeological evaluation. There were some major changes to the 2012 Report, as well as the fact that over a decade had passed since the initial work was completed. Woodard & Curran subcontracted Callahan Consulting (CCI) to evaluate and review all previous work, as well as conduct site visits as part of the scope of services. Work reviewed included documents, hydrogeologic data collected and calculations made by the Town's consultants that produced the 2012 PER Report to evaluate the basis of the conclusions and recommendations presented in the Project Evaluation Report (PER). Woodard & Curran provided CCI with the following documents produced for the 2012 Report:

- Project Evaluation Report (PER) WSE, June 2012 with Town Revisions incorporated June 2013.
- Chapter 7.0 – Hydrogeological Investigation for Disposal Sites
- Appendix C: Initial Testing Results
- June 16, 2003 Schofield Brothers to Technical Advisory Committee (Former Bushey Property and 625 Boston Post Road)
- March 31, 2004 Schofield Brothers to Sudbury Board of Health
- (Soil Testing at 275 Old Lancaster Road)
- June 14, 2004 Schofield Brothers to Technical Advisory Committee (DPW Property 275 Old Lancaster Road)
- August 13, 2007 Schofield Brothers to Jody Kablack, Director of Planning and
- Community Development (Young Property)
    - Appendix D: Subsurface Data Results - Letter to Town of Sudbury February 18, 2010 WSE February 18, 2010 Subsurface Data Results in a Letter to Ms. Kablack, Town Planner regarding Subsurface Data Results
    - Appendix E: WSE's DEP Approved Hydrogeologic Work Plan - Curtis Middle School Wastewater Disposal submitted on August 6, 2010 to MassDEP NERO's Criss Stephen and Kevin Brander.
    - Appendix A: WSE February 18, 2010 Subsurface Data Results in a Letter to Ms. Kablack, Town Planner regarding Subsurface Data Results
    - Appendix A: Soil Borings Logs (Haskell Field, CMS and Old Lancaster Road)
    - Appendix B: Slug Test and Particle Size Analysis
    - Appendix C: Water Table Mounding Calculations
    - Appendix B: CMS Preliminary Site Screening - Interoffice Memorandum November 3, 2009: Preliminary Feasibility Study

Conceptual Sewer Layout

CWMP Update
Town of Sudbury, MA

N

Legend

- Groundwater Discharge
- Wastewater Treatment Plant
- Pump Station
- Gravity Sewer
- Low Pressure Sewer
- Force Main
- Goodman's Hill Project Area
- Raymond Road North Project Area
- Raymond Road South Project Area
- Route 20 Project Area

Figure 6-2

0 450 900 1,800 Feet

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Esri, NASA, NGA, USGS, FEMA, Esri, HERE, Garmin, SafeGraph, GeoTechnologies, Inc, METI/NASA, USGS, EPA, NPS, US Census Bureau, USDA

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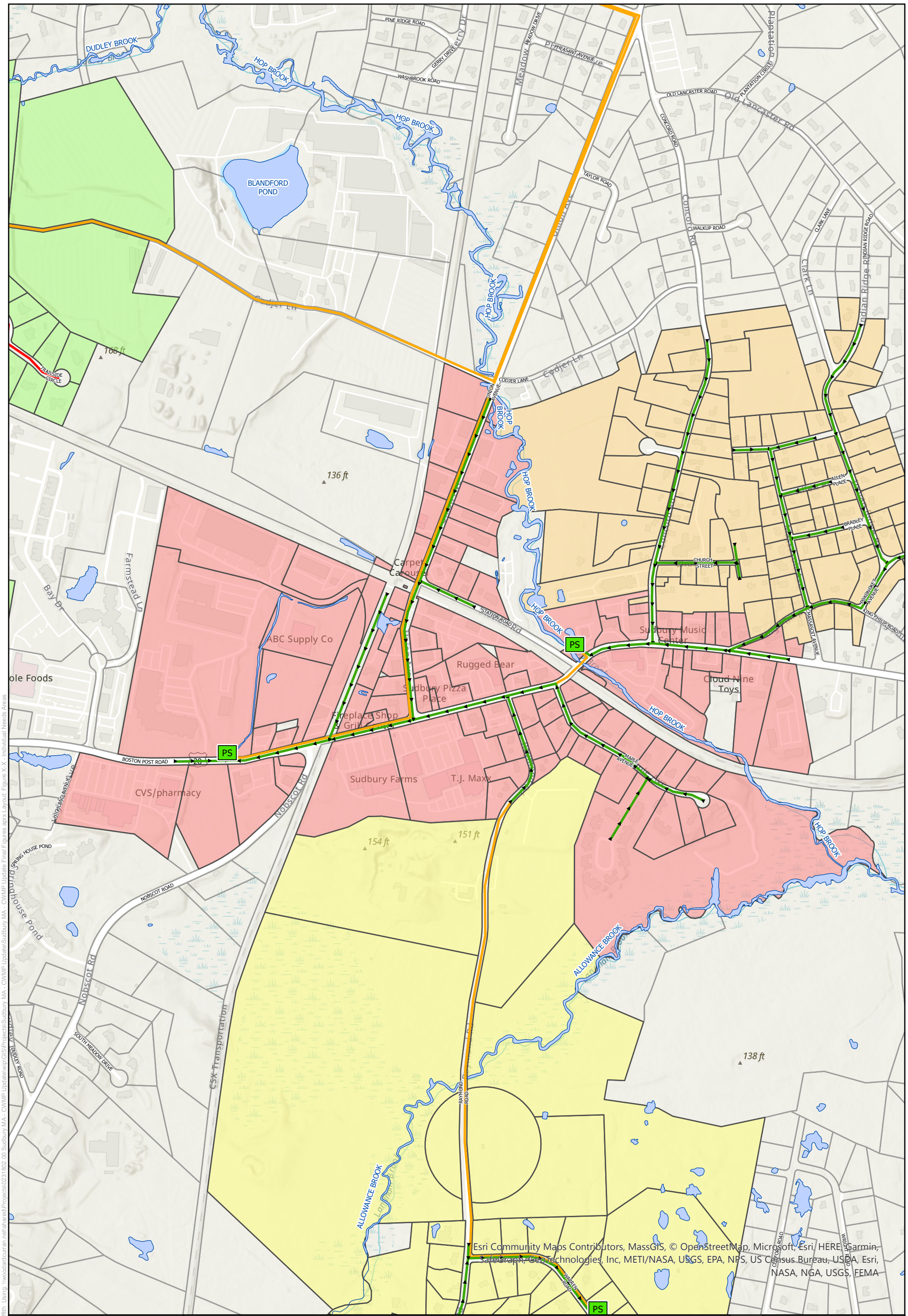

Route 20 Needs Area

CWMP Update
Town of Sudbury, MA

Legend

- Groundwater Discharge
- WWTP Wastewater Treatment Plant
- PS Pump Station
- Gravity Sewer
- Low Pressure Sewer
- Force Main
- Goodman's Hill Project Area
- Raymond Road North Project Area
- Raymond Road South Project Area
- Route 20 Project Area

Conceptual Sewer Layout
Figure 6-3

0 150 300 600 Feet

N

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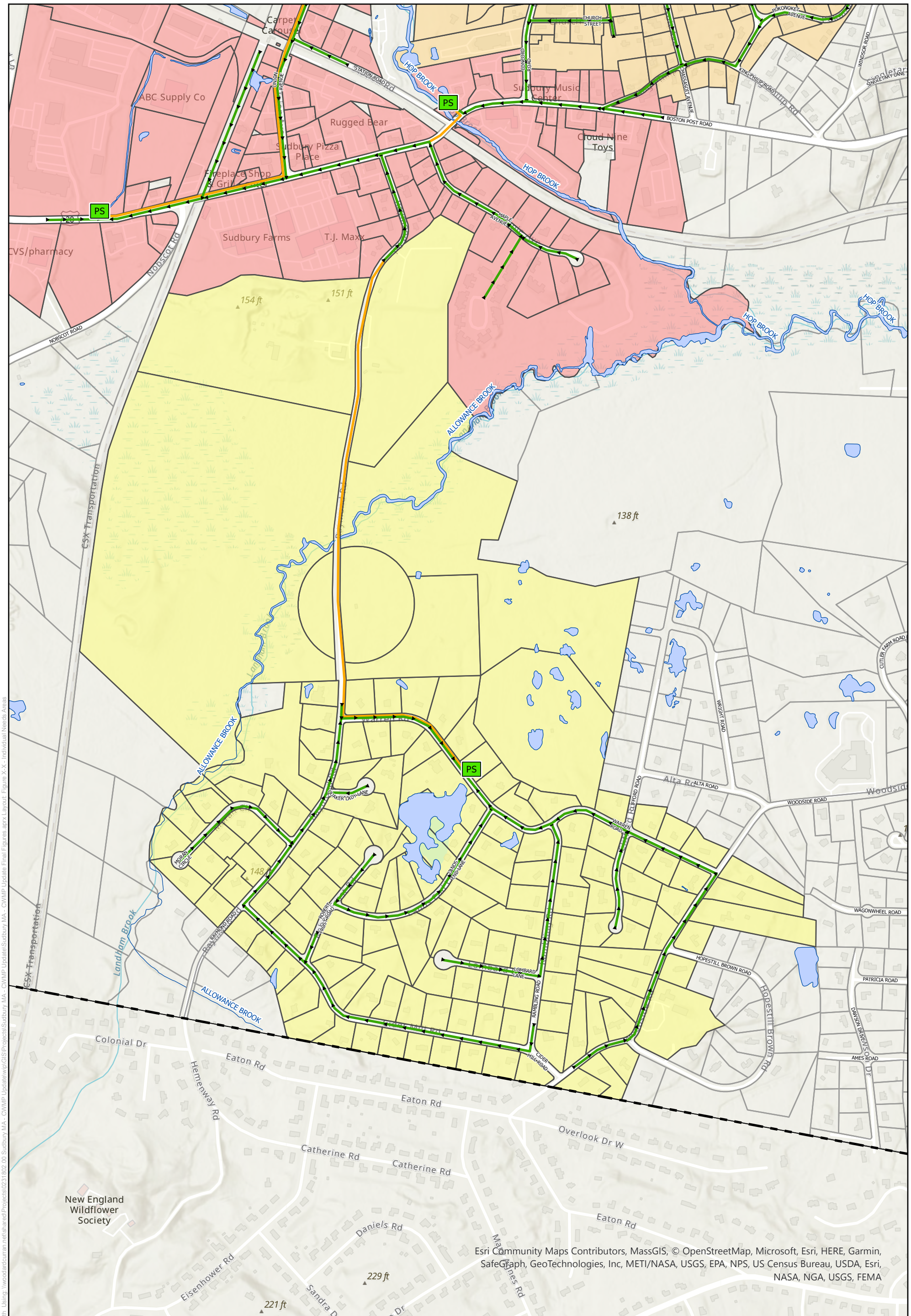

Raymond Road South Needs Area

CWMP Update
Town of Sudbury, MA

Legend

- Groundwater Discharge
- WWTP Wastewater Treatment Plant
- PS Pump Station
- Gravity Sewer
- Low Pressure Sewer
- Force Main
- Goodman's Hill Project Area
- Raymond Road North Project Area
- Raymond Road South Project Area
- Route 20 Project Area

Conceptual Sewer Layout
Figure 6-4

0 150 300 600 Feet

N

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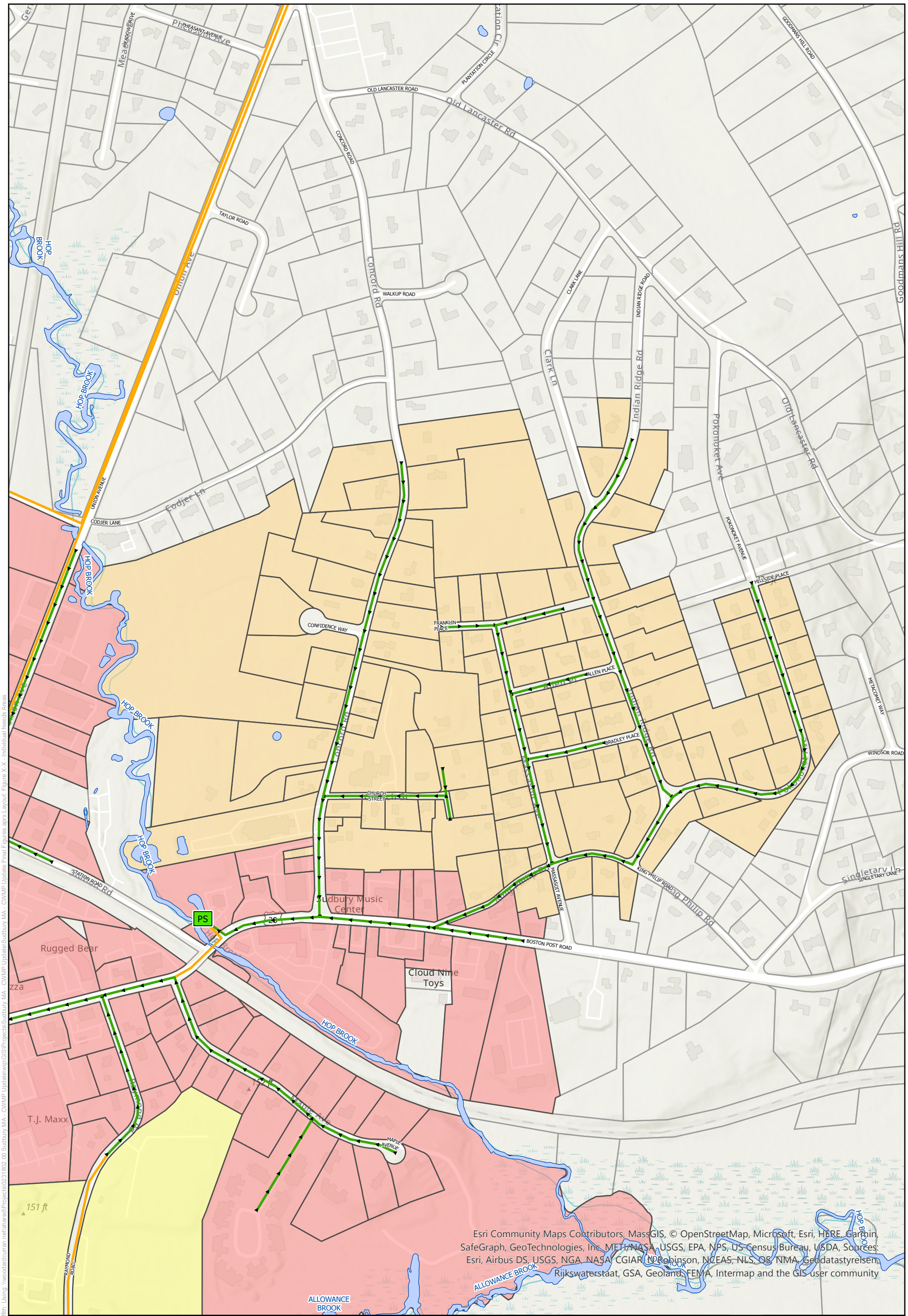

Goodman's Hill Needs Area

CWMP Update
Town of Sudbury, MA

Legend

- Groundwater Discharge
- Wastewater Treatment Plant
- Pump Station
- Gravity Sewer
- Low Pressure Sewer
- Force Main
- Goodman's Hill Project Area
- Raymond Road North Project Area
- Raymond Road South Project Area
- Route 20 Project Area

Conceptual Sewer Layout
Figure 6-5

0 100 200 400 Feet

N

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Project #: 0231802.00
Map Created: August 2022

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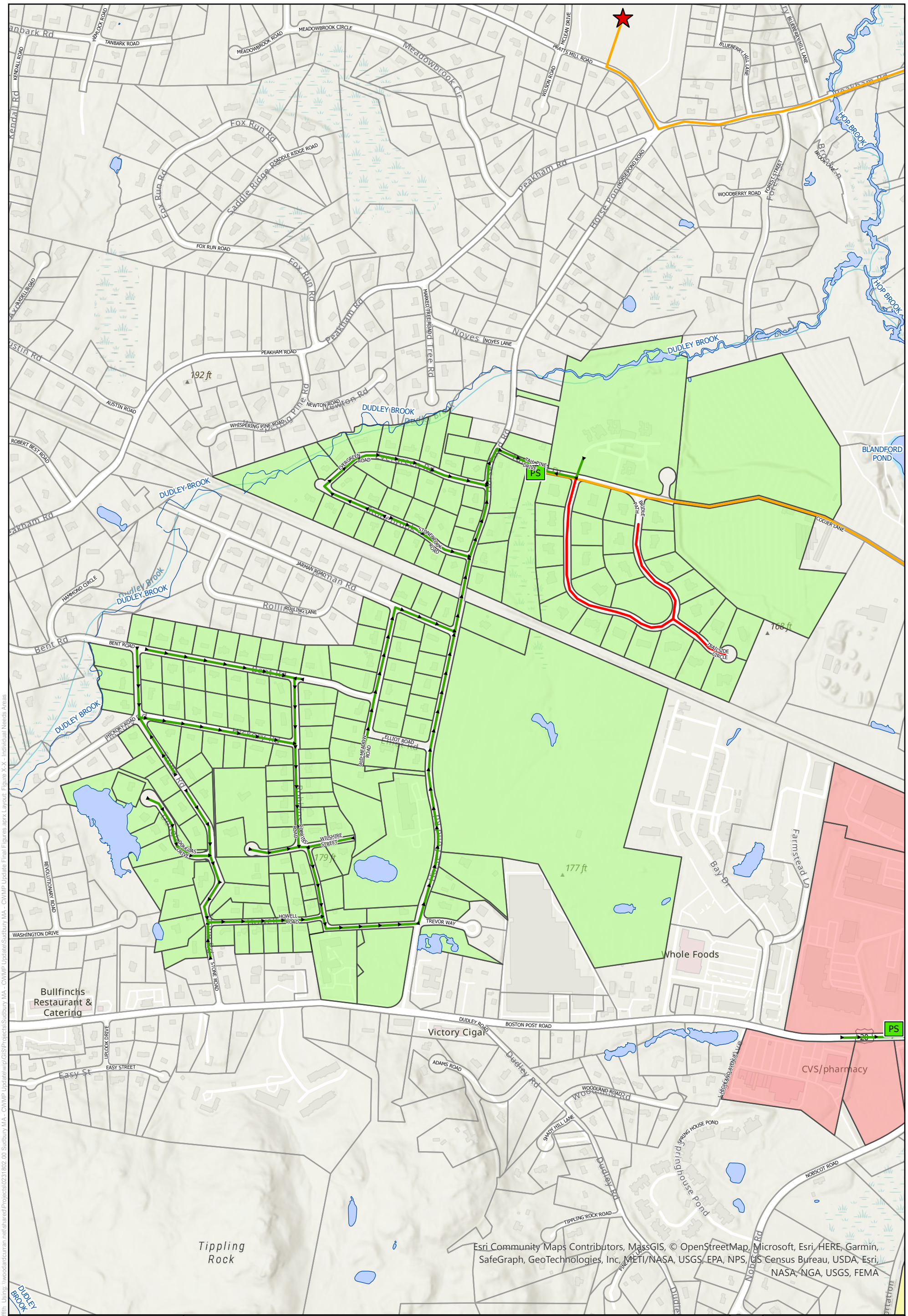

Raymond Road North Needs Area

CWMP Update
Town of Sudbury, MA

Legend

- Groundwater Discharge
- WWTP Wastewater Treatment Plant
- PS Pump Station
- Gravity Sewer
- Low Pressure Sewer
- Force Main
- Goodman's Hill Project Area
- Raymond Road North Project Area
- Raymond Road South Project Area
- Route 20 Project Area

Conceptual Sewer Layout
Figure 6-6

0 150 300 600 Feet

N

WOODARD & CURRAN

Project #: 0231802.00
Map Created: August 2022

Figure Exported: 8/16/2022 By: cgriffith Using: \\woodardcurran.net\shared\Projects\0231802.00 Sudbury MA - CWMP Update\wip\GIS\Projects\Sudbury MA - CWMP Update Final Figures aprx Layout: Figure X-X - Individual Needs Areas

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Any reliance upon the map or data contained herein shall be at the users' sole risk. **Data Sources:**

- Final Report on Updated Water Distribution Facilities Analysis for Sudbury Water District, 1998, H2O Engineering Consulting Associates, Burlington, MA
    - Water System Hydraulic Model Report, Sudbury Water District, Massachusetts January 2017, Stantec
    - Sudbury WATER DISTRICT'S 2017, 2018 AND 2019 ANNUAL STATISTICAL REPORTS
    - Route 20 Business District Wastewater Management Plan Update, August 2010, WSE

NOTE: Refer to Appendix B for copies of these documents, including the 2012 PER. Full access is at https://sudbury.ma.us/dpw/cwmp.

After review of all data above, the conclusions for the Curtis Middle School site are as follows:

Based on the results of a loading test conducted between December 19 and 26, 2010 and the analytical mounding analysis, the former consultant concluded that a discharge of 350,000 gpd would produce a 3.22-foot mound at 1,000 feet from a soil absorption system (SAS) constructed at the Curtis Middle School. The consultant characterized the mound as having a "relatively small impact at radial distances beyond 1,000 ft." and went on to state, "the 'minor rise at the corners of the athletic fields indicate that the permeable subsurface deposits between 30 and 51 feet are laterally extensive and in good hydraulic communication. This connection is ideal for long term assimilation of the planned discharge."

The Hydrogeologic Investigation Plan for the Curtis Middle School was designed in accordance with 314 CMR 5.09 and approved by MassDEP on October 12, 2010. A Project Evaluation Report (PER) was prepared for the Town in 2010, but was never submitted to MassDEP for review and approval. This Report is included in Appendix B and can be fully accessed at https://sudbury.ma.us.

CCI reviewed the hydrogeologic data collected at the Curtis Middle School and calculations presented in 2010 and their June *2012 PER with Town Revisions incorporated June 2013*. It is our opinion that industry-wide acceptable methods were used to gather and interpret field data and applied appropriately conservative analytical analyses to calculate potential mounding.

It is our understanding that the 2012 analysis is adequate to meet MassDEP's requirements for a hydrogeologic evaluation of the Curtis Middle School site. The Town has had several meetings with MassDEP to discuss the efforts to date and the proposed recommended plan to utilize the Curtis Middle School site for groundwater discharge. The initial planning will propose to develop the site in phases, starting with the first Phase with discharge proposed of 300,000 gpd, which is well under the 350,000 gpd that testing has shown to be available. The Town will work with MassDEP to comply with 314 CMR 5.00, the Groundwater Discharge Program and with the filing of WP83 – Hydrogeological Evaluation Report to start this process. The Town will engage with MassDEP early in this process to coordinate efforts for additional hydrogeologic work to be completed before the actual filing of the permit. Once the Town votes to move forward towards implementation, MassDEP staff will be contacted to start this process. At this time, discussion will center on the additional work to be completed in order to support a future Massachusetts Groundwater Discharge Permit for this system. Groundwater disposal capacities are anticipated to align with and be constructed in concert with the WWTF capacities, but depending on capital costs and sequencing at the time of final design and construction may be adjusted as appropriate.

6.4 Final Recommended Wastewater Treatment Technology

There are multiple treatment alternatives that could be employed within the proposed wastewater treatment facility. The appropriateness and cost-effectiveness of these systems vary based on size of system, use, and effluent limits (such as in the case of potential reuse of wastewater). Based on Woodard & Curran's recent experience with Membrane Bioreactor (MBR) facilities we believe this treatment technology is a good fit for Sudbury's needs and uses on the existing Department

of Public Work's site. The facility can be designed in a modular fashion with expansion in mind with a limited increase in cost allowing installation of some additional equipment, additional membranes, and pretreatment tanks to be completed at a later date. Facilities of this size are typically constructed to convey the maximum daily flow using equalization tanks to trim of the peak hourly flows using influent equalization tanks.

MBR is the combination of a membrane process utilizing microfiltration or ultrafiltration with a biological wastewater treatment process, the activated sludge process. It is now widely used for municipal and industrial wastewater treatment including reuse projects. The filtration step provides a robust solids removal process protecting downstream facilities which is typically the groundwater recharge system. There are many membrane manufacturers that sell "package systems" that could serve as the core of the WWTF. These include Kubota, Ovivo SiC, and Suez Zeeweed amongst others. Membranes can be hollow fiber style or flat sheet style either of which would be applicable to this project. Figure 6-7 below presents a typical process flow diagram for the proposed treatment facility. Potential effluent limits are presented in Table 6-1 assuming the discharge is not designed for re-use.

Figure 6-7 WWTF – Treatment Process Flow Diagram

Table 6-1 MBR Typical Discharge Permit Limits

Parameter	Potential Effluent Limits*
Flow (MGD)	Case by Case per design
pH	6.5-8.5
Fecal Coliform (é/100 mL)	200
UV Intensity	Case-by-case
BOD (mg/L)	30
TSS (mg/L)	30
Turbidity (NTU)	NA — not within Zone II
TOG (mg/L)	NA — not within Zone II
Total Nitrogen (mg/L)	10
Nitrate Nitrogen (ng/L)	10
Total Phosphorous (mg/L)	Case-by-case
Orthophosphate	Case-by-case
Oil & Grease	15 mg/l
VOGs (EPA 624/	Monitor & report
Other Constituents	Case-by-case

*Typical permit limits are based on the Guidelines for the Design, Construction, Operation and Maintenance of Small Wastewater Treatment Facilities With Land Disposal, revised July 2018 for outside of Zone II areas and with no re-use.

The WWTF and groundwater disposal will be constructed in three phases using modular wastewater treatment trains of 150,000 gpd per train. Phase A WWTF (Base) will include two trains to support Phase 1 with capacity of 300,000 gpd, Phase 1A and buildout within the area. Phase B WWTF (Intermediate) will add a third train to support Phase 2 and Phase C WWTF (Final) expansion will add a fourth and final train to support Goodman Hill and final buildout WWTF capacity of 600,000 gpd.

At this planning level stage, we are utilizing comparable facility designs, as well as discharge permit limits, for Sudbury's Final Recommended Plan, which is the most up to date information at the time of this Report. This includes a typical

Membrane Bio-Reactor (MBR) with influent equalization and UV disinfection. It is understood that these examples may change over time and may be different at the time Sudbury moves forward with implementation of the Final Recommended Plan contained herein. A future Groundwater Discharge Permit application and process will most certainly drive what is appropriate for the then current situation.

6.5 Revised Location for New Wastewater Treatment Facility at DPW Location

As detailed in Section 5, a thorough review of potential sites to locate a new Wastewater Treatment Facility (WWTF) was completed. The 2012 plan proposed a site located on Boston Post Road that was proximate to the proposed area of sewer-only Route 20. The CWMP expanded the study Town-wide, thus geographic areas changed significantly from the 2012 Study. Given the locations of areas identified as Needs Area, a more central location was called for. The Department of Public Works site at 275 Old Lancaster Road was selected due to location, as well as current operations at this site are comparable and the proposed wastewater system will be under the DPW jurisdiction. This makes sense from a staffing and energy savings opportunity, with staff located at the site and not having to travel to another location, thus saving Greenhouse Gases as well.

6.6 Opinion of Probable Costs

The Opinion of Probable Costs is presented below in Table 6-2 for each Phase of sewer. These costs broken down by project phase include both costs of the conceptual collection systems for each phase (i.e. proposed gravity sewer, low pressure sewer, force mains, and pump stations) as well as costs to construct the proposed WWTF and upgrade its capacity in the future (Treatment & Disposal). WWTF capacity upgrades are proposed during Phases 2 & 4 of the project. Proposed collection system costs were calculated by assuming unit costs of $500 per linear foot of gravity sewer, $175 per linear foot of low-pressure sewer, and $250 per linear foot of force main. WWTF costs included construction of the MBR facility at the DPW property, construction of the soil absorption system at the Curtis Middle School athletic fields, and construction of a pump station located at the WWTF to transport flows to the proposed groundwater discharge site. Final costs also include 25% contingency, engineering final design, permitting, hydrogeological reports, construction phase administration services, police details, and an allowance for other miscellaneous costs such as land and easement acquisitions. The total project cost is estimated to be $117M. These costs assume the project's design, bidding, and construction follow the schedule outlined in the proposed Capital Improvements Plan (Table 6-4).

Table 6-2 Opinion of Probable Costs

Phase	Needs Area Description	Collection	Treatment & Disposal	Conceptual Project Cost Total
1	**Route 20 Sub-Area A**	$14,000,000	$32,900,000	**$63,100,000**
1A	**Raymond Road South**	$16,200,000		
2	**Raymond Road North**	$20,300,000	$10,900,000	**$31,200,000**
3	**Route 20 Sub-Area B & Goodman Hill Sub - Area A**	$11,800,000	$10,900,000	**$22,700,000**
4	**Route 20 East Sub-Area A***	N.C.	N.C.	**N.C.**
Total		**$62,300,000**	**$54,700,000**	**$117,000,000**

*This project would require future consideration and a Notice of Project Change prior to continuing and is therefore not included in the Opinion of Probable Costs.

6.7 Recommended Plan

The Final Recommended Plan is as presented in Table 6-3. The high priority Needs areas include sewering with a treatment facility located at the DPW site and the groundwater disposal field located at the Curtis Middle School. In addition to the remainder of the Town, a small portion of these areas are expected to utilize onsite systems under Septic Management Plans. The WWTF and groundwater disposal will be constructed in three phases using modular wastewater treatment trains of 150,000 gpd per train. Phase A WWTF (Base) will include two trains to support Phase 1 with capacity of 300,000 gpd, Phase 1A and buildout within the area. Phase B WWTF (Intermediate) will add a third train to support Phase 2 and Phase C WWTF (Final) expansion will add a fourth and final train to support Goodman Hill and final buildout WWTF capacity of 600,000 gpd. Groundwater disposal capacities are anticipated to align with and be constructed in concert with the WWTF capacities but depending on capital costs and sequencing at the time of final design and construction may be adjusted as appropriate.

Table 6-3 Final Recommended Plan[1]

Needs Area	Proposed Phases	Need (Max Daily Flow, gpd)	Recommended Solutions (Max Day Flow, gpd)
			Send to proposed DPW WWTF & Curtis Field Ground Water Discharge
Route 20 Sub-Area A/B	1, 3	106,000	82,000 from Sub-Area A (Phase 1) 24,000 from Sub-Area B (Phase 3)
Raymond Road South Sub-Area A	1A	59,000	59,000
Raymond Road North Sub-Area A	2	88,000	88,000
Goodman Hill Sub-Area A	3	38,000	24,000

1. Flows are presented based on Near Term Need. The WWTF and groundwater disposal will be constructed in a modular fashion (phased approach) to support these Needs and ultimate buildout within the Needs Areas.

6.8 Capital Improvement Plan

The Final Capital Improvements Plan (Table 6-4) is a conceptual schedule and financing plan looking at the 20-year CWMP planning life. This is a baseline for the Town to do its financial planning in coordination with other municipal capital planning and serves as a living document to be adjusted as needed. All costs are in 2022 dollars and details design costs in green and construction (blue) estimates. It is important to note, that once the Town moves forward towards an implementation phase, consideration should be given to the completion of an Asset Management Plan (Fiscal Sustainability Plan), as well as an Infiltration and Inflow (I/I) Plan.

Table 6-4 Final Recommended Plan – Capital Improvements Plan[1,2,4]

Phase	Description	Year 1 (2022)	2	3	4	5	6	7	8	9	10	13	14	15	16-20	Total
N/A	Public Outreach	TBD	TBD	TBD												
1	Route 20 Sub-Area A Design and Construction		$2,000,000	$2,300,000	$29,400,000	$29,400,000										$63,100,000
1A	Raymond Road South Design and Construction															
2	Raymond Road North Design and Construction						$2,200,000	$14,500,000	$14,500,000							$31,200,000
3	Route 20 Sub-Area B & Goodman Hill Sub Area A Design and Construction									$1,700,000	$10,500,000	$10,500,000				$22,700,000
4	Route 20 East Sub-Area A Design and Construction[3]															$0
	Total	$0	$2,000,000	$2,300,000	$29,400,000	$29,400,000	$2,200,000	$14,500,000	$14,500,000	$1,700,000	$10,500,000	$10,500,000	$0	$0	$0	$117,000,000

1. All in 2022 dollars.
2. Includes design and construction costs for WWTF upgrades to support connections
3. This project would require future consideration and a Notice of Project Change prior to continuing and is therefore not included in the CIP costs.
4. Each Project includes WWTF/Disposal field permitting/design/construction as needed to support the project (Phase 1/1A is new facility and later phases are expansion of the facility).

7. SECTION 61 FINDINGS - FINAL SINGLE ENVIRONMENTAL IMPACT REPORT AND PROPOSED MITIGATION MEASURES

7.1 Preliminary Environmental Review for each Needs Area and Collection System Infrastructure

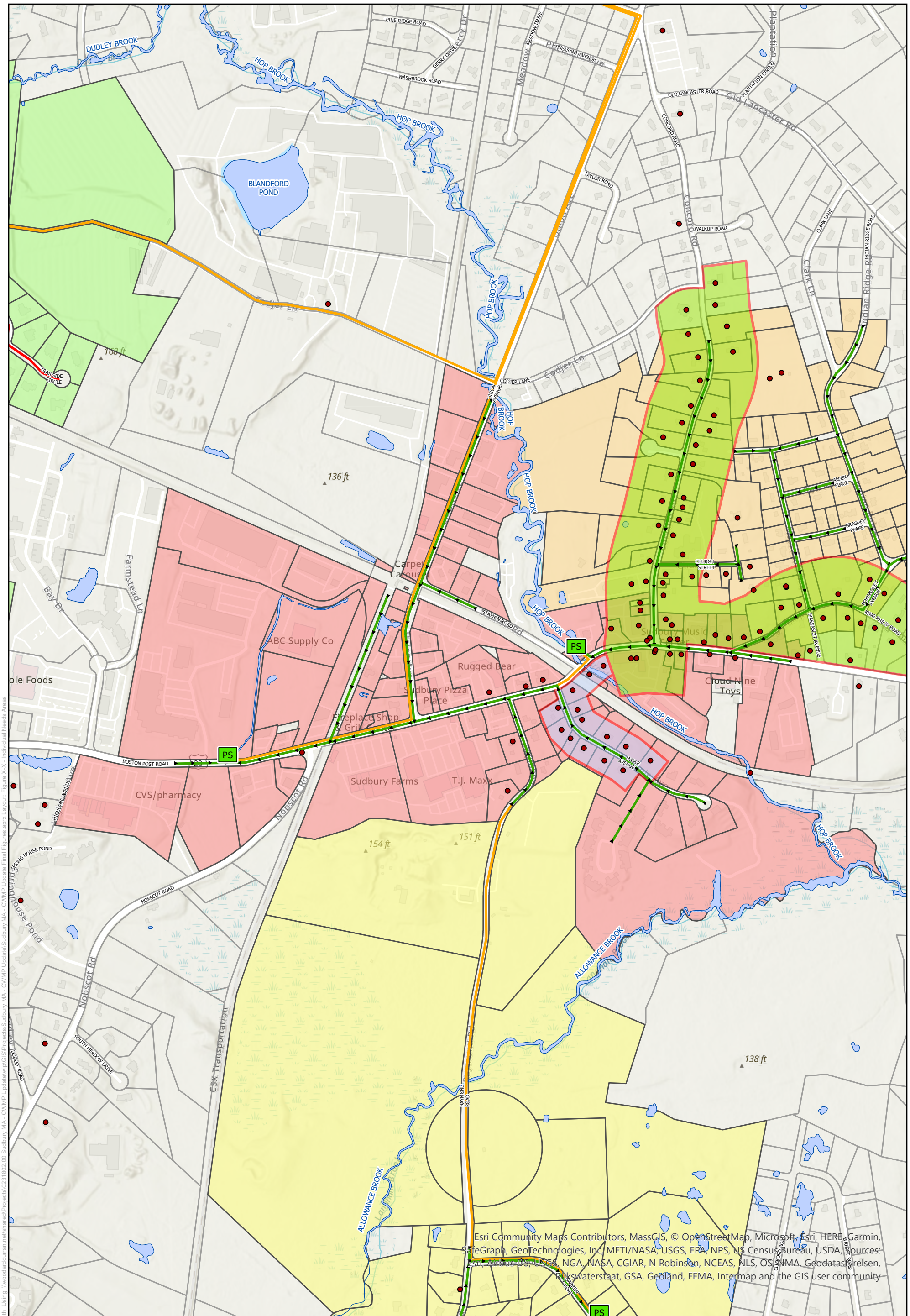
When determining the recommended plan for each Needs Area, it is important to take into consideration, identify, and mitigate any environmental impacts. Massachusetts's Executive Order 385 was signed into law by then Governor William F. Weld and states in general that the citizens of Massachusetts have a constitutional "right to clean air and water and the natural, scenic, historic, and aesthetic qualities of their environment." It also states that the "conflict between environmental quality and economic activity ultimately puts at risk environmental resources as well as economic opportunity; thus threatening, for example, public water supplies, clean air, swimmable and fishable waters, flood protection, open space, agricultural lands, historic sites, and community character; but also affecting the timely provision of needed infrastructure, financial assistance and regulatory approvals for appropriately sited and designed development." With the provisions of Executive Order 385 in effect, the conflicts of the environment should and can be avoided to a great extent through proactive and coordinated planning oriented towards both resource protection and sustainable economic activity, known as growth management, or basically sustainable development. So, Executive Order 385 is the State's direction for all planning, such as this CWMP Update, to account for sustainable development in the crafting of this Final Recommended Plan. While this Report has not officially completed a formal EIR filing with MEPA, the evaluation was completed in order to supplement an Extended Environmental Notification Form (EENF) and distinguish any areas of environmental impact and provide mitigation measures for moving forward.

- Each Needs Area was mapped with the most up to date MassGIS environmental layers and are included as Figures 7-1 through 7-12.
- This following section presents potential environmental impacts and associated mitigation measures of the Recommended Plan in each of the identified needs Areas, in accordance with Executive Order 385. Figures 7-1 through 7-12 delineates each individual Needs Area with any environmental constraints that are discussed in detail throughout this section.

7.2 Direct Impacts

7.2.1 Historical, Archaeological, Cultural, Conservation and Recreation

There are a significant number of historical/archaeological resources inventoried in Sudbury. A Project Notification Form (PNF) was filed with the Massachusetts Historical Commission in April 2021 to identify areas within Sudbury of historical and/or archaeological significance in relation to the identified Needs Areas. The Massachusetts Historical Commission PNF response received on April 22, 2021, concluded that due to the significant number of sensitive historical and archaeological resources located throughout the Town, a Reconnaissance Survey, conducted under 950 CMR 70, will need to be conducted ahead of any proposed construction. As this CWMP provides a conceptual, planning level effort, we would propose to coordinate with the Massachusetts Historical Commission during Preliminary Design when more detailed information on where infrastructure, as well as staging and all construction related activities would be planned, and use this more defined information to support a Survey. As part of preliminary design, a full survey would be conducted, which will afford a more detailed plan of the area and surrounding resources, in relation to proposed construction. While we reviewed existing resource information, including those noted in the paragraphs below, Sudbury's historic resources are plentiful and well noted. The overall goal of the CWMP Final Recommended Plan contained herein is to meet all technical and environmental goals, while also striving to eliminate any potential impact to historical/archaeological resources. We are confident we can meet these goals with coordination with the Sudbury Historical Commission, Sudbury Historical District Commission and the Massachusetts Historical Commission. The complete PNF can be found in Appendix H.



Route 20 Needs Area

CWMP Update
Town of Sudbury, MA

Legend

- Groundwater Discharge
- WWTP Wastewater Treatment Plant
- PS Pump Station
- Gravity Sewer
- Low Pressure Sewer
- Force Main
- Inventoried & Nationally Registered Historic Sites
- George Pitts Tavern Historic District
- King Philip Historic District
- Old Sudbury Historic District
- Wayside Inn Historic District #1
- Wayside Inn Historic District #2
- Goodman's Hill Project Area
- Raymond Road North Project Area
- Raymond Road South Project Area
- Route 20 Project Area

Historical Resources Figure 7-1

0 150 300 600 Feet

N

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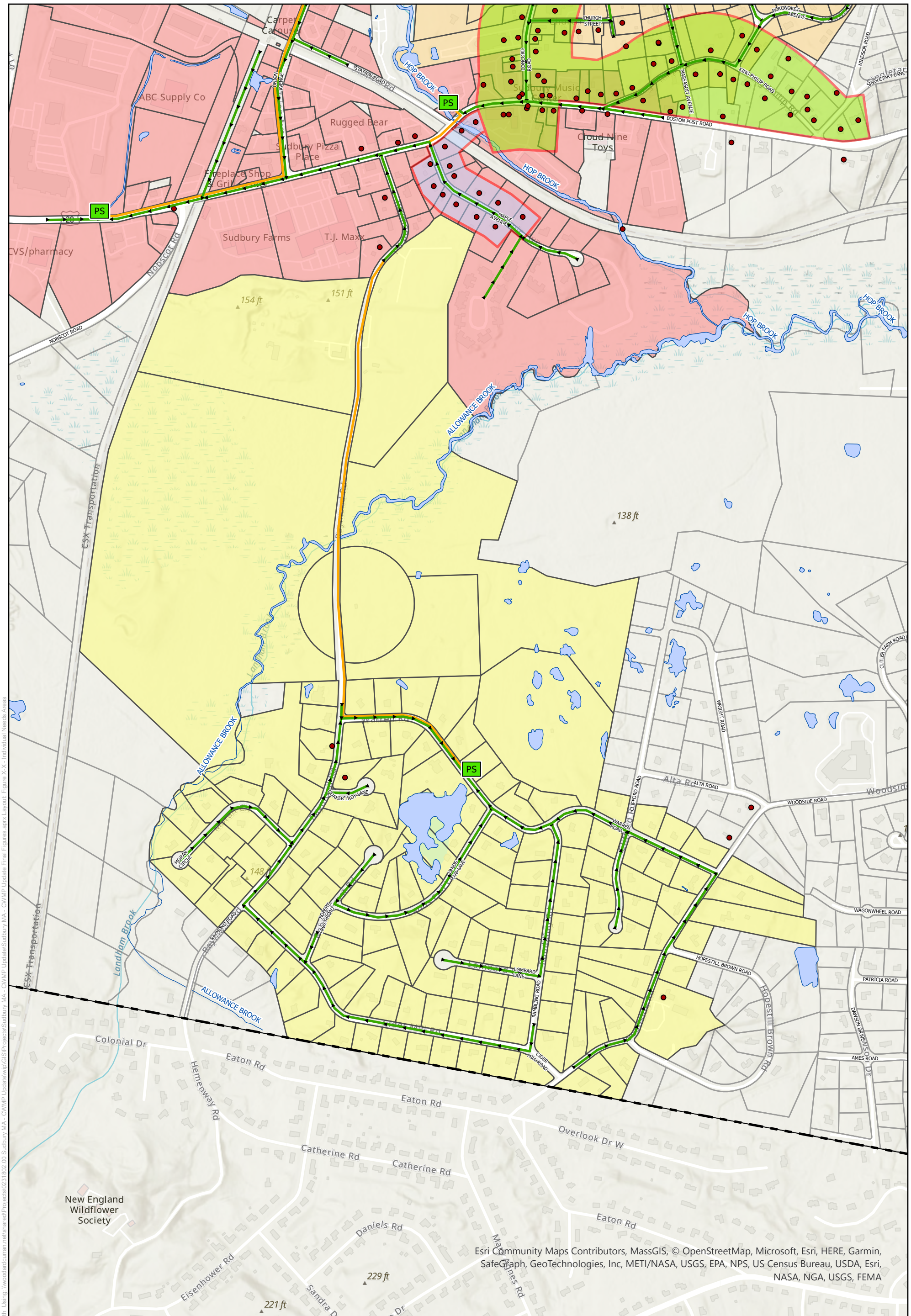

Raymond Road South Needs Area

CWMP Update
Town of Sudbury, MA

Legend

- Groundwater Discharge
- WWTP Wastewater Treatment Plant
- PS Pump Station
- Gravity Sewer
- Low Pressure Sewer
- Force Main
- Inventoried & Nationally Registered Historic Sites
- George Pitts Tavern Historic District
- King Philip Historic District
- Old Sudbury Historic District
- Wayside Inn Historic District #1
- Wayside Inn Historic District #2
- Goodman's Hill Project Area
- Raymond Road North Project Area
- Raymond Road South Project Area
- Route 20 Project Area

Historical Resources
Figure 7-2

0 150 300 600 Feet

N

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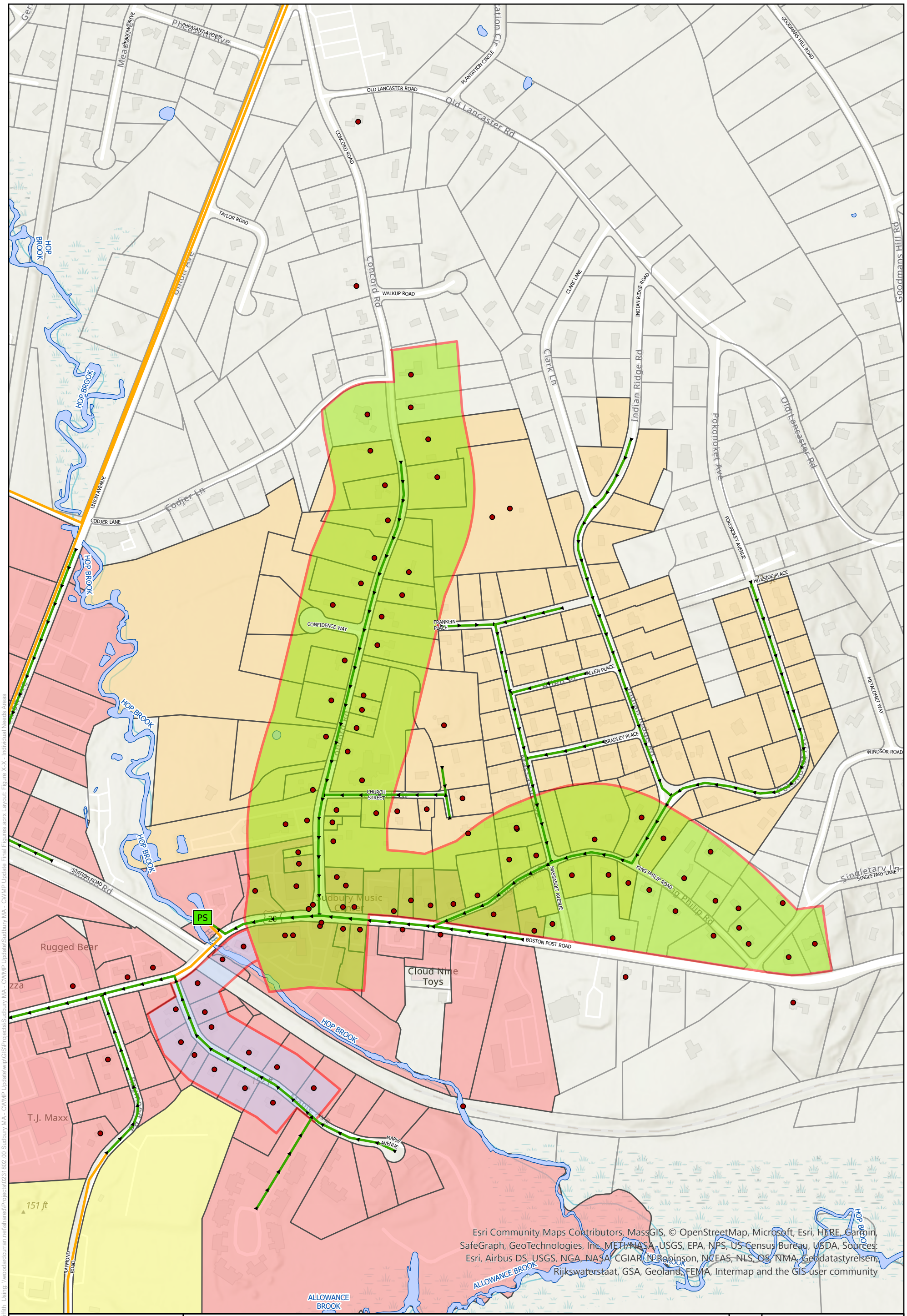

Goodman's Hill Needs Area

CWMP Update
Town of Sudbury, MA

Legend

- Groundwater Discharge
- WWTP Wastewater Treatment Plant
- PS Pump Station
- Gravity Sewer
- Low Pressure Sewer
- Force Main
- Inventoried & Nationally Registered Historic Sites
- George Pitts Tavern Historic District
- King Philip Historic District
- Old Sudbury Historic District
- Wayside Inn Historic District #1
- Wayside Inn Historic District #2
- Goodman's Hill Project Area
- Raymond Road North Project Area
- Raymond Road South Project Area
- Route 20 Project Area

Historical Resources
Figure 7-3

0 100 200 400 Feet

N

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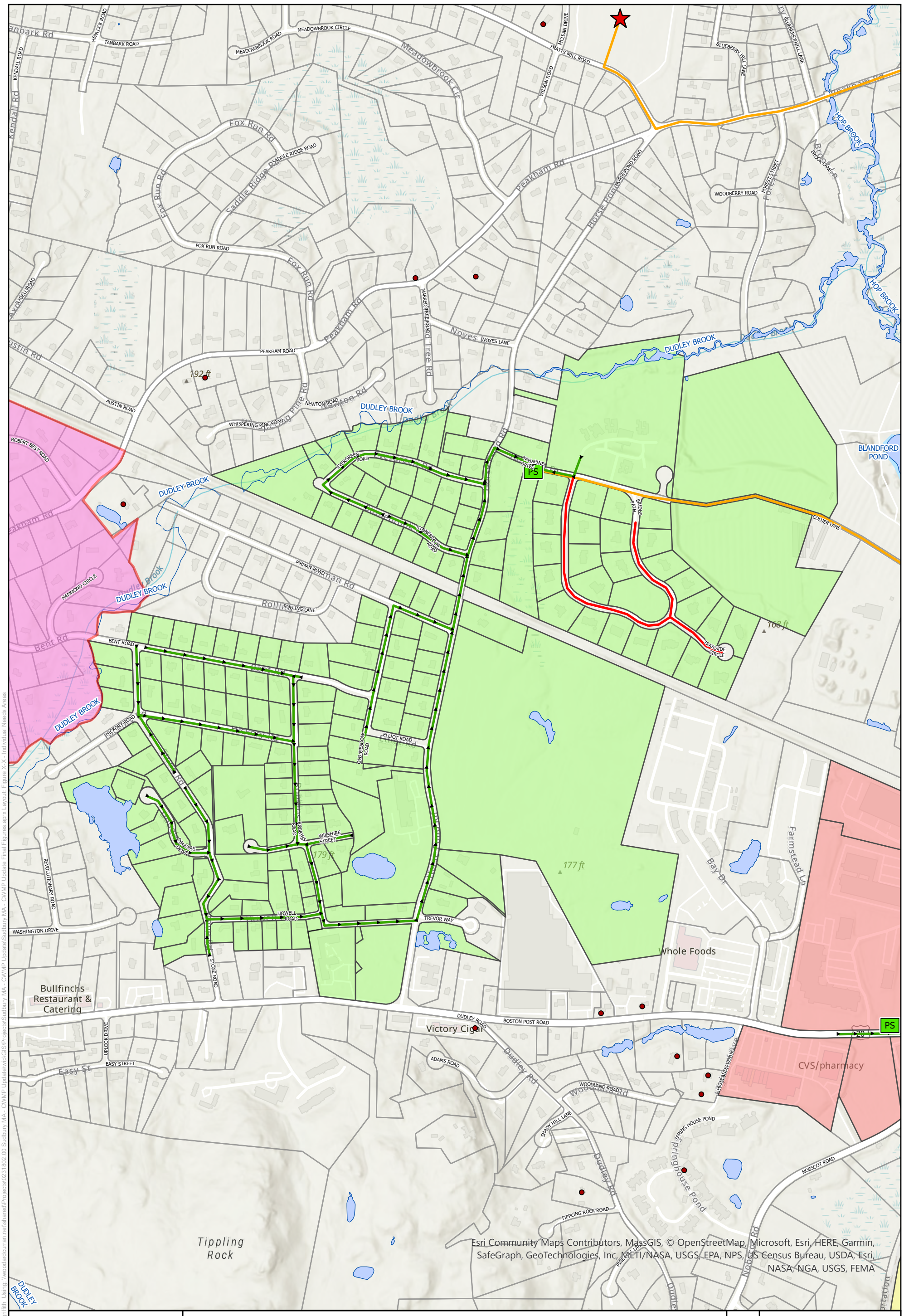

Raymond Road North Needs Area

CWMP Update
Town of Sudbury, MA

Legend

- Groundwater Discharge
- WWTP Wastewater Treatment Plant
- PS Pump Station
- Gravity Sewer
- Low Pressure Sewer
- Force Main
- Inventoried & Nationally Registered Historic Sites
- George Pitts Tavern Historic District
- King Philip Historic District
- Old Sudbury Historic District
- Wayside Inn Historic District #1
- Wayside Inn Historic District #2
- Goodman's Hill Project Area
- Raymond Road North Project Area
- Raymond Road South Project Area
- Route 20 Project Area

Historical Resources Figure 7-4

0 150 300 600 Feet

N

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A comprehensive review of the "Inventory of Historic Buildings, Structures and Places 200726" contains over 458 historic, pre-1940 buildings and structures, with 403 of these being houses. The National Register of Historic Places inventories buildings, places, as well as a number of Milestone Markers located in Sudbury. There are four identified Historic Districts located within Sudbury:

1. King Phillip Historic District
2. George Pitts Tavern Historic District
3. Sudbury Centre Historic District
4. Wayside Inn Historic Districts

Only two of the Historic Districts are included in the "National Register of Historic Places":

1. Sudbury Centre Historic District*
2. Wayside Inn Historic Districts*

**None of the CWMP Needs Areas are located within either of these Historic Districts.*

The CWMP Final Recommended plan has sewer infrastructure proposed within two of the four Historic Districts:

1. King Philip Historic District – This area was the site of the Indian Wars of 1676 where Captain Samuel Wadsworth and his troop were killed in an ambush and later buried in the Wadsworth Cemetery. The Wadsworth Monument was erected in 1852 in memory of the gallant men who fought the Battle of Green Hill and appears on the Town Seal of Sudbury. Also in the District is the Goodnow Library, included in the National Register of Historic Places, as well as homes of 17th and 18th century construction, including the Goulding House, Sudbury's oldest existing home, 1720. In the area of Mill Village is the site of the west-side Grist Mill, erected in 1659.
2. George Pitts Tavern Historic District – In 1721 at the George Pitts Tavern (located on Maple Avenue) a meeting was held to petition the Colonial Legislature for permission to erect a meeting house west of the Sudbury River, thereby separating the towns of Sudbury and Wayland. The outcome of this historic gathering effectively created the Town of Sudbury. According to maps of the 1800s, even the Old Boston Post Road passed along a portion of this street. Today, the architecture and structure of Maple Avenue showcases Sudbury's evolution throughout time. Many of the homes standing today were built between 1882 and 1920.

The CWMP Final Recommended Plan in response to historical/archaeological resources in Town is as follows. Coordination with the Massachusetts Historical Commission through surveys to be conducted under its jurisdiction will determine any future efforts with regards to historical/archaeological resources/sensitive areas. The Town will work with the MHC and local historical groups during Preliminary Design to eliminate any impact to resource areas. At this conceptual planning timing, based on a review of documented resources, there is no expected impacts due to sewer implementation:

<u>Sewer Piping and Pump Stations</u>

The CWMP overall recommended Plan, as shown in PNF Figure 1 in Appendix H, details the proposed areas of sewer infrastructure. All sewer pipe is proposed within existing pre-disturbed, roadway, areas. There are five proposed pump stations included in the overall plan. The pump stations' locations as detailed below, were all checked with the "Inventory of Historic Buildings, Structures and Places-200726", as well as the "National Register of Historic Places" to ensure none were located on an historic resource area. All pump proposed stations are located outside of historic resource areas and are shown on PNF Figures 4 through 8. Proposed pump station locations are as follows:

- Route 20 Pump Station: MBL K07-0018, 490 Boston Post Road
- Raymond Road South Pump Station: MBL M08-0126, 82 Warren Road

- Raymond Road North Pump Station: MBL J06-0500, Tall Pine Drive (no number)
- Route 20 East Pump Station: MBL K11-0052, 26 Goodmans Hill Road
- Goodman Hill / Route 20 Sub-Area B Pump Station: MBL K08-0037, 378 Boston Post Road

All historic locations from the Inventory are shown on PNF Figures 4-8, which identifies all historic properties, building and markers in Town and clearly show all proposed pump stations outside of any inventoried properties.

Wastewater Treatment Facility

The recommended Municipal Wastewater system proposes to design and construct a Wastewater Treatment Facility (WWTF) at the existing Department of Public Works at 275 Old Lancaster Road. This location was checked with the "Inventory of Historic Buildings, Structures and Places-200726", as well as the "National Register of Historic Places", to ensure the parcel was not included in an historic resource area. The facility will be housed with the existing Department of Public Works that also includes additional land use departments including Highway Department and Health Department. This area is also outside of any of the four historic districts noted in Town and at a pre-disturbed location. See PNF Figure 2 in Appendix H. The Town will coordinate efforts with MHC and the local historic groups during Preliminary Design to avoid design in resource/sensitive areas. It is noted that historical/archaeological surveys will be conducted under the jurisdiction of MHC before any design efforts are undertaken.

Groundwater Discharge Beds

The groundwater discharge beds are proposed to be located subsurface to the ball fields at the Curtis Middle School at 22 Pratts Mill Road. This location was checked with the "Inventory of Historic Buildings, Structures and Places-200726", as well as the "National Register of Historic Places", to ensure the parcel was not included in an historic resource area. This area is pre-disturbed, cleared land currently being utilized as ball fields. This area is also outside of any of the four historic districts noted in Town and at a pre-disturbed location. See PNF Figure 3 in Appendix H.

Review of all data in the CWMP confirmed that the top priorities are a combination of properties along the Route 20/Union Avenue area and Raymond Road South Study Areas. These four Needs Areas directly abut the Raymond Road Aquifer-the Town's major drinking water wells- and includes both residential and non-residential properties all currently on on-site wastewater systems.. The Needs Areas encompass the Zone II for the Raymond Road Aquifer.

The following summarizes the Needs Areas within noted historic districts:

1. The George Pitts Tavern Historic District is along Maple Avenue with three parcels included along Route 20. This District is within the Route 20 Needs Area as shown on PNF Figures 4 and 7. All proposed sewer infrastructure in the Historic District is within pre-disturbed, existing roadway / right of way areas.
2. The King Phillip Historic District is along portions of the Route 20 Needs Area and the Goodman Hill Needs Area. Refer to PNF Figures 4 and 7 for a map of this location. All proposed sewer infrastructure in the Historic District is within pre-disturbed, existing roadway / right of way areas.
3. PNF Figure 5 details the Raymond Road North Needs Area. This area is not within a defined Historic District All proposed sewer infrastructure is within pre-disturbed, existing roadway / right of way areas.
4. PNF Figure 6 details the Raymond Road South Needs Area. All proposed sewer infrastructure is within pre-disturbed, existing roadway / right of way areas.
5. PNF Figure 8 details the Route 20 East Needs Area. All proposed sewer infrastructure in the Historic District is within pre-disturbed, existing roadway / right of way areas.

It is noted that a positive impact to the myriad of historic buildings and places with the design and construction of Municipal Wastewater infrastructure is that all properties within the Needs Areas limits can be serviced with Municipal sewer and avoid failing septic systems, many of which fail due to high groundwater and require a mounded system. These mounded

systems raise the on-site wastewater system above groundwater and create a negative aesthetic to the property. Location could be in the front yard, side yard or back yard with the mound clearly visible. A mounded system many times decreases the overall property values. Parcels located along Union Avenue and Goodman Hill Road detail high groundwater and severe soil conditions for long-term sustainability of on-site systems. Municipal sewer in these areas will offer these historic resources a pleasing alternative to a failed septic that would otherwise require a mounded system and avoid structures that impact the overall aesthetics of these valuable areas.

In addition to positively impacting aesthetics to the historic resources, removing the on-site wastewater systems from within this sensitive area will preserve and protect the drinking water supplies from potential threat of degradation of wastewater and the pollutants it contains. A fifth Needs Area, Route 20 East, Phase 3, is located along the Wayland Town border. This Needs Area is outside of any historic districts. Refer to PNF Figures 4 through 8 for maps of Needs Areas in relation to historic districts.

Septic to sewer will ensure that public health threats from on-site wastewater will be eliminated. Even an on-site that is considered "properly operating and maintained" could degrade water resources with the documented soil and groundwater conditions affording faster transport of improperly cleansed wastewater to water resources.

With the removal of the on-site wastewater systems in the proposed areas, the threat of continued degradation to the water resources is eliminated. The preservation and protection of the drinking water supplies is the major goal, with the overall environmental benefiting as well. This positive approach also benefits the historical resources.

The Town will coordinate efforts with MHC and the local historic groups during Preliminary Design to avoid design in resource/sensitive areas. It is noted that historical/archaeological surveys will be conducted under the jurisdiction of MHC before any design efforts are undertaken.

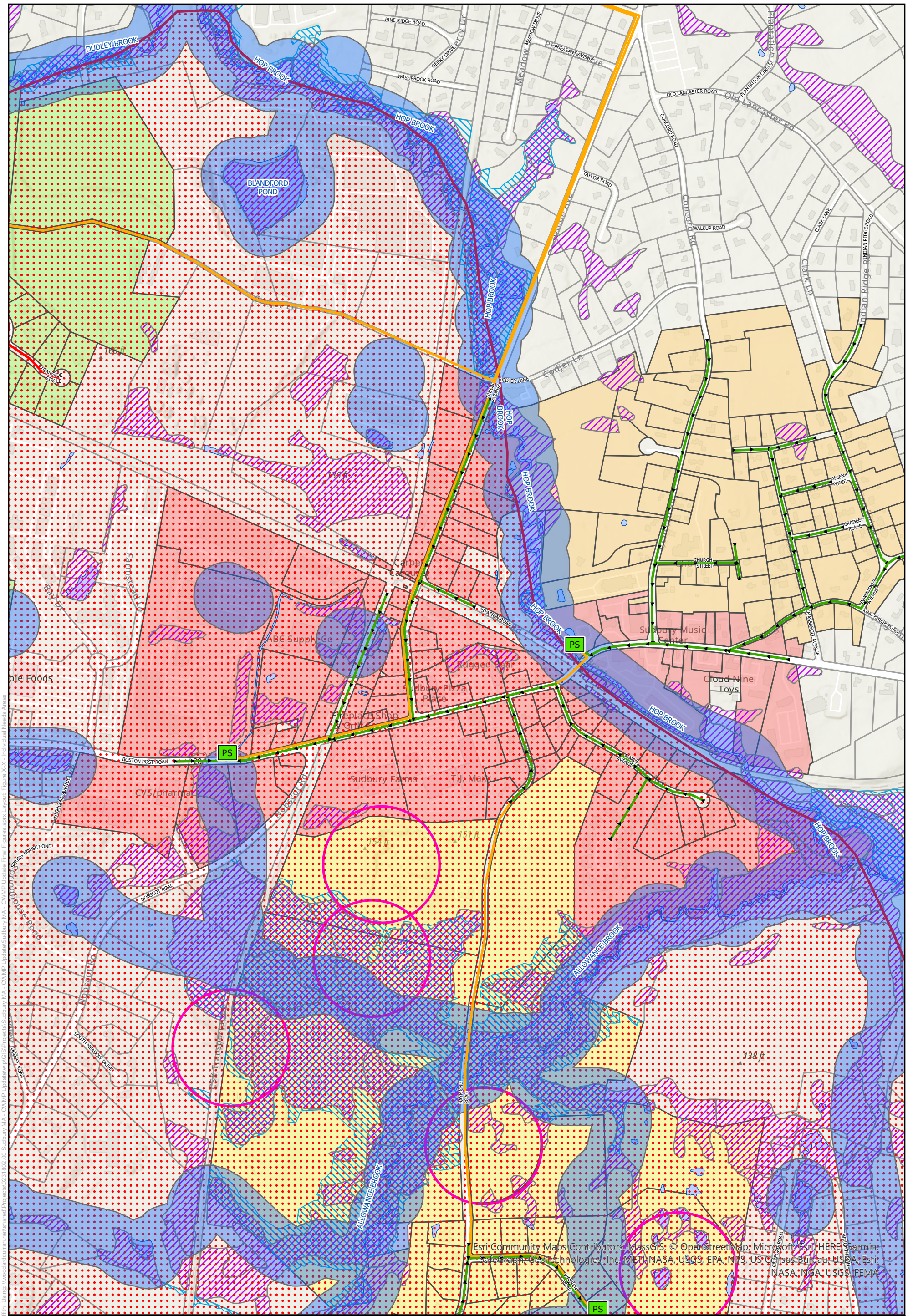
With the CWMP under the jurisdiction of Town Administration and Public Works, every effort will be expended to work with the local Historical Commission(s) during Preliminary Design to avoid noted historical resources.

7.2.2 Wetlands, Flood Plains, and Agricultural Lands

- Implementation of the proposed Recommended Plan may temporarily impact wetlands. No long term or permanent impacts to wetlands are anticipated. Wetlands, Flood Plains, and Agricultural Lands are shown on Figures 7-5 through 7-8. There is potential for construction of future sewer pipe and pump stations within the 100-foot buffer zone as the Project follows within pre-disturbed roadways and rights-of-way. The design process will include a survey and wetlands flagging, and the collection systems will be designed in a manner to avoid wetland resource areas and minimize proximity to wetlands where technically feasible.
- Any impacts will be temporary and associated with construction of the collection system. Impacts will be mitigated by erosion and sedimentation control during construction and by any other means deemed necessary by the local Conservation Commission and MassDEP through the wetlands permitting process. At this point in time, there is nothing but conceptual design. Once the Project moves forward towards implementation, the Massachusetts Stormwater Management Standards and Handbook will be followed as necessary and appropriate. Preliminary design will include topographical survey, which will better locate exact locations of wetland resources that will afford a more finite ability to design stormwater standards for the entire Project.
- While this Report is based on conceptual design, the Final Design will determine the exact location, and if necessary, design will include watertight appurtenances. All of the identified Needs Areas show potential wetland impacts to be evaluated and mitigated during the preliminary design phase. There may be areas where sewer pipe cross wetland areas/buffers, as well as Flood Plain areas, and in all of these cases it will be specified that water-tight covers are to be used. Per industry standards, precast manholes and other underground structures will be designed to resist flotation during a flooded condition, and pipe materials will be chosen to reduce the possibility of infiltration and inflow. All manholes and sewer lines will be pressure

tested for water tightness prior to acceptance to confirm they have been installed in accordance with these requirements.

- Resiliency measures will be utilized in any wetland/flood prone areas to mitigate any existing and/or projected issues and design measures taken beforehand to avoid these areas altogether.
- None of the Needs Areas contains Agricultural Preservation Restriction lands. The methodology utilized to determine future wastewater flows excludes agricultural land based on the State Land Use Code. There will be no impact to agricultural lands.
- All potential vernal pools mapped are located outside of all Needs Areas.
- Coordination of design and construction will be conducted with the Sudbury Conservation Commission and local/regional Board of Health, to identify any wetlands or flood plain resource issues and identify any necessary mitigation measures. In addition, the Town will work with the Conservation Commission to determine the need for Requests for Determination of Applicability (RDAs) and Notice of Intents (NOIs) as the recommended plan progresses.
- Any areas that could be recommended for Low-Pressure sewer will take the process of design and construction with directional drilling of sewer infrastructure into account with potential to avoid resource impact.



Route 20 Needs Area

CWMP Update
Town of Sudbury, MA

Legend

- Groundwater Discharge
- WWTP Wastewater Treatment Plant
- PS Pump Station
- Gravity Sewer
- Low Pressure Sewer
- Force Main
- Riverfront Areas
- Public Water Supply - Zone 2
- Public Water Supply - Zone 1
- MassDEP Wetlands
- 100-Year Floodplain
- Goodman's Hill Project Area
- Raymond Road North Project Area
- Raymond Road South Project Area
- Route 20 Project Area

Wetlands, Floodplains, & Zones of Contribution
Figure 7-5

0 150 300 600 Feet

N

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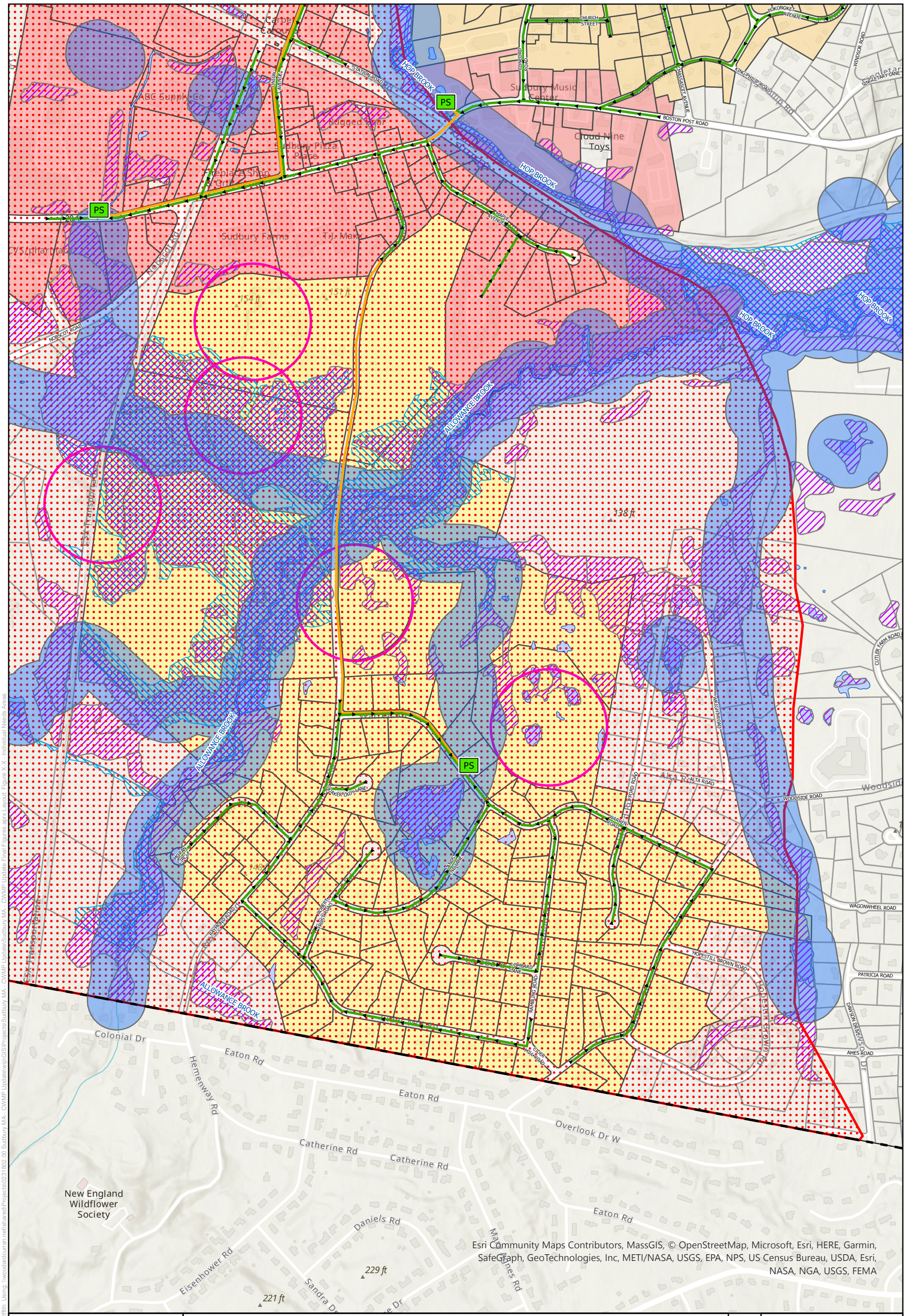

Raymond Road South Needs Area

CWMP Update
Town of Sudbury, MA

Legend

- Groundwater Discharge
- WWTP Wastewater Treatment Plant
- PS Pump Station
- Gravity Sewer
- Low Pressure Sewer
- Force Main
- Riverfront Areas
- Public Water Supply - Zone 2
- Public Water Supply - Zone 1
- MassDEP Wetlands
- 100-Year Floodplain
- Goodman's Hill Project Area
- Raymond Road North Project Area
- Raymond Road South Project Area
- Route 20 Project Area

Wetlands, Floodplains, & Zones of Contribution
Figure 7-6

0 150 300 600 Feet

N

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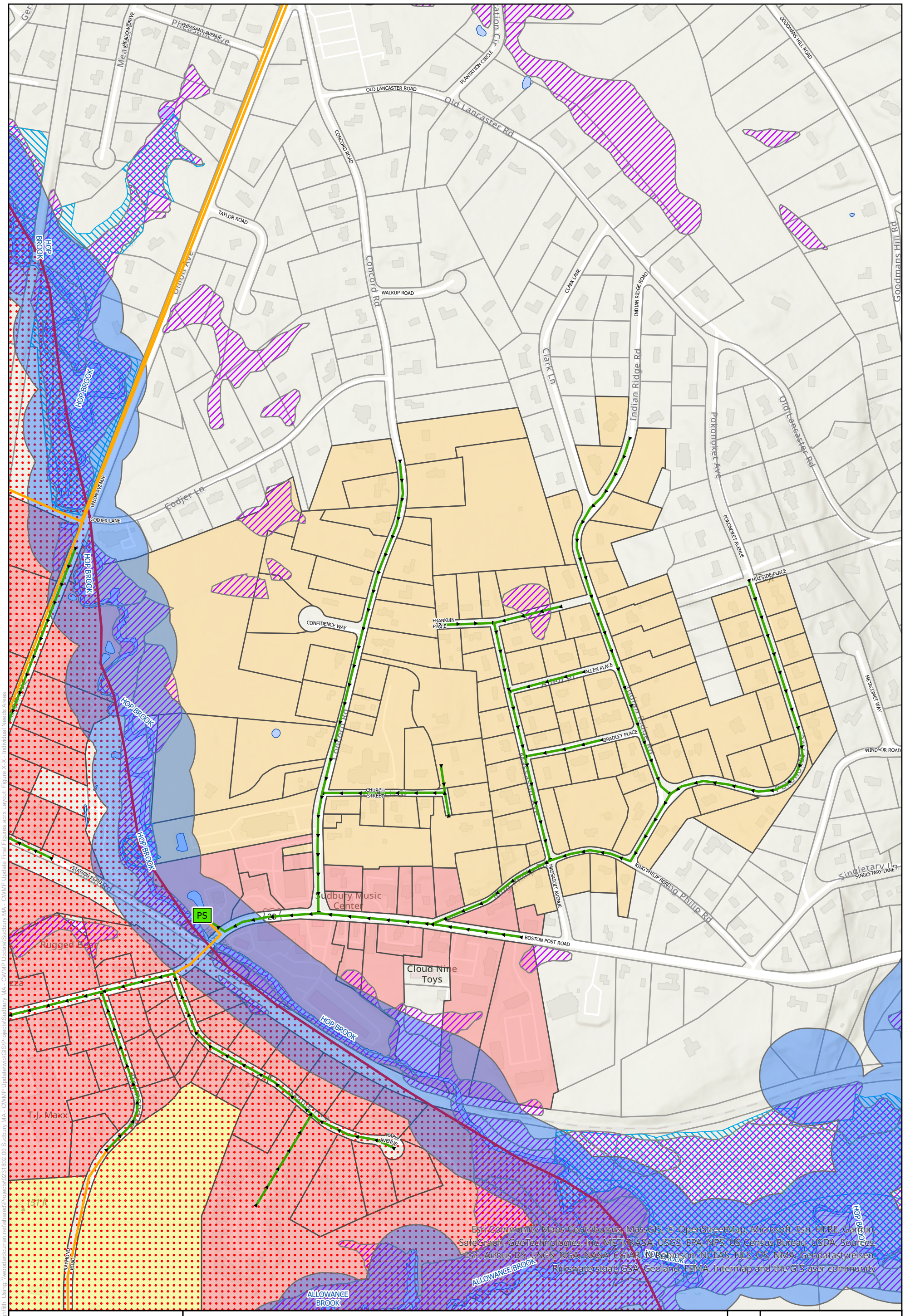

Goodman's Hill Needs Area

CWMP Update
Town of Sudbury, MA

Legend

- Groundwater Discharge
- WWTP Wastewater Treatment Plant
- PS Pump Station
- Gravity Sewer
- Low Pressure Sewer
- Force Main
- Riverfront Areas
- Public Water Supply - Zone 2
- Public Water Supply - Zone 1
- MassDEP Wetlands
- 100-Year Floodplain
- Goodman's Hill Project Area
- Raymond Road North Project Area
- Raymond Road South Project Area
- Route 20 Project Area

Wetlands, Floodplains, & Zones of Contribution
Figure 7-7

0 100 200 400 Feet

N

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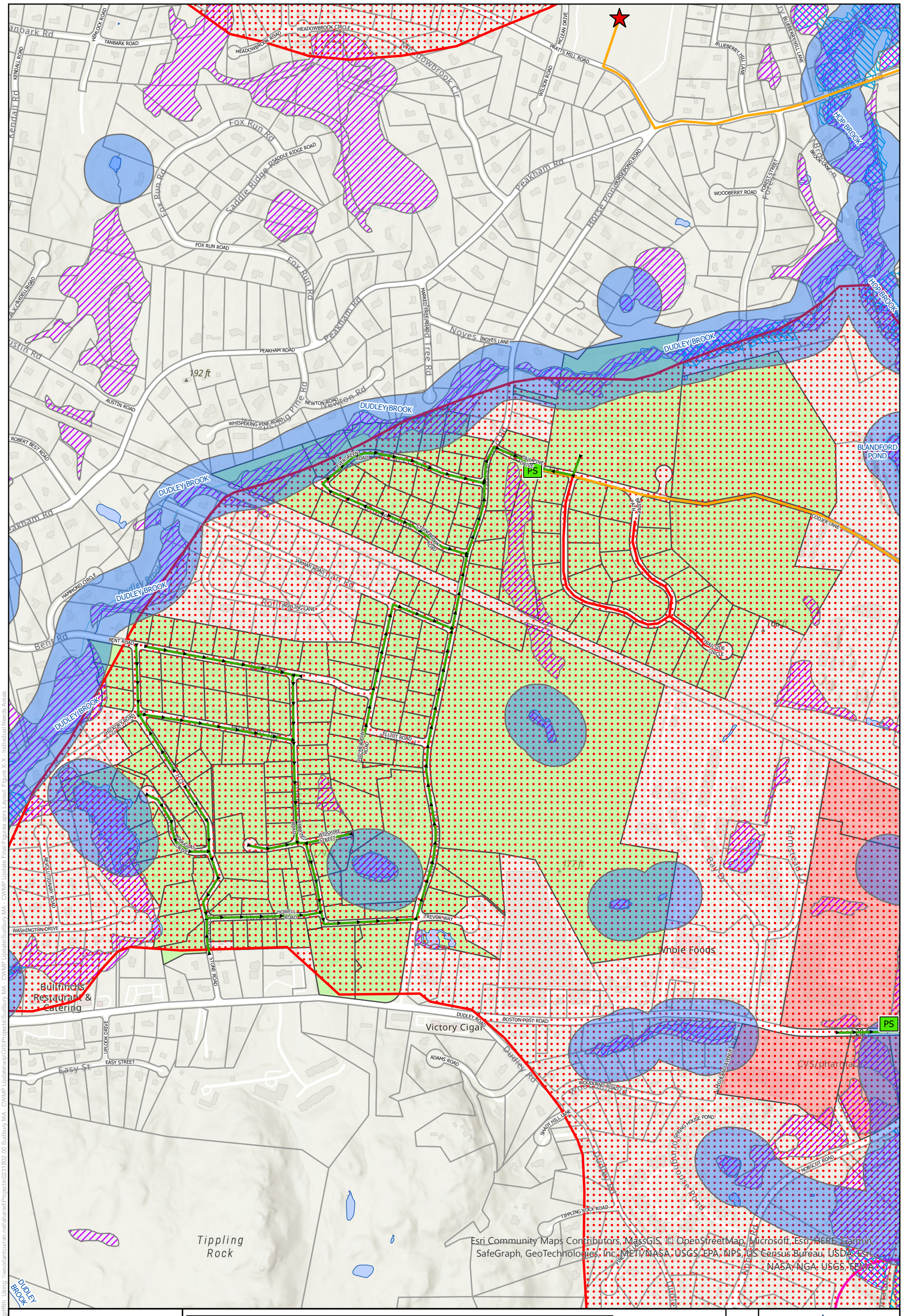

Raymond Road North Needs Area

CWMP Update
Town of Sudbury, MA

Legend

- Groundwater Discharge
- WWTP Wastewater Treatment Plant
- PS Pump Station
- Gravity Sewer
- Low Pressure Sewer
- Force Main
- Riverfront Areas
- Public Water Supply - Zone 2
- Public Water Supply - Zone 1
- MassDEP Wetlands
- 100-Year Floodplain
- Goodman's Hill Project Area
- Raymond Road North Project Area
- Raymond Road South Project Area
- Route 20 Project Area

Wetlands, Floodplains, & Zones of Contribution
Figure 7-8

0 150 300 600 Feet

N

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7.2.3 Zones of Contribution of Existing and Proposed Water Supply Sources

- The proposed Recommended Plan contained in the CWMP were developed to preserve and protect the Town's wellhead areas from on-site wastewater systems that have been well noted over decades as a threat to these resources. Figures 7-5 through 7-8 detail these areas where sewer is planned. While construction is planned within these resource areas, the Recommended Plan to remove on-site wastewater systems is protection from failing and/or improperly operating systems that could potentially pollute the groundwater resources. The following identifies the care and thought that will be used during construction to further protect these valuable resources.
- There are no direct negative impacts anticipated to any water protection areas, as the sewer mains are proposed to be installed within existing roadways. Any proposed sewers in wellhead protection areas will be designed in accordance with DEP requirements for such construction and will include stringent measures to guard against exfiltration of untreated wastewater. Furthermore, steps will be taken to minimize indirect environmental impacts during preliminary design and construction.
- Removal of onsite wastewater disposal systems will benefit the environment and preserve and protect the drinking water source in these areas. As previously stated, the sewer mains are proposed be constructed within existing roadways, thereby minimizing potential environmental impacts. The installation and connection of residences to a centralized wastewater collection system will divert wastewater from the public water supply aquifers, having a beneficial impact to the groundwater quality within the wellhead protection area.
- In all areas within the Zones of Contributions, design will include provisions from DWS Policy 88-02 (copy of on following page) where MassDEP mandates that all existing and potential water supplies be protected from potential sewer leaks. All manholes will be designed with water-tight covers and sewer shall all be tested according to the above reference Policy. This Policy is effective state-wide and is a solid reference for various water resource areas. This Policy is reprinted in its entirety on the following page. There are no direct, negative impacts to these resources from any other Needs Areas.

7.2.4 Surface and Groundwater Resources

- No negative impacts associated with the recommended plan are anticipated to surface and groundwater resources. The proposed Project will serve to remove failing and/or improperly operating septic systems that have the potential to degrade these water resources. The CWMP Final Recommended Plan for Needs Areas of constructing a Wastewater Treatment Facility, groundwater discharge beds and associated collection system infrastructure will reduce violations of water quality standards in and around the water resources of Town. Most notable are from the "Massachusetts Year 2016 Integrated List of Waters, which documents Hop Brook Segments MA82A-05 and MA82A-06 (these waters include Allowance Brook, Stearns Mill Pond, Carding Mill Pond, sections of the Sudbury River and Wash Brook) with the following impairments:
    - Algae
    - Non-native aquatic plants and aquatic plants
    - Dissolved Oxygen
    - E. Coli
    - Phosphorus, Total
    - Turbidity
    - NUTRIENTS* (major contribution from septic systems)

The CWMP plan to remove on-site wastewater systems, as proposed in the CWMP Final Recommended Plan, will eliminate degradation to the water resources in these areas and serve to reduce the nutrient loading. The elimination of all on-site wastewater systems in these areas will restore water quality and designated uses in the named water bodies by reducing

the overall degradation in the resource areas. Removal of septics will also reduce the impacts to sensitive and environmental resources documented in the area, which includes two major Zone II Areas-Hop Brook and Raymond Road. Sewering, removing all on-site wastewater from leaching into all of the water resources, will greatly reduce the E. Coli, as well as a host of pollutants not included in the 303(d) List-most notably personal care products, hosts of pharmaceuticals and in today's world, COVID 19 and its variants. These areas are well documented with fast percolating soils and high groundwater conditions, which afford wastewater from on-site wastewater systems to travel faster and potentially uncleansed, to the water resources contributing to the degradation. Refer to the following figures for mapping of all resources.

Septic to sewer will ensure that public health threats from on-site wastewater will be eliminated. Even an on-site that is considered "properly operating and maintained" has the ability to degrade water resources with the documented soil and groundwater conditions affording faster transport of improperly cleansed wastewater to water resources.

With the removal of the on-site wastewater systems in the proposed Needs Areas, the threat of continued degradation to the water resources is eliminated. The preservation and protection of the drinking water supplies is the major goal, with the overall environmental benefiting as well.

DWS POLICY 88-02
DEPARTMENT OF ENVIRONMENTAL PROTECTION
POLICY FOR REVIEW OF SEWER LINE/WATER SUPPLY PROTECTION

The Department of Environmental Protection seeks to protect existing and potential water supplies from the potentially negative effects of leaking sewer lines through the adoption of a Department policy on this subject. The following restrictions will apply to new sewer construction statewide:

Gravel Packed Wells

Within the 400 foot radius protective distance around gravel packed wells, all sewer lines and appurtenances are prohibited, unless they are necessary to eliminate existing and/or potential sources of pollution to the well.

Tubular Wells

Within the 250 foot radius protective distance around tubular wells, all sewer lines and appurtenances are prohibited, unless they are necessary to eliminate existing and/or potential sources of pollution to the well.

Gravel Packed and Tubular Wells

Within a minimum radius of 2,640 feet or unless otherwise documented by an appropriate study specifically defining the area of influence and approved by the Division of Water Supply, all sewer lines and appurtenances will be designed and constructed for maximum water tightness.

Force Mains or Pressure Sewers:

Shall be tested at 150% above maximum operating pressure or 150 p.s.i. whichever is greater. Testing shall conform to the requirements of the American Water works Association (AWWA) standard c 600.

Gravity Sewers

Shall be tested by approved methods which will achieve test results for infiltration or exfiltration of less than 100 gallons/inch diameter/mile/24 hours.

Manholes

Shall be installed with watertight covers with locking or bolted and gasketed assembles. Testing for infiltration/exfiltration shall conform to the same standards as the maximum allowed for pipes in the manhole as required for gravity sewers, indicated above.

Satisfactory test results for Force Mains, Manholes and Gravity Sewers shall be performed prior to the expiration of the contractor's one-year guarantee period.

All pumping stations within this zone shall have standby power high water alarms telemetered to an appropriated location that is manned at all times. An emergency contingency plan must be developed by the owner and approved by the BWR.

A minimum of Class B bedding as defined by WPCF-MOP9 must be used for all piping.

Service connections (laterals and house connections) shall be rigidly inspected by the appropriate municipal official. Certified inspection reports shall be submitted to the BWR.

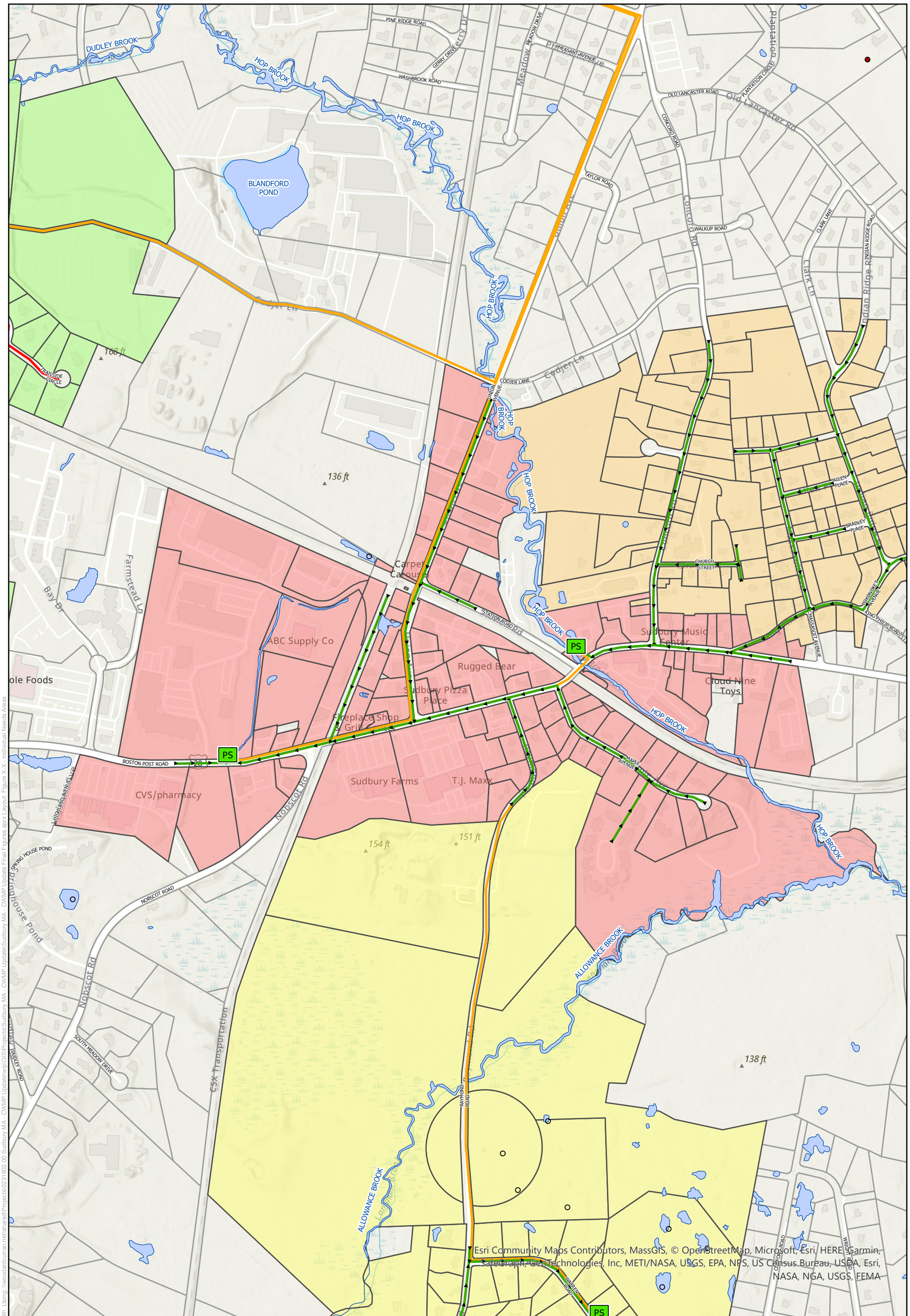
DEP-DWS-PM Page 1 of 3
DEP-DMS-F Page 22 of 24

7.2.4.1 Natural Heritage and Endangered Species Program (NHESP) Rare and Endangered Species and Priority Habitats

The Natural Heritage and Endangered Species (NHESP) Program maps Rare and Endangered Species and Priority Habitats. Figures 7-9 through 7-12 identifies areas where rare and endangered species and habitats are mapped within the Town's borders and in relation to identified Needs Areas. In addition, MassGIS was used to identify locations where certified vernal pools, as well as potential vernal pools are located in Town.

These areas include estimated habitats of rare wildlife, certified vernal pools and priority sites of rare species habitats are mapped Town-wide, as well as included in each Needs Area section as shown on Figures 7-9 through 7-12. This enabled identification of potential impact within each Phase of the proposed sewer. These resource areas are all outside of targeted Needs Areas, so there is no impact with NHESP under the proposed plan, which the figures clearly show.

As shown on the following Figures 7-9 through 7-16, there are no mapped Needs Areas in either NHESP or AUL and 21 E Sites.



Route 20 Needs Area

CWMP Update
Town of Sudbury, MA

Legend

- Groundwater Discharge
- WWTP Wastewater Treatment Plant
- PS Pump Station
- Gravity Sewer
- Low Pressure Sewer
- Force Main
- Certified Vernal Pools
- Potential Vernal Pools
- Priority Habitats of Rare Species
- Estimated Habitats of Rare Wildlife
- Goodman's Hill Project Area
- Raymond Road North Project Area
- Raymond Road South Project Area
- Route 20 Project Area

NHESP & Vernal Pools
Figure 7-9

0 150 300 600 Feet

N

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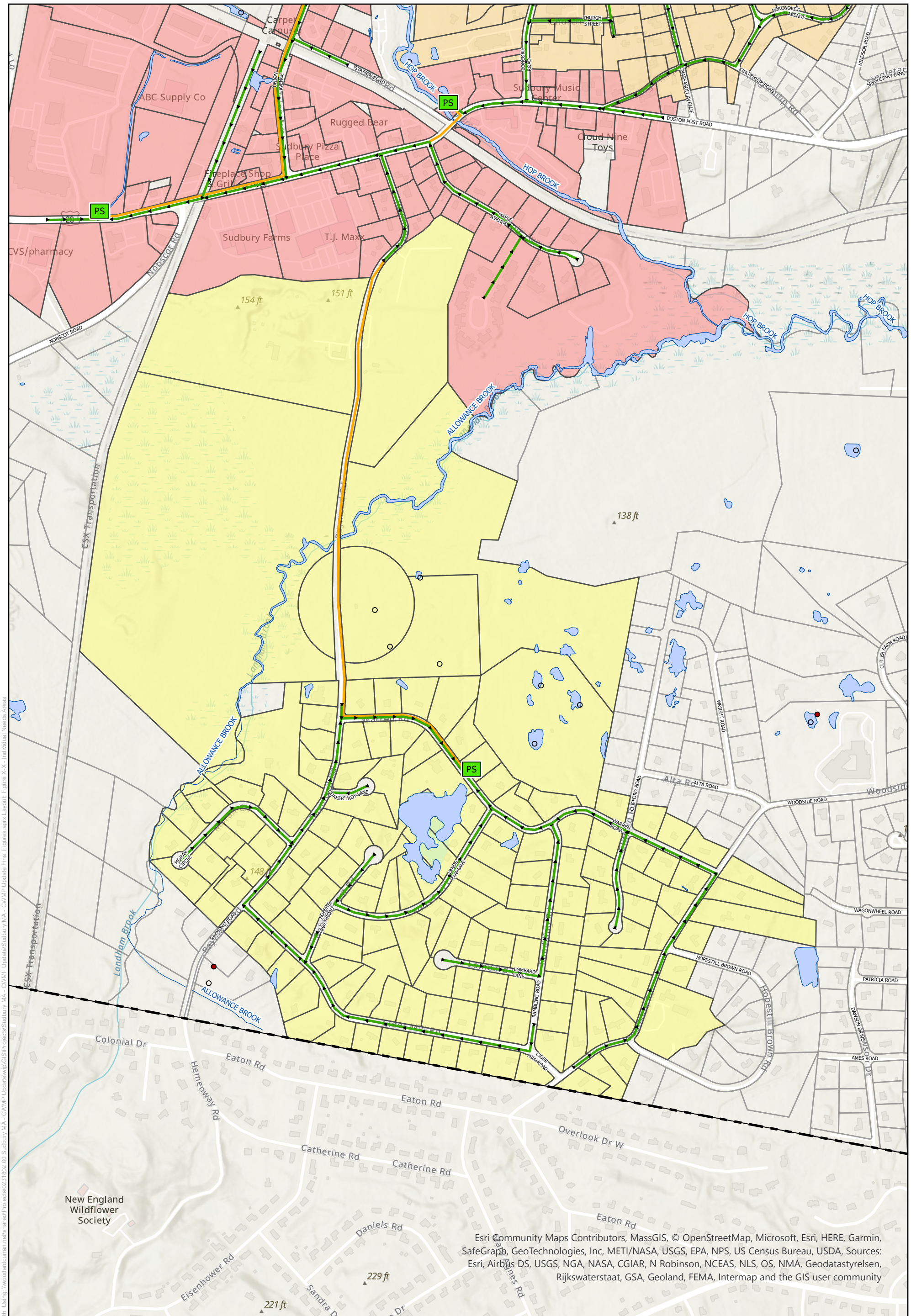

Raymond Road South Needs Area

CWMP Update
Town of Sudbury, MA

Legend

- Groundwater Discharge
- WWTP Wastewater Treatment Plant
- PS Pump Station
- Gravity Sewer
- Low Pressure Sewer
- Force Main
- Certified Vernal Pools
- Potential Vernal Pools
- Priority Habitats of Rare Species
- Estimated Habitats of Rare Wildlife
- Goodman's Hill Project Area
- Raymond Road North Project Area
- Raymond Road South Project Area
- Route 20 Project Area

NHESP & Vernal Pools
Figure 7-10

0 150 300 600 Feet

N

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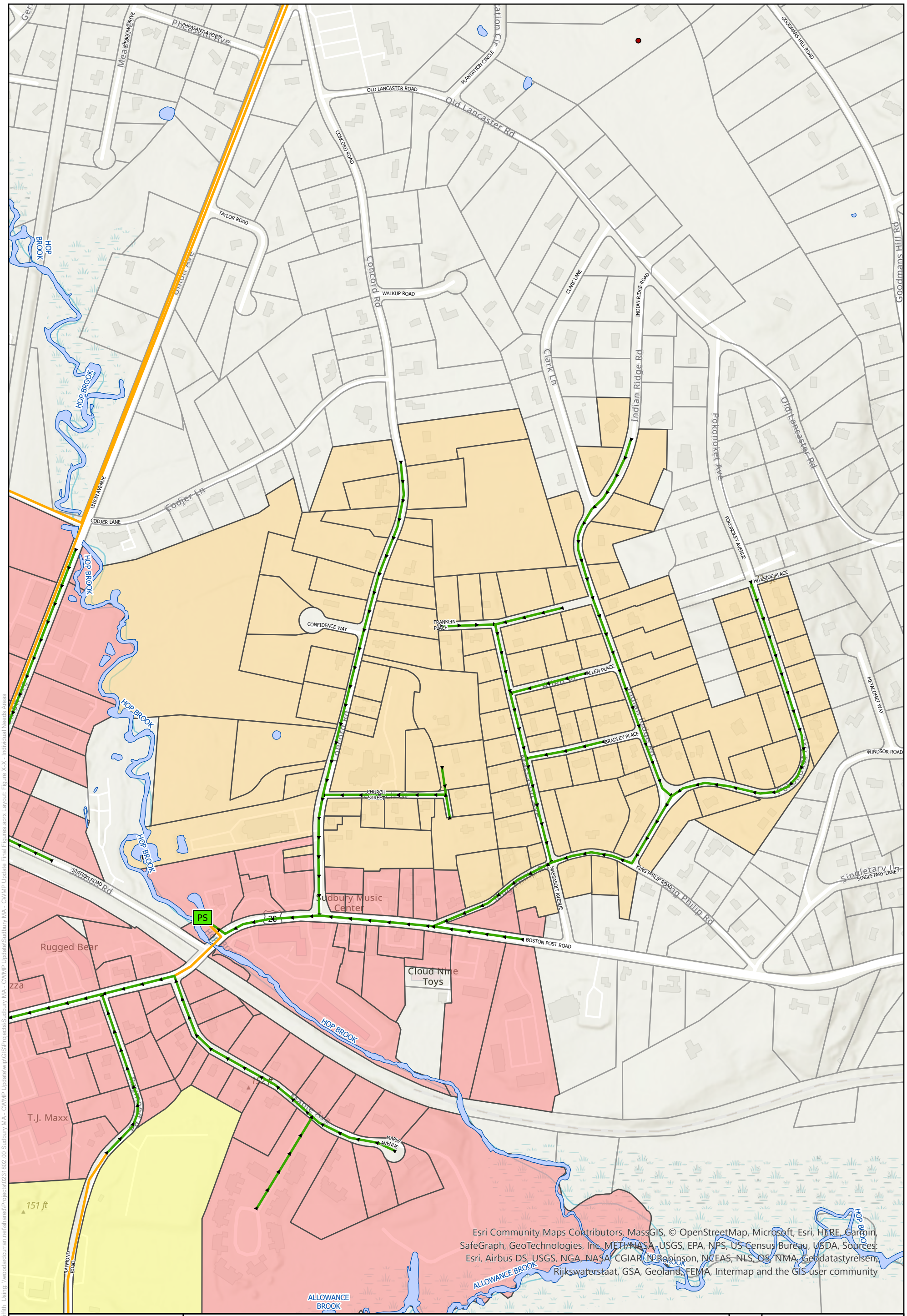

Goodman's Hill Needs Area

CWMP Update
Town of Sudbury, MA

Legend

- Groundwater Discharge
- WWTP Wastewater Treatment Plant
- PS Pump Station
- Gravity Sewer
- Low Pressure Sewer
- Force Main
- Certified Vernal Pools
- Potential Vernal Pools
- Priority Habitats of Rare Species
- Estimated Habitats of Rare Wildlife
- Goodman's Hill Project Area
- Raymond Road North Project Area
- Raymond Road South Project Area
- Route 20 Project Area

NHESP & Vernal Pools
Figure 7-11

0 100 200 400 Feet

N

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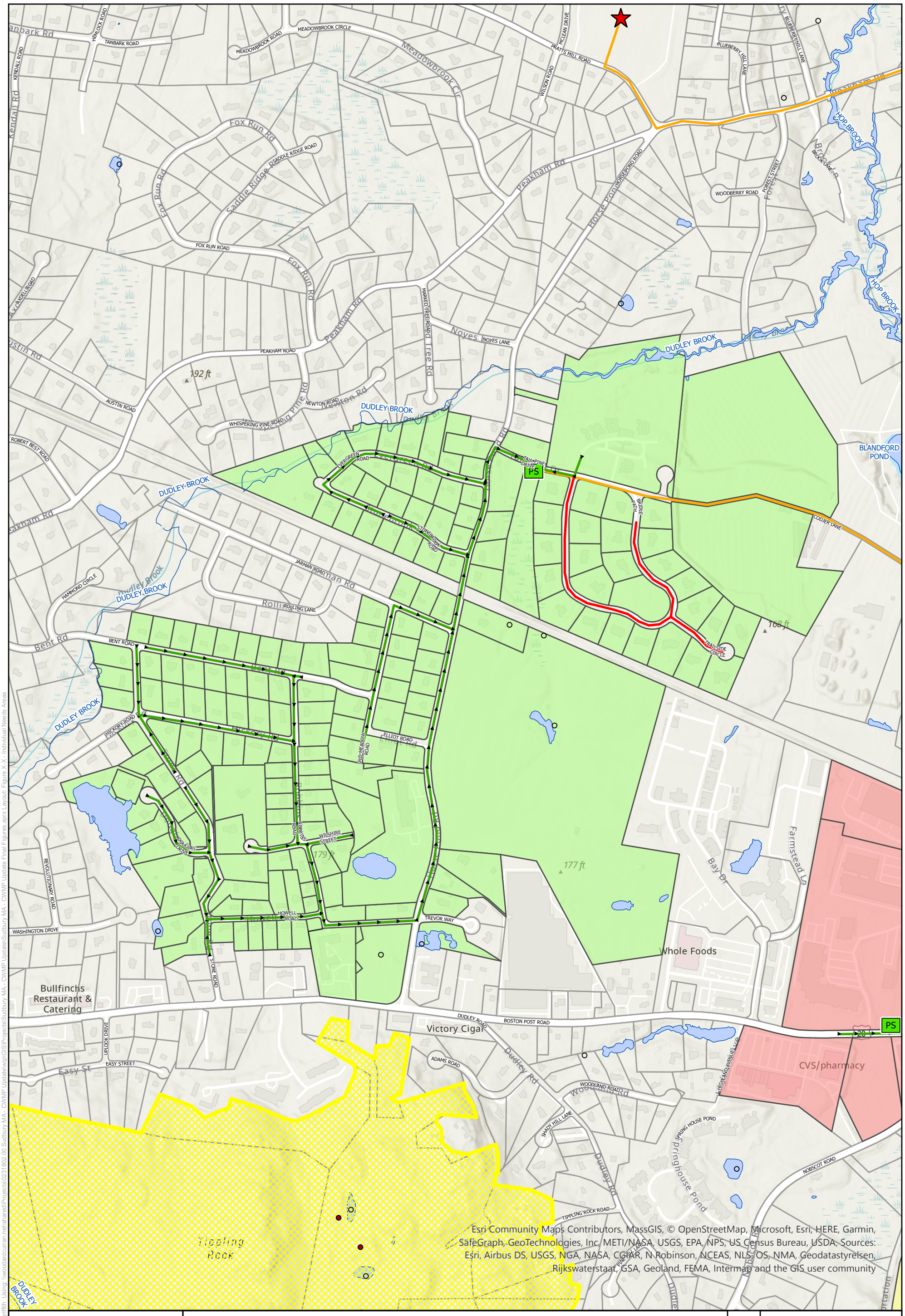

Raymond Road North Needs Area

CWMP Update
Town of Sudbury, MA

Legend

- Groundwater Discharge
- WWTP Wastewater Treatment Plant
- PS Pump Station
- Gravity Sewer
- Low Pressure Sewer
- Force Main
- Certified Vernal Pools
- Potential Vernal Pools
- Priority Habitats of Rare Species
- Estimated Habitats of Rare Wildlife
- Goodman's Hill Project Area
- Raymond Road North Project Area
- Raymond Road South Project Area
- Route 20 Project Area

NHESP & Vernal Pools
Figure 7-12

0 150 300 600 Feet

N

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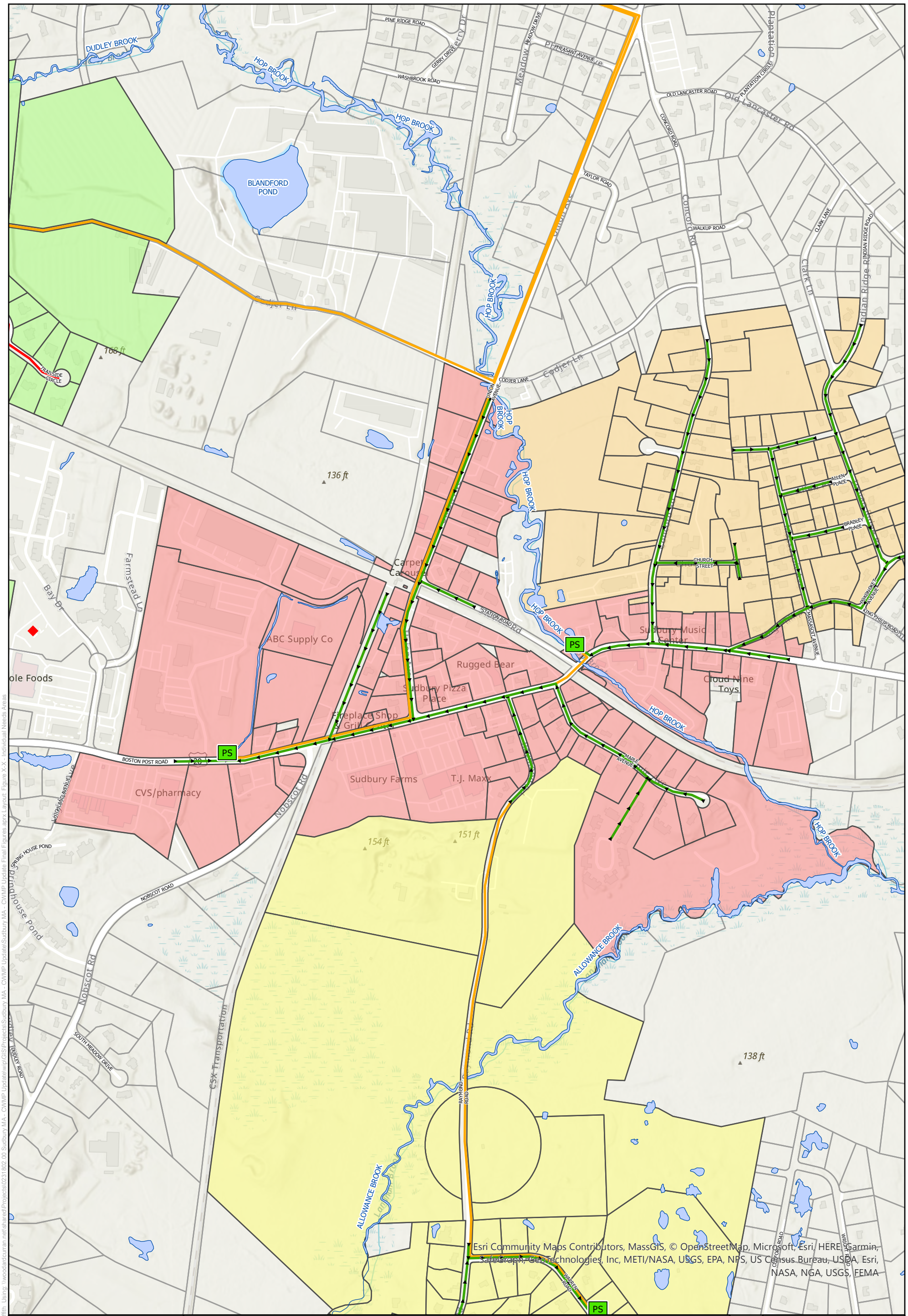

Route 20 Needs Area

CWMP Update
Town of Sudbury, MA

Legend

21E Sites
- Tier I
- Tier II
- AUL Sites

- Groundwater Discharge
- WWTP Wastewater Treatment Plant
- PS Pump Station

- Gravity Sewer
- Low Pressure Sewer
- Force Main
- Goodman's Hill Project Area

- Raymond Road North Project Area
- Raymond Road South Project Area
- Route 20 Project Area

AUL & 21E Sites
Figure 7-13

0 150 300 600 Feet

N

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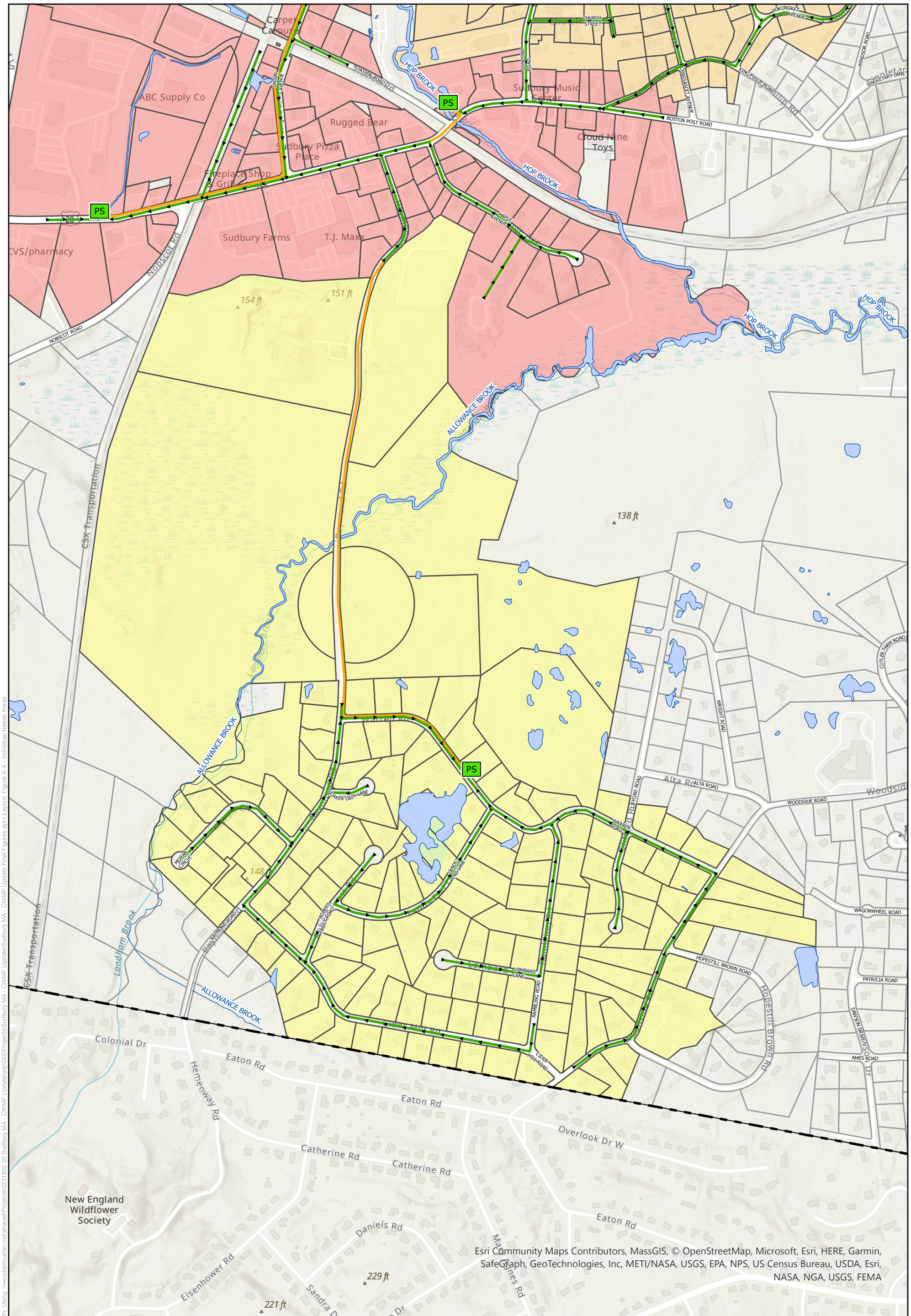

Raymond Road South Needs Area

CWMP Update
Town of Sudbury, MA

Legend

21E Sites
- Tier I
- Tier II
- AUL Sites

- Groundwater Discharge
- WWTP Wastewater Treatment Plant
- PS Pump Station
- Gravity Sewer
- Low Pressure Sewer
- Force Main
- Goodman's Hill Project Area
- Raymond Road North Project Area
- Raymond Road South Project Area
- Route 20 Project Area

AUL & 21E Sites
Figure 7-14

0 150 300 600 Feet

N

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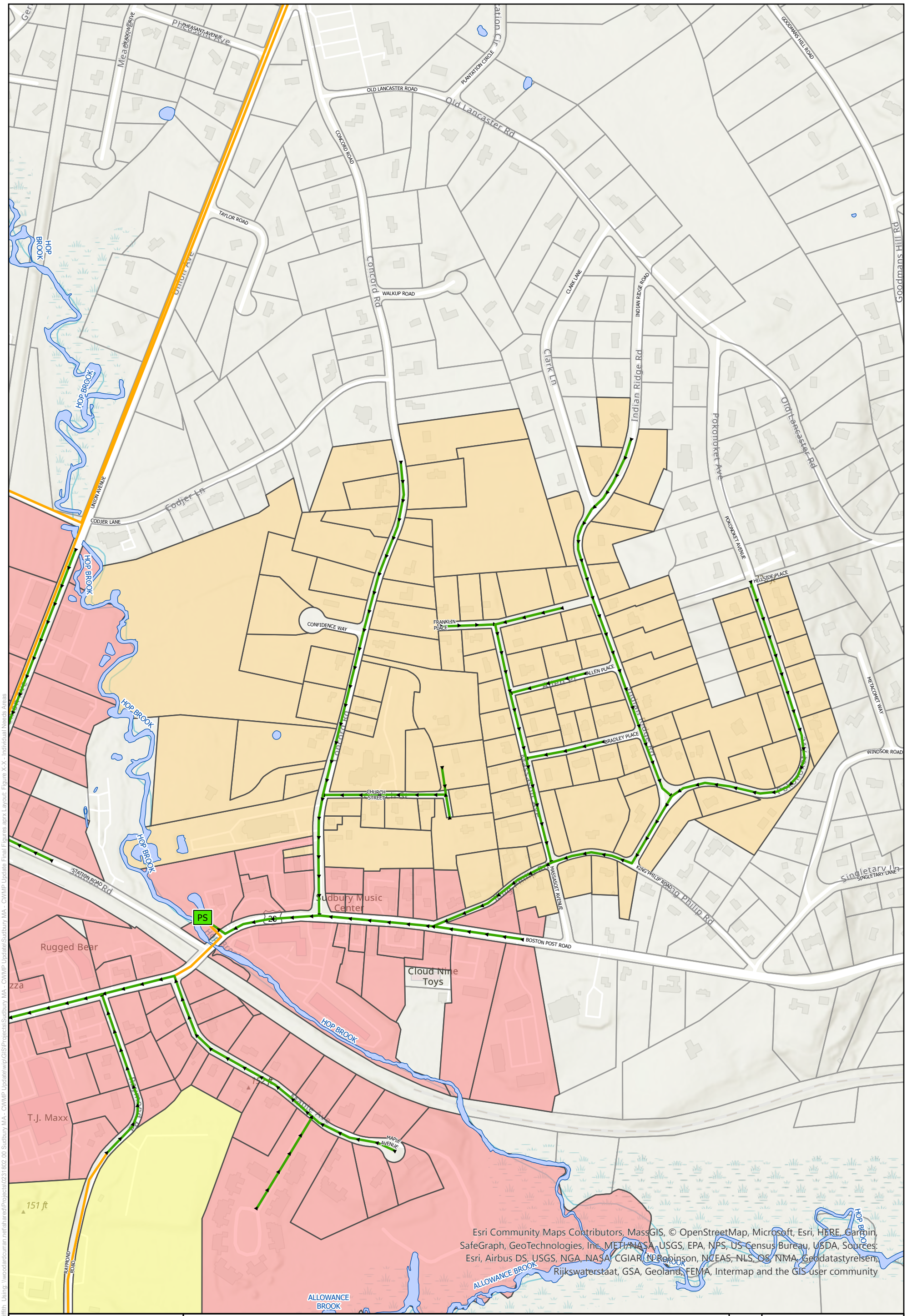

Goodman's Hill Needs Area

CWMP Update
Town of Sudbury, MA

Legend

21E Sites
- Tier I
- Tier II
- AUL Sites

- Groundwater Discharge
- WWTP Wastewater Treatment Plant
- PS Pump Station

- Gravity Sewer
- Low Pressure Sewer
- Force Main
- Goodman's Hill Project Area

- Raymond Road North Project Area
- Raymond Road South Project Area
- Route 20 Project Area

AUL & 21E Sites
Figure 7-15

N

0 100 200 400 Feet

WOODARD & CURRAN

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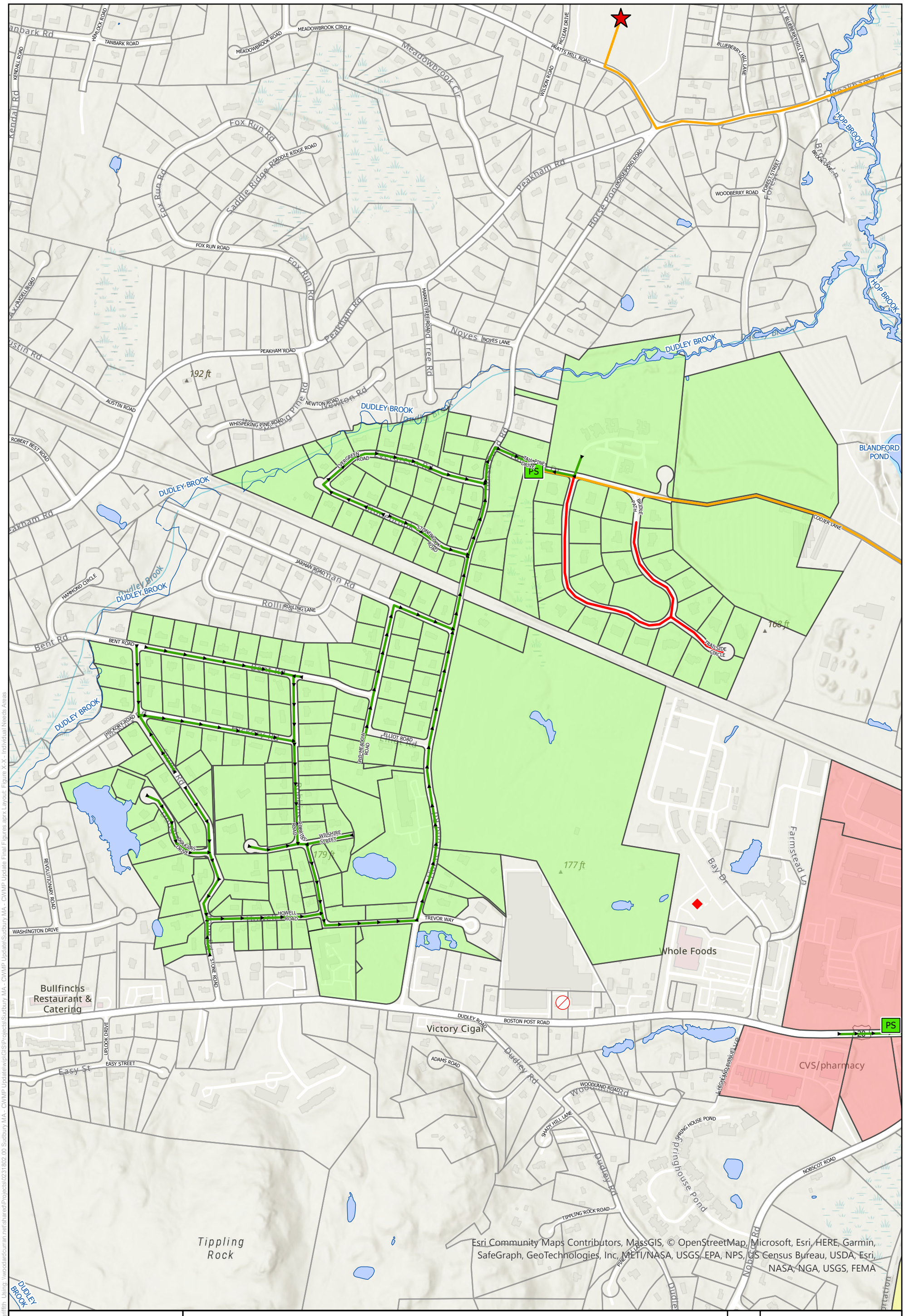


Raymond Road North Needs Area

CWMP Update
Town of Sudbury, MA

Legend

21E Sites
- Tier I
- Tier II
- AUL Sites

- Groundwater Discharge
- WWTP Wastewater Treatment Plant
- PS Pump Station

- Gravity Sewer
- Low Pressure Sewer
- Force Main
- Goodman's Hill Project Area

- Raymond Road North Project Area
- Raymond Road South Project Area
- Route 20 Project Area

AUL & 21E Sites
Figure 7-16

0 150 300 600 Feet

N

WOODARD & CURRAN

Project #: 0231802.00
Map Created: August 2022

Figure Exported: 8/16/2022 By: cgriffith Using: \\woodardcurran.net\shared\Projects\0231802.00 Sudbury MA - CWMP Update\wip\GIS\Projects\Sudbury MA - CWMP Update Final Figures.aprx Layout: Figure X-X - Individual Needs Areas

Third Party GIS Disclaimer: This map is for reference and graphical purposes only and should not be relied upon by third parties for any legal decisions.
Any reliance upon the map or data contained herein shall be at the users' sole risk. **Data Sources:**

7.2.5 Displacements of Households, Businesses, and Services

- None of the Recommended Plan will cause displacement of households or businesses. Final design of sewer infrastructure and pump station locations will be developed to prevent displacements of households, businesses and services. There may be temporary disturbances during construction, but the Town will work to develop a plan to notify any properties well in advance of the actual construction and work together to develop a plan that has the least impact.
- Future sewer construction will have a plan developed well before actual construction, including traffic mitigation.

7.2.6 Noise Pollution, Air Pollution, Odor and Public Health Issues Associated with Construction and Operation

- There may be temporary noise pollution and air pollution (dust) during construction involved with the Recommended Plan. Limiting the hours and the days of construction will mitigate the construction noise impacts, and employing dust control during construction will mitigate any adverse impacts to the air.
- There is the potential for odor issues associated with operation of a collection system. During design, sewers and pump stations will be evaluated for inclusion of odor control. If necessary, odor control mechanisms will be installed.
- No public health issues associated with the construction of the FinalFinalRecommended Plan are anticipated, as a wastewater collection system is constructed to solve the public health issue of contamination of groundwater by septic systems. Any impacts associated with these alternatives will be mitigated during final design.

7.2.7 Violation of Federal, State, or Local Environmental and Land Use Statutes or Regulations and Plans Imposed by Such Statues and Regulations

- Implementation of the Recommended Plan will not violate any federal, state or local environmental and land use statues/regulations, nor will it violate any plans imposed by these statutes/regulations.

7.3 Indirect Impacts

7.3.1 Changes in Development and Land Use Patterns

- All Needs Areas' collection systems that are part of the Recommended Plan have been sized for wastewater flows that were estimated from existing developed lots and those designated as buildable in the future according to the current State Land Use Code recorded at the Town Assessor Office and local zoning. Based on this methodology, no major changes in land use patterns are expected with the proposed Plan. The Town has evaluated land use in evaluating each Needs Area, with the majority consisting of residential parcels with a few smaller commercial parcels interspersed. The Town should look towards regulating any future potential changes through the Zoning Board.
- While the introduction of sewer infrastructure in itself does not serve to promote or deny growth, the local regulatory mechanisms and Zoning Board will. The intent of this CWMP is to solve the problems of the existing development and existing environmental concerns, while concurrently serving to discourage unconstrained and unregulated development.

7.3.2 Pollution Stemming from Changes in Land Use

- There will be no pollution stemming from changes in land use.

7.3.3 Damage to Sensitive Ecosystems

- Sensitive Ecosystems include wetlands, priority habitats of rare species, estimated habitats of rare wildlife, and vernal pools. There is a potential for temporary impacts to sensitive ecosystems during construction of collection systems (sewer lines and pump stations), but these will be mitigated during design and construction. No permanent or long term impacts are anticipated.
- As depicted in Figures EENF 2 through EENF 17 that detail each Needs Area with all Environmental Constraints, there are portions of Needs Areas that impact wetland resource areas , Zones I and II. There are no mapped impacts to NHESP, Vernal Pools or AUL and 21 E Sites using MassGIS layers.
- Based on the on-going degradation Town-wide due to failing and/or improperly operating onsite wastewater disposal systems, it has been determined that optimizing these onsite wastewater disposal systems are a larger and more detrimental threat to resources in this area. With the proposed sewer plan, the water resources degradation from onsite systems, as well as potential threat to drinking water supplies, will be eliminated thus affording the area to rebound and the species now located within this area will be protected from possible further degradation.

7.3.4 Socioeconomic Pressures for Expansion

- Connection of the five identified Needs Areas should not affect socioeconomics, as all proposed sewering will be a flow-based system for those parcels included in the Needs Analysis and clearly identified in the planning process. There will be some small amount of “in-building” expected with parcels that are designated as developable in the State land Use Codes. While some “in-building” could lead to additional development in this area, it is negligible and would not increase budget needs for school systems, roadway maintenance, fire protection, and other Town services. In addition, the design of the system with connection to the new WWTF is a managed system based on the flow projections in the CWMP. The Town will develop a flow neutral policy and regulations to address any future flows outside of CWMP identified Needs Areas.
- The proposed collection system will be constructed in phases, with full build out not expected until well after the 20-year planning period. With the methodology utilized to estimate future wastewater flows, using the current State Land Use Codes, only those properties that currently exist and those categorized as developable now under the State Land Use Codes detailed in the Town Assessor Database will be allotted flows. If a property is coded as non-developable now with onsite wastewater system, it will remain undevelopable when municipal sewer is brought to the area. This conforms to the State’s sustainability goals.
- The proposed route of the sewer infrastructure for the five Needs Areas is conceptually designed in the CWMP Update Report. Based on these elements, the following items are discussed:
- Effect On Land Use

  The Sudbury Sewer Project will not have a permanent negative impact on any land use. The CWMP does not include any land uses other than residential, commercial, industrial and municipal. All agricultural lands or Conservation Commission lands are excluded from the CWMP. The only land impacted will be existing roadways and locations for wastewater treatment facility and pump stations. There will be temporary impacts during construction that will reviewed with a mitigation plan in place during the design period. The Town will work with the commercial properties located along Route 20 for planning before any construction begins. Traffic management will be coordinated and approved through MassDOT. While there may be temporary traffic impacts during construction, a sound traffic management plan prepared in advance that includes input from impacted properties will serve as a smooth transition. There may be temporary impact to all properties as the major portion of the collection system is proposed in existing roadways, but a traffic management plan, as well as public outreach plan will be in place for notices to be sent to any areas during construction of any potential impacts.
- Effects On Streams and/or Inter-basin Transfers

There are no negative impacts to streams with the proposed sewering plan. The proposed sewering will remove failing and/or improperly operating septic systems, which will preserve and protect water quality in Town. The sewer will meet and exceed the recommendations contained in the Massachusetts Year 2016 Integrated List of Waters by reducing and/or eliminating nutrient degradation coming from on-site wastewater systems throughout the major Watersheds in Sudbury that impact the surface water resources in Sudbury as noted.

- Limitations For Future Expansion

  The Sewer System will be limited to future expansion based on the flow-based design and construction of the WWTF and associated infrastructure. The wastewater system is designed as “flow-based” to meet the current Needs. This will also serve to meet Executive Order 385 as “Sustainable” and limit any potential sprawl.

- Reliability, Operation and Maintenance

  The proposed WWTF system will be designed to be reliable with the appropriate on-going operation and maintenance standards.

- Legal and/or Municipal Agreements And Permitting

All legal, municipal, and permitting required as part of the systems implementation will be attained according to the requirements of MassDEP. The Town of Sudbury will work to develop all appropriate sewer user rules and regulations/bylaws that details the conditions required to meet with regards to the wastewater system.

8. GREENHOUSE GAS EMISSIONS POLICY

8.1 Greenhouse Gas Emissions Policy and Sustainable Design

The Massachusetts Executive Office of Energy and Environmental Affairs (EEA) issued the 2007 Greenhouse Gas Emissions Policy (GHG Policy) after determining after determining that the phrase "damage to the environment" as used in the Massachusetts Environmental Policy Act (MEPA) includes the emission of greenhouse gases" ("Summary of the Final Revisions to the MEPA Greenhouse Gas Policy and Protocol," EEA, May 5, 2010). This project requires an environmental impact report (EIR) per 301 CMR 11.01(2)(a)(2), and the GHG Policy is therefore applicable. The current revision of the GHG Policy which is considered by this report is the "Final Revised MEPA GHG Emissions Policy and Protocol" which became effective as of May 5, 2010.

The purpose of this section, in accordance with the GHG Policy, is to discuss and quantify the greenhouse gas emissions for the existing and planned sewer infrastructure within the Town of Sudbury, as well as measures to avoid, minimize, or mitigate such emissions.

The existing sewage infrastructure in the Town of Sudbury consists of on-site sewage disposal systems.

The proposed infrastructure which is evaluated herein consists of installing gravity sewers, three pump stations, and a new wastewater treatment plant.

8.2 Design Standards

These sustainable design standards in this section are intended to provide for GHG reductions where possible by maximizing energy efficiencies. These standards shall be implemented where they are determined to be feasible and appropriate. This determination shall occur during the design phase of future expansion and rehabilitation projects.

8.2.1 Building Design and General Site Selection

The following standards will be reviewed and applied to the extent practicable for building rehabilitation and new construction. These considerations are anticipated to be applicable to all new construction; their practicability for building rehabilitation will be limited.

- Avoid buildings where practicable by using an outdoor controls cabinet instead. This will substantially reduce electricity usage due to heating, as well as overall project cost, materials usage, pump station footprint, and stormwater impacts.
- Duct Installation shall include sealing ducts with mastic, testing, and then insulating to prevent unnecessary duct leakage.
- Pump station buildings are intended for temporary occupancy, so heating shall be minimized such as to only be warm enough to protect equipment, and air conditioning will not be provided, aside from ventilation.
- High-albedo roofing material shall be implemented to reduce ventilation requirements due to heat management.
- Roof and wall insulation shall utilize the highest R-value insulation feasible for the specific type of building construction.
- Energy efficient lighting shall be used for all construction.
- High efficiency heating systems shall be utilized. Use natural gas heating if practicable.
- On-site renewable energy shall be considered in building siting, design, and construction. This includes constructing buildings to support future solar photovoltaic systems and orienting new buildings to maximize the solar benefit.

8.2.2 Equipment/Process Design

The following standards are applicable to all new equipment installations. These standards will be evaluated when large pieces of equipment are replaced.

6. New or replacement motors greater than 10 HP for pumps, blowers, fans, mixers and other drives shall consider Variable Frequency Drivers (VFDs) where variable speed operation can reduce energy consumption. VFDs will typically be provided in lieu of Soft Start devices for pumps, to access the operational flexibility and efficiency potential that a VFD offers.
7. SCADA controls will be remotely accessible via radio or other network connection to reduce need for operators and maintenance personnel to travel to the pump station sites, allow for better analysis of station efficiency and optimization, and access other logistical benefits of remote accessibility.
8. Pump sizes and combinations to maximize average efficiency shall be evaluated at preliminary/final design.
9. Sewer force mains shall be sized, designed, and routed in preliminary design to optimize for minimal maintenance and lower average pumping power required to convey sewer flow.
10. New or replacement motors greater than 1 horsepower (HP) for pumps, blowers, fans, mixers and other drives shall be premium efficiency duty. New or replacement equipment shall incorporate high efficiency models where cost-effective.
11. Review flows and loads with Town to mitigate issues with sizing pumps and stations from unrealistically high buildout flows. Areas proposed to be sewered in this report are largely developed already and the delta between near-term and buildout flows is small relative to other sewer projects, so actual water use data should be used to guide this effort.
12. Considerations shall be when selecting equipment and designing the wetwell to prevent ragging of the pump and excessive scum buildup, which would cause inefficient pump operation.

8.3 Maintenance and Public Policy

The following standards are potentially applicable to all sewered areas.

13. Maintain the collection system to prevent infiltration and inflow by putting in place a replacement and rehabilitation schedule. This will reduce the required pumping, mitigate the risk of sanitary sewer overflows, and prevent costly emergency repairs.
14. Encourage reduction in sewer flows. In the future, evaluate cost-incentive programs for businesses to reduce their sewer fees, and clearly communicate how sewer fees are assessed so residents understand and have a cost incentive to be careful with their water usage.

8.4 GHG Emissions Quantification

This section provides the calculated quantities of GHG emissions for the existing sewer infrastructure, proposed sewer infrastructure without proposed improvements, and proposed sewer infrastructure with proposed improvements. Basis GHG emissions were calculated based solely on electricity usage. Note all proposed buildings are assumed to have electric unit heaters. Table 8-1, below, provides the factors used to convert electricity usage to carbon dioxide equivalents (CO_2e).

Table 8-1 Greenhouse Gas Emissions Factors

Gas	Emissions Rates, lbs/MWH [1]	GWP [2]	CO_2e, tons/MWH [2]
CO_2	633.00	1	0.32
NO_x [2]	0.26	298	0.04
Total	--	--	0.36

1: Emissions rates are included are 2019 Emission Rates per 2019 ISO New England Electric Generator Air Emissions Report, dated March 2021, published by ISO New England Inc. System Planning. This report also includes an emissions rate for sulfur dioxide of 0.05 lbs/MWH, but as sulfur dioxide is generally not considered a greenhouse gas, this is omitted.
2: CO_2 equivalent (CO_2e) is found by multiplying the quantity of the gas by the Global Warming Potential (GWP). Global Warming Potential for nitrous oxide utilized is upper limit
per https://www.epa.gov/ghgemissions/understanding-global-warming-potentials, as extracted July 23, 2019.

Electricity usage for pumps was calculated based on the following calculations:

15. Hydraulic Horsepower (HP) = Flow [gpm] x Total Dynamic Head [ft] / 3956
16. Power Delivered to Motor [HP] = Hydraulic HP / (Efficiency of Motor x Efficiency of Pump)
17. Input Power Required, kW = Power Delivered to Motor x 0.7457 kW/HP

For pump stations, motor efficiencies were assumed as 85%. Proposed pump station usage was calculated as a range. For the high end of electricity consumption and GHG emissions, a pump efficiency of 65% was assumed and buildout flows were used. For the low end, a pump efficiency of 75% was assumed, and existing flows were used.

Electricity usage for unit heaters was calculated by assuming:

18. Each unit heater would run eight hours per day in January
19. Each unit heater would run a number of hours prorated off of the January runtime, based on the maximum heating-degree-days for each respective month as taken from degreedays.net, based on Hanscom Field in Bedford, MA (KBED) data from Dec 2019-Nov 2021, with a base temperature of 60°F.
20. Unit heaters for buildings would be 3kW each, with one heater per room. Unit heaters for an exterior control cabinet would be 0.5kW each.

For the wastewater treatment plant, projected energy usage was estimated based on a discharge pump station calculated based on the approach described above, and from data provided by Transcend, which provides package treatment plant designs. Additional detail can be found in Appendix K.

8.4.1 Baseline GHG Emissions

GHG emissions for existing septic systems was calculated assuming 0.11 tons/CO2e per capita-yr, per the *Evaluation of Greenhouse Gas Emissions from Septic Systems* report from the Water Environment Research Foundation (WERF), dated December 2011 (note: converted from metric tons). The 'capita equivalent' for each phase of the project was calculated by dividing the flow from that phase of the project by 59 gpd, the per capita sewage flow calculated as discussed in Section 2.8 Baseline GHG emissions are included in Table 8-2, below.

Table 8-2 Baseline GHG Emissions

Area Served By:	Low Estimate (Existing)			High Estimate (Buildout)		
	Near Term ADF, gpd	Equivalent in Capita	CO2e, tons/yr	Buildout ADF, gpd	Equivalent in Capita	CO2e, tons/yr
Phase 1: Route 20 Sub-Area A PS	38,692	656	72	146,150	2,477	273
Phase 1A: Raymond Road South	25,857	438	48	34,283	581	64
Phase 2 – Raymond Hills North PS	31,253	530	58	41,072	696	77
Phase 4: Route 20 Sub-Area B PS	27,482	466	51	54,589	925	102
Total	123,285	2,090	230	276,095	4,680	516

8.4.2 Projected GHG Emissions

GHG emissions for proposed pump stations and wastewater treatment plant were calculated based on projected electricity usage. Low and high estimates are provided.

For pump stations, the low and high estimates differ in their assumption regarding heating requirements and pump efficiency. Heating requirements will vary based on the size of the building. The low estimate assumes the following: Heating for control room only for Phase 1 PS. Heating for exterior control cabinets for other stations. The high end assumes all pump stations will have buildings with two small rooms. The inclusion of buildings will depend on final site selection. Low estimates assume a pump efficiency of 65%, high estimates assume a pump efficiency of 75%. This will vary based on final pump selection. Higher efficiency equipment will be sought, but may not be practicable, in particular for the smaller pump stations which may need grinder pumps. These low and high end estimates represent design standards being implemented to various degrees.

For the wastewater plant, the energy usage is calculated by prorating the energy usage for the estimated for the discharge pump station and by Transcend against the flow associated with an individual phase. The low and high estimates vary based on whether the near term or buildout flow was being used.

Table 8-3 provides the estimated expanded GHG emissions. Additional detail is provided in Appendix K.

Table 8-3 Expanded GHG Emissions

Phase	Energy Usage, MWH/yr			GHG Emissions (tpy CO2e)		
	Pump Stations	WWTP	Total	Baseline	Proposed	Delta
Phase 1: Route 20 Sub-Area A PS	16 to 61	3 to 11	19 to 72	72 to 273	8 to 40	-33 to -265
Phase 1A: Raymond Road South PS	12 to 25	2 to 3	14 to 27	48 to 64	6 to 13	-35 to -58
Phase 2 - Raymond Hills North PS	23 to 42	2 to 3	26 to 46	58 to 77	10 to 20	-38 to -66
Phase 4: Route 20 Sub-Area B PS	8 to 26	2 to 4	10 to 30	51 to 102	5 to 16	-35 to -97
Total	59 to 153	10 to 21	69 to 175	230 to 516	29 to 89	-141 to -487

8.5 Conclusions

GHG Emissions are estimated to be reduced by eliminating on-site septic disposal and replacing it with conveyance and treatment. Taking into consideration the various other environmental benefits realized by removing on-site sewage

treatment in densely populated areas as discussed elsewhere in this report, this report does confidently conclude that the project has a positive impact on reducing greenhouse gas emissions.

Greenhouse gas reductions may be maximized by employing the efficiency recommendations discussed in this section. However, as sewage pump stations are generally utilitarian and therefore inherently efficient, these reductions are not substantial and will need to be considered relative to their cost efficacy.

Sudbury is committed to reducing GHG as it moves forward. The additional costs savings to the O&M brings additional benefit to the Town. Refer to Appendix K for Green House Gas supporting datasets.

9. FUTURE FINANCIAL AND ORGANIZATIONAL CONSIDERATIONS

9.1 Institutional Arrangements

The Final Recommended Plan for wastewater collection, transmission and treatment facilities over the next 20 years is being planned, designed and implemented under the guidance and direction of the Town of Sudbury Department of Public Works and Select Board. In order to properly operate and manage the overall wastewater facilities in Town, the Town will need to implement various institutional and system management procedures. These include the following:

- Update of Current Public Works Staff to Oversee Operations & Maintenance of the Entire System
- Develop Sewer User Rules and Regulations, Construction Standards and all associated by-laws
- Develop Sewer User Charge System
- Develop and Approve Sewer System Expansion Control Policy
- Develop Sewer System Staffing and Operations Plan
- Develop of Plans to Address Infiltration and Inflow
- Continued Water Conservation Program
- Development of a Septic management Plan (Remainder of Town not proposed for sewer)
- Development of a Financing/Cost Recovery Plan

9.1.1 Develop Sewer User Rules and Regulations and Construction Standards

The Town will need to develop its Sewer User Rules and Regulations before the first phases of sewer become active. These should be finalized before implementation of the CWMP.

9.1.2 Develop Sewer User Charge System

Develop user charge system that will address these costs before implementation of the first phases of sewer as recommended in the CWMP. This should be an on-going effort as the implementation of the CWMP takes place to address current and future costs of the system become known.

9.1.3 Develop Sewer System Expansion Control Policy

Based on the Recommended Plan contained in the CWMP, the Town will need to diligently monitor the connections to the sewer system. The CWMP has gone to exhaustive efforts to develop a plan that coordinates with the projected existing and future build-out flows from the CWMP for the proposed flow-based system throughout the five individual and the Hybrid Needs Areas.

9.1.4 Review and Develop Sewer System Staffing and Operations Plan

Based on the Recommended Plan for wastewater identified in this CWMP Report, this evaluation recommends the Town review options for the staffing of operations and maintenance of the expanded wastewater system.

9.2 Permits and Funding

The following is a list of potential permits that may be required for the CWMP implementation. Once the CWMP transfers from conceptual planning to preliminary design/survey, these agencies will be contacted and permitting processes begun.

Table 9-1 Permitting Requirements

Permit	Agency	Reason
Wetlands, RDA and NOI	MassDEP and Local Conservation Commission	Wetland crossing, buffer areas
State Road Work	MassDOT	State jurisdiction roadway work
Road Opening	Town of Sudbury DPW	Local road work
Construction of WWTF and Groundwater Discharge BRP-83 et al as needed	MassDEP	Construction of Wastewater Treatment Facility and Groundwater Discharge Fields

Although not a permit, the Town will coordinate through The Massachusetts Historical Commission, as well as the two local historical groups, to coordinate survey work required as part of the Project Notification Form.

9.3 Financing Plan

9.3.1 State Revolving Fund Loan Program

A user-friendly funding option for projects of this sort is public financing through the Massachusetts State Revolving Fund (SRF) Loan Program. The SRF Program is administered through MassDEP and affords communities low interest loans currently at 2 percent over a 20-year period. Additionally, the O'Leary Legislation passed in 2008, affords projects that meet specific criteria the opportunity for 0 percent SRF loans of which Sudbury may be eligible based on the proposed sewering plan to reduce and or eliminate nutrient degradation as detailed in Section 2.6 . The proposed Nutrient reduction included in the Final Recommended Plan is a major qualifier for the zero percent interest.

This Program is financed through the Massachusetts Clean Water Trust (Trust), which was established by Chapter 275 of the Acts of 1989 (The Hayes Act), as amended (Chapter 29C). Under Chapter 29C, financial assistance is offered to projects at one-half market rate. The General Court authorized additional funding (contract assistance) to be paid by the Trust to "buy down" the interest to 2 percent. For wastewater treatment and collection projects such as contained in this Report, design costs are ineligible for SRF financing. This cost is paid directly through Town means.

In August of 2021, the Town filed a Project Evaluation Form (PEF) for Calendar Year (CY) 2021 State Revolving Fund (SRF) funds to cover capital costs for the first phase of the Recommended Plan. At the time of this Report writing, the Final Intended Use Plan (IUP) had not been issued. In any case, the Town will continue to pursue the SRF Program for funding for this Project.

9.3.2 Recommended Finance Plan

All avenues of funding are being pursued at this time. The Town is reviewing a Capital Cost Recovery Plan with the ability to assess betterments through Town Meeting action but has not made any final decision as to how capital cost recovery will be for current and future sewer phases. This Report made assumptions using the cost per parcel financed by SRF over 20 years in order to determine very preliminary estimates.

The Town Department of Public Works, with the lead of the Select Board, will now need to take this same discussion to the taxpayers for the CWMP. Discussion could include not only what Town-wide benefits exist, but to what extent. For example, should the betterments be solely on the property owners who are proposed for offsite wastewater solutions or split to some degree with the ratepayers in Town. There is a significant amount of work to be done before any final decisions on funding/financing are made.

9.4 Cost Recovery Planning

9.4.1 Individual Property Costs

This section looked at potential costs associated with the sewering of the Needs Areas. The Town has not made any final decisions as to how it will recover costs with future implementation. These discussions are on-going and will be further vetted both through Town Administration, as well as the public. There are may potential avenues with which to recover borrowed costs that will be fully vetted.

There are various costs associated with the Final Recommended Plan to address wastewater needs that may including the following:

- Capital costs for the wastewater infrastructure, including force mains, gravity sewers, pump stations, low-pressure sewers, engineering, legal, fiscal, administrative and contingency
- Individual grinder pumps in areas where future survey details Low-Pressure Sewers as the appropriate method of sewering
- Wastewater System Operation and Maintenance costs
- User Fees
- Connection fees
- Individual sewer connections at the private property line
- Potential plumbing and electrical upgrades
- Pumping of and abandonment of existing onsite wastewater systems

The capital and annual operation and maintenance costs represent planning level estimations. Until the Town moves forward beyond the planning stage and completes initial topographical survey, detailed discussions cannot be had. The estimated capital cost for the Final Recommended Plan included herein is shown as a Capital Improvement Plan laid out over the 20-year planning period. Refer to Table 6-4. Once the Town moves forward with implementation of the Final approved Recommended Plan contained in the next MEPA filing, a Final Design Report will further refine costs. Only when a project is finally bid will the true costs be known. The on-going public outreach/education effort will continue beyond the completion of this Final CWMP and costs are the expected concentration. Below is a general discussion of the types of costs associated with a municipal sewer system.

9.4.2 Capital Costs

Capital costs include furnishing and installing sewer pipes (gravity, low-pressure and force mains), pumping stations, engineering, legal, fiscal and contingency.

9.4.3 Individual Grinder Pumps

In those areas where low-pressure sewers are recommended each property owner will be responsible for the cost to install, operate and maintain individual grinder pumps. Located on private property, the grinder pumps convey the building's sewerage to the Town's collection system for treatment at the proposed WWTF at the DPW Site.

9.4.4 Operation and Maintenance Costs

In addition to the capital costs for the sewer infrastructure as noted above, there will be an annual cost to the Town to both operate and maintain the collection system. This cost is born by the users of the system under a "User Fee" as described below. The Town would apportion the operation and maintenance of the wastewater infrastructure, pumping stations and divide it equally among the users in the same manner that it does now.

A User Fee is a charge for those properties that are connected into wastewater infrastructure and this pays for the operation and maintenance of the system. This charge is typically based on water usage. This Report was able to review over two years of water usage through Sudbury Water District records. For this Report, the Town's average water usage is assumed to estimate future costs.

9.4.4.1 Connection Fees

This is the connection fee that the Town typically charges to connect into the wastewater system. This fee has yet to be determined for any new sewer areas. Before Sudbury implements the CWMP sewering plan, it will review appropriate policies and procedures to develop a Connection Fee Policy.

9.4.4.2 Individual Sewer Connections (Private Property)

This is the cost born by the property owner to connect to the Town's infrastructure. This cost will vary depending on the property specifics – how far off the road, presence of trees, soil conditions for trenches, location of indoor plumbing fixtures, etc. These costs will vary based on the specific situation.

9.4.4.3 Plumbing / Electrical Upgrades

These are potential costs to the property owner if upgrades on the private property need to be made either to plumbing and/or electrical systems. For example, if a property owner currently has plumbing on the back side of the building and the sewer is coming in from the front, the property owner may elect to re-route plumbing to the front to limit costs. This same holds true for electrical costs - should the property need a higher amperage electrical service, that upgrade may need to be made. Every effort will be made during the preliminary design phase to work with the property owner to determine where the plumbing exists and try to locate the sewer stub in a convenient location. The Town will send out notices to each property owner to detail the existing plumbing and ask where they want the stub located.

9.4.4.4 Septic System Abandonment

This is a cost that every property owner will assume once sewer service in their area is operational at the time of connection to the sewer. It involves a full pumping of the existing septic tank and either a removal of the tank or cracking and filling with sand to completely abandon the system. The Board of Health is the local jurisdiction of this process. Once the Town has approved the next phase, preliminary design and survey being the first tasks undertaken, this discussion can be expanded with the Health Department to develop standards for this process with the CWMP.

9.4.4.5 Capital Cost Recovery Considerations

The two major methods that are typical for this type of Project include recovery through the Town's general tax revenues, issuing property Betterments and many times a combination of the two. The following few paragraphs are an introduction to the two methods that should be investigated thoroughly during the Preliminary Design Phase of the Project. This is a teaser into the next tasks to be undertaken by the Town.

9.4.5 Property Taxes / General Funds / Expenditures

State statutes allow the Town of Sudbury the ability to raise revenue through assessing real and property taxes. The passage of Proposition 2 ½ (Massachusetts General Law Chapter 59, Section 21C) is a Massachusetts Statute passed in 1980 that took effect in 1982. This statute places constraints on the amount of the levy raised by a city or town, basically a 2.5 percent annual limit on the increase in taxes that a municipality is allowed to levy. Proposition 2 ½ established two forms of levy limits:

- Levy Ceiling -The total annual property tax revenue raised by a municipality shall not exceed 2.5% of the assessed value of all taxable property contained in it. Property taxes can exceed the levy ceiling only if the community passes a capital exclusion, a debt exclusion or a special exclusion.

- Levy Limit - The annual increase of property tax cannot exceed 2.5%, plus the amount attributable to taxes that are from new real property. This levy limit can only be exceeded if the community passes a capital exclusion, a debt exclusion or a special exclusion.

In Needs Areas where there is a benefit to the general public with the construction of sewer infrastructure, capital cost recovery can be attained through an increase in the Town's taxes. For example, along the Route 20/Raymond Road South and North Needs Areas, the overall preservation and protection of the Town's drinking water supplies will provide benefit to the entire Town and thus could be paid for through the general tax base. There are also instances where this option would be included as partial cost recovery with another option detailed further in this section. It is vital that a computation of the benefit percentage be done in order to determine a fair and equitable percentage of costs to be attributed to this option.

The Massachusetts Department of Revenue, Division of Local Services has published a booklet that provides a complete overview of the taxing process. This "*Levy Limits: A Primer on Proposition 2 ½"* outlines the law and the provisions that a community needs to understand before turning to this option for capital cost recovery. The parameters of an "override" or actual means of superseding the existing law are also discussed. With an override, a community would be able to recover costs with a vote for a debt exclusion or a capital outlay expenditure exclusion.

Additional information regarding this process is provided by the Massachusetts Department of Revenue, Division of Local Services publication "*Proposition 2 ½ Ballot Questions Requirements and Procedures"* which details the types of ballot questions, referendum procedures, relationship to appropriations, role of Mass DOR and sample forms. There are also documents identifying successful Proposition 2 ½ overrides in Massachusetts.

9.5 Betterments / Sewer Assessments

The Town will need to address how it finances sewer infrastructure with any future efforts. A common method of recovery of sewer capital costs is with the assessment of a Betterment/Sewer Assessment. This is a complex process that follows Massachusetts General Laws Chapter 80 and 83, but the following is a brief synopsis of the process.

A betterment/sewer assessment is a special property tax for a benefit furnished from the construction of a public improvement and may be assessed upon the land benefited in proportion to the amount of such benefit. Wherever a part of a community benefits from a public improvement (water, sewer, sidewalk), special property taxes may be assessed to those property owners that are benefited from the improvement. The betterment may be in whole (100 percent) or can be in part (percentage less than 100 percent). Each property receiving the improvement can be assessed a proportionate share of the cost of the improvement. This cost can be paid in full at the time the improvement (benefit) is operational or can be apportioned over a period of up to 20 years and in some cases over 30 years (State Revolving Fund affords 30-year payment periods as long as the capital has a useful life of 30 years and is certified by the engineer)

There are two main methods of assessing Betterments, which are described below:

9.5.1 Frontage Method (also called Fixed Uniform Rate Method)

Assessment costs are divided according to the amount of frontage and/or area the property has on the street or by the way in which the pipeline is constructed. This method assumes that larger properties will contribute more cost to the construction. In the frontage method, more pipeline in abutting the property is equated to an increase in the cost of construction to serve that property and subsequently a larger share of the overall project cost to better the property to the extent other properties are bettered.

9.5.2 Uniform Unit Method

Assessment costs are calculated by dividing the project cost by the total number of "residential units" abutting the project in this manner:

- Each sewer unit is equal to a single-family residence and is called an equivalent dwelling unit (EDU).

- Every property is assessed, including developable vacant parcels.
- A residential unit is defined as the quantity of wastewater flow expected from the unit. This may be based on average water meter data or on assumed flow based on a standard such as the Town's Wastewater Treatment Facility regulations.
- For multiple-family residential properties, the number of residential units is determined based on the number of units, i.e. two family is 2 EDUs, three family is 3 EDUs and so forth. A smaller EDU may be assessed on an in-law apartment-this is based on specific situation.
- Non-residential properties are assessed based on existing zoning regulations and best use. Residential equivalency can be determined by floor space (4000 s.f. = 1 sewer unit) or total developable area, or by comparing water use to the residential water use basis. For undeveloped properties, determined by likely use, high wastewater demand businesses are considered best use (e.g. restaurants, hair salons).

Note: An unrecorded apartment in a residential unit impacts the total count. A single developed lot must be assessed as two units if it can be further subdivided within the zoning. Subdivision may not always be fair due to environmental restrictions on portions of the parcel (e.g. wetlands)

In Massachusetts, the most typical method of Betterment/Sewer Assessment is through the Uniform Unit Method. This is typically the most fair and equitable method as it relates to both residential and no-residential parcels equally.

The publication by the Massachusetts Department of Revenue, Division of Local Services entitled, "*Betterments and Special Assessments-Assessment and Collection Procedures"* detail this process in its entirety, including nature of assessments, authority to levy assessments, procedures for assessment and collection, remedies for both property owners and administrators and accounting methods. The publication also includes samples schedules and forms. This document was updated in February 2021 and is available at the following link: https://archives.lib.state.ma.us/bitstream/handle/2452/838067/ocn425958307-2021-01.pdf?sequence=1&isAllowed=y.

9.6 Privilege Fees

In addition to Betterments, Sewer Privilege Fees are a method of cost recovery for sewer users. A privilege fee is a mechanism of cost recovery that can be used when a public improvement is extended to a new area and is used to recover the capital costs associated with the new project. This method assigns the costs of the project to those who benefit from the project, rather than assigning it to the entire tax base. Massachusetts General Law, Chapter 83, Section 17, et al. allows the Town to establish a privilege payment system in lieu of or in case a sewer assessment was not applicable at the time the original sewer was constructed.

There are times when a privilege fee is assessed in lieu of a betterment as follows:

Privilege fees are utilized for those properties that do not about the sewer line, but connect in to the system at a later date. In this case, the privilege assessment shall be due on the date upon which the property connects into the system.

This option is also used when a property that abuts the sewer is connected and at a future date is subdivided. The time of assessment is usually the date when the subdivided parcels connect to the sewer system.

Additionally, if a developer or entity other than the Town, constructs a sewer extension to the municipal system, the Town can assess a privilege fee against each property connecting into the system.

A compensatory privilege fee can be assessed in the case where there is undeveloped property and a Betterment was assessed based on a certain number of sewer units and the property actually develops into a number in excess of those originally assessed. This can be utilized in both residential and commercial/industrial cases.

An Equivalent Dwelling Unit is defined as a unit of measure for sewer services provided by the Town that is calculated and imposed upon each improved property served by the Municipal Sewer System, as determined in accordance with the overall Project Capital Costs.

- An Equivalent Dwelling Unit or EDU is defined as one-single family residential household
- Multi-family residential units and non-residential facility EDU assessments are also calculated on a fixed "EDU basis"
    - Two-Family – Two EDUs
    - Three-Family – Three EDUs
    - Commercial – Based on S.F. Multiplied by EDU

In order to estimate individual household costs, a complex set of data would be used to determine the land uses (single family residential, multi-family (# of units), commercial/industrial (square footage of buildings, specific uses such as restaurant, laundromats-high water users versus low water users. If a Needs Area was comprised of a total of residential users, then costs would be determined by taking the total cost and divide by the number of units (single family represents one unit, two-family represent two units and so forth). For example, if a total cost was $20,000,000 and there were 600 "units", then the individual parcel costs would be in the $33,000 range. If financed through the State Revolving Fund (SRF) Program, betterment costs could be apportioned over 20/30 years, paid as a special tax on existing tax bills two times a year. This is only to show HOW costs MAY be apportioned. The exact costs for Sudbury's Needs Areas will be based on a more detailed and complex review of datasets.

The following is a sample of what this financing option looks like if the property owner was to pay $20,000 at 2% interest (Typical SRF Interest Rate) over 20 years equals approximately $101.00 monthly, paid two times a year at $606 each. The SRF also has an option to pay back over 30 years, with this resulting in payments of approximately $74.00 monthly, paid two times a year at $444.00 each.

These are approximations of cost scenarios. As the Town moves each sewer phase to implementation, costs will be more finitely detailed.

The following Table 9-2 is an estimation of total costs-capital costs plus O&M costs as described above.

Table 9-2 Template of Estimated Range of Annual Costs Per Year

Costs/Fees	Total Financed Costs Per EDU per year*
Estimated Betterment	$888 to $1,212
Estimated Connection Fee	$550 (Average*)
Estimated User Fee (O&M Costs)	$420 to $700
TOTAL	$1,858 To $2,462

*These costs are site specific-i.e. ledge on property, house set back off road, large trees in year, etc.

The Town, with the lead of the Select Board and Department of Public Works, will now need to expand on the costs in order to more finitely detail what is to be expected to the future users, as well as ratepayers in Town. As the Town moves forward to preliminary design phase in the first Hybrid priority area, cost estimates will be further refined in order to give the Town a solid basis for detailing costs to the property owners. The discussion will include Town-wide benefits with the sewering of the Needs Areas with the protection and preservation of water resources in and around Town, specifically the Raymond Road and Hop Brook Aquifer areas. Discussion could include not only what Town-wide benefits exist, but to what extent. This will help in determining how the Town moves forward in apportioning costs. For example, should the betterments be solely on the property owners who are users of the wastewater solutions or split to some degree with the ratepayers in Town. As the Town makes decisions on exactly how it determines costs should be apportioned, these "worst case

scenario/approximations" costs can be refined. Also, as the Town proceeds with Preliminary and Final Design, more accurate costs will be defined. The costs contained herein are planning level costs only.

The Final Capital Improvements Plan, Table 6-4 is a conceptual schedule and financing plan looking at the 20-year CWMP planning life. This is a baseline for the Town to do its financial planning in coordination with other municipal capital planning and serves as a living document to be adjusted as needed. It is important to note, that once the Town moves forward towards an implementation phase, consideration should be given to the completion of an Asset Management Plan (Fiscal Sustainability Plan), as well as an Infiltration and Inflow (I/I) Plan.

The first will form the baseline of managing the Town's new sewer infrastructure. It is considered a "living plan" that gets updated regularly as the Town designs and builds infrastructure. The second, I/I Plan will track all extraneous flow in to the system to accurately manage flows. When the town implements the Final recommended Plan, it will be held to permitted flows under a Massachusetts Groundwater Discharge Permit. The flows will be restricted based on the Permit, so it is vital to track flow that is considered clean water (infiltration or inflow) and not wastewater, so it is vital to track this as the town does not want to treat nor pay for the treatment of water either from the ground or roof leaders, sump pumps etc.

In addition to the Final Recommended Plan contained herein, as part of the state's new policy on Climate Change and Adaptation, the following scope is being added to the future phases of preliminary design.

9.7 Climate Change / Resiliency

This CWMP planning complies with Executive Order 569 with climate change and resiliency protocols. As directed, the CWMP is incorporating the RMAT Climate Resilience Design Standards Tool per the MEPA Interim Protocol.

As standard practice, the Final Recommended Plan from this CWMP will be addressing both climate change and resiliency measures in the future preliminary and final design standards for the proposed sewer infrastructure included in the CWMP. This includes a MBR Wastewater Treatment Facility (WWTF) to be located on property currently in use as the Department of Public Works, five (six if a future Wayland connection is realized) pump stations conceptually located in the CWMP that will be located according to future survey efforts in the preliminary and final design, as well as all collection system infrastructure of sewer pipe and manholes. This will be accomplished utilizing the design standard for wastewater facilities in New England, Technical Report #16 ("TR-16") published by the New England Interstate Water Pollution Control Commission. This document was updated in 2016 specifically "to reflect recent experience and thinking in preparing for storm surge and extreme weather events". The panel which reviewed the design standards for the 2016 update included representatives from regulatory agencies (including MassDEP and US EPA), private engineering consultants, municipal agencies, and academia. Specific items addressed will be assuring that all new facilities will be designed to the maximum extent possible to meet flood protection criteria, as well as vulnerability to not only protect environmental resources, but to also ensure uninterrupted wastewater treatment operations and infrastructure protection from damage from any flooding events. This will be addressed for all critical and non-critical components of the proposed wastewater system.

The proposed CWMP Project includes the design and construction of an MBR Wastewater Treatment Facility (WWTF) and five pump stations, along with the collection system of sewer pipes and manholes. The WWTF is proposed to be located at the existing Department of Public Works on a currently tree covered parcel of land. This is the only location where tree cutting is proposed and will be limited to the facility components, parking and entrance and exit. The future preliminary design will survey the parcel and this will determine the exact location so that as many existing trees that offer resource protection, as well as provide buffer to the facility can be saved.

The five pump stations are proposed in existing cleared areas. The majority of the collection system of pipes and manholes are to be located in public roadways/rights-of-ways that are currently pre-disturbed and do not require the cutting of trees.

The proposed groundwater discharge areas, which are the largest expanse of land needed for the Project, are proposed to be constructed under existing ball field-all of which are currently open land. No cutting of trees is proposed here and the fields will be fully restored for continued use as ball fields.

The total of new impervious area is estimated at 0.73 acres, which is minimal and may be able to be reduced based on design survey. The majority of this proposed Project is within existing roadways/rights-of-ways and existing cleared ball fields, thus proving resiliency in limiting extraneous impervious areas.

As part of the December 30, 2021, MEPA filing, the Town completed the RMAT Climate Resilience Design Standards Tool and it is included in Appendix L.

Comments received from Mass DOER in the April 1, 2022 MEPA Certificate will be reviewed and evaluated for appropriateness during implementation. At the time of this Report, all are conceptual, planning level discussions. Once the Town votes to move forward to implementation, the Town will look towards coordinating efforts with DOER on potential energy saving opportunities with future design and construction activities.

10. PUBLIC PARTICIPATION

10.1 Develop Public Participation Program

The Public Participation Program for the CWMP UPDATE/SEIR will continue through the entire planning process, as well as into the design and construction phases once the Town votes towards implementation of the Final Recommended Plan. Each phase will build on the previous phase. The Plan contains the following elements: 1) development of a Public Participation Work Plan, which includes a communications and public- relations program; 2) development of a schedule of public participation activities; 3) periodic distribution of fact sheets, newsletters, and mailings; 4) arranging and making presentations at one public informational meeting during each phase, with a Public Hearing in Phase II; 5) Provide up to two three-ring binders with a summary of project information to place in up to two locations for general public review of written materials. Materials will be furnished to the Town for inclusion in the three-ring binders. A Town representative periodically updates the three-ring binders by inserting the materials provided.

A Public Outreach meeting will be conducted once all above data has been updated to present the initial findings. A summary of the milestone results of the update are currently being presented as a Monthly Summary on the Department of Public Works' webpage for the public's information, as well as to solicit input. Information presented and input received will be included in the subsequent phases of the Project once the Town has reviewed and approved the final document. This planning was updated with the arrival of COVID-19, which hampered the actual "public" physical presence on the outreach to a virtual program.

While a significant effort has been made to adjust all outreach/education to remote, the Town also felt the need to expand this effort. With that goal, a public relations firm has been hired to conduct parallel outreach/education to reach interested parties through a multitude of channels not currently underway. While the Town continues with updating the webpage, presenting at Select Board meetings and addressing direct questions/comments from the public, the public relations firm will be addressing the project through a stream of information presented through social media avenues. Efforts include a comprehensive update and management of Town's webpage, with a hotline number/email for interested parties to send comments/questions. The firm will be responsible to respond on a timely basis to all. Various virtual workshops will be set up to bring project information/updates to neighborhoods, as well as the business community along Route 20/Union Avenue and work collaboratively through the Sudbury Chamber of Commerce. Town-wide mailings, as well as email updates will be coordinated.

Woodard & Curran worked with the Town to develop this full-scale public outreach plan in spite of COVID-19 restrictions in order to keep the public apprised of the Project happenings that was possible through virtual meetings, updates at the Select Board meetings that are televised and recorded, and posts and summary updates on a wastewater-dedicated webpage. The Comprehensive Wastewater Management Plan (CWMP) Public Participation Program is a collaboration between Town Administration and the Department of Public Works (Project proponents). The Town's consultant, Woodard & Curran assists in carrying out the public education/public forum aspect of the project. Outreach to date includes virtual Town meetings, presentations at Town Meetings and updates at regularly scheduled Select Board Meetings. Appendix M contains materials and presentations to date. As of this Report writing, the end of the CWMP will not end the outreach efforts. The Town intends to continue the Pubic Outreach to the implementation phase and beyond.

The Town also maintains a dedicated webpage for the CWMP. This contains all information relative to the CWMP, including Monthly Updates on the Project, postings of all meetings, both past and future, all previous reports and filings done in regards to wastewater planning in Town. Refer to https://sudbury.ma.us/dpw/cwmp/ for the Town's webpage.

The Project proponent, together with Woodard & Curran and the public relations firm, are carrying out the full Project execution and technical communication with the general public, interest groups, business community and agencies having jurisdiction.

Currently, the Department of Public Works schedules CWMP updates at various Select Board meetings that are being held remotely. These meetings are live taped and can be viewed live or on loops that run on local Cable TV. Postings for

meetings can be viewed at Town Hall for specific dates, times and locations. On-going regular update and work sessions are also being held amongst the consultant and the Town as needed.

The Town is preparing to hold virtual Public outreach meetings utilizing either Microsoft Teams or Zoom platforms and widely advertised, including on the Town's dedicated webpage at https://sudbury.ma.us/dpw/cwmp, posted in Town Hall, in local newspapers and at regularly scheduled Select Board meetings. It is anticipated that a number of informal presentations and workshops will be held throughout the project duration for presentation and review by various entities having jurisdiction over or interest in the project. The following meetings have been held to date on the CWMP with information posted as noted:

- January 8th, 2019: Board of Selectmen Meeting – \\woodardcurran.net\shared\Projects\0231802.00 Sudbury MA - CWMP Update\wip\Meetings\2019.01.08_BOS Meeting.pptx

- March 5th, 2019: Board of Selectmen Finance Meeting – \\woodardcurran.net\shared\Projects\0231802.00 Sudbury MA - CWMP Update\wip\Meetings\2019.03.05_BOS Finance Meeting.pptx

- March 27th, 2019: Planning Board Meeting – \\woodardcurran.net\shared\Projects\0231802.00 Sudbury MA - CWMP Update\wip\Meetings\2019.03.27_Planning Board Meeting.pptx

- May 6th, 2019: Annual Town Meeting – \\woodardcurran.net\shared\Projects\0231802.00 Sudbury MA - CWMP Update\wip\Public Outreach & TM Support\2019 ATM

- May 25th, 2021: Board of Selectmen Meeting (originally scheduled for May 4th, 2021) – \\woodardcurran.net\shared\Projects\0231802.00 Sudbury MA - CWMP Update\wip\Public Outreach & TM Support\BOS Updates\2021.05.25 CWMP Update -Select Board Meeting (002).pptx

- August 5th, 2021: CWMP Forum? (video on Town's website) – https://sudbury.vod.castus.tv/vod/?video=4484f6da-fc7d-4f7f-9844-0657564033fa&nav=recent

- February 3rd, 2022: Public Outreach Zoom Meeting – \\woodardcurran.net\shared\Projects\0231802.00 Sudbury MA - CWMP Update\wip\Public Outreach & TM Support\2022.02.03 Outreach Meeting

- February 7th, 2022: School Board Meeting – \\woodardcurran.net\shared\Projects\0231802.00 Sudbury MA - CWMP Update\wip\Public Outreach & TM Support\2022.02.07 School Board

  February 9th, 2022: Board of Selectmen Meeting – \\woodardcurran.net\shared\Projects\0231802.00 Sudbury MA - CWMP Update\wip\Public Outreach & TM Support\2022.02.09 BOS Update

- July 12, 2022: CWMP Public Hearing - Select Board Meeting: Tuesday, July 12, 2022 » Select Board (sudbury.ma.us)

The Town has been provided with two (2) three-ring Depository Record binders for placement in three locations in Town for public viewing. The Depositories consist of copies of all reports filed on the project along with the Binder. The Binder contains information specific to the project including:

- Mailing List (for any interested party)
- Public Participation Work Plan
- Appendix A Scope of Services
- MADEP State Revolving Fund Information

- Reference Materials
- Media Coverage
- Public Meeting Records
- Responsiveness Summaries
- List of Appendices
- Meeting Minutes
- Regulatory Information

These Depositories are located in the following locations:

Town of Sudbury
Select Board Office
Town Hall
322 Concord Road
Sudbury, MA 01776 (Tel. (978) 639 - 3381)

Hours: NOTE: *Check to see if open due to COVID-19 restrictions in place*
Monday, Wednesday, Thursday: 8:30 am - 5:00 pm
Tuesday: 8:30 am - 7:00 pm
Friday: 8:30 am - 12:30 pm

Friday: 8 am to 11:30 am
Town of Sudbury Department of Public Works
275 Old Lancaster Road
Sudbury, MA 01776
Hours: NOTE: *Check to see if open due to COVID-19 restrictions in place*
Monday - Friday 8:00 A.M. - 3:30 P.M.

A record will be kept of all persons "attending" public meetings and informal workshops. Periodic checks of the Depository Records under "Mail List" will update this list and be utilized for distribution of fact sheets, newsletters, and requested information and responsiveness summaries.

The Town, through the Select Board and Department of Public Works, will prepare and distribute periodic fact sheets, newsletters and mailings to the Mail List as a minimum and to a larger constituency at key points in the CWMP's development.

At the completion of the Final Environmental Impact Report, a Public Hearing was scheduled and held on Tuesday, July 12, 2022 at 7:15PM. The Public Hearing was advertised two times, two weeks in advance, as well as posted at Town Hall and on the Town's webpage at Comprehensive Wastewater Management Plan (CWMP) Updates » Department of Public Works (sudbury.ma.us). All documents relating to the Public Hearing-Notices published, Presentation and official Transcript of Hearing are include in Appendix M.

All proposed and current avenues provided opportunity for interested parties to comment on the Final CWMP/SEIR. Significant and appropriate comments received during the MEPA EENF process have been incorporated into the SEIR.

In addition to the Sudbury Outreach, as part of the Massachusetts Environmental Policy Act Office (MEPA) protocols, the Town added the following to its scope to address this new policy.

10.2 Environmental Justice Policy

The Town of Sudbury acknowledges the updated Environmental Justice Policy currently in effect. While the Environmental Justice Policy (the Policy) was initially enacted in 2002, there have been several updates since then, the most recent on March 26, 2021, with Governor Baker signing *An Act Creating a Next Generation Roadmap for Massachusetts Climate Policy*. This law categorizes foundational definitions for environmental justice principles and populations, as well as environmental benefits and burdens, which have been incorporated into the overall Policy.

The Sudbury Comprehensive Wastewater Management Plan (CWMP) developed and implemented a comprehensive public outreach plan as part of its overall scope of services that is on-going throughout the entire Project. Outreach is a mandatory requirement as part of the Massachusetts Department of Environmental Protection (MassDEP) CWMP Scope and as such, the Sudbury CWMP Scope was approved by the MassDEP for implementation under the State Revolving Fund Loan Program (SRF). This outreach/education plan's goal is to present the work being done as part of the CWMP to the general public, ratepayers, Town Departments and all interested parties and solicit input / comment as the Project progresses. This aligns with the general provisions of the EJ Policy. Utilizing the same provisions included in the CWMP Scope for the Town, the EJ population located in North Framingham can be also included.

Utilizing the Interactive Environmental Justice Map Viewer, it notes that there are no EJ populations designated in the Town of Sudbury. However, there is an EJ designated area in an abutting community, Framingham, located less than one mile from the CWMP proposed Raymond Road South Needs Area (Refer to Figures 10-1 and 10-2). This includes Block Group 6, Census Trac 3839.01, Middlesex County, MA. This Trac is located on the northern edge of Framingham abutting the southern border of Sudbury with Framingham along Edgell Road in North Framingham as it abuts Nobscot Road in Sudbury. The following two maps made using the Interactive Environmental Justice Map Viewer details these areas, with the first noting the geographic location and Census Trac details. The second details the locations of both the EJ Population in North Framingham to the proposed Raymond Road South Needs Area in Sudbury.

The December 30, 2021, MEPA filing of the Expanded Environmental Notification Form (EENF) included the recommended lists of community-based organizations (COB) and tribes from the MEPA Office and EEA EJ Director as part of the overall outreach. In addition to the CWMP adding the specific area of Framingham where the MEPA mapping tool identified the EJ population in Framingham, the MEPA recommendations are being added to the list for the MEPA Site visit. Sudbury is working with the Chief Information Officer (CIO) in Framingham to disseminate all outreach information to the appropriate EJ populations, as well as all interested parties through a variety of avenues. These include posting the information on the FraminghamMa.gov website and publishing the information on the Framingham Source. We also could have access to the Framingham Community & Government Facebook pages, so information can be shared there as well. We could also reach out to Framingham Access to see if they would be interested in filming a segment on their program. There is also potential to be included on the City Council Agenda, - televised on the Government Channel. The intention is to include Framingham in the overall Sudbury CWMP Outreach plan and use this opportunity as one total effort.

Three Native American Tribes have been included in the EJ process:

- Mashpee Wampanoag Tribe
- Wampanoag Tribe of Gay Head
- Nipmuc Tribal Nation

All three Tribes were contacted directly via telephone to inform them of their inclusion in the Sudbury CWMP/SEIR process, with direct contacts added to the permanent Distribution List. In addition, all three direct contacts were emailed direct links to all Project information disseminated to date. Copies of communication are included in Appendix N.

Figure 10-1 Environmental Justice Populations Search Results

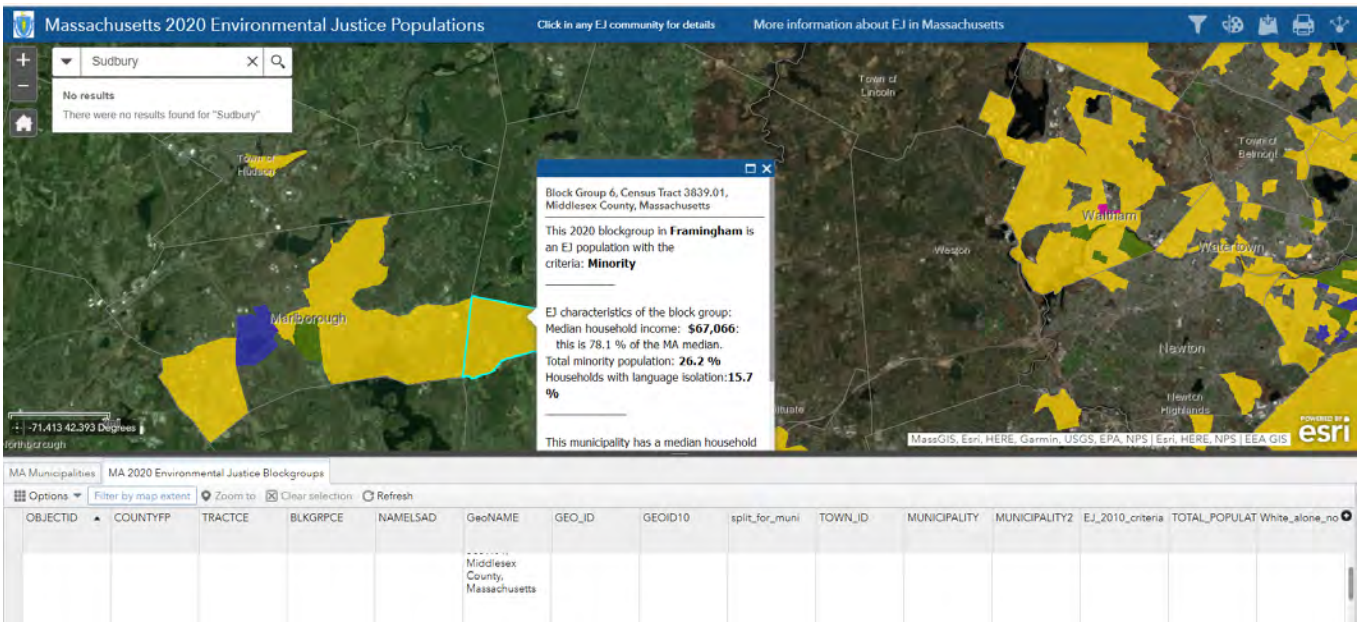
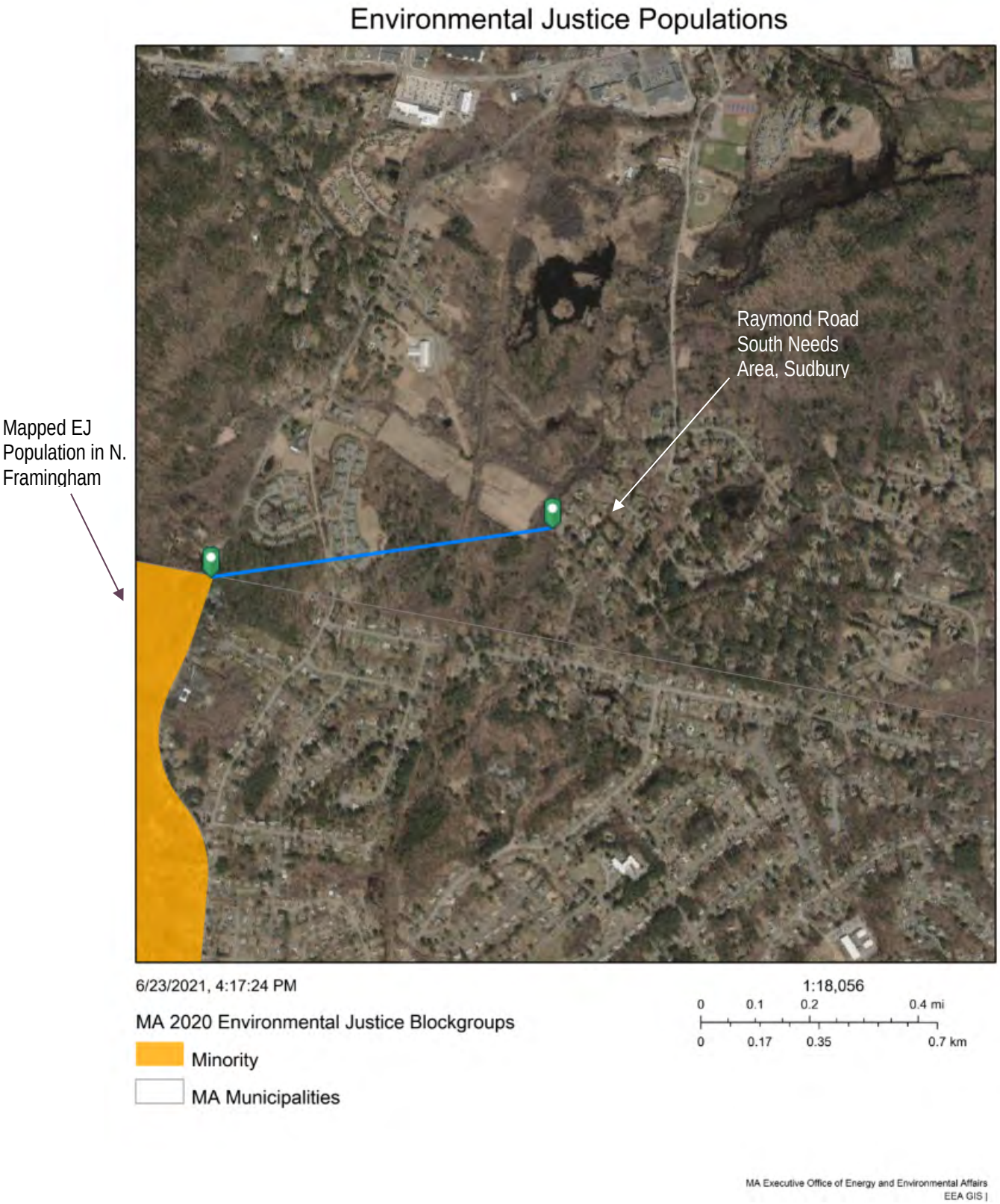


Figure 10-2 Environmental Justice Populations Proximity Map



The Raymond Road South Needs Area in Sudbury is a geographical area that is a high priority for municipal sewer construction in the CWMP Planning. This will eventually include construction of a sewer collection system in the public roadways / rights-of-way. As currently proposed in the CWMP, the sewer construction should NOT impact the North Framingham EJ population for a number of reasons. First, there is no direct route from the EJ areas in North Framingham to the Raymond Road South Needs Area, so there is no anticipated traffic concerns. There is no proposed construction above the roadways in this geographic location-all sewer construction is collection system infrastructure below the roadways, so no emissions, odors or associated impacts anticipated. There could be temporary noise during construction activities, but that would be limited times during the day and temporary during construction, but this is a stretch given the location of the EJ population to the proposed sewering.

Given the EJ Policy that deals with significant challenges while attempting to guide how and where development occurs while also preserving the character of their communities, this development has been in place in Sudbury since the early 1950s. There is no loss of farmlands, forests or open spaces, but more environmental protection of drinking water supplies and maintaining of water quality in adjacent water resources. The Framingham EJ Population will not be subjected to living next to sources of pollution and old abandoned, contaminated sites, which can pose risks to public health and the environment. The Sudbury CWMP Planning of municipal sewering to preserve and protect public health and environmental resources will ensure a healthy living environment for Sudbury, Framingham and all Massachusetts communities located within the Sudbury River Watershed.

The EJ Population in North Framingham will be added as an interested party to the full CWMP Outreach Plan. All information developed as part of the CWMP Scope will be made available to the EJ Population. We can do this through the Framingham Public Information Officer and request they assist us in notifying the residents, posting the information on the FraminghamMa.gov website and publishing the information on the Framingham Source using the local blog space. We can also utilize the Framingham Community & Government Facebook pages, so we can share the information there. All outreach information will be shared with the Framingham Public Work's outreach coordinator and request that they share the information with this public as well. All CWMP information is posted on the Town of Sudbury Department of Public Works webpage at Comprehensive Wastewater Management Plan (CWMP) Updates » Department of Public Works (sudbury.ma.us)

As a note, the MEPA Office provided a list of EJ designations to include in information circulation. This has been added to the Distribution List included in Appendix N.

APPENDIX A: CONTRACT AND SCOPE OF WORK

The Commonwealth of Massachusetts
Executive Office of Energy and Environmental Affairs
100 Cambridge Street, Suite 900
Boston, MA 02114

Charles D. Baker
GOVERNOR

Karyn E. Polito
LIEUTENANT GOVERNOR

Kathleen A. Theoharides
SECRETARY

Tel: (617) 626-1000
Fax: (617) 626-1181
http://www.mass.gov/envir

April 1, 2022

CERTIFICATE OF THE SECRETARY OF ENERGY AND ENVIRONMENTAL AFFAIRS
ON THE
EXPANDED ENVIRONMENTAL NOTIFICATION FORM

PROJECT NAME	: Comprehensive Wastewater Management Plan
PROJECT MUNICIPALITY	: Sudbury
PROJECT WATERSHED	: Sudbury, Assabet and Concord (SuAsCo)
EEA NUMBER	: 16510
PROJECT PROPONENT	: Town of Sudbury
DATE NOTICED IN MONITOR	: January 7, 2022

Pursuant to the Massachusetts Environmental Policy Act (MEPA; M.G.L. c. 30, ss. 61-62L) and Section 11.06 of the MEPA Regulations (301 CMR 11.00), I have reviewed the Expanded Environmental Notification Form (EENF) and hereby determine that this project **requires** the submission of an Environmental Impact Report (EIR). In accordance with Section 11.06(8) of the MEPA regulations, the Proponent requested that I allow a Single EIR to be submitted in lieu of the usual two-stage Draft and Final EIR process. I hereby grant the request to file a Single EIR, which the Proponent should submit in accordance with the Scope included in this Certificate.

Project Description

The EENF/Draft Comprehensive Wastewater Management Plan (CWMP) provided an overview of the Town of Sudbury's wastewater assessment and planning efforts, reviewed impacts to the Town's drinking water supply and surface water bodies from potential failure of on-site septic systems, identified wastewater management and treatment priorities for addressing threats to the Town's water supply from septic systems, and described a Draft Recommended Plan that proposes to provide sewer service to areas with the greatest potential to impact water supplies.

Needs Assessment

The Town does not have a sewer system or a public wastewater treatment facility and all but five properties are served by on-site septic systems. In 1995, 2001 and 2010, the Town conducted wastewater management planning studies of the Route 20 commercial district in the southern part of Sudbury. This area was the focus of the studies because most of it is located within the Zone II groundwater protection area associated with the Town's Raymond Road public water supply wells. In addition, economic development in the commercial district has been constrained by the need for on-site septic systems.

The Draft CWMP expanded upon the earlier studies by analyzing soil and groundwater conditions, lot size, condition of on-site septic systems, development potential and environmental constraints such as wetlands and water supply protection zones in 10 delineated study areas covering the whole Town. Wastewater needs and development potential were estimated for a 20-year buildout period. Five Needs Areas were identified in which septic systems would be replaced by sanitary sewers that would convey wastewater to a new wastewater treatment plant (WWTP). The Needs Areas largely coincide with the Route 20 corridor identified in earlier studies in addition to other areas north and south of Route 20 within the Zone II or with commercial uses. The other study areas contain generally larger residential properties with soil and groundwater conditions that are suitable for septic systems; as noted below, these areas will continue to be served by on-site septic systems. The Needs Areas proposed to be sewered are described below; Table 1 provides estimates of wastewater maximum daily flows under existing and future conditions for each Needs Area.

- Route 20 Sub-Area A and Sub-Area B Needs Areas: The Route 20 Needs Area includes 402 parcels located along Route 20 at its intersection with Union Avenue and Raymond Road. The major land use is non-residential and many of the commercial uses are located within business condos, which generally have more significant wastewater discharges through on-site septic systems. This Needs Area has been divided into Sub-Area A and Sub-Area B. Sub-Area A includes 119 parcels generally located where Route 20 intersects Union Avenue, Nobscot Road and Raymond Road. Sub-Area A is the top priority for sewering due its location within the Zone II of the Raymond Road water supply wells and the concentration of commercial uses within it. Sub-Area B includes 114 parcels located along Route 20 northeast of Sub-Area A; sewering this area is a lower priority because it is not within the Zone II.
- Raymond Road South Needs Area: This Needs Area includes 148 parcels and is located is located south of Route 20. Allowance Brook flows through the center of the area. Approximately 90 percent of the area is in residential use. The Raymond Road South Needs Area is a high priority for sewering due to the presence of the Town's five Raymond Road water supply wells and associated Zone 2 protection areas are within the area.
- Raymond Road North Needs Area: This Needs Area is located northwest of the Route 20 Needs Area and it is bordered to the north and west by Dudley Brook. There are 218 parcels, approximately 90 percent of which are in residential use. This area has been recommended for sewering due to its location within the Zone II water supply protection area of the Raymond Road wells.
- Goodman Hill Needs Area: This Needs Area is located north of Route 20 and east of Union Avenue. Its eastern side borders the Town of Wayland and Hopp Brook flows along its western edge. The Needs Area includes 76 parcels, of which 87 percent are in residential use.

Table 1. Maximum Daily Wastewater Flows (gallons per day (gpd)) Under Existing and Future Buildout Conditions

Needs Area	Existing (gpd)	Buildout (gpd)
Route 20 Sub-Area A	82,000	297,000
Raymond Road South	59,000	76,000
Raymond Road North	88,000	107,000
Goodman Hill	38,000	48,000
Route 20 Sub-Area B	24,000	68,000
Total	291,000	596,000

The CWMP also identified a sixth needs area called the Route 20 East Needs Area. This area is located along the eastern end of Route 20 in Sudbury and abuts the Wayland town line. The CWMP has proposed that this area remain connected to on-site septic systems; however, it is located in a commercial district and may need to be serviced by sewers in the future. As described below, wastewater flow from this area may be conveyed to a new sewer main in Route 20 to be constructed by the Town of Wayland and treated at the nearby Wayland wastewater treatment facility. The new sewer main is anticipated to be along an existing roadway (Route 20), and impacts limited to construction period activities. According to the EENF, the Town will submit a Notice of Project Change (NPC) if and when the Route 20 East Needs Area is proposed to be sewered, provided that Agency Actions remain outstanding at that time.

Draft Recommended Plan

The EENF described a Draft Recommended Plan which proposes a phased approach to wastewater management with the following components:

- A new WWTP to be constructed at the Town's Department of Public Works (DPW) site at 275 Old Lancaster Road. The WWTP will be initially constructed with a capacity to treat 300,000 gpd of sewage, which will be increased to 600,000 gpd over the next 20 years;
- Subsurface discharge beds under the playing fields at the Curtis Middle School located at 22 Pratts Mill Road; this facility will require a groundwater discharge permit from MassDEP and will also be constructed with a capacity to accept 300,000 gpd of treated wastewater effluent and expanded to accommodate 600,000 gpd as the WWTP is expanded;
- A wastewater collection system with approximately 17 miles of sewer mains, including 4,400 linear feet (0.8 miles) within Route 20, and five pumping stations that will connect 675 parcels to the wastewater system; and,
- Implementation of a Septage Management Plan (SMP) for properties which will continue to use on-site septic systems.

The WWTP will feature a Membrane Bioreactor (MBR) system, which includes anaerobic and anoxic biological treatment processes and filtration that is capable of removing organic matter, bacteria and viruses. As detailed in the Scope, the Single EIR should provide a more comprehensive description of the proposed WWTP and discharge area, including conceptual plans, and an explanation of how these systems will ensure that treated effluent meets applicable water quality standards.

The Town will implement an SMP for areas where septic systems will remain in use. The purpose of an SMP is to maintain the operation of septic systems to maintain public health, protect groundwater and surface water resources and avoid the need for additional sewering to due failure of septic systems. It will include inspections of septic systems and will identify areas containing septic systems warranting monitoring and maintenance. According to the EENF, the Town may be eligible to receive up to $200,000 through MassDEP's Community Septic Management Program is a source of low interest loans to property owners for the repair and replacement of septic systems.

Project Phasing

The project will be constructed in the following phases:

Phase 1
- Construct WWTP and discharge area with a capacity to treat 300,000 gpd;
- Construct a pump station and 0.9-mile long force main to convey treated wastewater from the WWTP to the discharge area; and,
- Install sewers in the Route 20 Sub-Area A Needs Area, including 1.7 miles of gravity sewer mains, 1.4 miles of forces mains and one pump station.

Phase 1A
- Install sewers in the Raymond Road South Needs Area, including 2.8 miles of gravity sewer mains, 0.8 miles of forces mains and one pump station.

Phase 2
- Expand the capacity of the WWTP and discharge area to 450,000 gpd; and,
- Install sewers in the Raymond Road North Needs Area, including 3.2 miles of gravity sewers, 1.4 miles of force mains, 0.5 miles of low-pressure mains and one pump station.

Phase 3
- Expand the capacity of the WWTP and discharge area from 450,000 gpd to 600,000 gpd; and,
- Install sewers in the Goodman Hill and Route 20 Sub-Area B Needs Areas, including 2.2 miles of gravity mains, 0.1 miles of force mains and one pump station.

Project Site

According to the EENF, the Town has a population of 19,655. Approximately 89 percent of the Town is zoned for residential use, five percent is zoned for tax exempt uses, 1.2 percent for municipal use, 0.6 percent for open space/agricultural use and three percent for commercial and industrial use, most of which is located in the Route 20 corridor. Specific characteristics of each Needs Areas are described above.

The WWTP is proposed to be constructed on a two-acre portion of the Town's 16.1-acre DPW site, which also includes the Town's Highway Department and Health Department. The existing buildings and parking areas are located at the center of the site, with wooded areas and wetlands around

the site's perimeter. The site is bordered by Old Lancaster Road to the northeast, residential neighborhoods to the north and east, and Hopp Brook to the west and south. The effluent discharge area is proposed to be under the playing fields at the Ephraim Curtis Middle School, which is located approximately 0.5 miles northwest of the DPW site. The 26.5-acre school site is bordered by forested land and wetlands associated with Hop Brook to the north, residential areas to the east and west and Pratts Mill Road to the south. The playing fields, which occupy approximately 11 acres of the site, are located south of the school building and north of Pratts Mill Road.

The Raymond Road South Needs Area and small portions of the Route 20 Sub-Area A and Raymond Road North Needs Areas are located within 1 mile of one Environmental Justice (EJ) population designated as Minority located in north Framingham. Project components are located within five miles of EJ populations designated as Minority located in Hudson, Acton, Marlborough and Framingham; English Isolation located in Framingham; Minority and Income and located in Framingham and Marlborough; Minority and English Isolation located in Framingham; and Minority, Income and English Isolation located in Marlborough EENF included a review of potential impacts and benefits to surrounding EJ populations, and described public involvement efforts undertaken to date.

Permitting and Jurisdiction

The project is subject to MEPA review and requires preparation of a mandatory EIR pursuant to 301 CMR 11.03(5)(a)(3) because it requires a State Agency Action and involves the construction of one or more New sewer mains ten or more miles in length. The project also exceeds ENF thresholds at 301 CMR 11.03(5)(b)(1) (construction of a New wastewater treatment and/or disposal facility with a Capacity of 100,000 or more gpd) and 301 CMR 11.03(5)(b)(4)(c)(ii) (New discharge to groundwater of 50,000 or more gpd of sewage). The project requires a Groundwater Discharge Permit and Treatment Works Plan Approval from the Massachusetts Department of Environmental Protection (MassDEP) and a Non-Vehicular Access Permit from the Massachusetts Department of Transportation (MassDOT). It is subject to the MEPA Greenhouse Gas (GHG) Emissions Policy.

The project will require an Order of Conditions (OOC) from the Sudbury Conservation Commission (or in the case of an appeal, a Superseding Order of Conditions (SOC) from MassDEP) and a National Pollutant Discharge Elimination System (NPDES) Construction General Permit (CGP) from the Environmental Protection Agency (EPA).

The Town will seek Financial Assistance from MassDEP through the Clean Water State Revolving Fund (SRF). Therefore, MEPA jurisdiction is broad and extends to all aspects of the project that are likely, directly or indirectly, to cause Damage to the Environment, as defined in the MEPA regulations.

Environmental Impacts and Mitigation

Potential impacts of the project include alteration of approximately 6.46 acres of land, addition of 0.73 acres (approximately 31,800 sf) of impervious area and temporary alteration of 14,411 sf (0.3 acres) of Bordering Land Subject to Flooding (BLSF). The project will also impact Riverfront Area, which was not described in the EENF; this should be provided in the Single EIR. The project will discharge up to 600,000 gpd of treated wastewater to groundwater.

The purpose of the project is to protect the Town's water supply system by replacing on-site treatment of wastewater by septic systems with sewers that will convey sanitary sewage to a new WWTP that will discharge treated wastewater outside of drinking water supply protection zones. The new discharges to groundwater will be regulated through MassDEP permitting, and treatment will be required to be protective of public health. The Single EIR described measures to minimize and mitigate construction impacts and incorporate energy efficient and resilient design features into the WWTP. Additional mitigation commitments for the any projects identified in the final CWMP should be described in the Single EIR.

Request for Single EIR

The MEPA regulations at 301 CMR 11.06(8) indicate that a Single EIR may be allowed provided I find that the EENF:

a. describes and analyzes all aspects of the project and all feasible alternatives, regardless of any jurisdictional or other limitation that may apply to the Scope;
b. provides a detailed baseline in relation to which potential environmental impacts and mitigation measures can be assessed; and,
c. demonstrates that the planning and design of the project use all feasible means to avoid potential environmental impacts.

Consistent with this request, the EENF was subject to an extended comment period under 301 CMR 11.05(8).

Review of the EENF

The EENF included the Draft CWMP, reviewed previous wastewater planning efforts and identified a Recommended Plan. It reviewed the project's potential impacts to cultural resources, wetlands and water quality and describe measures to minimize and mitigate impacts. It included a GHG analysis, described a public participation plan and included data on septic system conditions maintained by the Board of Health.

Consistent with the MEPA Interim Protocol on Climate Change Adaptation and Resiliency, the EENF contained an output report from the MA Climate Resilience Design Standards Tool prepared by the Resilient Massachusetts Action Team (RMAT) (the "MA Resilience Design Tool"),[1] together with information on climate resilience strategies to be undertaken by the project. The Single EIR should provide a more detailed description of the project's impacts and mitigation measures, as set forth in the Scope below.

Alternatives Analysis

The EENF provided an analysis of regional alternatives for wastewater treatment and disposal and alternative locations for the WWTP and effluent discharge area.

[1] https://resilientma.org/rmat_home/designstandards/

Regional Treatment Alternatives

The Town evaluated the potential to connect Needs Areas to collection and treatment systems in adjacent communities. This alternative would minimize impacts associated with construction of a new WWTP and discharge area. The Town of Wayland, which borders Sudbury to the east, operates a small wastewater treatment facility that may have additional capacity to accommodate a portion of the Sudbury's wastewater flows. In addition, the Town of Wayland is planning to construct a sewer main and pump station along Route 20 to serve a development site located in Wayland abutting Sudbury's Route 20 East Needs Area. The Wayland wastewater treatment system will not have sufficient capacity to treat flows from all of the Sudbury Needs Areas; however, if the Route 20 East Needs Area requires sewering in the future, the Town will evaluate a connection from that area to Wayland's system. The Town also had discussions with Marlborough, which borders Sudbury to the west; however, Marlborough's wastewater treatment system does not have extra capacity to accept flows from Sudbury. The southern edge of the Raymond Road South Needs Area abuts the City of Framingham, which is connected to the Massachusetts Water Resources Authority (MWRA) water and sewer systems. According to the EENF, it appears that the nearest sewer main in Framingham has adequate capacity to convey additional flows from Sudbury to the MWRA collection system for transport to the Deer Island Wastewater Treatment Facility. However, a connection to the MWRA system was deemed to be infeasible for the following reasons:

- Legislative approval would be required for Sudbury to join the MWRA system;
- The costs of joining the MWRA system and contributing to infrastructure operation and maintenance are high; and
- Sudbury would have to purchase drinking water from the MWRA in order to avoid an inter-basin transfer of groundwater from the SuAsCo basin used for the public water supply to Boston Harbor, which would deplete the Town's groundwater supply.

Alternative Locations for the WWTP and Discharge Area

According to the EENF, previous studies had identified a Town-owned parcel at 641 Boston Post Road (Route 20) as the proposed site of the WWTP. However, that site was selected when only areas immediately adjacent to Route 20 were to be sewered. Because of the expansion of the Needs Areas, it is no longer centrally located. The preferred location is the DPW site because it is centrally located with respect to the Needs Areas and discharge site, has sufficient space to accommodate the treatment facility without directly impacting wetland resource areas and is already the site of complementary uses. The WWTP will be constructed in a portion of the site closest to Old Lancaster Road, within which sewer mains and the treated wastewater discharge pipe will be constructed.

The EENF reviewed potential groundwater discharge sites that had been identified in previous planning studies. One site found to have suitable soil and groundwater conditions (the "Johnson property") is no longer available because it has recently been developed for residential uses. A second site, Haskell Field, is located over 1.5 miles northwest of the DPW site. This site is owned by the Town and has sufficient space for a discharge area; however, it lacks suitable soils and the site is located within the Zone II protection area of the Town's Hop Brook water supply wells. The preferred location of the discharge area was identified to be the playing fields at the Curtis Middle School. The site is connected to the DPW site by a series of roadways within which the discharge pipe will be installed

without impacting undeveloped areas. The school building in the northern half of the site is located within the Zone II of the Hop Brook water supply wells; however, the southern portion of the site occupied by the playing fields is outside of the Zone II. A hydrogeological evaluation of the site completed in 2012 estimated that the site could accommodate the 350,000 gpd of treated wastewater effluent that was contemplated to be generated by the WWTP under the conceptual design then under consideration. As noted by MassDEP, updated hydrogeological information will be required to confirm that the site can accommodate proposed discharges of up to 600,000 gpd without impacting the Hop Brook wells, and to guide the design of the WWTP and discharge area.

The Preferred Alternative, as described above, has been designed to provide sewer service to priority Needs Areas identified because these areas are located within the Zone II and include soil and groundwater conditions that could lead to failure of septic system, and to support economic development in commercial districts. According to the EENF, the proposed MBR treatment technology will meet pollutant removal requirements to ensure that the discharge will protect public health and environmental resources. As required in the Scope, the Single EIR should provide a comprehensive description and analysis of the treatment and discharge system to support their selection as the Preferred Alternative.

Environmental Justice

As noted above, the project site is located within one mile of an EJ population designated as Minority located in north Framingham. According to the EENF, this EJ population is not likely to be negatively impacted by the project because all construction activities will occur more than 0.5 miles away. According to the EENF, there are no direct routes between the construction areas and the EJ population, and therefore construction vehicles are unlikely to drive through the EJ population. The proposed location of the WWTP and discharge area are more than two miles away from the EJ population. As noted, the Single EIR should provide a comprehensive analysis of the treatment and discharge system, including documentation of groundwater flows, to demonstrate that the system will be protective of public health and will not disproportionately affect the nearby EJ population.

According to the EENF, MassDEP's approval of the Scope for the CWMP required the Town to develop and implement a comprehensive public outreach plan to inform the public and solicit input. The EJ population in Framingham will be included in this outreach effort, which will include notifying residents and posting information on the Town's website, the City of Framingham's website and the Framingham Source online community news web page. The Framingham DPW outreach coordinator will be provided with project information and requested to assist the Town in its outreach efforts.

As required in the Scope, the Single EIR should describe the Town's outreach to local EJ groups and residents, tribes and indigenous organizations during the planning, design and construction phases of the project and provide an analysis to document that the proposed discharge will meet pollutant limits necessary to protect public health.

Growth Management

Executive Order #385 requires that State and local agencies engage in protective and coordinated planning oriented towards resource protection and sustainable economic development. For reasons of both environmental protection and fiscal prudence, investments in public infrastructure should be carefully targeted toward those areas for which clear existing needs have been established and for areas

where denser development is appropriate, thereby relieving development pressures on open space, agricultural lands, and other valuable natural resources.

According to the EENF, the project will accommodate growth primarily within the existing commercial district along Route 20. As shown in Table 1, approximately 85 percent of the increased flow under buildout conditions will be generated in the Route 20 Sub-Area A and Sub-Area B Needs Areas. The project will not provide sewer service to parts of the Town with large tracts of undeveloped land, including agricultural or recreational land. According to the EENF, the wastewater system design is intended to limit potential sprawl and will be consistent with Executive Order #385. Furthermore, sewering the Needs Areas will protect the public water supply by minimizing potential impacts to water quality from septic system failure within the Zone II.

Wetlands and Stormwater

Project activities in an around wetland resource areas will be confined to construction of sewer mains in previously-disturbed right-of-way (ROW) and roadways crossings of Hop Brook, Dudley Brook and Allowance Brook. The EENF asserted that the project will not directly impact wetland resource areas; however, it appears that the EENF did not consider alteration of Riverfront Area associated with stream crossings. The Single EIR should quantify alteration of Riverfront Area and identify mitigation measures. The project will temporarily impact 14,411 sf of BLSF. According to the EENF, BLSF will be restored upon completion of construction and the project will not result in permanent impacts to flood storage. The Single EIR should document any wetland impact that may arise as a result of groundwater flows from the discharge location.

The project will add 0.73 acres of impervious area in connection with the construction of the WWTP and the pump stations. The EENF did not include conceptual plans of these structures or associated stormwater management systems; this information should be provided in the Single EIR. The EENF included a commitment to install sedimentation and erosion controls around work areas during the construction period to minimize impacts to wetlands and water quality.

Cultural Resources

According to the EENF, over 458 structures and four historic districts in Sudbury are included in local, state and/or federal lists of historical resources. The project will not directly impact and historic structures; however, project activities are proposed within two historic districts listed in the Massachusetts Historical Commission's Inventory of Historic and Archaeological Assets of the Commonwealth. Portions of the Route 20 and Goodman Hill Needs Areas are located within the King Phillip Historic District and a section of the Route 20 Needs Area is also located within the George Pitts Tavern Historic District. Because plans for structures and construction activities within the historic district are at a conceptual level, the Town has proposed to conduct reconnaissance surveys approved by MHC after a Preliminary Design has been prepared. Comments provided by MHC indicate that this approach is acceptable. As recommended by MHC in a letter to the Town (dated April 22, 2021) included in the EENF, the Town should consult with the Mashpee Wampanoag Tribe, Wampanoag Tribe of Gay Head (Aquinnah), Nipmuc Tribal Nation, Sudbury Historical Commission, Historic District Commission and MHC during the planning and design stages of the project.

Climate Change

Governor Baker's Executive Order 569: Establishing an Integrated Climate Change Strategy for the Commonwealth (EO 569; the Order) was issued on September 16, 2016. The Order recognizes the serious threat presented by climate change and directs Executive Branch agencies to develop and implement an integrated strategy that leverages state resources to combat climate change and prepare for its impacts. The Order seeks to ensure that Massachusetts will meet GHG emissions reduction limits established under the Global Warming Solution Act of 2008 (GWSA) and will work to prepare state government and cities and towns for the impacts of climate change. I note that the MEPA statute directs all State Agencies to consider reasonably foreseeable climate change impacts, including additional greenhouse gas emissions, and effects, such as predicted sea level rise, when issuing permits, licenses and other administrative approvals and decisions under M.G.L. c. 30, § 61. The GHG Policy and requirements to analyze the effects of climate change through EIR review play an important role in this statewide strategy. These analyses advance proponents' understanding of a project's contribution and vulnerability to climate change.

Additionally, the Town is a participant in the Commonwealth's Municipal Vulnerability Preparedness (MVP) program. The MVP program is a community-driven process to define natural and climate-related hazards, identify existing and future vulnerabilities and strengths of infrastructure, environmental resources and vulnerable populations, and develop, prioritize and implement specific actions the Town can take to reduce risk and build resilience. *The Sudbury Municipal Vulnerability Preparedness Workshop Summary of Findings* report (dated June 29, 2019) identifies severe storms, extreme temperatures, fire and drought as the most significant climate hazards facing the Town.

Adaptation and Resiliency

Effective October 1, 2021, all MEPA projects are required to submit an output report from the MA Resilience Design Tool to assess the climate risks of the project. Based on the output report attached to the EENF, the WWTP and pump stations have high exposure ratings based on their location for: extreme precipitation (riverine flooding) and extreme heat. The EENF did not include an evaluation of the effluent disposal area; this should be provided in the Single EIR. Based on the 30-year useful life identified for the project and the self-assessed criticality of the proposed WWTP and pump stations, the MA Resilience Design Tool recommends a planning horizon of 2050 and a return period associated with a 25-year (4.0 percent chance) storm event when designing the WWTP and a 10-year (10.0 percent chance) storm event when designing the pump stations. The 25-year return period for the WWTP would appear to correspond to infrastructure with a medium criticality rating, whereas the 10-year return period for the pump stations corresponds to a low criticality rating. These assessments of criticality (generated from user inputs) appear low given the critical role that this infrastructure will play in managing wastewater flows and reducing impacts to water quality. According to the EENF, the design of the project is at a conceptual stage and the final design will incorporate measures to increase the project's resilience to future climate conditions based on the New England Interstate Water Pollution Control Commission's Technical Report 16, which includes recommendations for resilient treatment facility design. As detailed in the Scope, the Single EIR should provide an expanded analysis of future climate assumptions and potential resilience design measures. The Single EIR should consider output recommendations from the MA Resilience Design Tool applicable to "high" critical assets, and should consider recommendations for a longer useful life.

Greenhouse Gas (GHG) Emissions

This project is subject to review under the May 5, 2010 MEPA GHG Policy. The Policy requires Proponents to quantify carbon dioxide (CO2) emissions and identify measures to avoid, minimize or mitigate such emissions. According to the EENF, GHG emissions associated with septic systems in the area are greater than the anticipated GHG emissions associated with electricity use by the WWTP and pump stations. The EENF compared estimated rates of GHG emissions associated with septic systems in the Needs Areas to emissions from electricity use of the pump stations and WWTP. Per capita emissions of carbon dioxide equivalents (CO_2e) from septic systems was estimated as 0.11 tons per year (tpy) based on a report prepared in 2010 by the Water Environment Research Foundation (WERF).[2] The existing population within the Needs Areas is 2,090 people, which is projected to increase to 4,680 under full build-out conditions. Therefore, total GHG emissions associated with all septic systems to be eliminated ranges from 230 tpy under existing conditions to 516 tpy under full build-out conditions. According to the EENF, the WWTP will be designed as an energy-efficient building with high R-value roof and wall insulation, efficient lighting and heating systems, use of high-efficiency pumps with variable frequency drives (VFD) and minimal heating in the pump stations. The EENF estimated that combined GHG emissions of the WWTP and pump stations will range from 41 tpy under initial conditions with low wastewater flows to 63 tpy, a reduction of 168 to 475 tpy compared to emissions from septic systems under existing conditions. I note that the EENF used an emissions factor of 488.9 pounds of CO_2 per megawatt-hour (lbs/MWh) of electricity use, which was developed by the Environmental Protection Agency (EPA); the Single EIR should use the most recent grid electricity emissions factor published by the Independent System Operator- New England (ISO-NE), which is currently 633 MWh per year. As detailed in the Scope, the Single EIR should clarify the proposed heating system to be used in the WWTP and provide additional information on the design of the WWTP requested by the Department of Energy Resources (DOER). It should evaluate the feasibility of rooftop photovoltaic (PV) systems on the WWTP and include a commitment to install electric vehicle (EV) charging stations at the WWTP site.

Construction Period

The EENF reviewed construction-period mitigation measures that will be implemented to minimize impacts. All construction activities should be managed in accordance with applicable MassDEP's regulations regarding Air Pollution Control (310 CMR 7.01, 7.09-7.10), and Solid Waste Facilities (310 CMR 16.00 and 310 CMR 19.00, including the waste ban provision at 310 CMR 19.017). The project should include measures to reduce construction period impacts (e.g., noise, dust, odor, solid waste management) and emissions of air pollutants from equipment, including anti-idling measures in accordance with the Air Quality regulations (310 CMR 7.11). I encourage the Town to require that its contractors use construction equipment with engines manufactured to Tier 4 federal emission standards, or select project contractors that have installed retrofit emissions control devices or vehicles that use alternative fuels to reduce emissions of volatile organic compounds (VOCs), carbon monoxide (CO) and particulate matter (PM) from diesel-powered equipment. Off-road vehicles are required to use ultra-low sulfur diesel fuel (ULSD). If oil and/or hazardous materials are found during construction, the Town should notify MassDEP in accordance with the Massachusetts Contingency Plan (310 CMR 40.00).

[2] "Evaluation of Greenhouse Gas Emissions from Septic Systems" available online at https://www.waterrf.org/research/projects/evaluation-greenhouse-gas-emissions-septic-systems

Erosion and sedimentation controls should be implemented and maintained in accordance with the Stormwater Pollution Prevention Plan prepared in accordance with the NPDES Construction General Permit requirements. The Town should prepare a spills contingency plan for addressing releases of fuel or other materials during construction. A comprehensive list of construction-period mitigation measures should be provided in the Single EIR.

Conclusion

The EENF/CWMP described the recommended Plan, potential environmental impacts and proposed mitigation measures in sufficient detail to warrant a Single EIR. The Scope below identifies analysis and information that should be provided in the Single EIR.

SCOPE

General

The Single EIR/CWMP should follow Section 11.07 of the MEPA regulations for outline and Content and the additional information and analyses identified in this Scope. The Single EIR should identify and describe any changes to the project since the filing of the EENF and provide an update on State, local and federal permitting.

Project Description

The Single EIR should include an executive summary, it should identify significant environmental benefits and impacts, and measures that will be taken to avoid, minimize and mitigate adverse impacts. The Single EIR should describe the planning process that has occurred to date, and the proposed schedule for implementing the remaining phases of planning, design, environmental permitting and review, and construction. Detailed information should be provided for each area where construction is proposed, including maps that show where sewer lines, cross-country easements, pumping stations, and other facilities will be located. It should identify environmental impacts of all alternatives and describe mitigation measures for the Preferred Alternative. The Single EIR should discuss the state permitting process for implementation of the Recommended Plan proposed in the CWMP and describe how it will meet all applicable performance standards. I encourage early coordination with MassDEP during preparation of the Single EIR/CWMP.

CWMP

The Single EIR should include a Final CWMP, including, as necessary, updated delineations of Needs Areas and wastewater flow estimates. It should include conceptual plans and more detailed descriptions of the WWTP, discharge area, pump stations and sewer mains. To the extent possible, the Single EIR should provide plans of sufficient detail to support the Town's determination that the Recommended Plan, including the use of MBR treatment technology, will accommodate projected flows and comply with anticipated effluent discharge limits. The Single EIR should review alternative alignments of the sewer main in the Raymond Road South Needs Area that avoid Zone I well protection zones. It should review the Town's land use planning and provide documentation to show that the proposed sewering is not intended to facilitate secondary growth.

The Single EIR should include the results of an updated hydrogeological report or additional data and analysis of groundwater and soil conditions at the proposed discharge area to support the proposed capacity of the facility. As noted by MassDEP, additional analysis of the discharge area is necessary to determine whether the effluent will be discharged into the Zone II of the Hop Brook water supply wells and whether the effluent would as a result be required to meet more rigorous permit requirements; this information could affect the final design of the treatment and disposal systems. The Single EIR should analyze whether use of the school playing fields or any surrounding forest land/open space would be impacted by siting discharge beds in this location.

The CWMP should clarify the septic system failure rate in the Needs Areas and parts of the Town not proposed for sewering and describe how that information will be used in developing the SMP. As requested by MassDEP, the Single EIR should include specific recommendations for measures to be included in the SMP and provide additional financial and organizational details that must be included in the CWMP.

Environmental Justice

The Single EIR should include an update on the Town's public outreach efforts, including any consultation or planned consultation with the Mashpee Wampanoag Tribe, Wampanoag Tribe of Gay Head (Aquinnah) and Nipmuc Tribal Nation.

The Single EIR should provide a baseline assessment of any existing unfair or inequitable Environmental Burden and related public health consequences impacting EJ Populations in accordance with 301 CMR 11.07(6)(n)1. and the MEPA Interim Protocol for Analysis of EJ Impacts. This baseline assessment should include analysis of the Department of Public Health (DPH) EJ Tool and the environmental indicators in EPA EJ Screen. I note that one environmental indicator in EJ Screen relates to proximity of the selected census block (i.e., here, the identified EJ population) to wastewater discharge locations. It should document that the project design will result in effluent discharge limits that will protect public health in Sudbury and surrounding communities. The Single EIR should also document whether the EJ population is downgradient or upgradient of groundwater flows from the discharge location, and whether any public health impacts are anticipated apart from potential impacts to Hop Brook water supply wells (such as recreational uses of any surrounding waterbodies). The Single EIR should discuss whether the project is anticipated to have any other impacts to the EJ population, including during the construction period, and whether any impacts will disproportionately affect the EJ population as compared to non-EJ populations.

Wetlands and Stormwater

The Single EIR should provide an updated analysis of potential permanent and temporary impacts to wetland resource areas and floodplains, and identify mitigation measures to minimize impacts to wetlands and water quality. It should describe the proposed stormwater management system at the WWTP and review how it will be designed to comply with the Massachusetts Stormwater Management Standards.

Climate Change

The Single EIR should review potential resiliency design measures that may be incorporated into the project design. Given the 20-year buildout of the Recommended Plan, I encourage the Town to design the project based on projected climate conditions beyond the 2050 planning horizon used in the EENF. The Town should demonstrate use of best available climate projections and data in designing project elements, including stormwater management systems and other applicable features, and, if the project (including supporting infrastructure) will not be designed to meet specifications based on climate projections, provide an explanation of the reasons and a description of whether and how the project will be able to take further steps to adapt to climate conditions at a later stage. The Single EIR should consider the recommendations provided in the MA Resilience Design Tool for medium or high critical assets, including the WWTP, discharge area, pump stations and sewer mains, for the 2050 and 2070 planning horizon. Specifically, it should analyze whether the elevation of the WWTF and pumping stations, and the sizing of the stormwater management system, are consistent with these recommendations. The Single EIR should provide clear justification for using the design parameters (useful life, return period/storm scenario) chosen for the project. If the project cannot be built to be fully resilient to future climate conditions, the Single EIR should discuss whether the project has engaged in adaptative management planning, and how future upgrades or retrofits could be made to adapt to worsening climate conditions. General guidance on adaptative management planning is available on the RMAT website.[3] The Single EIR should address the considerations identified in this guidance document.

The Single EIR should identify conditioned space in the proposed WWTP and provide the analysis requested by DOER. It should provide a revised estimate of the project's GHG emissions using the grid emissions rate established by ISO-NE and, if necessary, emissions factors for fossil fuels from the Energy Information Administration (EIA). [4] The Single EIR should clarify whether natural gas or oil will be used for space heating; if a gas- or oil-fired heating system is proposed, the Single EIR should evaluate the feasibility of air source heat pumps (ASHP). It should review the feasibility of rooftop PV systems on the WWTP and include a commitment to construct an EV charging station at the DPW site.

Mitigation and Draft Section 61 Findings

The Single EIR should include a separate chapter summarizing all proposed mitigation measures including construction-period measures. This chapter should also include a comprehensive list of all commitments made by the Town to avoid, minimize, and mitigate the environmental and related public health impacts of the project, including air/GHG, water quality and noise impacts during the construction period. The filing should contain clear commitments to implement these mitigation measures, estimate the individual costs of each proposed measure, identify the parties responsible for implementation, and contain a schedule for implementation. The list of commitments should be provided in a tabular format organized by subject matter (land, water/wastewater, GHG, environmental justice, etc.) and identify the Agency Action or Permit associated with each category of impact. Draft Section 61 Findings should be separately included for each Agency Action to be taken on the project.

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[3] https://eea-nescaum-dataservices-assets-prd.s3.amazonaws.com/cms/GUIDELINES/20210330FlexibleAdaptationPathwaysFormFinal.pdf.

[4] https://www.eia.gov/tools/faqs/faq.php?id=76&t=11#:~:text=The%20U.S.%20Energy%20Information%20Administration,for%20when%20electricity%20is%20generated.

The filing should clearly indicate which mitigation measures will be constructed or implemented based upon project phasing to ensure that adequate measures are in place to mitigate impacts associated with each development phase

Responses to Comments

The Single EIR should contain a copy of this Certificate and a copy of each comment letter received. In order to ensure that the issues raised by commenters are addressed, the Single EIR should include direct responses to comments to the extent that they are within MEPA jurisdiction. This directive is not intended, and shall not be construed, to enlarge the scope of the Single EIR beyond what has been expressly identified in this certificate.

Circulation

In accordance with 301 CMR 11.16, the Town should circulate the Single EIR to those parties who commented on the EENF and to any State Agencies from which the Town will seek permits or approvals, including MassDOT. A copy of the Single EIR should be made available for review in the Sudbury Public Library.

K. Theoharides

April 1, 2022
Date

Kathleen A. Theoharides

Comments received:

01/20/2022 Massachusetts Historical Commission (MHC)
03/03/2022 Town of Sudbury
03/25/2022 Massachusetts Department of Environmental Protection (MassDEP) – Northeast Regional Office (NERO)
03/29/2022 Department of Energy Resources (DOER)

KAT/AJS/ajs

The Commonwealth of Massachusetts

William Francis Galvin, Secretary of the Commonwealth
Massachusetts Historical Commission

January 20, 2022

Secretary Kathleen Theoharides
Executive Office of Energy & Environmental Affairs
100 Cambridge St., Ste. 900
Boston, MA 02114

Attn.: Alexander Strysky, MEPA Office

RE: RE: Sudbury Comprehensive Wastewater Management Plan, Sudbury, MA.
W&C PN 0231802.00. MHC #RC.69626. **EEA #16510.**

Dear Secretary Theoharides:

Staff of the Massachusetts Historical Commission (MHC), office of the State Historic Preservation Officer, have reviewed the Environmental Notification Form (ENF) submitted for the project referenced above, and the MHC's files.

The ENF (Attachment 9) includes a copy of the MHC's letter of April 22, 2021, requesting additional information.

The MHC agrees with the planning approach outlined in the ENF (Project Description, page 32) to provide the specific information with the contents and in the format requested in the MHC's letter when the project plans are developed during the preliminary design phase of the project; to have a reconnaissance-level archaeological survey conducted for the project impact areas; and to consult further with the MHC and other consulting or interested parties to assist in the identification, evaluation, and resolution of any adverse effects to significant historic and archaeological resources.

These comments are offered to assist in compliance with Section 106 of the National Historic Preservation Act of 1966, as amended (36 CFR 800), Massachusetts General Laws, Chapter 9, Sections 26-27C (950 CMR 71), and MEPA (301 CMR 11). Please contact me if you have questions or require additional information.

Sincerely,

Edward L. Bell
Deputy State Historic Preservation Officer
Senior Archaeologist
Massachusetts Historical Commission

xc:
Daniel Nason, Sudbury Department of Public Works
Rosemary T. Blacquier, Woodard & Curran
Maria Pinaud, DEP-SRF
Sudbury Historical Commission
Sudbury Historic Districts Commission

220 Morrissey Boulevard, Boston, Massachusetts 02125
(617) 727-8470 • Fax: (617) 727-5128
www.sec.state.ma.us/mhc

Town of Sudbury

Office of Select Board

Flynn Building
278 Old Sudbury Rd
Sudbury, MA 01776-1843
978-639-3381
Fax: 978-443-0756
selectboard@sudbury.ma.us

March 3, 2022

Secretary Kathleen A. Theoharides
Executive Office of Energy and Environmental Affairs (EEA)
Attn: MEPA Office
Alex Strysky, EEA No.16510, Sudbury, MA CWMP
100 Cambridge Street, Suite 900
Boston MA 02114

Dear Secretary Theoharides:

On behalf of the Town of Sudbury, the Select Board is pleased to submit these comments relative to the above-referenced Comprehensive Wastewater Management Plan (CWMP) Project advertised in the January 7, 2022, Environmental Monitor and currently accepting public comment until March 11, 2022.

In May 2019 at its Annual Town Meeting, the residents of Sudbury voted to approve the borrowing to complete its town-wide CWMP. The State Revolving Loan Fund (SRF) Program, in conjunction with the Massachusetts Clean Water Trust, approved the CWMP on its CY19 Intended Use Plan. The Town engaged the services of Woodard & Curran, as its consultant to complete the CWMP and the EEA No. 16510 filed with MEPA on December 30, 2021, as the Expanded Environmental Notification Form (EENF), with the supplemental filing on February 3, 2022, of the Draft CWMP and Draft SEIR, are the culmination of the efforts expended under the CWMP.

The CWMP is being undertaken by the Town of Sudbury under the jurisdiction of the Select Board, together with the Department of Public Works assigned as the Town's Local Government Unit. The ultimate goal of the CWMP is to update the Town's wastewater planning as a town-wide effort in order to provide the Town with a 20-year wastewater planning document. With the development of the Draft CWMP, this effort is being realized. The CWMP serves to provide data to support the long-term preservation and protection of the Town's major drinking water supplies.

The CWMP completion is a goal of the Select Board, as well as a major goal of the 2021 Master Plan. Regular coordination on the CWMP activities are included at milestone intervals, along with a comprehensive public outreach plan, are in place.

The Board looks forward to MEPA's favorable review of the EENF and Draft CWMP/Draft SEIR so that the goal of completing the CWMP can be brought to fruition in this calendar year. The Board appreciates this opportunity to comment on this most important environmental Project.

Sincerely,
Sudbury Select Board

Jennifer S. Roberts. Chair

Charles G. Russo, Vice-Chair

Daniel E. Carty, Member

Janie W. Dretler, Member

William J. Schineller, Member

cc: Dan Nason, Director DPW
Woodard & Curran

Commonwealth of Massachusetts
Executive Office of Energy & Environmental Affairs

Department of Environmental Protection

Northeast Regional Office • 205B Lowell Street, Wilmington MA 01887 • 978-694-3200

Charles D. Baker
Governor

Karyn E. Polito
Lieutenant Governor

Kathleen A. Theoharides
Secretary

Martin Suuberg
Commissioner

March 25, 2022

Kathleen A. Theoharides, Secretary
Executive Office of
Energy & Environmental Affairs
100 Cambridge Street
Boston MA, 02114

Attn: MEPA Unit

RE: Sudbury
Sudbury Comprehensive Wastewater
Management Plan
EEA # 16510

Dear Secretary Theoharides:

The Massachusetts Department of Environmental Protection Northeast Regional Office (MassDEP-NERO) has reviewed the Expanded Environmental Notification Form for the proposed Sudbury Comprehensive Wastewater Management Plan in Sudbury. MassDEP provides the following comments.

Wastewater

MassDEP has discussed wastewater management planning with officials from the Town of Sudbury and their consultants on many occasions in the past and supports the Town's effort to complete the planning process so that existing and future water resource needs can be met. MassDEP has reviewed the CWMP and generally concurs with its findings and recommendations, subject to the following comments. Specifically, MassDEP agrees with the recommendation to provide sewer service for areas where on-site systems have been documented to be in failure; where siting of such systems has serious environmental constraints; and where systems, failing or otherwise, have potential to impair the town's drinking water resources. The CWMP has identified these "needs" areas. Areas for which on-site systems, regulated under Title 5 (310 CMR 15.000),

This information is available in alternate format. Contact Michelle Waters-Ekanem, Director of Diversity/Civil Rights at 617-292-5751.
TTY# MassRelay Service 1-800-439-2370
MassDEP Website: www.mass.gov/dep

Printed on Recycled Paper

will provide for proper wastewater management in the future are also identified. Providing centralized wastewater treatment and disposal for identified needs areas will result in a much higher level of wastewater treatment and will also serve to mitigate or eliminate impacts to the towns drinking water resources for those systems located in Zone II areas.

Needs Areas

While the Board of Health records do not show a high Title 5 failure rate throughout the town, there are areas identified where soil conditions, groundwater conditions, or a combination of these factors make design, construction, and operation of on-site systems challenging, and where their proximity to the town wells create the potential for adverse impacts. These areas have been targeted for sewering.

The CWMP includes several tables which provide information on planning level flow estimates, both for existing flows and buildout flows, in the identified needs areas. However, this information needs to be clarified. The information in Tables 4-11 and 4-13 appears to conflict with the information in the recommended plan contained in Table 6-3. These disparities should be explained, and the best estimate of design flows clarified. It will be critical to link the required hydrogeological investigation and subsequent MassDEP groundwater discharge permit application with the proper design flows. It is especially important that that the town understands that MassDEP groundwater discharge permits include a flow limit which is not a running annual average flow, such as is done in many cases in surface water discharge permits. Accordingly, the flow limit of the groundwater permit will be a maximum day flow limit. From the information in Tables 4-11 and 4-13, and more importantly in Figure 6-1, it is clear that max day flows, when including peaking factors and I/I, are considerably higher than average day flows. These max day flows will need to be the basis for sizing key elements of the wastewater collection and treatment works, and also must be the basis for the hydrogeological studies, which are essential to support a groundwater discharge permit application. The procedures for obtaining a MassDEP Groundwater Discharge Permit, and extensive technical guidance on developing required information, are included in MassDEP's *Guidelines for the Design, Construction, Operation, and Maintenance of Small Wastewater Treatment Facilities with Land Disposal.*

Hydrogeological Report (Appendix J)

MassDEP approved a scope of work for a hydrogeological investigation at the Curtis Middle School in 2010; however, no completed hydrogeological report was submitted to MassDEP for review and approval. In the CWMP, the Curtis Middle School remains the recommended location for soil absorption systems (SAS) for final disposal of treated effluent. In order to accommodate the design flows from the collective needs areas recommended for sewering, which are considerably higher than the design flows assessed back in 2010, an updated hydrogeological investigation must be undertaken. Pursuant to 314 CMR 5.09, this is a required submittal which must precede an application for a MassDEP Groundwater Discharge Permit. The CWMP includes a recommendation that the Town and their consultants meet with MassDEP to formally advance that work and reach agreement on a scope of work. MassDEP agrees that this is a necessary step in moving forward. The proximity of the proposed locations of the primary and reserve SAS to the Zone II area for the Hop Brook wells also will need to be assessed and confirmed. Given the time

since the 2010 work was undertaken, and the development of CWMP recommendations for higher flows at the site, the town should meet in advance with MassDEP staff to establish the scope for updating the information that was previously developed. In the event all or a portion of wastewater effluent will be discharged into a Zone II area, a MassDEP Groundwater Discharge Permit will have much more rigorous requirements.

Specific Technical Comments:

Page 2-3 The CWMP identifies four facilities in the Town with MassDEP Groundwater Discharge Permits. There is one additional facility with a Permit: Sudbury Pines Extended Care located at 642 Boston Post Road. The current permit for this facility authorizes up to 21,000 gallons per day of flow from this facility, though the required wastewater treatment plant is not yet constructed (and the facility remains subject to an enforcement action). Further, MassDEP notes that on Figure 6-6, the conceptual sewer layout is accessible from the rear of this facility on Robbins Road.

Appendix C There are some failure rates noted in the Current Conditions Assessment in Section 2 of the CWMP. The information in the Table in Appendix C should delineate the failure rates, along with the other factors used in the table to define sewering needs for each area assessed, including the subareas within each needs areas, to distinguish areas targeted for sewering, with those targeted for on-site systems. The "notes" for some of the entries are also truncated and should be fully provided in the final CWMP.

Table 4-14 The text or figures should clearly indicate the Phase 1A and Phase 2 Raymond Road areas.

Page 2-15 The CWMP indicates there are areas of the town which are served by private wells. If there is any data on water quality impairments, this information should also be provided.

Page 5-1 The CWMP includes a review of the range of options for establishing and maintaining a Septic Management Plan. While Title 5 inspections do not indicate widespread septic system failures, there are extensive water resources throughout the town, and MassDEP recommends that the Town consider putting a Septic Management Plan in place, so that the design, construction, and operation of on-site systems in the town can be more effectively managed. The final CWMP should include a recommendation in this regard, and for any recommended Septic Management Plan, should identify resources needs.

Figure 6-4 The conceptual sewering plan for the South Raymond Road Area includes a segment of proposed force main that passes through a Zone I area of one of the town's active drinking water sources. The town should indicate if there are any alternatives to this alignment, and if not, the CWMP should note that this segment will be subject to more rigorous design and construction standards

included in MassDEP's water line sewer line policy.

MassDEP notes that the Town and Woodard & Curran are continuing to proceed with the public participation program, to further engage the businesses and residents in the Town. This work will not only be essential in addressing outstanding issues and eliciting public support, it is also a requirement for completing a CWMP which will be eligible for SRF assistance pursuant to the regulations at 310 CMR 44.09.

Lastly, MassDEP notes that the Draft CWMP includes an assessment of alternatives for some aspects of the plan, such as the Septic Management Plan noted above and the Future Financial and Organizational requirements outlined in Section 9 of the document. The final CWMP must include formal recommendations for these elements. MassDEP looks forward to working with the Town of Sudbury to resolve the remaining CWMP issues so the plan can be finalized.

The MassDEP appreciates the opportunity to comment on this proposed project. Please contact Rachel.Freed@mass.gov at (978) 694-3258 or Kevin.Brander@mass.gov at (978) 694-3236 for further information on wastewater issues. If you have any general questions regarding these comments, please contact me at John.D.Viola@mass.gov or at (978) 694-3304.

Sincerely,

This final document copy is being provided to you electronically by the Department of Environmental Protection. A signed copy of this document is on file at the DEP office listed on the letterhead.

John D. Viola
Deputy Regional Director

cc: Brona Simon, Massachusetts Historical Commission
Eric Worrall, Rachel Freed, Jill Provencal, Kevin Brander, MassDEP-NERO

COMMONWEALTH OF MASSACHUSETTS
EXECUTIVE OFFICE OF
ENERGY AND ENVIRONMENTAL AFFAIRS
DEPARTMENT OF ENERGY RESOURCES
100 CAMBRIDGE ST., SUITE 1020
BOSTON, MA 02114
Telephone: 617-626-7300
Facsimile: 617-727-0030

Charles D. Baker
Governor

Karyn E. Polito
Lt. Governor

Kathleen A. Theoharides
Secretary

Patrick C. Woodcock
Commissioner

10 February 2022

Kathleen Theoharides, Secretary
Executive Office of Energy & Environmental Affairs
100 Cambridge Street
Boston, Massachusetts 02114
Attn: MEPA Unit

RE: Sudbury CWMP, Sudbury, MA, EEA # 16510

Cc: Maggie McCarey, Director of Energy Efficiency, Department of Energy Resources
Patrick Woodcock, Commissioner, Department of Energy Resources

Dear Secretary Theoharides:

We've reviewed the Expanded Environmental Notification Form (EENF) for the above project. The proposed plan consists of a new wastewater treatment facility including built space that requires space conditioning. Unfortunately, the submission does not contain enough information to fully understand proposed built space and the extent to which such space will be heated and cooled. The following letter will provide strategies which can help mitigate emissions associated with heating and cooling of any built space.

Key Strategies

Deployed together, the following have been found to be effective strategies in advancing emissions reduction, resilience, and affordability for space conditioned built space:

- Building design and construction practices that result in low heating and cooling thermal energy demand intensity (heating and cooling "TEDI") by:
    - Maintaining envelope integrity with framed, insulated walls with continuous insulation;

  - Thermally-broken windows and other components to eliminate thermal bridges;
  - Minimizing glass curtain wall assemblies and excessive windows;
  - Low air-infiltration, confirmed with in-building air-infiltration testing;
  - Energy recovery;
  - Management of solar heat gains;

- Efficient electrification of space heating consisting of hydronic space heating with 100% air to water heat pump input, or air source VRF, or air to air heat pumps.
- Efficient electrification of water heating with air source heat pumps;
- Rooftop PV;
- Electric vehicle ready parking spaces.

Experience has shown that the above deliver 50 to 80% less emissions than projects built to Code while improving affordability and resilience. In addition, significant incentives may be available, including MassSave® incentives, Alternative Energy Credits (AECs), and Solar Massachusetts Renewable Target (SMART) credits.

Key Mitigation Strategies Explained

Building Envelope Performance

High-performing envelope is essential to successful GHG mitigation. Key strategies for maintaining integrity of envelope are:

- Continuous insulation;
- Reducing air infiltration;
- Reducing thermal bridges;
- Limiting or eliminating use of glass "curtain wall" and spandrel assemblies;
- Maximizing framed, insulated walls sections;
- Maintaining windows at or above code levels.

The project should review opportunities to incorporate above code building envelope into the design.

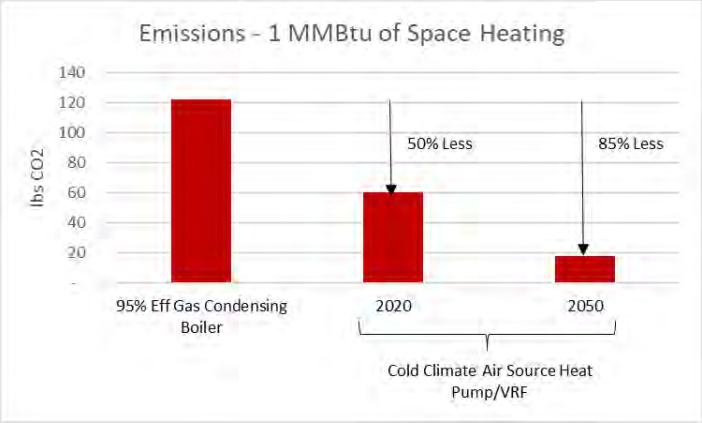
Fossil Fuel Elimination

Efficient electrification and renewable thermal space and water heating entails the swapping of fossil fuels (natural gas, oil, and propane) or electric resistance systems with one or more of the following:

- Cold-climate air source heat pumps and variable refrigerant flow (VRF) for space heating;
- Air source heat pumps for water heating;
- Ground source heat pumps;
- Solar thermal.

Electrification of space and water heating is a key mitigation strategy with significant short- and long-term implications on GHG emissions. Massachusetts grid emissions rates continue to decline with the implementation of clean energy policies that increase renewable electricity sources. The implication is that efficient electric space and water heating with cold climate air source heat pump and VRF equipment have lower emissions than other fossil-fuel based heating options, including best-in-class (95% efficient) condensing natural gas equipment.

Currently, efficient electric heating has approximately **50% lower emissions** in Massachusetts than condensing natural gas heating. By 2050, efficient electric heating is expected to have approximately **85% lower emissions** in Massachusetts than condensing natural gas heating. See illustration below.



We recommend the project review opportunities for air source heat pumps for all space heating.

Heat Pump Water Heating

Similarly to the above, air source heat pump water heating can significantly reduce GHG emissions in both the short and long term when compared to fossil fuel based systems.

Due to the limited occupancy and hot water usage of the proposed building and limited hot water usage. The project should review both air source heat pump water heating and on demand electric service water heating for any onsite hot water usage.

Solar PV

Rooftop PV can provide significant GHG benefits as well as significant financial benefits. The project should review opportunities to maximize on-site PV by set-aside as much roof space as possible for future rooftop PV.

Even if PV is not installed during building construction, it's important to plan the project to ensure that roof space is set aside for PV and that roof space doesn't become unnecessarily encroached with HVAC appurtenances, diminishing the opportunities for future PV. Electrification of heating and Passivehouse can both contribute to enabling more PV as these approaches can reduce rooftop equipment associated with conventional code HVAC.

Electric Vehicle (EV) Ready Parking Spaces

EV charging stations are critical for the continual transition towards electric mobility. Even if EV charging stations are not installed during construction, it is critical to maximize EV ready spaces as it is significantly cheaper and easier to size electrical service and install wiring or wiring conduit during construction rather than retrofitting a project later.

We encourage the project to incorporate EV ready parking spaces for the project.

Incentives

Buildings which incorporate the above strategies can qualify for significant incentives:

- MassSave performance-based incentives[1] offer incentives for every kWh or therm saved compared to a program-provided energy model. The above energy efficiency strategies offer opportunities for large kWh and therm savings.

- Alternative Energy Credits (AECs)[2] offer incentives to electrify building space heating using heat pumps and/or VRF. This program also includes multipliers which increase value if the building meets Passivehouse standards or buildings built to HERs 50 or less. These credits may be distributed on a quarterly basis over time; or, may be distributed in a lump sum to the developer if certain conditions are met.

- Massachusetts SMART program[3] provides significant incentives for solar development on top of federal and state tax incentives. SMART includes pathways which allow solar production to be sold without off-takers. This may be of potential interest to building developers as this allows them to develop rooftop solar without necessarily engaging with building tenants. For this reason, setting aside rooftop solar PV areas helps ensure that building owners' ability to monetize the roof is not impacted.

[1] https://www.masssave.com/en/saving/business-rebates/new-buildings-and-major-renovations/
[2] https://www.mass.gov/guides/aps-renewable-thermal-statement-of-qualification-application
[3] https://www.mass.gov/solar-massachusetts-renewable-target-smart

Codes and Baseline

Massachusetts building energy Code applies to this project with Massachusetts amendments including C402.1.5 (envelope), C405.3 and C405.4 (lighting), C405.10 (EV charging), and C406 (three additional efficiency measures).

Recommendations for the Next Submission

Recommendations are as follows:

1. Ensure base code building scenario meets all requirements including relevant MA amendments. Clearly indicate which three C406 measures are being used in the baseline.

2. Develop two UA analysis tables:

    a. One table that shows how the baseline complies with Table 5.5-5 of ASHRAE 90.1 2013 Appendix G plus Massachusetts Amendment C401.2.4.

    b. A second table that shows how the proposed complies with 2018 IECC Tables C-402.1.3, C402.1.4, and C-402.4. Fenestration limit shall be 30%.

3. Review opportunities for above-code envelope throughout the project. In summary:

    a. Above Code-threshold envelope is recommended (vertical walls, windows, roofs and exposed lower-level floors). Priority should be given to increasing **continuous insulation**. Distinguish between R value of batt and R value of continuous insulation. Indicate planned wall assembly U value and wall construction type (mass, wood, metal stud, etc). Confirm that the relationship between R-value and assembly U-factor conform to Appendix A of the Code.

4. Review opportunities for efficient electrification of both space and water heating. Emissions and utility costs should be estimated for heat pumps/VRF scenarios. Fossil-fuel heating should be avoided.

5. For any buildings proposed to have heating and/or cooling, evaluate the following scenario:

    a. Envelope which exceeds code and having air infiltration of less than 0.25 cfm/sf at 75 Pa. Electric air source heat pump for space heating, electric air source heat pump for water heating.

6. Evaluate incentives, including

    a. Estimate of Alternative Energy Credits

    b. Estimates of MassSave® incentives, based on meeting with utility.

7. Evaluate solar PV.

    a. Investigate models of ownership and operation under SMART, including Qualified Facility pathway.

    b. Meet utility to discuss interconnection.

    c. Include building roof plans showing location of planned solar and location of roof HVAC equipment and other appurtenances.

    d. Indicate on the plans the code-required extent of solar readiness, if applicable.

    e. Map out maximum area available for solar.

    f. Estimate GHG reduction as a result of solar PV.

8. Evaluate opportunities for EV ready and installed EV spaces.

9. Submit project modeling files to the DOER on a flash drive.

10. Compare model results total and individual end uses with representative, prototype buildings developed by Pacific Northwest National Labs/Department of Energy found at the link below. Provide a summary explaining potential differences.

    - https://www.energycodes.gov/sites/default/files/documents/BECP_901_2013_Progress_Indicator_0_0.pdf

    - http://www.energycodes.gov/sites/default/files/documents/2013EndUseTables.zip

    - https://www.energycodes.gov/commercial-energy-cost-savings-analysis

11. Include a table similar to the example below. For "code value" ensure that the value incorporates any improved efficiency per requirements of Section C406.1 of the Massachusetts' amendments.

Measure/Area	**Base Code**	**Proposed**	**% Change**	**Comment**
AC Efficiency (EER)				
Bldg 1	*code value*	*design value*	%	
Bldg 2	*code value*	*design value*	%	
ERV Effectiveness (%)				
Bldg 1	*code value*	*design value*	%	
Bldg 2	*code value*	*design value*	%	
Boiler (% efficiency)				
Bldg 1	*code value*	*design value*	%	
Bldg 2	*code value*	*design value*	%	
LPD (Watts/sq ft)				

Bldg 1	*code value*	*design value*	%	
Bldg 2	*code value*	*design value*	%	
(continue to include service water, equipment, etc)				

Sincerely,

Paul F. Ormond, P.E.
Energy Efficiency Engineer
Massachusetts Department of Energy Resources

Brendan Place
Clean Energy Engineer
Massachusetts Department of Energy Resources

SUMMARY OF PUBLIC COMMENTS RECEIVED DURING THE MEPA PROCESS
April 2022

The Town of Sudbury filed an Expanded Environmental Notification Form (EENF), EEA No. 16510 on December 30, 2021, to the Massachusetts Environmental Policy Act Office (MEPA). The filing was advertised in the Environmental Monitor on January 7, 2022. The filing was also advertised in the Town Crier on December 30, 2021. The initial filing was extended twice, with a final issued on March 25, 2022, with a MEPA Certificate due on April 1, 2022.

The EENF included the Phase 1 Comprehensive Wastewater Management Plan (CWMP) Needs Analysis and Draft Environmental Impact Report that detailed the 20-year draft recommended wastewater plan for the Town. The EENF requested that the filing be reviewed and approved by MEPA with a subsequent filing of a Single Environmental Impact Report (SEIR).

The Secretary issued a MEPA Certificate on April 1, 2022, that determined the Sudbury CWMP/Draft EIR submission of an Environmental Impact Report (EIR). The Town requested and was granted approval to file a Single Environmental Impact Report (SEIR), pursuant to Section 11.06(8) of the MEPA Regulations.

The MEPA Certificate mandated that this Response to Comments document be completed to address questions/comments from those that submitted letters during the Public Comment period. This document serves to meet this mandate. A full copy of this Response to Comments is included in Appendix A of the CWMP/SEIR.

In addition to the MEPA Certificate, the MEPA Certificate mandates that circulation of this Response to Comments document, as well as the SEIR, be to all parties that commented on the EENF, as well as all state agencies from which Sudbury will need to seek permits/approvals and to those entities specified in Section 11.16 of the MEPA Regulations. Copies of the Distribution List are included in Appendix I of the CWMP/SEIR.

The following is a list of comment letters received by the MEPA Office during the public comment period for the Project:

1. Massachusetts Historical Commission (MHC)
2. Town of Sudbury
3. Massachusetts Department of Environmental Protection – MassDEP Northeast Regional Office
4. Department of Energy Resources (DOER)

Each individual letter includes a variety of issues, concerns, and general comments, which are summarized in the paragraphs that follow. A response to the comments immediately follows each individual comment. The complete MEPA Certificates with the comment letters are provided in their entirety in Appendix A.

1. **January 20, 2022, letter from Edward L. Bell, Deputy State Historic Preservation Officer/Senior Archaeologist at The Massachusetts Historical Commission (MHC) reviewed the EENF and had the following comments:**

    - MHC agrees with the planning approach outlined in the EEF and requests a reconnaissance-level survey be conducted for the Project impact areas and to consult further with MHC to identify, evaluate and resolve any adverse effects to significant historic and archaeological resources.
        - *Acknowledged. The Town will work with MHC once the CWMP is moved forward to preliminary design.*

2. **March 3, 2020, letter from the Select Board, Town of Sudbury and had the following comments submitted through the EENF submittal:**

    - The CWMP completion is a goal of the Select Board, as well as a major goal of the 2021 Town Master Plan. The Board looks forward to MEPA's favorable review of the CWMP so the Project can be brought to fruition.
        - *Acknowledged. Efforts on behalf of the CWMP will continue coordination with the Select Board, DPW, Planning, Conservation, and all other Town Boards/Departments/Committees to bring a fully compliant CWMP to fruition to benefit the Town of Sudbury.*

3. **March 25, 2022, letter from John D. Viola, Deputy Regional Director of The Massachusetts Department of Environmental Protection, Northeast Regional Office (MassDEP/NERO) and had the following comments submitted through the EENF submittal:**

    - The CWMP includes several tables which provide information on planning level flow estimates, both for existing and buildout flows, in the identified Needs Areas. This information needs to be clarified to agree with other tables and recommendations.

        - *Acknowledged. The Town worked with MassDEP to better organize the flow estimations, which are presented in Tables 4-11, 4-13 and 6-3. These Tables now represent consistent data for estimated flows, both existing and build out. Figure 6-1 also has been revised to coordinate with the Table referenced above.*

    - An updated Hydrogeological Report/Investigation must be undertaken, as a required submittal prior to an application for a MassDEP Groundwater Discharge Permit (pursuant to 314 CMR 5.09). This will include the locations of the SAS, both primary and reserve, to the Zone II for Hop Brook wells. The Town should meet in advance with MassDEP staff to establish the scope for updating previous hydrogeological information (2010 Report).

        - *Acknowledged. The Town and our consultants will engage the staff at MassDEP/NERO early in the process to develop an approved scope for additional hydrogeological investigations once the Town approves moving forward towards implementation. This has been agreed upon between the Town and MassDEP previously, as has been the case of the entire CWMP process. The Town looks forward to working collaboratively through the hydrogeological process once the Town approves the Project to move forward.*
    - The CWMP identified four facilities in the Town with current MassDEP Groundwater Discharge Permits. There is one additional Permit: Sudbury Pines Extended Care located at 642 Boston Post

Road (the required wastewater treatment plant is not yet constructed at this location). It appears from Figure 6-6 that this facility is adjacent to the proposed sewer and wondered why it is not included in the proposed planning.

- *This was reviewed and it appears it was an oversight, and this location should have been included in the Raymond Road North Needs Area. This has been corrected and is included in the Final CWMP/SEIR as revised Figure 6-6.*

- There are some failure rates noted in the Current Conditions Assessment in Section 2 of the CWMP. The information in the Table in Appendix C should delineate failure rates, along with other factors used in the table to define sewering needs for each area assessed. Provide full text of notes.
- C
  - *Acknowledged. Appendix C has been revised to address the comment. A cover sheet has been added to Appendix C spreadsheets detailing the data sets.*

- The text or figures should clearly indicate Phase 1A and Phase 2 Raymond Road areas.

  - *Acknowledged. All have been revised to address the comment.*

- The CWMP indicates there are areas of the Town which are served by private wells. If there is any data on water quality impairments, this information should also be provided.

  - *The areas serviced by private wells are located in north Sudbury, an area not identified as a Needs Area. There was no information on file indicating there were any water quality issues/concerns in the area.*

- The MassDEP recommends that the Town consider putting a Septage Management Plan in place so that design, construction, and operation of on-site systems can be more effectively managed.

  - *The Town's Board of Health has been included in the CWMP planning and has information on SMPs in hand for consideration. The Town and its consultant will work with the Board of Health in this effort for future planning.*

- The conceptual plan for the Raymond Road South Needs Area includes a segment of proposed force main that passes through a Zone I of one of the Town's active drinking water sources. The Town should indicate if there are any alternatives to this alignment, and if not, the CWMP should note that this segment will be subject to more rigorous design and construction standards included in MassDEP's water line sewer line policy.

  - *So noted. There is no alternative route and while there is a constructed roadway that traverses through the Zone II (previously disturbed) along Raymond Road, the Town acknowledges that additional provisions to the design and constructed will be necessary in this specific area. DWS Policy 88-02 MassDEP Policy for Review of Sewer Line/Water Supply is included as part of the Final CWMP/SEIR in Section 7.*

- Additional comments include including the public outreach program, and future final financial and organizational requirements being addressed in the Final CWMP/SEIR

4. **February 10, 2022, letter from Brendan Place, Lead Energy Engineer, Massachusetts Department of Energy had the following comments submitted through the EENF submittal:**

- DOER noted multiple areas for the future design and construction of the wastewater infrastructure including:
  - Strategies for advancing emissions reduction, resilience, and affordability
  - Multiple incentives that may be available
  - Opportunities to incorporate above code options into design
  - Opportunities for space heating
  - Opportunities for water heating and demand electric services
  - Potential for solar
  - Review of EV parking options
  -
    - *Acknowledged. At the time that the Town moves forward with preliminary design a review of opportunities for all of these, as well as any new items that may have arisen between the time of this Report and actual implementation, will be investigated and evaluated for potential use.*
- DOER listed several specific recommendations for the next submission as follows:
  - Ensure base building scenario meets all requirements including relevant MA amendments
  - Develop two UA analysis tables
    - Table showing how baseline complies with specific codes
    - Second Table showing how proposed complies with specific items
  - Review opportunities for above code items in Project
  - Review opportunities for efficient electrification of space and water heating
  - Review heating and colling scenarios
  - Evaluate incentives
  - Evaluate solar options
  - Evaluate options for EV ready spaces
  - Submit project modeling file to DOER with comparisons as noted in letter, including tables etc.

.

- *Acknowledged. The Town appreciates and acknowledges the DOER recommendations and will collaborate with DOER when and if the Town votes to move the conceptual CWMP planning to implementation stages. At the time of this CWMP Report, the WWTF, pump stations and associated wastewater infrastructure are in the conceptual, planning stages and no preliminary design has been authorized under the current Scope of Work. The CWMP has taken great strides to prepare a Report using recent engineering experience with regards to WTWF, pump stations and other wastewater infrastructure to estimate what a new Sudbury Wastewater System could look like. We understand that DOER has expressed multiple options and opportunities to design and construct a resilient system that meets and or exceeds federal, state, and local codes. The Town will collaborate with DOER, coordinating efforts as well with the MassDEP when it moves forward to a preliminary design stage. Early coordination will be the goal so that all can garner and reap the benefits available for a truly sustainable system. So at this time, the Town notes that the bulk of DOER recommendations are a "TBD" future date once the planning moves forward to implementation.*

The Secretary requested in the April 1, 2022, MEPA Certificate that the following items be addressed in the CWMP/SEIR, many of which are addressed in the responses above:

1 Provide more comprehensive description of proposed WWTP-meet effluent permit levels

RESPONSE ***The information provided in the CWMP Report is an estimate of what a future WWTF and wastewater system would like given today's codes and standards. We utilized information from wastewater systems recently approved, designed, and constructed as the CWMP is a conceptual, planning document at this time. The Town has not approved moving forward to preliminary design at this time. Once the Town approves the implementation of the recommendations in the CWMP, coordination with MassDEP, DOER and others as appropriate. At this time, we are utilizing the most up to date information from currently or recently designed and constructed systems that have been approved by the state regulatory system. The detailed process flow diagram is included in Figure 5-4 which is configured to meet the current groundwater discharge permit limits as presented in Tables 5-1& 6-1 based on the siting of the groundwater discharge location. The process includes a typical Membrane Bio-Reactor (MBR) with influent equalization and UV disinfection. The WWTF and groundwater disposal are configured to be constructed using 4 modular trains with 2 to be constructed initially and two future phases to construct the remaining 2. Refer to Section 5 for additional detail.***

2 Update Impacts to Riverfront area and wetland areas

RESPONSE ***Acknowledged. The Final CWMP/SEIR includes the updates to Riverfront and wetland areas as commented by MEPA. Updates are in Section 2 of the Final CWMP/SEIR.***

3 Provide additional mitigation commitments

RESPONSE ***Acknowledged. The Final CWMP/SEIR includes a full list of mitigation commitments as commented by MEPA. Updates are in Section 7 of the Final CWMP/SEIR.***

4 Provide more Project impact details in the Scope of Work from the Certificate

RESPONSE ***Acknowledged. The Final CWMP/SEIR provides a full list of details readily available at this time as commented by MEPA. Updates are in the executive Summary, as well as Appendix 1of the Final CWMP/SEIR.***

5 Noted by MassDEP comment, update hydrogeological information

RESPONSE ***The Town has coordinated with MassDEP to engage early on once the Town votes to move forward with implementation of the CWMP recommendations. At this time, the approved work only includes the planning stages. The Town and MassDEP agreed to meet as soon as the Town votes towards CWMP implementation and will coordinate together the future Scope of Work for an update Hydrogeological Report.***

6 Provide more details on WWTF treatment and discharge

RESPONSE ***Acknowledged. The Final CWMP/SEIR contains additional details as are available at this time on a conceptual wastewater system. Response mirrors No. 1 above at this time. Updates are in Section 5 of the Final CWMP/SEIR.***

7 Need to detail to WWTP and discharge and demonstrate will not impact EJ population

RESPONSE ***Acknowledged. The Final CWMP/SEIR will update language to detail that there are no impacts to not only EJ populations, but all Town of Sudbury as well. Updates are in Sections 7 and 10 of the Final CWMP/SEIR.***

8 Describe Town's outreach to EJ-contact tribes etc. during planning, design, and construction

RESPONSE The outreach to EJ, as well as an overall view of the comprehensive outreach plan in place is included in the Final CWMP/SEIR in Section 10. IN addition to the EJ communication, the Town added three Native American Tribes to the Distribution List as directed in the Certificate. Direct contact was made via telephone, with follow up emails to the Tribe's contacts. The Distribution List has been updated. Refer to Section 10 for more information.

9 Provide conceptual plans of all structures that will add impervious area-WWTP, PS

RESPONSE ***Acknowledged. Conceptual plans have been updated per MEPA comment using the best available information at the time of this Report. Updates are in Section 5 of the Final CWMP/SEIR. Figure 5-5 presents the WWTF site plan on the DPW site and Figure 5-6 presents the groundwater discharge locations at the Curtis Middle School site both showing the initial and future phases. The groundwater discharge system, once installed will not have a permanent impact on the use the athletic fields or driveway parking areas where it is installed.***

10 Provide an evaluation of discharge area

RESPONSE ***Acknowledged. The conceptual plan has been updated per MEPA's comment using the best available information at the time of this Report and has been included as Figure 5-6. The Groundwater discharge system was sized for each of the WWTP's three proposed phases (300K GPD Base Phase, 450K GPD Intermediate Phase, & 600K GPD Final Phase) using the standard design loading rate for leaching chambers with a percolation rate less than 5 min/in of 3 gpd / ft^2 per MassDEP's "Guidelines for the Design, Construction, Operation, and Maintenance of Small Wastewater Treatment Facilities with Land Disposal". The proposed wastewater disposal fields were also sized to accommodate trenches designated as the reserve area for the system per Title 5 Section 15.251 (1)(d). Updates are in Section 5 of the Final CWMP/SEIR.***

11 Review "output" measures from the Design Tool App (Appendix L in Report)

RESPONSE ***Acknowledged. Updates are in Section 9 of the Final CWMP/SEIR. At this point in time, the CWMP is conceptual without any preliminary design contracted. Once the Town votes at a future Town Meeting towards implementation, the RMAT Tool, as well as the substantial comments submitted through MEPA will be reviewed for appropriateness in the Project. The Town will address all suggestions in the Preliminary Design stage once approved.***

12 GHG evaluation needs updating using most recent grid electricity emissions

RESPONSE ***Acknowledged. Section 8 and Appendix K of the Draft CWMP/SEIR have been updated based on the following:***

- ***The most recent grid electricity emissions factors of published by ISO-NE, are now used in place of the factors provided by the EPA per the reviewer's comments.***
    - ***Previously used EPA factors:***

        - ***488.9 lbs CO2e/MWH for CO2***
        - ***0.343 lbs CO2e/MWH for NOx***
    - ***Currently used ISO-NE factors: per the ISO New England Electric Generator Air Emissions Report, dated March 2021***
        - ***633 lbs/MWH for CO2***
        - ***0.26 for lbs/MWH NOx***
    - ***Result: total CO2e/MWH estimated as 0.36 vs 0.30 (refer to Table 8-1).***
- ***A unit conversion error was corrected in the WWTP energy estimate (KWH/day was not correctly converted to MWH/year in the previous draft), and the WWTP energy estimate now includes a discharge pump station. These changes resulted in a net lower estimate for annual WWTP energy usage as shown on the last page of Appendix K.***
- ***For clarity/consistency, the low estimates for energy usage has been updated such that the low estimates are now consistently based on near term flows, while the high estimates continue to be consistently based on buildout flows.***

The net result of these changes is that the work is now estimated to reduce slightly more GHG emissions than indicated in the February 2022 draft of this report, as shown in Table 8-3. The ISO-NE factors resulted in an increase in GHG associated with the proposed work; however, the corrected conversion factor for the WWTP estimate lowered the estimate more than the adjusted GHG factors increased the estimate.

Please also note that the replacement of on-site sewer disposal systems with collection and treatment is likely to become more valuable in terms of GHG reduction as GHG emissions associated with electrical production continue to trend down, while GHG emissions associated with septic tanks are not projected to trend down.

13 Provide permitting update

RESPONSE ***Acknowledged. Using best available information, permitting updates have been done. Updates are in Section 9 of the Final CWMP/SEIR.***

14 Complete Executive Summary

RESPONSE ***Acknowledged. The Executive Summary is complete in the Final CWMP/SEIR.***

15 Complete final CWMP, new maps, update flow estimates

RESPONSE ***Acknowledged. The Final CWMP/SEIR with all required updates is complete and included as a part of the SEIR filing.***

16 Review alternate alignments on Raymond Road South in Zone I area

RESPONSE ***Acknowledged. Multiple reviews have taken place and unfortunately, there is no alternate route for this Needs Area. This is a pre-disturbed, existing public roadway that happens to traverse through the Zone I of the Raymond Road wells. Extraordinary care will be applied during preliminary design to ensure there are no impacts to the water resources in this location and understand that design will be subject to more rigorous standards. At this time, we included DWS Policy 88-02, MassDEP Policy for Review of Sewer Line/Water Supply in Section 7 of the Final CWMP/SEIR.***

17 Review Town's Land Use Plan to defend growth with proposed sewer

RESPONSE ***Acknowledged. The Town coordinated the CWMP with the Planning Department throughout the process. The CWMP, as presented, garnered full support from the Planning, specifically the new Town Master Plan. The CWMP methodology proposes a Smart Growth strategy that fully meets Town expectations to prevent sprawl and unwarranted growth. Review Section 7 of the Final CWMP/SEIR.***

18 Update Town's Outreach Plan

RESPONSE ***Acknowledged. The Town has conducted a comprehensive outreach plan and is in the process of extending this beyond the life of the CWMP process. Refer to Section 10 of the Final CWMP/SEIR.***

19 Detail Stormwater Mgmt. Plan proposed in more detail

RESPONSE ***Acknowledged. Updates are in Section 7 of the Final CWMP/SEIR.***

20 Clarify the septic system failure rate in Needs Areas, update Appendix C

RESPONSE ***Acknowledged. Appendix C has been updated in the Final CWMP/SEIR.***

21 Identify conditioned space in WWTP, identify heating methods

RESPONSE ***Acknowledged. This has been updated in the Final CWMP/SEIR.***

22 Section 61 Findings-add separate chapter summarizing all mitigation measures including construction

RESPONSE ***Acknowledged. The Final CWMP/SEIR contains a summary table in Section 7.***

SCOPE OF SERVICES AGREEMENT

AGREEMENT BETWEEN
TOWN OF SUDBURY AND
WOODARD & CURRAN

THIS AGREEMENT for Engineering Consulting Services to assist the Town of Sudbury with the Comprehensive Wastewater Management Plan Update and Environmental Impact Report (hereinafter referred to as the "Project"), is made the 19TH day of August, 2019, by and between Woodard & Curran with a usual place of business at 980 Washington Street, Suite 325, Dedham, MA 02026, hereinafter referred to as the "CONTRACTOR"), and the Town of Sudbury acting by its Town Manager with the address 278 Old Sudbury Road, Sudbury, MA 01776, (hereinafter referred to as the "TOWN").

WITNESSETH that the CONTRACTOR and the TOWN, for the consideration hereinafter named, agree as follows:

ARTICLE 1: CONTRACT DOCUMENTS

The Contract Documents consist of the following, and in the event of conflicts or discrepancies among them, they shall be interpreted on the basis of the following priorities:

1) Amendment issued, if applicable
2) This agreement for procurement between TOWN and CONTRACTOR
3) Attachment A – dated July 16, 2019
4) Drawings required for the project, if applicable
5) Copies of all required certificates of insurance and licenses required under the contract,

EACH OF WHICH IS ATTACHED HERETO. These documents form the entire Agreement between the parties and there are no other agreements between the parties. Any amendment or modification to this Agreement must be in writing and signed by an official with the authority to bind the Town.

ARTICLE 2: SCOPE OF WORK

The CONTRACTOR shall furnish all materials, labor and equipment, and perform all work outlined in Attachment A – dated July 16, 2019 attached and on the Contract Documents, and the CONTRACTOR agrees to do everything required by this Agreement and the Contract Documents.

ARTICLE 3: TERMS OF AGREEMENT

(a) The work to be performed under this Agreement shall be commenced on the date of this contract and shall be entirely completed by December 31, 2021, unless otherwise extended by mutual agreement.

(b) The CONTRACTOR shall commence work promptly upon execution of this Agreement and shall prosecute and complete the work regularly, diligently and uninterruptedly at such a rate of progress as will insure completion in a timely manner.

(c) The CONTRACTOR hereby agrees that if it fails to carry on the work with reasonable speed or stops work altogether without due cause, as determined in each case by the TOWN, the TOWN may terminate this Agreement in accordance with the provisions hereof.

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ARTICLE 4: THE CONTRACT SUM

The TOWN shall pay the CONTRACTOR for the performance of this Agreement the sum not to exceed $500,000 unless otherwise agreed by the parties.

ARTICLE 5: PAYMENT

(a) The TOWN shall make payment as follows:
Payment within thirty days after receipt of an invoice, for work then fully completed and performed.

(b) With any invoice, the CONTRACTOR shall submit evidence satisfactory to the TOWN that the goods or supplies have been delivered and/or that the work has been completed in accordance with this Agreement, and that all payrolls, material bills and other indebtedness connected with the work have been paid. The billings shall include, if applicable, all charges for consultants, subcontractors, plans, equipment, models, renderings, travel, reproductions, postage and delivery, and all other expenses. There shall not be any markup for overhead, administration or profit for any of the above listed services.

(c) The acceptance of final payment by the CONTRACTOR shall constitute a waiver of all claims by the CONTRACTOR arising under the Agreement.

ARTICLE 6: TERMINATION

(a) The TOWN may suspend or terminate this Agreement by providing the CONTRACTOR with ten (10) days written notice for the reasons outlined as follows:

1. Failure of the CONTRACTOR to fulfill in a timely and proper manner its obligations under this Agreement.
2. Violation of any of the provisions of this Agreement by the CONTRACTOR.
3. A determination by the TOWN that the CONTRACTOR has engaged in fraud, waste, mismanagement, misuse of funds, or criminal activity with any funds provided by this Agreement.

(b) In addition, the TOWN shall have the right to terminate this Agreement if funds are not appropriated or otherwise made available to support the continuation of this Agreement after the first year, if applicable.

(c) The TOWN shall also have the right to terminate this Agreement without cause, upon ten (10) days written notice to the CONTRACTOR. In the event that the Agreement is terminated pursuant to this subparagraph, the CONTRACTOR shall be reimbursed in accordance with the Agreement for all work performed up to the termination date.

(d) The CONTRACTOR shall have the right to terminate this Agreement if the TOWN fails to make payment within 30 days after it is due.

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ARTICLE 7: NOTICE

All notices required to be given under this Agreement shall be in writing and shall be effective upon receipt by hand delivery or certified mail to:

Town of Sudbury:
Town Manager
278 Old Sudbury Road
Sudbury, MA 01776

Contractor:
Woodard & Curran
Scott J. Medeiros, PE, Vice President
980 Washington Street, Suite 325
Dedham, MA 02026

ARTICLE 8. INSURANCE

(a) The CONTRACTOR shall, at its own expense, obtain and maintain a commercial and general liability insurance policies protecting the TOWN in connection with any operations included in this Contract, and shall have the TOWN as an additional insured on the policies. Commercial and General liability coverages shall be in the amount of at least $1,000,000 per occurrence and $2,000,000 aggregate.

(b) The CONTRACTOR shall, before commencing performance of this Contract, provide by insurance for the payment of compensation and the furnishing of other benefits in accordance with Mass. Gen. L. Ch. 152, as amended, to all employed under the Contract and shall continue such insurance in full force and effect during the term of the Contract.

(c) All insurance coverage shall be in force from the time of the Agreement to the date when all work under the Contract is completed and accepted by the TOWN. **Certificates and any and all renewals substantiating that required insurance coverage is in effect shall be filed with the TOWN and, except worker's compensation, insurance shall list the TOWN as additional insured for each policy.** Since this insurance is normally written on a year-to-year basis, the CONTRACTOR shall notify the TOWN should coverage become unavailable or if its policy should change. Any cancellation of insurance, whether by the insurers or the insured, shall not be valid unless written notice thereof is given by the party proposing cancellation to the other party and to the TOWN at least fifteen days prior to the intended effective date thereof, which date should be expressed in said notice.

(d) The CONTRACTOR shall indemnify and save harmless the TOWN and all of the TOWN'S officers, agents and employees from and against all suits and claims of liability, asserted against the Town by a third party, including costs of defending any action, for or on account of any injuries to persons or damage to property of the TOWN or any person, firm, corporation or association but only to the extent caused by any negligent act or omission, of the CONTRACTOR, its subcontractors and its and their agents or employees in the performance of the work covered by this Agreement and/or failure to comply with terms and conditions of this Agreement, but only in respect of such injuries or damages sustained during the performance and prior to the completion and acceptance of the work covered by this Agreement. The foregoing provisions are in addition to any other remedies available to the Town, and shall not be deemed to

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be released, waived or modified in any respect by reason of any surety or insurance provided by the CONTRACTOR under the Contract.

ARTICLE 9: SUBCONTRACTING OF WORK

The CONTRACTOR shall not subcontract any of the work that it is required to perform under this Contract to any corporation, entity or person without the prior written approval of the TOWN.

ARTICLE 10: OWNERSHIP OF DOCUMENTS

Upon completion of the final payment to the CONTRACTOR, the TOWN shall be the owner of all plans, specifications, electronic data and computations created by the CONTRACTOR that relate to this Agreement. The TOWN agrees that the information contained therein was produced specifically for this Agreement and agrees to waive all claims against the CONTRACTOR and hold the CONTRACTOR harmless from any liability of the TOWN'S use of these documents in any future project not directly related to the subject matter of this Agreement.

ARTICLE 11: STANDARD OF CARE

The CONTRACTOR agrees to perform its work under this Contract, which the parties acknowledge consists solely of professional consulting services, in accordance with the degree of skill and care exercised by similarly practicing professionals performing similar services under similar conditions.

ARTICLE 12: GOVERNING LAW

The CONTRACTOR shall perform the work required under this Contract in conformity with requirements and standards of the TOWN and all applicable laws of the Commonwealth of Massachusetts, its political subdivisions, and the Federal Government.

This Agreement and performance thereunder are governed by, and shall be interpreted and enforced in accordance with the laws of the Commonwealth of Massachusetts and shall be subject to all such laws and all other applicable by-laws and administrative rules, regulations and orders.

ARTICLE 13: BINDING AGREEMENT AND ASSIGNMENT OF INTEREST

This Agreement shall be binding upon the TOWN and the CONTRACTOR and the partners, successors, heirs, executors, administrators, assigns and legal representatives of the TOWN and the CONTRACTOR. Neither the TOWN nor the CONTRACTOR shall assign, sublet or transfer any interest in this Agreement without the written consent of each other, and such consent shall not be unreasonably withheld.

ARTICLE 14: CERTIFICATE OF COMPLIANCE WITH MASSACHUSETTS TAX LAWS; NON-COLLUSION CERTIFICATION

The undersigned CONTRACTOR certifies under the pains and penalties of perjury that the **CONTRACTOR** has complied with all laws of the Commonwealth relating to taxes, reporting of

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employees and contractors, and withholding and remitting of child support, and that the services set forth in Attachment A have been proposed and submitted in good faith and without collusion or fraud.

IN WITNESS WHEREOF the parties hereto have executed copies of this Agreement the day and year first above written. *

*If a Corporation, attach to each signed copy of this Contract an attested copy of the vote of the Corporation on authorizing the said signing and sealing.

WOODARD & CURRAN

Scott J. Medeiros, PE, Vice President

Dated: 8-15-19

TOWN OF SUDBURY

Melissa Rodrigues, Town Manager

Dated: 8/19/19

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WOODARD &CURRAN

Attachment 'A'

COMPREHENSIVE WASTEWATER MANAGEMENT PLAN UPDATE AND ENVIRONMENATAL IMPACT REPORT (CWMP/EIR)

SCOPE OF SERVICES

The following scope of services will be provided under this Agreement.

PHASE I — CWMP UPDATE - NEEDS ANALYSIS SUPPLEMENT

Task 1.0 Prepare for and attend Project Kick Off Meeting with the Town. Woodard & Curran will prepare and present the work to be completed as part of the Project to all interested Town Departments.

Task 2.0 ASSESS CURRENT CONDITIONS – REVIEW AND UPDATE NEEDS AREAS FROM 2013 REPORT

2.1 EXISTING CONDITIONS IN PLANNING AREA

The Sudbury planning area will be described; updating the existing conditions described and evaluated in the 2013 Project Evaluation Report. The 2013 Report will be supplemented to a full Comprehensive Wastewater Management Plan (CWMP) and include updates to the following:

A. Assess Study Areas Boundaries
In re-assessing the Needs Areas, thought will be given to age of development and systems, lot size, preservation of environmental resources, zoning and geographic location within Town. Input will also be obtained from the Board of Health and the Sudbury Health Agent in helping to identify areas that have or likely will have poorly performing on-site wastewater systems during the 20-year planning period.

B. Land Use, Demographic and Population Data
Existing information in the 2013 Report will be updated to identify and inventory land use patterns and plans. Relevant land use information will be identified including developed and undeveloped areas, land ownership (public vs. private), development density and lot size, zoning classifications, infrastructure, and public facilities. Sources of existing information include the Department of Public Works, Planning Board, Town Clerk, Assessors, Zoning, Building Department records, and existing planning reports.

Pertinent demographic conditions such as single family and multi-family housing units, average household size, existing population, and average household income, will be identified from existing sources of information, including, but not limited to State and Federal Census Reports, Town records and existing planning reports.

C. Existing Environmental Conditions
The existing environmental conditions in the planning area will be updated and described. The parameters to be discussed will include groundwater

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supply, air quality; wetlands and flood plains; rare and endangered species; sensitive habitats, parklands, recreational resources; historical and archaeological resources; conservation land; and other environmentally sensitive areas. Major sources of the information to be used will include all Town Departments, Boards and Commissions, Mass GIS database, Flood Insurance Maps, Massachusetts Historical Commission, and the Natural Heritage and Endangered Species Program.

D. PLANNING PERIOD

The planning period is 20 years beyond the date for which the planned facilities are scheduled to begin operation.

Task 3 UPDATE FLOWS AND LOADS AND ON-SITE DISPOSAL

A. Update Board of Health Data

An extensive review of Board of Health (BOH) records was completed during preparation of the 2013 Report for the targeted wastewater area on Route 20. This resulted in a map showing a summary of on-site systems with problems. This map will be updated to include BOH Town-wide. The level of effort for this subtask is based upon the Health Department's database supplying information consisting of, but not limited to, the following per address or lot number: type of system (cesspool, septic tank/leaching field, etc.), enforcement actions, percolation test data, pump out data, system age, failures, inspection results and repairs.

B. Wastewater Flow Projections

Wastewater flow projections will be revised to the extent necessary using population projections, demographic data, land use and water use. A breakdown of the wastewater flows will be presented identifying residential, commercial, industrial, institutional, infiltration/inflow and septage flows for both the initial and design years. These flows will be further delineated geographically in the planning area. The estimates will be based on available water supply records adjusted for consumption and other losses. Where water data is unavailable, Massachusetts Title 5 design flow criteria will be used. An estimate of per capita and per household wastewater flow will be generated.

C. Water Conservation Benefits

Perform an evaluation and make projections of potential benefits by reducing wastewater flows through implementation of a water demand management and conservation program that takes into account seasonal variations in water demand. Any implemented water conservation program shall be in accordance with the Water Resources Commission Water Conservation Standards for the Commonwealth of Massachusetts as revised June 2012.

Task 4 REVIEW AND UPDATE 2013 REPORT RECOMMENDED SITES FOR WWTF AND DISCHARGE

A. Review all work done in 2013 Report recommending WWTF site and groundwater discharge. This task will review all hydrogeological work done for the siting of groundwater discharge. Any additional site work is

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dependent on Task 3 above and the Town approving any additional flows in excess of those identified in the 2013 Report. An evaluation will determine the total groundwater discharge potential for the previous site.

B. A review of the 2013 Report recommended WWTF alternatives will be completed. This includes process, size, siting location and updated costs. Updates to the 2013 Report will be made based on the results of the Needs Analysis update, as well as the hydrogeological update.

Task 4.1 UPDATED WASTEWATER NEEDS/PROBLEM IDENTIFICATION

A. The wastewater Needs Analysis presented in the 2013 Report will be updated as necessary to accommodate any revisions to Needs Area boundaries. The analysis will consider the entire Town. Specific areas of need, the severity and nature of the problems and a prioritization of each area of concern will be determined and described. Information from the Board of Health and input from Town officials that formed the basis for the 2013 analysis will be consulted for updates. The data will be used to determine the areas of need and special concern regarding on-site wastewater disposal. The results of this evaluation will be incorporated into forecasts of future wastewater flows and assessments of alternatives.

B. ON-SITE TREATMENT ADEQUACY

A preliminary analysis of using updated information will be performed to determine whether or not the specific areas of wastewater disposal need can accommodate Title 5 septic systems based on revised regulations effective March 31, 1995. From the existing information described in the tasks above, the specific areas of on-site systems that have failed or are likely to fail within the 20-year design period will be determined. The adequacy of on-site treatment and disposal will be re-assessed based on updated information and revised study area boundaries.

Task 5.0 PUBLIC PARTICIPATION

A. DEVELOP PUBLIC PARTICIPATION PROGRAM

The Public Participation Program for the CWMP UPDATE/EIR will continue through the entire planning process. Each phase will build on the previous phase. The Plan will contain the following elements: 1) development of a Public Participation Work Plan, which will include a communications and public- relations program; 2) development of a schedule of public participation activities; 3) periodic distribution of fact sheets, newsletters, and mailings; 4) arranging and making presentations at public informational meeting(s) during each phase, with a Public Hearing in Phase II; 5) Provide up to two three-ring binders with a summary of project information to place in up to two locations for general public review of written materials. Materials will be furnished to the Town for inclusion in the three-ring binders. A Town representative will periodically update the three-ring binders by inserting the materials provided.

A Public Outreach meeting will be conducted once all above data has been updated to present the initial findings. A summary of the milestone results of the update will be presented to the public for informational reasons, as well

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as to solicit input. Information presented and input received will be included in the subsequent phases of the Project once the Town has reviewed and approved the final document.

6.0 EVALUATION AND UPDATE OF 2013 COSTS

6.1 EVALUATION OF COSTS

A cost-effective analysis will be performed on the recommended plan identified for detailed evaluation. This analysis will include a calculation of the direct monetary costs of the alternative using present worth or equivalent uniform annual cost as a basis. The analysis will include consideration of all project costs over the planning period.

A. Cost Analyses

A present worth analysis will be performed for all wastewater alternatives, which have been short-listed for further evaluation. The analysis will be performed in accordance with the examples set forth in Appendix A of the Guide to Comprehensive Wastewater Management Planning. If and where applicable, costs will be assessed on an equivalent uniform annual basis.

B. Cost Effective Analysis

The cost-effective analysis of each alternative will be developed and will include all costs associated with construction of and operation of the wastewater facilities included in each plan alternative. Costs to be included in this analysis are: the capital costs including the cost of construction of the wastewater facilities and any costs associated with the lease, easement or acquisition of land and rights-of-way; the cost of engineering, legal, fiscal and administrative elements of the project; contingency, the operation and maintenance costs including the costs for labor, utilities, materials, contractual services, expenses, replacement of equipment and parts to ensure effective and dependable operation during the 20-year planning period. The impact that grants and loans have on the cost-effective analysis will also be discussed. The construction cost index from the Engineering News Record will be utilized and referenced in the capital cost estimate.

7.0 PHASE I DELIVERABLE

A. PHASE I DELIVERABLE

The deliverable for Phase I will be a written report summarizing the updated findings, including incorporation of significant comments as a result of the Public Participation process. A meeting with MassDEP and MEPA to determine the appropriate filing submittal, Environmental Notification Form (ENF) or Expanded Environmental Notification Form (EENF) will take place. Once this is vetted and agreed upon, the appropriate filing, together with the Phase 1 Update, will be submitted for review and circulation per MEPA Regulations. Applicable comments will be incorporated in the next Phase as outlined in the Secretary's MEPA Certificate.

PHASE II – DRAFT CWMP/EIR

1.0 ENVIRONMENTAL EVALUATION PER MEPA CERTIFICATE

The following scope is based on typical requirements after the filing of an ENF/EENF. The final scope will be determined after the ENF/EENF filing and receipt of the MEPA Certificate.

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A. Direct Impacts

Direct impacts will be evaluated for the recommended plan. Direct impacts are those impacts that are considered directly related to the construction and operation of the wastewater facilities. The following direct impacts will be evaluated:

1. Impacts on historical, archaeological, geological, cultural, conservation, or recreational areas;
2. Impacts on wetlands, flood plains, and agricultural land;
3. Impacts to zones of contribution of existing and proposed water supply sources;
4. Impacts on surface and groundwater resources within drainage sub-basins;
5. Displacement of households, businesses or services;
6. Noise pollution, air pollution, odor, and public health problems associated with construction and operation of each alternative; and
7. Violation of Federal, State, or local environmental and land-use statutes, or regulations and plans imposed by such statutes and regulations. An example of one such regulation is Title 5 of the State Environmental Code.

B. Indirect Impacts

Indirect impacts will be evaluated for the recommended plan. Indirect impacts consist of impacts, which are induced changes in the patterns of land-use and population growth and other environmental effects resulting from changes in land use and population. The environmental assessment will determine if the indirect impacts will contravene existing Federal, State and local environmental and land use statutes, regulations or standards. The following indirect impacts will be evaluated for each alternative:

1. Changes in Development and Land Use Patterns
   The recommended plan will be evaluated to determine if its implementation will change the rate, density or type of development, including residential, commercial, municipal, and industrial development, or if it will change the use of open space or other categories of land.
2. Pollution Stemming from Changes in Land Use
   The recommended plan will be evaluated to determine if its implementation will cause air, water, noise, solid waste or pesticide pollution as a result of the induced changes in population and land use.
3. Damage to Sensitive Ecosystems
   The recommended plan will be evaluated to determine if its implementation will cause damage to sensitive ecosystems (such as wetlands and habitats for endangered species) and environmentally protected areas (such as parks, conservation land and historic sites) as a result of changes in population and land use.
4. Socioeconomic Pressures for Expansion (Executive Order 385)

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The recommended plan will be evaluated to determine if its implementation will cause socioeconomic pressures for expansion of the presently proposed infrastructure resulting from induced changes in land use and population.

C. INSTITUTIONAL ARRANGEMENTS

A comparison of the existing institutional arrangements and those required to implement the recommended plan will be included in the evaluation of alternatives. The organization that will be responsible for the management of the wastewater facilities will be identified for each alternative. The costs to each jurisdiction for construction, operation and maintenance of the facilities will be estimated. A program to ensure that sump pumps will not be connected to new sewer facilities will be outlined.

D. FLOW AND WASTE REDUCTION

The potential for flow and waste reduction will be evaluated for the recommended plan, including the option to optimize existing on-site wastewater systems as discussed previously.

E. CONCEPTUAL LOCATION OF FACILITIES

Sites for interceptors, transmission lines, and pump stations will be evaluated based on the following considerations: 1) to locate facilities away from residential areas which would be affected by odors; 2) to minimize aesthetic problems through proper design and landscaping at the facility sites; and 3) to locate facilities outside of environmentally sensitive areas. Concepts for future design will be shown on updated maps.

F. PHASED CONSTRUCTION

A cost analysis of phased development will be included in this plan. Factors that will be considered are: relative cost of providing excess capacity initially compared with the present worth of deferred costs for providing capacity when needed; and uncertainties of projected long-term wastewater flows and possible technological advances or flow waste reduction measures which may limit the need for excess capacity.

G. FLEXIBILITY AND RELIABILITY

The flexibility of wastewater alternatives will be assessed in providing sufficient land to allow for expansion of the wastewater facilities to handle unforeseen increases in wastewater flows or pollutant loads. The reliability of wastewater facilities and their most critical processes will be evaluated.

H. EXECUTIVE ORDER 385

Executive Order 385 growth impacts will be assessed. The assessment will include an evaluation of the possible impacts of system expansion into areas with low densities and the resultant potential of secondary growth. Possible mitigation measures will be detailed, including growth management and ways of reducing non-point source impacts of new development.

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2.0 DRAFT RECOMMENDED PLAN

The evaluations above will culminate in the draft recommendation with the greatest environmental and cost benefit. This section of the CWMP/EIR Update will include a description of the critical components of the recommended plan. The environmental impacts, preliminary design criteria, financing analysis and implementation schedule of the recommended plan will also be discussed.

A. FINANCING PLAN

The financing requirements necessary for the implementation of the recommended plan will be presented. The costs of the recommended wastewater facilities will be presented and the availability of any federal, state or private assistance for reducing costs will be discussed. The estimated costs per household will be presented and the method of cost distribution will be presented, including betterments. The costs per commercial and industrial user will also be presented. The financial and/or economical-impacts to the planning area will be analyzed and presented.

B. IMPLEMENTATION PLAN

A schedule for implementation of the recommended plan will be presented. This schedule will detail the proposed design and construction of the draft recommended wastewater facilities and will also include any plan to phase construction of these facilities.

C. PUBLIC PARTICIPATION

Throughout Phase II, the public participation program will be implemented. The Draft CWMP/EIR will be presented at a formal Public Hearing. The public participation program will consist of: 1) arranging and making presentations at one public hearing; and 2) preparing a responsiveness summary of the Public Hearing addressing all significant comments to be filed in the permanent project record.

3.0 PREPARATION OF DRAFT CWMP/EIR SUPPLEMENT

The Draft CWMP/EIR will present a draft recommended wastewater management plan that describes the proposed solutions to Sudbury's identified wastewater disposal problems. It will present the specific recommendations for upgrading the on-site systems, operation and maintenance, wastewater, collection, transmission, treatment and disposal. It will also present the costs of any proposed solutions and suggestions as to how they could be financed, the appropriate design criteria for the recommended systems and facilities, the environmental impacts of the plan and any necessary mitigation, as well as the needed management system to assure that the solutions can be implemented and supported.

4.0 PHASE II – DELIVERABLE

A. PHASE II DELIVERABLE

The deliverable for Phase II will be a written report summarizing the Draft CWMP/EIR Recommended Plan. The Phase II Report will be submitted to MassDEP and MEPA for review and circulation per MEPA Regulations and as determined in the Phase 1 MEPA filing. Applicable comments will be incorporated in the Phase III Final CWMP/EIR.

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PHASE III — FINAL CWMP/EIR

1.0 PREPARATION OF FINAL CWMP/EIR

A. PREPARATION OF FINAL CWMP/EIR SUPPLEMENT

The Final CWMP/EIR will address any unresolved issues in the Phase II Draft CWMP/EIR. It will provide further detail where necessary and address any comments received on the Draft Report.

2.0 PUBLIC PARTICIPATION

A. PUBLIC PARTICIPATION

During Phase III, the public participation program will consist of presenting the Final Recommended Plan and submitting any comments received to the public record.

3.0 PREPARATION OF FINAL CWMP/EIR

The Final CWMP/EIR will present the final recommended wastewater management plan that describes the proposed solutions to Sudbury's identified wastewater disposal problems. It will present the final recommendations for upgrading the on-site systems, operation and maintenance, wastewater, collection, transmission, treatment and disposal. It will also present the costs of any proposed solutions and suggestions as to how they could be financed, the appropriate design criteria for the recommended systems and facilities, the environmental impacts of the plan and any necessary mitigation, as well as the needed management system to assure that the solutions can be implemented and supported.

4.0 PHASE III DELIVERABLE

4.1 PHASE III DELIVERABLE

The deliverable for Phase III will be a written report summarizing the Final CWMP/EIR Recommended Plan. The Phase III Report will be submitted to MassDEP and MEPA for review and circulation per MEPA Regulations and as previously determined in the Phase 1 MEPA filing. Applicable comments will be incorporated in the permanent file for the Phase III Final CWMP/EIR. Both written and electronic copies will be provided for the record.

COMPENSATION

The compensation for the above listed Scope of Services shall be a fixed fee of $500,000. The fee will not be exceeded without the prior approval of the Client. Any additional services that may be requested by the Client will be provided as an amendment to this scope. The Engineer will submit monthly invoices for the services completed during the previous billing period.

SCHEDULE

The Scope of Services will begin upon written authorization to proceed. The duration of the project and final schedule will be dependent on regulatory review and comments issued and is estimated to be between 18 and 24 months. The project will be considered complete upon final regulatory approval.

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APPENDIX B: WASTEWATER REPORTS

Report

Town of Sudbury

Project Evaluation Report

June 2012
(Town Revisions incorporated June 2013)

Prepared for:
Town of Sudbury
Planning & Community Development
278 Old Sudbury Road
Sudbury, MA 01776

Weston&Sampson

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EXECUTIVE SUMMARY

The Town of Sudbury has been investigating wastewater options for the Route 20 business district for approximately the past 20 years. To find the best solutions to Sudbury's wastewater management challenges, the following principles were emphasized throughout the planning process:

- Detailed Review of wastewater needs information.
- Thorough and thoughtful review of appropriate alternatives.
- Recognition of the importance of maintaining or enhancing local water balance.
- Selection of recommended plan based upon documented need.
- Broad-based public participation and stakeholder involvement.

Over the last 10 years, the framework for the development of a viable wastewater solution to satisfy the needs of the Route 20 business district has been set. As part of that effort, the wastewater needs of those properties within the Route 20 business district have been assessed, future wastewater flows have been estimated, potential treatment and disposal sites have been identified, hydrogeological site evaluations have been completed, and wastewater treatment and disposal alternatives have been examined, as described in more detail herein.

Evaluating Needs and Alternatives

In 1995, the Town completed an initial study assessing the need for alternative wastewater disposal options other than the current method of individual on-site disposal systems. The Town of Sudbury retained Weston & Sampson in May of 2000 to assist with a wastewater needs assessment, which substantiated the concern that septic systems are a limiting factor in the economic development of existing businesses along the Route 20 corridor. The Town's drinking water supply is, located in close proximity to the Route 20 business district, was also at risk due to malfunctioning septic systems.

Areas within the Route 20 business district with challenges to using on-site wastewater treatment and disposal systems were identified. Factors such as system age, system condition, soil conditions, groundwater levels, lot size, and environmental concerns were considered. Through this assessment, the West and Central areas were found to have more properties with greater need than the East area.

Potential long-term wastewater management alternatives for the properties identified were then evaluated. The alternatives investigated include: 1) Title 5 repairs/upgrades, including innovative/alternative (I/A) technologies; 2) shared septic systems; 3) decentralized wastewater collection, treatment, and disposal; and 4) regional solutions. After screening the investigated alternatives, the best alternative identified was a decentralized wastewater treatment system, and a more in depth hydrogeologic investigation was completed to further evaluate potential groundwater discharge sites. The Curtis Middle School was identified as the site most suitable for the development of a large-scale soil absorption system.

The final step included finalizing alternatives for wastewater management in the Route 20 business district by assessing environmental impacts, developing a recommended plan (including design and construction schedules), analyzing project costs, cost allocations and financing, and arranging for project implementation.

The Recommended Plan

The Recommended Plan for wastewater management in the Route 20 business district includes the following components:

- Construction of a decentralized wastewater treatment system for between 208,500 and 268,400 gpd.
- Gravity-collected wastewater flows from the Central Area collected at a pump station located on Route 20 in the vicinity of Nobscot Road and transmitted to the proposed wastewater treatment facility by force main.
- Pressure sewers and individual grinder pumps to serve all properties located in the West Area.
- A Wastewater Treatment Facility located on town property at 641 Boston Post Road (Parcel K06-505) consisting of a 1.6 acre parcel located away from developed residential areas and with no current structures.
- A membrane bioreactor (MBR) process with a denitrification sand filter for wastewater treatment, allowing the treated effluent to be discharged without further treatment to an effluent disposal system.
- A 1.7 mile force main, beginning at the wastewater treatment facility, following along Horse Pond Road, and discharging onto the Curtis Middle School athletic fields.
- Continued reliance of the East Area on on-site systems, with each individual property owner responsible for septic system repairs in accordance with Title 5.

More detail on the Recommended Plan is included in Section 8 of the PER. A map showing the areas served by the recommended plan is included as Figure 8.1.

The Recommended Plan is necessary and appropriate for the Route 20 business district because:

- It addresses the needs of most of the lots identified as having a significant need for an off-site wastewater solution.
- It protects the public health and the environment by addressing problem systems in sensitive areas.
- It specifically protects water resources (both ground and surface water), from a quantity and quality standpoint
- It balances affordability, feasibility and local interests.

Impacts and Mitigation

The Recommended Plan has been evaluated for its expected environmental impacts. The effects of the recommended sewer installation program will have some short-term construction related impacts, but will result in significant long-term benefits to the community, as identified above.

The proposed project falls under the following MEPA review thresholds: construction of a new wastewater treatment facility and/or disposal facility with a capacity of 100,000 gallons per day (gpd) or more; construction of one or more new sewer mains that are five or more miles in length; and new discharge to groundwater of 50,000 gpd or more of sewage. Therefore, an expanded Environmental Notification Form (ENF) and potentialy a single Environmental Impact Report (EIR) will be required.

Cost of the Recommended Plan

The total cost of the recommended plan is estimated at $15 million. This includes design, permitting and construction. It is recommended that this total be paid through the use of a combination of state and local funds. It is assumed that available state funding for the construction portion of the project, which is estimated at $14 million, will be in the form of a two-percent (2%) interest rate State Revolving Fund (SRF) Loan. Local funds to finance the project will include a combination of funds raised through taxation and through betterment

assessments for sewered properties. Sewer rates (i.e. user charges) should only be used for operation and maintenance of the completed system.

Public Participation

Extensive public participation efforts were made throughout the wastewater planning process. The process was designed to involve business owners within the Route 20 business district. The public participation process has included:

- Establishing the Technical Advisory Committee (TAC), which has met regularly throughout the planning process.
- Publishing various articles in the Sudbury Town Crier, the Metro West Daily News and the Sudbury Patch discussing the project.
- Development of a list of Frequently Asked Questions regarding the proposed project.
- Sending letters to area businesses and holding a meeting with the Chamber of Commerce to discuss the proposed project.
- Presenting the project at Town Meeting.
- Holding a panel discussion/public meeting with residents and business owners to answer questions about the project.
- Posting of all of the above information on the Town's website for public access.

Next Steps

Although the appropriation of monies for the design and permitting of the WWTF and associated collection system were approved with a two-thirds majority vote at the 2011 Town Meeting, the ballot vote held on June 7, 2011 as part of the Special Election was defeated.

The Board of Selectmen has since re-established the Citizens Advisory Committee and established a Sewer Steering Committee. Their purpose is to provide an avenue for public involvement in the planning process, and to provide guidance and coordination to all committees and groups working on the wastewater management planning process.

Once the project is approved, the next step is the filing of an Environmental Notification Form and if required, a single Environmental Impact Report for the project.

TABLE OF CONTENTS

EXECUTIVE SUMMARY ES-1

TABLE OF CONTENTS i

LIST OF FIGURES iv

LIST OF TABLES v

LIST OF APPENDICES vii

1.0 BACKGROUND 1-1
- 1.1 Project Purpose 1-1
- 1.2 Prior Planning Efforts 1-2
- 1.3 Scope of Work 1-3

2.0 ASSESSMENT OF GENERAL CONDITIONS 2-1
- 2.1 Planning Area Description 2-1
  - 2.1.1 Geology and Soils 2-1
  - 2.1.2 Topography 2-4
  - 2.1.3 Watershed 2-4
- 2.2 Land Use and Zoning 2-4
  - 2.2.1 Land Use 2-6
  - 2.2.2 Land Use Issues 2-6
  - 2.2.3 Zoning 2-6
  - 2.2.4 Development Potential 2-7
- 2.3 Environmental Conditions 2-7
  - 2.3.1 Groundwater Resources 2-7
  - 2.3.2 Surface Water Resources 2-8
  - 2.3.3 Wetlands 2-8
  - 2.3.4 Floodplains 2-8
  - 2.3.5 Rare Species and Sensitive Habitats 2-8
- 2.4 Existing Wastewater Facilities 2-9
  - 2.4.1 On-Site Subsurface Disposal 2-9
  - 2.4.2 Innovative/Alternative Technologies 2-10
  - 2.4.3 Treatment Facilities 2-11
  - 2.4.4 Collection Systems 2-11

3.0 WASTEWATER NEEDS ANALYSIS 3-1
- 3.1 Matrix Criteria 3-1
- 3.2 Matrix Scoring Distribution 3-4
- 3.3 Matrix Results and Conclusions 3-6
- 3.4 2011 Matrix Updates 3-8

4.0 ASSESSMENT OF FUTURE CONDITIONS 4-1
4.1 Potential Flows 4-1
4.2 Zoning Regulations 4-1
4.3 Planning Assumptions 4-2
4.4 Future Water Use 4-2
4.5 Future Wastewater Flows 4-2
4.5.1 Peak Flows 4-3
4.5.2 Infiltration/Inflow 4-3
4.6 Initial Flow Analysis (2001 Needs Assessment) 4-4
4.7 2010 Update 4-5
4.8 2011 PER Updates 4-6

5.0 WASTEWATER MANAGEMENT ALTERNATIVES 5-1
5.1 Alternative 1 – Title 5 Repairs/Upgrades 5-1
5.1.1 Alternative 1A – Conventional Septic Systems 5-1
5.1.2 Alternative 1B – Tight Tanks 5-4
5.1.3 Alternative 1C – Innovative/Alternative (I/A) Systems 5-4
5.2 Alternative 2 – Shared Septic Systems 5-7
5.3 Alternative 3 – Decentralized Wastewater Treatment 5-7
5.3.1 Wastewater Collection Alternatives 5-8
5.3.2 Effluent Disposal Alternatives 5-12
5.4 Alternative 4 – Regional Solutions 5-13
5.4.1 Framingham/Massachusetts Water Resources Authority 5-14
5.4.2 Marlborough Easterly Treatment Plant 5-16
5.5 Summary of Alternatives 5-17

6.0 SCREENING OF ALTERNATIVES 6-1
6.1 Title 5 Repairs/Upgrades Screening ("No Action" Alternative) 6-1
6.2 Shared Septic Systems Screening 6-3
6.3 Decentralized Wastewater Treatment Screening 6-3
6.3.1 Initial Wastewater Treatment Facility & Discharge Siting (2001 Analysis) .. 6-4
6.3.2 The Continued Search for a Discharge Site 6-9

7.0 HYDROGEOLOGIC INVESTIGATION FOR DISPOSAL SITES 7-1
7.1 Site Selection 7-1
7.2 Test Drilling 7-2
7.3 Load Scale Test 7-6
7.4 Analytical Modeling 7-9
7.5 Conclusions and Recommendations 7-11

8.0 RECOMMENDED PLAN 8-1
8.1 Introduction 8-1
8.2 Service Area 8-1
8.3 Wastewater Treatment Facility 8-2
8.4 Environmental Impacts 8-4
8.4.1 Direct Impacts 8-4
8.4.2 Indirect Impacts 8-7
8.4.3 Summary of Environmental Considerations 8-8

8.5 Preliminary Design 8-8
8.5.1 Design Basis 8-8
8.5.2 Preliminary Design 8-8
8.6 Design and Construction Costs 8-15
8.7 O&M Considerations 8-16

9.0 IMPLEMENTATION OF RECOMMENDED ALTERNATIVE 9-1
9.1 Introduction 9-1
9.2 Organizational Context 9-1
9.3 Financing Alternatives 9-1
9.3.1 State Revolving Fund Loan Program 9-1
9.4 Betterment Assessment Methods 9-3
9.5 Implementation 9-5
9.5.1 Sewer Rules and Regulations 9-5
9.5.2 Groundwater Discharge Permit 9-7
9.5.3 Design and Construction Administration 9-8
9.6 Project Schedule 9-8
9.6.1 MEPA Process 9-8
9.6.2 Final Design and Permitting (including SRF Application) 9-10
9.6.3 Groundwater Discharge Permit 9-10
9.6.4 Bidding and Construction 9-10
9.6.5 Schedule Overview 9-11

10.0 PUBLIC PARTICIPATION 10-1
10.1 Sewer Assessment Technical Advisory Committee 10-1
10.2 Public Education Materials 10-1
10.2.1 Newspaper Articles 10-1
10.2.2 Frequently Asked Questions 10-2
10.2.3 Letter to Area Businesses 10-3
10.2.4 Letter to the Editor 10-3
10.3 Public Meetings 10-3
10.3.1 Public Forum – Needs Assessment 10-3
10.3.2 School Committee Meeting 10-3
10.3.3 Board of Selectmen Meeting 10-4
10.3.4 Public Meeting with Town Officials and Business Owners 10-4
10.3.5 Chamber of Commerce Meeting 10-4
10.3.6 Town Meeting 10-4
10.3.7 Panel Discussion 10-5
10.3.8 Ballot Vote 10-5
10.4 Citizens Advisory Committee 10-5
10.5 Route 20 Sewer Steering Committee 10-5

LIST OF FIGURES

FIGURE 2-1: Planning Area 2-2
FIGURE 2-2: Area Topography 2-5
FIGURE 3-1: Point Rating Histograph 3-5
FIGURE 3-2: Parcel Ranking 3-7
FIGURE 3-3: Revised Parcel Ranking 3-11
FIGURE 6-1: Treatment Facility Site Screening 6-5
FIGURE 6-2: Wastewater Recharge (Screened Sites) 6-11
FIGURE 7-1: Curtis Middle School – Site Map 7-3
FIGURE 7-2: Curtis Middle School – Hydrogeologic Investigation 7-4
FIGURE 7-3: Curtis Middle School Infiltration Test Mounding Results 7-8
FIGURE 8-1: Proposed Service Area and System Layout 8-3
FIGURE 8-2: Decentralized Wastewater Treatment Facility Conceptual Plan 8-11
FIGURE 8-3: Schematic MBR Process 8-12
FIGURE 8-4: Proposed Wastewater Disposal Fields 8-14

LIST OF TABLES

TABLE 3-1: Wastewater Needs Matrix 3-2

TABLE 4-1: Future Wastewater Flows Per Zoning District 4-8

TABLE 4-2: Future Wastewater Flows Per Parcel 4-9

TABLE 4-3: West Area Flow 4-10

TABLE 4-4: West Area "Critical" and "Priority" Flow 4-10

TABLE 4-5: West Area "Critical" Flow 4-11

TABLE 4-6: Central Area Flow 4-12

TABLE 4-7: Central Area "Critical" and "Priority" Flow 4-13

TABLE 4-8: Central Area "Critical" Flow 4-14

TABLE 4-9: East Area Flow 4-15

TABLE 4-10: East Area "Critical" and "Priority" Flow 4-16

TABLE 4-11: Summary of Build-Out Wastewater Design Flows 4-5

TABLE 4-12: Updated Build-Out Wastewater Design Flows 4-6

TABLE 4-13: Existing & Future Flows, Final Proposed Service Area (West and Central) . 4-17

TABLE 4-14: Final Proposed West Area Flows 4-18

TABLE 4-15: Final Proposed Central Area Flows 4-19

TABLE 4-16: Additional Potential Flows from Fronted Properties in the West & Central Areas 4-20

TABLE 5-1: Advantages and Disadvantages – Treatment Alternatives 5-18

TABLE 6-1: Title 5 Repairs/Upgrades – Cost Analysis 6-2

TABLE 6-2: Screened Parcels for Groundwater Discharge 6-10

TABLE 7-1: Hydraulic Conductivity Estimates 7-6

TABLE 7-2: Groundwater Elevations 7-7

TABLE 7-3: Mound Height Calculations for Various Discharge Rates 7-10

TABLE 7-4: Mound Height at Varying Distances 7-10

TABLE 8-1: Septic System vs. MBR Plant Effluent Quality Comparison 8-15

TABLE 8-2: Estimated Design, Permitting and Construction Costs 8-16

TABLE 8-3: Estimated Operation and Maintenance Costs 8-18

TABLE 9-1: Project Implementation Schedule 9-11

LIST OF APPENDICES

APPENDIX A: I/A Technologies

APPENDIX B: Treatment Facility Design Alternatives

APPENDIX C: Initial Soil Testing Results:

June 16, 2003 Schofield Brothers to Technical Advisory Committee (Former Bushey Property and 625 Boston Post Road)

March 31, 2004 Schofield Brothers to Sudbury Board of Health (Soil Testing at 275 Old Lancaster Road)

June 14, 2004 Schofield Brothers to Technical Advisory Committee (DPW Property 275 Old Lancaster Road)

August 13, 2007 Schofield Brothers to Jody Kablack, Director of Planning and Community Development (Young Property)

APPENDIX D: Subsurface Data Results:

February 18, 2010 Letter Report to Jody Kablack

APPENDIX E: DEP Approved Hydrogeologic Work Plan for Curtis Middle School Wastewater Disposal

Soil Borings from Load Scale Testing

Sieve Analysis for Wells A, C, D & G

Water Level Data from Load Scale Testing

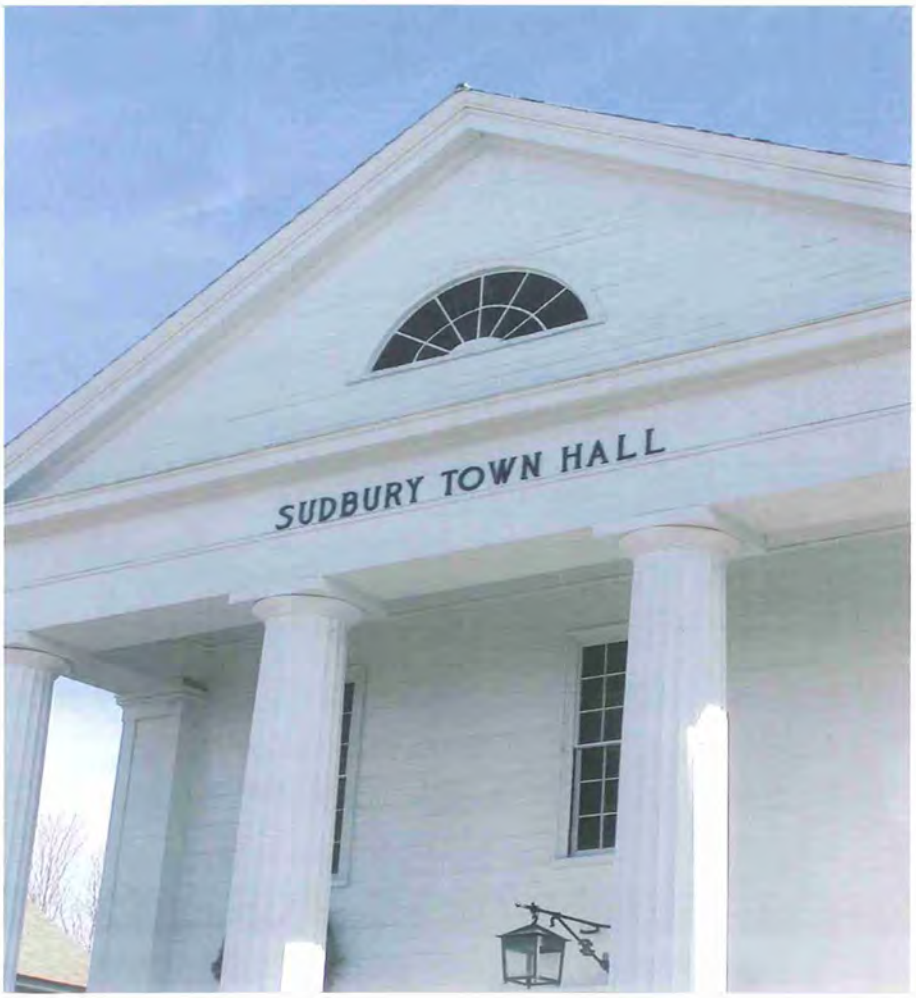
Mounding Analysis Calculations

APPENDIX F: Public Participation Materials:

March 31, 2011 Sudbury Town Crier Article
April 28, 2011 Sudbury Town Crier Article
November 18, 2010 Sudbury Town Crier Article
March 3, 2011 Sudbury Town Crier Article
March 3, 2011 Metrowest Daily News Article
April 7, 2011 Sudbury Town Crier Article
April 15, 2011 Sudbury Patch Article
Frequently Asked Questions
April 7, 2011 Letter to Rte. 20 Area Business Leaders

April 25, 2011 Letter of Support from Rte. 20 Business Community
April 14, 2011 Letter to the Editor in the Sudbury Town Crier
November 7, 2001 Public Forum (presentation slides)
November 15, 2001 Sudbury Town Crier Article
November 26, 2001 Boston Globe Article
June 23, 2010 School Committee Meeting (presentation slides)
November 16, 2010 Board of Selectmen Meeting (presentation slides)
April 7, 2011 Public Meeting with Town Officials & Business Owners (meeting minutes)
May 3, 2011 Town Meeting Presentation (written narrative & presentation slides)
May 19, 2011 Sudbury Town Crier Notice for May 25th Panel Discussion
May 25, 2011 Panel Discussion – presentation slides
Citizens Advisory Committee Mission Statement & Responsibilities
Route 20 Sewer Steering Committee Mission Statement & Responsibilities

TOWN OF SUDBURY, MASSACHUSETTS
ROUTE 20 BUSINESS DISTRICT
WASTEWATER MANAGEMENT PLAN UPDATE
AUGUST 2010



INTRODUCTION / GOALS

Both the long-term growth and health of many New England communities is constrained by the need to manage both water supplies and wastewater disposal resulting in a constant struggle to identify sustainable solutions that maintain economic viability. This is certainly true in the Town of Sudbury, which relies almost entirely on individual, on-site, subsurface systems for the disposal and treatment of wastewater, and relies on underground aquifers for its drinking water. While the compatibility between these systems does not appear to be a widespread problem in the residential areas of town, commercial property owners are experiencing difficulty in treating and disposing of wastewater in an economically feasible manner due to physical and regulatory constraints (e.g. soil conditions, depth to groundwater, aquifer protection, Title V regulations, etc.).

Protection of the town's water supply is of heightened concern since the central portion of the Route 20 business district is within Zone II of the town's main drinking water wells at the Raymond Road Aquifer. Approximately 383 acres in Sudbury is currently zoned commercial or in commercial use. With the exception of a few acres in other parts of town, the commercial districts are located in and around the Route 20 corridor, hereinafter referred to as the Route 20 business district. There is pressure in Sudbury to achieve economic sustainability by balancing residential growth with an economically viable commercial sector. However the compatibility between development growth and groundwater protection have proven challenging for the Town.

Recognizing the need to properly manage and responsibly treat wastewater generated in the Route 20 corridor, Sudbury developed a Technical Advisory Committee (TAC) to undertake wastewater planning efforts and identify areas of concern for wastewater collection, treatment, and disposal and develop a viable and sustainable solution.

This document provides an overview of the wastewater planning efforts performed to date by the TAC, Town of Sudbury staff, and various sub-consultants and summarizes the current status of the process, and the next critical steps. Specifically, the following topics are discussed:

Chapter 1	Wastewater Management Needs
Chapter 2	Wastewater Recharge Evaluation/Site Screening
Chapter 3	Conceptual Layout/System Components
Chapter 4	Plan of Action/Schedule/Estimated Costs

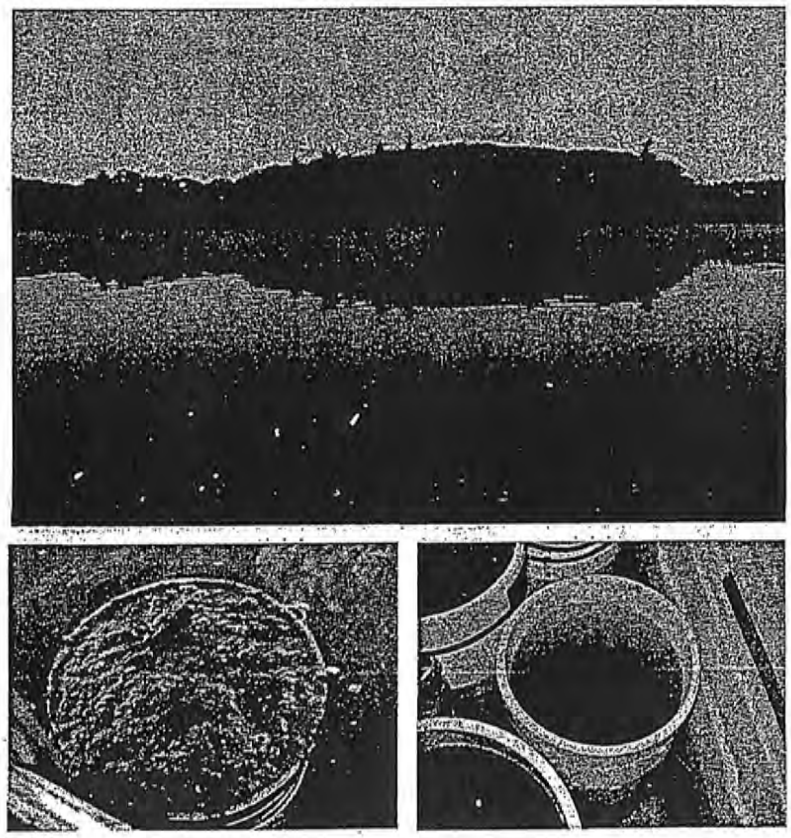
Prepared For:

Massachusetts Department of Environmental Protection

and the

United States Army Corps of Engineers

Supplemental Nutrient Loading Evaluation of Hop Brook



DRAFT

April 2004

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CONTENTS

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1.0 INTRODUCTION 1-1

2.0 METHODS 2-1

2.1 DIURNAL DISSOLVED OXYGEN 2-1
2.2 SEDIMENT FRACTIONATION 2-1
2.3 SEDIMENT OXYGEN DEMAND AND NUTRIENT FLUX 2-6
2.4 MODELING OF POSSIBLE FUTURE CONDITIONS IN IMPOUNDMENTS 2-8
2.5 MODELING OF THEORETICAL PRE-SETTLEMENT CONDITIONS IN IMPOUNDMENTS 2-9

3.0 RESULTS 3-1

3.1 DIURNAL DISSOLVED OXYGEN 3-1
3.2 SEDIMENT CHEMISTRY 3-5
3.3 SEDIMENT OXYGEN DEMAND 3-8
3.4 NUTRIENT FLUX 3-10
3.5 MODELING POSSIBLE FUTURE PHOSPHORUS LEVELS 3-12
3.6 MODELING OF THEORETICAL PRE-SETTLEMENT CONDITIONS IN IMPOUNDMENTS 3-18

4.0 MANAGEMENT IMPLICATIONS 4-1

5.0 MANAGEMENT OPTIONS 5-1

5.1 GENERAL MANAGEMENT OPTIONS 5-1
5.2 REDUCTION OF MEWWTF PHOSPHORUS LOAD 5-1
5.3 SUPPRESSION OF INTERNAL LOADING 5-2
5.4 STORM WATER MANAGEMENT 5-5

6.0 MANAGEMENT RECOMMENDATIONS 6-1

7.0 REFERENCES 7-1

APPENDIX A: SUPPLEMENTAL QUALITY ASSURANCE PROJECT PLAN

APPENDIX B: SUPPLEMENTAL IMPOUNDMENT MANAGEMENT TECHNIQUE INFORMATION

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LIST OF TABLES

Table 1 - Samples Collected From Each Hop Brook Impoundment 2-7
Table 2 - Dissolved Oxygen Values throughout the Diurnal Survey on August 26, 2003. 3-2
Table 3 - Sediment Chemistry Results For Hop Brook Impoundments 3-6
Table 4 - Literature Reported Sediment Chemistry Results 3-7
Table 5 - Sediment Description of Cores Collected in Hop Brook Impoundments 3-8
Table 6 - Nutrient Flux and Sediment Oxygen Demand (SOD) Results for Hop Brook Impoundments 3-9
Table 7 - Literature Reported Sediment Oxygen Demand (SOD) Results 3-9
Table 8 - Physical Characteristics of Hop Brook Impoundments and Phosphorus Release Calculations 3-11
Table 9 - Phosphorus, Chlorophyll and Secchi Transparency in the Hop Brook Impoundments Under Selected Input Conditions Using ShedMod 3-16
Table 10 - Phosphorus, Chlorophyll and Secchi Transparency in the Hop Brook Impoundments Under Conditions of Minimal Human Influence Using ShedMod 3-18
Table 11 - Aluminum dose Necessary to Inactivate Surficial Sediment Phosphorus 5-2
Table 12 - Soft Sediment Volumes Calculated Using Contoured Sediment Thickness Data 5-4

LIST OF FIGURES

Figure 1. Hager Pond Sample Locations 2-2
Figure 2. Grist Millpond Sample Locations 2-3
Figure 3. Carding Millpond Sample Locations 2-4
Figure 4. Stearns Millpond Sample Locations 2-5
Figure 5. Temperature/Dissolved Oxygen Profiles on August 26, 2003 3-4
Figure 6 Phosphorus and Chlorophyll Concentrations Predicted for the Hop Brook Impoundments Under Selected Input Conditions Using QUAL2E 3-13

1.0 INTRODUCTION

Four impoundments of Hop Brook (Hager Pond, Grist Millpond, Carding Millpond and Stearns Millpond) exhibit signs of advanced eutrophication, including excessive growths of algae. Inputs to the brook and its impoundments include the discharge from the Marlborough East Waste Water Treatment Facility (MEWWTF) and a variety of non-point sources, with phosphorus and nitrogen inputs posing the greatest concern. Phosphorus is believed to control productivity in this system, although water velocity minimizes algae and plant biomass in much of the brook, and light restrictions imposed by extensive surficial algal mats limit further growths in the impoundments by late summer. A permit for continued operation of the MEWWTF has been under development by USEPA and MADEP, with considerable public input, for several years, and field investigations and modeling (ENSR 2000) have been conducted to support this effort. Based on the available data, it appears that reduced phosphorus loading from the MEWWTF is essential to improving aquatic conditions in the Hop Brook impoundments, but that loading from other sources may have to be addressed before detectable improvement is attained.

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Of particular concern is the potential role of internal recycling of phosphorus within the impoundments. More specifically, phosphorus that has been incorporated into surficial bottom sediments as iron precipitates can be released back into the water column under low oxygen conditions. Formation of iron precipitates is the most common form of sedimented phosphorus in most lakes in this region, and low oxygen conditions are likely to occur overnight and at times of elevated decay in systems where productivity is high. Yet while the potential for internal phosphorus recycling in the Hop Brook impoundments is very high, such recycling appeared low in field investigations. Low releases of phosphorus from sediment may be a function of more permanent binding of phosphorus or continuously adequate oxygen, neither of which seems likely in this system. However, equilibrium chemistry dictates that phosphorus release may be reduced or curtailed when the phosphorus content of the overlying water is already high. Studies summarized in a pending paper by Reddy et al. (in review) suggest that sediment phosphorus release may be depressed at overlying water phosphorus concentrations >100 ug/L, while concentrations in Hop Brook are higher. This raises a critical management question; if the MEWWTF discharge concentration of phosphorus is reduced, will internal recycling of phosphorus in the Hop Brook impoundments increase, thereby negating the benefits of reduced discharge phosphorus concentration?

This investigation is primarily focused on evaluating the role of internal phosphorus loading from the sediments of the Hop Brook impoundments under expected future loading scenarios for the MEWWTF. This effort encompasses the measurement of oxygen profiles within the impoundments over a daily cycle, assessment of the pool of available phosphorus in the surficial sediments of each impoundment, evaluation of actual release under lowered phosphorus levels in the overlying water, and modeling of the likely future condition of the impoundments under various plausible management scenarios.

VMR (4pg)

Sudbury, Massachusetts

Assessment of Wastewater Management Needs for the Route 20 Business District

June 2001

Weston&Sampson ENGINEERS, INC.

Report

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TABLE OF CONTENTS

TABLE OF CONTENTS i

LIST OF FIGURES iii

LIST OF TABLES iii

LIST OF APPENDICES iii

1.0 INTRODUCTION 1-1
1.1 Background Information 1-1
1.2 Scope of Work 1-2
1.3 Review of Existing Data 1-3
2.0 ASSESSMENT OF CURRENT CONDITIONS 2-1
2.1 Planning Area Description 2-1
2.1.1 Geology and Soils 2-3
2.1.2 Topography 2-4
2.1.3 Watershed 2-4
2.2 Land Use and Zoning 2-6
2.2.1 Land Use 2-6
2.2.2 Land Use Issues 2-6
2.2.3 Zoning 2-6
2.2.4 Development Potential 2-7
2.3 Environmental Conditions 2-7
2.3.1 Groundwater Resources 2-7
2.3.2 Surface Water Resources 2-8
2.3.3 Wetlands 2-8
2.3.4 Floodplains 2-8
2.3.5 Rare Species and Sensitive Habitats 2-9
2.4 Existing Wastewater Facilities 2-9
2.4.1 On-Site Subsurface Disposal 2-9
2.4.2 Innovative/Alternative Technologies 2-10
2.4.3 Treatment Facilities 2-11
2.4.4 Collection Systems 2-11
3.0 WASTEWATER NEEDS IDENTIFICATION 3-1
3.1 Matrix Criteria 3-1
3.2 Matrix Scoring Distribution 3-6
3.3 Matrix Results 3-8
3.4 Conclusions 3-8
4.0 ESTIMATED FUTURE WASTEWATER FLOWS 4-1
4.1 Potential Flows 4-1
4.2 Zoning Regulations 4-1
4.3 Planning Assumptions 4-2
4.4 Future Water Use 4-2

4.5 Future Wastewater Flows 4-2
4.5.1 Peak Flows 4-3
4.5.2 Infiltration/Inflow 4-3
4.6 Flow Analysis 4-4
5.0 WASTEWATER MANAGEMENT ALTERNATIVES 5-1
5.1 Alternative 1 – Title 5 Repairs/Upgrades 5-1
5.1.1 Alternative 1A – Conventional Septic Systems 5-1
5.1.2 Alternative 1B – Tight Tanks 5-4
5.1.3 Alternative 1C – Innovative/Alternative (I/A) Systems 5-4
5.2 Alternative 2 – Shared Septic Systems 5-7
5.3 Alternative 3 – Decentralized Wastewater Treatment 5-7
5.3.1 Wastewater Collection Alternatives 5-9
5.3.2 Effluent Disposal Alternatives 5-12
5.4 Summary of Alternatives 5-13
6.0 SCREENING OF ALTERNATIVES AND RECOMMENDED PLAN 6-1
6.1 Title 5 Repairs/Upgrades Screening 6-1
6.2 Shared Septic Systems Screening 6-3
6.3 Decentralized Wastewater Treatment Screening 6-3
6.3.1 Wastewater Treatment Facility Siting 6-4
6.4 Recommended Plan 6-8
6.4.1 East Area 6-8
6.4.2 West Area 6-9
6.4.3 Central Area 6-9

LIST OF FIGURES

FIGURE 2-1: Planning Area 2-2

FIGURE 2-2: Area Topography 2-5

FIGURE 3-1: Point Rating Histograph 3-7

FIGURE 3-2: Parcel Ranking 3-9

FIGURE 6-1: Treatment Facility Site Screening 6-5

LIST OF TABLES

TABLE 3-1: Wastewater Matrix 3-2

TABLE 4-1: Future Wastewater Flows Per Zoning District 4-5

TABLE 4-2: Future Wastewater Flows Per Parcel 4-6

TABLE 4-3: West Area Flow 4-10

TABLE 4-4: West Area "Critical" and "Priority" Flow 4-11

TABLE 4-5: West Area "Critical" Flow 4-11

TABLE 4-6: Central Area Flow 4-12

TABLE 4-7: Central Area "Critical" and "Priority" Flow 4-14

TABLE 4-8: Central Area "Critical" Flow 4-16

TABLE 4-9: East Area Flow 4-17

TABLE 4-10: East Area "Critical" and "Priority" Flow 4-18

TABLE 4-11: Summary of Future Wastewater Design Flows 4-19

TABLE 5-1: Advantages and Disadvantages – T reatment Alternatives 5-14

TABLE 6-1: Title 5 Repairs/Upgrades – Cost Analysis 6-2

TABLE 6-2: Cost Comparison of Alternatives (One Time Capital Costs Only) 6-13

LIST OF APPENDICES

APPENDIX A: I/A Technologies A-1

APPENDIX B: Treatment Facility Alternatives B-1

APPENDIX C: Institutional Issues C-1

1.0 INTRODUCTION

1.1 Background Information

The town of Sudbury relies almost entirely on individual, on-site, subsurface systems for the disposal and treatment of wastewater. While this does not appear to be a widespread problem in the residential areas of town, commercial property owners are increasingly having difficulty treating and disposing of wastewater in an economically feasible manner due to physical and regulatory constraints (e.g. soil conditions, depth to groundwater, aquifer protection, Title 5 regulations, etc.).

Approximately 383 acres in Sudbury is currently zoned commercial or in commercial use. With the exception of a few acres in other parts of town, the commercial districts are located in and around the Route 20 corridor, hereinafter referred to as the Route 20 business district. In addition to the economic concerns of providing adequate wastewater disposal systems in this commercial district, protection of the town's water supply is also of concern since the central portion of the Route 20 business district is within Zone II of the town's main drinking water wells at the Raymond Road Aquifer.

A 1995 study entitled "Sudbury Wastewater Disposal Options, Route 20 Business District" determined that the risk of contamination of groundwater in the Raymond Road Aquifer is mitigated by the silt and clay layer, which exists beneath some or all of the Route 20 business district. The study further states, however, that evidence of contamination reaching the Sudbury Water District's #2 well (Raymond Road Aquifer) suggests that the clay layer is not providing complete protection from activities in the Route 20 area. Furthermore, the study found that some septic systems in the area appear to be at maximum use with no potential for expansion or repair.

Subsequent to the 1995 study, a 1999 survey conducted by the Chamber of Commerce further substantiated that the expansion potential of existing businesses might be limited by existing subsurface wastewater disposal systems.

There is increasing pressure in Sudbury to achieve economic sustainability by balancing the recent surge in residential growth with an economically viable commercial sector. The town is seeking to assess the wastewater management needs for the Route 20 Business District and to identify whether there are feasible alternatives to individual septic systems within the district or portions thereof.

The 1999 annual Sudbury town meeting appropriated funds for the completion of a wastewater needs assessment. In May of 2000, the town retained Weston & Sampson Engineers, Inc. (WSE) to assist in the assessment of wastewater management needs for the Route 20 business district, including a preliminary evaluation of alternatives for wastewater treatment and disposal.

1.2 Scope of Work

The specific scope of work for this project was developed by a Technical Advisory Committee (TAC) of the Town of Sudbury. The scope of services includes:

- Assessment of current conditions in the study area with respect to natural environment, land use, water supply and usage, and wastewater disposal.
- Assessment of future conditions in the study area with respect to potential build-out under current zoning.
- Completion of a matrix-type analysis to identify the adequacy of existing wastewater disposal systems to meet existing and projected needs in the study area.
- Preliminary evaluation of potential alternatives for the disposal and treatment of wastewater for the study area.
- Report preparation including submission of a draft report for review by the TAC, attendance at a public meeting to solicit comments on the draft report, and submission of a final report. The report is intended to summarize the study's findings, conclusions, and recommendations.

The study area focuses on the above mentioned Route 20 business district, which includes over 100 business properties on Route 20 and Union Avenue.

1.3 Review of Existing Data

In performing this evaluation and preparing this report, WSE used historic documents prepared for the town by other sources. These documents included the following:

- Sudbury Zoning Map and Street Index, dated 1999.
- Sudbury, MA, Soil Conservation Services Map, dated 1989.
- Sudbury Assessor's Maps, revised 1991.
- F.I.R.M. Map, Federal Emergency Management Association, revised November 20, 1998.
- Water Resource Protection Districts, Town of Sudbury, MA, revised February 1, 1994.
- Sudbury Wastewater Disposal Options, Route 20 Business Districts, prepared for the Town of Sudbury Wastewater Disposal Options Task Force, by Woodard & Curran Inc., dated August 18, 1995.
- Chamber of Commerce Wastewater Survey, dated March 1999
- Hydrology and Ground Water Resources of Sudbury, Massachusetts, prepared for the Town of Sudbury Planning Board, by Ward S. Motts, Hydrogeologist, dated February 1977.
- Hydrogeologic Study, Raytheon Company, Equipment Development Laboratories, prepared for Raytheon Company, Sudbury, Massachusetts, by Goldberg-Zoino & Associates, Inc., dated May 1990.
- Groundwater Model Documentation Supplement to Prolonged Pumping Test Report for New Well No. 9, Sudbury, Massachusetts, compiled for the Sudbury Water District, by H20 Engineering Consulting Associates, Inc., dated February 13, 1992.
- Nitrogen Loading Analysis for Groundwater Supplies for the Sudbury Water District, Sudbury, MA, by H20 Engineering Consulting Associates, Inc., dated December 1993.
- Report on Raymond Road Aquifer Study, prepared for the Sudbury Water District, Sudbury, MA, by H20 Engineering Consulting Associates, Inc., dated January 1985.
- Sustainable Sudbury, Draft Master Plan, by the Sudbury Planning Board, dated 1999.
- IRA Status Report, Gravestar, Inc., Sudbury Plaza, Sudbury, MA, Document No. 3169-003-101, dated April 1996.
- December 2000 Sudbury Build-Out Analysis, by the Metropolitan Area Planning Council.

REPORT

SUDBURY WASTEWATER DISPOSAL OPTIONS
ROUTE 20 BUSINESS DISTRICTS

prepared for:
Town of Sudbury
Wastewater Disposal Options
Task Force

August 18, 1995

prepared by:

WOODARD & CURRAN INC.
990 Washington Street
Dedham, MA 02026

This project was funded by a Municipal Incentive Grant awarded by the Massachusetts Executive Office of Communities and Development

TABLE OF CONTENTS

INTRODUCTION 1
STUDY PURPOSE AND SCOPE 1
STUDY AREA 1
DATA COLLECTION 3
APPROACH 4
METHODOLOGY 4
ASSESSMENT OF EXISTING AND FUTURE CONDITIONS 5
GENERAL 5
WEST AREA 5
CENTRAL AREA 6
EAST AREA 9
NEEDS ASSESSMENT 11
Summary of Study Area 11
Needs Analysis 11
Assumptions 13
West Area 14
Central Area 14
East Area 14
IDENTIFICATION AND EVALUATION OF WASTEWATER MANAGEMENT ALTERNATIVES 15
Rehabilitation of septic systems 15
Limited Sewering to Communal Septic System / Wastewater Treatment Facility 16
West Area 16
Central Area 17
East Area 17
Entire Study Area 18
SUMMARY AND CONCLUSIONS 19
RECOMMENDATIONS FOR MAINTENANCE OF ON-SITE SEWAGE DISPOSAL SYSTEMS 20

APPENDIX A SPREADSHEET OF PARCELS
APPENDIX B COST CALCULATIONS

LIST OF REFERENCES

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The purpose of this study is to assess the need for wastewater disposal options other than the current method of individual on-site disposal in the Route 20 business district, and (to the extent there is a need due to environmental or public health reasons) to develop and evaluate wastewater management options.

The scope of work included:

- A compilation and review of available information for the study area, such as current zoning, land use, building and parcel sizes, water use, wastewater disposal, soils data, wetlands, aquifer protection areas (Zone II).
- Review of applicable regulations and statutes.
- Review of other studies relating to the area.
- Conducting a needs assessment, based on the above review, to determine whether options to on-site disposal are warranted from the perspectives of environmental impact, public health or economic considerations.
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STUDY AREA

The study area consists of the Route 20 business and industrial districts, from the easterly end of Business District #1 (at the Wayland line), to the westerly end of Business District #6 (near Lafayette Drive), including Union Avenue to the railroad tracks. The districts included are:

Business District (BD) 1 through 6, 15 and 16
Limited Business District (LBD) 1 through 4, and 6
Limited Industrial District (LID) 1 and 6
Industrial District (ID) 2, 4, 8 and 12

In all, there are 98 parcels represented by the study area.

The study area has been identified to exist in large part over the Town of Sudbury aquifer for the Raymond Road wells (# 2, 4, 6, 7 & 9), which supply the Town with a significant fraction of its drinking water.

The study area is shown on Figure 1.

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CENTRAL AREA 6
EAST AREA 9
NEEDS ASSESSMENT 11
Summary of Study Area 11
Needs Analysis 11
Assumptions 13
West Area 14
Central Area 14
East Area 14
IDENTIFICATION AND EVALUATION OF WASTEWATER MANAGEMENT ALTERNATIVES 15
Rehabilitation of septic systems 15
Limited Sewering to Communal Septic System / Wastewater Treatment Facility 16
West Area 16
Central Area 17
East Area 17
Entire Study Area 18
SUMMARY AND CONCLUSIONS 19
RECOMMENDATIONS FOR MAINTENANCE OF ON-SITE SEWAGE DISPOSAL SYSTEMS 20

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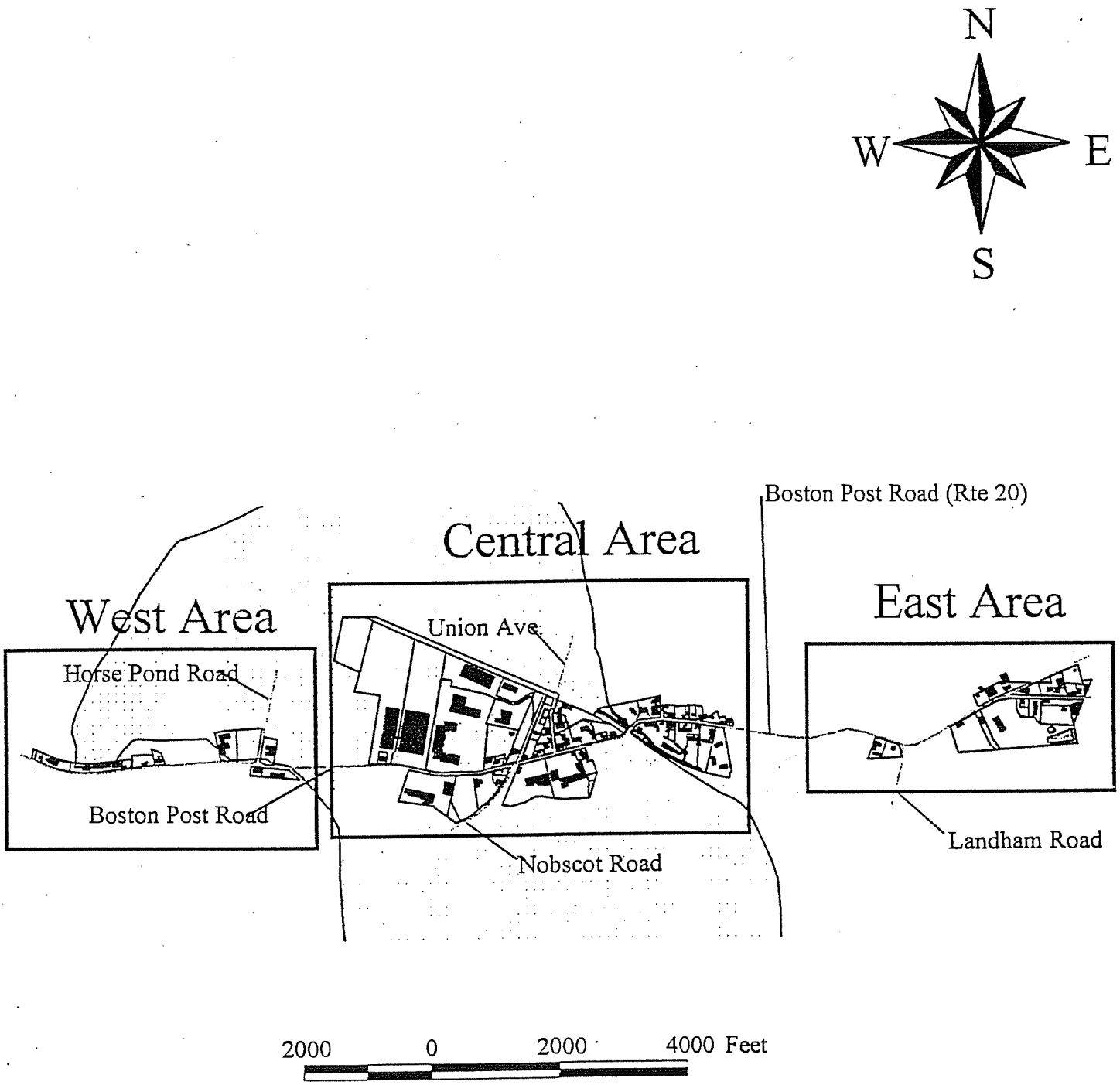

Streams
Building
Parcels
Sudzone2

FIGURE 1
STUDY AREA

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Industrial District (ID) 2, 4, 8 and 12

In all, there are 98 parcels represented by the study area.

The study area has been identified to exist in large part over the Town of Sudbury aquifer for the Raymond Road wells (# 2, 4, 6, 7 & 9), which supply the Town with a significant fraction of its drinking water.

The study area is shown on Figure 1.

REPORT ON

NITROGEN LOADING ANALYSIS FOR GROUNDWATER SUPPLIES

FOR

THE SUDBURY WATER DISTRICT SUDBURY, MASSACHUSETTS

REVISED - MAY 1994

COMMONWEALTH OF MASSACHUSETTS
TSUNG TING CHIANG
No. 23891
REGISTERED PROFESSIONAL ENGINEER

T. T. Chiang

H_2O ENGINEERING CONSULTING ASSOCIATES, INC.

H_2O Engineering Consulting Associates, Inc.

6 Page Place, Woburn, MA 01801
Telephone (617) 933-6961 Fax (617) 935-1877

May 11, 1994

Board of Water Commissioners
Sudbury Water District
199 Raymond Road
Sudbury, MA 01776

RE: Nitrate Loading Analysis

Dear Commissioners:

As requested, the report on Nitrogen Loading Analysis for Groundwater Supplies for the Sudbury Water District, submitted in January 1994, has been revised. Enclosed in this revision is two additional Nitrogen Loading Analysis Models adjusted to the future development buildout condition of the District.

The first additional model accounts for the condition of

1. Five (5) persons and 10,000 square feet of lawn per house in the future development buildout of the District and

2. The existing houses have only three (3) persons per house

The second additional Model was performed for the condition of:

1. The same as the first model: Five (5) persons and 10,000 square feet of lawn per house in the future development buildout of the District and

2. The existing houses also have five (5) persons per house.

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The results of these models are tabulated and Pie graphed in Appendix C and Appendix D of this report for your study.

Should you have any questions, please call our office.

Very truly yours

T. T Chiang

Edward T. T. Chiang, Ph.D., P.E.
President

enclosures

TABLE OF CONTENTS

1. EXECUTIVE SUMMARY

2. APPENDIX A: ZONE II DELINEATION MAPS

3. APPENDIX B: HORSLEY & WITTEN, INC. REPORT

4. APPENDIX C: ADDITIONAL NITROGEN LOADING ANALYSIS MODEL
(For 5 person, 10,000 sf of lawn per future buildout house
and 3 persons, per existing house)

5. APPENDIX D: ADDITIONAL NITROGEN LOADING ANALYSIS MODEL
(For 5 person, 10,000 sf of lawn per future buildout house
and 5 persons per existing house)

H_2O Engineering Consulting Associates, Inc.

水利工程顧問

6 Page Place Woburn, MA 01801
Telephone (617) 933-6961, 933-9369 Fax (617) 935-1877

January 7, 1994

Board of Commissioners
Sudbury Water District
199 Raymond Road
Sudbury, MA 01776

RE: Nitrogen Loading Analysis for Groundwater Supplies of the Sudbury Water District

Gentlemen:

In accordance with our agreement, H_2O Engineering Consulting Associates, Inc., is pleased to submit our report on the results of the Nitrogen Loading Analysis for the Groundwater Supplies of the Sudbury Water District.

Purpose of Nitrate Loading Analysis:

Due to the revisions to Massachusetts DEP Drinking Water and Wellhead Protection Regulations, a Nitrate Loading Analysis for the Zone II area of all Sudbury Water District's existing wells and possible future wells must be conducted. The only alternative to that is to default to the State's maximum zoning allowance of 440 gallons per 40,000 square feet land area per day. The study predicts the concentration of nitrogen loading on groundwater at the buildout condition according to existing zoning, land use regulations and bylaws. If the concentration of Nitrogen Loading on groundwater exceed the limits set by the Massachusetts DEP, the zoning, land use regulation, the bylaws may have to be revised.

Scope of Nitrate Loading:

A. Data Collection - Information used to perform the analysis include the following:

o Sudbury zoning bylaws and Zoning maps

- Assessors maps and Records for the Zone II areas surrounding all public supply wells
- Available aerial photos for the Zone II areas
- Available wetland maps and Zone II maps
- Pumping records and Water quality data
- Large water use data within Zone II areas, especially commercial and industrial users
- Hydrologic maps and Topographical maps.

B. Buildout Analysis: A mass-balance accounting model shall be used and calibrated for current and future development within Zone II areas under existing Sudbury Board of Health regulations, zoning bylaws and maps.

C. Nitrogen Loading Analysis: Nitrogen Loading Analysis of Zone II areas for the Raymond Road Aquifer, Hop Brook Aquifer and Well 5 are conducted. Inputs to the model will include nitrogen from septic systems, lawn fertilizers, pavement and roof runoff, and natural precipitation. Using these calibrated models, the concentrations of nitrogen in the production wells under buildout conditions will be determined. The concentrations of nitrogen are defined as the total load of nitrate divided by the total volume of water. The total load of nitrate includes load of nitrate from recharge and load of nitrate from source.

D. Report and Meeting: After the completion of the Nitrate Loading Analysis, a report will be prepared to present the findings.

Summary:

Protection of groundwater quality for public water supply has become a priority environmental issue, especially for sources from unconfined aquifers such as Sudbury Water District's wells. The degradation of groundwater quality due to subsurface wastewater disposal systems, lawn fertilizers, and agricultural activities have become a serious problem. Nitrate concentrations in groundwater have been considered a good monitor of the level of groundwater degradation. Therefore, modeling existing nitrate concentration in groundwater and predicting the nitrate concentration due to the land use activities is necessary for possible change of land use in the future to control the level of groundwater quality degradation.

To complete the tasks, H_2O Engineering Consulting Associates, Inc., has teamed with Dr. Michael H. Frimpter of Horsley & Witten, Inc., an expert in the field of modeling nitrate concentration in groundwater.

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Nitrogen Loading Analyses were conducted for four Zone II wellhead protection areas for the Sudbury Water District for existing and buildout development conditions. The four Zone II areas include the following:

- Raymond Road Aquifer - Wells 2, 4, 6, 7 and 9
- Hop Brook Aquifer - Wells 3, 8 and 10
- Well 5 Zone II area (Zoned as Research District)
- Future Well 11 Zone II area

With the exception of Future Well 11, all other Zone II areas were determined based on field test data and computer analysis, and all have been approved by DEP.

Based on the calibrated mass-balance accounting model developed by Dr. Michael H. Frimpter, all four Zone II area nitrate concentrations at buildout condition will be below the maximum contaminant level(MCL) of 10 mg/l set by the U.S. Environmental Protection Agency and the Massachusetts DEP. However, the State DEP recommended planning goal limits for nitrate concentration is 5 mg/l. The following table indicates the analyses results:

SUMMARY OF MODELED NITRATE CONCENTRATION

ZONE II AREA OF WELL	NITRATE CONCENTRATION (Mg/l)		
	CONDITION		PERCENTAGE INCREASE
	CURRENT DEVELOPMENT	BUILDOUT DEVELOPMENT	
WELL No.5	2.25	7.98	254.7%
WELL No. 11	1.16	2.46	112.1%
HOP BROOK AQUIFER WELL 3, 8, AND 10	3.91	4.20	7.4%
RAYMOND ROAD AQUIFER WELLS 2, 4, 6, 7, AND 9.	3.35	3.85	14.9%

The largest increase of nitrate concentration would be at Well 5 Zone II due to the fact that current land use and the possible future land use based upon current zoning bylaw is significantly different. A major portion of the Well 5 Zone II area is undeveloped at present (sand pits, grass and wooded). The buildout prediction is based on this area as zoned Research District with allowable maximum 1000 gallons per day per acre wastewater disposal rate. The result indicated that the nitrate concentration in Well 5 will reach to about 8.0 mg/l, exceeding the State recommended planning goal limit of 5.0 mg/l by a significant margin.

The estimated Well 11 Zone II area currently has little development. This area, developed or not developed, would not heavily degrade the groundwater quality due to the major portion of this area is wetlands and owned by the State Fish and Game and National Wild Life Refuge.

Appendix A includes maps of the four Zone II areas.

Appendix B contains the analysis report prepared by Dr. Michael H. Frimpter of Horsley & Witten, Inc.

Recommendations:

Although the analysis indicated that the buildout Nitrogen Loading in all four Zone II areas will not exceed the MCL set by the U.S. EPA and the State DEP, it is very important that these sources be protected. The following is recommended:

A. The District working with the Sudbury Board of Health and Planning Board should review any subdivision and development of land within Zone II areas so to make sure that all:

- future sub-surface wastewater disposal systems be designed and installed properly.
- Repairing or modification of existing wastewater disposal systems are upgraded to the latest standards.

B. Land owners within the Zone II areas should be educated to minimize the use of lawn fertilizers.

C. For industrial zoned areas, the type of industry and commerce which will generate hazardous wastes should not be allowed to locate within Zone II area.

D. Given the potential impact to Well 5 by the Research District full buildout, Sudbury Water District should work with Sudbury Planning Board to reconsider the

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1000 gallons per day per acre limit of the wastewater generation allowances in the Research District.

H_2O Engineering Consulting Associates, Inc., wishes to express our appreciation for the cooperation, data research, and assistance received from the District staff, especially Mr. Carroll and Mr. Leupold, of the Sudbury Board of Health.

H_2O Engineering suggests that two copies of the report be submitted to DEP (Northeast Region, Woburn and DEP Main Office, Boston) for their review and comment.

Should have any questions, please contact us.

Very truly yours,

Dr. Edward T.T. Chiang, P.E.
President

Enclosures

REPORT ON

NITROGEN LOADING ANALYSIS FOR GROUNDWATER SUPPLIES

FOR

THE SUDBURY WATER DISTRICT SUDBURY, MASSACHUSETTS

DECEMBER 1993

COMMONWEALTH OF MASSACHUSETTS
TSUNG TING CHIANG
No. 23891
REGISTERED PROFESSIONAL ENGINEER

T. T. Chiang

H_2O ENGINNERING CONSULTING ASSOCIATES, INC.

H_2O Engineering Consulting Associates, Inc.

水利工程顧問

6 Page Place Woburn, MA 01801
Telephone (617) 933-6961, 933-9369 Fax (617) 935-1877

January 7, 1994

Board of Commissioners
Sudbury Water District
199 Raymond Road
Sudbury, MA 01776

RE: Nitrogen Loading Analysis for Groundwater Supplies of the Sudbury Water District

Gentlemen:

In accordance with our agreement, H_2O Engineering Consulting Associates, Inc., is pleased to submit our report on the results of the Nitrogen Loading Analysis for the Groundwater Supplies of the Sudbury Water District.

Purpose of Nitrate Loading Analysis:

Due to the revisions to Massachusetts DEP Drinking Water and Wellhead Protection Regulations, a Nitrate Loading Analysis for the Zone II area of all Sudbury Water District's existing wells and possible future wells must be conducted. The only alternative to that is to default to the State's maximum zoning allowance of 440 gallons per 40,000 square feet land area per day. The study predicts the concentration of nitrogen loading on groundwater at the buildout condition according to existing zoning, land use regulations and bylaws. If the concentration of Nitrogen Loading on groundwaters exceed the limits set by the Massachusetts DEP, the zoning, land use regulation, the bylaws may have to be revised.

Scope of Nitrate Loading:

A. Data Collection - Information used to perform the analysis include the following:

- Sudbury zoning bylaws and Zoning maps
- Assessors maps and Records for the Zone II areas surrounding all public supply wells
- Available aerial photos for the Zone II areas
- Available wetland maps and Zone II maps
- Pumping records and Water quality data
- Large water use data within Zone II areas, especially commercial and industrial users
- Hydrologic maps and Topographical maps.

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B. Buildout Analysis: A mass-balance accounting model shall be used and calibrated for current and future development within Zone II areas under existing Sudbury Board of Health regulations, zoning bylaws and maps.

C. Nitrogen Loading Analysis: Nitrogen Loading Analysis of Zone II areas for the Raymond Road Aquifier, Hop Brook Aquifier and Well 5 are conducted. Inputs to the model will include nitrogen from septic systems, lawn fertilizers, pavement and roof runoff, and natural precipitation. Using these calibrated models, the concentrations of nitrogen in the production wells under buildout conditions will be determined. The concentrations of nitrogen are defined as the total load of nitrate divided by the total volume of water. The total load of nitrate includes load of nitrate from recharge and load of nitrate from source.

D. Report and Meeting: After the completion of the Nitrate Loading Analysis, a report will be prepared to present the findings.

Summary:

Protection of groundwater quality for public water supply has become a priority environmental issue, especially for sources from unconfined aquifiers such as Sudbury Water District's wells. The degradation of groundwater quality due to subsurface wastewater disposal systems, lawn fertilizers, and agricultural activities have become a serious problem. Nitrate concentrations in groundwater have been considered a good monitor of the level of groundwater degradation. Therefore, modeling existing nitrate concentration in groundwater and predicting the nitrate concentration due to the land use activities is necessary for possible change of land use in the future to control the level of groundwater quality degradation.

To complete the tasks, H_2O Engineering Consulting Associates, Inc., has teamed with Dr. Michael H. Frimpter of Horsley & Witten, Inc., an expert in the field of modeling nitrate concentration in groundwater.

Nitrogen Loading Analyses were conducted for four Zone II wellhead protection areas for the Sudbury Water District for existing and buildout development conditions. The four Zone II areas include the following:

- Raymond Road Aquifier - Wells 2, 4, 6, 7 and 9
- Hop Brook Aquifier - Wells 3, 8 and 10
- Well 5 Zone II area (Zoned as Research District)
- Future Well 11 Zone II area

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With the exception of Future Well 11, all other Zone II areas were determined based on field test data and computer analysis, and all have been approved by DEP.

Based on the calibrated mass-balance accounting model developed by Dr. Michael H. Frimpter, all four Zone II area nitrate concentrations at buildout condition will be below the maximum contaminant level(MCL) of 10 mg/l set by the U.S. Environmental Protection Agency and the Massachusetts DEP. However, the State DEP recommended planning goal limits for nitrate concentration is 5 mg/l. The following table indicates the analyses results:

SUMMARY OF MODELED NITRATE CONCENTRATION

Zone II Area of Wells	Nitrate Concentration, Mg/l		
	Current	Buildout	Percentage Increase
Well 5	2.25	7.98	254.7%
Well 11	1.16	2.46	112.1%
Hop Brook Aquifier Wells 3, 8, and 10	3.91	4.20	7.4%
Raymond Road Aquifier Wells 2, 4, 6, 7, and 9	3.35	3.85	14.9%

The largest increase of nitrate concentration would be at Well 5 Zone II due to the fact that current land use and the possible future land use based upon current zoning bylaw is significantly different. A major portion of the Well 5 Zone II area is undeveloped at present (sand pits, grass and wooded). The buildout prediction is based on this area as zoned Research District with allowable maximum 1000 gallons per day per acre wastewater disposal rate. The result indicated that the nitrate concentration in Well 5 will reach to about 8.0 mg/l, exceeding the State recommended planning goal limit of 5.0 mg/l by a significant margin.

The estimated Well 11 Zone II area currently has little development. This area, developed or not developed, would not heavily degrade the groundwater quality due to the major portion of this area is wetlands and owned by the State Fish and Game and National Wild Life Refuge.

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Appendix A includes maps of the four Zone II areas.

Appendix B contains the analysis report prepared by Dr. Michael H. Frimpter of Horsley & Witten, Inc.

Recommendations:

Although the analysis indicated that the buildout Nitrogen Loading in all four Zone II areas will not exceed the MCL set by the U.S. EPA and the State DEP, it is very important that these sources be protected. The following is recommended:

A. The District working with the Sudbury Board of Health and Planning Board should review any subdivision and development of land within Zone II areas so to make sure that all:

   - future sub-surface wastewater disposal systems be designed and installed properly.
   - Repairing or modification of existing wastewater disposal systems are upgraded to the latest standards.

B. Land owners within the Zone II areas should be educated to minimize the use of lawn fertilizers.

C. For industrial zoned areas, the type of industry and commerce which will generate hazardous wastes should not be allowed to locate within Zone II area.

D. Given the potential impact to Well 5 by the Research District full buildout, Sudbury Water District should work with Sudbury Planning Board to reconsider the 1000 gallons per day per acre limit of the wastewater generation allowances in the Research District.

H_2O Engineering Consulting Associates, Inc., wishes to express our appreciation for the cooperation, data research, and assistance received from the District staff, especially Mr. Carroll and Mr. Leupold, of the Sudbury Board of Health.

H_2O Engineering suggests that two copies of the report be submitted to DEP (Northeast Region, Woburn and DEP Main Office, Boston) for their review and comment.

Should have any questions, please contact us.

Very truly yours,

T. T. Chiang

Dr. Edward T.T. Chiang, P.E.
President

Enclosures

SUDBURY WATER DISTRICT
SUDBURY, MASSACHUSETTS

REPORT ON

WELL No. 5
ZONE II DELINEATION REPORT

SUDBURY WATER DISTRICT

Civil

COMMONWEALTH OF MASSACHUSETTS
TSUNG TING CHIANG
No. 23891
REGISTERED PROFESSIONAL ENGINEER

T. T. Chiang

AUGUST 1993

H_2O ENGINEERING CONSULTING ASSOCIATES, INC.
6 PAGE PLACE
WOBURN, MA 01801

COMMONWEALTH OF MASSACHUSETTS
EXECUTIVE OFFICE OF ENVIRONMENTAL AFFAIRS
DEPARTMENT OF ENVIRONMENTAL PROTECTION
METROPOLITAN BOSTON - NORTHEAST REGIONAL OFFICE

WILLIAM F. WELD
Governor

ARGEO PAUL CELLUCCI
Lt. Governor

TRUDY COXE
Secretary

DAVID B. STRUHS
Commissioner

October 10, 1996

Board of Water Commissioners
Sudbury Water District
199 Raymond Road
Sudbury, MA 01776

RE: **SUDBURY**—Public Water Supply
—Nitrate Loading Analysis—
Well No. 5

PWS-ID # 3288000

Dear Commissioners:

The Department of Environmental Protection (DEP), Division of Water Supply (DWS), has reviewed a July 1995 report from your hydrogeologic consultant, H_2O Engineering Consulting Associates, Inc., entitled, "Nitrate Loading Analysis for Well No. 5 — Watershed Area, Sudbury Water District." This analysis is intended to show that, under existing local controls, the nitrate level at the District's Well No. 5 will not exceed the planning goal of 5 milligrams per liter (mg/L) when the maximum permissible development level is reached. In accordance with the Sudbury Water District's Water Withdrawal Permit, the Town of Sudbury has enacted wellhead protection zoning and non-zoning controls that meet the requirements of 310 CMR 22.21(2). If the nitrate planning goal is met, the Department may approve a variance (as per 310 CMR 22.21(2)(d)) so that the controls implemented by the Town of Sudbury need not meet the requirements in 310 CMR 22.21(2)(a)5., which restrict septic system density.

A previous nitrate analysis for all of the Sudbury Water District's wells was prepared in December 1993 by H_2O Engineering. The Department did not approve a variance from 310 CMR 22.21(2)(a)5. for Well No. 5 based on the December 1993 analysis, as the analysis showed that the nitrate level under buildout conditions would exceed 5 mg/L. However, the analysis done for Well No. 5 in the December 1993 report inadvertently assessed both the Zone II and Zone III areas, rather than just the Zone II area. The Zone III consists of portions of the groundwater drainage area that are underlain by low-transmissivity soils; this area may contribute some water to the aquifer, but it is not part of the aquifer in its own right. The December 1993 analysis therefore overestimated the nitrate loading within the Zone II for Well No. 5.

DWS **approves** the revised nitrate loading analysis for Well No. 5. In accordance with 310 CMR 22.21(2)(d), DWS hereby **approves** a variance from the requirements in 310 CMR 22.21(2)(a)5. for the Zone II of Well No. 5. **Please note:** DEP intends to promulgate changes to the Drinking Water Regulations soon that eliminate the requirement for zoning and nonzoning controls to restrict septic system density (310 CMR 22.21(2)(a)5.), because public water supply protection from septic system nitrate loading is now included within the Title V regulations (310 CMR 15.214).

H_2O Engineering Consulting Associates, Inc.

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September 24, 1993

Board of Water Commissioners
Sudbury Water District
199 Raymond Road
Sudbury, MA 01776

RE: Report on Well #5 Zone II Delineation

Gentlemen:

We submit herewith fourteen (14) copies of the Report on Well #5 Zone II Delineation in accordance with our proposal to you in an effort to conform with DEP policies and guidelines for all existing public groundwater supplies.

This report was conducted based on the following:

The prolonged pumping test was conducted by Leggette, Brashears & Graham, Inc. consultants for the Sperry/Unisys Corporation, in their efforts to locate the contaminants sources for Well #5. The LBG work included test wells, bore holes, permeability tests and a multi-phase pumping test on Well #5. The prolonged pumping test has been performed continuously for more than thirty (30) days, and massive data has been collected. This data has been the most recent and important source for studying the hydrogeology in this aquifer.

The other source used in this report is the Hydrogeology of Sudbury Report by Motts for the Sudbury Planning Board in 1976.

Along with these sources, we also coordinated with in-house data which were collected over the years through working with Sudbury Water District.

Due to the complicated geology of this aquifer and the massive data, this delineation of Zone II for Well #5 is probably more complete than it should be. It also took much more efforts to analyze those data.

H_2O Engineering Consulting Associates, Inc.
6 Page Place Woburn, MA 01801
Telephone (617) 933-6961, 933-9369 Fax (617) 935-1877

We recommend that you submit two copies of this report to DEP for approval.

Very truly yours,

T. T Chiang

Dr. Edward T.T. Chiang, P.E.
President, H2O ENGINEERING CONSULTING ASSOCIATES, INC.

TABLE OF CONTENTS

I. Introduction ..... Page 1

II. Study area ..... Page 2

III. Topography ..... Page 2

IV. Site Development History ..... Page 3

V. Previous Investigations ..... Page 3

VI. Geologic Setting ..... Page 4

VII. Hydrogeology ..... Page 6

VIII. Recent Pumping Tests ..... Page 6

IX. Safe Yield Calculation ..... Page 7

X. Aquifer Characteristics ..... Page 9

XI. Computer Simulation of Zone II Conditions ..... Page 9

XII. Delineation of Zone II and Zone III ..... Page 10

APPENDIX A LBG Pumping Test Report

APPENDIX B Groundwater Model

1. Model Purposes ..... Page B- 1
2. Conceptual Model ..... Page B- 1
3. Data Collection ..... Page B- 2
4. Model Description ..... Page B- 3
5. Assignment of Model Parameters ..... Page B- 3
6. Model Calibration ..... Page B- 5
7. Sensitivity Analysis ..... Page B- 5
8. Model validation ..... Page B- 5
9. Data Preprocessing and Postprocessing ..... Page B- 6

10. Model Prediction ..... Page B- 6
11. Model Results ..... Page B- 6

APPENDIX C Well Contruction Record

APPENDIX D Sensitivity Analysis

APPENDIX E Groundwater Model Computer Output

LIST OF FIGURES

Figure No. 1 Locus Map & Limit of Model

Figure No. 2 Surficial Geology

Figure No. 3 Bedrock Surface Contours

Figure No. 4 Geologic Cross Section Parallel to the Flow

Figure No. 5 Geologic Cross Section perpendicular to the Flow

Figure No. 6 Observed Water Table Map

Figure No. 7 Oservation Well Locations

Figure No. 8 Steady- state Water Table Map - Computer Simulation

Figure No. 9 Zone II Groundwater Contour Map

Figure No. 10 Zone II Map

WELL #5
SUDBURY, MASSACHUSETTS

ZONE II DELINEATION REPORT

I. Introduction

This report is presented in support of an effort to delineate a wellhead protection zone for the Sudbury Water District Well #5 in Sudbury, Massachusetts. The work has been completed in accordance with DEP Guidelines and Policies for Public Water Supplies, revision dated October 1991.

This report is presented to DEP with a request for review and approval of the Zone II.

The Sudbury Water District has maintained a public water supply well and pumping station at the location of well # 5 for 29 years. The well is located in the northern part of Sudbury near the Concord town line just south of Route 117 (see Locus Map, Figure 1).

The land surrounding the well is generally in residential or agricultural use or it is undeveloped woodland and fields. The exceptional land use is the buildings and grounds of the former Sperry / Unisys Research and Development Center located 2200 feet to the northwest of the well. This 140 acre facility is generally up slope and up gradient from the well.

In early of the 1980's Well #5 was shut down due to elevated levels of organic solvants in the groundwater. During the period when the well was out of service extensive geologic and groundwater exploration was conducted near the well and in the surrounding area to try to locate the source of the organic contamination. Much of this work was focused on and around the former Sperry / Unisys Facility as a possible source of the contamination.

The results of the several phases of exploration have been inconclusive as to the source of contamination, however the work has provided extensive information regarding geologic and hydrogeologic conditions in the area.

The most recent investigations have been completed by Legget Brashears and Graham (LBG) and have been published in a series of reports on the work. These reports have been presented to the Massachusetts DEP and to the Sudbury Water District for their

use and review. The LBG work included test wells, bore hole permeability tests, and a multi-phase pumping test on well #5. This most recent data has been incorporated into this study for delineation of the Zone II for Well #5.

II. STUDY AREA

The hydrogeologic complexity of the setting for Well #5 indicated that delineation of a Zone II for the well could be best undertaken with the use of a digital computer model to simulate the geologic boundaries and stresses on the aquifer. Modeling the hydrogeologic system around Well #5 required that the model boundaries be removed some distance from the well. Thus the study area for this project encompasses about 1700 acres. The study area generally includes the northern half of the drainage basin of Pantry Brook from its headwaters near Haynes School to its confluence with the Sudbury River (See Locus Map). This study area includes the basins of Cold Brook which is a tributary to Pantry Brook and several other unnamed tributaries surrounding Well #5 which feed Pantry Brook from the north.

Principal landmarks used for reference in the following discussions include the Well #5 site, Pantry Brook, Route 117 (North Road), the Sperry/Unisys Research Facility, White Pond, the Sudbury-Concord Town Line, the unnamed tributary brook which flows from the north side of the Research Facility southward to join Cold Brook near Well #5 passing just east of Well #5. These reference points can be seen on the Locus Map (Figure 1).

III. TOPOGRAPHY

Most of the study area for this project lies in the relatively flat basin of Pantry Brook, Cold Brook and the Sudbury River at about elevation 120 feet +- msl. The Well #5 pumping station is located in this rather flat basin setting.

However, there are notable and important exceptions north of Route 117 (North Road) and west of the New Haven and Hartford Railroad. In both of these areas, topography rises quickly to elevations approaching 200 feet (See Locus Map).

The increased elevation north of Route 117, which is northwest of the Well #5 site, includes the high ground where the Sperry/Unisys Facility is located. This high standing area is drained by two unnamed tributaries to Cold Brook which wrap around the Facility on the east, west and south sides and carry runoff to Cold Brook and toward the Well #5 site.

SUDBURY PLANNING BOARD
FLYNN BUILDING
SUDBURY, MA 01776

HOP BROOK PONDS SYSTEM STUDY
SUDBURY, MASSACHUSETTS

Prepared for:

Board of Health
Town of Sudbury

Prepared by:

Whitman & Howard, Inc.
Wellesley, Massachusetts

JULY 1989

J.N. 87-368

TABLE OF CONTENTS

Section		Page
	LETTER OF TRANSMITTAL	
	LIST OF TABLES	v
	LIST OF FIGURES	vii
I.	EXECUTIVE SUMMARY	1-1
	A. Purpose of the Study	1-1
	B. Summary of Findings and Recommendations	1-1
II.	INTRODUCTION	2-1
	A. Background Information	2-1
	1. Process of Lake Eutrophication	2-1
	2. Previous Studies of the Hop Brook Ponds System	2-2
	3. Hop Brook Ponds System Study	2-3
	B. Historical Review of the Hop Brook Watershed	2-4
III.	CHARACTERISTICS OF THE WATERSHEDS	3-1
	A. Size and Location	3-1
	1. Hager Pond Watershed	3-1
	2. Grist Millpond Watershed	3-3
	3. Carding Millpond Watershed	3-3
	4. Stearns Millpond Watershed	3-3
	B. General Climatology	3-4
	C. Topography and Drainage	3-4
	D. General Hydrology	3-6
	E. General Soils Information	3-7
	1. Soil Properties	3-7
	2. Soil Groups	3-7
	3. Soil Mapping	3-9
	4. Relationship to Subsurface Wastewater Disposal and Aquifer Areas	3-11
	F. Land Use	3-12
IV.	DESCRIPTION OF HOP BROOK PONDS	4-1
	A. Hager Pond	4-1
	1. Overview	4-1
	2. Pond Morphology	4-1

TABLE OF CONTENTS (CONT)

Section | Page

B. Grist Millpond 4-1

1. Overview 4-1
2. Pond Morphology 4-4

C. Carding Millpond 4-4

1. Overview 4-4
2. Pond Morphology 4-7

D. Stearns Millpond 4-7

1. Overview 4-7
2. Pond Morphology 4-10

E. Pond Water-Level Controls 4-10

V. MARLBOROUGH EASTERLY WASTEWATER TREATMENT PLANT (MEWWTP) 5-1

A. History of MEWWTP 5-1
B. Current MEWWTP NPDES Permit Status 5-1
C. Implications for Future Water Quality in the Hop Brook System 5-2

VI. ANALYSES OF DIAGNOSTIC DATA 6-1

A. Objective of Study 6-1
B. Sampling Collection and Analyses 6-1

1. Sampling Stations 6-1
2. Sampling Methodology 6-1
3. Sample Analyses 6-3
4. Comparative Analyses 6-3

C. Analyses of Physical Data 6-3

1. Water Temperature 6-3
2. Water Transparency 6-4

D. Analyses of Chemical Data 6-9

1. Dissolved Oxygen 6-9
2. pH and Alkalinity 6-11
3. Chlorides 6-14
4. Suspended Solids, Dissolved Solids, and Turbidity 6-15
5. Phosphorus 6-15
6. Nitrogen 6-23
7. Summary of Chemical Analyses 6-28

TABLE OF CONTENTS (CONT)

Section		Page
	E. Analyses of Biological Data	6-29
	1. Bacteriological Samples	6-29
	2. Phytoplankton and Chlorophyll a	6-31
	3. Aquatic Macrophytes	6-35
	F. In-Pond Sediment Investigations	6-44
VII.	SANITARY QUESTIONNAIRE SURVEY RESULTS	7-1
	A. Objective of Study	7-1
	B. Results of Hop Brook Watershed Wastewater Questionnaire Survey	7-1
VIII.	HYDROLOGIC BUDGET	8-1
	A. Introduction	8-1
	B. Hager Pond Calculations	8-3
	C. Grist Millpond Calculations	8-3
	D. Carding Millpond Calculations	8-7
	E. Stearns Millpond Calculations	8-7
IX.	LIMITING NUTRIENT (PHOSPHORUS) BUDGET	9-1
X.	DISCUSSION OF ALTERNATIVES	10-1
	A. Introduction	10-1
	B. Reduction in Nutrient Loadings into the Ponds System	10-1
	C. In-Pond Restoration Techniques	10-3
	1. Dredging	10-3
	2. Chemical Treatment	10-4
	D. Pond Management Techniques	10-4
	1. Water-Level Manipulation	10-4
	2. Watershed Management	10-5
	3. Aquatic Macrophyte Harvesting	10-6
XI.	RECOMMENDATIONS	11-1
XII.	REFERENCES	12-1
Appendix		
A.	Hop Brook Pond System Questionnaire	A-1

LIST OF TABLES

Table		Page
3-1	Watershed Coverage Area	3-3
3-2	Climatological Data	3-5
3-3	Subwatershed Areas within the Hop Brook Study Area	3-8
3-4	Soil Hydrologic Group by Subwatershed	3-10
4-1	Hager Pond Morphometric Data	4-3
4-2	Grist Millpond Morphometric Data	4-6
4-3	Carding Millpond Morphometric Data	4-9
4-4	Stearns Millpond Morphometric Data	4-12
6-1	Sampling Stations in Sudbury Ponds Study	6-2
6-2	Pond Temperature, Dissolved Oxygen, and Percent Saturation: Grist Millpond	6-5
6-3	Pond Temperature, Dissolved Oxygen, and Percent Saturation: Carding Millpond	6-6
6-4	Pond Temperature, Dissolved Oxygen, and Percent Saturation: Stearns Millpond	6-7
6-5	Secchi Disk Transparency	6-8
6-6	Inlet and Outlet Temperatures, Dissolved Oxygen, and Percent Saturation	6-10
6-7	Alkalinity	6-12
6-8	pH	6-13
6-9	Chloride	6-16
6-10	Total Suspended Solids	6-17
6-11	Total Dissolved Solids	6-18
6-12	Turbidity	6-19
6-13	Total Phosphorus	6-21
6-14	Ammonia Nitrogen	6-25
6-15	Nitrate Nitrogen	6-26

LIST OF TABLES (CONT)

Table		Page
6-16	Total Kjeldahl Nitrogen	6-27
6-17	Fecal Coliform Bacteria	6-30
6-18	Fecal Streptococci Bacteria	6-32
6-19	Chlorophyll a	6-33
6-20	Phytoplankton	6-34
6-21	In-Pond Sediment Data	6-49
6-22	Great Lakes Sediment Rating Criteria	6-50
6-23	Comparative Pollutional Status of the Sudbury Ponds' Sediments	6-51
8-1	Marlborough Easterly Wastewater Treatment Plant Effluent Volumes	8-4
8-2	Determination of Wastewater Flow Versus Contributions from Other Sources Entering Hager Pond	8-5
9-1	Grist Millpond Existing Phosphorus Loading Rates	9-3
9-2	Carding Millpond Existing Phosphorus Loading Rates	9-4
9-3	Stearns Millpond Existing Phosphorus Loading Rates	9-5
9-4	Phosphorus Loading Results	9-6

LIST OF FIGURES

Figures		Page
3-1	Hop Brook Ponds Study - Watershed Areas	3-2
4-1	Hager Pond Bathymetric Map and Location of Sampling Stations	4-2
4-2	Grist Pond Bathymetric Map and Location of Sampling Stations	4-5
4-3	Carding Pond Bathymetric Map and Location of Sampling Stations	4-8
4-4	Stearns Pond Bathymetric Map and Location of Sampling Stations	4-11
6-1	Grist Millpond Aquatic Macrophyte Density Map	6-36
6-2	Grist Millpond Aquatic Macrophyte Distribution Map	6-37
6-3	Carding Millpond Aquatic Macrophyte Density Map	6-38
6-4	Carding Millpond Aquatic Macrophyte Distribution Map	6-39
6-5	Stearns Millpond Aquatic Macrophyte Density Map	6-40
6-6	Stearns Millpond Aquatic Macrophyte Distribution Map	6-41
6-7	Grist Millpond Substrate Map	6-45
6-8	Carding Millpond Substrate Map	6-46
6-9	Stearns Millpond Substrate Map	6-47
8-1	Hydrologic Cycle Diagram	8-2

I. EXECUTIVE SUMMARY

A. PURPOSE OF THE STUDY

This study was conducted to determine the current pollutional status of Grist, Carding, and Stearns Millponds in Sudbury. A further purpose was was to identify the sources of the ponds' water quality problems and propose cleanup alternatives.

The study consisted of two phases; a diagnostic phase and a feasibility phase. The diagnostic phase involved collecting data and identifying the existing and potential sources of pollution affecting the Sudbury ponds. The feasibility phase involved analyzing and applying collected data to assess methods for pollution control.

B. SUMMARY OF FINDINGS AND RECOMMENDATIONS

The conclusion of the 12-month diagnostic phase is that the excessive algal and macrophyte growth within the Sudbury ponds is primarily due to the discharge from the Marlborough Easterly Wastewater Treatment Plant (MEWWTP) which has, since 1896, discharged treated effluent to Hop Brook. The treatment plant effluent comprises between 50 and 90 percent of the flow in Hop Brook. The effluent is a rich source of phosphorus, the nutrient determined to be the key influence to aquatic plant growth rates within the ponds.

The gradual filling of the ponds, exacerbated by both the MEWWTP effluent and watershed development, has significantly decreased the water depths within the ponds. This depth decrease has led to an increase in the area available for rooted macrophyte growth. The elevated nutrient levels have provided an ideal media for algal and floating macrophyte growth. The profusion of aquatic plant growth is symptomatic of the hypereutrophic state of the ponds. These problems have further negative impacts to the community because they depreciate many of what are considered the finer characteristics of the ponds and are limiting the ponds uses. Specifically, recreational-uses, such as boating and fishing are becoming impossible due to the excessive aquatic plant growth caused by nutrient loading. Also, the aesthetic beauty once seen in the ponds is diminishing. Repugnant odors from the ponds, unsightly plant growth, and mosquitos have changed the ponds from the once open water area to inland wetlands.

A multi-phased approach to solving the problems of the Sudbury ponds should be undertaken. First, nutrient inputs to the ponds must be curtailed. Since 95 percent of the phosphorus loading to the ponds comes from the MEWWTP, the nutrient levels in the effluent should be reduced. The City of Marlborough should consider additional tertiary treatment techniques, effluent redirection/reduction, and influent controls to achieve a meaningful decrease in nutrient (especially phosphorus) loading to Hop Brook.

Dredging portions of each pond to physically remove phosphorus-laden sediments and decrease the area of the littoral zone should be considered. The dredging alternative involves the mechanical removal of approximately 140,000 cubic yards of soft sediment at an estimated cost of $2.1 million.

Mechanical removal of vegetation (harvesting), or physically limiting the area available for plant growth, show promise as an alternative to dredging. These methods may result in a decrease in rooted plant densities, but do not effectively remove sediments from the ponds or increase pond depths.

Watershed management techniques and pond water-level manipulation should also be part of the restoration plan for the three ponds. Lawn fertilizers, unmonitored septic systems, and improper development techniques add to the nutrient loadings to the ponds. Water-level manipulation can be an effective tool in limiting the growth of aquatic macrophytes by removing a portion of the biomass from the pond system.

In order to achieve the goal of cleaning up these ponds, it is essential for the City of Marlborough and the Town of Sudbury to cooperate in these efforts. This is an effort that can provide a healthy and desirable recreational and aesthetic asset to both communities.

Report On
Raymond Road Aquifer Study

Sudbury Water District
Sudbury, Massachusetts

For
The Board of Water Commissioners
Milton D. Bartlett, Chairman
Robert F. Boyle
George Mercury

Winthrop H. Fairbank, Executive Secretary

H_2O Engineering Consulting Associates, Inc.
4 Glenfeld East
Weston, Massachusetts

January, 1985

H_2O

Engineering Consulting Associates

水利工程顧問

4 Glenfeld East, Weston, MA 02193 • Tel. 617-891-4988

January 18, 1985

Board of Water Commissioners
Sudbury Water District
Raymond Road
Sudbury, MA 01776

Gentlemen:

We are please to submit herewith our report on Raymond Road Aquifer Study to your Board in accordance with our Agreement with you dated May 16, 1984.

The results of our study together with our conclusions and recommendations are described in detail in the Report.

We would like to take this opportunity to thank the employees of the Sudbury Water District, especially to Mr. Fairbank, for their generous cooperation in providing data and assistance during our study.

It is our hope that this report will assist the Board of Water Commissioners and other Board of Town of Sudbury in their move toward aquifer protection in the Town of Sudbury.

Very truly yours,
H_2O Engineering Consulting Associates, Inc.

COMMONWEALTH OF MASSACHUSETTS
TSUNG TING CHIANG
No. 23891
REGISTERED PROFESSIONAL ENGINEER

By T. T. Chiang
Edward T. T. Chiang, Ph.D., P.E.
President

TABLE OF CONTENTS

Section	Title	Page
SECTION 1.	INTRODUCTION	1
SECTION 2.	OBJECTIVE AND APPROACH	2
SECTION 3.	METHODOLOGY	3
3.1	Background	3
3.2	Model Development	4
SECTION 4.	RAYMOND ROAD AQUIFER	5
4.1	Topographic and Geologic Setting	5
4.2	Aquifer Hydrology	8
4.3	Environmental Condition	9
4.4	Existing Groundwater Supply	10
4.5	Aquifer Potential and Restriction	12
SECTION 5.	COMPUTER MODELING	15
5.1	Model Charactistics	15
5.2	Model Predictions	16
5.3	Model Inputs	17
5.4	Model Results	19
SECTION 6.	AQUIFER PROTECTION PROGRAM	21
6.1	Water Resources Development and Management Water Consumption Review and Projection	21
6.2	Aquifer and Wetland Delineation and Mapping	22
6.3	Regulations, By-Laws and Procedures	22
6.4	Inventory of Aquifer Hazards	23
6.5	Other Issues	24
SECTION 7.	CONCLUSION AND RECOMMENDATIONS	25
7.1	Potential Supply from Raymond Road Aquifer	25
7.2	Aquifer Management	26
7.3	Protection of Raymond Road Area	27
7.4	Long Range Water Resources Study and Plan	27
SECTION 8.	BIBOLOGROPHY	29
	APPENDIX A	30

1. INTRODUCTION

As authorized by the Sudbury Water District, H_2O Engineering Consulting Associates, Inc. have completed a hydrogeologic study of the Raymond Road aquifer and well complex. This study area included Sudbury Water District's Wells 2, 4, 6 and 7 and the aquifer and streams which contribute to the wells.

The request for the study was prompted by the Sudbury Water District's interest in exploiting maximum available supply from the Raymond Road aquifer. The District was also concerned with potential contamination of the aquifer from areas of contribution where significant development has occurred.

By reviewing available information on geology and testing in the aquifer and by use of computer modeling, we have reached conclusions and recommendations regarding conditions in the aquifer. The findings will help the Water District and the Town of Sudbury formulate policy and action to address their concerns.

APPENDIX C: UPDATED BOARD OF HEALTH, CENSUS DATA, LAND USE CODES

The following Excel Spreadsheets detail the Board of Health file review. The following Tables are organized alphabetically by street and color coded to match Figure 6-1 Final Wastewater Needs Areas and Recommended Plan.(Needs Areas noted on each parcel). There were a large number of files that were pulled for review that did not contain any information, which we assumed translated that specific parcel was utilizing the original wastewater system installed. Many of these properties were built well before 1995 Title 5 update, which we noted as "Non-Compliant" in the spreadsheets. While there was no information to note a failure, the fact that it was most probably installed before the Title 5 Update, it was assumed to be "non-compliant".

The spreadsheet is organized detailing the following:

- Needs Area
- Map-Block-Lot
- Address
- Street (to determine Needs/Study Area)
- Title 5 Failure
- Title 5 Pass
- Title 5 Compliant (see note above)
- Variance(s)
- 4+ System Pumps per Year (Categoric Title 5 Failure)
- Perc Rate
- Notes – details additional data that was included in file

The data that was included was then used to determine a Title 5 Failure rate for specific Needs Areas. It is important to note that this is not a finite exercise, as we did not have complete data in every single file. The total files reviewed that did have data were used with the total number of Title 5 Failures (includes major system repairs with a Certificate of Compliance that would have generated a Title 5 Failure if inspected before repair to estimate rates of failure.

It is important to note that the following failure rates were used as supplemental information to the physical site conditions of soils, groundwater levels, environmental resources, lot sizes, age of existing systems, land uses, and water resource data to determine the long-term sustainability with current on-site wastewater systems. The failure rates expressed in the Report are a result of the available files reviewed and the data contained therein as detailed below.

The review estimate resulted in the following:

Route 20 Needs Area reviewed 332 files with 74 Title 5 failures, resulted in an estimated Title 5 Failure rate of 23 percent.

The Hybrid Needs Area with Route 20 and Raymond Road South together reviewed 420 with 92 Title 5 Failures, resulted in a 22 percent Title 5 Failure rate.

Town-wide review of all files that contained Title 5 data, resulted in an overall 16.5 percent Title 5 Failure rate.

Section 2 of the Final CWMP further details this data.

Study Area	Unique CAMA ID	Address	Street	Title 5 Failure	Title 5 Pass	Title 5 Compliant	Variance	4+ Pumps/yr	Perc Rate (MPI)	NOTES
Route 20	K06-0035	32 ADAMS RD	ADAMS RD							
Goodman Hill	K09-0427	10 ALLEN PL	ALLEN PL			2017				3 mpi perc
Goodman Hill	K09-0430	11 ALLEN PL	ALLEN PL		2013					
Goodman Hill	K09-0426	18 ALLEN PL	ALLEN PL		1997					
Goodman Hill	K09-0428	6 ALLEN PL	ALLEN PL			2011				Certificate of Compliance 2011
Goodman Hill	K09-0429	9 ALLEN PL	ALLEN PL		2015		Depth to gw			Ai System
Raymond Road	M09-0228	10 ALTA RD	ALTA RD							
Raymond Road	M09-0210	15 ALTA RD	ALTA RD							
Raymond Road	M09-0229	16 ALTA RD	ALTA RD							
Raymond Road	M09-0211	23 ALTA RD	ALTA RD							
Raymond Road	M09-0230	26 ALTA RD	ALTA RD							
Raymond Road	M09-0212	33 ALTA RD	ALTA RD							
Raymond Road	M09-0238	34 ALTA RD	ALTA RD							
Goodman Hill	H09-0203	11 ANTIQUE CIR	ANTIQUE CIR							
Goodman Hill	H09-0202	12 ANTIQUE CIR	ANTIQUE CIR							
Goodman Hill	H09-0204	3 ANTIQUE CIR	ANTIQUE CIR							
Route 20	K07-0023-8	100-104 BAY DR	BAY DR							
Route 20	K07-0023-9	110-119 BAY DR	BAY DR							
Route 20	K07-0023-7	1-16 BAY DR	BAY DR							
Route 20	K07-0023-10	120-129 BAY DR	BAY DR							
Route 20	K07-0023-11	130-139 BAY DR	BAY DR							
Route 20	K07-0023-12	140-149 BAY DR	BAY DR							
Route 20	K07-0023-13	150-159 BAY DR	BAY DR							
Route 20	K07-0023-14	160-167 BAY DR	BAY DR							
Route 20	K07-0023-15	170-177 BAY DR	BAY DR							
Route 20	K07-0023-16	180-187 BAY DR	BAY DR							
Route 20	K07-0023-17	190-197 BAY DR	BAY DR							
Route 20	K07-0023-2	200 BAY DR	BAY DR							
Route 20	K07-0023-1	200 BAY DR UNIT POOL HSE	BAY DR							
Route 20	K07-0023-3	201 BAY DR UNIT RECYCLE	BAY DR							
Route 20	K07-0023-4	202 BAY DR UNIT MAINT	BAY DR							
Route 20	K07-0023-18	20-29 BAY DR	BAY DR							
Route 20	K07-0023-5	203 BAY DR UNIT WWTP	BAY DR							
Route 20	K07-0023-6	204 BAY DR UNIT BELTRAN	BAY DR							
Route 20	K07-0023-19	210-213 BAY DR	BAY DR							
Route 20	K07-0023-20	220-226 BAY DR	BAY DR							
Route 20	K07-0023-21	230-234 BAY DR	BAY DR							
Route 20	K07-0023-22	240-245 BAY DR	BAY DR							
Route 20	K07-0023-23	250-256 BAY DR	BAY DR							
Route 20	K07-0023-24	260-269 BAY DR	BAY DR							
Route 20	K07-0023-25	270-279 BAY DR	BAY DR							
Route 20	K07-0023-26	280-289 BAY DR	BAY DR							
Route 20	K07-0023-27	290-299 BAY DR	BAY DR							
Route 20	K07-0023-28	300-303 BAY DR	BAY DR							
Route 20	K07-0023-29	30-39 BAY DR	BAY DR							
Route 20	K07-0023-30	310-313 BAY DR	BAY DR							
Route 20	K07-0023-31	40-49 BAY DR	BAY DR							
Route 20	K07-0023-32	50-59 BAY DR	BAY DR							
Route 20	K07-0023-33	60-69 BAY DR	BAY DR							
Route 20	K07-0023-34	70-75 BAY DR	BAY DR							
Route 20	K07-0023-35	80-89 BAY DR	BAY DR							
Route 20	K07-0023-36	90-93 BAY DR	BAY DR							
Raymond Road	J06-0151	20 BENT RD	BENT RD							
Raymond Road	J06-0152	26 BENT RD	BENT RD							
Raymond Road	K06-0166	31 BENT RD	BENT RD							
Raymond Road	J06-0153	32 BENT RD	BENT RD							
Raymond Road	J06-0154	38 BENT RD	BENT RD							
Raymond Road	K06-0165	39 BENT RD	BENT RD							
Raymond Road	J06-0155	44 BENT RD	BENT RD							
Raymond Road	K06-0164	45 BENT RD	BENT RD							
Raymond Road	J05-0156	50 BENT RD	BENT RD							
Raymond Road	J05-0163	51 BENT RD	BENT RD							
Raymond Road	J05-0157	56 BENT RD	BENT RD							
Raymond Road	J05-0162	57 BENT RD	BENT RD							
Raymond Road	J05-0158	60 BENT RD	BENT RD							
Raymond Road	J05-0159	68 BENT RD	BENT RD							
Raymond Road	J05-0160	74 BENT RD	BENT RD							
Route 20	K06-0017	0 BOSTON POST RD	BOSTON POST RD							
Route 20	K07-0015-1	0 BOSTON POST RD	BOSTON POST RD							
Route 20	K07-0015-2	0 BOSTON POST RD	BOSTON POST RD							
Route 20 East	K11-0019-A	0 BOSTON POST RD	BOSTON POST RD							
Route 20 East	K12-0004-0-8U	0 BOSTON POST RD UNIT 8U	BOSTON POST RD							
Route 20 East	K12-0004-0-A	0 BOSTON POST RD UNIT A	BOSTON POST RD							
Route 20 East	K12-0004-0-B	0 BOSTON POST RD UNIT B	BOSTON POST RD							
Route 20	K07-0026	0 BOSTON POST RD UNIT FIRE STAT	BOSTON POST RD							
Route 20 East	K11-0010	100 BOSTON POST RD	BOSTON POST RD		1995					New system for gas station
Route 20 East	K11-0016	103 BOSTON POST RD	BOSTON POST RD			2002				Repair of SAS-Cert of Compliance
Route 20 East	K11-0008	104 BOSTON POST RD	BOSTON POST RD							1983 system approved
Route 20 East	K11-0017	105 BOSTON POST RD	BOSTON POST RD							
Route 20 East	K11-0100-0-101	111 BOSTON POST RD UNIT 101	BOSTON POST RD			No				System Built 1984
Route 20 East	K11-0100-0-102	111 BOSTON POST RD UNIT 102	BOSTON POST RD			No				System Built 1984
Route 20 East	K11-0100-0-103	111 BOSTON POST RD UNIT 103	BOSTON POST RD			No				System Built 1984

Study Area	Unique CAMA ID	Address	Street	Title 5 Failure	Title 5 Pass	Title 5 Compliant	Variance	4+ Pumps/yr	Perc Rate (MPI)	NOTES
Route 20 East	K11-0100-0-104	111 BOSTON POST RD UNIT 104	BOSTON POST RD			No				System Built 1984
Route 20 East	K11-0100-0-105	111 BOSTON POST RD UNIT 105	BOSTON POST RD			No				System Built 1984
Route 20 East	K11-0100-0-106	111 BOSTON POST RD UNIT 106	BOSTON POST RD			No				System Built 1984
Route 20 East	K11-0100-0-107	111 BOSTON POST RD UNIT 107	BOSTON POST RD			No				System Built 1984
Route 20 East	K11-0100-0-108	111 BOSTON POST RD UNIT 108	BOSTON POST RD			No				System Built 1984
Route 20 East	K11-0100-0-209	111 BOSTON POST RD UNIT 209	BOSTON POST RD			No				System Built 1984
Route 20 East	K11-0100-0-210	111 BOSTON POST RD UNIT 210	BOSTON POST RD			No				System Built 1984
Route 20 East	K11-0100-0-211	111 BOSTON POST RD UNIT 211	BOSTON POST RD			No				System Built 1984
Route 20 East	K11-0100-0-212	111 BOSTON POST RD UNIT 212	BOSTON POST RD			No				System Built 1984
Route 20 East	K11-0100-0-213	111 BOSTON POST RD UNIT 213	BOSTON POST RD			No				System Built 1984
Route 20 East	K11-0100-0-214	111 BOSTON POST RD UNIT 214	BOSTON POST RD			No				System Built 1984
Route 20 East	K11-0100-0-215	111 BOSTON POST RD UNIT 215	BOSTON POST RD			No				System Built 1984
Route 20 East	K11-0100-0-216	111 BOSTON POST RD UNIT 216	BOSTON POST RD			No				System Built 1984
Route 20 East	K11-0018	119 BOSTON POST RD	BOSTON POST RD		1999					Conditinal Pass-pump once a year
Route 20 East	K11-0007	120 BOSTON POST RD	BOSTON POST RD			1996				New SAS 1996
Route 20 East	K11-0200	121 BOSTON POST RD	BOSTON POST RD		2016					
Route 20 East	K11-0003	136 BOSTON POST RD	BOSTON POST RD		2017					
Route 20 East	K11-0019	141 BOSTON POST RD	BOSTON POST RD			2003				New System 2003
Route 20 East	K11-0002	150 BOSTON POST RD	BOSTON POST RD			1999				As Built dated 1999
Route 20 East	K11-0020	151 BOSTON POST RD	BOSTON POST RD			2011				New FAST system 2003
Route 20 East	K10-0016	174 BOSTON POST RD	BOSTON POST RD		1995					
Route 20 East	K10-0014	183 BOSTON POST RD	BOSTON POST RD							
Route 20 East	K10-0017	186 BOSTON POST RD	BOSTON POST RD			2015				System upgraded with Certificate of Compliance
Route 20 East	K10-0081	187 BOSTON POST RD	BOSTON POST RD							
Route 20 East	K10-0012	189 BOSTON POST RD	BOSTON POST RD			2018				New system. Presby compliant
Route 20 East	K10-0018-0-01	192 BOSTON POST RD UNIT 01	BOSTON POST RD		2019	2013				Certificate of Compliance
Route 20 East	K10-0018-0-02	192 BOSTON POST RD UNIT 02	BOSTON POST RD		2019	2013				Certificate of Compliance
Route 20 East	K10-0018-0-03	192 BOSTON POST RD UNIT 03	BOSTON POST RD		2019	2013				Certificate of Compliance
Route 20 East	K10-0018-0-04	192 BOSTON POST RD UNIT 04	BOSTON POST RD		2019	2013				Certificate of Compliance
Route 20 East	K10-0018-0-05	192 BOSTON POST RD UNIT 05	BOSTON POST RD		2019	2013				Certificate of Compliance
Route 20 East	K10-0018-0-06	192 BOSTON POST RD UNIT 06	BOSTON POST RD		2019	2013				Certificate of Compliance
Route 20 East	K10-0018-0-07	192 BOSTON POST RD UNIT 07	BOSTON POST RD		2019	2013				Certificate of Compliance
Route 20 East	K10-0018-0-08	192 BOSTON POST RD UNIT 08	BOSTON POST RD		2019	2013				Certificate of Compliance
Route 20 East	K10-0018-0-09	192 BOSTON POST RD UNIT 09	BOSTON POST RD		2019	2013				Certificate of Compliance
Route 20 East	K10-0018-0-10	192 BOSTON POST RD UNIT 10	BOSTON POST RD		2019	2013				Certificate of Compliance
Route 20 East	K10-0018-0-11	192 BOSTON POST RD UNIT 11	BOSTON POST RD		2019	2013				Certificate of Compliance
Route 20 East	K10-0018-0-12	192 BOSTON POST RD UNIT 12	BOSTON POST RD		2019	2013				Certificate of Compliance
Route 20 East	K10-0018-0-13	192 BOSTON POST RD UNIT 13	BOSTON POST RD		2019	2013				Certificate of Compliance
Route 20 East	K10-0018-0-14	192 BOSTON POST RD UNIT 14	BOSTON POST RD		2019	2013				Certificate of Compliance
Route 20 East	K10-0018-0-15	192 BOSTON POST RD UNIT 15	BOSTON POST RD		2019	2013				Certificate of Compliance
Route 20 East	K10-0018-0-16	192 BOSTON POST RD UNIT 16	BOSTON POST RD		2019	2013				Certificate of Compliance
Route 20 East	K10-0018-0-17	192 BOSTON POST RD UNIT 17	BOSTON POST RD		2019	2013				Certificate of Compliance
Route 20 East	K10-0018-0-18	192 BOSTON POST RD UNIT 18	BOSTON POST RD		2019	2013				Certificate of Compliance
Route 20 East	K10-0018-0-19	192 BOSTON POST RD UNIT 19	BOSTON POST RD		2019	2013				Certificate of Compliance
Route 20 East	K10-0018-0-20	192 BOSTON POST RD UNIT 20	BOSTON POST RD		2019	2013				Certificate of Compliance
Route 20 East	K10-0018-0-21	192 BOSTON POST RD UNIT 21	BOSTON POST RD		2019	2013				Certificate of Compliance
Route 20 East	K10-0018-0-22	192 BOSTON POST RD UNIT 22	BOSTON POST RD		2019	2013				Certificate of Compliance
Route 20 East	K10-0018-0-23	192 BOSTON POST RD UNIT 23	BOSTON POST RD		2019	2013				Certificate of Compliance
Route 20 East	K10-0018-0-24	192 BOSTON POST RD UNIT 24	BOSTON POST RD		2019	2013				Certificate of Compliance
Route 20 East	K10-0018-0-25	192 BOSTON POST RD UNIT 25	BOSTON POST RD		2019	2013				Certificate of Compliance
Route 20 East	K10-0018-0-26	192 BOSTON POST RD UNIT 26	BOSTON POST RD		2019	2013				Certificate of Compliance
Route 20 East	K10-0018-0-27	192 BOSTON POST RD UNIT 27	BOSTON POST RD		2019	2013				Certificate of Compliance
Route 20 East	K10-0018-0-28	192 BOSTON POST RD UNIT 28	BOSTON POST RD		2019	2013				Certificate of Compliance
Route 20 East	K10-0018-0-29	192 BOSTON POST RD UNIT 29	BOSTON POST RD		2019	2013				Certificate of Compliance
Route 20 East	K10-0018-0-30	192 BOSTON POST RD UNIT 30	BOSTON POST RD		2019	2013				Certificate of Compliance
Route 20 East	K10-0018-0-31	192 BOSTON POST RD UNIT 31	BOSTON POST RD		2019	2013				Certificate of Compliance
Route 20 East	K12-0002	20 BOSTON POST RD	BOSTON POST RD							
Route 20 East	K10-0019	206 BOSTON POST RD	BOSTON POST RD							system 1973
Route 20 East	K10-0008	209 BOSTON POST RD	BOSTON POST RD	1992		No				1992 new system
Route 20 East	K10-0020	214 BOSTON POST RD	BOSTON POST RD			No				1975 system approved
Route 20 East	K10-0007-0-1A	215-A BOSTON POST RD UNIT 1	BOSTON POST RD		2014					
Route 20 East	K10-0007-0-1B	215-B BOSTON POST RD UNIT 1	BOSTON POST RD		2014					
Route 20 East	K10-0007-0-2B	215-B BOSTON POST RD UNIT 2	BOSTON POST RD		2014					
Route 20 East	K10-0007-0-1C	215-C BOSTON POST RD UNIT 1	BOSTON POST RD		2014					
Route 20 East	K10-0007-0-2C	215-C BOSTON POST RD UNIT 2	BOSTON POST RD		2014					
Route 20 East	K10-0021	222 BOSTON POST RD	BOSTON POST RD		2011					
Route 20 East	K10-0040	225 BOSTON POST RD	BOSTON POST RD							Septic Plan Approved 2002
Route 20 East	K10-0009	227 BOSTON POST RD	BOSTON POST RD			No				1963 system
Route 20 East	K10-0010	239 BOSTON POST RD	BOSTON POST RD							
Route 20 East	K10-0108	244 BOSTON POST RD	BOSTON POST RD							
Route 20 East	K10-0107	250 BOSTON POST RD	BOSTON POST RD							
Route 20 East	K09-0066	271 BOSTON POST RD	BOSTON POST RD		2001					
Route 20 East	K09-0065	275 BOSTON POST RD	BOSTON POST RD							
Route 20 East	K09-0064	289 BOSTON POST RD	BOSTON POST RD		2003					
Route 20 East	K09-0062	295 BOSTON POST RD	BOSTON POST RD			1999				new system 1999-added bedrooms
Route 20 East	K09-0061	303 BOSTON POST RD	BOSTON POST RD		2019					
Route 20 East	K09-0048	306 BOSTON POST RD	BOSTON POST RD		2003					
Route 20 East	K09-0060-1	307 BOSTON POST RD	BOSTON POST RD			2002				Repair to system-Certificate of Compliance 2002-FAST
Route 20 East	K09-0060-2	307-2 BOSTON POST RD	BOSTON POST RD							
Route 20 East	K09-0405	316 BOSTON POST RD	BOSTON POST RD	2018		No				Tight Tank 2018
Route 20	K09-0401	320 BOSTON POST RD	BOSTON POST RD			2008				320 & 326 Certificate of Compliance
Route 20	K09-0059-0-1	321 BOSTON POST RD	BOSTON POST RD			2009				Upgraded 2009

Study Area	Unique CAMA ID	Address	Street	Title 5 Failure	Title 5 Pass	Title 5 Compliant	Variance	4+ Pumps/yr	Perc Rate (MPI)	NOTES
Route 20	K09-0059-0-2	321 BOSTON POST RD	BOSTON POST RD		2018					
Route 20	K09-0059-0-2A1	321 BOSTON POST RD UNIT A	BOSTON POST RD		2018					
Route 20	K09-0059-0-3A1	321 BOSTON POST RD UNIT A	BOSTON POST RD		2018					
Route 20	K09-0059-0-4A1	321 BOSTON POST RD UNIT A	BOSTON POST RD		2018					
Route 20	K09-0059-0-2B1	321 BOSTON POST RD UNIT B	BOSTON POST RD		2018					
Route 20	K09-0059-0-3B1	321 BOSTON POST RD UNIT B	BOSTON POST RD		2018					
Route 20	K09-0059-0-4B1	321 BOSTON POST RD UNIT B	BOSTON POST RD		2018					
Route 20	K09-0059-0-3C1	321 BOSTON POST RD UNIT C	BOSTON POST RD		2018					
Route 20	K09-0059-0-4C1	321 BOSTON POST RD UNIT C	BOSTON POST RD		2018					
Route 20	K09-0059-0-3D1	321 BOSTON POST RD UNIT D	BOSTON POST RD		2018					
Route 20	K09-0059-0-1A3	323 BOSTON POST RD UNIT A	BOSTON POST RD		1997	2009				Passed T5 in 1997, system upgraded in 2009
Route 20	K09-0059-0-2A3	323 BOSTON POST RD UNIT A	BOSTON POST RD		1997	2009				Passed T5 in 1997, system upgraded in 2009
Route 20	K09-0059-0-3A3	323 BOSTON POST RD UNIT A	BOSTON POST RD		1997	2009				Passed T5 in 1997, system upgraded in 2009
Route 20	K09-0059-0-4A3	323 BOSTON POST RD UNIT A	BOSTON POST RD		1997	2009				Passed T5 in 1997, system upgraded in 2009
Route 20	K09-0059-0-1B3	323 BOSTON POST RD UNIT B	BOSTON POST RD		1997	2009				Passed T5 in 1997, system upgraded in 2009
Route 20	K09-0059-0-2B3	323 BOSTON POST RD UNIT B	BOSTON POST RD		1997	2009				Passed T5 in 1997, system upgraded in 2009
Route 20	K09-0059-0-3B3	323 BOSTON POST RD UNIT B	BOSTON POST RD		1997	2009				Passed T5 in 1997, system upgraded in 2009
Route 20	K09-0059-0-4B3	323 BOSTON POST RD UNIT B	BOSTON POST RD		1997	2009				Passed T5 in 1997, system upgraded in 2009
Route 20	K09-0059-0-2C3	323 BOSTON POST RD UNIT C	BOSTON POST RD		1997	2009				Passed T5 in 1997, system upgraded in 2009
Route 20	K09-0059-0-1C3	323 BOSTON POST RD UNIT C	BOSTON POST RD		1997	2009				Passed T5 in 1997, system upgraded in 2009
Route 20	K09-0059-0-3C3	323 BOSTON POST RD UNIT C	BOSTON POST RD		1997	2009				Passed T5 in 1997, system upgraded in 2009
Route 20	K09-0059-0-4C3	323 BOSTON POST RD UNIT C	BOSTON POST RD		1997	2009				Passed T5 in 1997, system upgraded in 2009
Route 20	K09-0059-0-2D3	323 BOSTON POST RD UNIT D	BOSTON POST RD		1997	2009				Passed T5 in 1997, system upgraded in 2009
Route 20	K09-0059-0-3D3	323 BOSTON POST RD UNIT D	BOSTON POST RD		1997	2009				Passed T5 in 1997, system upgraded in 2009
Route 20	K09-0059-0-15	325 BOSTON POST RD	BOSTON POST RD		2016					
Route 20	K09-0059-0-25	325 BOSTON POST RD	BOSTON POST RD		2016					
Route 20	K09-0059-0-35	325 BOSTON POST RD	BOSTON POST RD		2016					
Route 20	K09-0059-0-45	325 BOSTON POST RD	BOSTON POST RD		2016					
Route 20	K09-0057-0-1A	327 BOSTON POST RD UNIT A	BOSTON POST RD		2003					
Route 20	K09-0057-0-1B	327 BOSTON POST RD UNIT B	BOSTON POST RD		2003					
Route 20	K09-0057-0-1C	327 BOSTON POST RD UNIT C	BOSTON POST RD		2003					
Route 20	K09-0057-0-1D	327 BOSTON POST RD UNIT D	BOSTON POST RD		2003					
Route 20	K09-0057-0-1E	327 BOSTON POST RD UNIT E	BOSTON POST RD		2003					
Route 20	K09-0057-0-1F	327 BOSTON POST RD UNIT F	BOSTON POST RD		2003					
Route 20	K09-0057-0-11A	329 BOSTON POST RD UNIT A	BOSTON POST RD		2003					
Route 20	K09-0057-0-11B	329 BOSTON POST RD UNIT B	BOSTON POST RD		2003					
Route 20	K09-0057-0-11C	329 BOSTON POST RD UNIT C	BOSTON POST RD		2003					
Route 20	K09-0057-0-11D	329 BOSTON POST RD UNIT D	BOSTON POST RD		2003					
Route 20 East	K12-0003	33 BOSTON POST RD	BOSTON POST RD		1995					
Route 20	K09-0056	333 BOSTON POST RD	BOSTON POST RD		2014					
Route 20	K09-0055	337 BOSTON POST RD	BOSTON POST RD		1999					
Route 20	K09-0054	339 BOSTON POST RD	BOSTON POST RD			No				1988 system
Route 20	K09-0032-1	344 BOSTON POST RD	BOSTON POST RD			1998				
Route 20	K09-0032-2	344-2 BOSTON POST RD	BOSTON POST RD							
Route 20	K09-0053-0-A	345 BOSTON POST RD UNIT A	BOSTON POST RD			No				approved 1984 system
Route 20	K09-0053-0-B	345 BOSTON POST RD UNIT B	BOSTON POST RD							
Route 20	K09-0053-0-C	345 BOSTON POST RD UNIT C	BOSTON POST RD							
Route 20	K09-0053-0-D	345 BOSTON POST RD UNIT D	BOSTON POST RD		2012					
Route 20	K09-0053-0-E	345 BOSTON POST RD UNIT E	BOSTON POST RD		2004					
Route 20	K09-0053-0-F	345 BOSTON POST RD UNIT F	BOSTON POST RD		2004					
Route 20	K09-0053-0-G	345 BOSTON POST RD UNIT G	BOSTON POST RD		2012					
Route 20	K09-0053-0-H	345 BOSTON POST RD UNIT H	BOSTON POST RD		2012					
Route 20	K09-0053-0-I	345 BOSTON POST RD UNIT I	BOSTON POST RD		2012					
Route 20	K09-0053-0-J	345 BOSTON POST RD UNIT J	BOSTON POST RD		2012					
Route 20	K09-0031	346 BOSTON POST RD	BOSTON POST RD		2000					
Route 20	K09-0030	348 BOSTON POST RD	BOSTON POST RD		2005					
Route 20	K09-0052	351 BOSTON POST RD	BOSTON POST RD			No				1972/73 system
Route 20	K09-0051	353 BOSTON POST RD	BOSTON POST RD		2001					
Route 20	K09-0029	354 BOSTON POST RD	BOSTON POST RD			No				approved 1990 system
Route 20	K09-0028	356 BOSTON POST RD	BOSTON POST RD			No				1956 system approved
Route 20	K09-0050	357 BOSTON POST RD	BOSTON POST RD		2015					
Route 20	K08-0026-1	359 BOSTON POST RD	BOSTON POST RD		1997					
Route 20	K08-0026-2	361 BOSTON POST RD	BOSTON POST RD		1997					
Route 20	K08-0026-3	365 BOSTON POST RD	BOSTON POST RD			2018				
Route 20	K08-0036	370 BOSTON POST RD	BOSTON POST RD			No				system approved 1990
Route 20	K08-0037	378 BOSTON POST RD	BOSTON POST RD			2003				
Route 20	K08-0026-4	383 BOSTON POST RD	BOSTON POST RD							
Route 20	K08-0026-5	385-G BOSTON POST RD	BOSTON POST RD							
Route 20	K08-0082	394 BOSTON POST RD	BOSTON POST RD			2019				Upgraded system
Route 20	K08-0013	395 BOSTON POST RD	BOSTON POST RD							
Route 20	K08-0081	400 BOSTON POST RD	BOSTON POST RD			2018				Certicate of Complaince-new line to system, new D-box
Route 20	K08-0007	407 BOSTON POST RD	BOSTON POST RD			2012				
Route 20	K08-0080	410 BOSTON POST RD	BOSTON POST RD			2011				Certificate of Compliance-added grease trap
Route 20	K08-0006	415 BOSTON POST RD	BOSTON POST RD			2017				Certificate of Compliance
Route 20	K08-0079-0-B	418 BOSTON POST RD UNIT B	BOSTON POST RD			2009				Current system BOH approved 2009
Raymond Road		420 BOSTON POST RD		2007		2012				SAS Fail, New field 2012 Certificate of Compliance
Route 20	K08-0004-1	421 BOSTON POST RD	BOSTON POST RD		2018					
Raymond Road		423 BOSTON POST RD			2018					Sudbury Plaza-Currently looking at WWTF
Route 20	K08-0079-0-A	424 BOSTON POST RD UNIT A	BOSTON POST RD			2009				
Raymond Road		425 BOSTON POST RD				No				1996 Tight Tank
Route 20	K08-0078	426 BOSTON POST RD	BOSTON POST RD		1997					
Route 20	K08-0077	430 BOSTON POST RD	BOSTON POST RD			2015				Certificate of Compliance

Study Area	Unique CAMA ID	Address	Street	Title 5 Failure	Title 5 Pass	Title 5 Compliant	Variance	4+ Pumps/yr	Perc Rate (MPI)	NOTES
Route 20	K08-0069	432 BOSTON POST RD	BOSTON POST RD		2010					
Route 20	K08-0004-2	435 BOSTON POST RD	BOSTON POST RD			2016				Grease Trap-Certificate of Compliance
Route 20	K08-0004-3	437 BOSTON POST RD	BOSTON POST RD			2012				
Raymond Road		439 BOSTON POST RD				2012				Sudbury Farms-AI System installed
Route 20	K08-0067	440 BOSTON POST RD	BOSTON POST RD		1998					
Route 20	K08-0058	444 BOSTON POST RD	BOSTON POST RD							
Route 20	K08-0003-1	447 BOSTON POST RD	BOSTON POST RD							
Route 20	K08-0066	450 BOSTON POST RD	BOSTON POST RD		1997					
Route 20	K08-0065	454 BOSTON POST RD	BOSTON POST RD			2008				tank, chamber sealed, D-box replaced
Route 20	K08-0003-2	457 BOSTON POST RD	BOSTON POST RD		2018					Friendly's - AI System
Route 20	K08-0062	460 BOSTON POST RD	BOSTON POST RD							
Route 20	K08-0002	465 BOSTON POST RD	BOSTON POST RD							
Route 20	K08-0064	470 BOSTON POST RD	BOSTON POST RD	2015						cesspool, SAS fail-no new plans in file
Route 20	K07-0008	474 BOSTON POST RD	BOSTON POST RD			2016				D-box replace-Certificate of Compliance
Route 20	K07-0007	475 BOSTON POST RD	BOSTON POST RD			No				System approved 1979
Route 20	K07-0018-2	490 BOSTON POST RD	BOSTON POST RD							
Route 20	K07-0018-1	490-B BOSTON POST RD	BOSTON POST RD		2017					1.73 perc
Route 20	K07-0018-3	490-C BOSTON POST RD	BOSTON POST RD		2006					
Route 20	K07-0005-1	505 BOSTON POST RD	BOSTON POST RD		2002					
Route 20	K07-0005-2	507 BOSTON POST RD	BOSTON POST RD		2019					
Route 20	K07-0022-1	526 BOSTON POST RD UNIT RTL VLG	BOSTON POST RD							Avalon-WWTF
Route 20	K07-0022-2	528 BOSTON POST RD UNIT RTL VLG	BOSTON POST RD							Avalon-WWTF
Route 20	K07-0022-3	530 BOSTON POST RD UNIT RTL VLG	BOSTON POST RD							Avalon-WWTF
Route 20	K07-0021-1	534 BOSTON POST RD	BOSTON POST RD							
Route 20	K07-0021-2	536 BOSTON POST RD	BOSTON POST RD							
Route 20 East	K12-0001	54 BOSTON POST RD	BOSTON POST RD							
Route 20	K07-0012	540 BOSTON POST RD	BOSTON POST RD							
Route 20	K06-0602	554 BOSTON POST RD	BOSTON POST RD			2020				Title Five Compliant system under construction
Route 20	K07-0002	555 BOSTON POST RD	BOSTON POST RD		2005					
Route 20	K07-0001	559 BOSTON POST RD	BOSTON POST RD			No				System approved 1993
Route 20	K07-0014	566 BOSTON POST RD	BOSTON POST RD							
Route 20	K06-0019	573 BOSTON POST RD	BOSTON POST RD							
Route 20	K06-0020	577 BOSTON POST RD	BOSTON POST RD			2009				Certificate of Compliance 2009
Route 20	K06-0018	578 BOSTON POST RD	BOSTON POST RD							
Route 20	K06-0022-1	587 BOSTON POST RD	BOSTON POST RD							
Route 20	K06-0022-2	589 BOSTON POST RD	BOSTON POST RD							
Route 20	K06-0022-3	593 BOSTON POST RD	BOSTON POST RD							
Route 20	K06-0015	598 BOSTON POST RD	BOSTON POST RD			2000				D-box replace required
Route 20	K06-0014	604 BOSTON POST RD	BOSTON POST RD							
Route 20	K06-0013	610 BOSTON POST RD	BOSTON POST RD			2018				
Route 20	K06-0026	615 BOSTON POST RD	BOSTON POST RD			2008				
Route 20	K06-0012-0-A	616 BOSTON POST RD UNIT A	BOSTON POST RD		2010					
Route 20	K06-0012-0-B	616 BOSTON POST RD UNIT B	BOSTON POST RD		2010					
Route 20	K06-0012-0-C	616 BOSTON POST RD UNIT C	BOSTON POST RD		2010					
Route 20	K06-0012-0-D	616 BOSTON POST RD UNIT D	BOSTON POST RD		2010					
Route 20	K06-0012-0-E	616 BOSTON POST RD UNIT E	BOSTON POST RD		2010					
Route 20	K06-0012-0-F	616 BOSTON POST RD UNIT F	BOSTON POST RD		2010					
Route 20	K06-0012-0-G	616 BOSTON POST RD UNIT G	BOSTON POST RD		2010					
Route 20	K06-0012-0-H	616 BOSTON POST RD UNIT H	BOSTON POST RD		2010					
Route 20	K06-0012-0-I	616 BOSTON POST RD UNIT I	BOSTON POST RD		2010					
Route 20	K06-0028	621 BOSTON POST RD	BOSTON POST RD			2018				
Route 20	K06-0029	625 BOSTON POST RD	BOSTON POST RD	2014		2014				Reairs made-Certificate of Compliance 204
Route 20	K06-0502	631 BOSTON POST RD	BOSTON POST RD		2014					
Route 20	K06-0005	632 BOSTON POST RD	BOSTON POST RD							
Route 20	K06-0500	641 BOSTON POST RD	BOSTON POST RD	1995						
Route 20	K06-0004	642 BOSTON POST RD	BOSTON POST RD		2010					Replaced D-box
Route 20	K06-0040	648 BOSTON POST RD	BOSTON POST RD		2015					
Route 20	K06-0501-5	655 BOSTON POST RD	BOSTON POST RD							Groundwater Discharge Permit
Route 20	K06-0501-1	655-2 BOSTON POST RD	BOSTON POST RD							
Route 20	K06-0501-4	655-3 BOSTON POST RD	BOSTON POST RD							
Route 20	K06-0501-3	655-4 BOSTON POST RD	BOSTON POST RD							
Route 20	K06-0501-2	655-5 BOSTON POST RD	BOSTON POST RD							
Route 20	K06-0003	656 BOSTON POST RD	BOSTON POST RD							
Route 20	K06-0002-1	662 BOSTON POST RD	BOSTON POST RD							
Route 20	K06-0002-2	662-2 BOSTON POST RD	BOSTON POST RD							
Route 20	K06-0504	665 BOSTON POST RD	BOSTON POST RD							
Route 20	K05-0020	676 BOSTON POST RD	BOSTON POST RD							
Route 20	K05-0019	684 BOSTON POST RD	BOSTON POST RD							
Route 20	K05-0213	687 BOSTON POST RD	BOSTON POST RD							
Route 20	K05-0212	693 BOSTON POST RD	BOSTON POST RD							
Route 20	K05-0017	694 BOSTON POST RD	BOSTON POST RD							
Raymond Road	K05-0018	700 BOSTON POST RD	BOSTON POST RD							
Route 20	K05-0015	708 BOSTON POST RD	BOSTON POST RD							
Route 20	K05-0013	712 BOSTON POST RD	BOSTON POST RD							
Route 20	K05-0225-0-01	725 BOSTON POST RD UNIT 1	BOSTON POST RD		2018					
Route 20	K05-0225-0-10	725 BOSTON POST RD UNIT 10	BOSTON POST RD		2018					
Route 20	K05-0225-0-11	725 BOSTON POST RD UNIT 11	BOSTON POST RD		2018					
Route 20	K05-0225-0-12	725 BOSTON POST RD UNIT 12	BOSTON POST RD		2018					
Route 20	K05-0225-0-13	725 BOSTON POST RD UNIT 13	BOSTON POST RD		2018					
Route 20	K05-0225-0-14	725 BOSTON POST RD UNIT 14	BOSTON POST RD		2018					
Route 20	K05-0225-0-15	725 BOSTON POST RD UNIT 15	BOSTON POST RD		2018					
Route 20	K05-0225-0-16	725 BOSTON POST RD UNIT 16	BOSTON POST RD		2018					

Study Area	Unique CAMA ID	Address	Street	Title 5 Failure	Title 5 Pass	Title 5 Compliant	Variance	4+ Pumps/yr	Perc Rate (MPI)	NOTES
Route 20	K05-0225-0-02	725 BOSTON POST RD UNIT 2	BOSTON POST RD		2018					
Route 20	K05-0225-0-03	725 BOSTON POST RD UNIT 3	BOSTON POST RD		2018					
Route 20	K05-0225-0-04	725 BOSTON POST RD UNIT 4	BOSTON POST RD		2018					
Route 20	K05-0225-0-05	725 BOSTON POST RD UNIT 5	BOSTON POST RD		2018					
Route 20	K05-0225-0-06	725 BOSTON POST RD UNIT 6	BOSTON POST RD		2018					
Route 20	K05-0225-0-07	725 BOSTON POST RD UNIT 7	BOSTON POST RD		2018					
Route 20	K05-0225-0-08	725 BOSTON POST RD UNIT 8	BOSTON POST RD		2018					
Route 20	K05-0225-0-09	725 BOSTON POST RD UNIT 9	BOSTON POST RD		2018					
Route 20	K05-0012	730 BOSTON POST RD	BOSTON POST RD			2016				
Route 20	K05-0226	735 BOSTON POST RD	BOSTON POST RD							
Route 20	K05-0011	736 BOSTON POST RD	BOSTON POST RD							
Route 20	K05-0007	738 BOSTON POST RD	BOSTON POST RD							
Route 20	K05-0031	761 BOSTON POST RD	BOSTON POST RD							
Route 20 East	K11-0012	78 BOSTON POST RD	BOSTON POST RD							
Route 20 East	K11-0015	83 BOSTON POST RD	BOSTON POST RD		2002					2002 new system-new bldgs
Route 20 East	K11-0013	84 BOSTON POST RD	BOSTON POST RD		2004					
Route 20 East	K11-0011	86 BOSTON POST RD	BOSTON POST RD							
Route 20 East	K11-0023	BOSTON POST RD	BOSTON POST RD							
Raymond Road	K06-0600	BOSTON POST RD	BOSTON POST RD							
Route 20	K05-0010	BOSTON POST RD	BOSTON POST RD							
Route 20	K06-0016	BOSTON POST RD	BOSTON POST RD							
Route 20	K06-0021	BOSTON POST RD	BOSTON POST RD							
Route 20	K07-0006	BOSTON POST RD	BOSTON POST RD							
Route 20	K07-0015-3	BOSTON POST RD	BOSTON POST RD							
Route 20	K08-0029	BOSTON POST RD	BOSTON POST RD							
Route 20	K08-0063	BOSTON POST RD	BOSTON POST RD							
Route 20	K08-0068	BOSTON POST RD	BOSTON POST RD							
Route 20 East	K09-0063	BOSTON POST RD	BOSTON POST RD							
Route 20 East	K09-0406	BOSTON POST RD	BOSTON POST RD							
Route 20 East	K10-0038	BOSTON POST RD	BOSTON POST RD							
Route 20 East	K10-0110	BOSTON POST RD	BOSTON POST RD							
Route 20 East	K10-0111	BOSTON POST RD	BOSTON POST RD							
Route 20 East	K10-0404	BOSTON POST RD	BOSTON POST RD							
Route 20 East	K10-0405	BOSTON POST RD	BOSTON POST RD							
Route 20 East	K11-0099	BOSTON POST RD	BOSTON POST RD							
Route 20 East	K11-0501	BOSTON POST RD	BOSTON POST RD							
Route 20	K06-0506	OFF BOSTON POST RD	BOSTON POST RD							
Route 20	K08-0084	OFF BOSTON POST RD	BOSTON POST RD							
Route 20 East	K11-0024	OFF BOSTON POST RD	BOSTON POST RD							
Route 20 East	K11-0050	OFF BOSTON POST RD	BOSTON POST RD							
Goodman Hill	H09-0030	2 BOSTONIAN WAY	BOSTONIAN WAY							
Goodman Hill	H09-0029	5 BOSTONIAN WAY	BOSTONIAN WAY							
Goodman Hill	H09-0205	6 BOSTONIAN WAY	BOSTONIAN WAY							
Goodman Hill	K09-0435	10 BRADLEY PL	BRADLEY PL							
Goodman Hill	K09-0438	11 BRADLEY PL	BRADLEY PL							
Goodman Hill	K09-0434	14 BRADLEY PL	BRADLEY PL							
Goodman Hill	K09-0436	6 BRADLEY PL	BRADLEY PL							
Goodman Hill	K09-0439	7 BRADLEY PL	BRADLEY PL							
Goodman Hill	H09-0114	15 BREWSTER RD	BREWSTER RD							
Goodman Hill	H09-0101	16 BREWSTER RD	BREWSTER RD							
Goodman Hill	H09-0113	19 BREWSTER RD	BREWSTER RD							
Goodman Hill	H09-0102	22 BREWSTER RD	BREWSTER RD							
Goodman Hill	H09-0103	28 BREWSTER RD	BREWSTER RD							
Goodman Hill	H09-0112	31 BREWSTER RD	BREWSTER RD							
Goodman Hill	H09-0104	36 BREWSTER RD	BREWSTER RD							
Goodman Hill	H09-0111	37 BREWSTER RD	BREWSTER RD							
Goodman Hill	H09-0105	46 BREWSTER RD	BREWSTER RD							
Goodman Hill	H09-0110	47 BREWSTER RD	BREWSTER RD							
Goodman Hill	H09-0106	54 BREWSTER RD	BREWSTER RD							
Goodman Hill	H09-0109	63 BREWSTER RD	BREWSTER RD							
Goodman Hill	H09-0107	64 BREWSTER RD	BREWSTER RD							
Goodman Hill	H10-0111	67 BREWSTER RD	BREWSTER RD							
Goodman Hill	H10-0108	BREWSTER RD	BREWSTER RD							
Goodman Hill	H10-0113	BREWSTER RD	BREWSTER RD							
Goodman Hill	H10-0901	PCL A BREWSTER RD	BREWSTER RD							
Raymond Road	J06-0502	11 BRIDLE PATH	BRIDLE PATH		2015	No				Built 1987;
Raymond Road	J07-0124	12 BRIDLE PATH	BRIDLE PATH		2002	No				Built 1987; Pass 2002;
Raymond Road	J06-0503	17 BRIDLE PATH	BRIDLE PATH		1998	No				Built 1987; Dbox 1998
Raymond Road	J07-0123	22 BRIDLE PATH	BRIDLE PATH		2018	No				Built 1987; 1996 Pass; Dbox 2018
Raymond Road	J06-0504	25 BRIDLE PATH	BRIDLE PATH		2019	No				Built 1987; 2019 Dbox;
Raymond Road	J06-0505	35 BRIDLE PATH	BRIDLE PATH		2007	No				Built 1987; 2007 D-box;
Raymond Road	J07-0122	36 BRIDLE PATH	BRIDLE PATH		1996	No				Built 1988; Pass 1996
Raymond Road	J07-0125	4 BRIDLE PATH	BRIDLE PATH		2017	No			2	1987 Install; 96 dbox; 98 tank; 2015 Pass; 2017 Pass;
Raymond Road	J07-0106	41 BRIDLE PATH	BRIDLE PATH		1996	No				Built 1988; Pass 1996
Raymond Road	J07-0107	49 BRIDLE PATH	BRIDLE PATH		2018	No				Built 1988; 2008 D-box; 2018 Pass
Raymond Road	J06-0501	5 BRIDLE PATH	BRIDLE PATH		2013	No				1987 Install; 2013 Pass
Raymond Road	J07-0108	57 BRIDLE PATH	BRIDLE PATH		1988	No				1988 Install
Raymond Road	J07-0115	67 BRIDLE PATH	BRIDLE PATH		2017	No				Built 1991; 2017 Pass
Raymond Road	J07-0116	77 BRIDLE PATH	BRIDLE PATH		2019	No				Built 1991; 2009 Pass, 2019 Pass
Raymond Road	J07-0121	82 BRIDLE PATH	BRIDLE PATH		2012	No				Built 1991; Pass 2012
Raymond Road	J07-0117	89 BRIDLE PATH	BRIDLE PATH		1997	No				Built 1991; Pass 1997
Raymond Road	J07-0120	90 BRIDLE PATH	BRIDLE PATH		2000	No				Built 1991; 2000 Pass

Study Area	Unique CAMA ID	Address	Street	Title 5 Failure	Title 5 Pass	Title 5 Compliant	Variance	4+ Pumps/yr	Perc Rate (MPI)	NOTES
Raymond Road	J07-0118	95 BRIDLE PATH	BRIDLE PATH		2010	No				Built 1992; Pass 2010
Raymond Road	J07-0119	96 BRIDLE PATH	BRIDLE PATH		2014	No				Built 1991; Pass 2014 D-box
Raymond Road	J07-0101	BRIDLE PATH	BRIDLE PATH							
Goodman Hill	K09-0022	11 CHURCH ST	CHURCH ST			2009				10 mpi perc
Goodman Hill	K09-0021	19 CHURCH ST	CHURCH ST			No				System approved 1973
Goodman Hill	K09-0018	20 CHURCH ST	CHURCH ST			1996				New D-box
Goodman Hill	K09-0020	24 CHURCH ST	CHURCH ST							
Goodman Hill	K09-0017-1	26 CHURCH ST	CHURCH ST			2000				10 mpi perc
Goodman Hill	K09-0019	28 CHURCH ST	CHURCH ST		2016					
Goodman Hill	K09-0011	30 CHURCH ST	CHURCH ST			2019				new line to house
Goodman Hill	K09-0010	34 CHURCH ST	CHURCH ST		1995					
Goodman Hill	K09-0023	9 CHURCH ST	CHURCH ST			1999				9 mpi perc
Raymond Road	M08-0160	14 CIDER MILL RD	CIDER MILL RD							
Raymond Road	M08-0140	15 CIDER MILL RD	CIDER MILL RD							
Raymond Road	M08-0159	20 CIDER MILL RD	CIDER MILL RD							
Raymond Road	M08-0141	23 CIDER MILL RD	CIDER MILL RD							
Raymond Road	M08-0158	28 CIDER MILL RD	CIDER MILL RD							
Raymond Road	M08-0142	31 CIDER MILL RD	CIDER MILL RD							
Raymond Road	M08-0143	37 CIDER MILL RD	CIDER MILL RD							
Raymond Road	M08-0157	38 CIDER MILL RD	CIDER MILL RD							
Raymond Road	M08-0156	42 CIDER MILL RD	CIDER MILL RD							
Raymond Road	M08-0144	45 CIDER MILL RD	CIDER MILL RD							
Raymond Road	M08-0155	46 CIDER MILL RD	CIDER MILL RD							
Raymond Road	M08-0145	51 CIDER MILL RD	CIDER MILL RD							
Raymond Road	M08-0154	54 CIDER MILL RD	CIDER MILL RD							
Raymond Road	M08-0146	55 CIDER MILL RD	CIDER MILL RD							
Raymond Road	M08-0153	60 CIDER MILL RD	CIDER MILL RD							
Raymond Road	M08-0147	61 CIDER MILL RD	CIDER MILL RD							
Raymond Road	M08-0139	7 CIDER MILL RD	CIDER MILL RD							
Raymond Road	M08-0148	71 CIDER MILL RD	CIDER MILL RD							
Raymond Road	M08-0149	77 CIDER MILL RD	CIDER MILL RD							
Raymond Road	M08-0115	83 CIDER MILL RD	CIDER MILL RD							
Raymond Road	M08-0116	86 CIDER MILL RD	CIDER MILL RD							
Raymond Road	M08-0150	CIDER MILL RD	CIDER MILL RD							
Goodman Hill	J09-0322	11 CLARK LN	CLARK LN							
Goodman Hill	J09-0338	12 CLARK LN	CLARK LN							
Goodman Hill	J09-0323	15 CLARK LN	CLARK LN							
Goodman Hill	J09-0333	18 CLARK LN	CLARK LN							
Goodman Hill	J09-0324	23 CLARK LN	CLARK LN							
Goodman Hill	J09-0332	26 CLARK LN	CLARK LN							
Goodman Hill	J09-0325	31 CLARK LN	CLARK LN							
Goodman Hill	J09-0331	36 CLARK LN	CLARK LN							
Goodman Hill	J09-0326	37 CLARK LN	CLARK LN							
Goodman Hill	J09-0327	45 CLARK LN	CLARK LN							
Goodman Hill	J09-0330	46 CLARK LN	CLARK LN							
Goodman Hill	J09-0328	53 CLARK LN	CLARK LN							
Goodman Hill	J09-0329	56 CLARK LN	CLARK LN							
Goodman Hill	J09-0321	7 CLARK LN	CLARK LN							
Raymond Road	M09-0503	37 CLIFFORD RD	CLIFFORD RD							
Raymond Road	M09-0504	38 CLIFFORD RD	CLIFFORD RD							
Raymond Road	M09-0502	45 CLIFFORD RD	CLIFFORD RD							
Raymond Road	M09-0505	46 CLIFFORD RD	CLIFFORD RD							
Raymond Road	M09-0506	52 CLIFFORD RD	CLIFFORD RD							
Raymond Road	M09-0501	53 CLIFFORD RD	CLIFFORD RD							
Raymond Road	M09-0205	71 CLIFFORD RD	CLIFFORD RD							
Raymond Road	M09-0213	77 CLIFFORD RD	CLIFFORD RD							
Raymond Road	L09-0001	CLIFFORD RD	CLIFFORD RD							
Raymond Road	L09-0215	CLIFFORD RD	CLIFFORD RD							
Raymond Road	L09-0216	CLIFFORD RD	CLIFFORD RD							
Raymond Road	L09-0217	CLIFFORD RD	CLIFFORD RD							
Raymond Road	L09-0218	CLIFFORD RD	CLIFFORD RD							
Raymond Road	L09-0219	CLIFFORD RD	CLIFFORD RD							
Raymond Road	L09-0220	CLIFFORD RD	CLIFFORD RD							
Raymond Road	L09-0221	CLIFFORD RD	CLIFFORD RD							
Raymond Road	L09-0235	CLIFFORD RD	CLIFFORD RD							
Raymond Road	L09-0236	CLIFFORD RD	CLIFFORD RD							
Raymond Road	L09-0237	CLIFFORD RD	CLIFFORD RD							
Raymond Road	M09-0214	CLIFFORD RD	CLIFFORD RD							
Goodman Hill	J09-0048	CLIFTON RD	CLIFTON RD							
Goodman Hill	K09-0459	CLIFTON RD	CLIFTON RD							
Goodman Hill	K09-0460	CLIFTON RD	CLIFTON RD							
Route 20	J08-0501	0 CODJER LN	CODJER LN							
Route 20	J08-0006	0 CODJER LN	CODJER LN							
Route 20	J08-0502	0 CODJER LN	CODJER LN							
Route 20	J08-0503	0 CODJER LN	CODJER LN							
Route 20	J08-0004-2	110 CODJER LN	CODJER LN							
Route 20	J08-0004-3	110 CODJER LN	CODJER LN							
Route 20	J08-0004-1	110-2 CODJER LN	CODJER LN							
Route 20	J08-0005-1	112 CODJER LN	CODJER LN							
Route 20	J08-0005-2	112-2 CODJER LN	CODJER LN							
Goodman Hill	J09-0609	12 CODJER LN	CODJER LN							
Goodman Hill	J08-0031	20 CODJER LN	CODJER LN							

Study Area	Unique CAMA ID	Address	Street	Title 5 Failure	Title 5 Pass	Title 5 Compliant	Variance	4+ Pumps/yr	Perc Rate (MPI)	NOTES
Goodman Hill	J09-0001	21 CODJER LN	CODJER LN							
Goodman Hill	J08-0030	26 CODJER LN	CODJER LN							
Goodman Hill	J08-0028	27 CODJER LN	CODJER LN							
Goodman Hill	J08-0029	30 CODJER LN	CODJER LN							
Goodman Hill	J08-0027	35 CODJER LN	CODJER LN							
Goodman Hill	J08-0026	41 CODJER LN	CODJER LN							
Goodman Hill	J08-0025	47 CODJER LN	CODJER LN							
Goodman Hill	J08-0024	53 CODJER LN	CODJER LN							
Goodman Hill	J08-0023-0-A	57 CODJER LN UNIT A	CODJER LN							
Goodman Hill	J08-0023-0-B	57 CODJER LN UNIT B	CODJER LN							
Goodman Hill	J08-0023-0-C	57 CODJER LN UNIT C	CODJER LN							
Goodman Hill	J08-0032	CODJER LN	CODJER LN							
Goodman Hill	J08-0205	CODJER LN	CODJER LN							
Raymond Road	J07-0006	CODJER LN	CODJER LN							
Raymond Road	J07-0007	CODJER LN	CODJER LN							
Raymond Road	J07-0009	CODJER LN	CODJER LN							
Raymond Road	J07-0012	CODJER LN	CODJER LN							
Raymond Road	J07-0205	CODJER LN	CODJER LN							
Raymond Road	J07-0401	CODJER LN	CODJER LN							
Route 20	K08-0105	CODJER LN	CODJER LN							
Route 20	K09-0027-2	10 CONCORD RD	CONCORD RD							
Goodman Hill	J09-0012	102 CONCORD RD	CONCORD RD							
Goodman Hill	J09-0601	105 CONCORD RD	CONCORD RD							
Goodman Hill	J09-0602	109 CONCORD RD	CONCORD RD							
Goodman Hill	J09-0603	113 CONCORD RD	CONCORD RD							
Goodman Hill	J09-0604	121 CONCORD RD	CONCORD RD							
Goodman Hill	J09-0605	129 CONCORD RD	CONCORD RD							
Goodman Hill	J09-0013	130 CONCORD RD	CONCORD RD							
Goodman Hill	J09-0606	133 CONCORD RD	CONCORD RD							
Goodman Hill	J09-0607	137 CONCORD RD	CONCORD RD							
Goodman Hill	J09-0014	138 CONCORD RD	CONCORD RD							
Goodman Hill	J09-0608	141 CONCORD RD	CONCORD RD							
Goodman Hill	J09-0036	149 CONCORD RD	CONCORD RD							
Goodman Hill	J09-0015	150 CONCORD RD	CONCORD RD							
Goodman Hill	J08-0020	159 CONCORD RD	CONCORD RD							
Goodman Hill	K09-0026	16 CONCORD RD	CONCORD RD							
Goodman Hill	J09-0023-1	160 CONCORD RD	CONCORD RD							
Goodman Hill	J08-0018	165 CONCORD RD	CONCORD RD							
Route 20	K08-0086	17 CONCORD RD	CONCORD RD							
Goodman Hill	J09-0023-2	178 CONCORD RD	CONCORD RD							
Goodman Hill	J08-0017	179 CONCORD RD	CONCORD RD							
Goodman Hill	K09-0025	18 CONCORD RD	CONCORD RD							
Goodman Hill	K08-0085	19 CONCORD RD	CONCORD RD							
Goodman Hill	H08-0301	193 CONCORD RD	CONCORD RD							
Goodman Hill	K09-0024	20 CONCORD RD	CONCORD RD							
Goodman Hill	J09-0025	200 CONCORD RD	CONCORD RD							
Goodman Hill	H09-0217	206 CONCORD RD	CONCORD RD							
Goodman Hill	K08-0033	21 CONCORD RD	CONCORD RD							
Goodman Hill	H09-0017	210 CONCORD RD	CONCORD RD							
Goodman Hill	H09-0016	233 CONCORD RD	CONCORD RD							
Goodman Hill	H09-0019	236 CONCORD RD	CONCORD RD							
Goodman Hill	H09-0206	239 CONCORD RD	CONCORD RD							
Goodman Hill	H09-0020-1	246 CONCORD RD	CONCORD RD							
Goodman Hill	H09-0020-3	248 CONCORD RD	CONCORD RD							
Goodman Hill	H09-0020-2	248-2 CONCORD RD	CONCORD RD							
Goodman Hill	K08-0032	25 CONCORD RD	CONCORD RD							
Goodman Hill	H09-0022	252 CONCORD RD	CONCORD RD							
Goodman Hill	H09-0015	253 CONCORD RD	CONCORD RD							
Goodman Hill	H09-0014	257 CONCORD RD	CONCORD RD							
Goodman Hill	H09-0021	260 CONCORD RD	CONCORD RD							
Goodman Hill	H09-0013	265 CONCORD RD	CONCORD RD							
Goodman Hill	H09-0011	269 CONCORD RD	CONCORD RD							
Goodman Hill	K08-0030	27 CONCORD RD	CONCORD RD							
Goodman Hill	H09-0023	272 CONCORD RD	CONCORD RD							
Goodman Hill	H09-0010	277 CONCORD RD	CONCORD RD							
Goodman Hill	H09-0047	284 CONCORD RD	CONCORD RD							
Goodman Hill	K09-0017-2	32 CONCORD RD	CONCORD RD							
Goodman Hill	K08-0028	35 CONCORD RD	CONCORD RD							
Goodman Hill	K09-0016	36 CONCORD RD	CONCORD RD							
Goodman Hill	K09-0015	40 CONCORD RD	CONCORD RD							
Goodman Hill	K09-0001	41 CONCORD RD	CONCORD RD							
Goodman Hill	K09-0013	44 CONCORD RD	CONCORD RD							
Goodman Hill	K09-0002	47 CONCORD RD	CONCORD RD							
Route 20	K08-0035	5 CONCORD RD	CONCORD RD							
Goodman Hill	K09-0008	52 CONCORD RD	CONCORD RD							
Goodman Hill	K09-0007	58 CONCORD RD	CONCORD RD							
Goodman Hill	K09-0004	61 CONCORD RD	CONCORD RD							
Goodman Hill	K09-0006	62 CONCORD RD	CONCORD RD							
Goodman Hill	J09-0006	67 CONCORD RD	CONCORD RD							
Goodman Hill	K09-0005	68 CONCORD RD	CONCORD RD							
Goodman Hill	J09-0005	71 CONCORD RD	CONCORD RD							
Goodman Hill	J09-0008	74 CONCORD RD	CONCORD RD							

Study Area	Unique CAMA ID	Address	Street	Title 5 Failure	Title 5 Pass	Title 5 Compliant	Variance	4+ Pumps/yr	Perc Rate (MPI)	NOTES
Route 20	K09-0027-1	8 CONCORD RD	CONCORD RD							
Goodman Hill	J09-0004	83 CONCORD RD	CONCORD RD							
Goodman Hill	J09-0009	84 CONCORD RD	CONCORD RD							
Goodman Hill	J09-0010	88 CONCORD RD	CONCORD RD							
Goodman Hill	J09-0003	89 CONCORD RD	CONCORD RD							
Goodman Hill	J09-0002	95 CONCORD RD	CONCORD RD							
Goodman Hill	J09-0011	98 CONCORD RD	CONCORD RD							
Goodman Hill	H09-0018	CONCORD RD	CONCORD RD							
Goodman Hill	J09-0007	CONCORD RD	CONCORD RD							
Goodman Hill	J09-0024	CONCORD RD	CONCORD RD							
Goodman Hill	K08-0101	CONCORD RD	CONCORD RD							
Goodman Hill	K08-0304	OFF CONCORD RD	CONCORD RD							
Goodman Hill	K09-0003	4 CONFIDENCE WAY	CONFIDENCE WAY							
Goodman Hill	K08-0302	CONFIDENCE WAY	CONFIDENCE WAY							
Goodman Hill	K08-0303	CONFIDENCE WAY	CONFIDENCE WAY							
Raymond Road	L09-0003	COOLIDGE LN	COOLIDGE LN							
Raymond Road	L09-0223	CUTLER FARM RD	CUTLER FARM RD							
Raymond Road	K05-0027	1 DOUGLAS DR	DOUGLAS DR		1991	No			2	Built 1985; Replaced 1991
Raymond Road	K05-0102	11 DOUGLAS DR	DOUGLAS DR		2011	Yes				Built 1984; Replaced 2011
Raymond Road	K05-0103	17 DOUGLAS DR	DOUGLAS DR		2018	No				Built 1984; 2012 Pass/Dbox; Pass 2018
Raymond Road	K05-0104	23 DOUGLAS DR	DOUGLAS DR			No				Built 1985;
Raymond Road	K05-0028	33 DOUGLAS DR	DOUGLAS DR		2019	No				Built ? -2019 Inspection - noted cesspool
Raymond Road	K05-0105	DOUGLAS DR	DOUGLAS DR							
Raymond Road	K05-0106	DOUGLAS DR	DOUGLAS DR							
Raymond Road	K05-0109	DOUGLAS DR	DOUGLAS DR							
Route 20	K06-0405	92 DUDLEY RD	DUDLEY RD							
Route 20	K06-0401	96 DUDLEY RD	DUDLEY RD							
Route 20	K05-0218	11 EASY ST	EASY ST							
Route 20	K05-0215	12 EASY ST	EASY ST							
Route 20	K05-0219	15 EASY ST	EASY ST							
Route 20	K05-0220	21 EASY ST	EASY ST							
Route 20	K05-0204	29 EASY ST	EASY ST							
Route 20	K05-0208	34 EASY ST	EASY ST							
Route 20	K05-0205	37 EASY ST	EASY ST							
Route 20	K05-0207	40 EASY ST	EASY ST							
Route 20	K05-0206	41 EASY ST	EASY ST							
Route 20	K05-0224	44 EASY ST	EASY ST							
Route 20	K05-0221	47 EASY ST	EASY ST							
Route 20	K05-0217	5 EASY ST	EASY ST							
Route 20	K05-0223	52 EASY ST	EASY ST							
Route 20	K05-0222	53 EASY ST	EASY ST							
Route 20	K05-0214	6 EASY ST	EASY ST							
Raymond Road	K06-0144	11 ELLIOT RD	ELLIOT RD							
Raymond Road	K06-0143	12 ELLIOT RD	ELLIOT RD							
Raymond Road	J06-0302	12 EVERGREEN RD	EVERGREEN RD							
Raymond Road	J06-0320	15 EVERGREEN RD	EVERGREEN RD							
Raymond Road	J06-0303	18 EVERGREEN RD	EVERGREEN RD							
Raymond Road	J06-0321	23 EVERGREEN RD	EVERGREEN RD							
Raymond Road	J06-0304	24 EVERGREEN RD	EVERGREEN RD							
Raymond Road	J06-0305	30 EVERGREEN RD	EVERGREEN RD							
Raymond Road	J06-0322	31 EVERGREEN RD	EVERGREEN RD							
Raymond Road	J06-0306	36 EVERGREEN RD	EVERGREEN RD							
Raymond Road	J06-0307	42 EVERGREEN RD	EVERGREEN RD							
Raymond Road	J06-0323	43 EVERGREEN RD	EVERGREEN RD							
Raymond Road	J06-0308	46 EVERGREEN RD	EVERGREEN RD							
Raymond Road	J06-0319	9 EVERGREEN RD	EVERGREEN RD							
Route 20	K07-0025	1 FARMSTEAD LN UNIT BRIDGES	FARMSTEAD LN							
Route 20	K07-0024-0-005	10 FARMSTEAD LN	FARMSTEAD LN							
Route 20	K07-0024-0-015	11 FARMSTEAD LN	FARMSTEAD LN							
Route 20	K07-0024-0-006	12 FARMSTEAD LN	FARMSTEAD LN							
Route 20	K07-0024-0-016	13 FARMSTEAD LN	FARMSTEAD LN							
Route 20	K07-0024-0-007	14 FARMSTEAD LN	FARMSTEAD LN							
Route 20	K07-0024-0-017	15 FARMSTEAD LN	FARMSTEAD LN							
Route 20	K07-0024-0-008	16 FARMSTEAD LN	FARMSTEAD LN							
Route 20	K07-0024-0-018	17 FARMSTEAD LN	FARMSTEAD LN							
Route 20	K07-0024-0-009	18 FARMSTEAD LN	FARMSTEAD LN							
Route 20	K07-0024-0-019	19 FARMSTEAD LN	FARMSTEAD LN							
Route 20	K07-0024-0-001	2 FARMSTEAD LN	FARMSTEAD LN							
Route 20	K07-0024-0-010	20 FARMSTEAD LN	FARMSTEAD LN							
Route 20	K07-0024-0-020	21 FARMSTEAD LN	FARMSTEAD LN							
Route 20	K07-0024	22 FARMSTEAD LN	FARMSTEAD LN							
Route 20	K07-0024-0-021	23 FARMSTEAD LN	FARMSTEAD LN							
Route 20	K07-0024-0-011	3 FARMSTEAD LN	FARMSTEAD LN							
Route 20	K07-0024-0-002	4 FARMSTEAD LN	FARMSTEAD LN							
Route 20	K07-0024-0-012	5 FARMSTEAD LN	FARMSTEAD LN							
Route 20	K07-0024-0-003	6 FARMSTEAD LN	FARMSTEAD LN							
Route 20	K07-0024-0-013	7 FARMSTEAD LN	FARMSTEAD LN							
Route 20	K07-0024-0-004	8 FARMSTEAD LN	FARMSTEAD LN							
Route 20	K07-0024-0-014	9 FARMSTEAD LN	FARMSTEAD LN							
Goodman Hill	K09-0421	18 FRANKLIN PL	FRANKLIN PL							
Goodman Hill	K09-0417	19 FRANKLIN PL	FRANKLIN PL							
Goodman Hill	K09-0420	22 FRANKLIN PL	FRANKLIN PL							

Study Area	Unique CAMA ID	Address	Street	Title 5 Failure	Title 5 Pass	Title 5 Compliant	Variance	4+ Pumps/yr	Perc Rate (MPI)	NOTES
Goodman Hill	K09-0418	25 FRANKLIN PL	FRANKLIN PL							
Goodman Hill	K09-0419	26 FRANKLIN PL	FRANKLIN PL							
Goodman Hill	K09-0422	FRANKLIN PL	FRANKLIN PL							
Goodman Hill	J10-0009	102 GOODMANS HILL RD	GOODMANS HILL RD		1998					
Goodman Hill	J10-0004	107 GOODMANS HILL RD	GOODMANS HILL RD		2014					replaced leach field 2010
Goodman Hill	J10-0012	118 GOODMANS HILL RD	GOODMANS HILL RD			1996				Certificate of Compliance 8 mpi perc
Goodman Hill	J10-0504	133 GOODMANS HILL RD	GOODMANS HILL RD			2018				Certificate of Compliance 20 mpi perc
Goodman Hill	J10-0503	139 GOODMANS HILL RD	GOODMANS HILL RD			2019				Certificate of Compliance 4 mpi perc
Goodman Hill	J10-0013	140 GOODMANS HILL RD	GOODMANS HILL RD			2011				Certificate of Compliance 4 mpi perc
Goodman Hill	J10-0502	141 GOODMANS HILL RD	GOODMANS HILL RD		1997					
Goodman Hill	J10-0434	146 GOODMANS HILL RD	GOODMANS HILL RD							
Goodman Hill	J10-0501	149 GOODMANS HILL RD	GOODMANS HILL RD			2003				Certificate of Compliance 2003
Goodman Hill	J10-0003	155 GOODMANS HILL RD	GOODMANS HILL RD		2016					
Goodman Hill	J10-0406	160 GOODMANS HILL RD	GOODMANS HILL RD			2009				D-box replaced
Goodman Hill	J10-0002	161 GOODMANS HILL RD	GOODMANS HILL RD		2019					
Goodman Hill	J10-0405	166 GOODMANS HILL RD	GOODMANS HILL RD							
Goodman Hill	J10-0001	173 GOODMANS HILL RD	GOODMANS HILL RD							
Goodman Hill	J09-0035	187 GOODMANS HILL RD	GOODMANS HILL RD		2012					
Goodman Hill	J10-0403	192 GOODMANS HILL RD	GOODMANS HILL RD			1999				Certificate of Compliance D-Box
Goodman Hill	J09-0034	193 GOODMANS HILL RD	GOODMANS HILL RD		2015					
Goodman Hill	J09-0033	199 GOODMANS HILL RD	GOODMANS HILL RD		2020					
Goodman Hill	J09-0032	207 GOODMANS HILL RD	GOODMANS HILL RD							
Goodman Hill	J09-0037	212 GOODMANS HILL RD	GOODMANS HILL RD							
Goodman Hill	J09-0031	215 GOODMANS HILL RD	GOODMANS HILL RD							
Goodman Hill	J09-0038	220 GOODMANS HILL RD	GOODMANS HILL RD							
Goodman Hill	J09-0030	221 GOODMANS HILL RD	GOODMANS HILL RD							
Goodman Hill	J09-0039	224 GOODMANS HILL RD	GOODMANS HILL RD							
Goodman Hill	J09-0040	226 GOODMANS HILL RD	GOODMANS HILL RD							
Goodman Hill	J09-0028	231 GOODMANS HILL RD	GOODMANS HILL RD							
Goodman Hill	J09-0042	232 GOODMANS HILL RD	GOODMANS HILL RD							
Goodman Hill	J09-0027	235 GOODMANS HILL RD	GOODMANS HILL RD							
Goodman Hill	J09-0043	238 GOODMANS HILL RD	GOODMANS HILL RD							
Goodman Hill	K11-0026	24 GOODMANS HILL RD	GOODMANS HILL RD							
Goodman Hill	J09-0026	241 GOODMANS HILL RD	GOODMANS HILL RD							
Goodman Hill	H09-0401	244 GOODMANS HILL RD	GOODMANS HILL RD							
Goodman Hill	H09-0034	245 GOODMANS HILL RD	GOODMANS HILL RD							
Goodman Hill	H09-0035	246 GOODMANS HILL RD	GOODMANS HILL RD							
Goodman Hill	H09-0033	249 GOODMANS HILL RD	GOODMANS HILL RD							
Goodman Hill	H09-0036	250 GOODMANS HILL RD	GOODMANS HILL RD							
Goodman Hill	H09-0032	253 GOODMANS HILL RD	GOODMANS HILL RD							
Goodman Hill	H09-0037	256 GOODMANS HILL RD	GOODMANS HILL RD							
Goodman Hill	H09-0038	258 GOODMANS HILL RD	GOODMANS HILL RD							
Route 20 East	K11-0052	26 GOODMANS HILL RD	GOODMANS HILL RD							
Goodman Hill	H09-0031	261 GOODMANS HILL RD	GOODMANS HILL RD							
Goodman Hill	K10-0401	27 GOODMANS HILL RD	GOODMANS HILL RD							
Goodman Hill	H09-0039	280 GOODMANS HILL RD	GOODMANS HILL RD							
Goodman Hill	H09-0028	281 GOODMANS HILL RD	GOODMANS HILL RD							
Goodman Hill	H09-0040	286 GOODMANS HILL RD	GOODMANS HILL RD							
Goodman Hill	H09-0027-1	289 GOODMANS HILL RD	GOODMANS HILL RD							
Route 20 East	K10-0402	29 GOODMANS HILL RD	GOODMANS HILL RD							
Goodman Hill	H09-0027-2	295 GOODMANS HILL RD	GOODMANS HILL RD							
Route 20 East	K11-0053	30 GOODMANS HILL RD	GOODMANS HILL RD							
Goodman Hill	H09-0042	304 GOODMANS HILL RD	GOODMANS HILL RD							
Goodman Hill	H09-0025	309 GOODMANS HILL RD	GOODMANS HILL RD							
Goodman Hill	H09-0024	315 GOODMANS HILL RD	GOODMANS HILL RD							
Goodman Hill	H09-0044	316 GOODMANS HILL RD	GOODMANS HILL RD							
Goodman Hill	H09-0045	328 GOODMANS HILL RD	GOODMANS HILL RD							
Route 20 East	K10-0403	33 GOODMANS HILL RD	GOODMANS HILL RD							
Goodman Hill	H09-0046	332 GOODMANS HILL RD	GOODMANS HILL RD							
Goodman Hill	K10-0075	34 GOODMANS HILL RD	GOODMANS HILL RD							
Goodman Hill	K10-0037	44 GOODMANS HILL RD	GOODMANS HILL RD							
Goodman Hill	K10-0207	52 GOODMANS HILL RD	GOODMANS HILL RD							
Goodman Hill	K10-0201	55 GOODMANS HILL RD	GOODMANS HILL RD							
Goodman Hill	K10-0036	62 GOODMANS HILL RD	GOODMANS HILL RD							
Goodman Hill	K10-0202	65 GOODMANS HILL RD	GOODMANS HILL RD							
Route 20 East	K10-0053	7 GOODMANS HILL RD	GOODMANS HILL RD							
Goodman Hill	K10-0034	73 GOODMANS HILL RD	GOODMANS HILL RD							
Goodman Hill	K10-0033	79 GOODMANS HILL RD	GOODMANS HILL RD							
Goodman Hill	K10-0032	85 GOODMANS HILL RD	GOODMANS HILL RD							
Goodman Hill	J10-0006	94 GOODMANS HILL RD	GOODMANS HILL RD							
Goodman Hill	J10-0005	95 GOODMANS HILL RD	GOODMANS HILL RD							
Goodman Hill	H09-0026	GOODMANS HILL RD	GOODMANS HILL RD							
Goodman Hill	H09-0115	GOODMANS HILL RD	GOODMANS HILL RD							
Goodman Hill	J10-0505	GOODMANS HILL RD	GOODMANS HILL RD							
Goodman Hill	K11-0051	GOODMANS HILL RD	GOODMANS HILL RD							
Goodman Hill	K10-0023	18 GREEN HILL RD	GREEN HILL RD							
Goodman Hill	K10-0025	29 GREEN HILL RD	GREEN HILL RD							
Goodman Hill	K10-0056	33 GREEN HILL RD	GREEN HILL RD							
Goodman Hill	K10-0311	45 GREEN HILL RD	GREEN HILL RD							
Goodman Hill	K10-0027	46 GREEN HILL RD	GREEN HILL RD							
Goodman Hill	K10-0028	52 GREEN HILL RD	GREEN HILL RD							
Goodman Hill	K10-0029	60 GREEN HILL RD	GREEN HILL RD							

Study Area	Unique CAMA ID	Address	Street	Title 5 Failure	Title 5 Pass	Title 5 Compliant	Variance	4+ Pumps/yr	Perc Rate (MPI)	NOTES
Goodman Hill	K10-0030	68 GREEN HILL RD	GREEN HILL RD							
Goodman Hill	K10-0031	78 GREEN HILL RD	GREEN HILL RD							
Goodman Hill	K10-0022	8 GREEN HILL RD	GREEN HILL RD							
Goodman Hill	K10-0026	GREEN HILL RD	GREEN HILL RD							
Route 20 East	K10-0024	GREEN HILL RD	GREEN HILL RD							
Raymond Road	K06-0195	11 HICKORY RD	HICKORY RD							
Raymond Road	K06-0169	12 HICKORY RD	HICKORY RD							
Raymond Road	K06-0194	17 HICKORY RD	HICKORY RD							
Raymond Road	K06-0170	18 HICKORY RD	HICKORY RD							
Raymond Road	K05-0193	23 HICKORY RD	HICKORY RD							
Raymond Road	K06-0171	24 HICKORY RD	HICKORY RD							
Raymond Road	K05-0172	26 HICKORY RD	HICKORY RD							
Raymond Road	K05-0192	29 HICKORY RD	HICKORY RD							
Raymond Road	K06-0215	3 HICKORY RD	HICKORY RD							
Raymond Road	K05-0191	35 HICKORY RD	HICKORY RD							
Raymond Road	K05-0173	36 HICKORY RD	HICKORY RD							
Raymond Road	K05-0184	47 HICKORY RD	HICKORY RD							
Raymond Road	K05-0178	52 HICKORY RD	HICKORY RD							
Raymond Road	K05-0183	55 HICKORY RD	HICKORY RD							
Raymond Road	K05-0182	61 HICKORY RD	HICKORY RD							
Raymond Road	K05-0179	62 HICKORY RD	HICKORY RD							
Raymond Road	K05-0181	73 HICKORY RD	HICKORY RD							
Raymond Road	K05-0180	74 HICKORY RD	HICKORY RD							
Route 20	K07-0004	53 HIGHLAND AVE	HIGHLAND AVE							
Route 20	K07-0003	55 HIGHLAND AVE	HIGHLAND AVE							
Route 20	K07-0102	57 HIGHLAND AVE	HIGHLAND AVE							
Route 20	K07-0103	59 HIGHLAND AVE	HIGHLAND AVE							
Goodman Hill	K09-0303	11 HILLSIDE PL	HILLSIDE PL							
Goodman Hill	J09-0047	14 HILLSIDE PL	HILLSIDE PL							
Goodman Hill	K09-0464	HILLSIDE PL	HILLSIDE PL							
Raymond Road	M09-0701	10 HOPESTILL BROWN RD	HOPESTILL BROWN RD		2004	2004				Built 1986; Replaced 2004
Raymond Road	M09-0717	17 HOPESTILL BROWN RD	HOPESTILL BROWN RD		2009	No				Built 1990; D-box 2001; D-box 2009;
Raymond Road	M09-0702	18 HOPESTILL BROWN RD	HOPESTILL BROWN RD							No Records
Raymond Road	M09-0716	27 HOPESTILL BROWN RD	HOPESTILL BROWN RD		2017	No				Built 1986; Debox 2004; D-box 2017
Raymond Road	M09-0404	4 HOPESTILL BROWN RD	HOPESTILL BROWN RD		1998	No				Built 1985; D-box 1998
Raymond Road	M09-0715	41 HOPESTILL BROWN RD	HOPESTILL BROWN RD			No				Built 1986
Raymond Road	M09-0704	42 HOPESTILL BROWN RD	HOPESTILL BROWN RD		2014	No				Built 1992; D-box 2014
Raymond Road	M09-0714	49 HOPESTILL BROWN RD	HOPESTILL BROWN RD		2000	No				Built 1986; D-box 2000
Raymond Road	M09-0705	50 HOPESTILL BROWN RD	HOPESTILL BROWN RD		1999	No				Built 1987; Pass 1999
Raymond Road	M09-0713	59 HOPESTILL BROWN RD	HOPESTILL BROWN RD			No				Built 1986
Raymond Road	M09-0706	60 HOPESTILL BROWN RD	HOPESTILL BROWN RD		2010	No				Built 1986; Pass 2010
Raymond Road	M09-0712	67 HOPESTILL BROWN RD	HOPESTILL BROWN RD			No				Built 1986
Raymond Road	M09-0707	68 HOPESTILL BROWN RD	HOPESTILL BROWN RD		2008	No				Built 1995; Pass 2008
Raymond Road	M09-0711	75 HOPESTILL BROWN RD	HOPESTILL BROWN RD			No				Built 1991
Raymond Road	M09-0708	76 HOPESTILL BROWN RD	HOPESTILL BROWN RD		2004	No				Built 1986; D-box 2004
Raymond Road	M09-0710	83 HOPESTILL BROWN RD	HOPESTILL BROWN RD		2012	No				Built 1985; Pass 2012
Raymond Road	M09-0709	84 HOPESTILL BROWN RD	HOPESTILL BROWN RD		1997	No				Built 1989; Pass 1997
Raymond Road	M09-0403	95 HOPESTILL BROWN RD	HOPESTILL BROWN RD		2020	No				Built 1985; 2016 Dbox; Pass 2020
Raymond Road	M09-0402	96 HOPESTILL BROWN RD	HOPESTILL BROWN RD		2014	No				Built 1983; D-box 1996; Pass 2014
Raymond Road	J06-0506	100 HORSE POND RD	HORSE POND RD							
Raymond Road	J06-0113	111 HORSE POND RD	HORSE POND RD							
Raymond Road	J06-0016	124 HORSE POND RD	HORSE POND RD							
Raymond Road	J06-0317	129 HORSE POND RD	HORSE POND RD							
Raymond Road	J06-0017	130 HORSE POND RD	HORSE POND RD							
Raymond Road	J06-0018	136 HORSE POND RD	HORSE POND RD							
Raymond Road	J06-0318	137 HORSE POND RD	HORSE POND RD							
Raymond Road	J06-0328	145 HORSE POND RD	HORSE POND RD							
Raymond Road	J06-0301	151 HORSE POND RD	HORSE POND RD							
Raymond Road	J06-0019	156 HORSE POND RD	HORSE POND RD							
Raymond Road	J06-0015	157 HORSE POND RD	HORSE POND RD							
Raymond Road	J06-0014	163 HORSE POND RD	HORSE POND RD							
Raymond Road	J06-0021	168 HORSE POND RD	HORSE POND RD							
Raymond Road	J06-0022	172 HORSE POND RD	HORSE POND RD							
Raymond Road	K06-0204	31 HORSE POND RD	HORSE POND RD							
Route 20	K06-0008-1	40 HORSE POND RD UNIT 1	HORSE POND RD							
Route 20	K06-0008-2	40-2 HORSE POND RD UNIT 2	HORSE POND RD							
Route 20	K06-0008-3	40-3 HORSE POND RD UNIT 3	HORSE POND RD							
Route 20	K06-0007	48 HORSE POND RD	HORSE POND RD							
Raymond Road	K06-0006	59 HORSE POND RD	HORSE POND RD							
Raymond Road	K06-0150	71 HORSE POND RD	HORSE POND RD							
Raymond Road	K06-0149	79 HORSE POND RD	HORSE POND RD							
Raymond Road	K06-0148	85 HORSE POND RD	HORSE POND RD							
Raymond Road	K06-0147	91 HORSE POND RD	HORSE POND RD							
Raymond Road	J06-0146	97 HORSE POND RD	HORSE POND RD							
Raymond Road	K06-0036	HORSE POND RD	HORSE POND RD							
Raymond Road	K06-0309	11 HOWELL RD	HOWELL RD							
Raymond Road	K06-0315	12 HOWELL RD	HOWELL RD							
Raymond Road	K06-0310	17 HOWELL RD	HOWELL RD							
Raymond Road	K06-0314	20 HOWELL RD	HOWELL RD							
Raymond Road	K06-0311	21 HOWELL RD	HOWELL RD							
Raymond Road	K06-0312	25 HOWELL RD	HOWELL RD							
Raymond Road	K06-0313	26 HOWELL RD	HOWELL RD							

Study Area	Unique CAMA ID	Address	Street	Title 5 Failure	Title 5 Pass	Title 5 Compliant	Variance	4+ Pumps/yr	Perc Rate (MPI)	NOTES
Raymond Road	K06-0316	8 HOWELL RD	HOWELL RD							
Raymond Road	K06-0308	9 HOWELL RD	HOWELL RD							
Goodman Hill	J09-0308	100 INDIAN RIDGE RD	INDIAN RIDGE RD							
Goodman Hill	K09-0445	12 INDIAN RIDGE RD	INDIAN RIDGE RD							
Goodman Hill	K09-0440	15 INDIAN RIDGE RD	INDIAN RIDGE RD							
Goodman Hill	K09-0446	16 INDIAN RIDGE RD	INDIAN RIDGE RD							
Goodman Hill	K09-0447	22 INDIAN RIDGE RD	INDIAN RIDGE RD							
Goodman Hill	K09-0448	28 INDIAN RIDGE RD	INDIAN RIDGE RD							
Goodman Hill	K09-0449	32 INDIAN RIDGE RD	INDIAN RIDGE RD							
Goodman Hill	K09-0450	36 INDIAN RIDGE RD	INDIAN RIDGE RD							
Goodman Hill	K09-0424	39 INDIAN RIDGE RD	INDIAN RIDGE RD							
Goodman Hill	K09-0451	40 INDIAN RIDGE RD	INDIAN RIDGE RD							
Goodman Hill	K09-0452	46 INDIAN RIDGE RD	INDIAN RIDGE RD							
Goodman Hill	K09-0423	47 INDIAN RIDGE RD	INDIAN RIDGE RD							
Goodman Hill	J09-0301	54 INDIAN RIDGE RD	INDIAN RIDGE RD							
Goodman Hill	J09-0303	62 INDIAN RIDGE RD	INDIAN RIDGE RD							
Goodman Hill	J09-0312	70 INDIAN RIDGE RD	INDIAN RIDGE RD							
Goodman Hill	J09-0337	75 INDIAN RIDGE RD	INDIAN RIDGE RD							
Goodman Hill	J09-0306	76 INDIAN RIDGE RD	INDIAN RIDGE RD							
Goodman Hill	J09-0336	85 INDIAN RIDGE RD	INDIAN RIDGE RD							
Goodman Hill	K09-0441	9 INDIAN RIDGE RD	INDIAN RIDGE RD							
Goodman Hill	J09-0307	90 INDIAN RIDGE RD	INDIAN RIDGE RD							
Goodman Hill	J09-0335	93 INDIAN RIDGE RD	INDIAN RIDGE RD							
Goodman Hill	J09-0334	99 INDIAN RIDGE RD	INDIAN RIDGE RD							
Goodman Hill	J09-0305	INDIAN RIDGE RD	INDIAN RIDGE RD							
Raymond Road	J06-0145	1 JARMAN RD	JARMAN RD							
Raymond Road	J06-0112	12 JARMAN RD	JARMAN RD							
Raymond Road	J06-0111	18 JARMAN RD	JARMAN RD							
Raymond Road	J06-0110	24 JARMAN RD	JARMAN RD							
Raymond Road	J06-0131	29 JARMAN RD	JARMAN RD							
Raymond Road	J06-0109	30 JARMAN RD	JARMAN RD							
Raymond Road	J06-0108	36 JARMAN RD	JARMAN RD							
Raymond Road	J06-0128	37 JARMAN RD	JARMAN RD							
Raymond Road	J06-0107	42 JARMAN RD	JARMAN RD							
Raymond Road	J06-0127	45 JARMAN RD	JARMAN RD							
Raymond Road	J06-0106	48 JARMAN RD	JARMAN RD							
Raymond Road	J06-0126	51 JARMAN RD	JARMAN RD							
Raymond Road	J06-0105	54 JARMAN RD	JARMAN RD							
Raymond Road	J06-0125	57 JARMAN RD	JARMAN RD							
Raymond Road	J06-0104	60 JARMAN RD	JARMAN RD							
Raymond Road	J06-0124	63 JARMAN RD	JARMAN RD							
Raymond Road	J06-0103	66 JARMAN RD	JARMAN RD							
Raymond Road	J06-0102	72 JARMAN RD	JARMAN RD							
Raymond Road	J05-0116	73 JARMAN RD	JARMAN RD							
Raymond Road	J05-0115	79 JARMAN RD	JARMAN RD							
Goodman Hill	J10-0011-A	12 KATO DR	KATO DR							
Goodman Hill	J10-0617	15 KATO DR	KATO DR							
Goodman Hill	J10-0601-A	20 KATO DR	KATO DR							
Goodman Hill	J10-0616	23 KATO DR	KATO DR							
Goodman Hill	J10-0602	32 KATO DR	KATO DR							
Goodman Hill	J10-0603	50 KATO DR	KATO DR							
Goodman Hill	J10-0604	62 KATO DR	KATO DR							
Goodman Hill	J10-0610	65 KATO DR	KATO DR							
Goodman Hill	J10-0605	70 KATO DR	KATO DR							
Goodman Hill	J10-0609	75 KATO DR	KATO DR							
Goodman Hill	J10-0606	78 KATO DR	KATO DR							
Goodman Hill	J10-0608	85 KATO DR	KATO DR							
Goodman Hill	J10-0607	86 KATO DR	KATO DR							
Goodman Hill	J10-0615	KATO DR	KATO DR							
Goodman Hill	J10-0612	10 KATO SUMMIT	KATO SUMMIT							
Goodman Hill	J10-0611	4 KATO SUMMIT	KATO SUMMIT							
Goodman Hill	J10-0614	5 KATO SUMMIT	KATO SUMMIT							
Goodman Hill	J10-0613	9 KATO SUMMIT	KATO SUMMIT							
Route 20 East	K09-0041	0 KING PHILIP RD	KING PHILIP RD							
Goodman Hill	K09-0101	12 KING PHILIP RD	KING PHILIP RD							
Goodman Hill	K09-0043	14 KING PHILIP RD	KING PHILIP RD							
Route 20 East	K09-0044	17 KING PHILIP RD	KING PHILIP RD							
Goodman Hill	K09-0042	20 KING PHILIP RD	KING PHILIP RD							
Goodman Hill	K09-0039	22 KING PHILIP RD	KING PHILIP RD							
Route 20 East	K09-0045	25 KING PHILIP RD	KING PHILIP RD							
Goodman Hill	K09-0046	29 KING PHILIP RD	KING PHILIP RD							
Goodman Hill	K09-0047	33 KING PHILIP RD	KING PHILIP RD							
Goodman Hill	K09-0038	38 KING PHILIP RD	KING PHILIP RD							
Goodman Hill	K09-0102	4 KING PHILIP RD	KING PHILIP RD							
Goodman Hill	K09-0036	48 KING PHILIP RD	KING PHILIP RD							
Goodman Hill	K09-0035	54 KING PHILIP RD	KING PHILIP RD							
Route 20	K09-0049	61 KING PHILIP RD	KING PHILIP RD							
Goodman Hill	K09-0034	62 KING PHILIP RD	KING PHILIP RD							
Route 20	K09-0033	68 KING PHILIP RD	KING PHILIP RD							
Raymond Road	L08-0011	LANDHAM RD	LANDHAM RD							
Raymond Road	L09-0002	LANDHAM RD	LANDHAM RD							
Raymond Road	M08-0180	15 LANDS END LN	LANDS END LN		2003	No				Built 1972; Passed 2003 (D-box)

Study Area	Unique CAMA ID	Address	Street	Title 5 Failure	Title 5 Pass	Title 5 Compliant	Variance	4+ Pumps/yr	Perc Rate (MPI)	NOTES
Raymond Road	M08-0187	16 LANDS END LN	LANDS END LN		2008	Yes				Built 1972; Replaced 2008
Raymond Road	M08-0179	21 LANDS END LN	LANDS END LN		2014	No				Built 1973; D-box 2014
Raymond Road	M08-0188	24 LANDS END LN	LANDS END LN		2005	No				Built 1972; New D-box 1995; D-box 2005
Raymond Road	M08-0178	27 LANDS END LN	LANDS END LN		2000	No				Built 1972; Pass 2000
Raymond Road	M08-0189	32 LANDS END LN	LANDS END LN							
Raymond Road	M08-0177	33 LANDS END LN	LANDS END LN		1999	No				Built 1972; D-box 1999
Raymond Road	M08-0190	38 LANDS END LN	LANDS END LN		2014	No				Built 1981; Pass 2014
Raymond Road	M08-0176	39 LANDS END LN	LANDS END LN		2014	Yes				Built 1972; Replaced 2014
Raymond Road	M08-0191	46 LANDS END LN	LANDS END LN		2009	No			2	Built 1982; Pass 2009
Raymond Road	M08-0175	47 LANDS END LN	LANDS END LN		2008	No				Built 1972; D-box 2008
Raymond Road	M08-0192	50 LANDS END LN	LANDS END LN		2006	No				Built 1973; D-box 2006
Raymond Road	M08-0174	55 LANDS END LN	LANDS END LN		2016	No				Built 1972; D-box 2016
Raymond Road	M08-0186	8 LANDS END LN	LANDS END LN		2002	2002				Built 1972; Complete Replacement 2002
Raymond Road	M08-0181	9 LANDS END LN	LANDS END LN		1998	No				Built 1971; D-box 1998
Raymond Road	M08-0163	11 LOMBARD LN	LOMBARD LN							
Raymond Road	M08-0168	12 LOMBARD LN	LOMBARD LN							
Raymond Road	M08-0164	17 LOMBARD LN	LOMBARD LN							
Raymond Road	M08-0167	18 LOMBARD LN	LOMBARD LN							
Raymond Road	M08-0166	26 LOMBARD LN	LOMBARD LN							
Raymond Road	M08-0165	27 LOMBARD LN	LOMBARD LN							
Route 20	K08-0024	10 MAPLE AVE	MAPLE AVE		1997	No				Built 1984; Pass 1997;
Route 20	K08-0015	11 MAPLE AVE	MAPLE AVE		2019	No				Built 1973; Replaced presby 2007; Pass 2019
Route 20	K08-0023	14 MAPLE AVE	MAPLE AVE		2018	No				Built 1981; Dbox 2018
Route 20	K08-0016	15 MAPLE AVE	MAPLE AVE							No Records
Route 20	K08-0017	19 MAPLE AVE	MAPLE AVE			No				Built 1987; 2010 Pass-Dbox;
Route 20	K08-0022	22 MAPLE AVE	MAPLE AVE		2011	No				Pass 2010; 2011 Replacement
Route 20	K08-0018	25 MAPLE AVE	MAPLE AVE							2000 Replacement
Route 20	K08-0021	28 MAPLE AVE	MAPLE AVE							
Route 20	K08-0019	31 MAPLE AVE	MAPLE AVE							
Route 20	K09-0073	34 MAPLE AVE	MAPLE AVE							
Raymond Road	K08-0020-0-101	35 MAPLE AVE UNIT 101	MAPLE AVE							
Raymond Road	K08-0020-0-102	35 MAPLE AVE UNIT 102	MAPLE AVE							
Raymond Road	K08-0020-0-103	35 MAPLE AVE UNIT 103	MAPLE AVE							
Raymond Road	K08-0020-0-201	35 MAPLE AVE UNIT 201	MAPLE AVE							
Raymond Road	K08-0020-0-202	35 MAPLE AVE UNIT 202	MAPLE AVE							
Raymond Road	K08-0020-0-203	35 MAPLE AVE UNIT 203	MAPLE AVE							
Raymond Road	K08-0020-0-301	35 MAPLE AVE UNIT 301	MAPLE AVE							
Raymond Road	K08-0020-0-302	35 MAPLE AVE UNIT 302	MAPLE AVE							
Raymond Road	K08-0020-0-303	35 MAPLE AVE UNIT 303	MAPLE AVE							
Raymond Road	K08-0020-0-401	35 MAPLE AVE UNIT 401	MAPLE AVE							
Raymond Road	K08-0020-0-402	35 MAPLE AVE UNIT 402	MAPLE AVE							
Raymond Road	K08-0020-0-501	35 MAPLE AVE UNIT 501	MAPLE AVE							
Raymond Road	K08-0020-0-502	35 MAPLE AVE UNIT 502	MAPLE AVE							
Raymond Road	K08-0020-0-503	35 MAPLE AVE UNIT 503	MAPLE AVE							
Raymond Road	K08-0020-0-601	35 MAPLE AVE UNIT 601	MAPLE AVE							
Raymond Road	K08-0020-0-602	35 MAPLE AVE UNIT 602	MAPLE AVE							
Raymond Road	K08-0020-0-701	35 MAPLE AVE UNIT 701	MAPLE AVE							
Raymond Road	K08-0020-0-702	35 MAPLE AVE UNIT 702	MAPLE AVE							
Raymond Road	K08-0020-0-703	35 MAPLE AVE UNIT 703	MAPLE AVE							
Raymond Road	K08-0020-0-801	35 MAPLE AVE UNIT 801	MAPLE AVE							
Raymond Road	K08-0020-0-802	35 MAPLE AVE UNIT 802	MAPLE AVE							
Raymond Road	K08-0020-0-901	35 MAPLE AVE UNIT 901	MAPLE AVE							
Raymond Road	K08-0020-0-902	35 MAPLE AVE UNIT 902	MAPLE AVE							
Route 20	K08-0025	4 MAPLE AVE	MAPLE AVE		2006	No				Built 1981; 2006 Pass
Route 20	K09-0072	44 MAPLE AVE	MAPLE AVE							
Route 20	K09-0076-0-1001	47 MAPLE AVE UNIT 1001	MAPLE AVE							
Route 20	K09-0076-0-1002	47 MAPLE AVE UNIT 1002	MAPLE AVE							
Route 20	K09-0076-0-1101	47 MAPLE AVE UNIT 1101	MAPLE AVE							
Route 20	K09-0076-0-1102	47 MAPLE AVE UNIT 1102	MAPLE AVE							
Route 20	K09-0076-0-1103	47 MAPLE AVE UNIT 1103	MAPLE AVE							
Route 20	K09-0071	50 MAPLE AVE	MAPLE AVE							
Route 20	K09-0075	54 MAPLE AVE	MAPLE AVE							
Route 20	K09-0074	55 MAPLE AVE	MAPLE AVE							
Route 20	K08-0014	7 MAPLE AVE	MAPLE AVE							Built 1968; Rebuilt 2003; Pass 2010; Pass 2015
Raymond Road	K09-0069	MAPLE AVE	MAPLE AVE							
Goodman Hill	K09-0402	11 MASSASOIT AVE	MASSASOIT AVE							
Goodman Hill	K09-0409	14 MASSASOIT AVE	MASSASOIT AVE							
Goodman Hill	K09-0037	23 MASSASOIT AVE	MASSASOIT AVE							
Goodman Hill	K09-0411	29 MASSASOIT AVE	MASSASOIT AVE							
Goodman Hill	K09-0437	32 MASSASOIT AVE	MASSASOIT AVE							
Goodman Hill	K09-0412	33 MASSASOIT AVE	MASSASOIT AVE							
Goodman Hill	K09-0413	39 MASSASOIT AVE	MASSASOIT AVE							
Goodman Hill	K09-0433	40 MASSASOIT AVE	MASSASOIT AVE							
Goodman Hill	K09-0432	42 MASSASOIT AVE	MASSASOIT AVE							
Goodman Hill	K09-0414	45 MASSASOIT AVE	MASSASOIT AVE							
Goodman Hill	K09-0431	46 MASSASOIT AVE	MASSASOIT AVE							
Goodman Hill	K09-0415	49 MASSASOIT AVE	MASSASOIT AVE							
Goodman Hill	K09-0416	55 MASSASOIT AVE	MASSASOIT AVE							
Goodman Hill	K09-0425	58 MASSASOIT AVE	MASSASOIT AVE							
Goodman Hill	K09-0410	MASSASOIT AVE	MASSASOIT AVE							
Goodman Hill	K10-0321	12 METACOMET WAY	METACOMET WAY							
Goodman Hill	K09-0318	15 METACOMET WAY	METACOMET WAY							

Study Area	Unique CAMA ID	Address	Street	Title 5 Failure	Title 5 Pass	Title 5 Compliant	Variance	4+ Pumps/yr	Perc Rate (MPI)	NOTES
Goodman Hill	K10-0320	20 METACOMET WAY	METACOMET WAY							
Goodman Hill	K09-0319	21 METACOMET WAY	METACOMET WAY							
Raymond Road	M08-0113	10 MORAN CIR	MORAN CIR							
Raymond Road	M08-0112	18 MORAN CIR	MORAN CIR							
Raymond Road	M08-0114	2 MORAN CIR	MORAN CIR							
Raymond Road	M08-0105	21 MORAN CIR	MORAN CIR							
Raymond Road	M08-0111	24 MORAN CIR	MORAN CIR							
Raymond Road	M08-0106	29 MORAN CIR	MORAN CIR							
Raymond Road	M08-0110	32 MORAN CIR	MORAN CIR							
Raymond Road	M08-0107	35 MORAN CIR	MORAN CIR							
Raymond Road	M08-0109	38 MORAN CIR	MORAN CIR							
Raymond Road	M08-0108	41 MORAN CIR	MORAN CIR							
Raymond Road	M08-0104	9 MORAN CIR	MORAN CIR							
Raymond Road	M08-0121	MORAN CIR	MORAN CIR							
Goodman Hill	J10-0404	10 NASHOBA RD	NASHOBA RD							
Goodman Hill	J10-0428	17 NASHOBA RD	NASHOBA RD							
Goodman Hill	J10-0408	18 NASHOBA RD	NASHOBA RD							
Goodman Hill	J10-0427	23 NASHOBA RD	NASHOBA RD							
Goodman Hill	J10-0429	7 NASHOBA RD	NASHOBA RD							
Route 20	K08-0001	239 NOBSCOT RD	NOBSCOT RD							
Raymond Road	L07-0023	NOBSCOT RD	NOBSCOT RD							
Route 20	L07-0015	NOBSCOT RD	NOBSCOT RD							
Route 20	K05-0032	14 NOKOMIS RD	NOKOMIS RD							
Route 20	K05-0001	9 NOKOMIS RD	NOKOMIS RD							
Route 20 East	K11-0025	23 OLD COUNTY RD	OLD COUNTY RD							
Route 20 East	K11-0009	33 OLD COUNTY RD	OLD COUNTY RD							
Route 20 East	K11-0202-0-01	6 OLD COUNTY RD UNIT 1	OLD COUNTY RD							
Route 20 East	K11-0202-0-10	6 OLD COUNTY RD UNIT 10	OLD COUNTY RD							
Route 20 East	K11-0202-0-11	6 OLD COUNTY RD UNIT 11	OLD COUNTY RD							
Route 20 East	K11-0202-0-12	6 OLD COUNTY RD UNIT 12	OLD COUNTY RD							
Route 20 East	K11-0202-0-13	6 OLD COUNTY RD UNIT 13	OLD COUNTY RD							
Route 20 East	K11-0202-0-14	6 OLD COUNTY RD UNIT 14	OLD COUNTY RD							
Route 20 East	K11-0202-0-15	6 OLD COUNTY RD UNIT 15	OLD COUNTY RD							
Route 20 East	K11-0202-0-16	6 OLD COUNTY RD UNIT 16	OLD COUNTY RD							
Route 20 East	K11-0202-0-17	6 OLD COUNTY RD UNIT 17	OLD COUNTY RD							
Route 20 East	K11-0202-0-18	6 OLD COUNTY RD UNIT 18	OLD COUNTY RD							
Route 20 East	K11-0202-0-19	6 OLD COUNTY RD UNIT 19	OLD COUNTY RD							
Route 20 East	K11-0202-0-02	6 OLD COUNTY RD UNIT 2	OLD COUNTY RD							
Route 20 East	K11-0202-0-20	6 OLD COUNTY RD UNIT 20	OLD COUNTY RD							
Route 20 East	K11-0202-0-21	6 OLD COUNTY RD UNIT 21	OLD COUNTY RD							
Route 20 East	K11-0202-0-22	6 OLD COUNTY RD UNIT 22	OLD COUNTY RD							
Route 20 East	K11-0202-0-23	6 OLD COUNTY RD UNIT 23	OLD COUNTY RD							
Route 20 East	K11-0202-0-24	6 OLD COUNTY RD UNIT 24	OLD COUNTY RD							
Route 20 East	K11-0202-0-25	6 OLD COUNTY RD UNIT 25	OLD COUNTY RD							
Route 20 East	K11-0202-0-26	6 OLD COUNTY RD UNIT 26	OLD COUNTY RD							
Route 20 East	K11-0202-0-27	6 OLD COUNTY RD UNIT 27	OLD COUNTY RD							
Route 20 East	K11-0202-0-28	6 OLD COUNTY RD UNIT 28	OLD COUNTY RD							
Route 20 East	K11-0202-0-29	6 OLD COUNTY RD UNIT 29	OLD COUNTY RD							
Route 20 East	K11-0202-0-03	6 OLD COUNTY RD UNIT 3	OLD COUNTY RD							
Route 20 East	K11-0202-0-30	6 OLD COUNTY RD UNIT 30	OLD COUNTY RD							
Route 20 East	K11-0202-0-31	6 OLD COUNTY RD UNIT 31	OLD COUNTY RD							
Route 20 East	K11-0202-0-32	6 OLD COUNTY RD UNIT 32	OLD COUNTY RD							
Route 20 East	K11-0202-0-33	6 OLD COUNTY RD UNIT 33	OLD COUNTY RD							
Route 20 East	K11-0202-0-34	6 OLD COUNTY RD UNIT 34	OLD COUNTY RD							
Route 20 East	K11-0202-0-35	6 OLD COUNTY RD UNIT 35	OLD COUNTY RD							
Route 20 East	K11-0202-0-36	6 OLD COUNTY RD UNIT 36	OLD COUNTY RD							
Route 20 East	K11-0202-0-37	6 OLD COUNTY RD UNIT 37	OLD COUNTY RD							
Route 20 East	K11-0202-0-04	6 OLD COUNTY RD UNIT 4	OLD COUNTY RD							
Route 20 East	K11-0202-0-05	6 OLD COUNTY RD UNIT 5	OLD COUNTY RD							
Route 20 East	K11-0202-0-06	6 OLD COUNTY RD UNIT 6	OLD COUNTY RD							
Route 20 East	K11-0202-0-07	6 OLD COUNTY RD UNIT 7	OLD COUNTY RD							
Route 20 East	K11-0202-0-08	6 OLD COUNTY RD UNIT 8	OLD COUNTY RD							
Route 20 East	K11-0202-0-09	6 OLD COUNTY RD UNIT 9	OLD COUNTY RD							
Route 20 East	K11-0004	68 OLD COUNTY RD	OLD COUNTY RD							
Route 20 East	K11-0014-3	9 OLD COUNTY RD	OLD COUNTY RD							
Route 20 East	K11-0014-1	9-2 OLD COUNTY RD	OLD COUNTY RD							
Route 20 East	K11-0014-2	9-3 OLD COUNTY RD	OLD COUNTY RD							
Goodman Hill	K11-0006	OLD COUNTY RD	OLD COUNTY RD							
Route 20 East	K11-0401	OLD COUNTY RD	OLD COUNTY RD							
Raymond Road	M07-0007	OLD FRAMINGHAM RD	OLD FRAMINGHAM RD							
Raymond Road	M07-0012	OLD FRAMINGHAM RD	OLD FRAMINGHAM RD							
Raymond Road	M07-0013	OLD FRAMINGHAM RD	OLD FRAMINGHAM RD							
Raymond Road	M07-0010	OLD FRAMINGHAM RD	OLD FRAMINGHAM RD							
Raymond Road	M07-0011	OLD FRAMINGHAM RD	OLD FRAMINGHAM RD							
Goodman Hill	J09-0704	100 OLD LANCASTER RD	OLD LANCASTER RD							
Goodman Hill	J09-0703	108 OLD LANCASTER RD	OLD LANCASTER RD							
Goodman Hill	J09-0021	111 OLD LANCASTER RD	OLD LANCASTER RD							
Goodman Hill	J09-0702	114 OLD LANCASTER RD	OLD LANCASTER RD							
Goodman Hill	J09-0701	120 OLD LANCASTER RD	OLD LANCASTER RD							
Goodman Hill	J09-0020	125 OLD LANCASTER RD	OLD LANCASTER RD							
Goodman Hill	J09-0709	128 OLD LANCASTER RD	OLD LANCASTER RD							
Goodman Hill	J09-0019	133 OLD LANCASTER RD	OLD LANCASTER RD							

Study Area	Unique CAMA ID	Address	Street	Title 5 Failure	Title 5 Pass	Title 5 Compliant	Variance	4+ Pumps/yr	Perc Rate (MPI)	NOTES
Goodman Hill	J09-0018	139 OLD LANCASTER RD	OLD LANCASTER RD							
Goodman Hill	J09-0017	145 OLD LANCASTER RD	OLD LANCASTER RD							
Goodman Hill	J09-0707	146 OLD LANCASTER RD	OLD LANCASTER RD							
Goodman Hill	J09-0016	149 OLD LANCASTER RD	OLD LANCASTER RD							
Goodman Hill	J10-0507	16 OLD LANCASTER RD	OLD LANCASTER RD							
Goodman Hill	K10-0305	21 OLD LANCASTER RD	OLD LANCASTER RD							
Goodman Hill	J10-0508	22 OLD LANCASTER RD	OLD LANCASTER RD							
Goodman Hill	K10-0304	29 OLD LANCASTER RD	OLD LANCASTER RD							
Goodman Hill	J10-0509	32 OLD LANCASTER RD	OLD LANCASTER RD							
Goodman Hill	J09-0044	39 OLD LANCASTER RD	OLD LANCASTER RD							
Goodman Hill	J09-0510	40 OLD LANCASTER RD	OLD LANCASTER RD							
Goodman Hill	J09-0320	45 OLD LANCASTER RD	OLD LANCASTER RD							
Goodman Hill	J09-0511	48 OLD LANCASTER RD	OLD LANCASTER RD							
Goodman Hill	J09-0319	53 OLD LANCASTER RD	OLD LANCASTER RD							
Goodman Hill	J09-0318	57 OLD LANCASTER RD	OLD LANCASTER RD							
Goodman Hill	J09-0513	58 OLD LANCASTER RD	OLD LANCASTER RD							
Goodman Hill	J09-0514	62 OLD LANCASTER RD	OLD LANCASTER RD							
Goodman Hill	J09-0022	76 OLD LANCASTER RD	OLD LANCASTER RD							
Goodman Hill	J10-0506	8 OLD LANCASTER RD	OLD LANCASTER RD							
Goodman Hill	J09-0706	84 OLD LANCASTER RD	OLD LANCASTER RD							
Goodman Hill	J10-0307	9 OLD LANCASTER RD	OLD LANCASTER RD							
Goodman Hill	J09-0705	92 OLD LANCASTER RD	OLD LANCASTER RD							
Goodman Hill	J09-0100	OLD LANCASTER RD	OLD LANCASTER RD							
Goodman Hill	J09-0512	OLD LANCASTER RD	OLD LANCASTER RD							
Raymond Road	J06-0133	11 OLD MEADOW RD	OLD MEADOW RD							
Raymond Road	J06-0140	12 OLD MEADOW RD	OLD MEADOW RD							
Raymond Road	J06-0134	15 OLD MEADOW RD	OLD MEADOW RD							
Raymond Road	J06-0141	18 OLD MEADOW RD	OLD MEADOW RD							
Raymond Road	J06-0135	21 OLD MEADOW RD	OLD MEADOW RD							
Raymond Road	K06-0142	24 OLD MEADOW RD	OLD MEADOW RD							
Raymond Road	J06-0132	3 OLD MEADOW RD	OLD MEADOW RD							
Raymond Road	K06-0136	31 OLD MEADOW RD	OLD MEADOW RD							
Raymond Road	K06-0137	35 OLD MEADOW RD	OLD MEADOW RD							
Raymond Road	K06-0138	41 OLD MEADOW RD	OLD MEADOW RD							
Raymond Road	K06-0037	47 OLD MEADOW RD	OLD MEADOW RD							
Raymond Road	J06-0139	6 OLD MEADOW RD	OLD MEADOW RD							
Raymond Road	K06-0038	OFF OLD MEADOW RD	OLD MEADOW RD							
Goodman Hill	J10-0200	OLD SUDBURY RD	OLD SUDBURY RD							
Goodman Hill	H09-0304	4 PENNYMEADOW RD	PENNYMEADOW RD							
Goodman Hill	H09-0303	7 PENNYMEADOW RD	PENNYMEADOW RD							
Goodman Hill	J08-0107	4 PHEASANT AVE	PHEASANT AVE							
Goodman Hill	J08-0123	5 PHEASANT AVE	PHEASANT AVE							
Goodman Hill	J10-0420	15 PILGRIMS PATH	PILGRIMS PATH							
Goodman Hill	J10-0421	23 PILGRIMS PATH	PILGRIMS PATH							
Goodman Hill	J10-0425	24 PILGRIMS PATH	PILGRIMS PATH							
Goodman Hill	J10-0422	29 PILGRIMS PATH	PILGRIMS PATH							
Goodman Hill	J10-0424	34 PILGRIMS PATH	PILGRIMS PATH							
Goodman Hill	J10-0423	39 PILGRIMS PATH	PILGRIMS PATH							
Goodman Hill	J10-0419	7 PILGRIMS PATH	PILGRIMS PATH							
Goodman Hill	J10-0426	8 PILGRIMS PATH	PILGRIMS PATH							
Goodman Hill	J09-0201	17 PLANTATION CIR	PLANTATION CIR							
Goodman Hill	J09-0202	25 PLANTATION CIR	PLANTATION CIR							
Goodman Hill	J09-0203	31 PLANTATION CIR	PLANTATION CIR							
Goodman Hill	J09-0204	36 PLANTATION CIR	PLANTATION CIR							
Goodman Hill	J09-0708	4 PLANTATION CIR	PLANTATION CIR							
Goodman Hill	J09-0205	42 PLANTATION CIR	PLANTATION CIR							
Goodman Hill	J09-0206	48 PLANTATION CIR	PLANTATION CIR							
Goodman Hill	K09-0443	10 POKONOKET AVE	POKONOKET AVE							
Goodman Hill	J09-0315	104 POKONOKET AVE	POKONOKET AVE			2002				Certiciate of Compliance 2002. 30 mpi perc
Goodman Hill	J09-0316	110 POKONOKET AVE	POKONOKET AVE			2007				Certiciate of Compliance 2002. 11 mpi perc
Goodman Hill	J09-0310	111 POKONOKET AVE	POKONOKET AVE							
Goodman Hill	J09-0317	118 POKONOKET AVE	POKONOKET AVE			2010				Certificate of Compliance 8 mpi perc
Goodman Hill	J09-0309	119 POKONOKET AVE	POKONOKET AVE			2010				Certificate of Compliance 2010
Goodman Hill	K09-0453	21 POKONOKET AVE	POKONOKET AVE							
Goodman Hill	K09-0454	23 POKONOKET AVE	POKONOKET AVE							
Goodman Hill	K09-0444	24 POKONOKET AVE	POKONOKET AVE							
Goodman Hill	K09-0455	27 POKONOKET AVE	POKONOKET AVE							
Goodman Hill	K09-0040	32 POKONOKET AVE	POKONOKET AVE							
Goodman Hill	K09-0456	37 POKONOKET AVE	POKONOKET AVE							
Goodman Hill	K09-0474	50 POKONOKET AVE	POKONOKET AVE							
Goodman Hill	K09-0473	54 POKONOKET AVE	POKONOKET AVE							
Goodman Hill	K09-0457	55 POKONOKET AVE	POKONOKET AVE							
Goodman Hill	K09-0458	59 POKONOKET AVE	POKONOKET AVE							
Goodman Hill	K09-0472	60 POKONOKET AVE	POKONOKET AVE							
Goodman Hill	K09-0471	64 POKONOKET AVE	POKONOKET AVE							
Goodman Hill	K09-0461	65 POKONOKET AVE	POKONOKET AVE							
Goodman Hill	K09-0462	69 POKONOKET AVE	POKONOKET AVE							
Goodman Hill	K09-0470	70 POKONOKET AVE	POKONOKET AVE							
Goodman Hill	K09-0465	73 POKONOKET AVE	POKONOKET AVE							
Goodman Hill	K09-0469	76 POKONOKET AVE	POKONOKET AVE							
Goodman Hill	K09-0466	79 POKONOKET AVE	POKONOKET AVE			No				5-22 mpi percs. Varied on 1979 approved system
Goodman Hill	K09-0468	80 POKONOKET AVE	POKONOKET AVE		1998					D-box replacement required

Study Area	Unique CAMA ID	Address	Street	Title 5 Failure	Title 5 Pass	Title 5 Compliant	Variance	4+ Pumps/yr	Perc Rate (MPI)	NOTES
Goodman Hill	J09-0045	84 POKONOKET AVE	POKONOKET AVE		2007					
Goodman Hill	J09-0046	85 POKONOKET AVE	POKONOKET AVE			NO				1968 approved system
Goodman Hill	K09-0442	9 POKONOKET AVE	POKONOKET AVE							
Goodman Hill	J09-0313	93 POKONOKET AVE	POKONOKET AVE		2004					
Goodman Hill	J09-0314	94 POKONOKET AVE	POKONOKET AVE		2002					
Goodman Hill	J09-0311	99 POKONOKET AVE	POKONOKET AVE			2017				
Goodman Hill	K09-0463	POKONOKET AVE	POKONOKET AVE							
Goodman Hill	J10-0412	100 PURITAN LN	PURITAN LN							
Goodman Hill	J10-0409	103 PURITAN LN	PURITAN LN							
Goodman Hill	J10-0410	111 PURITAN LN	PURITAN LN							
Goodman Hill	J10-0431	112 PURITAN LN	PURITAN LN							
Goodman Hill	J10-0437	115 PURITAN LN	PURITAN LN							
Goodman Hill	J10-0439	117 PURITAN LN	PURITAN LN							
Goodman Hill	J10-0438	119 PURITAN LN	PURITAN LN							
Goodman Hill	J10-0436	123 PURITAN LN	PURITAN LN							
Goodman Hill	J10-0417	63 PURITAN LN	PURITAN LN							
Goodman Hill	J10-0416	64 PURITAN LN	PURITAN LN							
Goodman Hill	J10-0418	69 PURITAN LN	PURITAN LN							
Goodman Hill	J10-0415	74 PURITAN LN	PURITAN LN							
Goodman Hill	J10-0414	80 PURITAN LN	PURITAN LN							
Goodman Hill	J10-0413	94 PURITAN LN	PURITAN LN							
Goodman Hill	H10-0112	PURITAN LN	PURITAN LN							
Goodman Hill	J10-0435	PURITAN LN	PURITAN LN							
Raymond Road	M08-0302	12 QUAKER LADY LN	QUAKER LADY LN							
Raymond Road	M08-0301	9 QUAKER LADY LN	QUAKER LADY LN							
Raymond Road	M08-0006	QUAKER LADY LN	QUAKER LADY LN							
Route 20 East	K12-5000	RAILWAY	RAILWAY							
Raymond Road	M09-0161	11 RAMBLING RD	RAMBLING RD		2005	No				Built 1970; D-box repaired 2005
Raymond Road	M09-0137	12 RAMBLING RD	RAMBLING RD		2018	No				Built 1970; D-box 2012; Pass 2018
Raymond Road	M09-0136	22 RAMBLING RD	RAMBLING RD		2011	No				Built 1971; D-box 1997; Pass 2011;
Raymond Road	M09-0162	25 RAMBLING RD	RAMBLING RD		1997	No			7.6	Built 1971; D-box 1997;
Raymond Road	M09-0135	30 RAMBLING RD	RAMBLING RD		2017	No				Built 1971; Pass 2017
Raymond Road	M09-0169	37 RAMBLING RD	RAMBLING RD		1996	No				Built 1970; Replaced D-box 1996;
Raymond Road	M09-0134	38 RAMBLING RD	RAMBLING RD			No				Built 1971
Raymond Road	M09-0170	45 RAMBLING RD	RAMBLING RD			No				Built 1971
Raymond Road	M09-0133	46 RAMBLING RD	RAMBLING RD		2010	2010				Built 1970; Completely replaced 2010
Raymond Road	M09-0171	51 RAMBLING RD	RAMBLING RD		2017	2006				Built 2006; Passed 2017
Raymond Road	M09-0132	54 RAMBLING RD	RAMBLING RD		2019	No				Built 1971; Passed 2015; 2019
Raymond Road	M09-0172	59 RAMBLING RD	RAMBLING RD		2014	No				Built 1971; Dbox 2014
Raymond Road	M09-0131	62 RAMBLING RD	RAMBLING RD			No				Built 1971
Raymond Road	M09-0173	67 RAMBLING RD	RAMBLING RD		2011	No				Built 1971; D-box 2011
Raymond Road	M09-0138	7 RAMBLING RD	RAMBLING RD		1988	No				Built 1970; New leach pits 1988
Raymond Road	M09-0130	70 RAMBLING RD	RAMBLING RD		1997	No				Built 1971; Dbox 1997
Raymond Road	L08-0007	101 RAYMOND RD	RAYMOND RD		2015	No				Built 1985; D-box repaired 2015
Raymond Road	M08-0204	14 RAYMOND RD	RAYMOND RD			2004			2	
Raymond Road	L08-0009	150 RAYMOND RD	RAYMOND RD							No Records
Raymond Road	M08-0203	19 RAYMOND RD	RAYMOND RD		2013	No			12	Repaired D-box; Built 1994;
Raymond Road	L08-0001	199 RAYMOND RD	RAYMOND RD			No			11	Built 1962; Repaired 1989; New system designed 2019
Raymond Road	L08-0012	200 RAYMOND RD	RAYMOND RD			No			2	150" of coarse gravel; no GW; 1974 Design Plan
Raymond Road	M08-0201	21 RAYMOND RD	RAYMOND RD			No				Built 1994
Raymond Road	M08-0202	22 RAYMOND RD	RAYMOND RD			2002				Mounded system;
Route 20	K08-0093	225 RAYMOND RD	RAYMOND RD		2020	No				Built 1992; Passed 2014; 2020
Route 20	K08-0010	236 RAYMOND RD	RAYMOND RD							Built 1968; Repaired 1994
Route 20	K08-0009	239 RAYMOND RD	RAYMOND RD			No			2.2	Built 1974; repaired 1994
Route 20	K08-0008	245 RAYMOND RD	RAYMOND RD		2015	No				Built 1976; Dbox 1995; Dbox/tank 2015
Route 20	K08-0011	246 RAYMOND RD	RAYMOND RD		2013	1998				Built 1998; passed 2013
Route 20	K08-0012	250 RAYMOND RD	RAYMOND RD		2011	No				Built 1974; Pass 2011
Raymond Road	M08-0101	29 RAYMOND RD	RAYMOND RD			2004				new system replaced 70s system
Raymond Road	M08-0205	3 RAYMOND RD	RAYMOND RD			1996			2	1996
Raymond Road	M08-0102	39 RAYMOND RD	RAYMOND RD		2016	No			2	Built 1974; repaired 2016
Raymond Road	M08-0103	49 RAYMOND RD	RAYMOND RD		2006	No				Built 1974; repaired 2016
Raymond Road	M08-0117	52 RAYMOND RD	RAYMOND RD		2006	No				Built 1969; repaired D-box 2006
Raymond Road	M08-0118	60 RAYMOND RD	RAYMOND RD		1998	No				Built 1969; repaired D-box 1998
Raymond Road	M08-0119	66 RAYMOND RD	RAYMOND RD		2007	No				Built 1973; repaired D-box 2007
Raymond Road	M08-0002	75 RAYMOND RD	RAYMOND RD			1998			8	Built 1998
Raymond Road	M08-0004	79 RAYMOND RD	RAYMOND RD			No				Variance for pumped system
Raymond Road	M08-0003	80 RAYMOND RD	RAYMOND RD		2011	No				Built 1973; repaired D-box 2011
Raymond Road	M08-0005	85 RAYMOND RD	RAYMOND RD		2019	2019			3	Built 2019; Pumped system; metal tank
Raymond Road	L08-0006	93 RAYMOND RD	RAYMOND RD		2020	2000	Yes- GW			Built 2000
Raymond Road	L08-0002	RAYMOND RD	RAYMOND RD							
Raymond Road	L08-0008	RAYMOND RD	RAYMOND RD							
Raymond Road	L08-0010	RAYMOND RD	RAYMOND RD							
Raymond Road	L08-0013	RAYMOND RD	RAYMOND RD							
Raymond Road	M08-0001	RAYMOND RD	RAYMOND RD							
Raymond Road	M08-0206	RAYMOND RD	RAYMOND RD							
Raymond Road	M08-0207	RAYMOND RD	RAYMOND RD							
Raymond Road	M08-0208	RAYMOND RD	RAYMOND RD							
Raymond Road	M08-0209	RAYMOND RD	RAYMOND RD							
Raymond Road	K05-0430	11 REVOLUTIONARY RD	REVOLUTIONARY RD		2017	Yes			0.5	Built 1970; 2013 Replaced; 2017 Pass;
Raymond Road	K05-0425	12 REVOLUTIONARY RD	REVOLUTIONARY RD							Built 1969; Pass 2008-dbox;
Raymond Road	K05-0426	20 REVOLUTIONARY RD	REVOLUTIONARY RD		2013	No			0.5	Built 1969; Replaced 1991; Pass 2013
Raymond Road	K05-0429	21 REVOLUTIONARY RD	REVOLUTIONARY RD		2010	Yes				1997 Dbox; Replaced 2010

Study Area	Unique CAMA ID	Address	Street	Title 5 Failure	Title 5 Pass	Title 5 Compliant	Variance	4+ Pumps/yr	Perc Rate (MPI)	NOTES
Raymond Road	K05-0428	27 REVOLUTIONARY RD	REVOLUTIONARY RD		2018	No				Built 1970; D-box 2018
Raymond Road	K05-0427	28 REVOLUTIONARY RD	REVOLUTIONARY RD			No			2.5	Built 1984; Dbox 1995; Pass 1998;
Raymond Road	K05-0424	6 REVOLUTIONARY RD	REVOLUTIONARY RD		1996	No				Built 1969; Pass 1996-Dbox;
Route 20 East	K11-0201	101 RIVER RD	RIVER RD							
Route 20 East	K11-0205	105 RIVER RD	RIVER RD							
Route 20 East	K11-0204	111 RIVER RD	RIVER RD							
Goodman Hill	J11-0100	91 RIVER RD	RIVER RD							
Route 20	K07-0027	0 ROADWAY UNIT ROADWAY	ROADWAY							
Raymond Road	K06-0201	24 ROBBINS RD	ROBBINS RD		2016	No				Built 1984; Dbox 2016
Raymond Road	K06-0226	31 ROBBINS RD	ROBBINS RD	2011	2011	2011	2 - 3' separation and poly barrier			Built 1966, repaired 1990; Failed 2011, replaced; Needs Nitrogen reduction system for 3 bed or more
Raymond Road	K06-0225	35 ROBBINS RD	ROBBINS RD		2007	No				1997 drywell repa; Pass 2007
Raymond Road	K06-0222	41 ROBBINS RD	ROBBINS RD		2015	2015			4	Old system - pre-1960 Replaced in 2016
Raymond Road	K06-0206	42 ROBBINS RD	ROBBINS RD			No				Built 1959
Raymond Road	K06-0220	53 ROBBINS RD	ROBBINS RD		2020	Yes				Built 1959; 2003 Replacement; 2012 Pass; 2020 Pass
Raymond Road	K06-0219	57 ROBBINS RD	ROBBINS RD		2000	Yes				Built 1959; Replaced 2000
Raymond Road	K06-0210	58 ROBBINS RD	ROBBINS RD		2015	Yes				Built 1959; Replaced 1997; Pass 2015;
Raymond Road	K06-0218	61 ROBBINS RD	ROBBINS RD		2016	No				Built 1959; Dbox 2016
Raymond Road	K06-0211	62 ROBBINS RD	ROBBINS RD		2015	Yes				Built 1959; Replaced 1985; Replaced 2015; 2002 Pass;
Raymond Road	K06-0217	65 ROBBINS RD	ROBBINS RD			No				Built 1959;
Raymond Road	K06-0212	66 ROBBINS RD	ROBBINS RD	2015	2015	Yes				Built 1959; 2015 Fail/replacement;
Raymond Road	K06-0216	69 ROBBINS RD	ROBBINS RD		2013	No				Built 1959; Replaced 1971; Pass 2013
Raymond Road	K06-0213	70 ROBBINS RD	ROBBINS RD		2009	Yes	3' separation & 20' to bldg			Built 1959; Replaced 2009
Raymond Road	K06-0214	74 ROBBINS RD	ROBBINS RD			No				Built 1959;
Raymond Road	K06-0196	80 ROBBINS RD	ROBBINS RD		2018	No				Built 1959; Replaced 1984; Pass 2018
Raymond Road	K06-0168	83 ROBBINS RD	ROBBINS RD	2019	2019	Yes	Conditions: vent system 15.405 local upgrade (3' separation to GW, use of bed sytsem			Built 1959; 2003 Passed; Replaced 2019
Raymond Road	K06-0197	86 ROBBINS RD	ROBBINS RD			No				Built 1959
Raymond Road	K06-0198	92 ROBBINS RD	ROBBINS RD		2012	No				Built 1959; Replaced tank, dbox in 2012
Raymond Road	K06-0167	93 ROBBINS RD	ROBBINS RD							Built 1959
Raymond Road	K06-0205	ROBBINS RD	ROBBINS RD							
Raymond Road	K06-0304	ROBBINS RD	ROBBINS RD							
Raymond Road	M08-0151	11 ROBERT FROST RD	ROBERT FROST RD							
Raymond Road	M08-0182	19 ROBERT FROST RD	ROBERT FROST RD							
Raymond Road	M08-0183	27 ROBERT FROST RD	ROBERT FROST RD							
Raymond Road	M08-0198	30 ROBERT FROST RD	ROBERT FROST RD							
Raymond Road	M08-0184	35 ROBERT FROST RD	ROBERT FROST RD							
Raymond Road	M08-0185	38 ROBERT FROST RD	ROBERT FROST RD							
Raymond Road	M08-0152	6 ROBERT FROST RD	ROBERT FROST RD							
Raymond Road	J06-0158	13 ROLLING LN	ROLLING LN							
Raymond Road	J06-0122	19 ROLLING LN	ROLLING LN							
Raymond Road	J06-0121	21 ROLLING LN	ROLLING LN							
Raymond Road	J06-0700	30 ROLLING LN	ROLLING LN							
Raymond Road	J06-0120	31 ROLLING LN	ROLLING LN							
Raymond Road	J06-0119	35 ROLLING LN	ROLLING LN							
Raymond Road	J05-0118	41 ROLLING LN	ROLLING LN							
Raymond Road	J05-0117	47 ROLLING LN	ROLLING LN							
Raymond Road	J06-0129	50 ROLLING LN	ROLLING LN							
Raymond Road	J06-0157	9 ROLLING LN	ROLLING LN							
Raymond Road	J06-0156	ROLLING LN	ROLLING LN							
Route 20 East	K10-0109	17 SINGLETARY LN	SINGLETARY LN							
Goodman Hill	K10-0126	18 SINGLETARY LN	SINGLETARY LN							
Goodman Hill	K10-0125	24 SINGLETARY LN	SINGLETARY LN							
Route 20 East	K10-0114	25 SINGLETARY LN	SINGLETARY LN							
Goodman Hill	K10-0115	31 SINGLETARY LN	SINGLETARY LN							
Goodman Hill	K10-0124	32 SINGLETARY LN	SINGLETARY LN							
Goodman Hill	K10-0128	33 SINGLETARY LN	SINGLETARY LN							
Goodman Hill	K10-0127	4 SINGLETARY LN	SINGLETARY LN							
Goodman Hill	K09-0123	40 SINGLETARY LN	SINGLETARY LN							
Route 20 East	K09-0105	41 SINGLETARY LN	SINGLETARY LN							
Route 20 East	K09-0104	45 SINGLETARY LN	SINGLETARY LN							
Goodman Hill	K09-0116	46 SINGLETARY LN	SINGLETARY LN							
Goodman Hill	K10-0112	5 SINGLETARY LN	SINGLETARY LN							
Route 20 East	K09-0103	57 SINGLETARY LN	SINGLETARY LN							
Route 20	K08-0038	0 STATION RD	STATION RD							
Route 20	K08-0039-1	34 STATION RD	STATION RD							
Route 20	K08-0039-2	36 STATION RD	STATION RD							
Route 20	K08-0040-1	38 STATION RD	STATION RD							
Route 20	K08-0040-2	40 STATION RD	STATION RD							
Route 20	K05-0021	11 STONE RD	STONE RD							
Route 20	K06-0305	16 STONE RD	STONE RD							
Raymond Road	K05-0022	17 STONE RD	STONE RD							
Raymond Road	K06-0307	24 STONE RD	STONE RD							
Raymond Road	K05-0023	25 STONE RD	STONE RD							
Raymond Road	K05-0024	29 STONE RD	STONE RD							
Raymond Road	K05-0026	35 STONE RD	STONE RD							
Raymond Road	K06-0302	36 STONE RD	STONE RD							
Raymond Road	K06-0301	40 STONE RD	STONE RD							
Raymond Road	K06-0001	44 STONE RD	STONE RD							
Raymond Road	K05-0188	45 STONE RD	STONE RD							
Raymond Road	K05-0187	53 STONE RD	STONE RD							
Raymond Road	K05-0189	54 STONE RD	STONE RD							
Raymond Road	K05-0190	62 STONE RD	STONE RD							
Raymond Road	K05-0186	63 STONE RD	STONE RD							

Study Area	Unique CAMA ID	Address	Street	Title 5 Failure	Title 5 Pass	Title 5 Compliant	Variance	4+ Pumps/yr	Perc Rate (MPI)	NOTES
Raymond Road	K05-0185	69 STONE RD	STONE RD							
Route 20	K06-0303	8 STONE RD	STONE RD							
Raymond Road	K05-0177	83 STONE RD	STONE RD							
Raymond Road	K05-0174	86 STONE RD	STONE RD							
Raymond Road	K05-0176	89 STONE RD	STONE RD							
Raymond Road	J05-0161	94 STONE RD	STONE RD							
Raymond Road	J05-0175	95 STONE RD	STONE RD							
Raymond Road	K05-0030	REAR STONE RD	STONE RD							
Raymond Road	K05-0439	STONE RD	STONE RD							
Raymond Road	J06-0327	14 STONEBROOK RD	STONEBROOK RD							
Raymond Road	J06-0314	15 STONEBROOK RD	STONEBROOK RD							
Raymond Road	J06-0326	18 STONEBROOK RD	STONEBROOK RD							
Raymond Road	J06-0313	21 STONEBROOK RD	STONEBROOK RD							
Raymond Road	J06-0325	26 STONEBROOK RD	STONEBROOK RD							
Raymond Road	J06-0312	29 STONEBROOK RD	STONEBROOK RD							
Raymond Road	J06-0316	3 STONEBROOK RD	STONEBROOK RD							
Raymond Road	J06-0324	32 STONEBROOK RD	STONEBROOK RD							
Raymond Road	J06-0311	33 STONEBROOK RD	STONEBROOK RD							
Raymond Road	J06-0310	41 STONEBROOK RD	STONEBROOK RD							
Raymond Road	J06-0309	47 STONEBROOK RD	STONEBROOK RD							
Raymond Road	J06-0315	9 STONEBROOK RD	STONEBROOK RD							
Raymond Road	J06-0020	14 TALL PINE DR	TALL PINE DR							
Raymond Road	J06-0023-0-01	40 TALL PINE DR UNIT 01	TALL PINE DR							
Raymond Road	J06-0023-0-02	40 TALL PINE DR UNIT 02	TALL PINE DR							
Raymond Road	J06-0023-0-03	40 TALL PINE DR UNIT 03	TALL PINE DR							
Raymond Road	J06-0023-0-04	40 TALL PINE DR UNIT 04	TALL PINE DR							
Raymond Road	J06-0023-0-05	40 TALL PINE DR UNIT 05	TALL PINE DR							
Raymond Road	J06-0023-0-06	40 TALL PINE DR UNIT 06	TALL PINE DR							
Raymond Road	J06-0023-0-07	40 TALL PINE DR UNIT 07	TALL PINE DR							
Raymond Road	J06-0023-0-08	40 TALL PINE DR UNIT 08	TALL PINE DR							
Raymond Road	J06-0023-0-09	40 TALL PINE DR UNIT 09	TALL PINE DR							
Raymond Road	J06-0023-0-10	40 TALL PINE DR UNIT 10	TALL PINE DR							
Raymond Road	J06-0023-0-11	40 TALL PINE DR UNIT 11	TALL PINE DR							
Raymond Road	J06-0023-0-12	40 TALL PINE DR UNIT 12	TALL PINE DR							
Raymond Road	J06-0023-0-13	40 TALL PINE DR UNIT 13	TALL PINE DR							
Raymond Road	J06-0023-0-14	40 TALL PINE DR UNIT 14	TALL PINE DR							
Raymond Road	J06-0023-0-15	40 TALL PINE DR UNIT 15	TALL PINE DR							
Raymond Road	J06-0023-0-16	40 TALL PINE DR UNIT 16	TALL PINE DR							
Raymond Road	J06-0023-0-17	40 TALL PINE DR UNIT 17	TALL PINE DR							
Raymond Road	J06-0023-0-18	40 TALL PINE DR UNIT 18	TALL PINE DR							
Raymond Road	J06-0023-0-19	40 TALL PINE DR UNIT 19	TALL PINE DR							
Raymond Road	J06-0023-0-20	40 TALL PINE DR UNIT 20	TALL PINE DR							
Raymond Road	J06-0023-0-21	40 TALL PINE DR UNIT 21	TALL PINE DR							
Raymond Road	J06-0023-0-22	40 TALL PINE DR UNIT 22	TALL PINE DR							
Raymond Road	J06-0023-0-23	40 TALL PINE DR UNIT 23	TALL PINE DR							
Raymond Road	J06-0023-0-24	40 TALL PINE DR UNIT 24	TALL PINE DR							
Raymond Road	J06-0023-0-25	40 TALL PINE DR UNIT 25	TALL PINE DR							
Raymond Road	J06-0023-0-26	40 TALL PINE DR UNIT 26	TALL PINE DR							
Raymond Road	J06-0500	TALL PINE DR	TALL PINE DR							
Goodman Hill	J08-0206	12 TAYLOR RD	TAYLOR RD							
Goodman Hill	J08-0207	18 TAYLOR RD	TAYLOR RD							
Goodman Hill	J08-0209	21 TAYLOR RD	TAYLOR RD							
Goodman Hill	J08-0208	24 TAYLOR RD	TAYLOR RD							
Goodman Hill	J08-0203	5 TAYLOR RD	TAYLOR RD							
Goodman Hill	J08-0204	6 TAYLOR RD	TAYLOR RD							
Raymond Road	J07-0110	11 TRAILSIDE CIR	TRAILSIDE CIR							
Raymond Road	J07-0113	12 TRAILSIDE CIR	TRAILSIDE CIR							
Raymond Road	J07-0111	17 TRAILSIDE CIR	TRAILSIDE CIR							
Raymond Road	J07-0112	18 TRAILSIDE CIR	TRAILSIDE CIR							
Raymond Road	J07-0109	3 TRAILSIDE CIR	TRAILSIDE CIR							
Raymond Road	J07-0114	4 TRAILSIDE CIR	TRAILSIDE CIR							
Raymond Road	J07-0100	TRAILSIDE CIR	TRAILSIDE CIR							
Route 20	K06-0010	11 TREVOR WAY	TREVOR WAY							
Route 20	K06-0601	12 TREVOR WAY	TREVOR WAY							
Route 20	K06-0009	8 TREVOR WAY	TREVOR WAY							
Route 20	K06-0011	9 TREVOR WAY	TREVOR WAY							
Route 20	K08-0073	0 UNION AVE	UNION AVE							
Route 20	K08-0070	1 UNION AVE	UNION AVE							
Goodman Hill	J08-0200	128 UNION AVE	UNION AVE							
Goodman Hill	J08-0400-2	135 UNION AVE	UNION AVE							
Goodman Hill	J08-0400-1	135-2 UNION AVE	UNION AVE							
Goodman Hill	J08-0201	138 UNION AVE	UNION AVE							
Goodman Hill	J08-0010	143 UNION AVE	UNION AVE							
Route 20	K08-0071	15 UNION AVE	UNION AVE							
Goodman Hill	J08-0008	151 UNION AVE	UNION AVE							
Goodman Hill	J08-0021	172 UNION AVE	UNION AVE							
Goodman Hill	J08-0036	173 UNION AVE	UNION AVE							
Goodman Hill	J08-0035	177 UNION AVE	UNION AVE							
Route 20	K08-0076	18 UNION AVE	UNION AVE		2004	No	remedial system - Bio-Microbics		2	Built 1984; Replaced 2004;
Goodman Hill	J08-0106	201 UNION AVE	UNION AVE							Built 1984;
Route 20	K08-0090	21 UNION AVE	UNION AVE							
Route 20	K08-0075	22 UNION AVE	UNION AVE		2018	No				Built 1972; Pass 2018

Study Area	Unique CAMA ID	Address	Street	Title 5 Failure	Title 5 Pass	Title 5 Compliant	Variance	4+ Pumps/yr	Perc Rate (MPI)	NOTES
Route 20	K08-0091	23 UNION AVE	UNION AVE							No Records
Route 20	K08-0060	25 UNION AVE	UNION AVE		2007	No				Built 1974; Pass-dbox 2007;
Route 20	K08-0056	27 UNION AVE	UNION AVE		2003	Yes			2	Built 1975; replaced 2003;
Route 20	K08-0074-3	28 UNION AVE	UNION AVE			No				Built 1968;
Route 20	K08-0074-1	28-2 UNION AVE	UNION AVE							
Route 20	K08-0074-2	28-3 UNION AVE	UNION AVE							
Route 20	K07-0018-4	31 UNION AVE	UNION AVE			No				; Pass 2017
Route 20	K07-0017	33 UNION AVE	UNION AVE			No				Built 1973; 2008 Pass; Pass 2017;
Route 20	K08-0054	37 UNION AVE	UNION AVE							No Records
Route 20	K08-0053	39 UNION AVE	UNION AVE	2017		No	Remedial Use - Presby			Built 1978; Replaced 2018-Presby
Route 20	K08-0041-1	44 UNION AVE	UNION AVE							1960- (44-46)
Route 20	K08-0041-2	46 UNION AVE	UNION AVE							1960 (44-46)
Route 20	K08-0042	50 UNION AVE	UNION AVE							Built 1965
Route 20	K08-0044	56 UNION AVE	UNION AVE			No				Built 1968; Pass 2007;
Route 20	K08-0052	57 UNION AVE	UNION AVE		2018		3 variances		3	Re-built 2018 w/ variances
Route 20	K08-0045	60 UNION AVE	UNION AVE		2007					Pass 2007
Route 20	K08-0046	64 UNION AVE	UNION AVE			No				Built 1980;
Route 20	K08-0051	65 UNION AVE	UNION AVE		2013	No	Presby systems			Built 1970 / 1980 (different buildings); Replaced with Presby 2013
Route 20	K08-0087	71 UNION AVE	UNION AVE							2001 replace; 2008 Replaced.
Route 20	K08-0050-1	75 UNION AVE	UNION AVE			No				Built 1968; 1982 repair
Route 20	K08-0047	80 UNION AVE	UNION AVE							1999 Replace; 2011 Pass-Dbox
Route 20	K08-0050-2	81 UNION AVE	UNION AVE							
Route 20	K08-0043	OFF UNION AVE	UNION AVE							
Goodman Hill	J08-0009	UNION AVE	UNION AVE							
Goodman Hill	J08-0022	UNION AVE	UNION AVE							
Goodman Hill	J08-0202	UNION AVE	UNION AVE							
Raymond Road	K07-0016	UNION AVE	UNION AVE							
Route 20	K08-0055	UNION AVE	UNION AVE							
Route 20	K08-0057	UNION AVE	UNION AVE							
Route 20	K05-0216	10 UPLOOK DR	UPLOOK DR							
Route 20	K05-0209	11 UPLOOK DR	UPLOOK DR							
Route 20	K05-0211	6 UPLOOK DR	UPLOOK DR							
Route 20	K05-0210	7 UPLOOK DR	UPLOOK DR							
Goodman Hill	K10-0206	11 WALKER FARM RD	WALKER FARM RD							
Goodman Hill	J10-0101	16 WALKER FARM RD	WALKER FARM RD							
Goodman Hill	J10-0103	24 WALKER FARM RD	WALKER FARM RD							
Goodman Hill	K10-0205	29 WALKER FARM RD	WALKER FARM RD							
Goodman Hill	J10-0104	32 WALKER FARM RD	WALKER FARM RD							
Goodman Hill	K10-0204	39 WALKER FARM RD	WALKER FARM RD							
Goodman Hill	J10-0105	40 WALKER FARM RD	WALKER FARM RD							
Goodman Hill	K10-0203	6 WALKER FARM RD	WALKER FARM RD							
Goodman Hill	J10-0102	WALKER FARM RD	WALKER FARM RD							
Goodman Hill	J09-0405	11 WALKUP RD	WALKUP RD							
Goodman Hill	J09-0403	12 WALKUP RD	WALKUP RD							
Goodman Hill	J09-0404	16 WALKUP RD	WALKUP RD							
Goodman Hill	J09-0402	6 WALKUP RD	WALKUP RD							
Goodman Hill	J09-0401	7 WALKUP RD	WALKUP RD							
Raymond Road	L08-0123	102 WARREN RD	WARREN RD							
Raymond Road	L08-0196	103 WARREN RD	WARREN RD							
Raymond Road	M09-0202	11 WARREN RD	WARREN RD							
Raymond Road	L08-0122	110 WARREN RD	WARREN RD							
Raymond Road	L08-0197	111 WARREN RD	WARREN RD							
Raymond Road	L08-0121	116 WARREN RD	WARREN RD							
Raymond Road	L08-0120	117 WARREN RD	WARREN RD							
Raymond Road	M09-0207	16 WARREN RD	WARREN RD							
Raymond Road	M09-0203	21 WARREN RD	WARREN RD							
Raymond Road	M09-0206	22 WARREN RD	WARREN RD							
Raymond Road	M09-0204	31 WARREN RD	WARREN RD							
Raymond Road	M09-0200	4 WARREN RD	WARREN RD							
Raymond Road	M09-0021	40 WARREN RD	WARREN RD							
Raymond Road	M09-0129	48 WARREN RD	WARREN RD							
Raymond Road	M09-0128	62 WARREN RD	WARREN RD							
Raymond Road	M08-0127	74 WARREN RD	WARREN RD							
Raymond Road	M08-0126	82 WARREN RD	WARREN RD							
Raymond Road	M08-0193	87 WARREN RD	WARREN RD							
Raymond Road	M08-0125	88 WARREN RD	WARREN RD							
Raymond Road	M08-0195	95 WARREN RD	WARREN RD							
Raymond Road	L08-0124	96 WARREN RD	WARREN RD							
Raymond Road	M09-0020	WARREN RD	WARREN RD							
Raymond Road	K05-0108	0 WASHINGTON DR	WASHINGTON DR							
Raymond Road	K05-0107	1 WASHINGTON DR	WASHINGTON DR							
Raymond Road	K05-0421	11 WASHINGTON DR	WASHINGTON DR							
Raymond Road	K05-0420	19 WASHINGTON DR	WASHINGTON DR							
Raymond Road	K05-0423	2 WASHINGTON DR	WASHINGTON DR							
Raymond Road	K05-0431	22 WASHINGTON DR	WASHINGTON DR							
Raymond Road	K05-0419	25 WASHINGTON DR	WASHINGTON DR							
Raymond Road	K05-0432	26 WASHINGTON DR	WASHINGTON DR							
Raymond Road	K05-0422	3 WASHINGTON DR	WASHINGTON DR							
Raymond Road	K05-0418	31 WASHINGTON DR	WASHINGTON DR							
Raymond Road	K05-0433	34 WASHINGTON DR	WASHINGTON DR							
Raymond Road	K05-0417	39 WASHINGTON DR	WASHINGTON DR							
Raymond Road	K06-0209	10 WILSHIRE ST	WILSHIRE ST							

Study Area	Unique CAMA ID	Address	Street	Title 5 Failure	Title 5 Pass	Title 5 Compliant	Variance	4+ Pumps/yr	Perc Rate (MPI)	NOTES
Raymond Road	K06-0221	21 WILSHIRE ST	WILSHIRE ST							
Raymond Road	K06-0503	28 WILSHIRE ST	WILSHIRE ST							
Raymond Road	K06-0207	3 WILSHIRE ST	WILSHIRE ST							
Raymond Road	K06-0208	4 WILSHIRE ST	WILSHIRE ST							
Goodman Hill	K09-0118	15 WINSOR RD	WINSOR RD							
Goodman Hill	K09-0122	18 WINSOR RD	WINSOR RD							
Goodman Hill	K09-0119	19 WINSOR RD	WINSOR RD							
Goodman Hill	K09-0121	22 WINSOR RD	WINSOR RD							
Goodman Hill	K09-0120	25 WINSOR RD	WINSOR RD							
Goodman Hill	K10-0317	35 WINSOR RD	WINSOR RD							
Goodman Hill	K10-0316	36 WINSOR RD	WINSOR RD							
Goodman Hill	K10-0315	40 WINSOR RD	WINSOR RD							
Goodman Hill	K10-0322	43 WINSOR RD	WINSOR RD							
Goodman Hill	K10-0314	46 WINSOR RD	WINSOR RD							
Goodman Hill	K09-0117	5 WINSOR RD	WINSOR RD							
Goodman Hill	K10-0313	52 WINSOR RD	WINSOR RD							
Goodman Hill	K10-0323	57 WINSOR RD	WINSOR RD							
Goodman Hill	K10-0312	60 WINSOR RD	WINSOR RD							
Goodman Hill	K10-0324	67 WINSOR RD	WINSOR RD							
Goodman Hill	K10-0310	68 WINSOR RD	WINSOR RD							
Goodman Hill	K10-0325	73 WINSOR RD	WINSOR RD							
Goodman Hill	K10-0309	74 WINSOR RD	WINSOR RD							
Goodman Hill	K10-0326	79 WINSOR RD	WINSOR RD							
Goodman Hill	K10-0308	80 WINSOR RD	WINSOR RD							
Goodman Hill	J10-0306	90 WINSOR RD	WINSOR RD							
Goodman Hill	J11-0202	39 WOLBACH RD	WOLBACH RD							
Goodman Hill	J11-0301	42 WOLBACH RD	WOLBACH RD							
Goodman Hill	J11-0300	46 WOLBACH RD	WOLBACH RD							
Goodman Hill	J11-0001	50 WOLBACH RD	WOLBACH RD							
Goodman Hill	J11-0201	WOLBACH RD	WOLBACH RD							
Goodman Hill	J11-0302	WOLBACH RD	WOLBACH RD							
Goodman Hill	J11-0303	WOLBACH RD	WOLBACH RD							
Goodman Hill	J11-0304	WOLBACH RD	WOLBACH RD							
Goodman Hill	J11-0305	WOLBACH RD	WOLBACH RD							
Goodman Hill	J11-0501	WOLBACH RD	WOLBACH RD							
Route 20	K07-0403	18 WOODLAND RD	WOODLAND RD							
Route 20	K07-0402	2 WOODLAND RD	WOODLAND RD							
Route 20	K07-0404	24 WOODLAND RD	WOODLAND RD							
Route 20	K07-0412	28 WOODLAND RD	WOODLAND RD							
Raymond Road	M09-0007	105 WOODSIDE RD	WOODSIDE RD							
Raymond Road	M09-0208	106 WOODSIDE RD	WOODSIDE RD							
Raymond Road	M09-0008	111 WOODSIDE RD	WOODSIDE RD							
Raymond Road	M09-0009	115 WOODSIDE RD	WOODSIDE RD							
Raymond Road	M09-0201	122 WOODSIDE RD	WOODSIDE RD							
Raymond Road	M09-0010	127 WOODSIDE RD	WOODSIDE RD							
Raymond Road	M09-0011	130 WOODSIDE RD	WOODSIDE RD							
Raymond Road	M09-0012	140 WOODSIDE RD	WOODSIDE RD							
Raymond Road	M09-0013	148 WOODSIDE RD	WOODSIDE RD							
Raymond Road	M09-0014	154 WOODSIDE RD	WOODSIDE RD							
Raymond Road	M09-0500-1	155 WOODSIDE RD	WOODSIDE RD							
Raymond Road	M09-0500-2	159 WOODSIDE RD	WOODSIDE RD							
Raymond Road	M09-0015	160 WOODSIDE RD	WOODSIDE RD							
Raymond Road	M09-0016	168 WOODSIDE RD	WOODSIDE RD							
Raymond Road	M09-0017	178 WOODSIDE RD	WOODSIDE RD							
Raymond Road	M09-0405	181 WOODSIDE RD	WOODSIDE RD							
Raymond Road	M09-0018	186 WOODSIDE RD	WOODSIDE RD							
Raymond Road	M09-0401	195 WOODSIDE RD	WOODSIDE RD							
Raymond Road	M09-0002	73 WOODSIDE RD	WOODSIDE RD							
Raymond Road	M09-0003	79 WOODSIDE RD	WOODSIDE RD							
Raymond Road	M09-0001	80 WOODSIDE RD	WOODSIDE RD							
Raymond Road	M09-0004	83 WOODSIDE RD	WOODSIDE RD							
Raymond Road	M09-0005	87 WOODSIDE RD	WOODSIDE RD							
Raymond Road	M09-0209	94 WOODSIDE RD	WOODSIDE RD							
Raymond Road	M09-0006	99 WOODSIDE RD	WOODSIDE RD							
Raymond Road	M09-0227	10 WRIGHT RD	WRIGHT RD		2014	2014				1971 system
Raymond Road	L09-0231	17 WRIGHT RD	WRIGHT RD		2009	No				Built 1960; Pass 2009; replaced dbox
Raymond Road	L09-0226	20 WRIGHT RD	WRIGHT RD		2014	2014				Built 1959; Replaced 2014
Raymond Road	L09-0232	25 WRIGHT RD	WRIGHT RD	Yes	2010	2010				Built 1971; Replaced 2010; Pumped to discharge
Raymond Road	L09-0225	28 WRIGHT RD	WRIGHT RD		2006	No				Built 1970; D-box 2006
Raymond Road	L09-0224	36 WRIGHT RD	WRIGHT RD		2013	No				Built 1970; Pass 2013
Raymond Road	L09-0233	37 WRIGHT RD	WRIGHT RD		2011	No				Built 1971; D-box 2011
Raymond Road	L09-0222	WRIGHT RD	WRIGHT RD							
Raymond Road	L09-0234	WRIGHT RD	WRIGHT RD							

Census Data

ALL TOPICS

Sudbury town, Middlesex County, Massachusetts

Population estimates, July 1, 2019, (V2019)

The 2020 Census is Happening Now. Respond Today.

QuickFacts

Sudbury town, Middlesex County, Massachusetts

QuickFacts provides statistics for all states and counties, and for cities and towns with a ***population of 5,000 or more***.

Table

PEOPLE	
Population	
Population estimates, July 1, 2019, (V2019)	**19,655**
Population estimates base, April 1, 2010, (V2019)	17,675
Population, percent change - April 1, 2010 (estimates base) to July 1, 2019, (V2019)	11.2%
Population, Census, April 1, 2010	17,659
Age and Sex	
Persons under 5 years, percent	△ 5.4%
Persons under 18 years, percent	△ 29.0%
Persons 65 years and over, percent	△ 15.7%
Female persons, percent	△ 50.0%
Race and Hispanic Origin	
White alone, percent	△ 84.5%
Black or African American alone, percent (a)	△ 0.9%
American Indian and Alaska Native alone, percent (a)	△ 0.0%
Asian alone, percent (a)	△ 10.8%
Native Hawaiian and Other Pacific Islander alone, percent (a)	△ 0.0%
Two or More Races, percent	△ 3.0%
Hispanic or Latino, percent (b)	△ 2.2%
White alone, not Hispanic or Latino, percent	△ 82.7%
Population Characteristics	
Veterans, 2014-2018	558
Foreign born persons, percent, 2014-2018	12.5%
Housing	
Housing units, July 1, 2019, (V2019)	X
Owner-occupied housing unit rate, 2014-2018	92.4%
Median value of owner-occupied housing units, 2014-2018	$677,900
Median selected monthly owner costs -with a mortgage, 2014-2018	$3,467
Median selected monthly owner costs -without a mortgage, 2014-2018	$1,472
Median gross rent, 2014-2018	$1,005
Building permits, 2019	X
Families & Living Arrangements	
Households, 2014-2018	6,355
Persons per household, 2014-2018	2.95
Living in same house 1 year ago, percent of persons age 1 year+, 2014-2018	94.4%
Language other than English spoken at home, percent of persons age 5 years+, 2014-2018	14.6%
Computer and Internet Use	
Households with a computer, percent, 2014-2018	97.8%
Households with a broadband Internet subscription, percent, 2014-2018	96.8%
Education	
High school graduate or higher, percent of persons age 25 years+, 2014-2018	98.9%
Bachelor's degree or higher, percent of persons age 25 years+, 2014-2018	78.7%
Health	
With a disability, under age 65 years, percent, 2014-2018	3.4%
Persons without health insurance, under age 65 years, percent	△ 0.1%

ALL TOPICS

Population estimates, July 1, 2019, (V2019)

Economy	Sudbury town, Middlesex County, Massachusetts
In civilian labor force, total, percent of population age 16 years+, 2014-2018	66.0%
In civilian labor force, female, percent of population age 16 years+, 2014-2018	56.1%
Total accommodation and food services sales, 2012 ($1,000) (c)	D
Total health care and social assistance receipts/revenue, 2012 ($1,000) (c)	88,212
Total manufacturers shipments, 2012 ($1,000) (c)	D
Total merchant wholesaler sales, 2012 ($1,000) (c)	338,831
Total retail sales, 2012 ($1,000) (c)	277,348
Total retail sales per capita, 2012 (c)	$15,307
Transportation	
Mean travel time to work (minutes), workers age 16 years+, 2014-2018	34.9
Income & Poverty	
Median household income (in 2018 dollars), 2014-2018	$176,570
Per capita income in past 12 months (in 2018 dollars), 2014-2018	$75,699
Persons in poverty, percent	▲ 2.9%

BUSINESSES

Businesses	
Total employer establishments, 2017	X
Total employment, 2017	X
Total annual payroll, 2017 ($1,000)	X
Total employment, percent change, 2016-2017	X
Total nonemployer establishments, 2018	X
All firms, 2012	2,506
Men-owned firms, 2012	1,321
Women-owned firms, 2012	821
Minority-owned firms, 2012	121
Nonminority-owned firms, 2012	2,323
Veteran-owned firms, 2012	293
Nonveteran-owned firms, 2012	2,101

GEOGRAPHY

Geography	
Population per square mile, 2010	727.5
Land area in square miles, 2010	24.27
FIPS Code	2501768260

About datasets used in this table

ALL TOPICS

Sudbury town, Middlesex County, Massachusetts

Value Notes

Estimates are not comparable to other geographic levels due to methodological differences that may exist between different data sources.

Population estimates, July 1, 2019, (V2019)

Some estimates presented here come from sample data, and thus have sampling errors that may render some apparent differences between geographies statistically indistinguishable. Click the Quick Info i
row in TABLE view to learn about sampling error.

The vintage year (e.g., V2019) refers to the final year of the series (2010 thru 2019). *Different vintage years of estimates are not comparable.*

Fact Notes

- **(a)** Includes persons reporting only one race
- **(b)** Hispanics may be of any race, so also are included in applicable race categories
- **(c)** Economic Census - Puerto Rico data are not comparable to U.S. Economic Census data

Value Flags

- **-** Either no or too few sample observations were available to compute an estimate, or a ratio of medians cannot be calculated because one or both of the median estimates falls in the lowest or open ended distribution.
- **D** Suppressed to avoid disclosure of confidential information
- **F** Fewer than 25 firms
- **FN** Footnote on this item in place of data
- **N** Data for this geographic area cannot be displayed because the number of sample cases is too small.
- **NA** Not available
- **S** Suppressed; does not meet publication standards
- **X** Not applicable
- **Z** Value greater than zero but less than half unit of measure shown

QuickFacts data are derived from: Population Estimates, American Community Survey, Census of Population and Housing, Current Population Survey, Small Area Health Insurance Estimates, Small Area Inco
Estimates, State and County Housing Unit Estimates, County Business Patterns, Nonemployer Statistics, Economic Census, Survey of Business Owners, Building Permits.

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Help for Survey Participants
FAQs
Director's Corner
Regional Offices
History
Research
Scientific Integrity
Census Careers
Business Opportunities
Congressional and Intergovernmental
Contact Us

FIND DATA
QuickFacts
Explore Census Data
2020 Census
2010 Census
Economic Census
Interactive Maps
Training & Workshops
Data Tools
Developers
Publications

BUSINESS & ECONOMY
Help With Your Forms
Economic Indicators
Economic Census
E-Stats
International Trade
Export Codes
NAICS
Governments
Longitudinal Employer-Household Dynamics (LEHD)
Survey of Business Owners

PEOPLE & HOUSEHOLDS
2020 Census
2010 Census
American Community Survey
Income
Poverty
Population Estimates
Population Projections
Health Insurance
Housing
International
Genealogy

SPECIAL TOPICS
Advisors, Centers and Research Programs
Statistics in Schools
Tribal Resources (AIAN)
Emergency Preparedness
Special Census Program
Data Linkage Infrastructure
Fraudulent Activity & Scams
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The 2020 Census is Happening Now. Respond Today.

QuickFacts

Sudbury town, Middlesex County, Massachusetts

QuickFacts provides statistics for all states and counties, and for cities and towns with a ***population of 5,000 or more***.

Table

ALL TOPICS	Sudbury town, Middlesex County, Massachusetts
Population estimates, July 1, 2019, (V2019)	**NA**
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Population estimates base, April 1, 2010, (V2019)	NA
Population estimates base, April 1, 2010, (V2018)	17,675
Population, percent change - April 1, 2010 (estimates base) to July 1, 2019, (V2019)	NA
Population, percent change - April 1, 2010 (estimates base) to July 1, 2018, (V2018)	11.0%
Population, Census, April 1, 2010	17,659
Age and Sex	
Persons under 5 years, percent	△ 5.4%
Persons under 18 years, percent	△ 29.0%
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Education	
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Bachelor's degree or higher, percent of persons age 25 years+, 2014-2018	78.7%

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Economy	
In civilian labor force, total, percent of population age 16 years+, 2014-2018	66.0%
In civilian labor force, female, percent of population age 16 years+, 2014-2018	58.7%
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Median household income (in 2018 dollars), 2014-2018	$176,570
Per capita income in past 12 months (in 2018 dollars), 2014-2018	$75,699
Persons in poverty, percent	▲ 2.9%

BUSINESSES

Businesses	
Total employer establishments, 2017	X
Total employment, 2017	X
Total annual payroll, 2017 ($1,000)	X
Total employment, percent change, 2016-2017	X
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All firms, 2012	2,506
Men-owned firms, 2012	1,321
Women-owned firms, 2012	821
Minority-owned firms, 2012	121
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Veteran-owned firms, 2012	293
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Population per square mile, 2010	727.5
Land area in square miles, 2010	24.27
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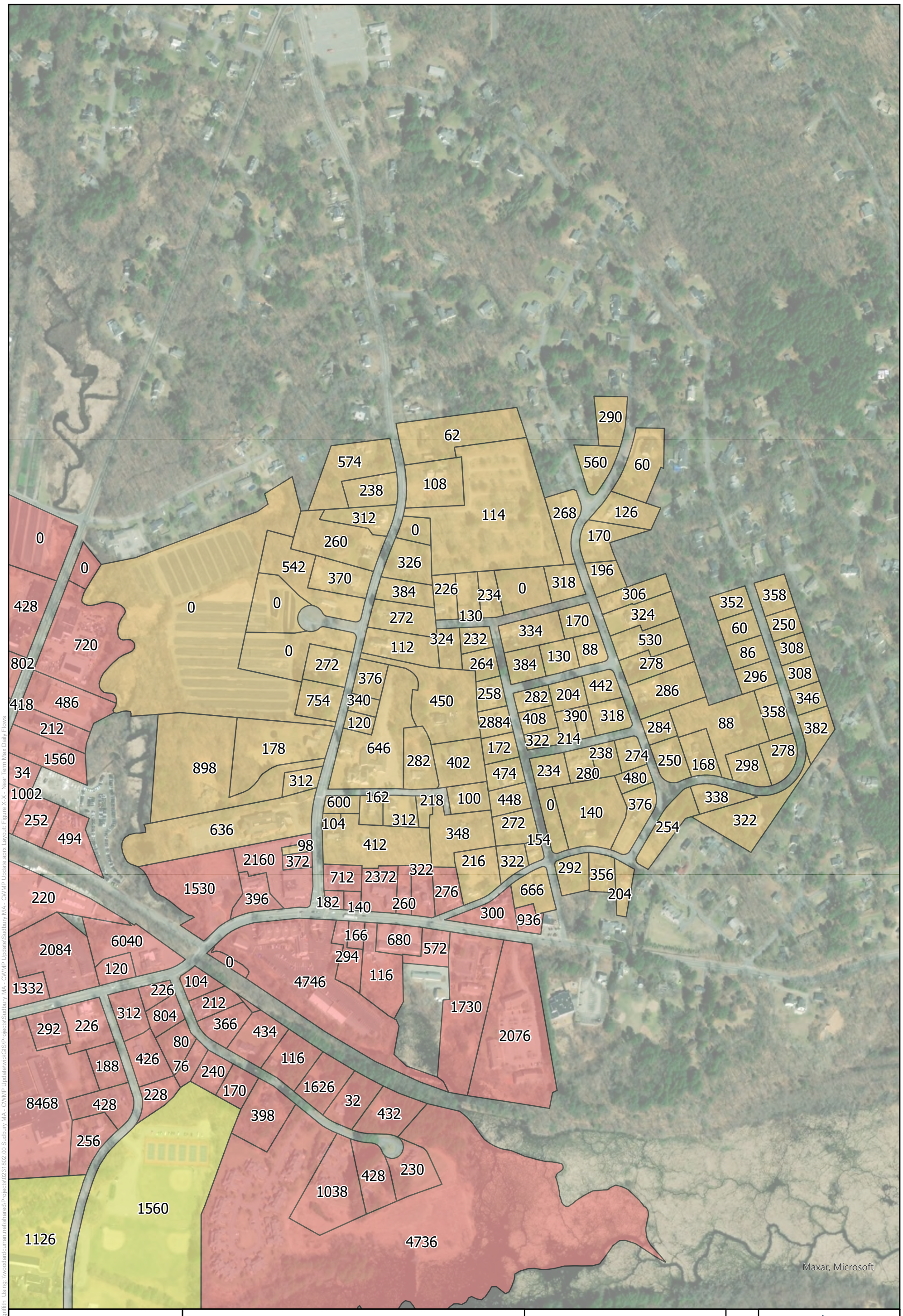


Goodman's Hill Project Area Near Term Max Daily Flows (gpd)

Legend

- Goodman's Hill Project Area
- Raymond Road North Project Area
- Raymond Road South Project Area
- Route 20 Project Area
- Route 20 East Project Area

CWMP Update
Town of Sudbury, MA

0 100 200 400 Feet

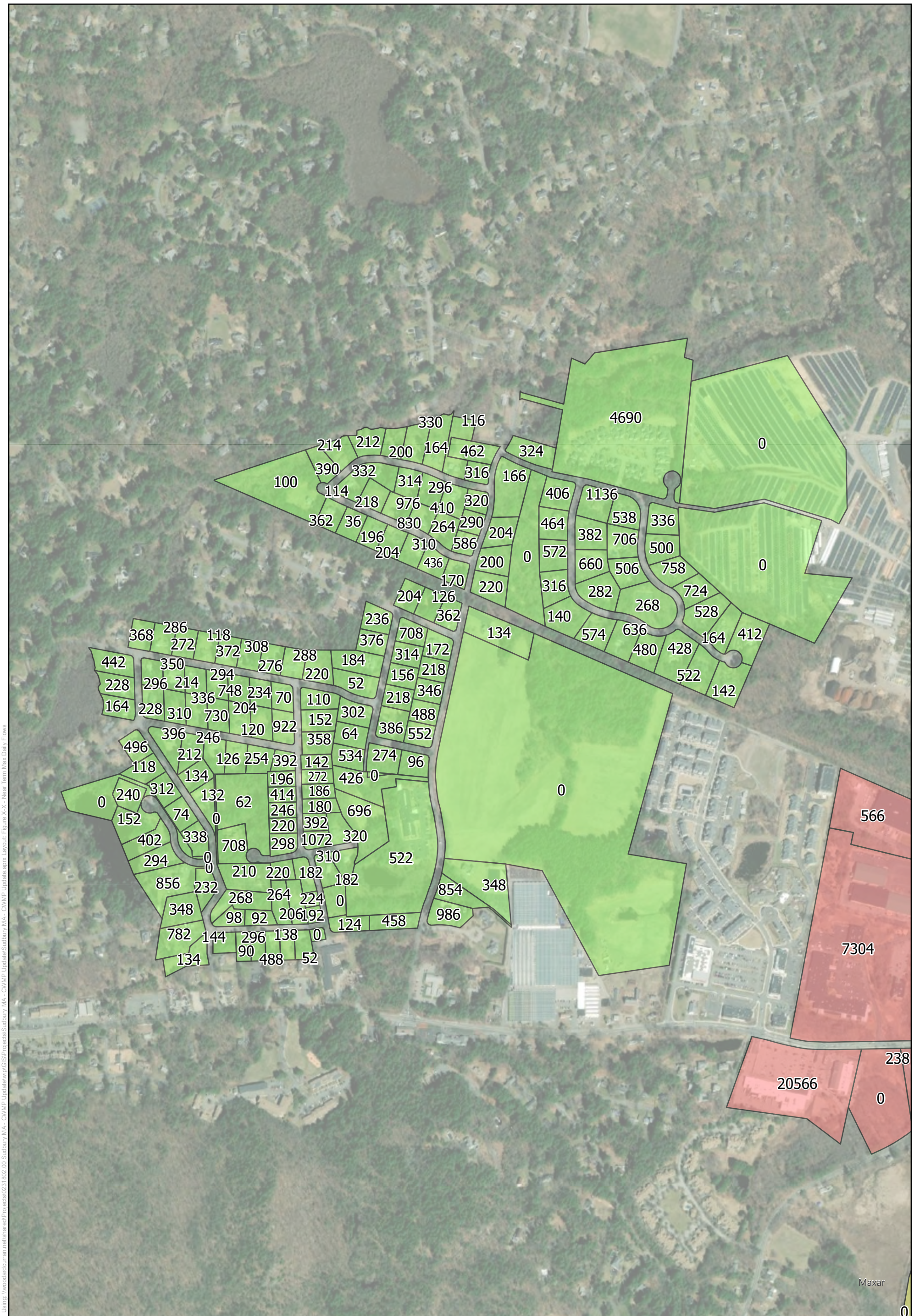
N

WOODARD & CURRAN

Project #: 0231802.00
Map Created: April 2021

Figure Exported: 4/13/2021 By: cgriffith Using: \\woodardcurran.net\shared\Projects\0231802.00 Sudbury MA - CWMP Update\wip\GIS\Projects\Sudbury MA - CWMP Update.aprx Layout: Figure X-X - Near Term Max Daily Flows

Third Party GIS Disclaimer: This map is for reference and graphical purposes only and should not be relied upon by third parties for any legal decisions.
Any reliance upon the map or data contained herein shall be at the users' sole risk. **Data Sources:**



Raymond Road North Project Area Near Term Max Daily Flows (gpd)

Legend

- Goodman's Hill Project Area
- Raymond Road North Project Area
- Raymond Road South Project Area
- Route 20 Project Area
- Route 20 East Project Area

CWMP Update
Town of Sudbury, MA

0 150 300 600 Feet

N

WOODARD &CURRAN

Project #: 0231802.00
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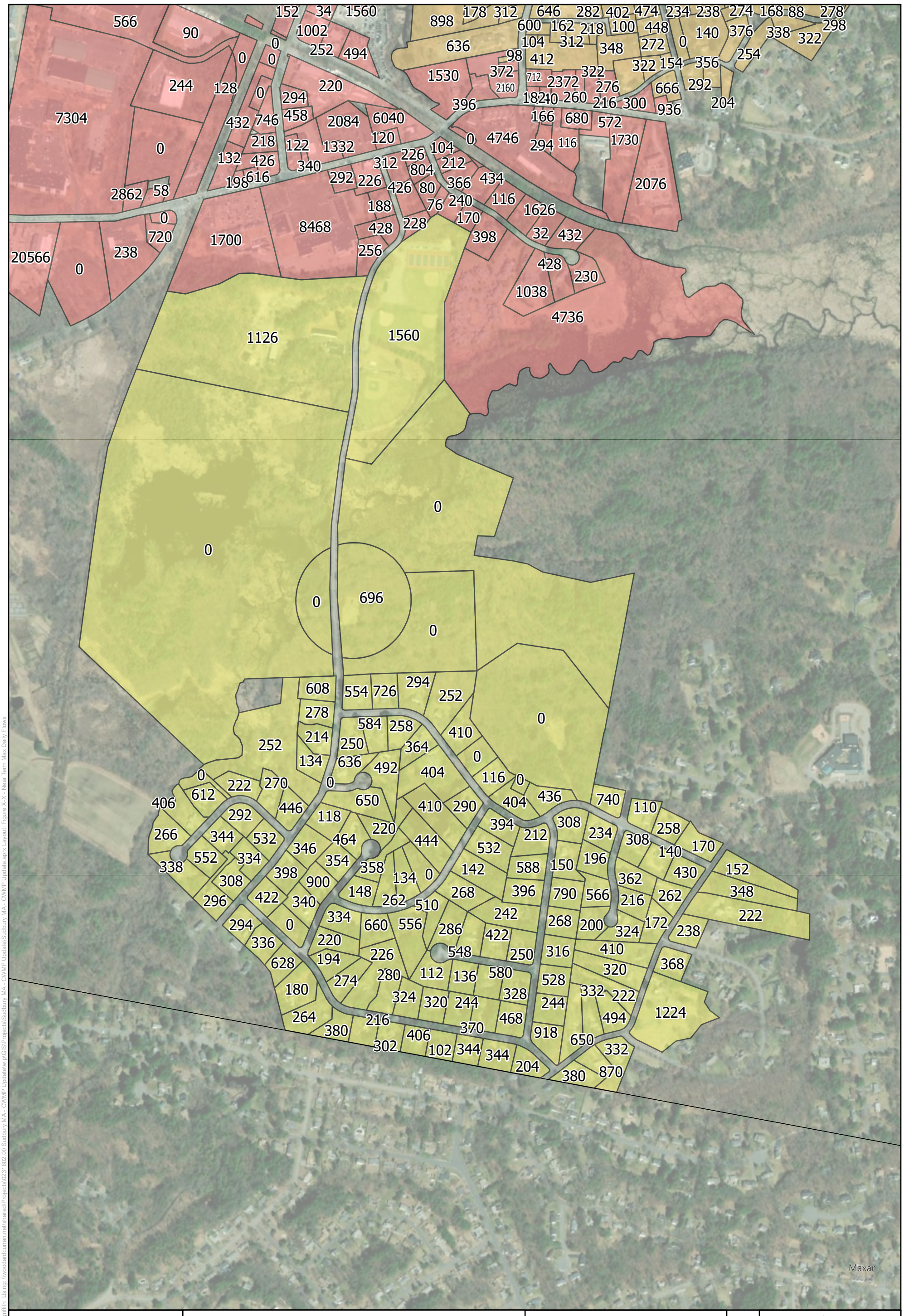

Raymond Road South Project Area Near Term Max Daily Flows (gpd)

Legend

- Goodman's Hill Project Area
- Raymond Road North Project Area
- Raymond Road South Project Area
- Route 20 Project Area
- Route 20 East Project Area

CWMP Update
Town of Sudbury, MA

0 150 300 600 Feet

N

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Project #: 0231802.00
Map Created: April 2021

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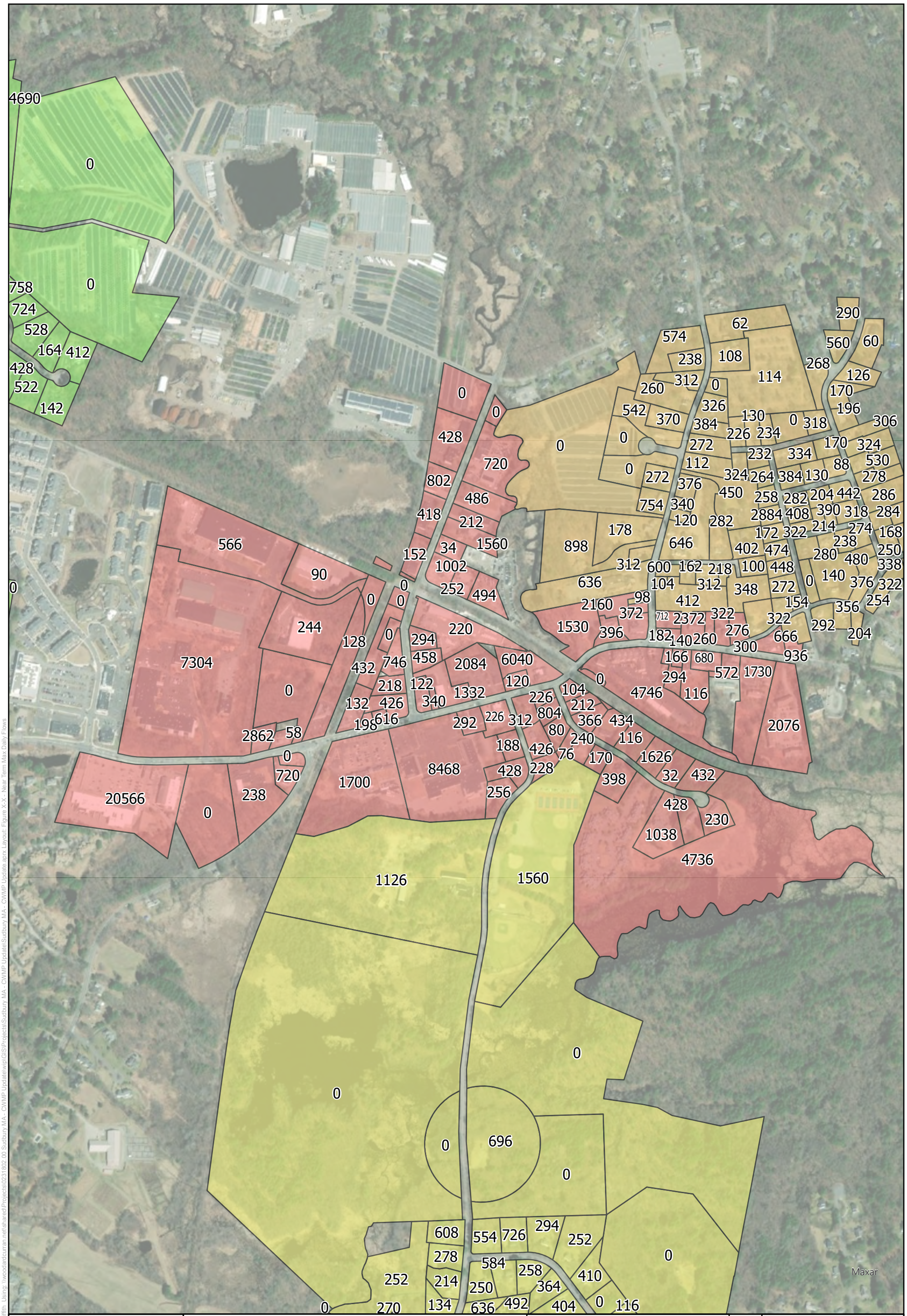

Route 20 Project Area Near Term Max Daily Flows (gpd)

Legend

- Goodman's Hill Project Area
- Raymond Road North Project Area
- Raymond Road South Project Area
- Route 20 Project Area
- Route 20 East Project Area

CWMP Update
Town of Sudbury, MA

0 150 300 600 Feet

N

WOODARD & CURRAN

Project #: 0231802.00
Map Created: April 2021

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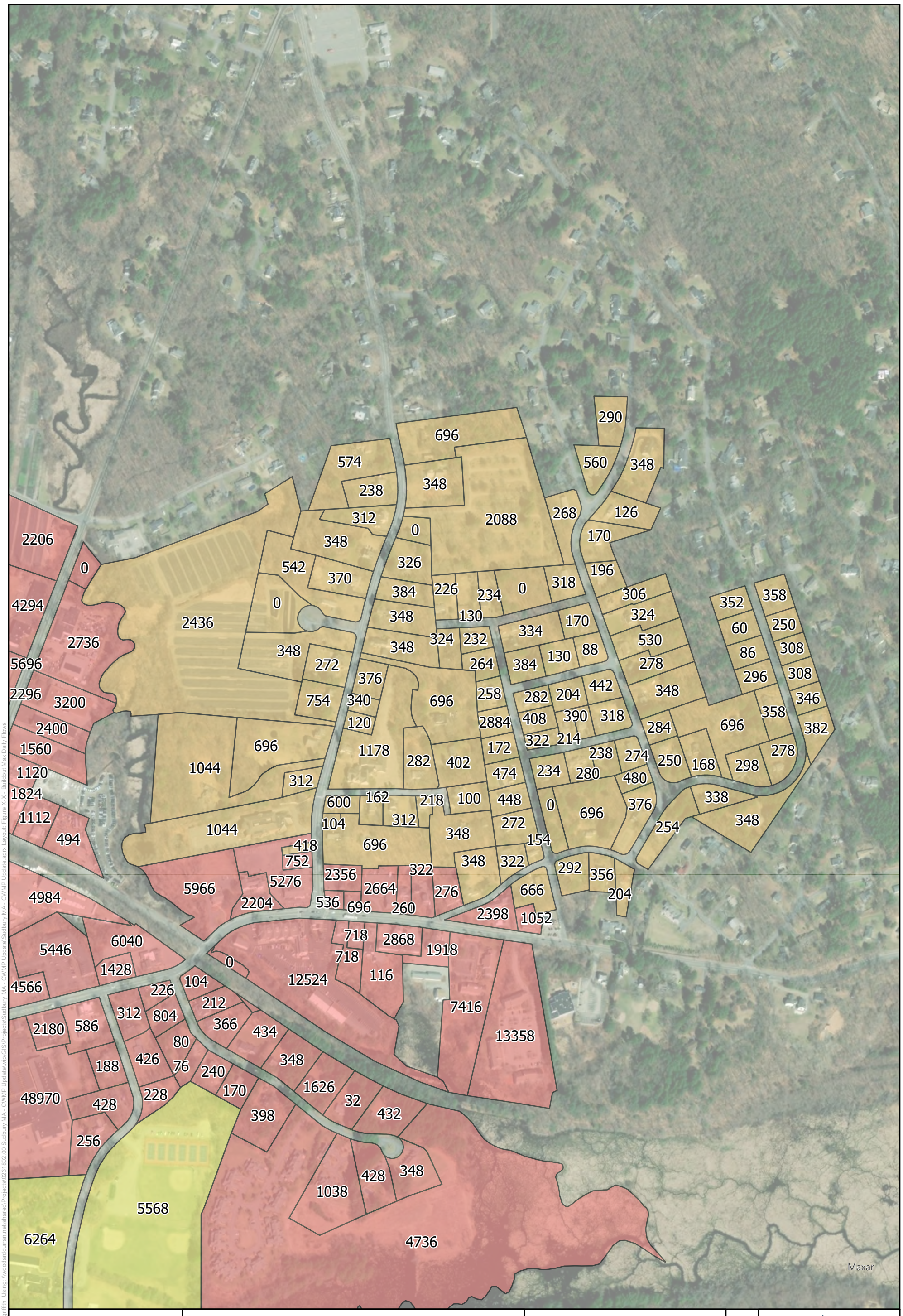

Goodman's Hill Project Area Buildout Max Daily Flows (gpd)

Legend

- Goodman's Hill Project Area
- Raymond Road North Project Area
- Raymond Road South Project Area
- Route 20 Project Area
- Route 20 East Project Area

CWMP Update
Town of Sudbury, MA

0 100 200 400 Feet

N

WOODARD & CURRAN

Project #: 0231802.00
Map Created: April 2021

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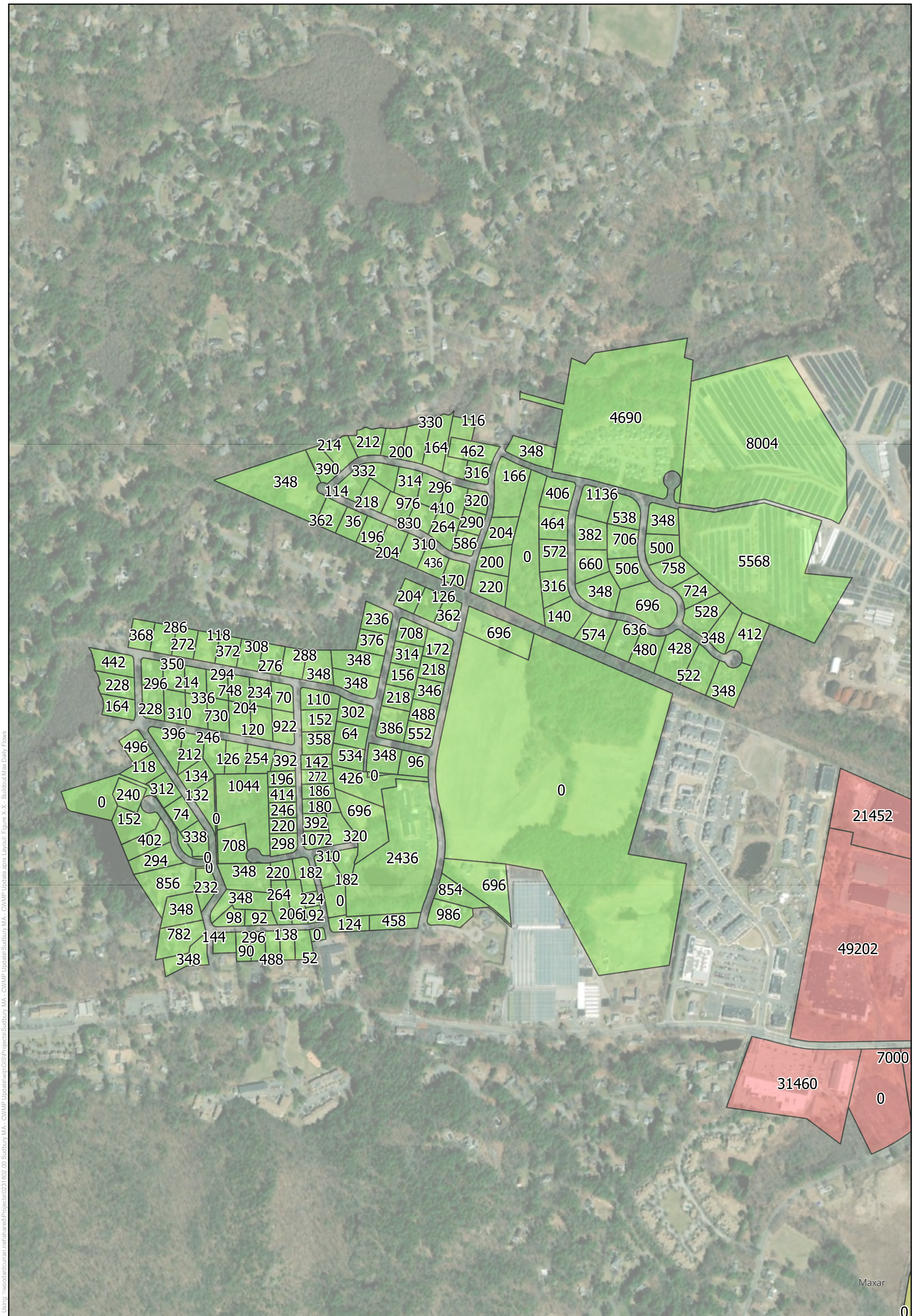

Raymond Road North Project Area Buildout Max Daily Flows (gpd)

Legend

- Goodman's Hill Project Area
- Raymond Road North Project Area
- Raymond Road South Project Area
- Route 20 Project Area
- Route 20 East Project Area

CWMP Update
Town of Sudbury, MA

0 150 300 600 Feet

N

WOODARD &CURRAN

Project #: 0231802.00
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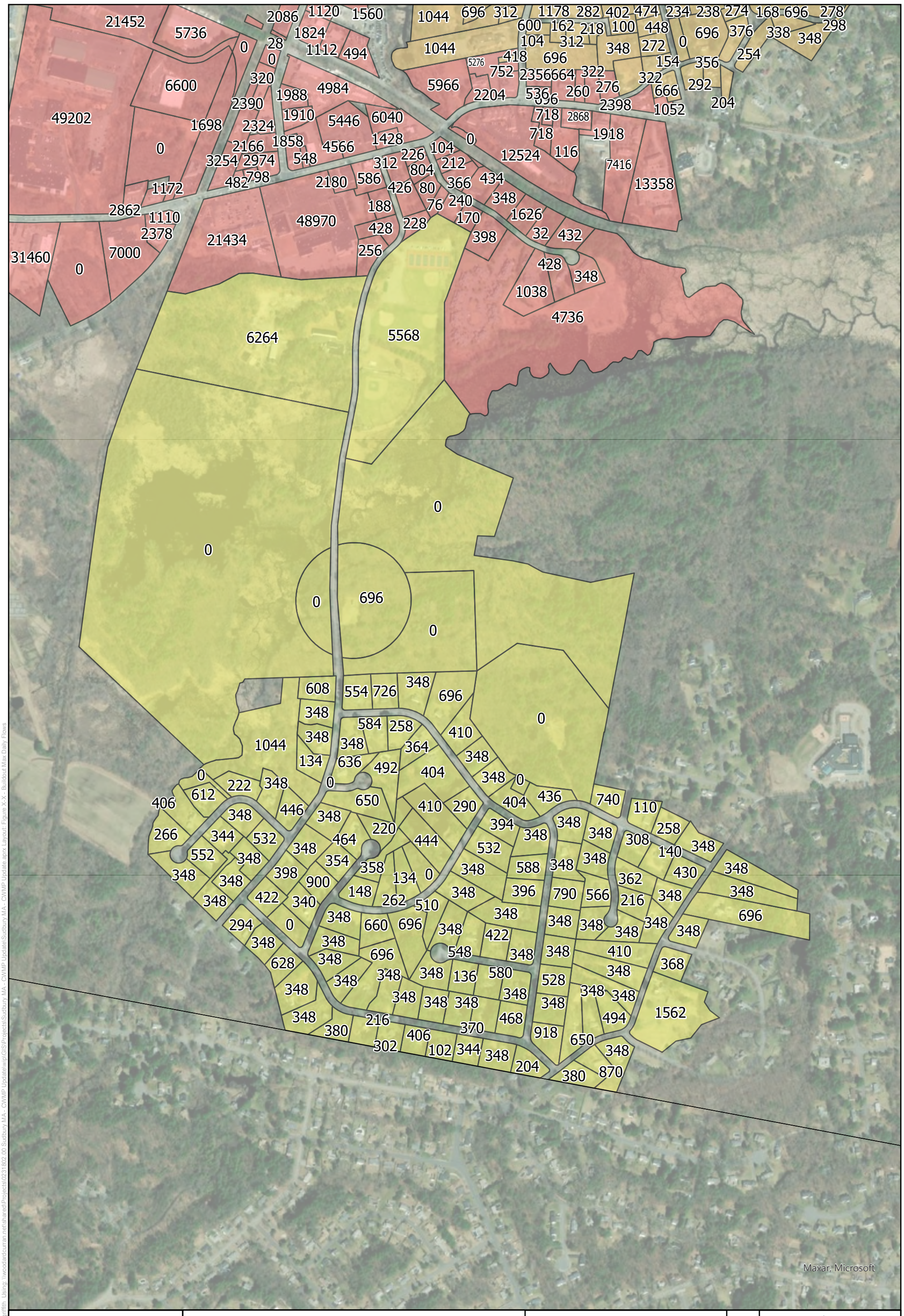

Raymond Road South Project Area Buildout Max Daily Flows (gpd)

Legend

- Goodman's Hill Project Area
- Raymond Road North Project Area
- Raymond Road South Project Area
- Route 20 Project Area
- Route 20 East Project Area

CWMP Update
Town of Sudbury, MA

0 150 300 600 Feet

N

WOODARD & CURRAN

Project #: 0231802.00
Map Created: April 2021

Figure Exported: 4/13/2021 By: cgriffith Using: \\woodardcurran.net\shared\Projects\0231802.00 Sudbury MA - CWMP Update\wip\GIS\Projects\Sudbury MA - CWMP Update.aprx Layout: Figure X-X - Buildout Max Daily Flows

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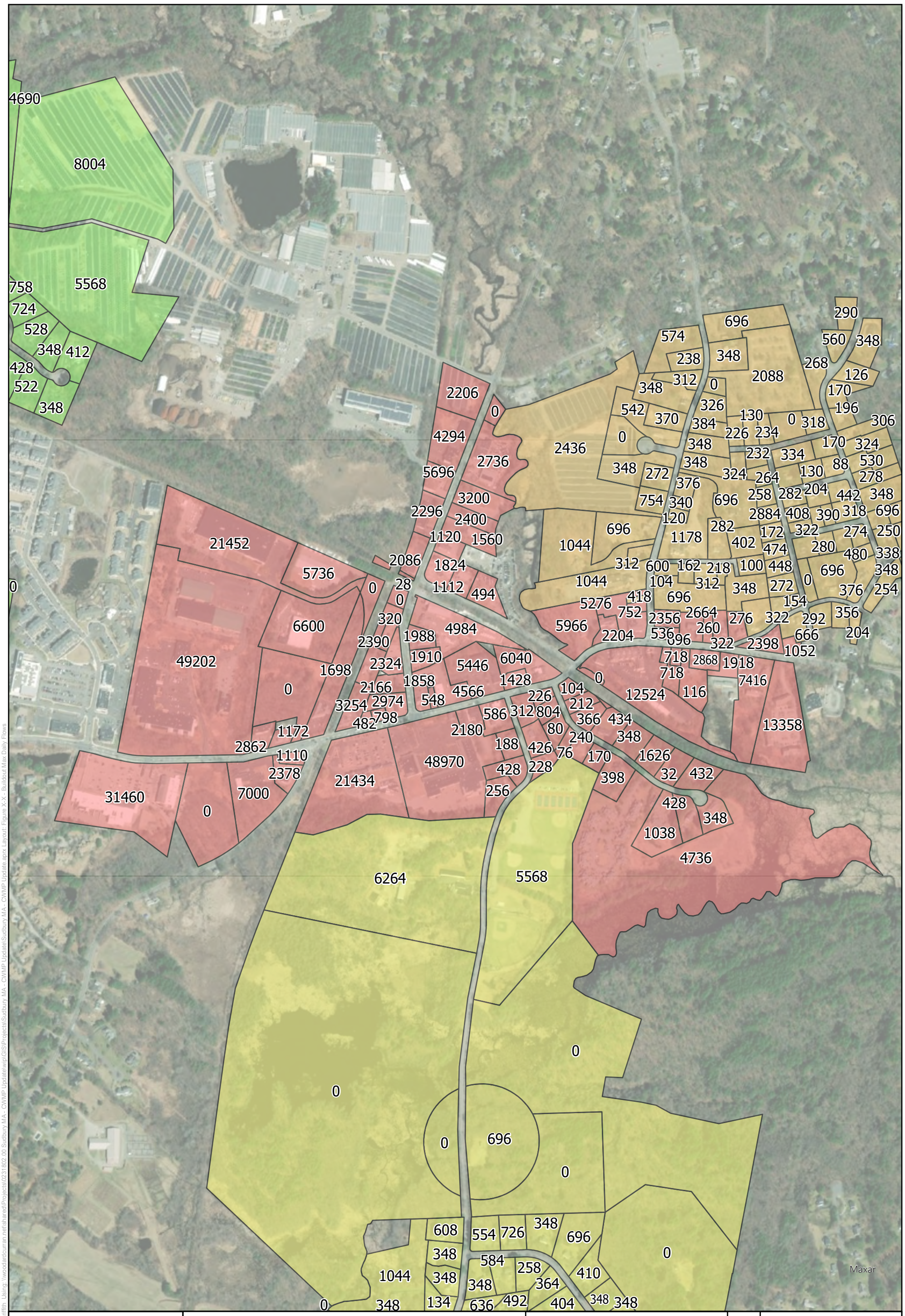

Route 20 Project Area Buildout Max Daily Flows (gpd)

Legend

- Goodman's Hill Project Area
- Raymond Road North Project Area
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- Route 20 Project Area
- Route 20 East Project Area

CWMP Update
Town of Sudbury, MA

0 150 300 600 Feet

N

WOODARD & CURRAN

Project #: 0231802.00
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Figure Exported: 4/13/2021 By: cgriffith Using: \\woodardcurran.net\shared\Projects\0231802.00 Sudbury MA - CWMP Update\wip\GIS\Projects\Sudbury MA - CWMP Update.aprx Layout: Figure X-X - Buildout Max Daily Flows

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APPENDIX D: WATER DISTRICT DATA

Commonwealth of Massachusetts
Executive Office of Energy & Environmental Affairs

Department of Environmental Protection

One Winter Street Boston, MA 02108 • 617-292-5500

Charles D. Baker
Governor

Karyn E. Polito
Lieutenant Governor

Kathleen A. Theoharides
Secretary

Martin Suuberg
Commissioner

March 18, 2021

Sudbury Water District
Board of Water Commissioners
199 Raymond Road
P.O. Box 111
Sudbury, MA 01776

RE: Sudbury – BRP/WMA
Sudbury Water District
PWS ID #3288000
Water Management Act Permit
Permit #9P-3-14-288.01

Dear Commissioners,

Attached please find:

- Final Findings of Fact in support of the renewal of Permit #9P314288.01, and
- Final WMA Permit #9P314288.01 for the Sudbury Water District.

The signature on this cover letter indicates formal issuance of the attached documents. If you have any questions regarding this information, please contact Jen D'Urso at (617) 654-6591 or via e-mail at jen.durso@state.ma.us.

Sincerely,

Duane LeVangie
Chief, Water Management Act Program
Bureau of Resource Protection

Y:\DWP Archive\NERO\Sudbury-3288000-WMA Final Permit-9P314288.01-3-18-2021

Ecc: Vincent Roy, Executive Director, Sudbury Water District
Chuck Adelsberger, Env.Partners
Anne Carrol, DCR OWR
Jen Pederson, MWWA
Julia Blatt, MA Rivers Alliance
Sarah Bower, MA Rivers Alliance
Nancy Bryant, Executive Director, SuAsCo Watershed Comm. Council: info@suasco.org
Alison Field Juma, OARS

This information is available in alternate format. Contact Michelle Waters-Ekanem, Director of Diversity/Civil Rights at 617-292-5751.
TTY# MassRelay Service 1-800-439-2370
MassDEP Website: www.mass.gov/dep

Printed on Recycled Paper

Communication For Non-English Speaking Parties - 310 CMR 1.03(5)(a)

Contact Michelle Waters-Ekanem, Diversity Director/Civil Rights: 617-292-5751 TTY# MassRelay Service 1-800-439-2370.

http://www.mass.gov/eea/agencies/massdep/service/justice/ (Version 3.30.15)

1 English:

This document is important and should be translated immediately. If you need this document translated, please contact MassDEP's Diversity Director at the telephone numbers listed below.

2 Español (Spanish):

Este documento es importante y debe ser traducido inmediatamente. Si necesita este documento traducido, por favor póngase en contacto con el Director de Diversidad MassDEP a los números de teléfono que aparecen más abajo.

3 Português (Portuguese):

Este documento é importante e deve ser traduzida imediatamente. Se você precisa deste documento traduzido, por favor, entre em contato com Diretor de Diversidade da MassDEP para os números de telefone listados abaixo.

4(a) 中國（傳統）(Chinese (Traditional):

本文件非常重要，應立即翻譯。如果您需要翻譯這份文件，請用下面列出的電話號碼與MassDEP的多樣性總監聯繫。

4(b) 中国（简体中文）(Chinese (Simplified):

本文件非常重要，应立即翻译。如果您需要翻译这份文件，请用下面列出的电话号码与MassDEP的多样性总监联系。

5 Ayisyen (franse kreyòl) (Haitian) (French Creole):

Dokiman sa-a se yon bagay enpòtan epi yo ta dwe tradui imedyatman. Si ou bezwen dokiman sa a tradui, tanpri kontakte Divèsite Direktè MassDEP a nan nimewo telefòn ki nan lis pi ba a.

6 Việt (Vietnamese):

Tài liệu này là rất quan trọng và cần được dịch ngay lập tức. Nếu bạn cần dịch tài liệu này, xin vui lòng liên hệ với Giám đốc MassDEP đa dạng tại các số điện thoại được liệt kê dưới đây.

7 ប្រទេសកម្ពុជា (Kmer (Cambodian):

ឯកសារនេះគឺមានសារៈសំខាន់និងគួរត្រូវបានបកប្រែភ្លាម។ ប្រសិនបើអ្នកត្រូវបានបកប្រែ ឯកសារនេះសូមទំនាក់ទំនងឯកោតជានាយក MassDEP នៅលេខទូរស័ព្ទដែលបានរាយ ខាងក្រោម។

8 Kriolu Kabuverdianu (Cape Verdean):

Es documento é importante e deve ser traduzido imidiatamente. Se bo precisa des documento traduzido, por favor contacta Director de Diversidade na MassDEP's pa es numero indicode li d'boche.

9 Русский язык (Russian):

Этот документ является важным и должно быть переведено сразу. Если вам нужен этот документ переведенный, пожалуйста, свяжитесь с директором разнообразия MassDEP по адресу телефонных номеров, указанных ниже.

10 ةيبرعلا (Arabic):

هذه وثيقة هامة يجب أن تترجم على الفور. اذا كنت بحاجة الى هذه الوثيقة مترجمة، يرجى الاتصال بمدير التنوع في MassDEP على الأرقام الواردة أدناه.

11 한국어 (Korean):

이 문서는 중요하고 즉시 번역해야합니다. 당신이 번역이 문서가 필요하면 아래의 전화 번호로 MassDEP의 다양성 감독에 문의하시기 바랍니다.

12 հայերեն (Armenian):

Այս փաստաթուղթը շատ կարեւոր է եւ պետք է թարգմանել անմիջապես. Եթե Ձեզ անհրաժեշտ է այս փաստաթուղթը թարգմանվել դիմել MassDEP բազմազանությունը տնօրեն է հեռախոսահամարների թվարկված են ստորեւ.

13 فارسی (Farsi (Persian):

اگر شما به ترجمه این سند نیاز دارید، لطفا با مدیر تنوع MassDEP در تماس شوید. شماره تلفن های ذیل درج شده است.

14 Français (French):

Ce document est important et devrait être traduit immédiatement. Si vous avez besoin de ce document traduit, s'il vous plaît communiquer avec le directeur de la diversité MassDEP aux numéros de téléphone indiqués ci-dessous.

15 Deutsch (German):

Dieses Dokument ist wichtig und sollte sofort übersetzt werden. Wenn Sie dieses Dokument übersetzt benötigen, wenden Sie sich bitte Diversity Director MassDEP die in den unten aufgeführten Telefonnummern.

16 Ελληνική (Greek):

Το έγγραφο αυτό είναι σημαντικό και θα πρέπει να μεταφραστούν αμέσως. Αν χρειάζεστε αυτό το έγγραφο μεταφράζεται, παρακαλούμε επικοινωνήστε Diversity Director MassDEP κατά τους αριθμούς τηλεφώνου που αναγράφεται πιο κάτω.

17 Italiano (Italian):

Questo documento è importante e dovrebbe essere tradotto immediatamente. Se avete bisogno di questo documento tradotto, si prega di contattare la diversità Direttore di MassDEP ai numeri di telefono elencati di seguito.

18 Język Polski (Polish):

Dokument ten jest ważny i powinien być natychmiast przetłumaczone. Jeśli potrzebujesz tego dokumentu tłumaczone, prosimy o kontakt z Dyrektorem MassDEP w różnorodności na numery telefonów wymienionych poniżej.

19 **हिन्दी** (Hindi):

यह दस्तावेज महत्वपूर्ण है और तुरंत अनुवाद किया जाना चाहिए. आप अनुवाद इस दस्तावेज़ की जरूरत है, नीचे सूचीबद्ध फोन नंबरों पर MassDEP की विविधता निदेशक से संपर्क करें.

Commonwealth of Massachusetts
Executive Office of Energy & Environmental Affairs

Department of Environmental Protection
One Winter Street Boston, MA 02108 • 617-292-5500

Charles D. Baker
Governor

Karyn E. Polito
Lieutenant Governor

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Secretary

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Commissioner

Findings of Fact in Support of Final Permit Issuance
Water Management Permit #9P314288.01
Sudbury Water District

The Department of Environmental Protection (the Department) makes the following Findings of Fact in support of the attached Final Water Management Permit #9P314288.01, and includes herewith its reasons for issuing the Final Permit and for conditions of approval imposed, as required by M.G.L. c. 21G, § 11. The issuance of this permit is in response to a water withdrawal permit renewal application by the Sudbury Water District, (Sudbury or the District) for the purpose of public water supply.

Sudbury operates four (4) permitted sources in the Concord River Basin. Sudbury was issued its initial Concord River Water Management Permit on August 20, 1993, which was then amended on March 27, 1997 and December 8, 2000 to add withdrawal points, and was then reviewed and modified in November 10, 2010.

On August 5, 2015, Sudbury applied to MassDEP for a permit renewal in the Concord River Basin. On November 13, 2019, Sudbury was issued a Permit Renewal Order to Complete (OTC) outlining specific information that was required to renew Sudbury's permit. Sudbury responded on February 7, 2020.

The Department adopted revised Water Management Regulations at 310 CMR 36.00 on November 7, 2014, (described in greater detail below). Since that time, the Department has been working closely with each Water Management Act (WMA) permittee to fully consider all aspects of their individual situations to ensure thoughtful and implementable permits.

<u>The Water Management Act (M.G.L. c. 21G)</u>

The Water Management Act (Act) requires the Department to issue permits that balance a variety of factors including without limitation:

- Impact of the withdrawal on other water sources;
- Water available within the safe yield of the water source;
- Reasonable protection of existing water uses, land values, investments and enterprises;
- Proposed use of the water and other existing or projected uses of water from the water source;
- Municipal and Massachusetts Water Resources Commission (WRC) water resource management plans;
- Reasonable conservation consistent with efficient water use;

- Reasonable protection of public drinking water supplies, water quality, wastewater treatment capacity, waste assimilation capacity, groundwater recharge areas, navigation, hydropower resources, water-based recreation, wetland habitat, fish and wildlife, agriculture, flood plains; and
- Reasonable economic development and job creation.

Water Management Regulation Revisions

In 2010 the Executive Office of Energy and Environmental Affairs (EEA) convened the Sustainable Water Management Initiative (SWMI) for the purpose of incorporating the best available science into the management of the Commonwealth's water resources. SWMI was a multi-year process that included a wide range of stakeholders and support from the Departments of Environmental Protection, Fish and Game, and Conservation and Recreation. In November 2012 the *Massachusetts Sustainable Water Management Initiative Framework Summary* (http://www.mass.gov/eea/docs/eea/water/swmi-framework-nov-2012.pdf) was released.

On November 7, 2014, the Department adopted revised Water Management Regulations at 310 CMR 36.00 that incorporate elements of the SWMI framework and the Water Conservation Standards adopted by the Massachusetts WRC. The regulations reflect a carefully developed balance to protect the health of Massachusetts' water bodies while meeting the needs of businesses and communities for water.

Without limitation, the Department has incorporated the following into Water Management permitting:

- Safe yield determinations for the major river basins based on a new methodology developed through SWMI (see the Safe Yield in the Concord River Basin section of this document). For more information on the Safe Yield methodology, go to the November 28, 2012 SWMI Framework Summary and Appendices;
- Water needs forecasts for public water suppliers developed by the Department of Conservation and Recreation, Office of Water Resources (DCR), using a methodology reviewed and approved by the Massachusetts WRC;
- Water supply protection measures for public water supplies including Zone II delineations for groundwater sources, and wellhead and surface water protection measures as required by Massachusetts Drinking Water Regulations (310 CMR 22.00);
- Water conservation and performance standards reviewed and approved by the WRC in July 2018 (Details on the 2018 Massachusetts Water Conservation Standards | Mass.gov); including without limitation;
    - performance standard of 65 residential gallons per capita day or less;
    - performance standard of 10% or less unaccounted-for-water;
    - seasonal limits on nonessential outdoor water use;
    - a water conservation program that includes leak detection and repair, full metering of the system and proper maintenance of the meters, periodic review of pricing, and education and outreach to residents and industrial and commercial water users; and
- Environmental protections developed through SWMI, including without limitation;

- protection for coldwater fish resources;
- minimization of withdrawal impacts in areas stressed by groundwater use;
- mitigation of the impacts of increasing withdrawals.

Safe Yield in the Concord River Basin

This permit is being issued under the safe yield methodology adopted by the Department on November 7, 2014, and described in the regulations at 310 CMR 36.13. As of the date of issuance of this permit, the safe yield for the Concord River Basin is 87.5 million gallons per day (MGD), and total registered and permitted withdrawals are 36.79 MGD. The maximum withdrawals that will be authorized in this permit, and all other permits currently under review by the Department within the Concord River Basin, will be within the safe yield and may be further conditioned as outlined in the regulations.

Findings of Fact for Permit Conditions in Sudbury's Water Management Act Permit

The following Findings of Fact for the special conditions included in the permit generally describe the rationale and background for each special condition in the final permit. This summary of permit special conditions is not intended to, and should not be construed as, modifying any of the permit special conditions. In the event of any ambiguity between this summary and the actual permit conditions, the permit language shall control.

Special Condition 1, Maximum Authorized Annual Average Withdrawal

The Department of Conservation and Recreation's Office of Water Resources (DCR) developed draft demand projections for Sudbury in the Concord River Basin in June 2015. After several exchanges of information, final projections were issued on August 11, 2015. DCR projected a range of values for Sudbury that identified potential demands from 1.96 MGD to 2.04 MGD. DEP's practice has been to allocate annual withdrawal rates based on the 65/10 DCR projections, which are outlined below.

TABLE 1: Summary of Sudbury Water District's WMA Authorizations	
WMA Authorization	**Volume Authorized**
WMA Permit #9P314288.01	0.24 MGD (87.6 MGY)
WMA Registration #42512301	1.72 MGD (627.8 MGY)
Total WMA Authorization	1.96 MGD (715.4 MGY)

In 2018, Sudbury's average daily withdrawal from the Concord River Basin was 1.66 MGD. If water needs are expected to exceed the maximum authorized in this permit and Sudbury is meeting all of its permit conditions, Sudbury may apply for additional volume at any time by submitting a new Water Management Permit application BRPWM03.

Special Condition 2, Maximum Daily Withdrawals from Groundwater Withdrawal Points, reflects the MassDEP-approved Zone II maximum daily pumping rate for each of Sudbury's permitted wells based on prolonged pumping tests. Withdrawals in excess of these maximum daily rates require approval from the Department.

Special Condition 3, Zone II Delineation requirements have been met and no further delineations are required as a condition of this permit.

Special Condition 4, Wellhead Protection requirements have been met and are up to date as of the issuance of this permit.

Special Condition 5, Residential Gallons per Capita Day (RGPCD) has not changed from the prior permit. This performance standard requires Sudbury to meet 65 RGPCD. From 2012 to 2018, Sudbury met the RGPCD requirement every year, with the exception of 2015. Sudbury's average RGPCD from 2012 to 2018 was 63.

Special Condition 6, Performance Standard for Unaccounted for Water (UAW) has not changed from the prior permit. The UAW required for all PWS permittees is 10%. In the renewed permit, Sudbury will be required to meet the 10% standard for 2 out of every 3 years. Based on previous non-compliance with this Performance Standard, Sudbury shall be in compliance with Steps 1-4 of developing a Municipal Water Loss Control Program as part of their functional equivalence requirements (Appendix B) by December 31, 2021.

Even though Sudbury met the 10% standard in 2019, they will be required to continue to follow the Functional Equivalence requirements until they have been in compliance for two out of three years.

Sudbury DEP Approved UAW %

2019	2018	2017	2016
9%	12%	16%	18%

Special Condition 7, Seasonal Limits on Nonessential Outdoor Water Use, includes revisions to your existing outdoor water use restriction requirement. The streamflow-triggered restrictions will continue to be determined by flows measured at USGS streamflow gage, #01099500, Concord River below River Meadow Brook at Lowell, MA. The options outlined in Special Condition 7 are based on whether reported RGPCD for the previous year was in compliance with the RGPCD Performance Standard (see Special Condition 5, Performance Standard for RGPCD).

In addition, outdoor water use by suppliers, like Sudbury, with wells in August net groundwater depleted subbasins[1] is limited to one or two days per week to minimize withdrawals from depleted subbasins. Sudbury's withdrawals are located in subbasins (#12007, #12008, and #12079) which all have August net groundwater depletions of 25% or more (44%, 281%, and 96% respectively).

Each year Sudbury may choose one of two options for implementing nonessential outdoor watering restrictions.

[1] Subbasins used for WMA permitting are the 1,395 subbasins delineated by the U.S. Geological Survey in *Indicators of Streamflow Alteration, Habitat Fragmentation, Impervious Cover, and Water Quality for Massachusetts Stream Basins* (Weiskel *et al.*, 2010, USGS SIR 2009-5272).

- **Calendar triggered restrictions** are in place from May 1st through September 30th. Many public water suppliers find this option easier to implement and enforce than the streamflow triggered approach
- **Streamflow triggered restrictions** are implemented at those times when streamflow falls below designated flow triggers measured at an assigned, web-based, real-time U.S. Geologic Survey (USGS) stream gage from May 1st through September 30th. At a minimum, restrictions commence when streamflow falls below the trigger for three consecutive days. Once implemented, the restrictions remain in place until streamflow at the assigned USGS local stream gage meets or exceeds the trigger streamflow for seven consecutive days.

- If Sudbury selects the streamflow trigger approach, it has been assigned USGS stream gage #01099500 –Concord River below Meadow Brook, at Lowell, MA. The local gage streamflow triggers at this site are **427** cubic feet per second (cfs) for May and June, and **156** cfs for July, August and September. Should the reliability of flow measurement at this gage be so impaired as to question its accuracy, Sudbury may request MassDEP's review and approval to transfer to another gage to trigger restrictions. MassDEP reserves the right to require use of a different gage.

- **The 7-Day Low Flow Trigger**, at which restrictions increase, is incorporated into both Calendar and Streamflow Triggered restrictions in order to provide additional protection to streamflows when flows are very low. The 7-day low flow trigger is based on the median value of the annual 7-day low flows for the period of record. The 7 day low-flow trigger for the Concord River below Meadow Brook gage is **71** cfs.

Sudbury may choose to implement limits on nonessential outdoor water use that are stricter than those required by the permit. This permit condition does not confer enforcement authority to the permittee.

Special Condition 8, General Water Conservation Requirements, incorporates the Water Conservation Standards for the Commonwealth of Massachusetts reviewed and approved by the WRC in July 2018. (Details on the 2018 Massachusetts Water Conservation Standards | Mass.gov).

Special Condition 9, Minimization of Groundwater Withdrawal Impacts in Stressed Subbasins, requires permittees with permitted groundwater sources in subbasins with net groundwater depletion of 25% or more during August to minimize their withdrawal impacts on those subbasins, to the greatest extent feasible, through optimization of groundwater source use, surface water releases to improve streamflows, outdoor water use restrictions and water conservation programs that go beyond standard Water Management permit requirements.

All 4 of Sudbury's wells are located in subbasins (#12007, #12008, and #12079) with an August net groundwater depletion (NGD) of greater than 25% (44%, 281%, and 96% respectively). Based on Department records and information submitted by Sudbury, the Department finds that minimization requirements will be met as follows:

- Since all of Sudbury`s sources are located in subbasins with an August NGD of greater than 25%, this permit does not require that Sudbury shift pumping to another subbasin.
- Sudbury has no surface water supplies and, therefore, cannot make releases to improve streamflow.
- Sudbury is currently undergoing a system-wide residential water meter replacement program with automated, remote read meters. Complete implementation of this program by December 31, 2021 is required.
- The limits on nonessential outdoor water use set forth in Special Condition 7 are restrictions developed to minimize withdrawals in August NGD subbasins.
- Sudbury will conduct a comprehensive water audit of the water system every five years, with the first audit to be completed by December 31, 2021.
- Sudbury will develop and implement an increasing block water rate or a seasonal water rate structure as a tool to encourage water conservation by December 31, 2022.
- Sudbury will increase its billing frequency to at least quarterly by December 31, 2022.
- On water bills, Sudbury will provide customers with water consumption information in gallons and show consumption history, by December 31, 2022.

Special Condition 10, Reporting Requirements, ensures that the information necessary to evaluate compliance with the conditions included herein is accurately reported.

General Permit Requirements, contains conditions that pertain to all permittees.

Coldwater Fishery Resource (CFR) Protection requires permittees with withdrawals that may impact the streamflow of a CFR (identified on subbasin maps) to evaluate reducing impacts to CFRs through feasible optimization. Sudbury's permitted sources are all in subbasins (12007 and 12008) with Coldwater Fishery Resources. At this time, only one of Sudbury's existing registered sources appears not to impact a stream identified as a CFR, GP Well # 5 (05G). However with the exception of some very limited usage in 2010 and 2015, the District has not used this well with any regularity since 2009 because of iron and manganese problems. Therefore, this requirement is not part of Sudbury's permit at this time. However, if Sudbury does start using 05G with any regularity, the Coldwater Fishery Resource (CFR) Protection requirements will need to be revisited.

Mitigation of Impacts for Withdrawals that Exceed Baseline[2], requires mitigation of the impacts of withdrawals above the permittee's baseline by direct and/or indirect mitigation activities. Sudbury's Baseline in the Concord River Basin (2.06 MGD) is based on the 2005 authorized volume. Sudbury's total authorized withdrawal in this permit is not above their baseline; therefore, no mitigation is required.

[2] Baseline is the volume of water withdrawn in 2005 plus 5%, or the average volume withdrawn from 2003 to 2005 plus 5%, which is greater. Baseline cannot be less than the registered volume, and cannot be more than the authorized volume during the 2003-2005 period. For suppliers with authorizations in multiple major basins, baseline is computed for each basin and for the entire system.

Public Comments

The draft Sudbury Water District permit was posted in the Massachusetts Environmental Monitor for 30 days, from January 22, 2021 to February 22, 2021, for public comments. Comments were received from OARS regarding the permit volume, the regulation of private wells and their impact, as well comments on Special Conditions 8 (Public Education) and 9 (Minimization).

The Department of Conservation and Recreation's Office of Water Resources (DCR) developed final demand projections for the Sudbury Water District on August 11, 2015. DEP's practice is to allocate annual withdrawal rates based on the 65/10 DCR projections, which are in the permit. This is a maximum allocation and Sudbury's permitted volume has been reduced from 0.36 MGD in its previous permit to 0.24 MGD in this permit.

While MassDEP has no authority to regulate private wells, the Department does encourage regulation by providing minimization and mitigation opportunities via private well bylaws credit. MassDEP encourages Sudbury to review the comments submitted regarding private well bylaws to determine their feasibility and impact.

All items listed in the Public Education and Outreach section (Condition 8, Table 5, p. 7) is required. The reference to Sudbury's bylaws on Outdoor water Use restrictions has been updated to the correct reference. The bylaw does include enforcement capability.

Commonwealth of Massachusetts
Executive Office of Energy & Environmental Affairs

Department of Environmental Protection
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Secretary

Martin Suuberg
Commissioner

FINAL WATER WITHDRAWAL PERMIT RENEWAL
Permit #9P314288.01
Sudbury Water District

This renewal of Permit #**9P314288.01** is approved pursuant to the Massachusetts Water Management Act (WMA) for the sole purpose of authorizing the withdrawal of a volume of water as stated below and subject to the following special and general conditions. This permit conveys no right in or to any property.

PERMIT NUMBER: 9P-3-14-288.01 **RIVER BASIN**: Concord

PERMITTEE: Sudbury Water District
Board of Water Commissioners
199 Raymond Road
P.O. Box 111
Sudbury, MA 01776

EFFECTIVE DATE: March 18, 2021
EXPIRATION DATE: August 31, 2031

TYPE AND NUMBER OF WITHDRAWAL POINTS: Groundwater: 4 Surface Water: 0
USE: Public Water Supply
DAYS OF OPERATION: 365

AUTHORIZED WITHDRAWAL POINTS:

Table 1: Withdrawal Point Identification	
Source Code	**Source**
3288000-06G	Raymond Road
3288000-07G	Nobscot Road
3288000-09G	G.P. Well #9
3288000-10G	Well #10

This information is available in alternate format. Contact Michelle Waters-Ekanem, Director of Diversity/Civil Rights at 617-292-5751.
TTY# MassRelay Service 1-800-439-2370
MassDEP Website: www.mass.gov/dep

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1. Maximum Authorized Annual Average Withdrawal

This permit authorizes the Sudbury Water District to withdraw water from the Concord River Basin at the rate described in Table 2 below. The permitted volumes are expressed both as an average daily withdrawal rate (million gallons per day or MGD), and as a total annual withdrawal volume (million gallons per year or MGY) for each permit period outlined. The Department of Environmental Protection (MassDEP) will use the raw water withdrawal volume from all authorized withdrawal points to assess compliance with the registered and permitted withdrawal rates.

Table 2: Sudbury Water District Authorized Withdrawal Rates

Permit Periods	Total Raw Water Withdrawal Volumes					
	Permit		Registration		Permit + Registration	
	Daily Average (MGD)	Total Annual (MGY)	Daily Average (MGD)	Total Annual (MGY)	Daily Average (MGD)	Total Annual (MGY)
3/10/21 to 8/31/2026	0.11	40.15	1.72	627.80	1.83	667.95
8/31/2026 to 8/31/2031	0.15	54.75	1.72	627.80	1.87	682.55
2031 plus 5% buffer	0.24	87.60	1.72	627.80	1.96	715.40

With advance written approval from the Department, Sudbury may be authorized to increase annual average daily withdrawals to the maximum authorized (1.96 MGD) prior to 2026 if Sudbury is meeting:

- Residential Gallons Per Capita Day (RGPCD) of 65 or less, or all RGPCD functional equivalence requirements in Special Condition 5;
- Unaccounted-for-water (UAW) of 10% or less, or all UAW functional equivalence requirements in Special Condition 6;
- Seasonal limits on nonessential outdoor water use in Special Condition 7; and
- Water conservation requirements in Special Condition 8.

2. Maximum Daily Withdrawals from Groundwater Withdrawal Points

Withdrawals from permitted groundwater sources are not to exceed the approved maximum daily rates listed in Table 3 below without advance written approval from the Department.

Table 3: Maximum Daily Withdrawal Rates from Authorized Groundwater Withdrawal Points

Source	Maximum Daily Rate
Raymond Road, 3288000-06G	0.72 MGD
Nobscot Road, 3288000-07G	1.0 MGD
G.P. Well #9, 3288000-09G	1.2 MGD
Well #10, 3288000-10G	0.69 MGD

3. Zone II Delineation

Department records show that all of the Sudbury Water District's sources have approved Zone II delineations, therefore, no further Zone II work is required.

4. Wellhead Protection

Department records show that Sudbury has implemented controls that comply with Wellhead Protection Regulations at 310 CMR 22.21(2).

5. Performance Standard for Residential Gallons Per Capita Day Water Use

The Sudbury Water District's performance standard for residential gallons per capita day (RGPCD) is 65 gallons or less. Sudbury shall be in compliance with this performance standard by December 31, 2021. If Sudbury does not meet the standard, Sudbury shall be in compliance with the functional equivalence requirements (Appendix A). Sudbury shall report its RGPCD water use annually in its Annual Statistical Report (ASR).

6. Performance Standard for Unaccounted for Water

The Sudbury Water District's Performance Standard for Unaccounted for Water (UAW) is 10% or less of overall water withdrawal for 2 of the most recent years 3 throughout the permit period. Based on previous non-compliance with this Performance Standard, Sudbury shall be in compliance with Steps 1-4 of developing a Municipal Water Loss Control Program as part of their functional equivalence requirements (Appendix B) by December 31, 2021.

Nothing in the permit shall prevent a permittee who meets the 10% performance standard from demonstrating compliance with the UAW performance standard by developing and implementing a water loss control program following the *AWWA M36 Water Audits and Loss Control Programs*.

Permittees meeting the Performance Standard for Unaccounted for Water through implementation of a water loss control program based on AWWA M36 annual water audits and guidance shall continue to report UAW annually as required in the Annual Statistical Report for public water suppliers.

7. Seasonal Limits on Nonessential Outdoor Water Use

Sudbury shall limit nonessential outdoor water use through mandatory restrictions from May 1st through September 30th as outlined in Table 4 below. Sudbury shall start implementing the seasonal limits on nonessential outdoor water use on May 1, 2021.

Sudbury shall be responsible for tracking steamflow gages and drought advisories and recording and reporting when restrictions are implemented if triggered restrictions are implemented. See Table 3 *Instructions for Accessing U.S. Geologic Survey Groundwater Level and Massachusetts Drought Advisory Website Information.* Sudbury shall also document compliance with the seasonal limits on nonessential outdoor water use annually in its Annual Statistical Report (ASR), and indicate whether it anticipates implementing calendar triggered restrictions or USGS monitoring well triggered restrictions during the next year.

Restricted Nonessential Outdoor Water Uses

Nonessential outdoor water uses that are subject to mandatory restrictions include**:**

- irrigation of lawns via sprinklers or automatic irrigation systems;
- filling swimming pools;
- washing of vehicles, except in a commercial car wash or as necessary for operator safety; and
- washing exterior building surfaces, parking lots, driveways or sidewalks, except as necessary to apply surface treatments such as paint, preservatives, stucco, pavement or cement.

The following uses may be allowed, before 9 am and after 5 pm, when mandatory restrictions are in place:

- irrigation to establish a new lawn and new plantings during the months of May and September;
- irrigation of public parks and recreational fields by means of automatic sprinklers outside the hours of 9 am to 5 pm;
- irrigation of gardens, flowers and ornamental plants by means of a hand-held hose or drip irrigation systems; and
- irrigation of lawns by means of a hand-held hose.

Water uses NOT subject to mandatory restrictions are those required:

- for health or safety reasons;
- by regulation;
- for the production of food and fiber;
- for the maintenance of livestock; or
- to meet the core functions of a business (for example, irrigation by golf courses as necessary to maintain tees, greens, and limited fairway watering, or irrigation by plant nurseries as necessary to maintain stock).

Public Notice of Seasonal Nonessential Outdoor Water Use Restrictions

Sudbury shall notify its customers of the restrictions, including a detailed description of the restrictions and penalties for violating the restrictions. Notice that restrictions have been put in place shall be filed each year with the Department within 14 days of the restriction's effective date. Filing shall be in writing on the form "Notification of Water Use Restrictions" available on MassDEP website.

Table 4: Seasonal Limits on Nonessential Outdoor Water Use
May 1 to September 30

For Permittees meeting the 65 RGPCD Standard for the preceding year RGPCD ≤ 65 as reported in the ASR and accepted by MassDEP	
Calendar Triggered Restrictions	Nonessential outdoor water use is allowed: a) **Two (2) days per week** before 9 am and after 5 pm; **and** b) **one (1) day per week** before 9 am and after 5 pm when USGS stream gage 01108000 – Concord River at Meadow Brook, at Lowell MA falls below **71 cfs** for three (3) consecutive days. Once streamflow triggered restrictions are implemented, they shall remain in place until streamflow at the gage meets or exceeds 71 cfs for seven (7) consecutive days.
Streamflow Triggered Restrictions	Nonessential outdoor water use is allowed: a) **Two (2) days per week** before 9 am and after 5 pm when USGS stream gage 01108000 – Concord River at Meadow Brook, Lowell, MA falls below: • May 1 – June 30: **427 cfs** for three (3) consecutive days • July 1 – September 30: **156 cfs** for three (3) consecutive day**s** b) **one (1) day per week** before 9 am and after 5 pm when USGS stream gage 01108000 – Concord River at Meadow Brook, Lowell, MA falls below **71 cfs** for three (3) consecutive days. Once implemented, the restrictions shall remain in place until streamflow at the gage meets or exceeds the trigger streamflow for seven (7) consecutive days.
For Permittees NOT meeting the 65 RGPCD standard for the preceding year RGPCD > 65 as reported in the ASR and accepted by MassDEP	
Calendar Triggered Restrictions	Nonessential outdoor water use is allowed **one (1) day per week** before 9 am and after 5pm;
Streamflow Triggered Restrictions	Nonessential outdoor water use is allowed one **(1) day per week** before 9 am and after 5 pm when USGS stream gage 01108000 – Concord River at Meadow Brook, Lowell , MA falls below: • May 1 – June 30: **427 cfs** for three (3) consecutive days • July 1 – September 30: **156 cfs** for three (3) consecutive days Once implemented, the restrictions shall remain in place until streamflow at the gage meets or exceeds the trigger streamflow for seven (7) consecutive days.

Nothing in the permit shall prevent Permittee from implementing water use restrictions that are more stringent than those set forth in this permit.

8. Water Conservation Requirements

At a minimum, Sudbury shall implement the following conservation measures in Table 5. Compliance with the water conservation requirements shall be reported to the Department upon request, unless otherwise noted below.

Table 5: Minimum Water Conservation Requirements
Leak Detection
1. At a minimum, conduct a full leak detection survey every three years.
2. Conduct leak detection of the entire distribution system within one year whenever the percentage of UAW increases by 5% or more (for example an increase from 3% to 8%) over the percentage reported on the ASR for the prior calendar year. Within 60 days of completing the leak detection survey, submit to the Department a report detailing the survey, any leaks uncovered as a result of the survey or otherwise, dates of repair and the estimated water savings as a result of the repairs.
3. Conduct field surveys for leaks and repair programs in accordance with the AWWA Manual 36.
4. Sudbury shall have repair reports available for inspection by the Department. Sudbury shall establish a schedule for repairing leaks that is at least as stringent as the following: o Leaks of 3 gallons per minute or more shall be repaired within 3 months of detection. o Leaks of less than 3 gallons per minute at hydrants and appurtenances shall be repaired as soon as possible. o Leaks of less than 3 gallons per minute shall be repaired in a timely manner, but in no event more than 6 months from detection, except that leaks in freeway, arterial or collector roadways shall be repaired when other roadwork is being performed on the roadway. Leaks shall be repaired in accordance with Sudbury's priority schedule including leaks up to the property line, curb stop or service meter, as applicable. Sudbury shall have water use regulations in place that require property owners to expeditiously repair leaks on their property.
Metering
1. Calibrate all source and finished water meters at least annually and report date of calibration on the ASR.
2. Sudbury reports its system is 100% metered. All water distribution system users shall have properly sized service lines and meters that meet AWWA calibration and accuracy performance standards as set forth in AWWA Manual M6 – Water Meters.
3. Sudbury shall have an ongoing program to inspect individual service meters to ensure that all service meters accurately measure the volume of water used by its customers. The metering program shall include regular meter maintenance, including testing, calibration, repair, replacement and checks for tampering to identify and correct illegal connections. The plan shall continue to include placement of sufficient funds in the annual budget to calibrate, repair, or replace meters as necessary.

Table 5: Minimum Water Conservation Requirements
Pricing
1. Sudbury shall maintain a water pricing structure that includes the full cost of operating the water supply system. Sudbury shall evaluate rates at a minimum every three to five years and adjust costs as needed. Full cost pricing factors all costs - operations, maintenance, capital, and indirect costs (environmental impacts, watershed protection) - into prices.
2. Sudbury shall not use decreasing block rates. Decreasing block rates which charge lower prices as water use increases during the billing period, are not allowed by M.G.L. Chapter 40 Section 39L.
Residential and Public Sector Conservation
1. Sudbury shall meet the standards set forth in the Federal Energy Policy Act, 1992 and the Massachusetts Plumbing Code.
2. Meter or estimate water used by contractors using fire hydrants for pipe flushing and construction.
3. Sudbury has reported that all municipally owned public buildings have been retrofitted with water saving devices (faucet aerators, low flow shower heads and low flow toilets). Sudbury Water District shall continue to work with the Town of Sudbury to ensure that water savings devices are installed in all municipal buildings as they are renovated, and shall ensure water conserving fixtures and landscaping practices are incorporating into the design of new municipal capital projects.
Industrial and Commercial Water Conservation
1. Sudbury Water District shall work with the Town of Sudbury to ensure water conservation practices are considered in all development proposals, particularly low flow devices and water-wise landscaping practices.
Public Education and Outreach
1. Sudbury shall continue to implement its water conservation and education efforts designed to educate the Town's water customers on ways to conserve water. Without limitation, Sudbury's plan may include the following actions: o Include in bill stuffers and/or bills, a work sheet to enable customers to track water use and conservation efforts and estimate the dollar savings; o Public space advertising/media stories on successes (and failures); o Conservation information centers perhaps run jointly with electric or gas company; o Speakers for community organizations; o Public service announcements; radio/T.V./audio-visual presentations; o Joint advertising with hardware stores to promote conservation devices; o Use of civic and professional organization resources; o Special events such as Conservation Fairs; o Develop materials that are targeted to schools with media that appeals to children, including materials on water resource projects and field trips; and o Provide multilingual materials as needed.

Table 5: Minimum Water Conservation Requirements
2. Upon request of the Department, the Town of Sudbury shall report on its public education and outreach effort, including a summary of activities developed for specific target audiences, any events or activities sponsored to promote water conservation and copies of written materials.

9. Minimization of Groundwater Withdrawal Impacts in Stressed Subbasins

Sudbury's minimization requirements will be met as follows:

- Sudbury is currently undergoing a system-wide residential water meter replacement program with automated, remote read meters. Complete implementation of this program by December 31, 2020 is required.
- Sudbury's Mandatory Water Use Restrictions by-law (Sudbury Water District Regulations, regulations 20-24, and Town Bylaw Article 5-31, Water Supply Restriction, includes enforcement authority and establishes penalties for violations of the permit restrictions.
- Sudbury will conduct a comprehensive water audit of the water system every five years, with the first audit to be completed by December 31, 2020.
- Sudbury will use develop and implement an increasing block water rate or a seasonal water rate structure as a tool to encourage water conservation by December 31, 2022.
- Sudbury will increase its billing frequency to at least quarterly by December 31, 2022.
- On water bills, Sudbury will provide customers with water consumption information in gallons and show consumption history, by December 31, 2022.

10. Reporting Requirements

Sudbury shall report annually as required by completing the electronic Annual Statistical Report (eASR) for public water suppliers, and shall provide other reporting as specified in the Special Conditions above.

General Permit Conditions (applicable to all Permittees)

1. <u>Duty to Comply</u> The Permittee shall comply at all times with the terms and conditions of this permit, the Act and all applicable State and Federal statutes and regulations.

2. <u>Operation and Maintenance</u> The Permittee shall at all times properly operate and maintain all facilities and equipment installed or used to withdraw up to the authorized volume so as not to impair the purposes and interests of the Act.

3. <u>Entry and Inspections</u> The Permittee or the Permittee's agent shall allow personnel or authorized agents or employees of MassDEP to enter and examine any property, inspect and monitor the withdrawal, and inspect and copy any relevant records, for the purpose of determining compliance with this permit, the Act or the regulations published pursuant thereto, upon presentation of proper identification and an oral statement of purpose.

4. <u>Water Emergency</u> Withdrawal volumes authorized by this permit are subject to restriction in any water emergency declared by MassDEP pursuant to M.G.L. c. 21G, §§ 15-17, M.G.L. c. 111, § 160, or any other enabling authority.

5. <u>Transfer of Permits</u> This permit shall not be transferred in whole or in part unless and until MassDEP approves such transfer in writing, pursuant to a transfer application on forms provided by

MassDEP requesting such approval and received by MassDEP at least thirty (30) days before the effective date of the proposed transfer. No transfer application shall be deemed filed unless it is accompanied by the applicable transfer fee established by 310 CMR 36.37.

6. Duty to Report The Permittee shall submit annually, on a form provided by MassDEP, a certified statement of the withdrawal. Such report is to be received by MassDEP by the date specified by MassDEP. Such report must be mailed or hand delivered to the address specified on the report form.

7. Duty to Maintain Records The Permittee shall be responsible for maintaining withdrawal records as specified by this permit.

8. Metering Withdrawal points shall be metered. Meters shall be calibrated annually. Meter shall be maintained and replaced as necessary to ensure the accuracy of the withdrawal records.

9. Amendment, Suspension or Termination The Department may amend, suspend or terminate this permit in accordance with M.G.L. c. 21G or 310 CMR 36.29.

APPEAL RIGHTS AND TIME LIMITS

This permit is a decision of MassDEP. Any person aggrieved by this decision may request an adjudicatory hearing. Any such request must be made in writing, by certified mail and received by MassDEP within twenty-one (21) days of the date of receipt of this permit.

No request for an appeal of this permit shall be validly filed unless a copy of the request is sent by certified mail, or delivered by hand to the local water resources management official in the community in which the withdrawal point is located; and for any person appealing this decision, who is not the applicant, unless such person notifies the permit applicant of the appeal in writing by certified mail or by hand within five (5) days of mailing the appeal to MassDEP.

CONTENTS OF HEARING REQUEST

310 CMR 1.01(6)(b) requires the request to include a clear and concise statement of the facts which are the grounds for the request and the relief sought. In addition, the request must include a statement of the reasons why the decision of MassDEP is not consistent with applicable rules and regulations, and for any person appealing this decision who is not the applicant, a clear and concise statement of how that person is aggrieved by the issuance of his permit.

FILING FEE AND ADDRESS

The hearing request, together with a valid check, payable to the Commonwealth of Massachusetts in the amount of $100 must be mailed to:

Commonwealth of Massachusetts
Department of Environmental Protection
P.O. Box 4062
Boston, MA 02211

The request shall be dismissed if the filing fee is not paid, unless the appellant is exempt or granted a waiver as described below.

EXEMPTIONS

The filing fee is not required if the appellant is a municipality (or municipal agency), county, district of the Commonwealth of Massachusetts, or a municipal housing authority.

WAIVER

MassDEP may waive the adjudicatory hearing filing fee for any person who demonstrates to the satisfaction of MassDEP that the fee will create an undue financial hardship. A person seeking a waiver must file, together with the hearing request, an affidavit setting forth the facts which support the claim of undue hardship.

Duane LeVangie

_____ 3/18/2021

Duane LeVangie
Chief, Water Management Act Program
Bureau of Water Resources

Date

Appendix A – Functional Equivalence with the 65 Residential Gallons Per Capita Day Performance Standard

MassDEP will consider PWS permittees who cannot meet the 65 RGPCD performance standard to be functionally equivalent, and in compliance with their permit, if they have an on-going program in place that ensures "best practices" for controlling residential water use as described below.

If the permittee fails to document compliance with the RGPCD performance standard in its 2018 Annual Statistical Report (ASR), or in any ASR thereafter, then the permittee must file with that ASR a Residential Gallons Per Capita Day Compliance Plan (RGPCD Plan) which shall include, at a minimum:

1. A description of the actions taken during the prior calendar year to meet the performance standard;
2. An analysis of the cause of the failure to meet the performance standard;
3. A description of the actions that will be taken to meet the performance standard which must include, at a minimum, at least one of the following:
    a) a program that provides water saving devices such as faucet aerators and low flow shower heads at cost;
    b) a program that provides rebates or other incentives for the purchase of low water use appliances (washing machines, dishwashers, and toilets), or
    c) the adoption and enforcement of an ordinance, by-law or regulation to require the installation of moisture sensors or similar climate related control technology on all automatic irrigation systems;
    and may include, without limitation, the following:
    d) the use of an increasing block water rate or a seasonal water rate structure as a tool to encourage water conservation;
    e) a program that provides rebates or other incentives for the installation of moisture sensors or similar climate related control technology on automatic irrigation systems;
    f) the adoption and enforcement of an ordinance, by-law or regulation to require that all new construction include water saving devices and low water use appliances;
    g) the adoption and enforcement of an ordinance, by-law or regulation to require that all new construction minimize lawn area and/or irrigated lawn area, maximize the use of drought resistant landscaping, and maximize the use of top soil with a high water retention rate;
    h) the implementation of a program to encourage the use of cisterns or rain barrels for outside watering;
    i) the implementation of monthly or quarterly billing.
4. A schedule for implementation; and
5. An analysis of how the planned actions will address the specific circumstances that resulted in the failure to meet the performance standard.

If the permittee is already implementing one or more of these programs, it must include in its RGPCD plan the continued implementation of such program(s), as well as implementation of at least one additional program. All programs must include a public information component designed to inform customers of the program and to encourage participation in the program.

RGPCD plans may be amended to revise the actions that will be taken to meet the performance standard. Amended RGPCD plans must include the information set forth above.

If a RGPCD plan is required, the permittee must:

1. submit information and supporting documentation sufficient to demonstrate compliance with its RGPCD plan annually at the time it files its ASR, and
2. continue to implement the RGPCD plan until it complies with the performance standard and such compliance is documented in the permittee's ASR for the calendar year in which the standard is met.

Appendix B – Functional Equivalence with the 10% Unaccounted for Water (UAW) Performance Standard

Water Loss Control Program: MassDEP will consider PWS permittees who cannot meet the 10% UAW performance standard to be functionally equivalent, and in compliance with their permit, if they have an on-going Water Loss Control Program in place that ensures best practices for controlling water loss.

Developing a Municipal Water Loss Control Program: A permittee who fails to document compliance with the 10% UAW performance standard for 2 out of the 3 years during the permit period, shall develop a Municipal Water Loss Control Program in accordance with the *AWWA M36 Water Audits and Loss Control Program*. Within 5 full calendar years of failing to meet the standard, the permittee shall:

1. Conduct an annual "top down" water audit, calculate the data validity level/score using AWWA Water Loss Control Committee's Free Water Audit Software, and submit the AWWA WLCC Free Water Audit Software Reporting Worksheet and data validity score annually as an attachment to the Annual Statistical Report (ASR).
    - If a PWS's data validity level/score is less than Level III (51-70), steps recommended through the audit(s) shall be taken to improve the reliability of the data prior to developing a component analysis and long-term program to reduce real and apparent water losses.
        i. Data with a validity score of 50 or less are considered too weak to be used to develop a component analysis or for infrastructure planning and maintenance.
        ii. Developing data with an acceptably strong validity score can be a multi-year process.
2. When the data validity score meets the Level III (51-70) requirement, conduct a component analysis to identify causes of real and apparent water loss and develop a program to control losses based on the results of the component analysis.
3. Submit the Municipal Water Loss Control Program that includes an M36 component analysis and implementation schedule, and identifies implementation funding to the Department.
4. Upon request of the Department, the permittee shall report on its implementation of the water loss control program.
5. Continued implementation of the Program will be required in order for the permittee to be considered functionally equivalent with the 10% UAW performance standard and in compliance with their permit.

A PWS permittee may choose to discontinue the Municipal Water Loss Control Program implementation if UAW, as reported on the ASR and approved by the Department, is below 10% for four consecutive years, and the water audit data validity scores are at least Level III (51-70) for the same four years.

NOTE FOR SMALL SYSTEMS: For small systems with less than 3,000 service connections or a service connection density of less than 16 connections per mile of pipeline, the Unavoidable Annual Real Loss (UARL) calculation and the Infrastructure Leak Index (ILI) developed as the final steps of the top down water audit may not result in valid performance indicators, and may not be comparable to the UARL and ILI calculations for larger systems.

However, these small systems can benefit from developing reliable data and conducting an annual top down water audit. Small systems can rely on the real losses (gallons per mile of main per day) performance indicator developed in the water audit as a measure of real water loss when developing a water loss control program. The M36 Manual discusses the audit process for small systems, and includes a chapter to guide small systems in understanding the results of their audits and in developing a water loss control program (*Manual of Water Supply Practices – M36, Fourth Edition, Chapter 9: Considerations for Small Systems*, pp. 293-305).

MassDEP Water Loss Control Program: If the permittee is required to develop a Water Loss Control Program in order to be to functionally equivalent with the 10% Unaccounted for Water Performance Standard, and the permittee has not developed a Municipal Water Loss Control Program that includes a component analysis and identifies implementation funding after 5 full calendar years of failing to meet the standard, the permittee will be required to implement the MassDEP UAW Water Loss Control Program measures outlined below:

- Complete an annual water audit and leak detection survey, as described in the AWWA M36 Manual, for the entire system.
  - Within one year, repair 75% (by water volume) of all leaks detected in the survey that are under the control of the public water system;
  - Thereafter, repair leaks as necessary to reduce permittee's UAW to 10% or the minimum level possible.
- Meter inspection and, as appropriate, repair, replace and calibrate water meters:
  - Large Meters (2" or greater) – within one year
  - Medium Meters (1" or greater and less than 2") – within 2 years
  - Small Meters (less than 1") - within three years
  - Thereafter, calibrate and or replace all meters according to type and specification.
- Bill at least quarterly within three years.
- Review the permittee's water pricing structure and ensure revenues are sufficient to pay the full cost of operating the system.

Hardship: A permittee may present an analysis of the cost-effectiveness of implementing certain conservation measures included in the MassDEP Water Loss Control Program and offer alternative measures. Any analysis must explicitly consider environmental impacts and must produce equal or greater environmental benefits.

A permittee's hardship analysis shall:

- Document economic hardship and present an analysis demonstrating that implementation of specific measures will cause or exacerbate significant economic hardship;
- Present reasons why specific measures are not cost-effective because the cost would exceed the costs of alternative methods of achieving the appropriate standard; and

- Propose specific conservation measures that would result in equal or greater system-wide water savings or equal or greater environmental benefits than the conservation measures included in the MassDEP UAW Water Loss Control Program.

MassDEP will review a permittee's detailed, written analysis to determine whether unique circumstances make specific water loss control measures less cost-effective than alternatives, or infeasible for the permittee.

RATES & FEES

RELATED LINKS

Water Quality

PFAS and the Sudbury Water District's Drinking Water Supply

Calculating My Water Bill

FAQs

Rates & Fees

Backflow Prevention

RESIDENTIAL WATER RATE

- **Base Charge** → $28.00 per quarter plus gallons used
- **Tier 1** → $5.25/1,000 gallons for the volume of water used up to 10,000 gallons
- **Tier 2** → $6.30/1,000 gallons for the volume of water used above 10,000 gallons and up to 20,000 gallons
- **Tier 3** → $8.40/1,000 gallons for the volume of water used above 20,000 gallons and up to 30,000 gallons
- **Tier 4** → $9.46/1,000 gallons for the volume of water used above 30,000 gallons and up to 40,000 gallons
- **Tier 5** → $11.56/1,000 gallons for the volume of water used above 40,000 gallons and up to 50,000 gallons
- **Tier 6** → $13.66/1,000 gallons for the volume of water used above 50,000 gallons and up to 60,000 gallons
- **Tier 7** → $16.81/1,000 gallons for the volume of water used above 60,000 gallons

COMMERCIAL WATER RATE

- **Base Charge** → $28.00 per quarter plus gallons used
- **Tier 1** → $6.30/1,000 gallons for the volume of water used up to 20,000 gallons
- **Tier 2** → $8.40/1,000 gallons for the volume of water used above 20,000 gallons and up to 30,000 gallons
- **Tier 3** → $9.46/1,000 gallons for the volume of water used above 30,000 gallons and up to 40,000 gallons
- **Tier 4** → $11.56/1,000 gallons for the volume of water used above 40,000 gallons and up to 50,000 gallons
- **Tier 5** → $13.66/1,000 gallons for the volume of water used above 50,000 and up to 60,000 gallons
- **Tier 6** → $16.81/1,000 gallons for the volume of water used above 60,000 and up to 150,000 gallons
- **Tier 7** → $11.56/1,000 gallons for the volume of water used above 150,000 gallons
- **Note** → Gallons used by Commercial Properties using a lawn irrigation system that have not installed a second irrigation meter will be calculated at the 'Residential Rate'

MUNICIPAL WATER RATE

- **Base Charge** → $28.00 per quarter plus gallons used
- $5.25/1,000 gallons

TERMS OF PAYMENT, PENALTY FEE:

- 1st Notice: net 30 days
- 2nd Notice: net 15 days plus $25.00 Penalty Fee
- 3rd Notice: net 10 days plus $50.00 Penalty Fee

PAYMENT NEGLECT, TURN ON FEE:

- $100.00 fine plus outstanding charges due (Regular Business Hours)
- $170.00 fine plus outstanding charges due (Outside Business Hours)

NEWS FEED

- Holiday Hours
- December Quarterly Billing Misprint in Summary of Charges
- Temporary Water Outage/Emergency Water Main Repair: Hudson Road (331-373), Dorothy Road and Fairhaven Circle

GENERAL LABOR FEE:

- **$50.00/Hour/Laborer** → One-hour-minimum for scheduled service appointments
- **$60.00/Hour/Laborer** → Two-hour-minimum for emergency or after hours calls

TITLE V WATER USAGE REPORT FEE:

- Free if using the Customer Web Portal
- $30.00 if SWD processes report
- **Note** → Maintaining the customer copy of your water invoices for your most recent 8 successive quarters (2 years) eliminates the need of this report. Simply supply your septic inspector with copies of these invoices as proof of water usage.

RESIDENTIAL CONNECTION/ENTRANCE FEE:

- $3,500 per living unit

COMMERCIAL CONNECTION/ENTRANCE FEE: *(calculated by meter size)*

- **Up to 2-Inch** → $5,000.00
- **3-Inch** → $10,000.00
- **4-Inch** → $25,000.00
- **6-Inch** → $50,000.00

FIRE PROTECTION CHARGE FEE: *(calculated by square foot)*

- **Up to 20,000 SF** → $500.00
- **Between 20,000 SF and 40,000 SF** → $1,000.00
- **Between 40,000 and 60,000 SF** → $1,500.00
- **Between 60,000 SF and 80,000 SF** → $2,000.00
- **Over 80,000 SF** → $2,500.00

HYDRANT FIRE FLOW TEST FEE:

- $200.00
- Plus Minimum of 2 Hour After Hours Labor Rate (when applicable)

UNAUTHORIZED USE OF WATER/METER TAMPERING FEE:

- $200.00 per day or at the discretion of the Executive Director

CONTACT INFO

Phone (978) 443-6602

Mailing Address
199 Raymond Road
P.O. Box 111
Sudbury, Massachusetts 01776

Phone: 978-443-6602 »
Fax: 978-443-9587 »
Email:
customerservice@sudburywater.com

NEWS FEED

- Holiday Hours
  December 20, 2021
- December Quarterly Billing Misprint in Summary of Charges
  December 13, 2021
- Temporary Water Outage/Emergency Water Main Repair: Hudson Road (331-373), Dorothy Road and Fairhaven Circle
  December 7, 2021

RESOURCES

- Water Quality
- Calculating My Water Bill
- FAQS
- Rates & Fees
- Backflow Prevention
- Careers

The Sudbury Water District is an independent municipal entity established by an Act of the Massachusetts Legislature in 1934.
It is separate and distinct from the Town of Sudbury, and is not affiliated with the Town of Sudbury's Department of Public Works.

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BACKFLOW PREVENTION

RELATED LINKS

Water Quality

PFAS and the Sudbury Water District's Drinking Water Supply

Calculating My Water Bill

FAQs

Rates & Fees

Backflow Prevention

Help prevent backflow contamination. A cross connection is a connection between a drinking water pipe and a non-approved source.

Did you know that contamination can come from your own home? For instance, you're going to spray fertilizer on your lawn and you attach your hose to the sprayer that contains the fertilizer. If the water pressure drops when the hose is connected to the fertilizer, the fertilizer could be sucked back into the drinking water pipes through the hose. Using an attachment on your hose called a backflow-prevention device can prevent this problem.

We recommend the installation of backflow prevention devices, such as a low cost hose bib vacuum breaker, for all inside and outside hose connections. They can be purchased at any hardware or plumbing supply store and at the Sudbury Water District business office.

You can learn more about ***backflow prevention*** by visiting these links:

50 Cross Connection Questions, Answers and Illustrations

NEWS FEED

- Holiday Hours
- December Quarterly Billing Misprint in Summary of Charges
- Temporary Water Outage/Emergency Water Main Repair: Hudson Road (331-373), Dorothy Road and Fairhaven Circle

CONTACT INFO

Phone (978) 443-6602

Mailing Address
199 Raymond Road

NEWS FEED

- Holiday Hours
  December 20, 2021

RESOURCES

Water Quality

Calculating My Water Bill

FAQS

P.O. Box 111
Sudbury, Massachusetts 01776

Phone: 978-443-6602 »
Fax: 978-443-9587 »
Email:
customerservice@sudburywater.com

- December Quarterly Billing Misprint in Summary of Charges
  December 13, 2021

- Temporary Water Outage/Emergency Water Main Repair: Hudson Road (331-373), Dorothy Road and Fairhaven Circle
  December 7, 2021

Rates & Fees

Backflow Prevention

Careers

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Sudbury
Water District

23rd Annual Water Quality Report

2020

sudburywater.com

PWS ID NO 3288000

Additional copies of this report are available at our business office:

199 Raymond Road

For more information about how Sudbury Water District
maintains the safety of your drinking water,
and to view previous years' reports go to

www.sudburywater.com/my-water/water-quality

TABLE OF CONTENTS

1

LETTER FROM THE EXECUTIVE DIRECTOR

2

WATER SUPPLY
DISTRIBUTION SYSTEM
WHY AM I RECEIVING THIS REPORT?

3

WHO DO I CONTACT IF I HAVE CONCERNS ABOUT MY LOCAL DRINKING WATER?
ARE THERE OPPORTUNITIES FOR PUBLIC PARTICIPATION?
WHERE DOES MY WATER COME FROM?

4

IS MY WATER TREATED?
HOW ARE THESE SOURCES PROTECTED?
SUBSTANCES FOUND IN DRINKING WATER

5

FURTHER INFORMATION CONCERNING SAFE DRINKING WATER
MINIMIZING LEAD EXPOSURE

6

CROSS CONNECTION CONTROL PROGRAM

7

WATER CONSERVATION

8

IMPROVEMENTS TO THE WATER DISTRIBUTION SYSTEM
FUTURE PROJECTS FOR 2021

9

WHAT DOES THIS DATA REPRESENT?
REGULATED CONTAMINANTS

10

UNREGULATED CONTAMINANTS

11

SECONDARY CONTAMINANTS

12

CLOSING AND WEBSITE INFORMATION

Sudbury Water District

Dear Resident,

The Sudbury Water District is once again proud to report that water delivered to you has met or exceeded all Federal and State drinking water standards. This year's Water Quality Report includes all water testing from January through December 2020 as well as other important information concerning your drinking water.

We are dedicated to the planning, operations and maintenance necessary for producing and delivering high quality drinking water for all household, commercial, and community needs. We strive to serve the community in a courteous, efficient, and environmentally sustainable manner. We are passionate about our work and try to instill our values of integrity, professionalism, and teamwork in everything that we do.

While maintaining water quality is critical and is our top priority, other issues such as service reliability, adequacy of supply, preparing for future growth, protecting our water supply, conservation and holding water rates down are also of key importance. We encourage you to take time to look over this report. If you have any further questions, or would like additional copies of this report, please contact our office at (978) 443-6602.

Sincerely,

Vincent J. Roy
Executive Director
Sudbury Water District
199 Raymond Road
Sudbury, MA 01776

Raymond Road Administration Building, Inside of RRWTP, Inside of Well 10, and East Street WTP.

This is a right-to know report required to be sent to you in accordance with the Federal Safe Drinking Water Act Public Law 104-182, Section 141(c)(4).

WHY AM I RECEIVING THIS REPORT?

In 1996 the Federal Safe Drinking Water Act mandated all community drinking water systems to prepare and distribute annually to their customers Consumer Confidence Reports (CCR's). In compliance with these regulations the Sudbury Water District is pleased to present our 23rd annual Water Quality Report; a snapshot of the drinking water quality provided to you last year. Included are important details about where your water comes from, what it contains and how it compares to state and federal standards.

WATER SUPPLY

The Sudbury Water District has nine (9) active gravel packed wells that supply the entire water system. A combined capacity of 7.6 MGD of water is available to pump from the nine wells; however, the system is not designed to operate all the wells simultaneously. The wells are located within the Raymond Road Aquifer (Well Nos. 2A, 4, 6, 7 and 9), Hop Brook Aquifer (Well Nos. 3A, 8A, 10), and Great Meadow Aquifer located in the northeast part of town (Well No. 5).

DISTRIBUTION SYSTEM

The distribution system consists of 6,100 service connections. The distribution system includes approximately 147 miles of water main (pipe) throughout the Town.

The District relies on four (4) ground level storage facilities that combine for a total capacity of 6.3 MG. Two storage tanks located on Willis Hill provide a significant majority of the overall capacity. A 1.0 MG storage tank is located at the end of Bigelow Drive, and a 0.3 MG tank is located on Goodman Hill.

Distribution storage serves to maintain system pressure by supplying local water demands during periods of peak consumption. It helps to meet hourly demand fluctuations, minimizing changes in flow rates through supply sources. Storage helps to meet required fire flows and it provides a volume of water for other emergencies such as a pipeline break or mechanical equipment malfunction. Storage, when properly located, helps to equalize pressures throughout the system. It is necessary to maintain storage levels as near to full as possible in order to maintain maximum available pressure in the distribution system, and to maximize fire flow availability. However, it is also important to allow the tank levels to fluctuate to minimize stagnant conditions and maintain water quality.

WHO DO I CONTACT IF I HAVE CONCERNS ABOUT MY LOCAL DRINKING WATER?

Sudbury Water District is staffed by seven field personnel and three office staff, all of whom are dedicated to bringing into your home the highest quality of drinking water. Office and field personnel are available weekdays between 8 a.m. and 4 p.m., to meet and address public supply needs. Questions or concerns about your drinking water? Contact (978) 443-6602 during regular business hours or visit our website www.sudburywater.com. A useful and informative tool updated regularly to include our most recent water quality tests, answers to frequently asked questions, explanations of rates, fees and links to pay your water bill online or to register to receive emergency alert notifications. Executive Director, Vincent Roy is also available during regular business hours by phone (978) 443-6602 or email him directly at vroy@sudburywater.com. Though office hours are limited, the District always has an experienced field technician on-call, 365 days a year, for emergency and after-hour matters. Should you experience or observe a water emergency after business call 9-1-1 and request the Sudbury Police Department to dispatch an on-call water technician to address the matter.

ARE THERE OPPORTUNITIES FOR PUBLIC PARTICIPATION?

The Board of Water Commissioners meets bi-weekly at 5:00 p.m. at our Administration office located at 199 Raymond Road to discuss and vote on issues concerning your drinking water supply. Director Roy keeps the Commissioners up to date on current projects and developing situations. You are invited to participate in this public forum and become more knowledgeable about your drinking water as well as bringing your concerns to the attention of the Commissioners and the Director. Contact the District office at (978) 443-6602 to obtain the scheduled meeting dates or view our meeting calendar online at www.sudburywater.com.

WHERE DOES MY WATER COME FROM?

Sudbury's water is obtained from nine gravel packed ground wells located in three separate aquifers; these aquifers are known as Raymond Road, Hop Brook and Great Meadow. We also have four storage tanks located throughout Town with a storage capacity ranging from 0.35 to 3.0 million gallons and totaling 6.35 million gallons. Your water is provided by the following sources:

Source Name	Mass DEP Source ID #	Source Type	Location of Aquifer
GP Well No 2A	3288000-02G	Groundwater	Raymond Road
GP Well No 3A	3288000-11G	Groundwater	Hop Brook
GP Well No 4	3288000-04G	Groundwater	Raymond Road
GP Well No 5	3288000-05G	Groundwater	Great Meadow
GP Well No 6	3288000-06G	Groundwater	Raymond Road
GP Well No 7	3288000-07G	Groundwater	Raymond Road
GP Well No 8A	3288000-12G	Groundwater	Hop Brook
GP Well No 9	3288000-09G	Groundwater	Raymond Road
GP Well No 10	3288000-10G	Groundwater	Hop Brook

IS MY WATER TREATED?

Our water system makes every effort to provide you with safe and pure drinking water. To improve the quality of the water delivered to you, we treat it to remove several contaminants:

We add disinfectant to protect you against microbial contaminants; we add fluoride to the water to aid in dental health and hygiene; we aerate and filter the water to remove volatile organic contaminants; we filter the water to reduce levels of iron and manganese and we chemically neutralize the water.

As there are variations in the water quality among our nine sources, treatment systems are designed to specifically address the type and amount of contaminants present at each site. Following treatment, water is pumped to elevated storage tanks for distribution to your home. When tanks are full, the pumps at the wells shut off and water is fed to customers from the tanks. As soon as demand brings tank levels to the "start" level, the pumps restart and the cycle begins again. In order to perform scheduled and emergency maintenance operations, the specific wells selected to be in service at any time will vary. Therefore, the water delivered to your home does not necessarily originate at a single point but rather is a blend of several our wells.

HOW ARE THESE SOURCES PROTECTED?

In 2002 the DEP prepared a Source Water Assessment Program (SWAP) Report for our water supply source(s). This report assesses the susceptibility of public water supplies: The Zone I for our wells is a 400-foot radius around the wellhead. Massachusetts Drinking Water Regulations (310 CMR 22.00 Drinking Water) requires public water suppliers to own or control the Zone I through a conservation restriction. Only water supply activities are allowed within the Zone I. However, many public water supplies were developed prior to the DEPs regulations and contain non-water supply activities such as homes, recreation fields and public roads. All our wells are located in aquifers with a high vulnerability to contamination due to the absence of hydro-geologic barriers (clay) that can prevent contamination migration. The Zone IIs for Sudbury are a mixture primarily of residential, forest and wetlands land use with a small portion consisting of other uses such as recreation, agriculture, commercial, light industry. The District employs corrective actions by continuing to work with local and state offices for the promotion of good practices on land contained within our Zone I and Zone II areas. The DEP has commended the District for taking an active role in promoting source protection measures in the water supply protection areas through: Adopting land use controls that meet the DEPs Drinking Water Regulations and partnering with the Town of Sudbury to study the feasibility of sewering the commercial section of Route 20. A complete SWAP Report can be viewed online at www.sudburywater.com or mailed upon request.

SUBSTANCES FOUND IN DRINKING WATER

Sources of drinking water (both tap water and bottled water) include rivers, lakes, streams, ponds, reservoirs, springs, and wells. As water travels over the surface of the land or through the ground, it dissolves naturally occurring minerals, and in some cases, radioactive material. It can pick up substances resulting from the presence of animals or from human activity. Contaminants that may be present in source water include Microbial contaminants, such as viruses and bacteria, may come from sewage and treatment plants, septic systems, agricultural livestock operations and wildlife. Inorganic contaminants, such as salts and metals, can be naturally occurring or resulting from urban storm water runoff, industrial or domestic wastewater discharges, oil and gas production, mining and farming. Pesticides and herbicides, which may come from a variety of sources such as agriculture, urban storm water runoff and residential uses. Organic chemical contaminants, including synthetic and volatile organic chemicals, which are byproducts of industrial process and petroleum production and may also come from gas stations, urban storm water runoff and septic systems. Radioactive contaminants, which can be naturally occurring or be the result of oil and gas production and mining activities.

FURTHER INFORMATION CONCERNING SAFE DRINKING WATER

In order to ensure that tap water is safe to drink, the Department of Environmental Protection (MassDEP) and U.S. Environmental Protection Agency (EPA) prescribe regulations that limit the amount of certain contaminants in water provided by public water systems. The Food and Drug Administration (FDA) and Massachusetts Department of Public Health (DPH) regulations establish limits for contaminants in bottled water that must provide the same protection for public health. All drinking water, including bottled water, may reasonably be expected to contain at least small amounts of some contaminants. The presence of contaminants does not necessarily indicate that water poses a health risk. More information about contaminants and potential health effects can be obtained by calling the EPA's Safe Drinking Water Hotline (800) 426-4791.

Some people may be more vulnerable to contaminants in drinking water than the general population. Immuno-compromised persons such as persons with cancer undergoing chemotherapy, persons who have undergone organ transplants, people with HIV/AIDS or other immune system disorders, some elderly, and some infants can be particularly at risk from infections. These people should seek advice about drinking water from their health care providers. EPA, Centers for Disease Control and Prevention (CDC) contain guidelines on lowering the risk of infection by cryptosporidium and other microbial contaminants are available from the Safe Drinking Water Hotline (800) 426-4791.

MINIMIZING LEAD EXPOSURE

If present, elevated levels of lead can cause serious health problems, especially for pregnant women and young children. Lead in drinking water is primarily from materials and components associated with service lines and home plumbing. Sudbury Water District is responsible for providing high quality drinking water but cannot control the variety of materials used in residential plumbing components. When your water has been sitting for several hours, you can minimize the potential for lead exposure by flushing your tap for 30 seconds to 2 minutes before using water for drinking or cooking. If you are concerned about lead in your water, you may wish to have your water tested. Information on lead in drinking water, testing methods, and steps you can take to minimize exposure is available from the Safe Drinking Water Hotline or at http://www.epa.gov/safewater/lead.

CROSS CONNECTION CONTROL PROGRAM

WHAT IS A CROSS CONNECTION?

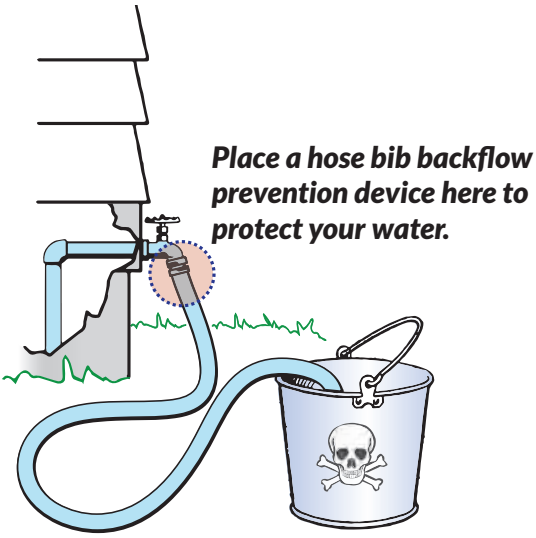
A cross-connection is an ACTUAL or POTENTIAL link between the potable water supply and a source of contamination (sewage, chemicals, gas, etc.). This has the potential of becoming a hazardous situation if the contaminant source were to enter (backflow) into the potable water. Backflow occurs when the water flow is reversed, due to a change in pressure, and water flows backwards, into and through the system. Contamination can also occur when the pressure in the drinking water system drops due to occurrences such as water main breaks and heavy water demand causing contaminants to be drawn (back-siphonage) into the potable water system.

WHERE DO I FIND CROSS CONNECTIONS?

Garden hoses connected to an outside water tap are the most common sources of cross connections in the home. The garden hose creates a hazard when submerged in non-potable water such as a swimming pool or when attached to a chemical sprayer for weed control. The District surveys all industrial, commercial, and municipal facilities to ensure that all cross connections are eliminated or protected by a backflow prevention device. The District is also responsible for inspecting and testing each device to ensure it is providing maximum protection.

WHAT CAN I DO TO PREVENT BACKFLOW?

You can prevent backflow in your home plumbing system by installing an inexpensive hose-bib vacuum breaker on each of your outside water spigots. These vacuum breakers will prevent water from being back siphoned from a polluted or even contaminated water source into your home's water pipes or the public water distribution system. These devices cost about $10 and are available at most hardware stores.



WHO SHOULD I CONTACT FOR MORE INFORMATION?

Sudbury Water District staff will be happy to answer your questions. Call (978) 443-6602 or send us an e-mail at customerservice@sudburywater.com.

WATER CONSERVATION

MassDEP has mandated Sudbury Water District to implement restrictions on outdoor water use. Though not popular with many residents, the restrictions are similar to what many neighboring communities are subject to. The purpose of the restrictions is to ensure an adequate supply of water for drinking and fire protection and to protect the quality and quantity of water in local aquatic habitats such as ponds, rivers and wetlands.

By using water more efficiently, you can help preserve water supplies for future generations, save money, and protect the environment. By changing a few habits, you will help protect your water supply and perhaps save on water charges. Here are some outdoor water saving tips that residents can implement in their homes.

- **Water your lawn only as needed. Too frequent watering can actually weaken a lawn by encouraging shallow roots. The general rule of thumb is one inch per week including rain.**
- **Timing is critical for lawn watering. Water your lawn in the early morning or late evening to avoid evaporation.**
- **Install mulch to keep roots cool and moist. Mulch serves as a ground cover that reduces water evaporation from the soil.**
- **Keep your blades sharp and high. Raising your lawn mower blade prevents tearing of the grass. Longer grass provides shade for the roots and helps reduce water loss.**
- **Use shut off-nozzles on hoses and automatic shut-off devices on irrigation systems. Unattended hoses can use 10 gallons or more per minute.**
- **Install a soil moisture sensor complimented with a rain sensor that turns automatic sprinkler systems off when the soil contains sufficient moisture and when it is raining.**

IMPROVEMENTS TO THE WATER DISTRIBUTION SYSTEM IN 2020

Each part of the water system needs routine maintenance to maintain a safe and dependable water supply. Listed are some of the projects undertaken by the District in 2020.

- Completed Raymond Road Administration Facility Improvement Project.
- Completed Water System Master Plan.
- Completed PFAS Study/Conceptual Design Report.
- Conducted a leak detection survey of the entire water system. The survey is necessary to locate and eliminate leaks from the system.
- Replaced 1,570 feet of 6-inch water main on Codjer Lane with new 8-inch ductile iron (D.I.) pipe.
- Replaced 3,490 feet of 10-inch water main on Morse Road with new 12-inch ductile iron (D.I.) pipe.
- Cleaned Well #s 2A and 8A.
- Improvements made to the Water GIS Mapping.
- Completed the upgrade of the Unidirectional Hydrant Flushing Program.
- Completed Risk and Resiliency Assessment of the Water System.
- Completed integration of Well 3A to the East Street Water Treatment Plant.
- Completed the conversion of the new billing software system.
- Completed water main design for Dutton Road Bridge Project.

FUTURE PROJECTS FOR 2021

- Complete design plans for PFAS Filtration system for the Raymond Road WTP.
- Complete preliminary design plans for a new pressure service area near the Goodman Hill Water Tank.
- Complete design plans and bid ready documents for SCADA upgrade.
- Completion of Water System Audit.
- Completed water main replacement at the Dutton Road Bridge Project. .

Board of Water Commissioners,

Joshua M. Fox, Chairman

Robert E. Boyd, Jr.

Robert H. Sheldon

WHAT DOES THIS DATA REPRESENT?

The water quality information presented in the following table(s) is from the most recent round of testing done in accordance with the 1996 Safe Drinking Water Act Amendments. All data shown was collected during the last calendar year unless otherwise noted.

Regulated Contaminants are those for which the EPA has set legal limits on the levels allowed in drinking water. The limits reflect both the level that protects human health and the level that water systems can achieve using the best available technology.

Lead and Copper Contaminant	Date(s) Collected	90th Percentile	Action Level	MCLG	No of Sites Sampled	No of Sites Above Action Level	Possible Source of Contamination
[1]Lead (ppm)	10/07/20	0.004	0.015	0	30	0	Corrosion of household plumbing systems; Erosion of natural deposits.
[1]Copper (ppm)	10/07/20	0.18	1.3	1.3	30	0	Corrosion of household plumbing systems; Erosion of natural deposits; Leaching from wood preservatives.

Inorganic Contaminant	Date Collected	Highest Result or Highest Running Average Detected	Range Detected	MCL or MRDL	MCLG, MRDLG or ORSG	Violation (Yes/No)	Possible Source of Contamination
Arsenic (ppb)	04/10/18	ND	—	0.010	—	No	Erosion of natural deposits; runoff from orchards; runoff from glass and electronics production wastes.
Cyanide (ppm)	04/02/19	ND	—	0.2	—	No	Discharge from steel and metal factories; discharge from plastic and fertilizer factories.
Barium (ppm)	04/10/18	0.0214	0.009 - 0.054	2	2	No	Discharge of drilling wastes; discharge from metal refineries; erosion of natural deposits.
Fluoride (ppm)**	Monthly 2020	0.55	0.28-0.55	4	4	No	Erosion of natural deposits; water additive which promotes strong teeth; discharge from fertilizer and aluminum factories.
Nitrate (ppm)	04/15/20	7.0	0.81-7.0	10	10	No	Runoff from fertilizer use; leaching from septic tanks; sewage; erosion of natural deposits.
Perchlorate (ppb)	07/07/20	0.21	0.08-0.21	2	N/A	No	Rocket propellants, fireworks, munitions, flares and blasting agents.
Sodium (ppm)	04/10/18	63.6	6.7 -63.6	—	20	No	Natural sources; runoff from use as salt on roadways; by-product of treatment process.

***Fluoride also has a secondary contaminant level (SMCL) of 2 ppm.*

Radioactive Contaminants	Date Collected	Highest Result or Highest Running Average Detected	Range Detected	MCL or MRDL	MCLG or MRDLG	Violation (Yes/No)	Possible Source of Contamination
[1]Gross Alpha emitter (pCi/L)	01/07/20	0.2	ND-0.2	15	0	No	Erosion of natural deposits.
[1]Radium 226 & 228 (pCi/L) (combined values)	01/07/20	1.0	0.3-1.0	5	N/A	No	Erosion of natural deposits.

Disinfection Byproducts	Date Collected	Highest Running Annual Average	Range	***MCL or MRDL	MCLG or MRDLG	Violation (Yes/No)	Possible Source of Contamination
Total Trihalomethanes (ppb) (TTHMs)	Quarterly 2020	65	8.5-108	80	—	No	By-product of drinking water chlorination.
Haloacetic Acids (ppb) (HAA5)	Quarterly 2020	27	3.7-50	60	—	No	By-product of drinking water disinfection.
Chlorine (ppm) (free, total or combined)	Monthly 2020	0.77	0.36-0.77	4	4	No	Water additive used to control microbes.

****Running Annual Average*

Unregulated Contaminants are those for which the EPA has not established drinking water standards. The purpose of unregulated contaminants monitoring is to assist the EPA in determining their occurrence in drinking water and whether future regulation is warranted.

Unregulated Contaminants	Date(s) Collected	Highest Result Detected	Range Detected	Possible Source of Contamination
Bromodichloromethane (ppb)	Quarterly 2020	33.1	1.8-33.1	Trihalomethane; by-product of drinking water chlorination.
Bromoform (ppb)	Quarterly 2020	1.1	ND-1.1	Trihalomethane; by-product of drinking water chlorination.
Chloroform (ppb)	Quarterly 2020	65.6	3.3-65.6	A by-product of drinking water chlorination (regulated collectively with total trihalomethanes (TTHMs); in non-chlorinated sources, chloroform may be naturally occurring.
Dibromochloromethane (ppb)	Quarterly 2020	14.4	2.5-14.4	Trihalomethane; by-product of drinking water chlorination.

Secondary Contaminants are non-mandatory water quality standards. The EPA does not enforce "secondary maximum contamination levels" or SMCL. They are established only as guidelines to assist public water systems in managing their drinking water for aesthetic considerations such as taste, color and odor. These contaminants are not considered to present a risk to human health at the SMCL.

Secondary Contaminants	Date(s) Collected	Range Detected	SMCL	Indications of Contamination
Hardness (ppm)	04/15/2020	58-221	—	Not applicable (No SMCL)
Iron (ppm)	04/15/2020	<0.05-0.38	0.3	Rusty color; sediment; metallic taste; reddish or orange staining.
Manganese (ppm)	10/06/2020	<0.01-0.5	0.05	Black to brown color; black staining; bitter metallic taste.
pH	Daily 2020	7.1 - 8.2	6.5 - 8.5	Low pH: bitter metallic taste; corrosion. High pH: slippery feel; soda taste; deposits.

ppb: parts per billion, or micrograms per liter (ug/l)

Lead and Copper 90th Percentile: Out of every 10 homes sampled, 9 were at or below this level.

ppm: parts per million, or milligrams per liter (mg/l)

Action Level: The concentration of a contaminant, which if exceeded, triggers treatment or other requirements that a water system must follow.

ND: None Detected **— :** Not Applicable

Maximum Contamination Level Goal (MCLG): The level of a contamination in drinking water below, which there is no known or expected risk to health MCLGs allow for a margin of safety.

Maximum Contamination Level (MCL): The highest level of a contaminant that is allowed in drinking water. MCLs are set as close to the MCLGs as feasible using the best available treatment technology.

Maximum Residual Disinfectant (MRDL): The highest level of a disinfectant allowed in drinking water. There is convincing evidence that addition of a disinfectant is necessary for control of microbial contaminants (ex. chlorine, chloramines, chlorine dioxide).

Maximum Residual Disinfectant Level Goal (MRDLG): The level of a drinking water disinfectant below which there is no known of expected risk to health. MRDLGs do not eflect the benefits of the use of disinfectants to control microbial contaminants.

(1) *The data presented in this report is from the most recent testing done in accordance with federal regulations for the lead and copper rule.*

We hope you find this report informative, allowing you the opportunity to become familiar with your public water supply. The Board of Water Commissioners and District employees strive to achieve the highest quality drinking water together with outstanding customer service. We invite your comments and questions regarding the District, its operation and this Annual Quality Report Questions. Comments or concerns may be addressed by contacting (978) 443-6602.

Additional copies of this report can be mailed upon request by contacting the District Business Office at (978) 443-6602 or emailing customerservice@sudburywater.com

For more information about how Sudbury Water District maintains the safety of your drinking water and to view previous years' reports go to:

www.sudburywater.com/my-water/water-quality

VISIT OUR WEBSITE FOR THE LATEST NEWS AND INFORMATION ON FLUSHING, WATER RESTRICTIONS, MEETINGS, AND MORE!

FLUSHING

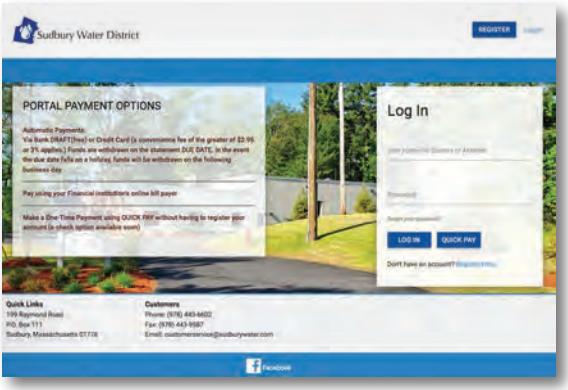
Sudbury Water District flushes hydrants every spring and fall, in an effort to clear water mains of sediment and mineral build up.

RESTRICTIONS

See current restrictions at www.sudburywater.com.

MEETINGS

Meetings are held at 5 p.m. at the Sudbury Water District office, 199 Raymond Road.



PLUS, PAY YOUR BILL ONLINE AT WWW.SUDBURYWATER.COM!

Sudbury Water District

199 Raymond Road • P.O. Box 111 • Sudbury, MA 01776
Phone (978) 443-6602 • Fax (978) 443-9587
customerservice@sudburywater.com

sudburywater.com

Sudbury
Water District

22nd Annual Water Quality Report

2019

sudburywater.com

PWS ID NO 3288000

Additional copies of this report are available at our business office:

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Hours of operation (8 a.m. - 4 p.m., M-F)

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TABLE OF CONTENTS

1

LETTER FROM THE EXECUTIVE DIRECTOR

2

WHY AM I RECEIVING THIS REPORT?
WHO DO I CONTACT IF I HAVE CONCERNS ABOUT MY LOCAL DRINKING WATER?
ARE THERE OPPORTUNITIES FOR PUBLIC PARTICIPATION?

3

DISTRIBUTION SYSTEM
YOUR DRINKING WATER SOURCE

4

IS MY WATER TREATED?
HOW ARE THESE SOURCES PROTECTED?
SUBSTANCES FOUND IN DRINKING WATER

5

FURTHER INFORMATION CONCERNING SAFE DRINKING WATER
MINIMIZING LEAD EXPOSURE

6

CROSS CONNECTION CONTROL PROGRAM

7

WATER CONSERVATION

8

IMPROVEMENTS TO THE WATER DISTRIBUTION SYSTEM
FUTURE PROJECTS FOR 2020

9

WHAT DOES THIS DATA REPRESENT?
REGULATED CONTAMINANTS

10

UNREGULATED CONTAMINANTS

11

SECONDARY CONTAMINANTS

12

CLOSING AND WEBSITE INFORMATION

Sudbury Water District

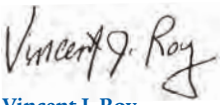
Dear Resident,

The Sudbury Water District is once again proud to report that water delivered to you has met or exceeded all Federal and State drinking water standards. This year's Water Quality Report includes all water testing from January through December 2019 as well as other important information concerning your drinking water.

We are dedicated to the planning, operations and maintenance necessary for producing and delivering high quality drinking water for all household, commercial, and community needs. We strive to serve the community in a courteous, efficient, and environmentally sustainable manner. We are passionate about our work and try to instill our values of integrity, professionalism, and teamwork in everything that we do.

While maintaining water quality is critical and is our top priority, other issues such as service reliability, adequacy of supply, preparing for future growth, protecting our water supply, conservation and holding water rates down are also of key importance. We encourage you to take time to look over this report. If you have any further questions, or would like additional copies of this report, please contact our office at (978) 443-6602.

Sincerely,



Vincent J. Roy
Executive Director
Sudbury Water District
199 Raymond Road
Sudbury, MA 01776

Raymond Road Administration Facility Improvement Project

This is a right-to know report required to be sent to you in accordance with the Federal Safe Drinking Water Act Public Law 104-182, Section 141(c)(4).

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ARE THERE OPPORTUNITIES FOR PUBLIC PARTICIPATION?

In response to the coronavirus outbreak and to support the health and safety of the Sudbury community and our staff Sudbury Water District has temporarily closed our administration building to public access. Our Board greatly values the public participation in the meeting process and will continue to welcome public participation utilizing remote access technology to conduct our meetings. Bi-Weekly Commissioners meeting will be held virtually at 5 p.m. to discuss and vote on issues concerning your drinking water supply. You are invited to participate remotely in this public forum and become more knowledgeable about your drinking water as well as bringing your concerns to the attention of the Commissioners and the Executive Director. View our meeting schedule online at www.sudburywater.com or call (978) 443-6602 to obtain scheduled meeting dates.

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GP Well No 7	3288000-07G	Groundwater	Raymond Road Aquifer
GP Well No 8A	3288000-12G	Groundwater	Hop Brook Aquifer
GP Well No 9	3288000-09G	Groundwater	Hop Brook Aquifer
GP Well No 10	3288000-10G	Groundwater	Pratt's Mill Road

IS MY WATER TREATED?

Our water system makes every effort to provide you with safe and pure drinking water. To improve the quality of the water delivered to you, we treat it to remove several contaminants:

We add disinfectant to protect you against microbial contaminants; we add fluoride to the water to aid in dental health and hygiene; we aerate and filter the water to remove volatile organic contaminants; we filter the water to reduce levels of iron and manganese and we chemically neutralize the water.

As there are variations in the water quality among our nine sources, treatment systems are designed to specifically address the type and amount of contaminants present at each site. Following treatment, water is pumped to elevated storage tanks for distribution to your home. When tanks are full, the pumps at the wells shut off and water is fed to customers from the tanks. As soon as demand brings tank levels to the "start" level, the pumps restart and the cycle begins again. In order to perform scheduled and emergency maintenance operations, the specific wells selected to be in service at any time will vary. Therefore the water delivered to your home does not necessarily originate at a single point but rather is a blend of a number of our wells.

HOW ARE THESE SOURCES PROTECTED?

In 2002 the DEP prepared a Source Water Assessment Program (SWAP) Report for our water supply source(s). This report assesses the susceptibility of public water supplies: The Zone I for our wells is a 400 foot radius around the wellhead. Massachusetts Drinking Water Regulations (310 CMR 22.00 Drinking Water) requires public water suppliers to own or control the Zone I through a conservation restriction. Only water supply activities are allowed within the Zone I. However many public water supplies were developed prior to the DEP's regulations and contain non-water supply activities such as homes, recreation fields and public roads. All of our wells are located in aquifers with a high vulnerability to contamination due to the absence of hydro-geologic barriers (clay) that can prevent contamination migration. The Zone IIs for Sudbury are a mixture primarily of residential, forest and wetlands land uses with a small portion consisting of other uses such as recreation, agriculture, commercial, light industry. The District employs corrective actions by continuing to work with local and state offices for the promotion of good practices on land contained within our Zone I and Zone II areas. The DEP has commended the District for taking an active role in promoting source protection measures in the water supply protection areas through: Adopting land use controls that meet the DEP's Drinking Water Regulations and partnering with the Town of Sudbury to study the feasibility of sewering

SUBSTANCES FOUND IN DRINKING WATER

Sources of drinking water (both tap water and bottled water) include rivers, lakes, streams, ponds, reservoirs, springs, and wells. As water travels over the surface of the land or through the ground, it dissolves naturally occurring minerals, and in some cases, radioactive material. It can pick up substances resulting from the presence of animals or from human activity. Contaminants that may be present in source water include: Microbial contaminants, such as viruses and bacteria, may come from sewage and treatment plants, septic systems, agricultural livestock operations and wildlife. Inorganic contaminants, such as salts and metals can be naturally occurring or resulting from urban storm water runoff, industrial or domestic wastewater discharges, oil and gas production, mining and farming. Pesticides and herbicides, which may come from a variety of sources such as agriculture, urban storm water runoff and residential uses. Organic chemical contaminants, including synthetic and volatile organic chemicals, which are byproducts of industrial process and petroleum production and may also come from gas stations, urban storm water runoff and septic systems. Radioactive contaminants, which can be naturally occurring or be the result of oil and gas production and mining activities.

FURTHER INFORMATION CONCERNING SAFE DRINKING WATER

In order to ensure that tap water is safe to drink, the Department of Environmental Protection (MassDEP) and U.S. Environmental Protection Agency (EPA) prescribe regulations that limit the amount of certain contaminants in water provided by public water systems. The Food and Drug Administration (FDA) and Massachusetts Department of Public Health (DPH) regulations establish limits for contaminants in bottled water that must provide the same protection for public health. All drinking water, including bottled water, may reasonably be expected to contain at least small amounts of some contaminants. The presence of contaminants does not necessarily indicate that water poses a health risk. More information about contaminants and potential health effects can be obtained by calling the EPA's Safe Drinking Water Hotline (800) 426-4791.

Some people may be more vulnerable to contaminants in drinking water than the general population. Immuno-compromised persons such as persons with cancer undergoing chemotherapy, persons who have undergone organ transplants, people with HIV/AIDS or other immune system disorders, some elderly, and some infants can be particularly at risk from infections. These people should seek advice about drinking water from their health care providers. EPA, Centers for Disease Control and Prevention (CDC) contain guidelines on lowering the risk of infection by cryptosporidium and other microbial contaminants are available from the Safe Drinking Water Hotline (800) 426-4791.

MINIMIZING LEAD EXPOSURE

If present, elevated levels of lead can cause serious health problems, especially for pregnant women and young children. Lead in drinking water is primarily from materials and components associated with service lines and home plumbing. Sudbury Water District is responsible for providing high quality drinking water, but cannot control the variety of materials used in residential plumbing components. When your water has been sitting for several hours, you can minimize the potential for lead exposure by flushing your tap for 30 seconds to 2 minutes before using water for drinking or cooking. If you are concerned about lead in your water, you may wish to have your water tested. Information on lead in drinking water, testing methods, and steps you can take to minimize exposure is available from the Safe Drinking Water Hotline or at http://www.epa.gov/safewater/lead.

CROSS CONNECTION CONTROL PROGRAM

WHAT IS A CROSS CONNECTION?

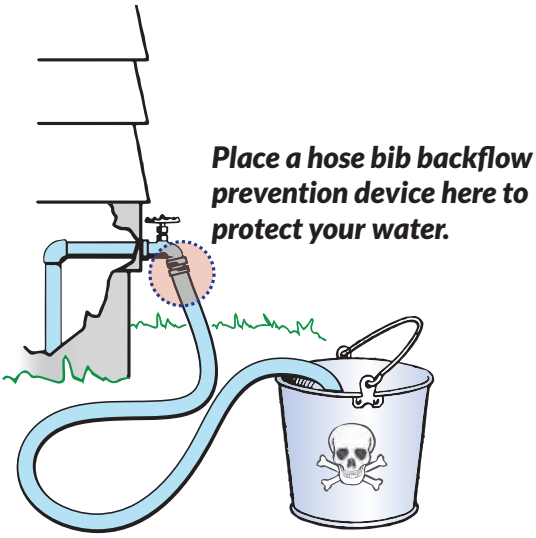
A cross-connection is an ACTUAL or POTENTIAL link between the potable water supply and a source of contamination (sewage, chemicals, gas, etc.). This has the potential of becoming a hazardous situation if the contaminant source were to enter (backflow) into the potable water. Backflow occurs when the water flow is reversed, due to a change in pressure, and water flows backwards, into and through the system. Contamination can also occur when the pressure in the drinking water system drops due to occurrences such as water main breaks and heavy water demand causing contaminants to be drawn (back-siphonage) into the potable water system.

WHERE DO I FIND CROSS CONNECTIONS?

Garden hoses connected to an outside water tap are the most common sources of cross connections in the home. The garden hose creates a hazard when submerged in non-potable water such as a swimming pool or when attached to a chemical sprayer for weed control. The District surveys all industrial, commercial, and municipal facilities to ensure that all cross connections are eliminated or protected by a backflow prevention device. The District is also responsible for inspecting and testing each device to ensure it is providing maximum protection.

WHAT CAN I DO TO PREVENT BACKFLOW?

You can prevent backflow in your home plumbing system by installing an inexpensive hose-bib vacuum breaker on each of your outside water spigots. These vacuum breakers will prevent water from being back-siphoned from a polluted or even contaminated water source into your home's water pipes or the public water distribution system. These devices cost about $10 and are available at most hardware stores.



WHO SHOULD I CONTACT FOR MORE INFORMATION?

Sudbury Water District staff will be happy to answer your questions. Call (978) 443-6602 or send us an e-mail at customerservice@sudburywater.com.

WATER CONSERVATION

MassDEP has mandated Sudbury Water District to implement restrictions on outdoor water use. Though not popular with many residents, the restrictions are similar to what many neighboring communities are subject to. The purpose of the restrictions is to ensure an adequate supply of water for drinking and fire protection and to protect the quality and quantity of water in local aquatic habitats such as ponds, rivers and wetlands.

By using water more efficiently, you can help preserve water supplies for future generations, save money, and protect the environment. By changing a few habits, you will help protect your water supply and perhaps save on water charges. Here are some outdoor water saving tips that residents can implement in their homes.

- **Water your lawn only as needed. Too frequent watering can actually weaken a lawn by encouraging shallow roots. The general rule of thumb is one inch per week including rain.**
- **Timing is critical for lawn watering. Water your lawn in the early morning or late evening to avoid evaporation.**
- **Install mulch to keep roots cool and moist. Mulch serves as a ground cover that reduces water evaporation from the soil.**
- **Keep your blades sharp and high. Raising your lawn mower blade prevents tearing of the grass. Longer grass provides shade for the roots and helps reduce water loss.**
- **Use shut off-nozzles on hoses and automatic shut-off devices on irrigation systems. Unattended hoses can use 10 gallons or more per minute.**
- **Install a soil moisture sensor complimented with a rain sensor that turns automatic sprinkler systems off when the soil contains sufficient moisture and when it is raining.**

IMPROVEMENTS TO THE WATER DISTRIBUTION SYSTEM

Each part of the water system needs routine maintenance in order to maintain a safe and dependable water supply. Listed are some of the projects undertaken by the Water District in 2019.

Well # 4 Renovation Project

- Completed Raymond Road Administration Facility Improvement Project.
- **Completed Well # 4 Renovation Project.**
- Installed 100 feet of D.I. pipe at the Raymond Road Water Treatment Facility for 4Log certification compliance.
- Conducted a leak detection survey of the entire water system. The survey is necessary to locate and eliminate leaks from the system.
- Replaced 6,200 feet of 8 inch water main on Horse Pond Road with new 12 inch ductile iron (D.I.) pipe.
- Replaced 1,000 feet of 8 inch water main on Morse Road with new 12 inch ductile iron (D.I.) pipe.
- Cleaned Well #s 7 and 9.
- Improvements made to the Water GIS Mapping.
- Implemented new work order system via Sudbury Water District's GIS Mapping System.
- Started analysis of Water Distribution and Treatment Systems for development of Water Master Plan.
- Started process to upgrade new billing system software.

FUTURE PROJECTS FOR 2020

- Complete design plans for telemetry at Bigelow Tank.
- Replace 900 feet of 8 inch water main on Codjer Lane with new D.I. pipe.
- Completion of Utility Billing System Software conversion project.
- Completion of Water System Master Plan.
- Upgrade Unidirectional Hydrant Flushing Program.

Board of Water Commissioners,

Robert E. Boyd, Jr., Chairman

Joshua M. Fox

Robert H. Sheldon

WHAT DOES THIS DATA REPRESENT?

What Does This Data Represent? The water quality information presented in the following table(s) is from the most recent round of testing done in accordance with the 1996 Safe Drinking Water Act Amendments. All data shown was collected during the last calendar year unless otherwise noted.

Regulated Contaminants are those for which the EPA has set legal limits on the levels allowed in drinking water. The limits reflect both the level that protects human health and the level that water systems can achieve using the best available technology.

Lead and Copper Contaminant	Date(s) Collected	90th Percentile	Action Level	MCLG	No of Sites Sampled	No of Sites Above Action Level	Possible Source of Contamination
[1]Lead (ppm)	9/10/19	0.004	0.015	0	30	0	Corrosion of household plumbing systems; Erosion of natural deposits.
[1]Copper (ppm)	09/10/19	0.148	1.3	1.3	30	0	Corrosion of household plumbing systems; Erosion of natural deposits; Leaching from wood preservatives.

Inorganic Contaminant	Date Collected	Highest Result or Highest Running Average Detected	Range Detected	MCL or MRDL	MCLG, MRDLG or ORSG	Violation (Yes/No)	Possible Source of Contamination
Arsenic (ppb)	04/10/18	1.1	ND - 1.1	10	—	No	Erosion of natural deposits; runoff from orchards; runoff from glass and electronics production wastes.
Barium (ppm)	04/10/18	0.0214	0.009 - 0.054	2	2	No	Discharge of drilling wastes; discharge from metal refineries; erosion of natural deposits.
Fluoride (ppm)**	Monthly 2019	0.61	0.16-0.61	4	4	No	Erosion of natural deposits; water additive which promotes strong teeth; discharge from fertilizer and aluminum factories.
Nitrate (ppm)	04/2/19	6.7	0.31-6.7	10	10	No	Runoff from fertilizer use; leaching from septic tanks; sewage; erosion of natural deposits.
Perchlorate (ppb)	07/13/19	0.22	0.11-0.22	2	N/A	No	Rocket propellants, fireworks, munitions, flares and blasting agents.
Sodium (ppm)	04/10/18	63.6	6.7-63.7	—	20	No	Natural sources; runoff from use as salt on roadways; by-product of treatment process.

***Fluoride also has a secondary contaminant level (SMCL) of 2 ppm.*

Radioactive Contaminants (Next Sampling due in 2020)	Date Collected	Highest Result or Highest Running Average Detected	Range Detected	MCL or MRDL	MCLG or MRDLG	Violation (Yes/No)	Possible Source of Contamination
[1]Gross Alpha emitter (pCi/L)	01/31/14	3.0	ND - 3.0	15	0	No	Erosion of natural deposits.
[1]Radium 226 & 228 (pCi/L) (combined values)	02/16/17	1	0.55 - 1	5	N/A	No	Erosion of natural deposits.

Disinfection Byproducts	Date Collected	Highest Running Annual Average	Range	***MCL or MRDL	MCLG or MRDLG	Violation (Yes/No)	Possible Source of Contamination
Total Trihalomethanes (ppb) (TTHMs)	Quarterly 2019	59	12.0 - 98	80	—	No	By-product of drinking water chlorination.
Haloacetic Acids (ppb) (HAA5)	Quarterly 2019	24	10 - 40	60	—	No	By-product of drinking water disinfection.
Chlorine (ppm) (free, total or combined)	Monthly 2019	0.67	0.50-0.67	4	4	No	Water additive used to control microbes.

****Running Annual Average*

Unregulated Contaminants are those for which the EPA has not established drinking water standards. The purpose of unregulated contaminants monitoring is to assist the EPA in determining their occurrence in drinking water and whether future regulation is warranted.

Unregulated Contaminants	Date(s) Collected	Highest Result Detected	Range Detected	Possible Source of Contamination
Bromodichloromethane (ppb)	Quarterly 2019	32.6	<3.9 – 32.6	Trihalomethane; by-product of drinking water chlorination.
Bromoform (ppb)	Quarterly 2019	1.6	0 - 1.6	Trihalomethane; by-product of drinking water chlorination.
Chloroform (ppb)	Quarterly 2019	51.1	<5.9 – 51.1	A by-product of drinking water chlorination (regulated collectively with total trihalomethanes (TTHMs); in non-chlorinated sources, chloroform may be naturally occurring.
Dibromochloromethane (ppb)	Quarterly 2019	13.9	3.2 – 13.9	Trihalomethane; by-product of drinking water chlorination.

Secondary Contaminants are non-mandatory water quality standards. The EPA does not enforce "secondary maximum contamination levels" or SMCL. They are established only as guidelines to assist public water systems in managing their drinking water for aesthetic considerations such as taste, color and odor. These contaminants are not considered to present a risk to human health at the SMCL.

Secondary Contaminants	Date(s) Collected	Range Detected	SMCL	Indications of Contamination
Hardness (ppm)	07/02/2019	53 - 199	—	Not applicable (No SMCL)
Iron (ppm)	07/02/2019	<0.05 - 2.46	0.3	Rusty color; sediment; metallic taste; reddish or orange staining.
Manganese (ppm)	07/02/2019	<.05 - 1.0	0.05	Black to brown color; black staining; bitter metallic taste.
pH	Daily 2019	7.2 - 8.3	6.5 - 8.5	Low pH: bitter metallic taste; corrosion. High pH: slippery feel; soda taste; deposits.

ppb: parts per billion, or micrograms per liter (ug/l)

Lead and Copper 90th Percentile: Out of every 10 homes sampled, 9 were at or below this level.

ppm: parts per million, or milligrams per liter (mg/l)

Action Level: The concentration of a contaminant, which if exceeded, triggers treatment or other requirements that a water system must follow.

ND: None Detected **— :** Not Applicable

Maximum Contamination Level Goal (MCLG): The level of a contamination in drinking water below, which there is no known or expected risk to health MCLGs allow for a margin of safety.

Maximum Contamination Level (MCL): The highest level of a contaminant that is allowed in drinking water. MCLs are set as close to the MCLGs as feasible using the best available treatment technology.

Maximum Residual Disinfectant (MRDL): The highest level of a disinfectant allowed in drinking water. There is convincing evidence that addition of a disinfectant is necessary for control of microbial contaminants (ex. chlorine, chloramines, chlorine dioxide).

Maximum Residual Disinfectant Level Goal (MRDLG): The level of a drinking water disinfectant below which there is no known of expected risk to health. MRDLGs do not eflect the benefits of the use of disinfectants to control microbial contaminants.

(1) *The data presented in this report is from the most recent testing done in accordance with federal regulations for the lead and copper rule.*

We hope you find this report informative, allowing you the opportunity to become familiar with your public water supply. The Board of Water Commissioners and District employee's strive to achieve the highest quality drinking water together with outstanding customer service. We invite your comments and questions regarding the District, its operation and this Annual Quality Report Questions. Comments or concerns may be addressed by contacting (978) 443-6602.

Our system violated drinking water standards over this past year. Even though this was not an emergency, our customers have the right to know what happened and the corrective action has since been taken. On August 15, 2019, the District failed to collect an initial triggered source water sample within 24 hours of notification of total coliform-positive sample as required by 310 CMR 22.26(3)(a). The District has provided the Testing Laboratory with a revised contact listing which includes cell phone numbers. The Laboratory has been instructed to communicate directly with the Executive Director and/or Operations Manager immediately upon confirmation of coliform-positive sample. They have also been directed to send an alert text message to the Executive Director and Operation Manager of the positive sample.

Additional copies of this report will be mailed upon request by contacting the District Business Office at (978) 443-6602 or emailing customerservice@sudburywater.com

For more information about how Sudbury Water District maintains the safety of your drinking water and to view previous years' reports go to:

http://www.sudburywater.com/my-water/water-quality

VISIT OUR WEBSITE FOR THE LATEST NEWS AND INFORMATION ON FLUSHING, WATER RESTRICTIONS, MEETINGS, AND MORE!

FLUSHING

Sudbury Water District flushes hydrants every spring and fall, in an effort to clear water mains of sediment and mineral build up.

RESTRICTIONS

See current restrictions at www.sudburywater.com.

MEETINGS

Meetings are held at 5 p.m. at the Sudbury Water District office, 199 Raymond Road.

PLUS, PAY YOUR BILL ONLINE AT WWW.SUDBURYWATER.COM!

To view current outdoor water restrictions, standards and guidelines please visit:
www.sudburywater.com/outdoorwaterrestrictionstandardsandguidelines

Sudbury Water District

199 Raymond Road • P.O. Box 111 • Sudbury, MA 01776
Phone (978) 443-6602 • Fax (978) 443-9587
customerservice@sudburywater.com

sudburywater.com

2019

84th Annual Report

Sudbury Water District
of Sudbury, Massachusetts

Proceedings for the Fiscal Year
Ending June 30, 2019
Special Meeting May 21, 2019

OFFICIAL WARRANTS

Fiscal Year Ending 2020/2021

Annual Water District Meeting – May 19, 2020
Special Water District Meeting – May 19, 2020

Sudbury Senior Center
Sudbury Pines Room
40 Fairbank Road
Sudbury, MA 01776

Elections 3:00 pm - 7:00 pm
Annual Meeting 7:00 pm
Special Meeting 7:15 pm

Sudbury Water District

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TABLE OF CONTENTS

District Officers 2
Warrant for the 84th Annual Meeting 3
Warrant for the 84th Special Meeting 5
Control Sheet 6
Treasurer's Report 7
Report of Revenues 8
Report of Expenditures 9
Record of the 83rd Annual Meeting 11
Report of the Board of Water Commissioners 12
Record of the Special Meeting 19
Supplementary Sheet A 20
Supplementary Sheet B 21

DISTRICT OFFICERS

MODERATOR

Craig E. Blake — Term Expires 2020

DISTRICT CLERK

Susan O'Connor — Term Expires 2020

BOARD OF WATER COMMISSIONERS

Joshua M. Fox — Term Expires 2020
Robert E. Boyd, Jr. — Term Expires 2021
Robert H. Sheldon — Term Expires 2022

TREASURER

Thomas S. Travers — Term Expires 2020

WARRANT FOR THE 84th ANNUAL MEETING

The Sudbury Water District
of
Sudbury, Massachusetts

The Commonwealth of Massachusetts
Middlesex, ss.

To Susan O'Connor, Clerk of the District,

GREETINGS:

You are hereby required to warn the inhabitants of the Town of Sudbury who are legal voters within the territory of the Sudbury Water District of Sudbury, the establishment of which is provided for in Chapter 100 of the Acts of the General Court of Massachusetts for the year 1934, to meet at the Sudbury Senior Center, Sudbury Pines Room in said Town on Tuesday, the 19th of May 2020 at seven o'clock in the forenoon; then and there to choose by ballot in accordance with law, a Moderator, a District Clerk, and a Treasurer, all for one year and one member of the Board of Water Commissioners for three years. The polls will open at three o'clock in the afternoon and remain open until seven o'clock in the evening.

And you are required to warn said voters that the Annual Meeting of the District will be held at the same location at seven o'clock in the evening on the aforementioned date, then and there to act on the following articles, to wit:

Article 1. To hear and act on reports.

Article 2. To see if the District vote to raise and appropriate or appropriate from available funds, the following sums of money for any and all necessary District purposes, for the fiscal year July 1, 2020 through June 30, 2021 or act on anything relative thereto. (Submitted by the Sudbury Water Commissioners.)

Maintenance & Operations	1,986,374.00
Administrative Salaries	9,050.00
Audit / CPA	13,500.00
Legal	50,000.00
Insurance and Bonding	405,000.00
Principal on Notes and Bonds	460,000.00
Notes and Bonds/Interest Expense	178,281.26
Service Costs	15,000.00
Middlesex County Retirement	142,163.00
Emergency Reserve	60,000.00
DEP Assessment	5,354.00
TOTAL BUDGET	$3,324,722.26

Article 3. To see if the District will vote to raise and appropriate or appropriate from available funds the sum of $60,000.00, or any other sum, for the purpose of acquiring various pieces of equipment for use by the District, or act on anything relative thereto. (Submitted by the Sudbury Water Commissioners.)

Article 4. To see if the District will vote to raise and appropriate or appropriate from available funds the sum of $250,000.00, or any other sum, to be used for emergency repair or replacement of water mains and appurtenances within the District, or act on anything relative thereto. (Submitted by the Sudbury Water Commissioners.)

Article 5. To see if the District will vote to raise and appropriate or appropriate from available funds the sum of $90,000.00, or any other sum, to be used for the "New Meter Program/Replacement of Water Meters", and costs relative thereto, or act on anything relative thereto. (Submitted by the Sudbury Water Commissioners.)

Article 6. To see if the District will vote to raise and appropriate or appropriate from available funds the sum of $125,000.00, or any other sum, to be used for the "Engineering, Redevelopment, Repair, Maintenance, or Replacement", of parts of wells in use by the District, or act on anything relative thereto. (Submitted by the Sudbury Water Commissioners.)

Article 7. To see if the District will vote to transfer from "free cash" the sum of $150,000.00 or any other sum, to be used for "Future System Improvement/ Maintenance" and associated costs, or act on anything relative thereto. (Submitted by the Sudbury Water Commissioners.)

Article 8. To see if the District will vote to transfer from "free cash" the sum of $130,000.00 or any other sum to be added to the account "Other Post-Employment Benefits Trust Fund", or act on anything relative thereto. (Submitted by the Sudbury Water Commissioners.)

Article 9. To see if the District will vote to transfer from "free cash" the sum of $30,000.00 or any other sum to be added to the account "Maint/Repair Storage Tanks", or act on anything relative thereto. (Submitted by the Sudbury Water Commissioners.)

Article 10. To see if the District will vote to transfer from "free cash" the sum of $100,000.00 or any other sum to be added to the account "Construct Water Mains", to include replacement of the water main related to the Dutton Road culvert replacement project, or act on anything relative thereto. (Submitted by the Sudbury Water Commissioners.)

Article 11. To hear the report of the District Clerk regarding the results of the election just concluded.

And you are directed to serve this warrant by posting attested copies thereof in three or more public places within said District fourteen days at least before the time of meeting aforesaid; and you are further directed to give or cause to be given by delivering at each dwelling or mailing to each householder in the District a notice of such meeting at least fourteen days prior to the time of the meeting aforesaid and make due return of this warrant with your doings thereon to ourselves at or before the time the meeting aforesaid.

Witness our hands this 24th day of February, 2020

Robert E. Boyd, Jr., Chairman
Joshua M. Fox
Robert H. Sheldon

Board of Water Commissioners
of the Sudbury Water District
of Sudbury, Massachusetts

A True Copy, Attest:

Susan O'Connor, District Clerk

WARRANT FOR THE SPECIAL MEETING

of

May 19, 2020

The Sudbury Water District

of

Sudbury, Massachusetts

Middlesex, ss.

To Susan O'Connor, Clerk of the District,

Greetings:

You are hereby required to warn the inhabitants of the Town of Sudbury who are legal voters within the territory of the Sudbury Water District of Sudbury, the establishment of which is provided for in Chapter 100 of the Acts of the General Court of Massachusetts for the year 1934, that a special meeting of said District will be held in the Sudbury Senior Center, Sudbury Pines Room in said Town on Tuesday, the 19th day of May, 2020 at 7:15 in the evening, then and there to act on the following articles, to wit:

Article 1. To see if the District will vote to transfer from "free cash" the sum of $100,000.00 or any other sum to be added to the account "Reserve Fund," or act on anything relative thereto. (Submitted by the Sudbury Water Commissioners.)

Witness our hands this 24th day of February, 2020

Robert E. Boyd, Jr., Chairman
Joshua M. Fox
Robert H. Sheldon

Board of Water Commissioners
of the Sudbury Water District
of Sudbury, Massachusetts

A True Copy, Attest: Susan O'Connor, District Clerk

CONTROL SHEET

	2018/2019 Budget	2018/2019 Actual	2019/2020 Budget	2020/2021 Budget
Maintenance & Operation Control	$1,844,434.00	$1,721,788.54	$1,919,992.00	$1,986,374.00
Salaries – Regular	$1,018,434.00	$985,257.59	$1,051,612.00	$1,071,390.00
Salaries – Overtime	53,000.00	59,148.94	65,000.00	67,832.00
Bank Service Charges	12,000.00	9,047.47	12,000.00	12,000.00
Computer	60,000.00	59,765.68	60,000.00	65,000.00
Chemicals	75,000.00	73,237.89	84,000.00	84,000.00
General	160,000.00	145,769.68	160,000.00	160,000.00
Utilities	284,000.00	252,567.50	303,880.00	325,152.00
Operating Supplies	20,000.00	15,162.49	20,000.00	20,000.00
Telephone	20,000.00	19,727.17	21,000.00	26,000.00
Vehicles	60,000.00	49,090.76	60,000.00	60,000.00
Medicare Contributions	16,000.00	16,578.40	16,500.00	17,000.00
FICA Contributions	6,000.00	4,687.52	6,000.00	7,000.00
Water Testing	45,000.00	21,539.93	45,000.00	55,000.00
Training	15,000.00	10,207.52	15,000.00	16,000.00

TREASURER'S REPORT

Balance Sheet
June 30, 2019

Assets	Enterprise Fund	Enterprise Fund Capital Assets	Enterprise Fund Long-Term Debt	Fiduciary Fund OPEB Trust
Petty Cash	$300			
Cash	6,770,901			
Investments:				
» Massachusetts Municipal Depository Trust	725,244			
» Commonwealth Financial Network				1,757,683
Accounts Receivable Net of Allowance				
for Uncollectible Accounts:				
» Water Rates	130,557			
» Miscellaneous	743			
» Backflow	(50)			
Capital Assets (net of accumulated depreciation):				
» Capital Assets Not Being Depreciated		5,704,568		
» Capital Assets Being Depreciated		16,522,332		
Amount to be provided for Long-Term Debt			5,670,000	
TOTAL ASSETS	$7,627,695	$22,226,900	$5,670,000	$1,757,683
Liabilities and Fund Equity				
Liabilites				
» Wages Payable	$36,472			
» Accounts Payable	718,411			
» Service Deposits Payable	7,299			
» Withholdings Payable	8,112			
» Guarantee Deposits	10,000			
» Unclaimed Checks	503			
» Bonds Payable			5,670,000	
Total Liabilities	**780,797**		**5,670,000**	
Fund Equity				
» Retained Earnings:				
» Reserved for Petty Cash	300			
» Reserved for Continued Appropriations	2,144,594			
» Invested in Capital Assets		22,226,900		
» Restricted for Other Post Employment Benefits				1,757,683
» Unreserved:				
Undesignated	2,237,734			
Designated for System Development	28,660			
Designated for Union Avenue Project	155,610			
Designated for Maynard Road Project	50,000			
Designated for Subsequent Year's Expense	2,230,000			
Total Fund Equity	**6,846,898**	**22,226,900**		**1,757,683**
TOTAL LIABILITES AND FUND EQUITY	$7,627,695	$22,226,900	$5,670,000	$1,757,683

REPORT OF REVENUES

Budget Basis of Accounting
July 1, 2018 to June 30, 2019

Account Name	Annual Budget	Revenue	Variance Favorable (Unfavorable)
Revenues			
» Water Charges		$3,851,452	
» Demand Fees		82,507	
» Backflow		43,695	
» Service Installations		18,205	
» Cell Tower Leases		201,748	
» Miscellaneous		51,415	
» Earnings on Investments		170,097	
Total Revenues	**3,804,854**	**4,419,119**	**614,265**
Other Available Funds/ Sources			
» Free Cash	780,000	780,000	
» Bond & Premium Proceeds			
Total Other Available Funds/Sources	**780,000**	**780,000**	
TOTAL REVENUES AND OTHER SOURCES	$4,584,854	$5,199,119	$614,265

Note: Revenues are reported on a budget basis (cash) not an accrual basis

REPORT OF EXPENDITURES

Budget Basis of Accounting
June 1, 2018 - June 30, 2019

Account Name	July 1, 2018 Continued Appropriations	Annual Budget		Transfers	Expenditures	June 30, 2019 Continued Appropriations	Unexpended Balance
Maintenance & Operations:		$1,844,434			$1,721,789		$122,645
Articles							
» Administration Salaries		9,050			8,800		250
» Audit/CPA		12,500			12,500		
» Legal		20,000		14,472	34,472		
» Insurance and Bonding		395,000			348,627		46,373
» Principal Loan/Note Payments		570,000			560,000		10,000
» Interest Loan/Note Payments		305,000			216,450		88,550
» New Service Installations		15,000			13,754		1,246
» Middlesex County Retirement Assessment		128,249			128,249		
» DEP Assessment		5,621			5,621		
» Emergency Reserve		160,000		(42,583)	197		117,220
» Well Exploration	10,861				2,727	8,134	
» General Extension	7,168	250,000			223,966	33,202	
» Other Post Employment Benefits Trust Contribution		100,000			100,000		
» Well #4 Construction	560,779				467,953	92,826	
» Wells #2 #6 #7 & #9	549				549		
» Equipment	674	65,000			49,921	15,753	
» New Meter Program	10,944	90,000			84,226	16,718	
» Well Repairs, Replace, Engineering & Redevelopment		125,000		28,111	153,111		
» Public Information & Education	2,219					2,219	
» Planning & Needs Study	10,000					10,000	
» Future System Improvements - Mains	83,389	100,000			148,575	34,814	
» Computer Model Water System	36,601				20,922	15,679	
» Maynard Main Extension	78,943				78,943		
» Construct Water Mains	4,201					4,201	
» Building Project	5,623,300				3,980,765	1,642,535	
» Well #7 Cleaning		40,000			30,070	9,930	
» Bigelow Tank/Telemetry Study		75,000			14,817	60,183	
» Design/Replace Codjer Lane Main		100,000			76,600	23,400	
» Water Master Plan		175,000				175,000	
Total Articles	6,429,628	2,740,420			6,761,815	2,144,594	263,639
TOTAL BUDGET BASIS	$6,429,628	$4,584,854			$8,483,604	$2,144,594	$386,284

RECORD OF THE 83rd ANNUAL MEETING

of
The Sudbury Water District
of
Sudbury, Massachusetts

Fairbank Community Center - Gym	May 21, 2019
40 Fairbank Road	Election 3:00 p.m. – 7:00 p.m.
Sudbury, Massachsuetts	Meeting 7:00 p.m.

Pursuant to the Warrant dated the 10th day of April, 2019 signed by Joshua M. Fox, Robert E. Boyd, Jr. and Robert H. Sheldon, Board of Water Commissioners, served according to law by Susan O'Connor, District Clerk, the Annual Meeting of the Sudbury Water District of Sudbury was held in the Fairbank Community Center, Gym, 40 Fairbank Road, Sudbury, Massachusetts, on May Twenty One, Two Thousand Nineteen.

The meeting was called to order at seven o'clock in the evening, a quorum being present. Craig E. Blake, District Moderator, announced that he had examined the call of the meeting and District Clerk's return of service and found them to be in order.

At that time, the Moderator read to the meeting a letter from the Massachusetts Department of Revenue, Division of Local Services indicating the amount of "free cash" as of July 1, 2018 for the Sudbury Water District was $2,192,077.00.

Introduction of the persons sitting at the head table from left was as follows: Vincent J. Roy, Executive Director, Joshua M. Fox, Robert H. Sheldon, Robert E. Boyd, Jr., Board of Water Commissioners, Thomas S. Travers, Treasurer, Karen A. Moretti, Office Manager/Assistant Treasurer, Richard Hingston, CPA, Lawson Williams, Counsel, Susan O'Connor, District Clerk, Renee Adams, Customer Service Manager.. Unanimous consent was given for any non-member of the Sudbury Water District at the head table to speak in order to answer any questions that may arise.

A motion was made to dispense with the reading of the call of the meeting, the Clerk's return of service, and the text of the articles. The motion was seconded and passed by a unanimous vote.

Article 1. To hear and act on report.
Seconded
Upon a vote by show of cards, it was a:

UNANIMOUS VOTE: "That the following reports be accepted as printed in the warrant for this meeting, as amended, subject to the correction of errors as and when found." (1) Record of the May 15, 2018 Annual Meeting. (2) Record of the May 15, 2018 Special Meeting.

The Board of Water Commissioners is pleased to present the following report summarizing the District's activities during the Fiscal Year ending 2018 for inclusion in the Minutes of this Annual Meeting of the Sudbury Water District.

REPORT OF THE BOARD OF WATER COMMISSIONERS

Good evening and welcome to the Sudbury Water District's Annual Meeting for 2019. Thanks for attending and showing your interest.

I've had the honor and pleasure of serving as a Commissioner for quite a few years now. This past year has been the busiest I can remember.

We are indebted to the hard work and dedication of our employees and we thank them for their service throughout the year. Our field and office staff members have kept the District on even keel, including the temporary move from Raymond Road to the construction-phase office on Boston Post Road. They've also worked to maintain infrastructure, oversee the performance of our two treatment plants, collect revenues, pay bills, and respond to emergencies, one of which occurred on New Year's Eve. They are vested in keeping our systems in operation and making sure that you have water whenever you need it.

This has been the first full year for our Executive Director, Vincent Roy, and he has taken on some major challenges and has done so with a spirit of "can-do." He's worked collaboratively with the Town on a variety of matters. He's faithfully kept the Commissioners in the loop with routine updates at our meetings every other week.

In terms of our finances, we remain in a very strong position. We continue to maintain our AAA bond rating. We are ahead of most utilities in establishing funds in our Other Post-Employment Benefits (OPEB) Trust. We are audited annually and work very closely with Dick Hingston and his staff to stay ahead of potential issues. We always have an eye towards balancing revenues with expenditures, and that has kept us in good standing.

Since last year's meeting, we advertised two major construction projects. Unfortunately, our region has seen a steady escalation of construction costs and contractor bids on new work. Costs of steel and aluminum have risen considerably and there's a lot of construction going on, meaning contractors are not competing especially hard. Last fall, we received bids on the upgrades to the Raymond Road office and garage space, and bids came in high, including the low bidder, M. O'Connor. We went ahead with the project but pared back on some items, waiting to see where we stood with change orders, how well the contractor was performing, and if there were lower-cost options for completing the items that had been removed. Tonight, you'll see Article 9 of the Annual District Meeting requesting transfer of funds from free cash into the facilities construction account to allow for completion of those items we have deemed best to be completed by M. O'Connor instead of delaying to a later procurement.

Countering the regional trend of high bids for construction, the recent bids for the Codjer Lane and Horse Pond Road water mains project were much lower than predicted, well below the engineer's estimate, essentially offsetting the higher bids on the facilities project. We're also pleased that the low bidder for this work is Celco Construction, who's provided outstanding construction work on all of their previous projects for us. Article 10 on the Annual District Meeting tonight requests authorization of construction funds for that project, which addresses much needed upgrades to water mains in two critical areas.

We procured new billing software and selected Utility Management Solutions (UMS) as the vendor. This software will allow the District to fully integrate our system's data and devices, including our meter-reading software and our financial software. Once

it's up and running, we'll be able to perform in minutes those operations and tasks that used to take hours, if not days. Furthermore, we'll have a full-service customer web portal to allow you to access account information 24/7 and make real-time payments using credit, debit, and bank-to-bank ACH transfers. You will be able to save your payment methods and opt for automatic debit. Those of you who prefer to be paperless can opt for e-billing. Those of you who prefer to receive paper can continue to do so. We plan to have the system in place for the billing cycle in November 2019.

Probably the biggest matter facing the District this past year came to us unexpectedly last summer – the Quarry North development project on North Road. It can be difficult to understand, and many of you might not be aware of how the Water District fits into the picture. Without delving into too many of the details, I'm hoping the following will help explain the work we've been doing with that development.

As background, let's talk about the two adjacent properties, located north of North Road (Route 117). The Town's property is the 46.6 acre parcel procured from the Melones in 1992. The District's property borders the Town's property to the east. It's at 16 North Road and is a triangular parcel of 6.87 acres, acquired by eminent domain in 1964. Also important to understand is that the District's Well No. 5 is just south of North Road, on the opposite side of the road from the District's 16 North Road parcel. That well is not used much these days because of high iron and manganese. However, it's in a distinct aquifer, and we very much want to preserve it as a source. Regulations require that a municipal well maintain an undeveloped 400-foot radius, Zone 1, around all wells, and our Zone 1 for Well No. 5 reaches across North Road and onto a significant portion of 16 North Road. For that reason, we need to preserve the southern portion of the property as the Zone 1 protection area. That leaves a little more than 3 acres at the north end that the District would be comfortable transferring to another owner. That land is also protected but to a lesser degree than Zone 1.

Last summer, the Town advertised for proposals from entities interested in purchasing the Melone property, and three parties responded. The Town chose to move forward with Quarry North, which was proposed by the same entity who was trying to move forward with the Sudbury Station project at the center of Town. The District became involved with the three respondents to the Town's request for proposals a little after the Town advertised for proposals. One by one, each of the three respondents contacted the Commissioners and requested to be on a meeting agenda to discuss use of our 16 North Road property. Soon after the last of those meetings, the Town announced its preference to move forward with Quarry North, and that option assumed involvement with the District as follows:

1) The District would sell a portion of 16 North Road to Quarry North, which wouldrequire the District to prepare a request for proposals to which Quarry North would respond.
2) The District could have land at the Sudbury Station site at the center of Town to construct a new well.

The District then proceeded with several parallel missions at an accelerated pace:

1) We prepared a request for proposals for a specific portion of 16 North Road, following Massachusetts procurement laws.
2) We evaluated the feasibility of installing a new well at the Sudbury Station site. By the way, a brand new well in a brand new location would be about a $5 million investment and could take up to ten years to bring on line, as opposed to a satellite well at an existing location.
3) We obtained an appraisal of the value of the 16 North Road property.
4) We assessed the infrastructure requirements needed to supply water to the proposed Quarry North development.
5) We sought legal advice associated with transferring 16 North Road property from District ownership to another entity.

The results of those missions are as follows:

1) <u>The District's request for proposals</u> – The District's request for proposals yielded only one response, and that was from Quarry North.
2) <u>Feasibility of a well at the Sudbury Station site</u> – Through research of past hydrogeological testing and then new tests, we determined that the soil conditions were not suitable for a high-production municipal well at the Sudbury Station site. Since getting a new well site was part of the Town's Quarry North proposal and was now deemed to be infeasible, we explored options in other parts of the Town with Town officials, looking for alternative locations for a new well or a satellite well (next to an existing well in case that well needed to be replaced) or added protection for our aquifers. The result was a parcel on Raymond Road near Well No's. 4 and 6 that would be beneficial for the District to acquire, was not of great importance to the Town, and had no major legal obstacles to transferal from the Town to the District. Through the good graces of the Town, that transaction was approved at Town meeting on May 7 of this year. That property therefore takes the place of the land for the promised District well at the Sudbury Station location.
3) <u>Appraised value of 16 North Road</u> – We had an appraiser assess the value of the 16 North Road property, and that appraisal was very close to the amount offered by Quarry North in their proposal.
4) <u>Ability to supply water to the Quarry North development</u> – We ran a hydraulic model of our distribution system and found that the existing system would support the water demands of the new development, even when Well No. 5 is off line, although having Well No. 5 available would be even better.
5) <u>Legal opinions related to the transfer of District property</u> – Our legal advisors stated that, because the District had originally acquired the 16 North Road property by eminent domain, the District must first offer the property to the Town of Sudbury. Only after the Town has turned that offer down can the District transfer it to another entity, in this case Quarry North. The Commissioners are empowered to undertake all of those transactions, provided that the District as a whole agrees on a price for the offer to the Town. Agreement on that price will be coming up as Article 2 of the Special Meeting tonight. That, of course, is pretty much a formality, since the Town intends to turn down the offer and let Quarry North purchase the District's property. The Commissioners have also entered into a Purchase and Sale Agreement with Quarry North, with necessary contingencies included.

That represents an outline of our activities on this matter to date. There was a lot more that went on at Commissioners meetings and meetings between District staff and Town staff. We are comfortable with the direction we're heading with the Town and Quarry North. We're very appreciative of the spirit of cooperation and collaboration among all who have been involved. Also, please note that the District continues to review plans and meet with the Town and Quarry North as the project moves forward. Our goal is to look out for the best interests of the District, the preservation of our assets, and the delivery of clean water to all of our customers.

There were more activities in the life of the District over the past year, but it's time to get on with the meeting. Thank you again for coming out tonight.

A motion was made to adjourn the Annual Meeting (7:15 p.m.) until the conclusion of the Special Meeting. The motion was seconded and passed by a unanimous vote.

The Special Meeting started at 7:15 p.m.

A motion was made to adjourn the Special Meeting (7:27 p.m.) and resume the Annual Meeting. The motion was seconded and passed by a unanimous vote.

The Annual Meeting resumed at 7:27 p.m.

Article 2. To see if the District will raise and appropriate, or appropriate from available funds, the following sums of money for any and all necessary District purposes, for the fiscal year July 1, 2019 through June 30, 2020:

Maintenance & Operations	1,919,992.00
Administrative Salaries	9,050.00
Audit / CPA	13,500.00
Legal	25,000.00
Insurance and Bonding	395,000.00
Principal on Notes and Bonds	460,000.00
Notes and Bonds, Interest Expense	191,143.76
Service Costs	15,000.00
Middlesex County Retirement	131,864.00
Emergency Reserve	60,000.00
DEP Assessment	5,037.39
TOTAL BUDGET	$3,225,587.15

Seconded
Upon a vote by a show of cards, it was a:

UNANIMOUS VOTE: "That the District raise and appropriate the sums of money set fourth in Article 2 of the Warrant this Annual Meeting for any and all necessary District purposes, for Fiscal Year July 1, 2019 through June 30, 2020."

Maintenance & Operations	1,919,992.00
Administrative Salaries	9,050.00
Audit / CPA	13,500.00
Legal	25,000.00
Insurance and Bonding	395,000.00
Principal on Notes and Bonds	460,000.00
Notes and Bonds, Interest Expense	191,143.76
Service Costs	15,000.00
Middlesex County Retirement	131,864.00
Emergency Reserve	60,000.00
DEP Assessment	5,037.39
TOTAL BUDGET	$3,225,587.15

Article 3. To see if the District will vote to raise and appropriate 80,000.00 for the purpose of acquiring various pieces of equipment for use by the District.
Seconded
Upon a vote by a show of cards, it was a:

UNANIMOUS VOTE: "That the District raise and appropriate $80,000.00 for the purpose of acquiring various pieces of equipment for use by the District."

Article 4. To see if the District will vote to raise and appropriate $250,000.00 to be used for the extension, maintenance, or replacement of water mains within the District.
Seconded
Upon a vote by a show of cards, it was a:

UNANIMOUS VOTE: "That the District raise and appropriate $250,000.00 to be used for the extension, maintenance, or replacement of water mains within the District."

Article 5. To see if the District will vote to raise and appropriate $90,000.00 for the "New Meter Program/Replacement of Water Meters", and costs relative thereto.
Seconded
Upon a vote by a show of cards, it was a:

UNVANIMOUS VOTE: "That the District raise and appropriate $90,000 for the "New Meter Program/Replacement of Water Meters".

Article 6: To see if the District will vote to raise and appropriate $125,000 to be used for engineering, redevelopment, repair, maintenance, or replacement of parts of wells and treatment plants in use by the District.
Seconded
Upon a vote by a show of cards, it was a:

UNANIMOUS VOTE: "That the District raise and appropriate $125,000.00 to be used for engineering, redevelopment, repair, maintenance, or replacement of parts of wells and treatment plants in use by the District."

Article 7. To see if the District will vote to transfer $100,000.00 from "free cash" to the account "Future System Improvement/Maintenance" and associated costs.
Seconded
Upon a vote by a show of cards, it was a:

UNANIMOUS VOTE: "That the District transfers $100,000.00 from "free cash" to the account "Future System Improvement/Maintenance."

Article 8. To see if the District will vote to transfer from "free cash" the sum of $100,000.00 to the account established as "Other Post- Employment Benefits Trust Fund".
Seconded
Upon a vote by a show of cards, it was a:

UNANIMOUS VOTE: "That the District transfer from "free cash" $100,000.00 from "free cash" to the account "Other Post- Employment Benefits Trust Fund."

Article 9: To see if the District will vote to transfer from "free cash" the sum of $342,000.00 to be added to the account "Facility Upgrade Project."
Seconded
Upon a vote by a show of cards, it was a:

UNANIMOUS VOTE: "That the District transfer from "free cash" the sum of $342,000.00 to be added to the "Facility Upgrade Project."

Article 10: To see if the District will vote to transfer from "free cash" the sum of $444,142.00 and vote to transfer $1,243,858.00 from "System Developments" for "Construction of Water Mains", to include Codjer Lane and Horse Pond Road.
Seconded
Upon a vote by a show of cards, it was a:

UNANIMOUS VOTE: That the District transfer from "free cash" $444,142.00 and transfer $1,243,858.00 from "System Developments" for "Construction of Water Mains".

Article 11: To see if the District will vote to hear the District Clerk regarding the results of the election just concluded.
Seconded
Upon a vote by a show of cards, it was a:

UNANIMOUS VOTE: "That the District hears the report of the District Clerk regarding the results of the election just concluded."

DISTRICT MODERATOR FOR ONE YEAR	
Craig E. Blake (election)	32
Blanks	0
Other	1
Total	33
DISTRICT CLERK FOR ONE YEAR	
Susan O'Connor (Re-election)	31
Blanks	1
Other	1
Total	33
DISTRICT TREASURER FOR ONE YEAR	
Thomas S. Travers (Re-election)	32
Blanks	1
Other	0
Total	33
MEMBER OF THE BOARD OF WATER COMMISSIONERS FOR THREE YEARS	
Robert H. Sheldon (Re-election)	31
Blanks	2
Other	0
Total	33

There being no further business to come before the meeting and upon a motion duly made and seconded it was voted unanimously that "THE MEETING BE ADJOURNED."

The meeting adjourned at eight oh seven in the evening.

A True Copy: Attest

Respectively submitted,
Susan O'Connor, District Clerk

Immediately after the close of the 83rd Annual Meeting, Joshua M. Fox swore in Susan O'Connor as District Clerk for the term of one year. Susan O'Connor then swore in the following elected officials: Craig E. Blake as District Moderator for the term of one year, Thomas S. Travers as Treasurer for the term of one year, and Robert H. Sheldon as Commissioner for the term of three years.

RECORD OF THE SPECIAL MEETING
of
The Sudbury Water District
of
Sudbury, Massachusetts

Fairbank Community Center - Gym
40 Fairbank Road
Sudbury, Massachusetts

May 21, 2019
7:15 p.m.

Pursuant to the Special Warrant dated the 10th day of April, 2019, signed by Joshua M. Fox, Robert E. Boyd, Jr., Robert H. Sheldon, Board of Water Commissioners, served according to law by Susan O'Connor, District Clerk, the Special Meeting of the Sudbury Water District of Sudbury was held in the Fairbank Community Center, Gym, 40 Fairbank Road, Sudbury, Massachusetts, on May twenty first Two Thousand Nineteen.

The meeting was called to order at seven fifteen in the evening, a quorum being present.

Article 1. To see if the District will vote to transfer the sum of $100,000.00 from the account "free cash" to the account established as "Reserve Fund."
Seconded
Upon a vote by show of cards, it was a:

UNANIMOUS VOTE: "That the District transfer $100,000.00 from "free cash" to be added to the account established as "Reserve Fund."

Article 2. To see if the District will vote in accordance with Massachusetts General laws, Chapter 40, section 15B to establish a minimum price of $360,500.00 for the purpose of offering for sale to the Town of Sudbury of certain land owned by the District consisting of 3.2+/-acres, and being a portion of Assessors' Parcel I.D. C12-0004, Research and Residence A zoned land, located on the northerly side of North Road (Route 117) in Sudbury at the Concord town line.
Seconded
Upon a vote by show of cards, it was a:

UNANIMOUS VOTE: "That the District establish a minimum price of $360,500.00 for the purpose of offering for sale to the Town of Sudbury of certain land owned by the District consisting of 3.2+/-acres, and being a portion of Assessors' Parcel I.D. C12-0004, Research and Residence A Zoned land, located on the northerly side of North Road (Route 117) in Sudbury at the Concord town line.

There being no further business to come before the Special Meeting and upon a motion duly made and seconded it was voted unanimously that "THE SPECIAL MEETING BE ADJOURNED."

The meeting adjourned at seven twenty-seven in the evening.

A True Copy: Attest

Respectively submitted,
Susan O'Connor, District Clerk

SUPPLEMENTARY SHEET "A"

WATER MAINS ADDED IN 2019
(Linear Feet)

New Subdivisions	Feet of Pipe	Main Size	Type	Additional Hydrants
		8"	DI	
		8"	DI	
		8"	DI	
		8"	DI	
		8"	DI	
		12"	DI	

Water Main Addition	Feet of Pipe	Main Size	Type	Additional Hydrants
East St Water Treatment Plant	740	8"	PVC	
		6"	DI	
		8"	DI	
		10"	DI	
Raymond Rd Water Treatment Plant	130	12"	DI	
		16"	DI	
Total Hydrants Maintained by Sudbury Water District				980
Total Private Hydrants				78

WATER MAINS ADDED & EXISTING
(Linear Feet)

Size / Type	Year End 2018	2019	Total Existing
16" DI	12,700		12,700
16" AC	3,760		3,760
12" CI	9,774		9,774
12" AC	36,600		36,600
12" DI	32,624	5,375	37,999
10" CI	3,844		3,844
10" AC	144,480		144,480
10" PVC	12,403		12,403
10" DI	34,150		34,150
8" CI	14,465		14,465
8" AC	246,791		246,791
8" PVC	36,867		36,867
8" DI	103,916		103,916
6" CI	5,438		5,438
6" AC	54,722	-5,255	49,467
6" PVC	5,868		5,868
6" DI	3,658		3,658
4" AC	379		379
Totals	762,439		762,559

SUPPLEMENTARY SHEET "B"

(Units in Thousands of Gallons)

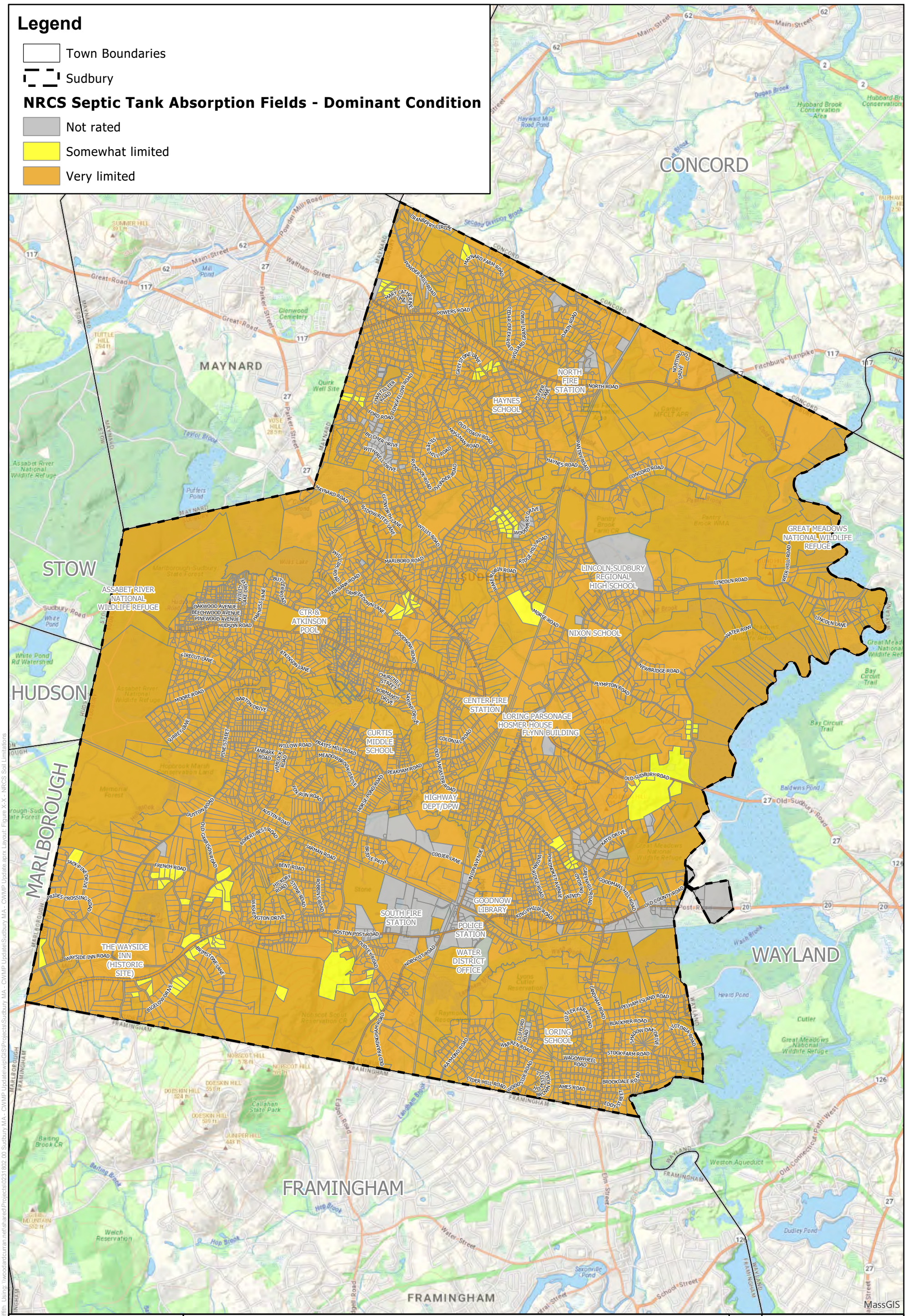
Year	Billed	Pumped	Difference	Largest Day Amount	Largest Week Amount	Largest Month Amount
2009	576,108	599,724	23,616	May 26 3,553	August 16 to August 22 18,210	August 65,045
2010	565,462	613,807	48,345	July 8 4,417	July 4 to July 10 28,561	July 96,648
2011	530,811	589,997	59,186	June 9 4,086	June 5 to June 12 18,641	July 71,542
2012	544,611	627,699	83,088	August 8 3,382	July 15 to July 21 20,684	July 82,337
2013	536,141	625,322	89,181	July 19 3,791	July 14 to July 20 22,949	July 81,018
2014	523,090	607,093	84,003	June 30 3,361	July 20 to July 26 18,999	July 75,394
2015	547,512	680,154	132,642	September 9 3,698	May 24 to May 30 22,739	September 80,853
2016	549,526	678,626	129,100	June 26 3,963	June 19 to June 25 23,811	June 90,155
2017	484,703	598,516	113,813	July 21 3,101	August 27 to September 3 16,553	August 68,841
2018	496,595	592,662	96,067	June, 20 3,418	June 17 to June 23 18,213	July 73,887
2019	479,439	563,577	84,138	July, 10 2,630	July 9 to July 15 15,198	July 67,382

	No. 1 Pump	Abandoned
Approximate Capacity of:	No. 2A Pump	1,008,000 Gallons Per Day
Approximate Capacity of:	No. 3A Pump	1,000,000 Gallons Per Day
Approximate Capacity of:	No. 4 Pump	388,400 Gallons Per Day
Approximate Capacity of:	No. 5 Pump	504,000 Gallons Per Day
Approximate Capacity of:	No. 6 Pump	868,000 Gallons Per Day
Approximate Capacity of:	No. 7 Pump	650,000 Gallons Per Day
Approximate Capacity of:	No. 8 Pump	837,000 Gallons Per Day
Approximate Capacity of:	No. 9 Pump	900,000 Gallons Per Day
Approximate Capacity of:	No. 10 Pump	685,000 Gallons Per Day

APPENDIX E: NRCS DATASETS

Table : Summary of Utilized NRCS Data

Data	Description, per NRCS	Figure	Comment
Water Table Depth – Annual Minimum	The shallowest depth to a wet soil layer (water table) at any time during the year expressed as centimeters from the soil surface, for components whose composition in the map unit is equal to or exceeds 15%.		This information was of limited availability, but where available, it indicated groundwater depths reached less than three feet throughout the Town. This information was used to assign additional prioritization points to these areas, but due to its limited scope had minimal effect on recommendations.
Depth to Bedrock – Minimum	The distance from the soil surface to the top of a bedrock layer, expressed as a shallowest depth of components whose composition in the map unit is equal to or exceeds 15%.		This information was available in a very limited portion of the Town, and was used to assign additional prioritization points to these areas, but due to its limited scope had minimal effect on recommendations.
Septic Tank Absorption – Dominant Condition	The rating of the map unit as a site for septic tank absorption fields, expressed as the dominant rating class for the map unit, based on composition percentage of each map unit component.		The Town was primarily categorized as "Very limited," including in areas which were known to have successfully implemented on-site wastewater disposal. This information is considered to be of low reliability, and as it was relatively uniform, was not helpful in prioritizing areas. This information was disregarded.
K_{sat} – Representative Value	The amount of water that would move vertically through a unit area of saturated soil in unit time under unit hydraulic gradient.		The most representative value was found for each mapunit, and shown on the map.[1] Note that there may be portions of each mapunit with areas with superior or lesser hydraulic conductivity, i.e. which are more suitable for on-site wastewater disposal. This information was used to assign additional prioritization points to these areas, but as it involved numerous assumptions and the level of review was non-site specific, e.g. each individual property was not reviewed in detail, this information was not weighted heavily.



NRCS Soil Limitations

CWMP Update
Town of Sudbury, MA

Figure Attachment 8

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Third Party GIS Disclaimer: This map is for reference and graphical purposes only and should not be relied upon by third parties for any legal decisions.
Any reliance upon the map or data contained herein shall be at the users' sole risk. **Data Sources:**

APPENDIX F: MASTER PLAN 2021

SUDBURY MASTER PLAN

BASELINE REPORT
VOLUME I

Adopted by the Sudbury Planning Board [date placeholder]

Sudbury Master Plan

BASELINE REPORT

Volume 1

February 19, 2021

Prepared for the Sudbury Master Plan Steering Committee

Horsley Witten Group

camoin associates

FITZGERALD & HALLIDAY, INC.
Innovative Planning, Better Communities

Table of Contents

Introduction 5
Community Profile 7
Transportation 17
Housing 34
Economic Development 47
Historic and Cultural Resources 70
Town Services 87
Open Space and Recreation 106
Natural Resources 118
Land Use 134

List of Tables

Table 1: Median Age Regional Comparison (2000-2017) 9
Table 2. Sudbury Population by Age (2000 to 2017) 10
Table 3. Projected Growth of Population Ages 65 and older in Sudbury, 2020 and 2030 11
Table 4: Race and Ethnicity of Sudbury Residents (2000-2017) 12
Table 5: People with a Disability in Sudbury, 2017 13
Table 6: Educational Attainment of Residents (Aged 25 Years and Older) in Sudbury (2000-2017) 14
Table 7: Regional Educational Attainment (2017) 15
Table 8: Change in Median Household Income (2000-2017) 15
Table 9: Household Composition in Sudbury (2000-2017) 16
Table 10. Comparison of Crash Volumes, Sudbury and Nearby Communities (1990-2016) 25
Table 11. Age of Housing in Sudbury, 2017 35
Table 12. Change in Housing Types in Sudbury, 2000-2017 35
Table 13. Multi-Family Residential Development Constructed from 2010 to May 2019 36
Table 14: Tenure of Occupied Units in the Region, 2017 39
Table 15. Annual Median Home Sale Prices in Sudbury, Neighboring Communities, Middlesex County, and Massachusetts, 2014-2018 40
Table 16: Household and Family Income of Sudbury Residents, 2000-2017 41
Table 17. Income Distribution Based on Household Occupancy, 2015 41
Table 18: Families and Individuals Below the Poverty Level in the Past 12 Months in Sudbury, 2000-2017 42
Table 19: Percentage of Individuals and Families Below the Poverty Level in the Past 12 Months in Sudbury and its Neighbors, 2017 42
Table 20: Severely Cost-Burdened Households in Sudbury, 2015 44
Table 21: Chapter Subsidized Housing Inventory (SHI) for Sudbury and its Neighbors, 9/14/17 45

Table 22: Jobs per Resident Index 47
Table 23: Total Jobs by Geography 48
Table 24: Population by Geography 48
Table 25: Gross Regional Product by 2-Digit NAICS Code, 2017 50
Table 26: Employment by 2-Digit NAICS Code, 2018 51
Table 27: Employment & Earnings, Top 20 4-Digit NAICS, Sudbury 52
Table 28: Sector Job Growth, Sudbury 53
Table 29: Employment by 2-Digit SOC Code, 2018 54
Table 30: Employment & Earnings, Top 20 4-Digit SOC, Sudbury 55
Table 31: Median Annual Earnings by Occupation 56
Table 32: Industry of Employment of Residents vs. Sudbury Job Base 58
Table 33: Unemployment Rate Comparison, 2017 59
Table 34: Labor Force Participation Rate, 2017 60
Table 35: Sudbury Employers with 100+ Employees 62
Table 36: Sudbury Retail Businesses, 2017 63
Table 38: Cultural Landscapes in Sudbury 78
Table 39: Number of Police Department Calls, 2008-2018 87
Table 40: Number of Fire Department Calls, 2008-2019 89
Table 41. Inventory of Recreation and Open Space Land (2019) 107
Table 42: Chapter 61 Properties 109
Table 43: Public Land with Public Access 110
Table 44: Impaired Waterbodies in Sudbury 125
Table 45: Rare species observed in Sudbury 128
Table 46: Summary of Local Land Use Regulation in Sudbury 135
Table 47: Land Coverage Summary (2016) 138
Table 48. Types of Residential Structured Permitted, 2009-2018 139
Table 49: Sudbury Zoning Bylaw Summary (2018) 141

List of Figures

Figure 1. Population Projections for Sudbury to 2040 7
Figure 2: Regional Comparison, Population Change (1990-2010) 8
Figure 3. Distribution of Age Groups in the Population (2000-2017) 10
Figure 4: Percentage of Non-White Alone, Two or More Races, or Hispanic or Latino in Sudbury (2000-2017) 12
Figure 5: Comparison Non-White Alone and Hispanic or Latino (2000-2017) 13
Figure 6: Median Household and Family Incomes of Sudbury and Its Neighbors (2017) 16
Figure 7. Traffic Volumes on Peakham Road, North of Austin Road 19
Figure 8. Where Sudbury Residents Work and Where Workers in Sudbury Live (2015) 26
Figure 9. Journey to Work 27
Figure 10: Total Housing Supply 34
Figure 11. Types of Housing in Sudbury and Neighboring Communities, 2017 37

Figure 12. Size of Housing Units by Number of Bedrooms in Sudbury and Neighboring Communities, 2017 38
Figure 13. Tenure and Occupancy of Housing in Sudbury, 2017 39
Figure 14. Median Gross Rents in Sudbury and Neighboring Communities, 2017 40
Figure 15. Percentage of Units with Housing Cost Burdens by Occupancy Type in Sudbury, 2010 and 2017 43
Figure 16: Historical Job Growth by Geography, 2008-2018 49
Figure 17: Top Sector Share of Sudbury GDP 50
Figure 18: Top Sectors Share of Sudbury Jobs 52
Figure 19: Commute Patterns, Sudbury 57
Figure 20: Unemployment Rate, 2001-2017 59
Figure 21: Jobs per Square Mile, Town of Sudbury, 2015 61
Figure 22: Sudbury Retail Businesses, 2017 63
Figure 23: Assessed Value by Property Class, 2019 64
Figure 24: New Growth, Sudbury, 2015-2019 65
Figure 25: Tax Levy by Class, 2019 66
Figure 26: Property Tax Rates, 2019 67
Figure 27: Operating Budget per Capita, 2018 67
Figure 28: Avg. Revenue by Source, 2018 68
Figure 29: General Fund Expenditures by Function, 2017 69
Figure 30: Student Enrollment of Sudbury School District, 2012-2019 98
Figure 31: Student Enrollment of Lincoln-Sudbury Regional High School, 2012-2019 99
Figure 32. Residential Permits Issued by Year, 2004-2018 139

List of Maps

Map 1: Massachusetts Department of Transportation Roadway Classifications 18
Map 2: Average Daily Traffic in Sudbury (2017) 20
Map 3: Posted Speed Limits on Principle and Arterial Roadways 22
Map 4: Three-Year Vehicle Crash Activity in Sudbury (2014-2016) 24
Map 5: Sudbury's Walking Network 30
Map 6: Trail Network in Sudbury 32
Map 7: Historic Resources in Sudbury 73
Map 8: Old Sudbury Historic District 75
Map 9: Wayside Inn Historic Districts 76
Map 10: King Philip and George Pitts Tavern Historic Districts 77
Map 11: Scenic Roadways in Sudbury 80
Map 12: Town Services & Facilities 88
Map 13: Recreation Resources 95
Map 14: Recreation and Open Space Resources 108
Map 15: Walking and Biking Trails in Sudbury 114
Map 16: Watersheds & Surface Water 119

Map 17: Water Resources 122
Map 18: Groundwater Resources 124
Map 20: Forested Land 127
Map 20: Priority Habitat for Rare Species 130
Map 21: Prime Farmland 131
Map 22: Sudbury Current Land-Use, 2016 137
Map 23: Sudbury Zoning 142
Map 24: Sudbury Overlay Districts 143

Introduction

What is the Sudbury Master Plan?

The Sudbury Master Plan sets the course for our future. It expresses our aspirations as a community to protect and support what we love about living in Sudbury. The Sudbury Master Plan looks at where we are, where we want to go, and how we're going to get there. It helps us be proactive and strategic about what happens in Sudbury over the next 20 years.

Because it outlines our future path, it will be used to guide public and private investments. It shows what we want to preserve, what needs to be strengthened, and what could be transformed to meet current and future needs of residents and the business community.

Who wrote the Master Plan?

The Sudbury Master Plan was shaped by the community. Led by the Master Plan Steering Committee, the Town used a variety of methods to gather feedback and disseminate information about the Master Plan update process to residents, businesses, workers, and visitors of Sudbury as well as Town staff. These tools included:

- Larger public events such as forums and open houses
- Smaller focus groups
- Online and paper surveys
- Interviews with stakeholders
- Attendance at local events
- Editorials and news articles in the Town Crier
- Master Plan Steering Committee website

Who uses the Master Plan?

The **Town** uses it to…

- Help prioritize decisions
- Support funding and grant requests
- Justify capital improvements
- Place decisions in historical context
- Advocate for residents and local businesses

The **Board of Selectmen** and **Town Boards, Committees,** and **Commissions** use it to…

- Serve as a strategic framework for decision making
- Justify regulatory decisions and investment of public funds

Residents and **Community Groups** use it to…

- Guide their volunteer activities to ensure everyone in Town is rowing in the same direction

Private Developers use it to…

- Understand the community's vision

The **State** uses it to…

- Learn about Sudbury's priorities and respect them in state plans

*Everyone should use it as a reminder Sudbury is a **great** place to live!*

Additionally, the Master Plan Steering Committee held (at a minimum) monthly meetings which were open to the public. Many residents took advantage of this and participated in meeting discussions by offering their personal experiences of living and working in Sudbury.

How is the Master Plan organized?

The Sudbury Master Plan is made up of three volumes: *Baseline Report*, *Master Plan*, and *Action Plan*.

Baseline Report

This document, the *Baseline Report*, is a snapshot of existing conditions as they relate to neighborhoods, parks, roadways, public services and facilities, the local economy, and historic and natural assets, among other items that define the quality of life in Sudbury. It includes inventories as well as population and buildout projections. This information was collected through Town staff interviews, outreach to key stakeholders, and reviews of existing reports and other documentation. The purpose of Baseline Report is to provide the foundation for sound policy development moving forward.

Master Plan

The *Master Plan* is the primary source policy document. It identifies the formative issues that will shape policy in all areas. It lays out the framework for how the Town will reach its vision. Public input from workshops, open houses, surveys, focus groups, and interviews have guided its development. The *Master Plan* will be used by Town leaders, staff, boards, committees, and other decision makers as well as incorporates short-, mid-, and long-term goals.

Action Plan

The final volume, the *Action Plan*, details how the Master Plan is implemented. It includes individual action items needed to meet community issues and needs. Advocates, entities that will champion an action to decision makers, such as Town departments, boards, committees, and commissions, are identified along with implementation timeframes. Since the Master Plan has a 20-year outlook, action items are divided into easy wins (completed within three years), short-term (completed within five years), mid-term (completed between five and 10 years), and long-term (completed in 10 to 20 years) periods. It is important to note that the Action Plan and Master Plan are companion documents and should be read together to understand the full context of action items.

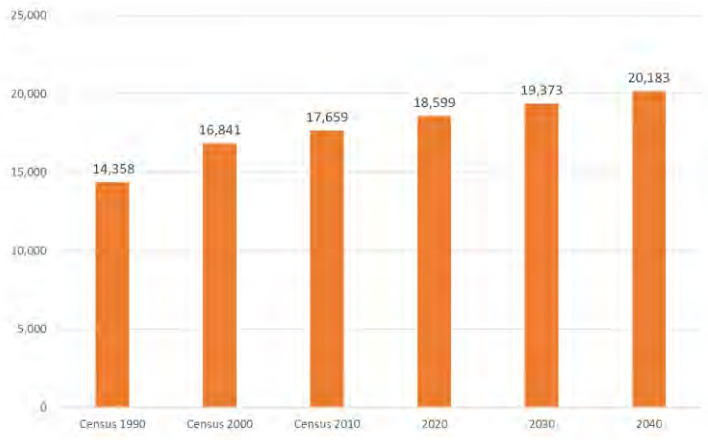
Community Profile

Examining Sudbury's population provides us with a snapshot of where we are today and where we have been as residents. While demographics are continually changing, analyzing patterns over time helps us understand how Sudbury has changed and what it might look like in the future. From this understanding, we can plan for needs around housing, recreation, transportation, and other aspects of our community that impact the quality of life.

Unless otherwise noted, data presented are from the U.S. Census Bureau's Decennial Census from 1990 to 2010, and American Community Survey (ACS) Five-Year Estimates published in 2017 (estimates for the years 2013 to 2017).[1] The Decennial Census is conducted once every ten years to provide an official count of the entire U.S. population and housing to Congress. The ACS is conducted every year to provide up-to-date information about the social and economic needs of communities. The ACS collects data from a sample of the population rather than from the whole population. Data are published as one-, three-, or five-year estimates depending on the size of the state, county, or place.

Sudbury experienced dramatic growth between 1990 and 2000 when the population increased 17% from 14,358 to 16,841. It slowed to 5% in the next decade, and in 2017, the population was estimated to be 18,697, another increase of 6%.

Recent population projections developed by the University of Massachusetts Donahue Institute (UMDI) and the Metropolitan Area Planning Council (MAPC) for the Massachusetts Department of Transportation (MassDOT)[2] forecast a consistent growth rate for Sudbury through 2040 (Figure 1).



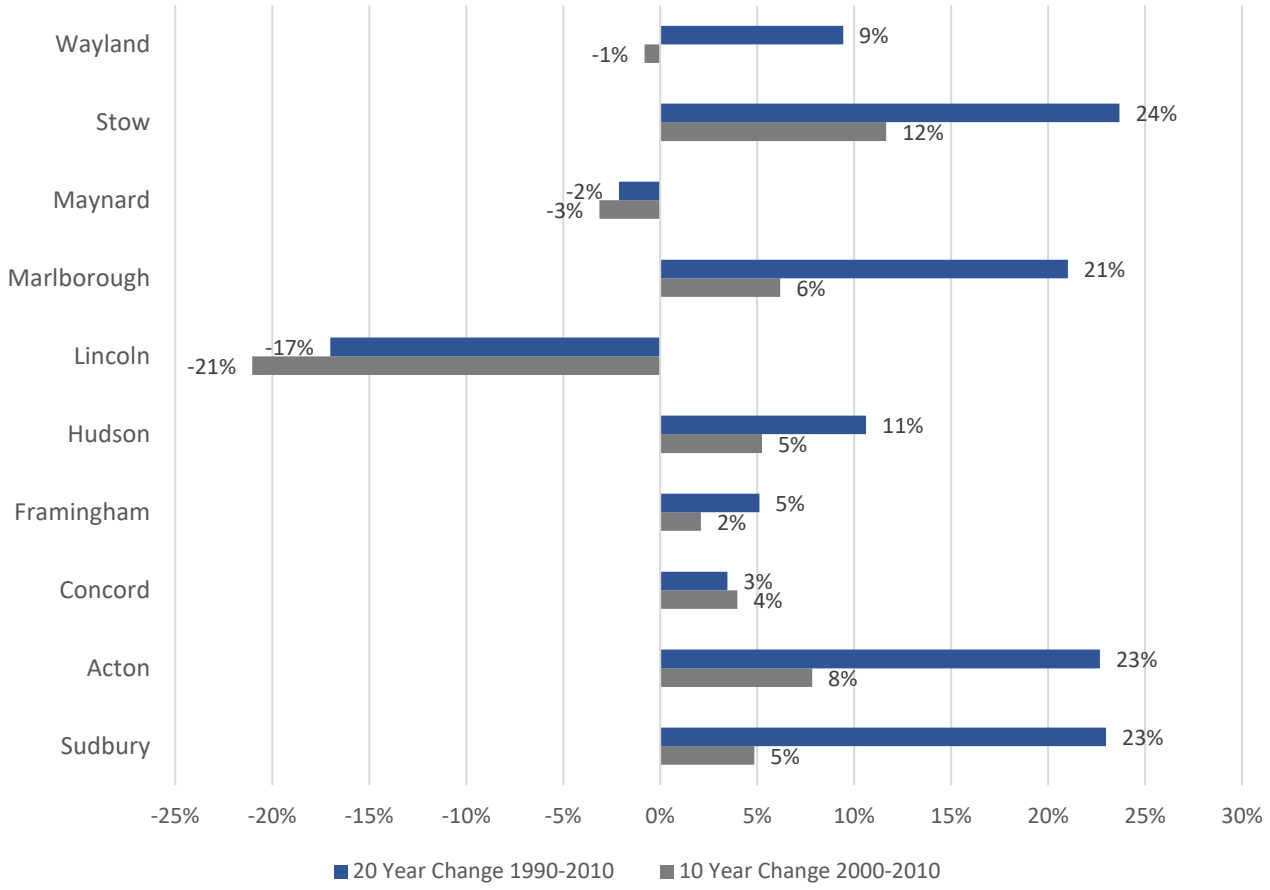
Source: Data for Socio-Economic Projections for 2020 Regional Transportation Plans, prepared by UMDI and MAPC for MassDOT, 2018

Figure 1. Population Projections for Sudbury to 2040

[1] https://www.census.gov/programs-surveys/acs/about.html

[2] Socio-Economic Projections for 2020 Regional Transportation Plans available at https://www.mass.gov/lists/socio-economic-projections-for-2020-regional-transportation-plans

Changes in population for other communities in the region varied between 1990 and 2000. Like Sudbury, neighboring towns of Acton, Marlborough, and Stow all experienced growth of more than 20% during this time (Figure 2). Concord, Framingham, Hudson, and Wayland saw a small percentage change, and Lincoln and Maynard experienced population loss.



Source: US Census 1990, 2000, and 2010

Figure 2: Regional Comparison, Population Change (1990-2010)

Age

Equally important as overall population growth is the change of a population within different age groups. People at various points in their lives have different preferences and needs for housing, parks, public health services, transportation, and employment. Understanding how age groups are shifting can help to predict these needs into the future.

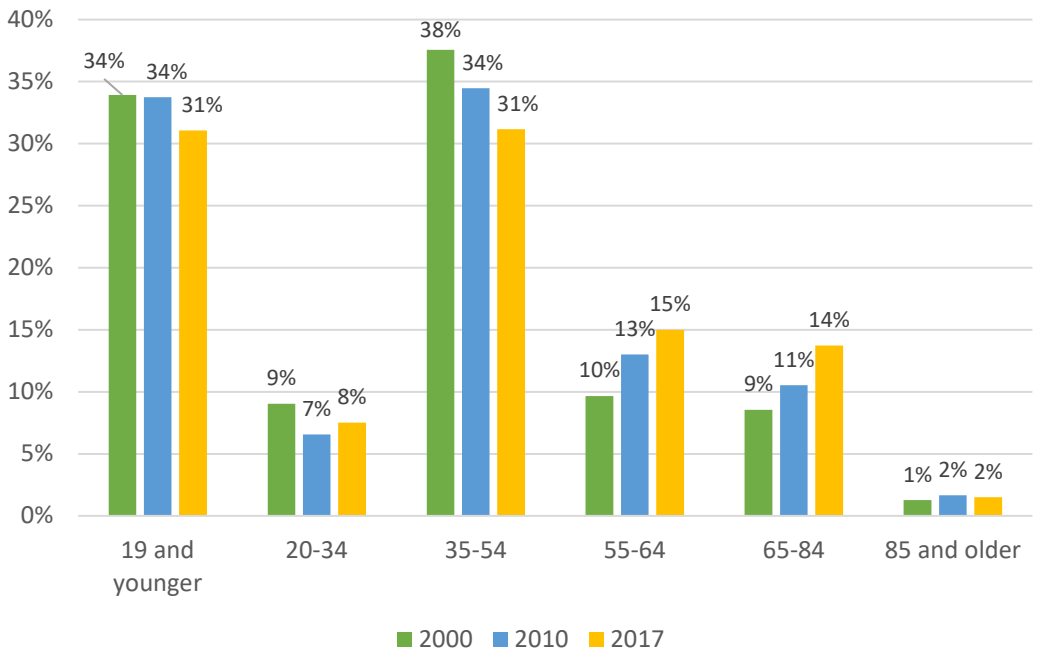
Like so many other communities across the U.S., Sudbury has an aging population. The median age of residents rose significantly from 39 years in 2000 to 44 in 2017. This is comparable to most of Sudbury's neighbors, with the exception of Framingham, which maintains a median age under 40 years (Table 1).

Table 1: Median Age Regional Comparison (2000-2017)

	2000	2010	2017	Change in years
Sudbury	39	43	44	5
Acton	38	42	44	6
Concord	42	47	47	5
Framingham	36	38	38	2
Hudson	37	41	44	7
Lincoln	35	43	41	6
Marlborough	36	39	40	4
Maynard	38	44	44	6
Stow	39	44	44	5
Wayland	41	45	44	3
Middlesex County	36	39	39	3
Massachusetts	37	39	39	2

Source: US Census 2000 and 2010, 2013-2017 ACS 5-Year Estimates

The increase in median age is a result of a growing population that is 55 years and older. Since 2000, Sudbury's younger residents (under 19 years) and those between the ages of 34 and 55 years have always represented the largest portions of the Town's population, each about one third (Figure 3). However, as shown in Table 2, from 2000 to 2017, there were slight shifts, where the younger group saw little growth (2%) and residents between 35 and 54 years decreased (-8%). While still a smaller portion of the Town's total population, around 15%, the percentage of older residents has increased. As shown in Table 2, residents between the ages of 65 and 84 experienced the most growth of all age groups from 2000 to 2017 with an increase of 78%, with those 55 to 64 years not far behind with 72%. Residents 85 years and older grew by one third.



Source: US Census 2000 and 2010, 2013-2017 ACS 5-Year Estimates

Figure 3. Distribution of Age Groups in the Population (2000-2017)

Table 2. Sudbury Population by Age (2000 to 2017)

	2000	2010	2017	Actual Change 2000-2017	Percentage Change 2000-2017
19 years and younger	5,712	5,961	5,808	96	2%
20-34 years	1,521	1,160	1,405	-116	-8%
35-54 years	6,327	6,087	5,827	-500	-8%
55-64 years	1,628	2,296	2,804	1,176	72%
65-84 years	1,439	1,860	2,569	1,130	79%
85 years and older	214	295	284	70	33%
TOTAL	**16,841**	**17,659**	**18,697**	**1,856**	**11%**

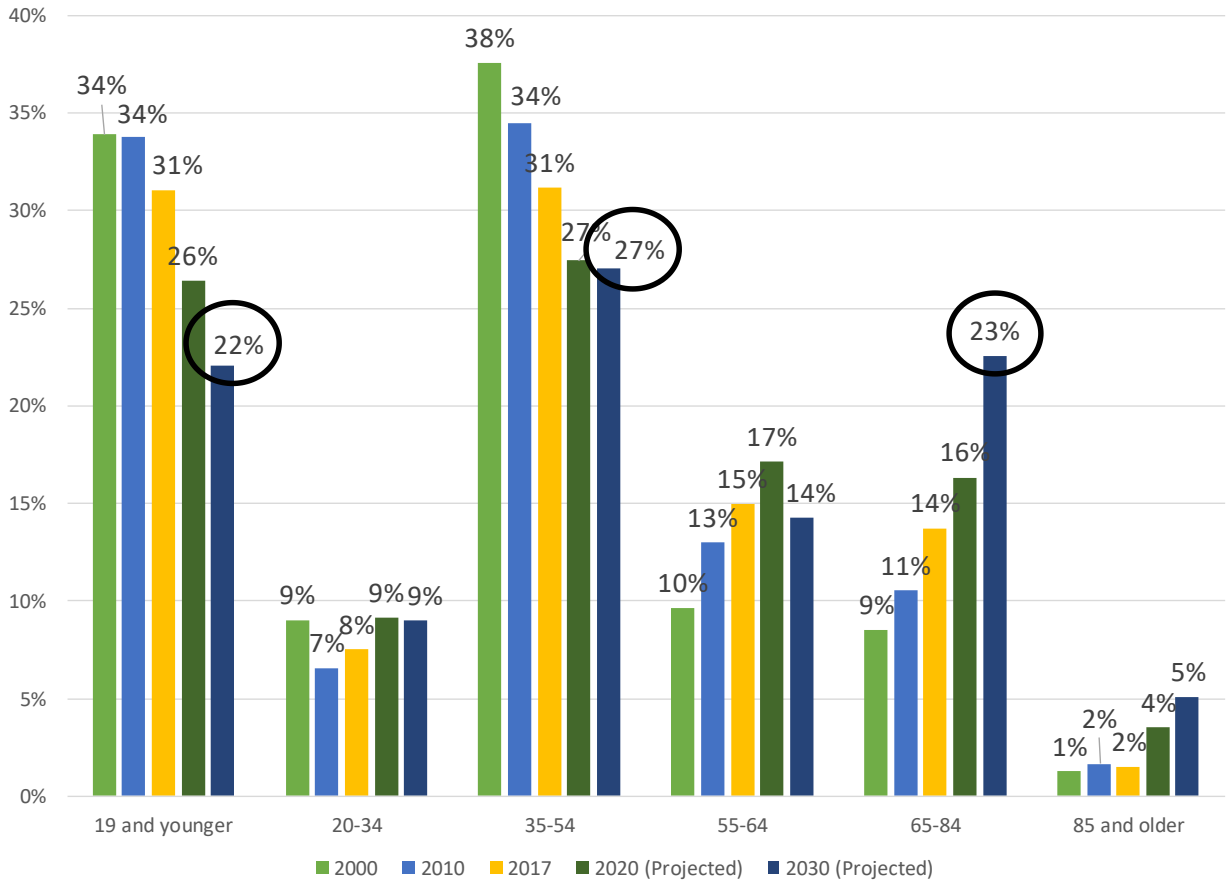
Source: US Census 2000 and 2010, 2017 ACS 5-Year Estimates (2013-2017)

These trends indicate that the town's older population will continue to grow. UMDI's 2015 population projections by age showed that residents 65 to 84 years could double, and those 85 years and older could quadruple (Table 3). These figures would raise the proportion of older residents to rival other age groups and increase the need for senior services (Figure 4).

Table 3. Projected Growth of Population Ages 65 and older in Sudbury, 2020 and 2030

Age	2010	2020 (projected)	2030 (projected)	Change 2010-2030	% Change 2010-2030
65-84 years	1,860	2,761	3,707	1,847	99%
85 years and older	295	594	835	540	183%

Source: UMDI, *Long-term Population Projections for Massachusetts Regions and Municipalities*, 2015



Source: UMDI, *Long-term Population Projections for Massachusetts Regions and Municipalities*, 2015

Figure 4. Projected Shifts in Population Projections by Age Group

Race & Ethnicity

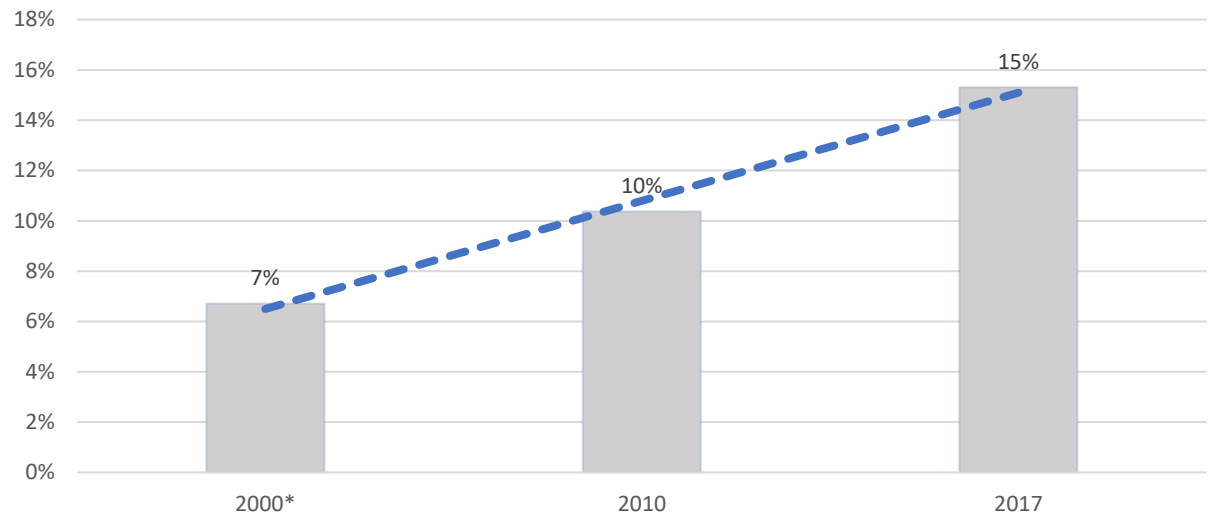
In 2017, the two largest racial groups in Sudbury were white at 86% and Asian at 10%. While the Town of Sudbury is predominately a white community (Table 4), the population of non-white residents has been growing at a faster percentage rate (Figure 5). Statistically, the largest growing groups from 2000 to 2017 are American Indian and Alaska Native at 240%; however, these small numbers can be within the margin of error for the 2017 estimates. The number of residents identifying themselves as some Other Race and Asian increased by 215% and 200%, respectively. When counting individuals (as opposed to percentages) the largest increase by far between 2000 and 2017 is with Asian residents. The census estimates this population grew by over 1,200 individuals during that time.

Table 4: Race and Ethnicity of Sudbury Residents (2000-2017)

Race/Ethnicity	2000	% of Total Popn	2010	% of Total Popn	2017	% of Total Popn	% Change 2000-2017
One race	16,679	99%	17,343	98%	18,271	98%	10%
White	15,870	94%	16,036	91%	16,105	86%	1%
Black or African American	134	1%	149	1%	147	1%	10%
American Indian and Alaska Native	5	0%	9	0%	17	0%	240%
Asian	626	4%	1,041	6%	1,879	10%	200%
Native Hawaiian and Other Pacific Islander	5	0%	9	0%	0	0%	-100%
Some Other Race	39	0%	99	1%	123	1%	215%
Two or More Races	162	1%	316	2%	426	2%	163%
Hispanic or Latino (of any race)	208	1%	350	2%	336	2%	62%

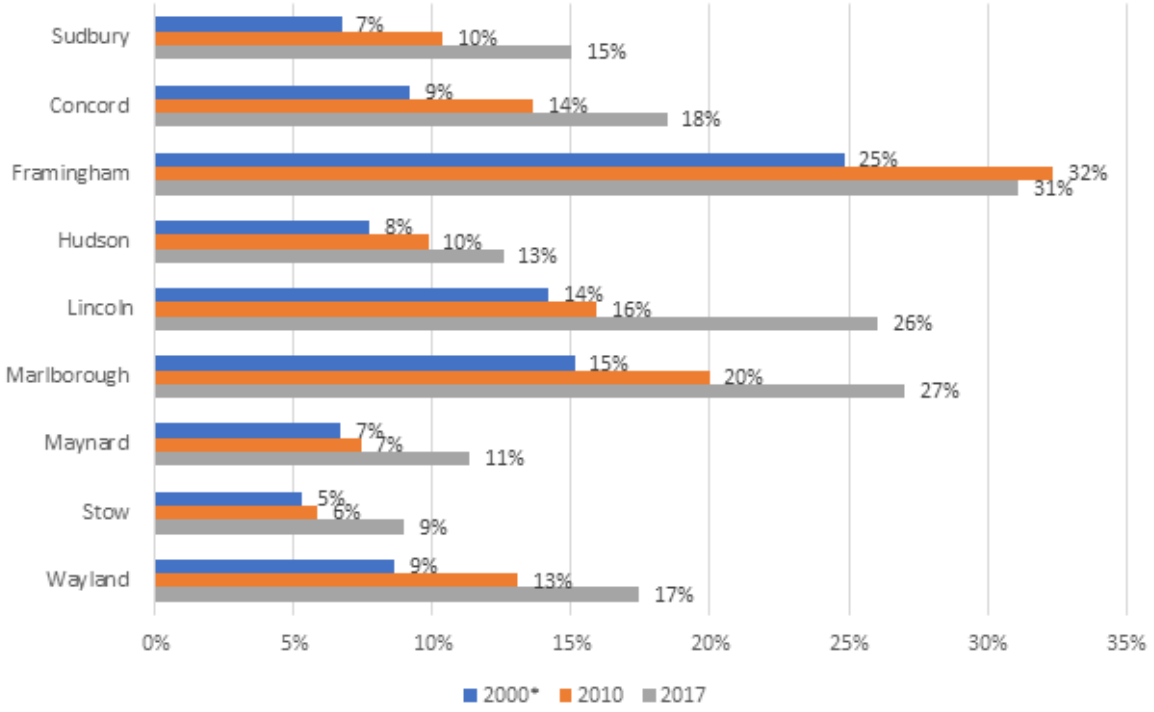
Source: MAPC, US Census 2000 and 2010, 2013-2017 ACS 5_Year Estimates

Figure 6 shows the increase in minority residents between 2000 and 2017 in Sudbury and surrounding communities. Comparing Sudbury's racial composition to its neighboring communities, the town is less diverse than Concord and Wayland, and about the same as Hudson.



Source: US Census 2000, 2010, and 2013-2017 ACS 5-Year Estimates

Figure 5: Percentage of Residents Who Identify as Non-White Alone, Two or More Races, or Hispanic or Latino in Sudbury (2000-2017)



*The difference of total population Not Hispanic or Latino and Not Hispanic or Latino White alone
Source: US Census 2000, 2010, and 2013-2017 ACS 5-Year Estimates

Figure 6: Comparison Non-White Alone and Hispanic or Latino (2000-2017)

People with Disabilities

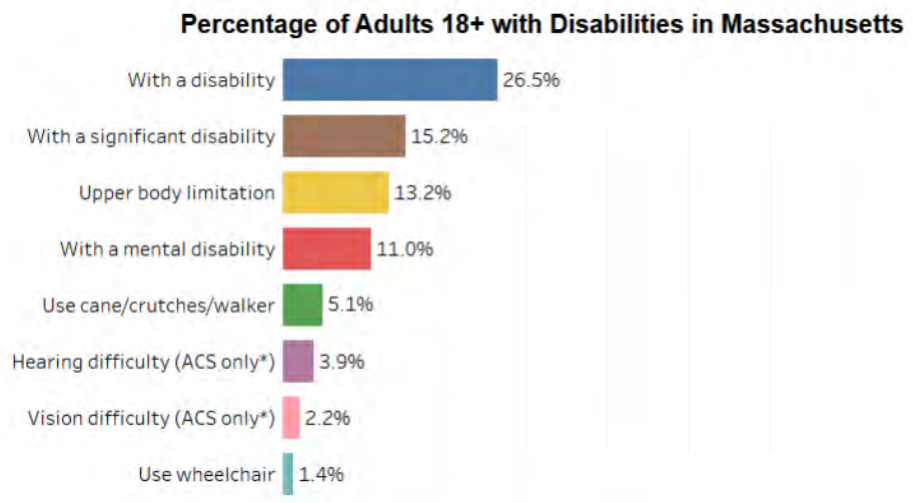
In the 2017 ACS, 6.2% of Sudbury residents were identified as having some disability. These are residents who noted having a long-lasting physical, mental, or emotional condition that makes it difficult to do everyday activities like walking, bathing, climbing stairs, bathing, or remembering. The data reflects the notion that when people age, they age into disability in that the percentage of people with disabilities increases with age. In 2017, the highest percentage of people with disabilities (Table 5) in Sudbury was among 75 years and over with 35.4% and the lowest percentage was 4% among children 17 years and under.

Table 5: People with a Disability in Sudbury, 2017

	Percentage of People with a Disability
Under 5 years	1.1%
5 to 17 years	2.8%
18 to 34 years	6.5%
35 to 64 years	4.5%
65 to 74 years	10.5%
75 years and over	35.4%

Source: US Census 2000, 2006-2010 ACS 5-Year Estimates, and 2013-2017 ACS 5-Year Estimates

Research by the New England Americans with Disabilities Act (ADA) Center[3] showed that the estimates of persons with disabilities is higher than reported by the ACS. In Massachusetts, 2017 ACS data estimate that 12% of adults 18 years and older have a disability, however, the New England ADA Center's estimates that 27% have a disability (Figure 7).



Source: New England ADA Center

Figure 7. Percentage of Adults (18 years and older) with a Disability in Massachusetts

Education

Sudbury is a well-educated community. In 2017, nearly 80% of the population age 25 years and older was estimated to have a bachelor's degree or higher (Table 6). Over the same period of time, those with a graduate or professional degree increased by 10% (from 32% to 42%). The percentage of people with only a high school diploma stayed the same. Compared to its neighbors, Sudbury residents were only second to Wayland (83%) for with a percentage of higher education degrees (Table 7).

Table 6: Educational Attainment of Residents (Aged 25 Years and Older) in Sudbury (2000-2017)

	2000	2010	2017	Change 2000-2017
Less than 9th Grade	8%	1%	1%	-8%
9th to 12th Grade, No Diploma	3%	2%	0%	-3%
High School Graduate (includes equivalency)	9%	8%	9%	0%
Some College, No Degree	10%	10%	8%	-2%
Associate Degree	6%	4%	3%	-2%
Bachelor's Degree	34%	35%	36%	2%
Graduate or Professional Degree	32%	39%	42%	10%

Source: US Census 2000, 2006-2010 ACS 5-Year Estimates, and 2013-2017 ACS 5-Year Estimates

[3] https://www.newenglandada.org/discover-true-nature-disability-new-england

Table 7: Regional Educational Attainment (2017)

	Less than 9th grade	9th to 12th grade, no diploma	High school graduate (includes equivalency)	Some college, no degree	Associate degree	Bachelor's degree	Graduate or higher
Sudbury	1%	0%	9%	8%	3%	36%	42%
Acton	2%	1%	7%	9%	5%	33%	44%
Concord	2%	3%	13%	7%	4%	29%	42%
Framingham	6%	5%	24%	14%	5%	27%	20%
Hudson	6%	3%	26%	15%	10%	25%	15%
Lincoln	1%	0%	5%	12%	6%	29%	47%
Marlborough	5%	4%	29%	15%	8%	23%	16%
Maynard	1%	2%	23%	16%	7%	25%	25%
Stow	0%	0%	13%	10%	8%	35%	34%
Wayland	1%	1%	6%	7%	3%	36%	47%
Middlesex County	4%	5%	20%	13%	6%	27%	27%
Massachusetts	5%	5%	25%	16%	8%	23%	19%

Source: US Census 2013-2017 ACS 5-Year Estimates

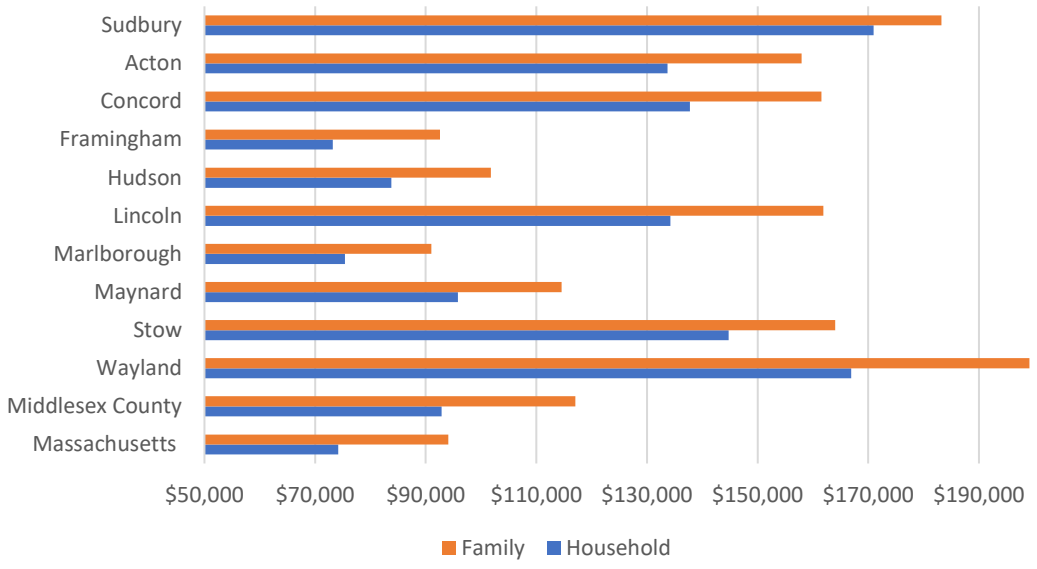
Household Income

Between 2000 and 2017 the median household income in Sudbury increased by an estimated 44%, however, when adjusted using the Consumer Price Index to show 2017 dollars, the rise in income decreased a household's buying power for goods and services by 2% (Table 8). Incomes in Sudbury have decreased similarly to the Commonwealth, whereas Middlesex County as a whole saw a 3% increase. Compared to its neighbors, in 2017, the median household and family household incomes were only lower than Wayland (Figure 8).

Table 8: Change in Median Household Income (2000-2017)

	2000 (1999 dollars)	2000 (2017 dollars*)	2017	% Change 2000-2017 (2017 dollars*)
Sudbury	$118,579	$175,262	$170,945	-2%
Middlesex County	$60,821	$89,895	$92,878	3%
Massachusetts	$50,502	$74,643	$74,167	-1%

* Based on US Bureau of Labor Statistics Consumer Price Index (CPI) inflation calculator
Source: US Census 2000, 2006-2010 ACS 5-Year Estimates, and 2013-2017 ACS 5-Year Estimates



Source: US Census 2000, 2006-2010 ACS 5-Year Estimates, and 2013-2017 ACS 5-Year Estimates

Figure 8: Median Household and Family Incomes of Sudbury and Its Neighbors (2017)

Household Characteristics

US Census defines a household as one person or a group of people living in a housing unit. A home where all people are related by birth, marriage, or adoption is considered, family household. The household composition in Sudbury has not drastically changed in the last 20 years, however, what has changed, shown in Table 9, is the percent of family households with their own children under 18 years. This household composition decreased slightly from 51% in 2010 to 46% in 2017. Another notable change was the percentage of households with individuals living alone that were 65 years and older, which increased from 6% in 2000 to 8% in 2017.

Definitions:

Family Household. A family is a group of two persons or more (one of whom is the householder) related by birth, marriage, or adoption and residing together; all of such persons (including related subfamily members) are considered as members of one family.

Household. A household consists of a householder living alone (a one-person household) or where the householder shares the home exclusively with people to whom he/she is not related.

Table 9: Household Composition in Sudbury (2000-2017)

	2000	2010	2017
Total households	**5,504**	**5,771**	**6,226**
Family Households (Families)	86%	86%	87%
With own Children under 18 years	51%	50%	46%
Married-Couple Family	79%	77%	80%
Nonfamily Households	14%	14%	13%
Householder Living Alone	11%	12%	11%
Householder 65 years and over	6%	7%	8%
Average Household Size	3.0	3.0	3.0
Average Family Size	3.3	3.3	3.2

Source: US Census 2000, 2010, and 2013-2017 ACS 5-Year Estimates

Transportation

Sudbury's transportation network includes roadways, walkways, and limited shuttle services. Off-road walking and biking trails are used for recreation but can offer opportunities to connect people to places.

Roadway Functional Classification

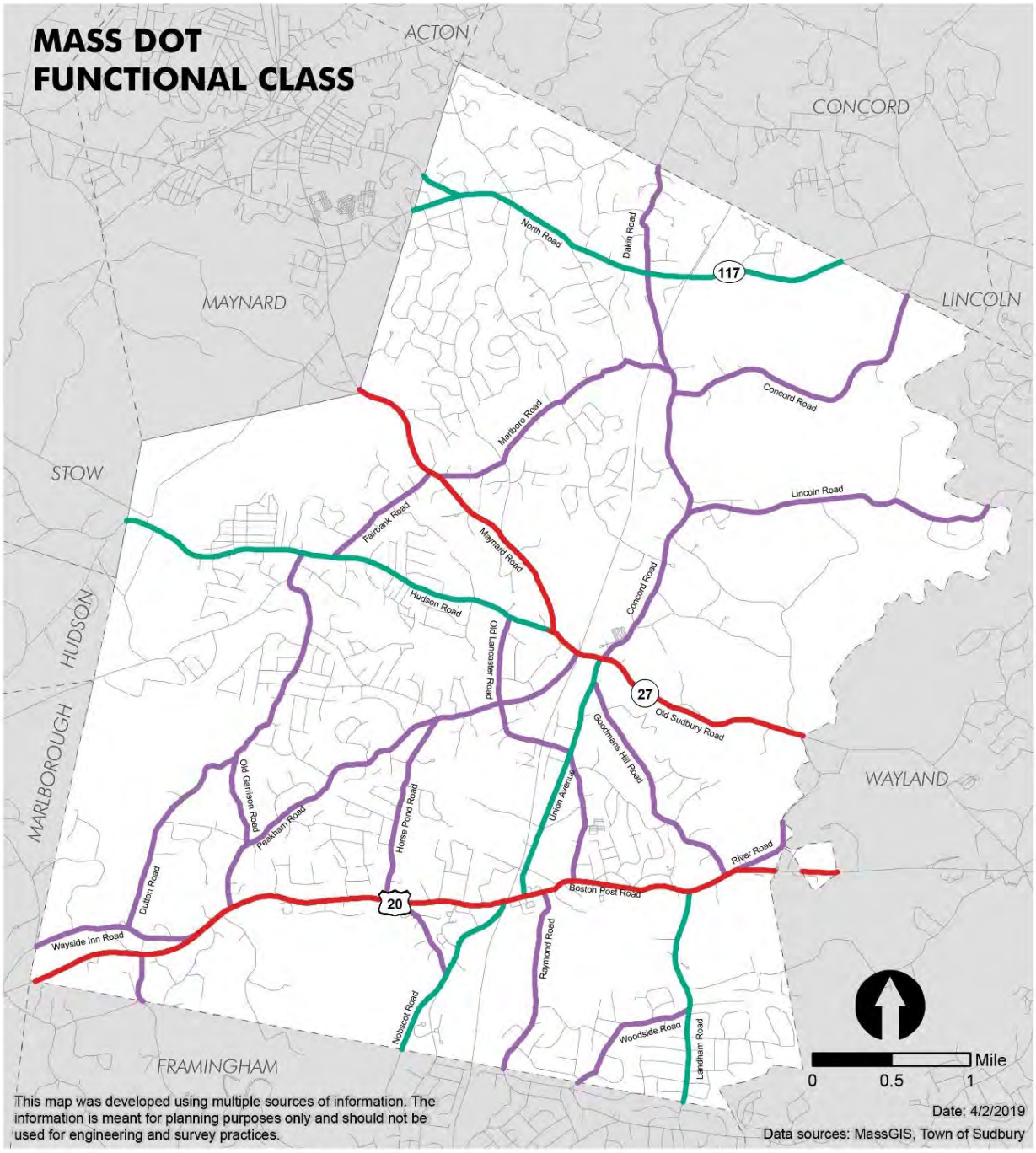
Sudbury has over 160 miles of roadways. These roadways include a mix of arterials, collectors, and local roads that serve the town and the region. There are no interstate highways within the Town's borders. Interstate (I) 495 lies approximately five miles to the west, I-90 (Massachusetts Turnpike) is approximately three miles south, and I-95 lies approximately seven miles east. Map 1 shows the roadway functional classifications throughout Sudbury, as defined by the Massachusetts Department of Transportation (MassDOT):

- Arterial – Provides the highest level of service at the greatest speed for the longest uninterrupted distance, with some degree of access control. The Institute of Traffic Engineers, *Traffic Engineering Handbook*, classifies arterials as either principal or minor. Both classes of arterials serve to carry longer-distance traffic flows between centers of activity. Arterials are laid out as the backbone of a traffic network and *should* be designed to afford the highest level of service.

  Principal arterials, such as Boston Post Road (Route 20) and Maynard Road/Hudson Road/Old Sudbury Road (Route 27) accommodate both regional and local traffic. However, only Boston Post Road is maintained by MassDOT. Boston Post Road also provides a regional connection to I-495 to the west. Minor arterials such as Hudson Road and North Road (Route 117) also carry both regional and local traffic, but to a lesser degree.

- Collector – Provides a less highly developed level of service at a lower speed for shorter distances by collecting traffic from local roads and connecting them with arterials. The Federal Highway Administration defines collector streets as those that provide land access service and traffic circulation within residential neighborhoods, commercial, and industrial areas. Sudbury has many collector roads that link the local roadway network to the regional network.

- Local – Consists of all roads not defined as arterials or collectors. Local streets primarily provide access to adjacent properties with little through movements. Local streets provide the lowest level of mobility and usually contain no bus routes. Utilization by through traffic is often deliberately discouraged.



Map 1: Massachusetts Department of Transportation Roadway Classifications

Traffic Analysis

Available traffic counts in Sudbury were assembled from MassDOT's Geographic Information System (GIS) data. MassDOT has 17 traffic volume count locations in Sudbury. This data has limitations in that the counts were recorded at different times in recent history. This condition limits both the ability to compare counts to each other and may also limit their comparability to current conditions. The counts do provide a snapshot of traffic volume at specific moments in time and, where there was more than one count taken over time, these can be used as an indicator of growth and economic activity. As shown in Figure 9, traffic volume at Peakham Road (north of Austin Road) peaked in 1985 and then again in 2007 with 2,400 vehicles per day. Volumes dropped off in 2010 and have been on a slight incline since 2013. Many similar communities saw a similar drop between 2008 and 2010. This trend can be attributed to the recession, which caused a decline in the number of commuters traveling to work. Residents along roadways with heavy traffic have emphasized the importance of counting during peak commuter hours and school hours during AM and PM times. There are four periods of heavy traffic along the scenic and local roads that connect to Sudbury's many schools.

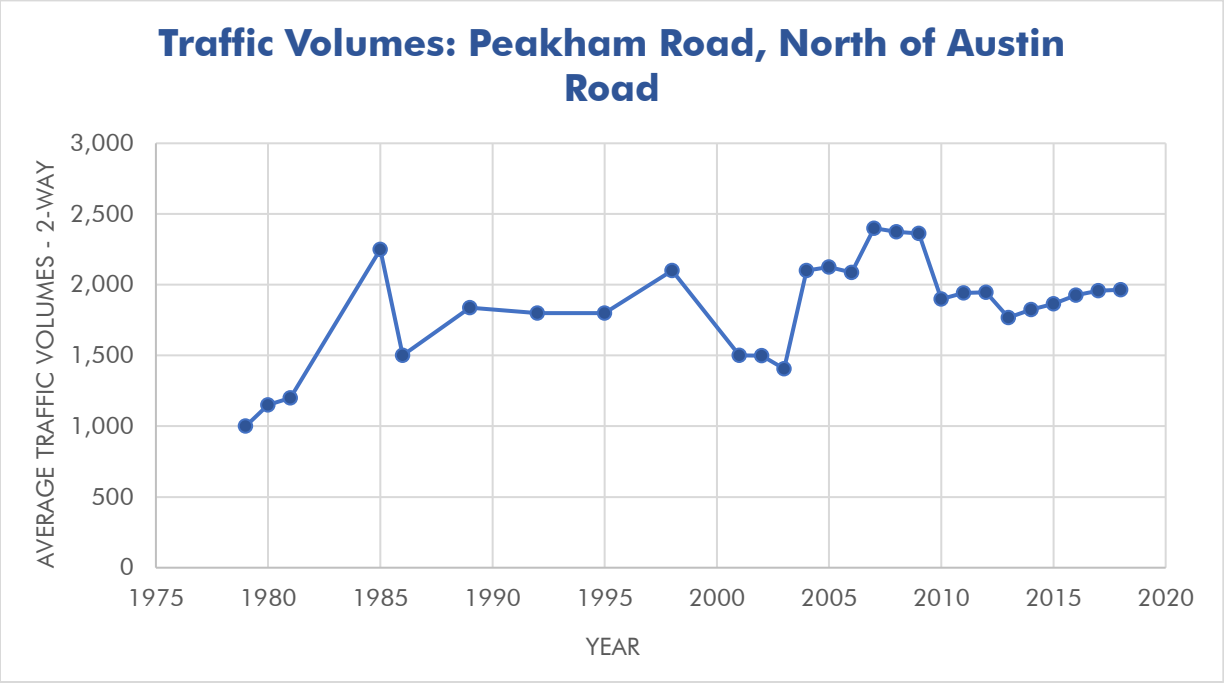
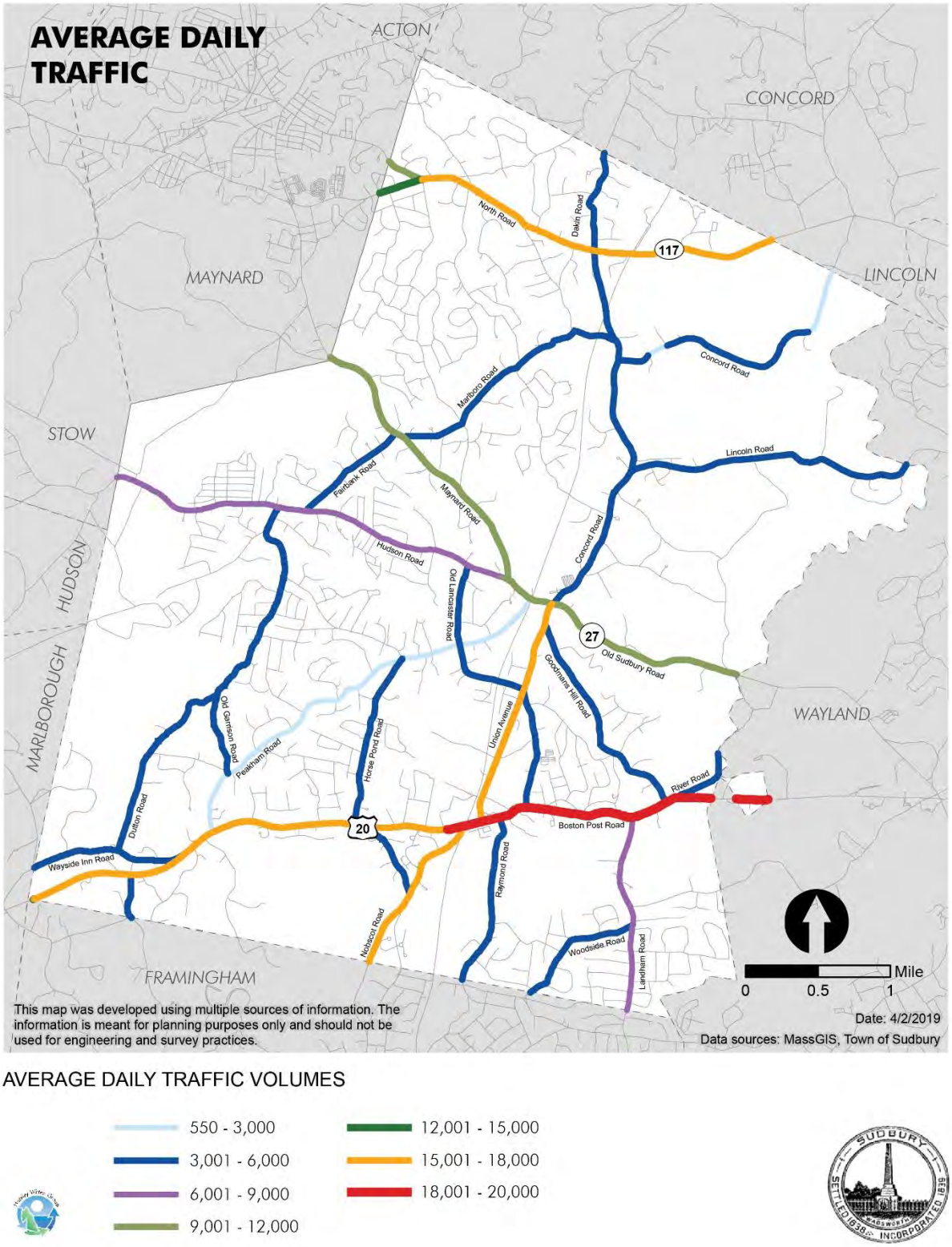


Figure 9. Traffic Volumes on Peakham Road, North of Austin Road

Map 2 shows the concentration of all traffic volumes in Sudbury on average in 2017 (latest available count year). The highest volumes are located on Boston Post Road, which has volumes between 15,000 and 20,000 vehicles per day. Union Avenue, Concord Road, North Road, and Nobscot Road have volumes between 15,000 to 18,000 vehicles per day. Maynard Road, Hudson Road, Old Sudbury Road, and Landham Road experience volumes between 6,000 and 12,000 per day. Available data for local roads indicates volumes between 550 and 6,000 vehicles per day.



Map 2: Average Daily Traffic in Sudbury (2017)

Regional Traffic

Development in neighboring communities impacts Sudbury, primarily on major transportation routes such as Routes 117, 27, and 20. Recent developments at Sudbury's borders with Maynard and Acton include the Maynard Crossing Development which has 320 housing units, the Market Basket store which will open in 2020, and the Beijing Royal International School, which is projected to enroll 500 students in grades K-12 beginning in 2020. Although located in other communities, these developments create additional regional traffic that may impact Sudbury, due to the development types and locations.

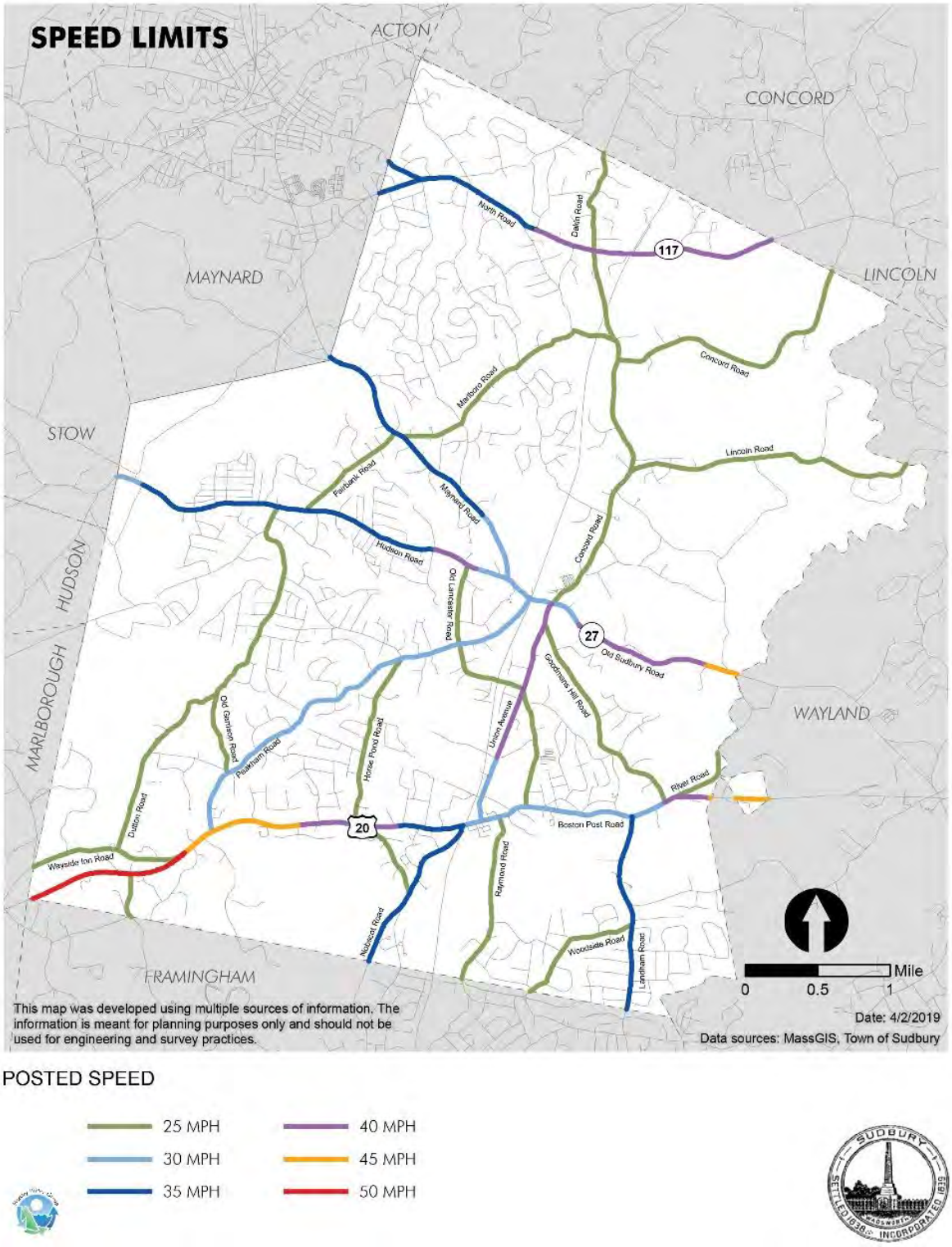
Speed Limits

Speeds limits in Sudbury vary based on roadway type and geography (Map 3). Typical speed limits on local roads are 25 miles per hour (MPH). Boston Post Road has speed limits between 30 and 50 MPH (west of Bigelow Drive). Speed limits of 30, 35, and 40 are common on minor arterial and collector roadways. Sudbury Police confirm speeding is not typically an issue in the Town Center, as traffic congestion helps to curb excessive speeds. Speeding does occur in the less congested, more rural areas, away from the Town Center. In a Road Safety Audit, conducted in 2015 and focused on the intersection of Boston Post Road (Route 20) and Landham Road, it was noted by the Sudbury Police Department, as well as other members of the audit team, many vehicles travel along Boston Post Road (Route 20) well in excess of the posted speed limit of 30 MPH, specifically along the eastbound approach. According to the Route 20 Corridor Study prepared by Vanasse Hangen Brustlin, Inc. in June 2012, the 85th percentile speed along Boston Post Road (Route 20) was 38 MPH, 8 MPH above the posted speed limit within the vicinity of Landham Road.

Traffic Operations

There are six signalized intersections in the Town of Sudbury, four of which are located on Boston Post Road, which serves the commercial areas and plazas along the state route. The other two signalized intersections are located at the intersection of Hudson Road, Concord Road, and Old Sudbury Road, and the intersection of North Road, Pantry Road, and Dakin Road. Signal upgrades to this intersection will be required when the Quarry North residential housing development on North Road (Route 117) is constructed.

Traffic congestion, primarily experienced on Boston Post Road, is related to queues at the four intersections, as well as left-turning vehicles into various business driveways. There are crosswalks located at all six signalized intersections in town. Funding is in place for the construction of a signalized intersection at Route 20 and Landham Road. This location has multiple stop signs and roadway islands that can be confusing to drivers. Additionally, this location also warrants signalization due to traffic volumes. Construction of this signalized intersection is expected to begin in late 2020. It should also be noted there is no way to cross Boston Post Road on a roadway in a north or south direction without actually getting onto Boston Post Road, at least temporarily, in an east or west manner.



Map 3: Posted Speed Limits on Principle and Arterial Roadways

Crash Analysis

Crash data was obtained from the MassDOT – Highway Division for the latest three available years (2014, 2015, and 2016). Crash data is derived from the Registry of Motor Vehicles (RMV) Crash Data System (CDS). The RMV Division of MassDOT obtains and compiles crash reports from local police, state police, and other police agencies. The threshold for reporting is any crash involving an injury or fatality, or damage to any one vehicle or personal property that exceeds $1,000. Crashes not in public ways or in off-street parking lots are usually excluded from the data. Because comparing crash data by individual years may distort analysis results, three years of data were analyzed to account for anomalies caused by outside variables such as construction projects.

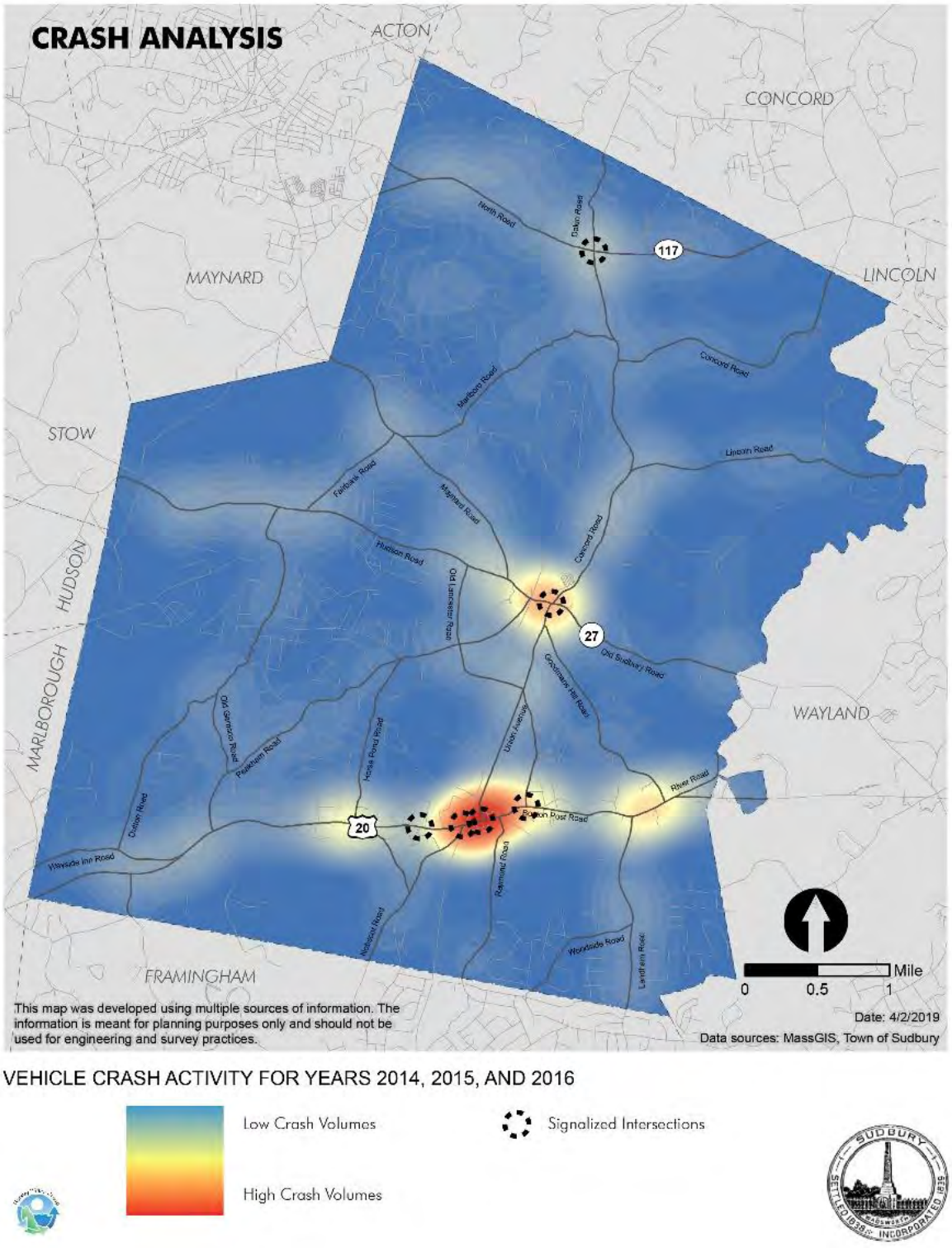
The crash data obtained from the CDS revealed that 799 crashes occurred within the Town of Sudbury over the three-year period between 2014 to 2016. Crash severity statistics are presented below:

- 1 Fatality
- 386 Property Damage Only
- 407 Non-Fatal Injury
- 5 Unknown

The greatest number of crashes are concentrated on Boston Post Road, primarily at the intersection of Boston Post Road and Union Avenue (see Map 4). These crashes are mostly rear-ended, property damage only types of collisions that are typical of areas with many or frequent signalized intersections. As discussed above, this area of Boston Post Road has a concentration of four signalized intersections, many commercial driveways, and high average daily traffic volumes (between 15,000 to 20,000 per day), which contribute to elevated crash rates at this location. Union Avenue is also an arterial roadway that is the primary north-south connection between the two-state highways, Route 20 and Route 27.

There are other pockets of high crash activity including the intersection of Boston Post Road and Goodman's Hill Road, and the four-way intersection of Hudson, Concord, and Old Sudbury Roads. There are many commercial driveways located in close proximity to the intersection of Goodman's Hill Road and Boston Post Road, as well as curves in the roadway that may contribute to the high crash activity at this location.

The most recent available three-year crash records utilized in this report were for the years 2014, 2015, and 2016. It is important to note that in 2016, the Town of Sudbury completed roadway redesign and reconstruction at the intersection of Concord Road, Hudson Road, and Old Sudbury. Improvements to this location were aimed at increasing the safety of the intersection for all users. Without more recent crash data, it is unclear if a reduction in crashes at this location has occurred in the years since the construction project was completed.



Map 4: Three-Year Vehicle Crash Activity in Sudbury (2014-2016)

Historic Crash Activity

A review of historic crash data between 1990 and 2016 reveals crash volumes have decreased by a significant amount (Table 10). In 1990, there were 524 reported crashes in the Town of Sudbury, and by 2016, this number had decreased to 277 crashes. This is a nearly 50% reduction in crash incidences. The decrease is consistent with neighboring towns such as Framingham, Concord, and Wayland. Marlborough was the only neighboring community to see an increase in crash numbers. See below for crash volume changes between 1990 and 2016.

Table 10. Comparison of Crash Volumes, Sudbury and Nearby Communities (1990-2016)

Community	% Change in Crash Volumes 1990 – 2016
Sudbury	- 47.1 %
Marlborough	+ 6.9 %
Maynard	- 33.2 %
Wayland	- 36.5 %
Framingham	- 47.2 %
Concord	- 44.0 %

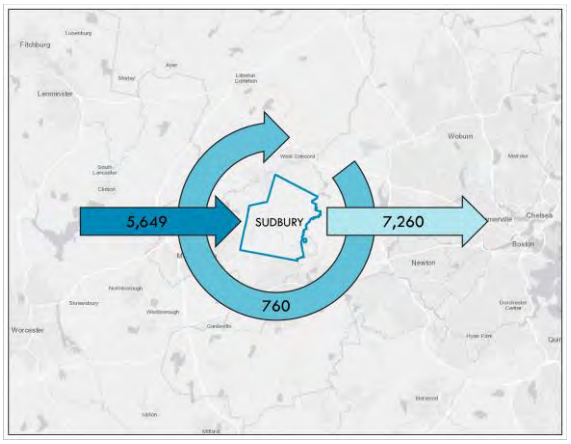
Source: MassDOT

Commuting Patterns

Sudbury residents are heavily reliant upon the automobile to get to work. In 2017, approximately 82% of residents drove to work alone. Most current commuting destination data from 2015 indicates the most common work destinations were Boston, Waltham, Framingham, and destinations within Sudbury.

Additionally, there were over 5,600 commuters into Sudbury, an overwhelming majority of which are dependent upon the automobile for travel. Nearly 7,300 Sudbury residents commuted out of town for work daily. The maps at right show commuting data for 2011 and 2015. In 2011 (most historic numbers available), the number of commuters into Sudbury was over 6,100, while almost 6,500 residents commuted away from Sudbury for work.

2011



2015

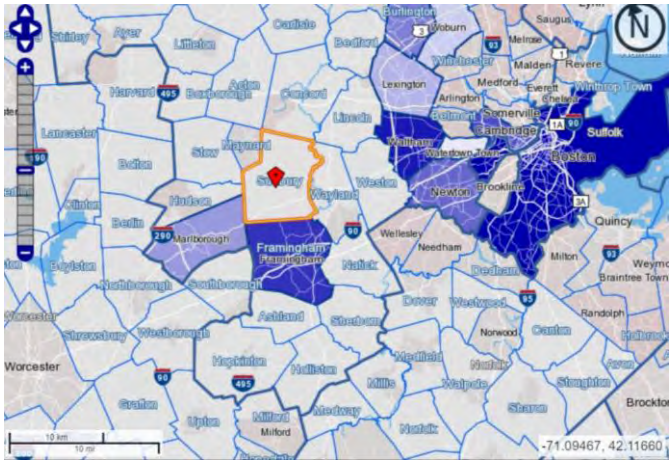
Employed in Sudbury and live outside
Employed and live in Sudbury
Live in Sudbury but Employed elsewhere

Source U.S. Census Bureau, Center for Economic Studies, OntheMap tool

Commuters into and out of Sudbury (2011 and 2015)

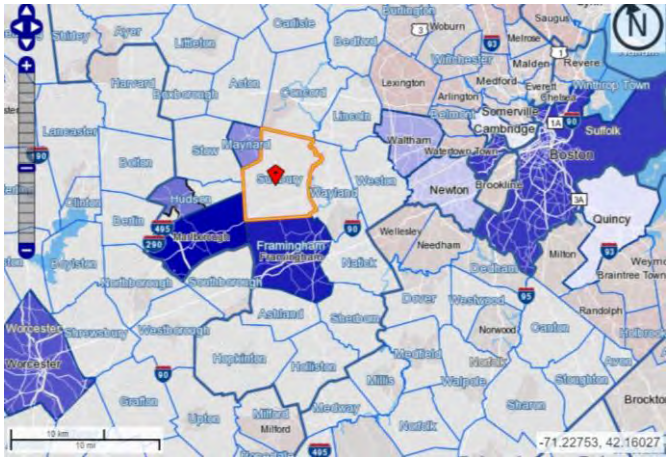
The 2015 commuter data also showed approximately 760 Sudbury residents that both lived and worked in Sudbury. This was an increase from 2011, where 714 Sudbury residents both lived and worked in the town.

Figure 10 shows where Sudbury residents are commuting for work, as well as where workers into Sudbury are commuting from. There are similarities between the two maps, but some differences as well. A greater number of Sudbury residents commute to Boston and other major employment centers for work. Sudbury attracts more workers from neighboring towns such as Marlborough and Framingham.



Jobs Counts by Places (Cities, CDPs, etc.) Where Workers are Employed - All Jobs	2015	
	Count	Share
All Places (Cities, CDPs, etc.)	8,552	100.0%
Boston city, MA	1,402	16.4%
Waltham city, MA	558	6.5%
Framingham CDP, MA	472	5.5%
Cambridge city, MA	418	4.9%
Newton city, MA	291	3.4%
Burlington CDP, MA	262	3.1%
Marlborough city, MA	223	2.6%
Lexington CDP, MA	200	2.3%
Woburn city, MA	106	1.2%
Watertown Town city, MA	103	1.2%
All Other Locations	4,517	52.8%

Where Residents Work – 2015



Jobs Counts by Places (Cities, CDPs, etc.) Where Workers Live - All Jobs	2015	
	Count	Share
All Places (Cities, CDPs, etc.)	6,999	100.0%
Marlborough city, MA	517	7.4%
Framingham CDP, MA	483	6.9%
Boston city, MA	320	4.6%
Worcester city, MA	190	2.7%
Hudson CDP, MA	151	2.2%
Maynard CDP, MA	137	2.0%
Waltham city, MA	132	1.9%
Newton city, MA	96	1.4%
Cambridge city, MA	67	1.0%
Quincy city, MA	67	1.0%
All Other Locations	4,839	69.1%

Where Workers Live - 2015

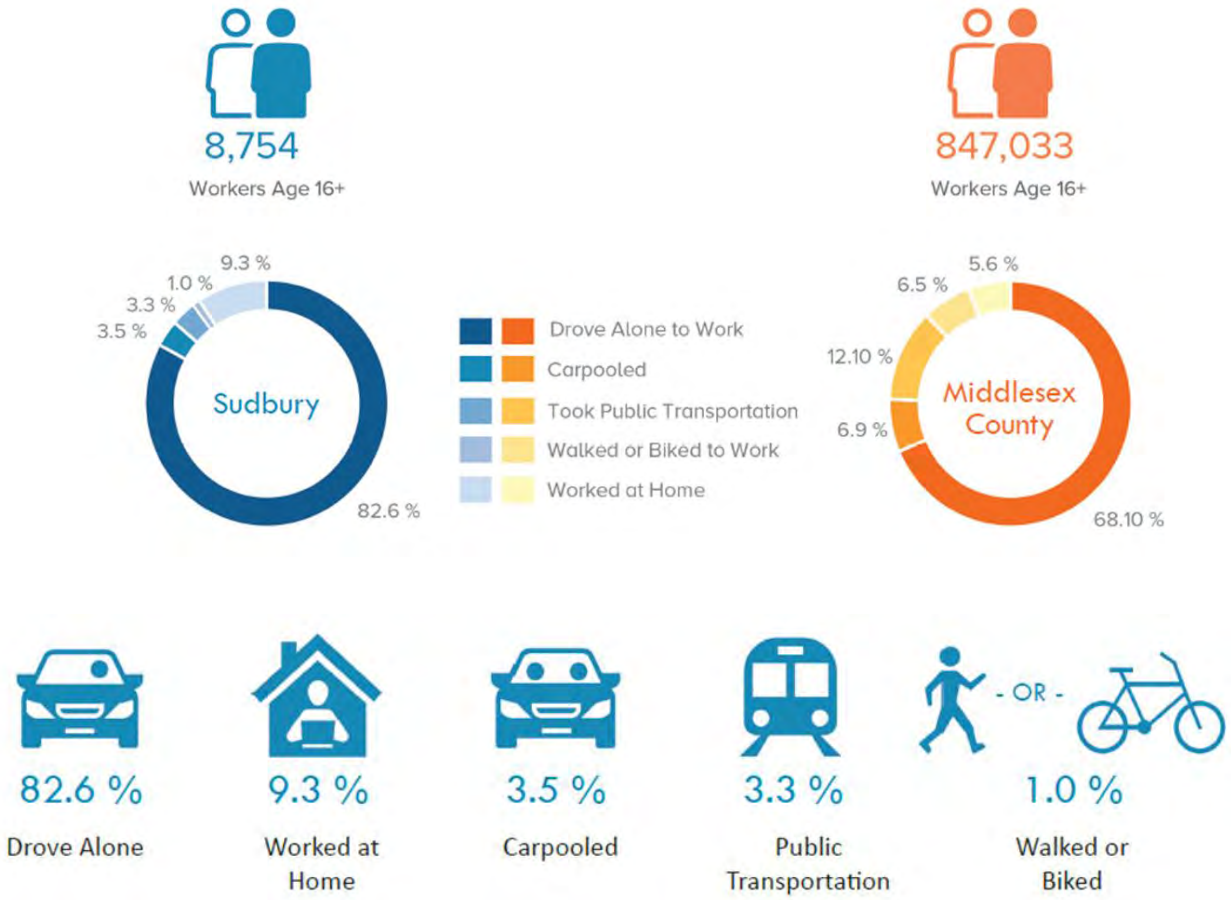
Source U.S. Census Bureau, Center for Economic Studies, OntheMap tool

Figure 10. Where Sudbury Residents Work and Where Workers in Sudbury Live (2015)

Journey to Work

When compared to Middlesex County, a greater number of Sudbury's residents drive alone to work according to the US Census Bureau's 2017 estimates. More Sudbury residents work from home though,

when compared to the County. Fewer Sudbury residents talk about public transportation than the County as a whole. These are all factors of location and available transit resources. Of the approximately 8,754 workers age 16 and over in Sudbury, 82.6% drive alone, 9.3% work at home, 3.5% carpooled, 3.3% took public transportation, and 1% walked or biked (Figure 11).



Source U.S. Census Bureau, ACS 5-year estimates, Bureau of Labor Statistics

Figure 11. Journey to Work

Public Transportation

MBTA Rail

There is no direct Massachusetts Bay Transportation Authority (MBTA) commuter rail service to Sudbury. There is direct service to North Station, Boston on the Fitchburg Line at Lincoln Station, Concord Station, West Concord Station, and the Kendall Green Station in Weston. Parking is very limited at these stations. There is also service to South Station, Boston on the Framingham–Worcester Line in Framingham and Natick. There is a commuter rail station in Framingham with access to the Framingham/Worcester Line. This line runs daily between Worcester and South Station in Boston weekdays between 5:30 AM and 10:15 PM, and weekends between 7:40 AM and 11:40 PM. Limited parking is available at the Framingham Station, and bicycles are allowed on trains. The closest MBTA subway stop is Riverside Station in Newton on the Green Line. Travelers without vehicles who wish to

take the train have limited options to get to nearby rail stations such as the one located in Framingham. A new pilot bus shuttle started on June 10, 2019 and will run until June 2020. This Commuter Shuttle runs from Marlborough through Sudbury on Route 20 to the MBTA Riverside Station where commuters can choose to ride the Greenline subway or take an express bus to Boston. Rideshare services such as Uber or Lyft are often utilized, but at low volumes, as indicated by the Transportation Network Companies 2017 assessment for the town.

MBTA Bus

Sudbury has limited transit services available to residents. There are no fixed-route buses servicing Sudbury. A temporary grant-funded pilot service targeted to seniors and persons with disabilities operates on Tuesdays and Thursdays between Marlborough through Sudbury and into Wayland (run by the Sudbury Senior Center). As mentioned above, the MetroWest Regional Transit Authority (MWRTA) started a pilot commuter shuttle along Route 20 in June 2019, that begins in Marlborough with optional stops in Sudbury and Wayland, connecting to the Riverside T station.

With an aging population, Sudbury residents face challenges associated with access to medical appointments and other services, which are increasingly vital to older adult residents. Additionally, Sudbury has transportation needs other than senior travel service. These include disabled residents and those without access to a vehicle. Between the hours of 8:30 AM to 4:00 PM, Monday through Friday, wheelchair accessible van service is provided by the Sudbury Senior Center. This is available to seniors and residents with disabilities. The van travels anywhere throughout Sudbury but will also take patrons a mile over the border within neighboring towns. Sudbury also received a grant for a shuttle bus that operates on Tuesday and Thursdays between 8:30 AM and 3:30 PM. This shuttle is open to residents over 60 and those with disabilities and others on a space-available basis. The shuttle provides service to three housing developments in Sudbury and operates along Boston Post Road (Route 20) between Marlborough and Wayland.

FISH of Sudbury

Friends In Service Helping (FISH) of Sudbury is a program of the Sudbury Senior Center where volunteers provide transportation for residents to medical appointments in the MetroWest area and Boston. FISH is available to all Sudbury residents and operates five days a week. It has approximately 75 active drivers, serving around 150 Sudbury residents. FISH typically receives 60 requests per month and is often at or over capacity. It is looking to recruit younger volunteer drivers, as many existing volunteers are aging. FISH is operated out of the Sudbury Senior Center and advertisements for the program are posted in the Senior Center Newsletter.

Pedestrian and Bicycle Infrastructure

Walkways

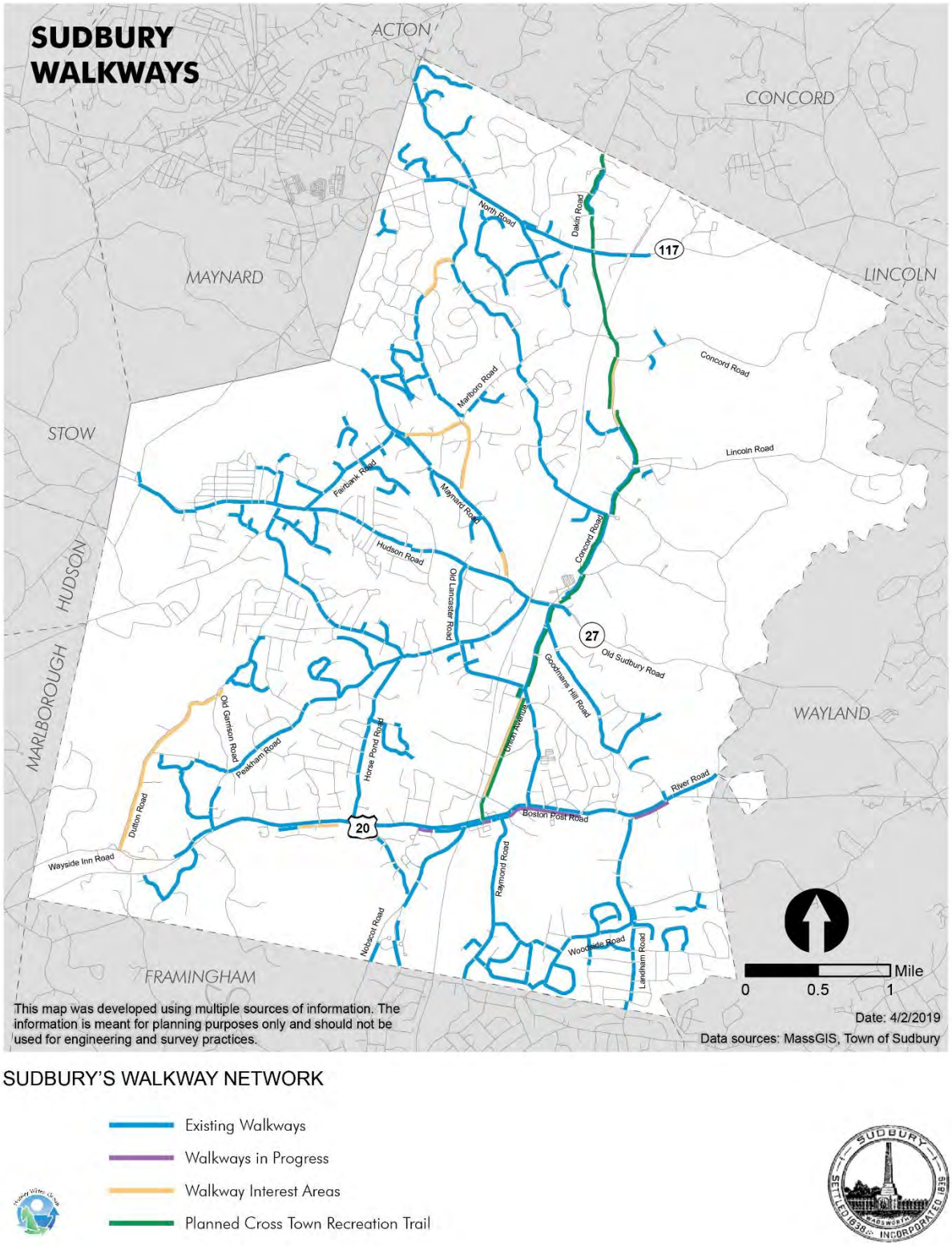
Sudbury has over 36 miles of walkways along its public roads (Map 5). All new subdivisions require the construction of walkways within the subdivision or along the adjacent public ways leading to the subdivision. In some instances, developers may contribute to a Town walkway fund for construction of walkways in underserved areas of town. Although recent development has increased traffic on Sudbury's roads, walkway construction has not kept pace with this growth, and many of the older, established neighborhoods are in need of walkways. At the same time, budgetary constraints have eliminated the annual appropriation for walkway construction and maintenance. Sudbury's Department of Public Works maintains and clears all walkways after winter storms. They also repair and replace broken sidewalks.

Despite budget constraints, Sudbury has been active in working towards expanding pedestrian infrastructure. In 2000, the Sudbury Walkway Committee identified an additional 16 miles of high priority walkways needed to improve safety. The Town has made some progress towards that objective having constructed walkways on local roads such as Maynard Road, but many other roads identified by the Committee still lack walkways. There are many gaps and "missing links" in the walkway network, particularly along Peakham Road. Walkway easement issues have made it challenging to connect some locations. Sudbury has many narrow, winding roads, many of which have trees or stone walls lining the edge of the pavement. This lack of space makes it difficult to manage traffic and equally challenging to accommodate bicycle or pedestrian infrastructure.

Boston Post Road (Route 20) is the main commercial corridor in Sudbury, with many shops, restaurants, and businesses. This roadway serves both regional and local traffic. Although Route 20 has many destinations that residents may wish to visit on foot, the corridor is very uncomfortable for pedestrians. Destinations are disconnected, and high speeds and congestion make it challenging for pedestrian travel, even along the places with walkways.

Greenways

Sudbury is located along the Bay Circuit Trail system, which will eventually create a continuous trail system in a semi-circular arc around the suburbs of Boston from the North Shore to the South Shore. The trail system is being created by members of various environmental organizations across the Commonwealth with the cooperation of local landowners. As shown in Map 6, the proposed trail meanders through Sudbury in the southern portion of the town, crossing the Sudbury River.



Map 5: Sudbury's Walking Network

Bicycle Infrastructure

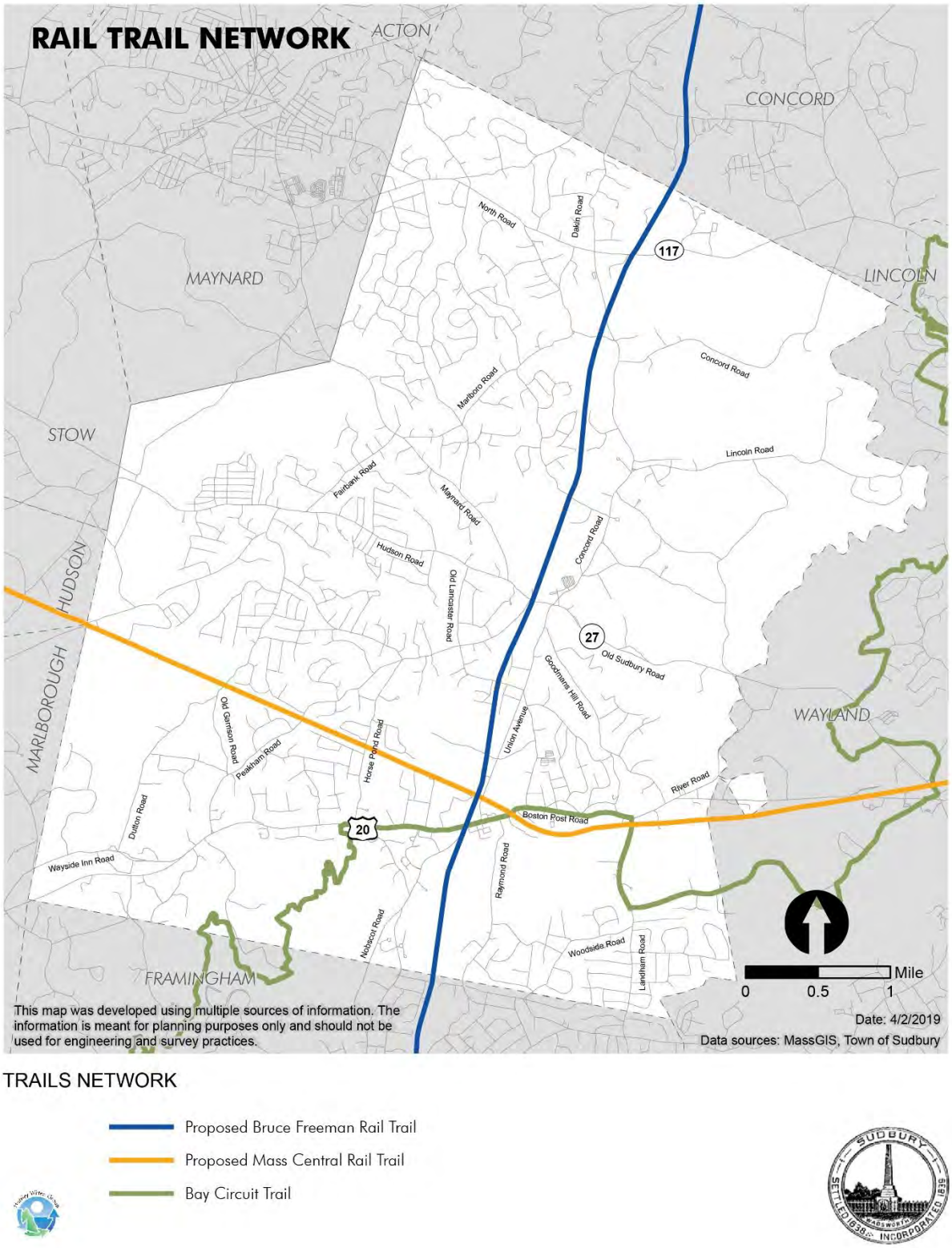
Sudbury has very little bicycle infrastructure. There are no dedicated bicycle lanes on local roads in town. Cyclists are allowed to use walkways, but this has the potential to create a conflict with pedestrians. Furthermore, cyclists may be riding on walkways opposite to traffic flow, which may create unsafe conditions between drivers and cyclists. State roadways in Sudbury have bicycle detection pavement marking signals at intersections. These indicators show where cyclists should position themselves in the roadway to trigger a green light to proceed through the intersection.

Trails

The Bruce Freeman Rail Trail (BFRT) follows the 25-mile route of the abandoned New Haven Railroad Framingham and Lowell line, and, once open in town, will be accessible to non-motorized uses such as cycling, jogging, walking, and cross-country skiing. It will run through the communities of Lowell, Chelmsford, Westford, Carlisle, Acton, Concord, Sudbury, and Framingham. Construction of the BFRT has already begun in the towns of Lowell, Chelmsford, Westford, Carlisle, Acton, and Concord. Sudbury is working towards 25% design of 4.5 miles of trail in town. Construction is expected to begin in 2022. The BFRT will be an asset to Sudbury because it will connect many of Sudbury's cultural and historic resources and open space parcels. It will also connect commercial areas, residential areas, and schools, and offer a robust off-road travel network throughout Sudbury. It is anticipated the Department of Public Works will need an additional two staff members to maintain the trail.

The Mass Central Rail Trail (MCRT) will also pass through Sudbury. This east-west trail will travel 104 miles between Boston and Northampton and connect 24 communities. Currently, 47 miles of the trail are open, primarily in and around the terminuses of Boston and Northampton. Construction has not started on the Sudbury segment. The route will traverse the southern end of Sudbury, between its border with Wayland and Hudson. The MCRT will cross the BFRT near Union Avenue and Boston Post Road.

Challenges associated with the rail trails include maintenance costs and establishing safe crossings where the trails intersect with existing roadways. Other challenges include long stretches with no or few "eyes on the trail," which may raise safety concerns for users. Signal improvements may be necessary at some intersections, particularly the intersection of Peakham Road and Hudson Road. This intersection will become signalized as part of the BFRT construction, although many believe this location has warranted a signal for quite some time.



Map 6: Trail Network in Sudbury

Parking

Municipal parking in Sudbury is available at the Sudbury Town Hall parking lot, located between the Town Hall and the Noyes School. Parking for commercial businesses and plazas is generally off-street, surface parking that is privately owned and serves the adjacent businesses. There is no dedicated parking enforcement in Sudbury. According to the Livable Sudbury Community Needs Assessment, completed in January of 2019, satisfaction with parking is relatively high amongst Sudbury residents, with 86% of survey respondents indicating they were satisfied or very satisfied with parking availability. This satisfaction is referring to available parking for retail and in-town locations, not general parking for commuting purposes.

Roadway Improvements

- A road safety audit was conducted in 2015 that focused on the intersection of Boston Post Road (Route 20) and Landham Road. These roads intersect to form a three-way unsignalized intersection. Plans for converting this location to a signalized intersection are completed. MassDOT is expected to begin construction in 2020.
- In 2016, the Town of Sudbury completed a roadway redesign and reconstruction at the intersection of Concord Road, Hudson Road, and Old Sudbury Road in its Town Center. Improvements to this location were aimed at increasing the safety of the intersection for automobiles, pedestrians, and bicyclists. Other objectives of the construction project included improving traffic flow through the center without increasing speeds. Doing so protects the existing scale and character of the center and its role as a civic location.

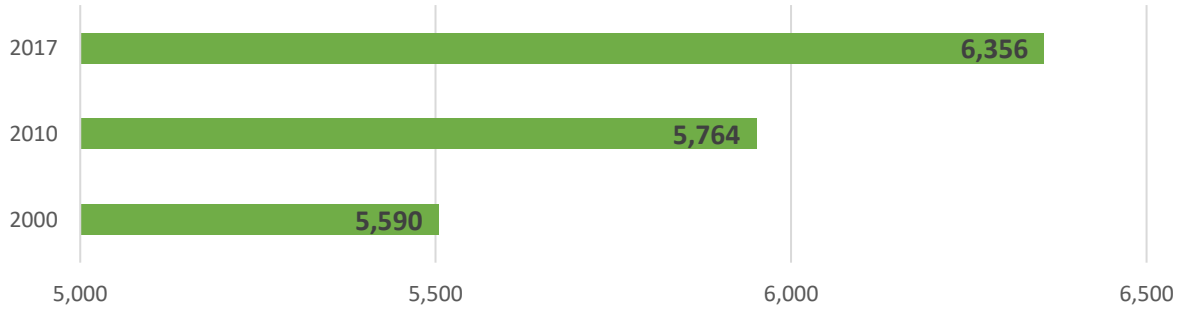
Housing

Safe and secure housing is essential for everyone to be healthy and successful in their personal lives and in the community, creating economic and social stability. A community that offers diverse housing choices opens opportunities for all ages, incomes, and abilities, and bolsters local economic sustainability.

Housing characteristics are important to evaluate when planning for a community's future.[4] These characteristics include types of options available (such as rentals or number of bedrooms in a unit or house), how many homes are available (if there is competition for a limited few), and their age (older homes are less energy-efficient and have a higher risk of environmental hazards such as lead-based paint or asbestos). Housing costs impact current residents and their ability to meet the cost of living in a community, as well as determining who can afford to move into a municipality.

Housing Supply

Between 2000[5] and 2017, Sudbury increased its housing supply by an estimated 14%, consistently adding between 7% to 8% per decade (Figure 12). This was consistent with population growth, where the town saw a 5% to 6% increase per decade and a total increase of 11% between 2000 and 2017.



Source: Table DP04; 2000 and 2010 Census and 2017 American Community Survey 5-Year Estimates (2013-2017)

Figure 12: Total Housing Supply

[4] Unless otherwise noted, data presented are from the US Census Bureau's American Community Survey (ACS). The ACS is conducted every year to provide up-to-date information about the social and economic needs of communities. The US Census Bureau collects data from a sample of the population in the US and Puerto Rico rather than from the whole population. It is important to keep in mind that all ACS data are estimates for one, three, or five-year periods. ACS data are published with a margin of error (MOE). https://www.census.gov/programs-surveys/acs/about.html

[5] The Census is conducted once every 10 years to provide an official count of the entire US population and housing to Congress.

Age of Homes

Sudbury's housing stock is dominated by post-World War II construction, with over 40% of all homes having been built between 1950 and 1969 (Table 11). It is important to consider the public health impacts of older homes. For example, homes built before 1970 (almost half of Sudbury's housing stock) tend to have environmental concerns, such as asbestos and lead-based paint, which pose health risks to those with respiratory conditions or young children.

Table 11. Age of Housing in Sudbury, 2017

Year Built	Number of Units
1939 or earlier	330 (5%)
1940 – 1949	187 (3%)
1950 – 1959	1,155 (18%)
1960 – 1969	1,404 (22%)
1970 – 1979	801 (13%)
1980 – 1989	732 (12%)
1990 – 1999	889 (14%)
2000 – 2009	661 (10%)
2010 or later	197 (3%)
Total	**6,356**

Source: Table DP04, 2017 American Community Survey 5-Year Estimates (2013-2017)

Types of Homes

As shown in Table 12, all housing types grew from 2010 to 2017. The number of single-family attached homes (townhouses or condominiums; units that share a wall) grew faster than any other type. Buildings with ten or more housing units have also seen a significant increase.

Table 12. Change in Housing Types in Sudbury, 2000-2017

Units in Structure	2000	2010 Est	2017 Est	Change 2000-2017
Total Housing Units	5,590	5,764	6,356	1,136
Single-Family, Detached*	5,322 (95%)	5,193 (90%)	5,634 (89%)	221
Single-Family, Attached*	14 (0%)	239 (4%)	384 (6%)	331
2 Units	37 (1%)	66 (1%)	51 (1%)	14
3 or 4 Units	58 (1%)	70 (1%)	66 (1%)	8
5 to 9 Units	6 (<0%)	26 (<0%)	18 (<1%)	12
10 or More Units	153 (3%)	170 (3%)	203 (3%)	50

* Single-family structures include fully detached, semi-detached (semi-attached, side-by-side), rowhouses, duplexes, quadruplexes, and townhouses. In order for attached units to be classified as single-family structures, each unit must: be separated by a ground-to roof wall, have a separate heating system, have individual meters for public utilities, and have no units located above or below. (https://www.census.gov/construction/chars/definitions/)

Source: Table DP04, 2000 Census and 2010 (2006-2010) and 2017 (2013-2017) American Community Survey 5-Year Estimates

While single-family detached homes still make up an estimated 89% of all homes in town, this is down from over 95% in 2000, suggesting that Sudbury has made gains toward diversifying its housing stock over the past two decades. Table 13 lists multi-family and single-family attached units developed since 2010. Many of these include subsidized units meeting local affordable housing needs (see discussion later in this chapter). A handful of projects are still under construction at this time.

Table 13. Multi-Family Residential Development Constructed from 2010 to May 2019

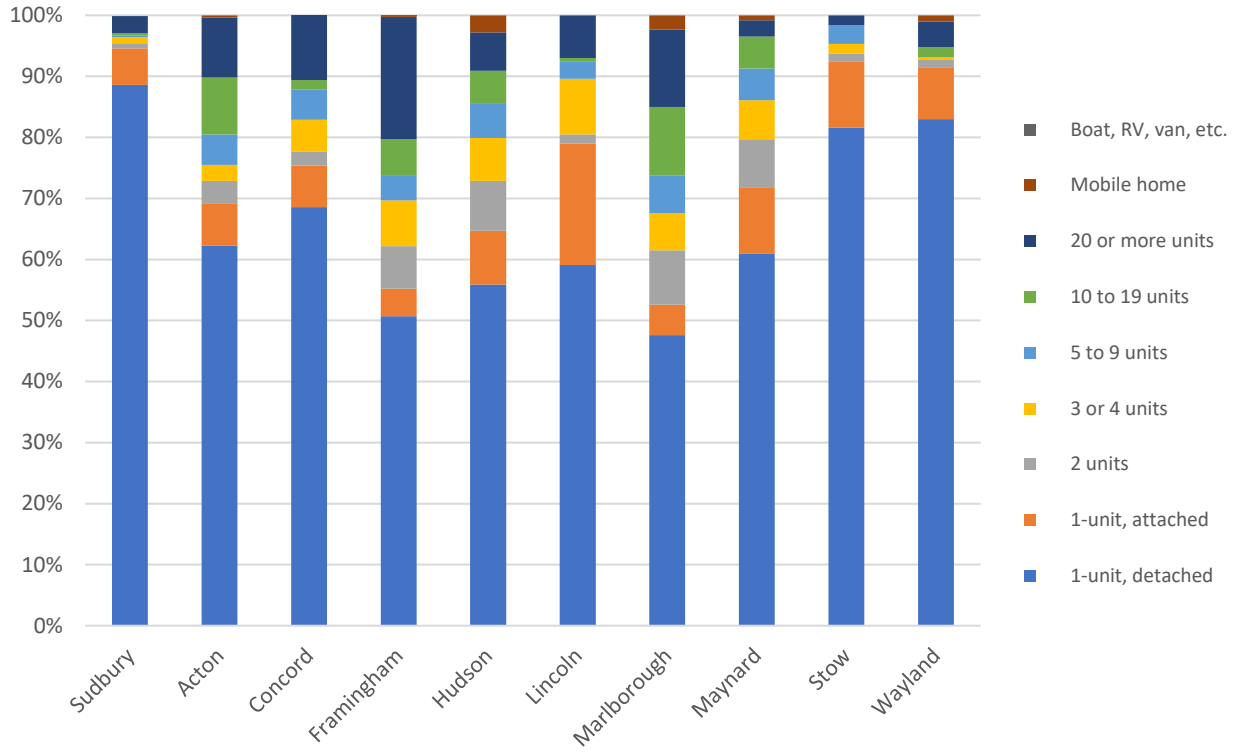
Name	Total Units	Subsidized Units	Location	Owner/Manager	Notes
Sudbury Housing Authority Duplex Reconstruction	12	12	various locations	Sudbury Housing Authority	
Villages at Old County Road	37	10	Old County Road	Trask, Inc (Southboro)	
Landham Crossing	31	8	192 Boston Post Road	Trask Development	
The Coolidge	64	64	189 Boston Post Road	B'nai B'rith Housing	
278 Maynard Road	3	3	3 Marlboro Road	Sudbury Housing Trust	
Dudley Brook Preserve	26	0	40 Tall Pine Drive	Pickwick Development	Age-restricted
Avalon Sudbury	250	63	Bay Drive	Sudbury Avalon, Inc.	Under construction
Highcrest at Meadow Walk	60	0	Farmstead Lane	Pulte Homes	Age-restricted, Under construction
The Coolidge Phase 2	56	56	189 Boston Post Road	B'nai B'rith Housing	Age-restricted, Under construction
TOTAL UNITS	**539**	**216**			

Source: Sudbury Department of Planning and Community Development, May 7, 2019

Similar to Sudbury, single-family homes in neighboring towns are the dominant type of housing (Figure 13). In 2017, communities like Acton, Framingham, and Marlborough offered more diverse housing options, and most of their multi-family units were in larger structures of 10 or more units.

In 2017, the US Census identified 6% of Sudbury residents were living with a long-lasting physical, mental, or emotional disable condition. The majority of these populations are older residents who are 75 years and over. Currently, three long-term care facilities provide housing and services for individuals who are managing illness and/or disability attributed to physical and/or mental health conditions:

- Orchard Hill Sudbury Assisted Living
- Wingate at Sudbury
- Sudbury Pines

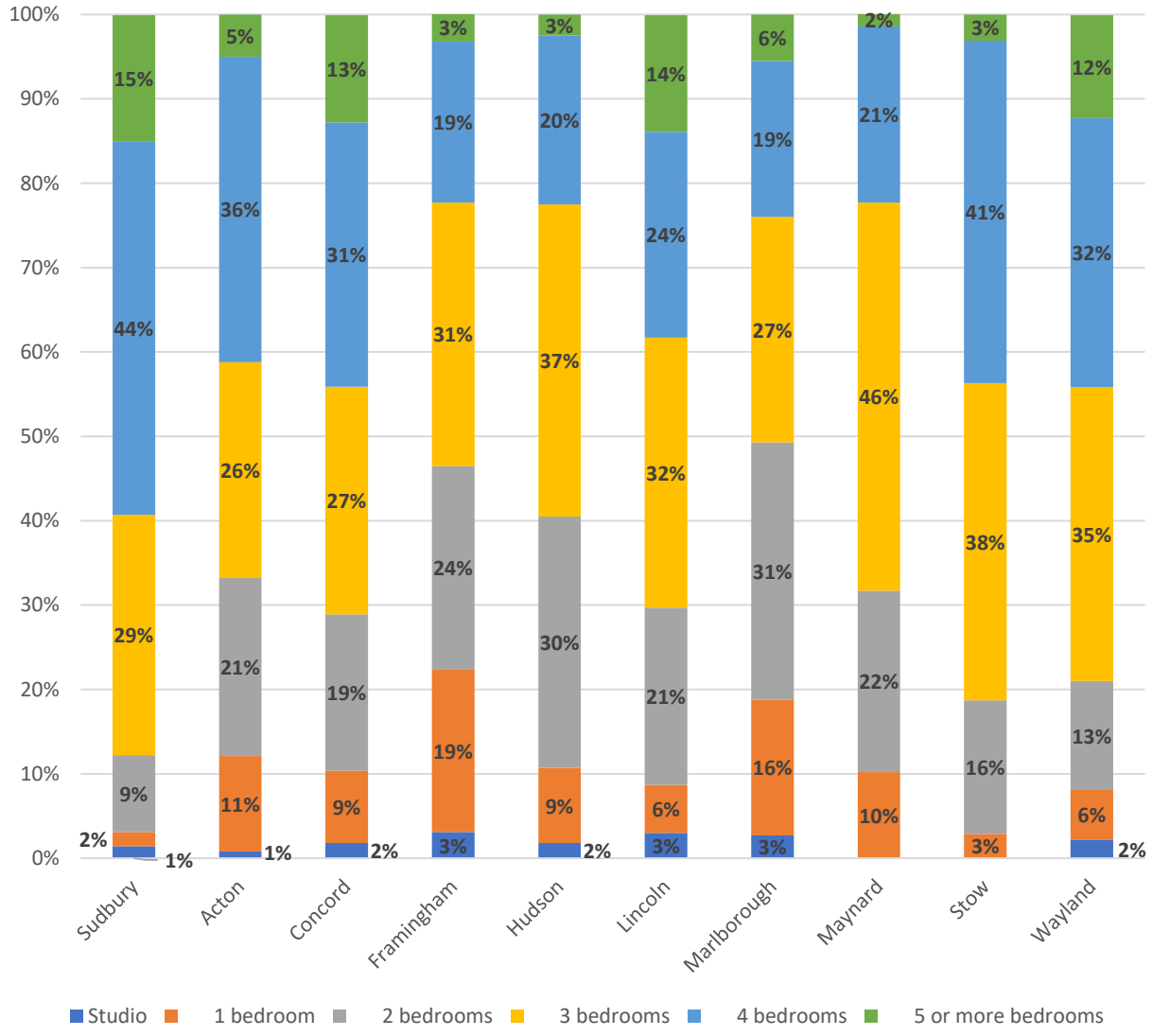


Source: Table DP04, 2017 American Community Survey 5-Year Estimates (2013-2017)

Figure 13. Types of Housing in Sudbury and Neighboring Communities, 2017

Number of Bedrooms

Consumers seek out a particular home to meet the size of their family or to accommodate other needs. In Sudbury, smaller housing options (two bedrooms or less), which are attractive to empty nesters looking to downsize and young families, tend to be less available compared to neighboring towns. In 2017, these types of housing options represented just 12% of the total housing stock (Figure 14), and most homes had four bedrooms or more.

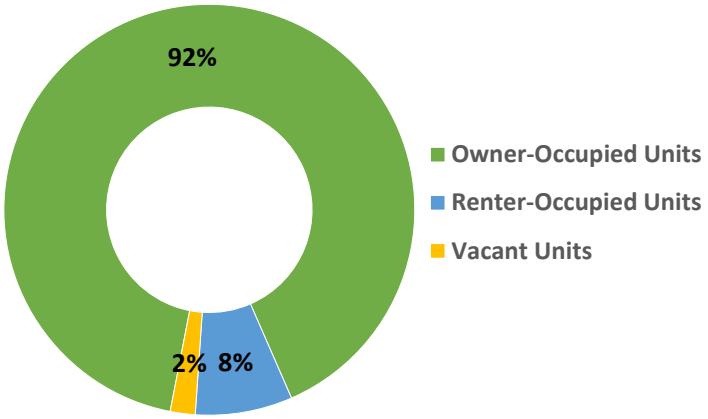


Source: Table DP04, 2017 American Community Survey 5-Year Estimates (2013-2017)

Figure 14. Size of Housing Units by Number of Bedrooms in Sudbury and Neighboring Communities, 2017

Tenure and Occupancy

Most housing in Sudbury was occupied (98%) in 2017 and primarily by owners (Figure 15). Only an estimated 130 homes (2%) were vacant. Of the occupied homes, only 8% were rentals. While this is a small percentage, it is an increase from 2000, where rentals made up only 6% of total occupied units. Overall, Sudbury had the lowest percentage of rental units compared to its neighbors, falling below Stow and Wayland (Table 14).



Source: Table DP04, 2017 American Community 5-Year Estimates (2013-2017)

Figure 15. Tenure and Occupancy of Housing in Sudbury, 2017

Table 14: Tenure of Occupied Units in the Region, 2017

	Owner-Occupied Units	Renter-Occupied Units
Sudbury	92%	8%
Acton	75%	25%
Concord	77%	23%
Framingham	54%	46%
Hudson	75%	25%
Lincoln	62%	38%
Marlborough	57%	43%
Maynard	73%	27%
Stow	90%	10%
Wayland	89%	11%

Source: Table DP04, 2017 American Community 5-Year Estimates (2013-2017)

Housing Affordability

Housing Costs

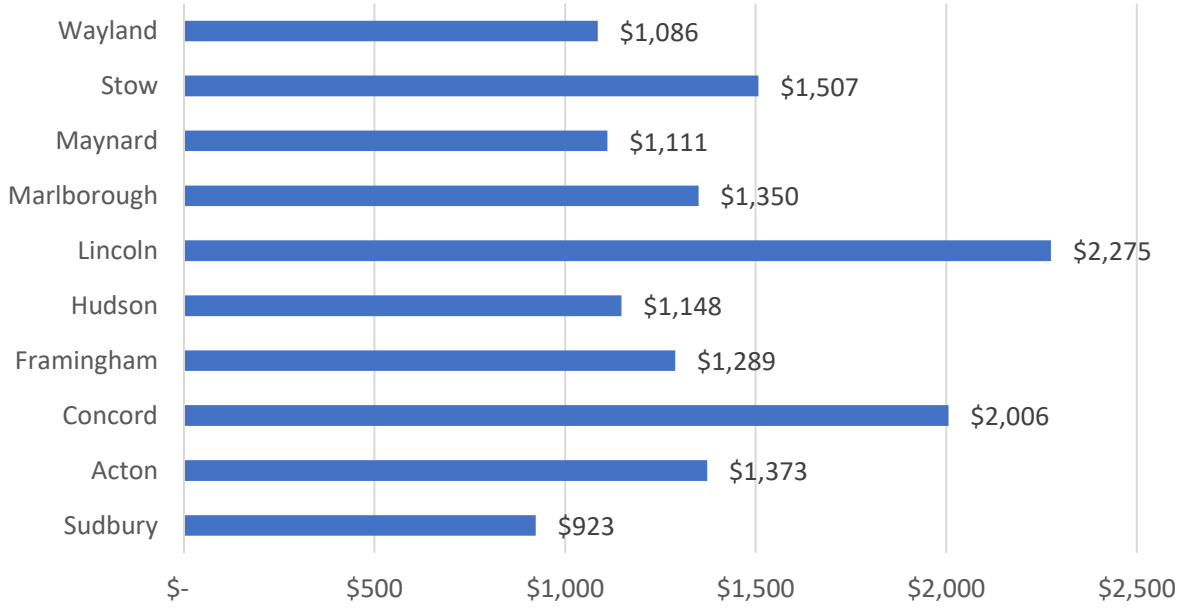
The housing market in the region is strong, and housing costs have increased over the past five years. Table 15 illustrates the changes in housing sales from 2014 to 2018 in Sudbury, neighboring communities, Middlesex County, and the Commonwealth of Massachusetts. The median sales price for a single-family home in Sudbury in 2018 was $749,900, an increase of 11% since 2014, the lowest percentage change along with Lincoln in the area. The town had the fourth-highest median sales price in 2018 after Wayland, Concord, and Lincoln, where the latter two had sales of $900,000 and higher.

Table 15. Annual Median Home Sale Prices in Sudbury, Neighboring Communities, Middlesex County, and Massachusetts, 2014-2018

	2014	2015	2016	2017	2018	% Change 2014-2018
Sudbury	$675,000	$680,000	$695,000	$718,500	$749,900	11%
Acton	$482,603	$505,000	$521,500	$531,500	$565,000	17%
Concord	$775,000	$842,000	$830,000	$910,250	$900,000	16%
Framingham	$317,000	$343,000	$379,000	$395,000	$425,000	34%
Hudson	$300,000	$311,500	$330,000	$333,500	$359,000	20%
Lincoln	$858,000	$700,000	$857,500	$850,000	$954,500	11%
Marlborough	$273,000	$288,200	$315,000	$335,108	$350,000	28%
Maynard	$295,000	$310,000	$325,000	$360,000	$359,000	22%
Stow	$426,000	$455,715	$476,000	$465,000	$520,000	22%
Wayland	$619,000	$695,000	$700,000	$675,000	$752,000	21%
Middlesex Co.	$420,000	$442,500	$460,000	$497,000	$533,500	27%
Massachusetts	$325,000	$335,000	$344,900	$360,000	$380,000	17%

Source: The Warren Group

Gross monthly rents in Sudbury have also increased. In 2000, the median monthly rent was $795 and in 2017, it was estimated to be $923, an increase of $128. When compared to its neighbors (Figure 16), rents in Sudbury were the lowest. The median gross monthly rents were estimated to be between $1,000 and $2,000, and many of these communities had over 20% of their housing as rentals, while Sudbury had only 8%.



Source: Table DP04, 2017 American Community Survey 5-Year Estimates (2013-2017)

Figure 16. Median Gross Rents in Sudbury and Neighboring Communities, 2017

Household Incomes and Poverty

With a strong housing market, the costs of homes and rents continue to rise and require higher incomes for people who want to live in Sudbury. As shown in Table 16, median incomes for both households and families have increased from 2000 to 2017 to meet these rising costs. However, overall, when adjusted using the Consumer Price Index to show incomes in 2017 dollars, the rise in income decreased a household's buying power for goods and services by 2% and families by 5%.

Table 16: Household and Family Income of Sudbury Residents, 2000-2017

	2000		2010 Est	2017 Est	% Change 2000-2017
Median Income: Households	$118,579 (1999 dollars)	$175,262 (2017 dollars)	$153,295 (2010 dollars)	$170,945 (2017 dollars)	-2%
Median Income: Families	$130,399 (1999 dollars)	$192,732 (2017 dollars)	$166,008 (2010 dollars)	$183,234 (2017 dollars)	-5%

Source: Table DP03, 2000 Census and 2010 (2006-2010) and 2017 (2013-2017) American Community Survey 5-Year Estimates

The U.S. Department of Housing and Urban Development (HUD) takes a deeper dive into household income and other data through its Comprehensive Housing Affordability Strategy (CHAS) program. Through HUD CHAS data, a town can learn more about how many of its households might have low or very low incomes (80% or less of the area median income), which are vulnerable to rising costs. The latest CHAS data were from 2015 and it reported an estimated 15% of households in Sudbury fell within these criteria (Table 17). By occupancy, nearly three-quarters of renters and 11% of owner-occupied households were considered low or very low income.

Table 17. Income Distribution Based on Household Occupancy, 2015

Income Distribution Overview	Owner-Occupied Households	Renter-Occupied Households	Total Households
Household Income <= 30% HAMFI	285 (5%)	115 (32%)	400 (7%)
Household Income >30% to <=50% HAMFI	95 (2%)	135 (38%)	230 (4%)
Household Income >50% to <=80% HAMFI	225 (4%)	25 (7%)	250 (4%)
Household Income >80% to <=100% HAMFI	290 (5%)	10 (3%)	300 (5%)
Household Income >100% HAMFI	4,815 (84%)	70 (20%)	4,885 (81%)
Total	5,710	355	6,065

HAMFI – HUD Area Median Family Income. This is the median family income calculated by HUD for each jurisdiction, in order to determine Fair Market Rents (FMRs) and income limits for HUD programs. HAMFI will not necessarily be the same as other calculations of median incomes (such as a simple Census number), due to a series of adjustments that are made (For full documentation of these adjustments, consult the HUD Income Limit Briefing Materials). If you see the terms "area median income" (AMI) or "median family income" (MFI) used in the CHAS, assume it refers to HAMFI.
Source: HUD CHAS data based on 2015 American Community Survey 5-Year Estimates (2011-2015)

As incomes increased, the proportion of families living in poverty remained the same. However, individuals living in poverty rose slighting between 2010 and 2017 (Table 18). Notable increases were children under 18 years old, which rose by 3% since 2010, and children under five years old, which rose

by 7%. Residents 18 years and older living in poverty also went up by 1%. However, residents 65 years and older living in these circumstances decreased by 4%.

Table 18: Families and Individuals Below the Poverty Level in the Past 12 Months in Sudbury, 2000-2017

	2010 Est	2017 Est	Change 2010-2017
Families Below the Poverty Level	2%	2%	0%
Individuals Below the Poverty Level	2%	3%	1%
Under 5 years	2%	9%	7%
Under 18 years	2%	5%	3%
18 years and older	5%	6%	1%
65 years and older	6%	2%	-4%

Source: Table DP03, 2010 (2006-2010) and 2017 (2013-2017) American Community Survey 5-Year Estimates

When compared to its neighbors, Sudbury poverty rates were among the lowest for both households and families, followed by Lincoln and Acton, respectively (Table 19). Framingham, the most populated community in the group, had the highest percentage of households and families in poverty.

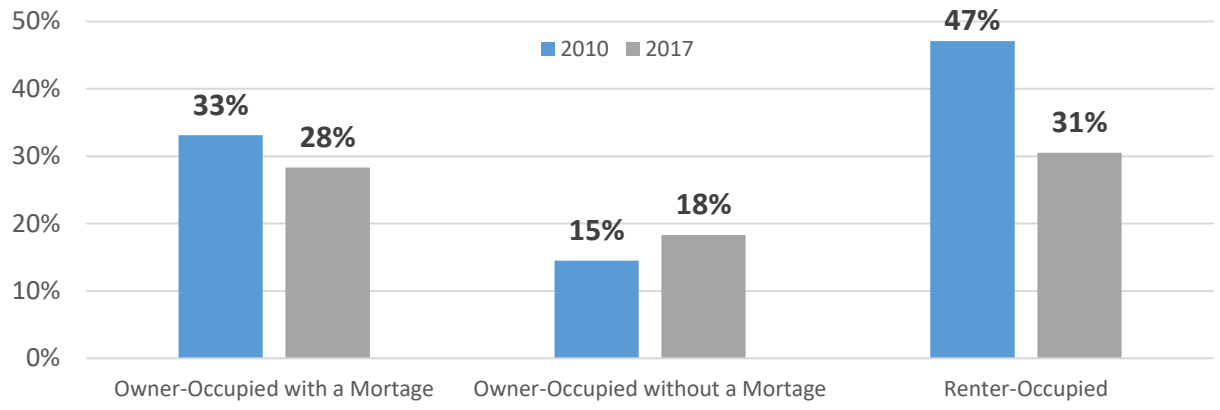
Table 19: Percentage of Individuals and Families Below the Poverty Level in the Past 12 Months in Sudbury and its Neighbors, 2017

	% of Families	% of Individuals
Sudbury	2%	3%
Acton	2%	4%
Concord	4%	6%
Framingham	8%	12%
Hudson	5%	6%
Lincoln	2%	3%
Marlborough	5%	7%
Maynard	7%	8%
Stow	2%	4%
Wayland	1%	3%

Source: Table DP03, 2017 American Community Survey 5-Year Estimates (2013-2017)

Cost Burdened Households

As housing costs rise, some households are not seeing their incomes increase proportionately. As discussed above, poverty rates are one indicator of affordability. Another indicator measures the percent of income spent on housing. As a rule of thumb, when aggregated, housing costs (rent, mortgage, insurance, utilities, fees, real estate taxes, etc.) should be no more than 30% of a household's income. When housing costs are greater than 30%, a household is considered to be "cost-burdened." Figure 17 shows the change from 2010 to 2017 in renter-occupied households and owner-occupied households, with and without a mortgage with housing cost burdens in Sudbury.



Source: Table DP04, 2010 (2006-2010) and 2017 (2013-2017) American Community Survey 5-Year Estimates

Figure 17. Percentage of Units with Housing Cost Burdens by Occupancy Type in Sudbury, 2010 and 2017

Since 2010, fewer households experienced the burden of housing costs with the exception of owner-occupied units that do not have a mortgage. These households are typically retired residents who have paid off their mortgage and are most likely living on limited incomes.

Housing cost trends, however, are expected to continue to increase, but incomes are not keeping up. This could put additional households at risk if the gap grows. As an example, as noted in Table 15, the median home sales price in 2018 was $749,900. It is estimated the monthly mortgage payment for a home with this cost is $4,285, and the household income needed to afford this payment is $171,040.[6] The median household income for Sudbury was $170,945 and the median family household income was $183,234 (Table 16). This payment would equate to approximately 30% and 28% of the monthly income for these households, respectively, at or slightly under the 30% threshold.

Homelessness

According to the Massachusetts Coalition for the Homeless, the number of people experiencing homelessness and housing instability in the Commonwealth remains high.[7] The Massachusetts Department of Housing and Community Development (DHCD) stated in its third-quarter report (May 2018), in fiscal year 2018, 1,902 families applied for emergency assistance and another 1,268 entered shelters, hotels/motels, or other home assistance during that quarter alone. The total number of families applying for emergency assistance to date during the fiscal year 2018 was 5,640. The top reason for families or individuals seeking emergency assistance and shelter was health and safety reasons (62%), followed by domestic violence (16%), and eviction (14%). Health and safety reasons can include housing being irregular housing, housing not meant for human habitation, violent conduct in the home, mental illness, substance abuse, or conditions of housing.

[6] Assumes a 20% down payment and includes insurance, taxes ($17.91/$1,000 for FY 2019), and P&I. Source: https://www.zillow.com/mortgage-calculator/. $4,285 x 12 months = $51,420, which is 30% of $171,400.
[7] https://www.mahomeless.org/about-us/basic-facts

The Massachusetts Department of Elementary and Secondary Education reported that over 21,000 students in the Commonwealth were identified as being homeless. Most were staying with friends or family or in shelters. The Sudbury School District has a district homeless policy to ensure that homeless students have the same access to academic and educational programs as all students.[8]

Resources for the homeless in Sudbury can be found through the Massachusetts Homeless Coalition.[9] Current facilities in the area are:

- Shelters for Families
  - Pathways Family Shelter, Framingham
  - South Middlesex Opportunity Council, Framingham
- Shelters for Unaccompanied Adults
  - Turning Point, Framingham
- Survivors of Domestic Violence
  - Voices Against Violence, Framingham

The Massachusetts Homeless Coalition identifies the lack of affordable housing as a main driving force behind the rise of homelessness. Those most at risk in Sudbury are individuals and families which are cost-burdened, particularly those paying more than 50% of their income on housing (severely cost-burdened). These data were available through the 2015 CHAS data, and it was estimated that 615 households were severely cost-burdened in Sudbury (Table 20). A significant portion of the households that fell within this category had an elderly person, who typically have fixed incomes. While some may have paid off mortgages and still live in their homes (refer back to Figure 17), increasing heating and other utility costs, among other housing expenses, can take funds away from other needs such as healthcare, transportation, and food. The Sudbury Council on Aging works closely with seniors, and their family members and caregivers to ensure elderly residents are receiving the services and resources they need.

Table 20: Severely Cost-Burdened Households in Sudbury, 2015

Household Type	Estimated Households
Elderly Family Households (2 persons either or both 62 years or older)	155
Elderly Non-Family Households (2 persons either or both 62 years or older)	212
Small Family Households (2 persons neither 62 years or older, or up to 4 persons)	190
Large Family Households (5 persons or more)	23
Other Household Types (non-family, non-elderly)	35
Estimated Total	615

Severely cost-burdened: Household paying more than 50% of its income on aggregate housing costs
Source: HUD CHAS data based on 2015 American Community Survey 5-Year Estimates (2011-2015)

[8] http://sudbury.k12.ma.us/index.php?option=com_content&view=article&id=153:special-services-and-programs&catid=65
[9] https://www.mahomeless.org/get-help

Addressing Housing Affordability in Sudbury

Housing Production Plan

The Town's Housing Production Plan (HPP)[10] was approved by the Massachusetts Department of Housing and Community Development (DHCD) in 2016. It is the Town's strategy to plan for and develop affordable housing to meet needs in the community in a manner consistent with the Chapter 40B statute and associated regulations.[11] Communities in the Commonwealth are required to meet the 10% threshold of affordable housing, which is measured by the number of eligible Subsidized Housing Inventory (SHI) units as a portion of total year-round housing in 2010. Through the HPP, annual housing production goals are established, increasing units at a minimum of 0.5% of the total units per year for five years (the timeframe of the HPP). After five years, a town can revisit its HPP and decide if it wants to update its current HPP or write a new one. Sudbury has reached and exceeded its 10% affordable housing threshold, but it still must maintain and improve upon its affordable housing inventory.

While some aspects of housing affordability are addressed in this chapter, the HPP offers a full analysis of the affordability gap in Sudbury and the region for low-income residents as well as the needs for middle-income households.

Since the approval of its HPP in 2016, Sudbury has increased its SHI units from 358 (6.05%) to 669 (11.3%), exceeding its 10% requirement (Table 21). This is a great accomplishment for the Town, and it will continue to monitor needs and stated goals in the HPP to ensure it maintains the 10% threshold into the future. The HPP highlights that most affordable housing is needed as rentals and targeted at the 65 years and older population. Through the production of SHI units over the past three years, the Town is making strides to meet these needs.

Table 21: Chapter Subsidized Housing Inventory (SHI) for Sudbury and its Neighbors, 9/14/17

Town	2010 Census Year-Round Housing Units	Total Development Units	SHI Units	% of 2010 Units
Sudbury	5,921	887	669	11.3%
Acton	8,475	1,144	568	6.7%
Concord	6,852	926	804	11.7%
Framingham	27,443	2,871	2,871	10.5%
Hudson	7,962	1,051	892	11.2%
Lincoln	2,153	310	238	11.2%
Marlborough	16,347	1,962	1,866	11.4%
Maynard	4,430	398	380	8.6%
Stow	2,500	337	185	7.4%
Wayland	4,957	370	254	5.1%

Source: MA Department of Housing and Community Development, dated September 14, 2017, https://www.mass.gov/files/documents/2017/10/10/shiinventory_0.pdf, obtained April 3, 2019

[10] https://sudbury.ma.us/housingtrust/2016/04/21/sudburys-2016-housing-production-plan-approved/sudbury-housing-production-plan/

[11] https://www.mass.gov/files/documents/2018/09/14/hpregs.pdf

Partners

The Town of Sudbury has several partners in meeting affordable housing needs.

Sudbury Housing Authority

The Sudbury Housing Authority develops and manages affordable rental housing for families, seniors, and disabled residents. It currently owns and operates 64 apartment units for elderly and disabled residents at the Musketahquid Village, and 28 units of single-family and duplex rental housing that house low-income families.

Sudbury Housing Trust

In 2006, the Sudbury Housing Trust was formed to provide for the preservation and creation of affordable housing in the community for the benefit of low- and moderate-income households. It also works to show performance towards the 10% minimum of Community Preservation Act spending/allocation requirement on community housing.

The Trust sponsors The Small Grant program which aids senior and moderate-income residents to make repairs and alterations to their homes for safety and health reasons.

The Trust generates revenue by performing lottery, resale, and monitoring agent services for Sudbury and other neighboring communities, which provides opportunities for local eligible buyers with connections to Sudbury to find affordable housing.

Regional Housing Services Office

The Regional Housing Services Office (RHSO) is a multi-jurisdictional collaborative effort that came to formation after the Metropolitan Area Planning Council (MAPC) conducted a study which revealed a gap in municipal functioning of affordable housing in 2011. The RHSO was formed through the Inter-Municipal Agreement three years later to serve the Towns of Acton, Bedford, Burlington, Concord, Lexington, Sudbury, Wayland, and Weston.

The RHSO serves its member towns by assisting with the municipal function of affordable housing, including proactive monitoring, program administration, project development, and resident assistants. The first host town was Sudbury and the organization currently has its office in Concord.

Economic Development

This economic baseline assessment offers a general outlook on the economic situation in the Town of Sudbury by comparing high-level economic indicators to seven surrounding towns, Middlesex County, the Boston Metropolitan Statistical Area (MSA),[12] and the United States as a whole. It provides an evaluation of the Town's current economic wellbeing and insight into future trends that could affect the local economy.

Sudbury has a strong, predominantly residential, tax base. While the town is not a large employment center within the region, it does have a significant concentration of jobs in the Professional Services and Health Care sectors. Additionally, its high quality of life and proximity to jobs in Boston and Cambridge, and along Route 128, reinforce its appeal as a desirable place to live and keeps the Town in a stable fiscal position. Moreover, though small in scale compared to its residential base, Sudbury's commercial businesses offer shopping and amenities that serve local residents and contribute to the vibrancy of the town.

Local Businesses and Employment

Jobs and Population

Table 22 below compares the number of jobs in each geography to the total population in that geography. With a ratio of 0.39 in 2018, the Town of Sudbury shows fewer jobs than residents based on historical and projected job and population figures. Little change in Sudbury's ratio is expected through 2028.

Table 22: Jobs per Resident Index

Year	Jobs per Resident, Sudbury	Jobs per Resident, Middlesex County	Jobs per Resident, Boston MSA	Jobs per Resident, US
2008	0.42	0.58	0.56	0.47
2018	0.39	0.59	0.57	0.46
2028	0.41	0.61	0.59	0.49

Source: EMSI

[12] The Boston MSA, or officially, the Boston-Cambridge-Newton Metropolitan Statistical Area, is defined by the US Census Bureau as consisting of the following counties: Essex County (MA), Middlesex County (MA), Norfolk County (MA), Plymouth County (MA), Suffolk County (MA), Rockingham County (NH), and Stafford County (NH).

Jobs and population over this time period are shown in Table 23 and Table 24.[13]

Table 23: Total Jobs by Geography

Year	Sudbury	Middlesex County	Boston MSA	US
2008	7,081	862,933	2,502,156	141,406,006
2018	7,285	955,955	2,772,645	151,221,504
2028	7,686	1,026,830	2,987,025	165,943,231
% Change 2008-2018	3%	11%	11%	7%
% Change 2018-2028	6%	7%	8%	10%

Source: EMSI

Table 24: Population by Geography

Year	Sudbury	Middlesex County	Boston MSA	US
2008	16,952	1,477,069	4,483,129	304,093,955
2018	18,793	1,615,086	4,871,773	328,038,851
2028	18,961	1,671,582	5,046,453	340,591,282
% Change 2008-2018	11%	9%	9%	8%
% Change 2018-2028	1%	3%	4%	4%

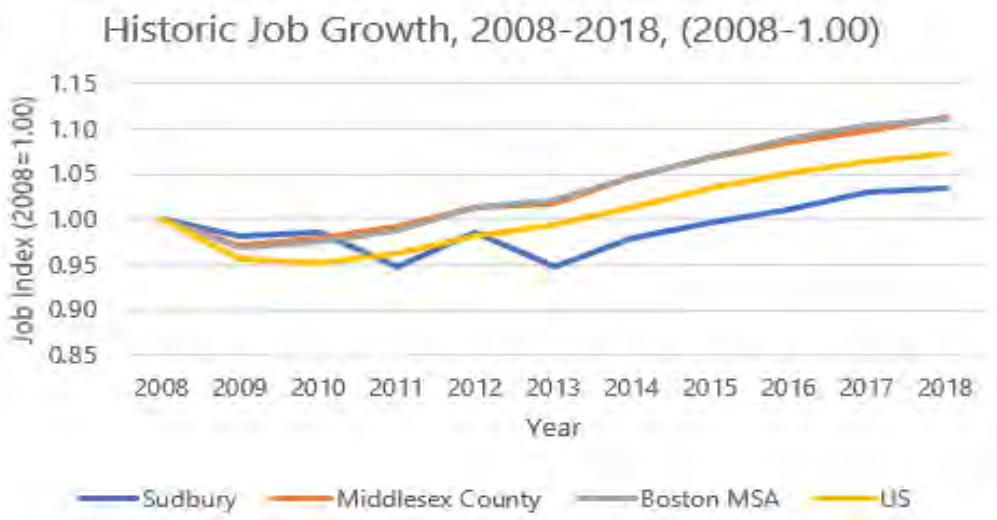
Source: EMSI

Figure 18 below compares the job growth trajectory in Sudbury to the county, MSA, and nation, indexed to 2008. Sudbury fared better than the county, MSA, and nation during the recessionary period of 2008-2009. Sudbury did, however, begin to experience job market volatility in 2010, a trend that continued through 2013.

Between 2010 and 2011, Sudbury experienced job losses in the manufacturing and utility sectors. Specifically, Pharmaceutical and Medicine Manufacturing (NAICS 3254) lost 141 jobs and Electric Power Generation, Transmission, and Distribution (NAICS 2211) lost 138 jobs.[14] These represented losses of 78% and 48% of the total jobs in these industries in Sudbury, respectively. Volatility in the number of child daycare positions between 2011 and 2013 caused overall job figures to bounce around, before stabilizing in 2014. Job growth in Sudbury has steadied and tracked to the region since that time.

[13] Job and population projections from EMSI are based on historic trends locally, regionally, and nationally and assumes a "status quo" future trajectory. Changes in land use policies and development patterns are likely to impact these projections.

[14] EMSI

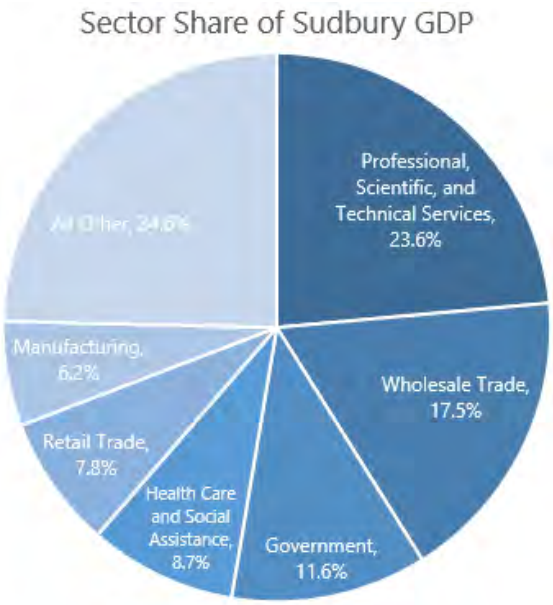


Source: EMSI

Figure 18: Historical Job Growth by Geography, 2008-2018

Economic Output by Sector

The Professional, Scientific, and Technical Services; Wholesale Trade; and Government sectors are sizable contributors to Sudbury's economy. Together, these sectors account for nearly 53% of Sudbury's economic output (Gross Regional Product, GRP) and 38% of its jobs. Within these sectors, Education and Hospitals; Architectural, Engineering, and Related Services; Computer Systems Design and Related Services; and Machinery, Equipment, and Supplies Merchant Wholesalers are prevalent sub-industries.



Source: EMSI

Figure 19: Top Sector Share of Sudbury GDP

Table 25 shows each sector's contribution to GRP in 2017. The Professional, Scientific, and Technical Services industry is the town's greatest contributor to its GRP, at 23.6%. Wholesale Trade follows, contributing 17.5% of GRP. These contributions are similar to the comparison geographies, although Manufacturing constitutes a greater portion of GRP in the county, MSA, and the US.

Table 25: Gross Regional Product by 2-Digit NAICS Code, 2017

NAICS (2-digit)	Description	2017 GRP, Sudbury	Sector Share of Sudbury GRP (%)	Sector Share of Middlesex County GRP (%)	Sector Share of Boston MSA GRP (%)	Sector Share of US GRP (%)
54	Professional, Scientific, and Technical Services	$213,890,917	23.6%	18.7%	14.3%	7.9%
42	Wholesale Trade	$158,719,045	17.5%	7.7%	6.3%	6.6%
90	Government	$105,020,119	11.6%	7.1%	8.8%	13.0%
62	Health Care and Social Assistance	$79,018,965	8.7%	6.5%	9.4%	8.0%
44	Retail Trade	$71,021,636	7.8%	3.9%	4.8%	6.4%
31	Manufacturing	$55,916,398	6.2%	14.7%	10.2%	13.4%
52	Finance and Insurance	$43,495,655	4.8%	5.8%	13.7%	9.3%
56	Administrative and Support and Waste Management and Remediation Services	$32,720,289	3.6%	3.1%	3.2%	3.4%
53	Real Estate and Rental and Leasing	$27,482,816	3.0%	2.6%	3.5%	4.0%
72	Accommodation and Food Services	$24,561,366	2.7%	2.0%	2.6%	3.1%
23	Construction	$23,536,830	2.6%	4.3%	4.5%	4.9%
81	Other Services (except Public Administration)	$22,346,259	2.5%	1.4%	1.6%	2.1%
51	Information	$18,486,521	2.0%	11.0%	7.0%	5.5%
22	Utilities	$13,586,951	1.5%	0.7%	1.1%	1.8%
71	Arts, Entertainment, and Recreation	$9,043,988	1.0%	0.6%	1.0%	1.1%
61	Educational Services	$4,828,933	0.5%	4.6%	3.3%	1.3%
48	Transportation and Warehousing	$3,212,576	0.4%	1.2%	1.8%	3.4%
55	Management of Companies and Enterprises	$191,506	0.0%	3.5%	2.6%	2.2%
11	Agriculture, Forestry, Fishing and Hunting	$0	0.0%	0.3%	0.2%	1.1%
21	Mining, Quarrying, and Oil and Gas Extraction	$0	0.0%	0.1%	0.1%	1.5%
TOTAL		**$907,080,771**	**100%**	**100%**	**100%**	**100%**

Source: EMSI

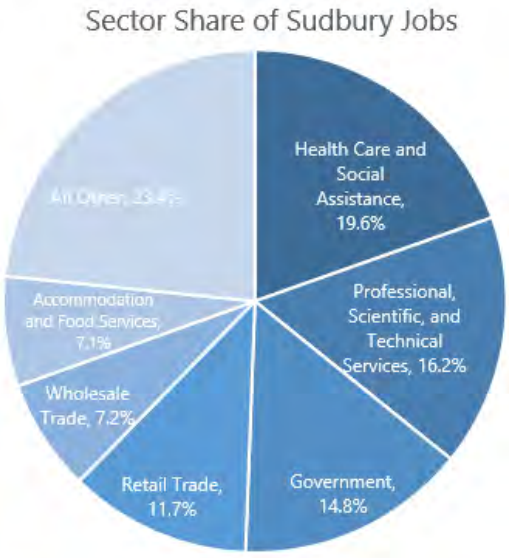
Employment by Sector

Table 26 on the following page presents employment data for the Town of Sudbury by 2-digit NAICS code, as well as the makeup of employment by sector in the county, MSA, and nation. Health Care and Social Assistance (NAICS 61) provided nearly 20% of Sudbury's jobs in 2018, which is higher than the concentration of the industry in the county, MSA, and country. Professional, Scientific, and Technical Services; Government; and Retail Trade also provide significant concentrations of the town's jobs, each making up over 10% of employment. Figure 20 displays the top sectors in terms of share of Sudbury jobs.

Table 26: Employment by 2-Digit NAICS Code, 2018

NAICS (2-digit)	Description	2018 Jobs, Sudbury	Sector Share of Sudbury Jobs (%)	Sector Share of Middlesex County Jobs (%)	Sector Share of Boston MSA Jobs (%)	Sector Share of US Jobs (%)
62	Health Care and Social Assistance	1,428	19.6%	12.5%	15.9%	12.9%
54	Professional, Scientific, and Technical Services	1,180	16.2%	14.1%	10.2%	6.1%
90	Government	1,078	14.8%	9.9%	11.5%	16.2%
44	Retail Trade	853	11.7%	8.2%	9.3%	10.5%
42	Wholesale Trade	526	7.2%	3.6%	3.1%	3.9%
72	Accommodation and Food Services	515	7.1%	6.8%	8.3%	9.0%
81	Other Services (except Public Administration)	371	5.1%	3.4%	3.8%	4.0%
56	Administrative and Support and Waste Management and Remediation Services	327	4.5%	5.5%	5.2%	6.0%
71	Arts, Entertainment, and Recreation	249	3.4%	1.3%	1.7%	1.5%
52	Finance and Insurance	189	2.6%	2.9%	5.3%	4.1%
31	Manufacturing	148	2.0%	7.7%	6.3%	8.2%
23	Construction	146	2.0%	4.2%	4.0%	4.8%
61	Educational Services	82	1.1%	9.2%	6.5%	2.6%
53	Real Estate and Rental and Leasing	68	0.9%	1.1%	1.4%	1.5%
48	Transportation and Warehousing	51	0.7%	1.8%	2.2%	3.5%
51	Information	51	0.7%	4.2%	2.9%	1.9%
22	Utilities	21	0.3%	0.2%	0.2%	0.4%
55	Management of Companies and Enterprises	<10	0.0%	2.9%	2.1%	1.5%
11	Agriculture, Forestry, Fishing and Hunting	0	0.0%	0.3%	0.2%	0.9%
21	Mining, Quarrying, and Oil and Gas Extraction	0	0.0%	0.0%	0.0%	0.4%
99	Unclassified Industry	0	0.0%	0.0%	0.0%	0.2%
TOTAL		**7,285**	**100%**	**100%**	**100%**	**100%**

Source: EMSI



Source: EMSI

Figure 20: Top Sectors Share of Sudbury Jobs

Table 27 shows the top 20 industries in the Town of Sudbury at the more detailed 4-digit NAICS level, in terms of 2018 job figures. Child Day Care Services and Education and Hospitals (Local Government) are the town's top employers with 788 and 783 jobs respectively in 2018, each making up 10.8% of total jobs. The Child Day Care Services industry has low average earnings[15] of $35,071 per job per year. Average earnings are higher for Education and Hospitals (Local Government) at $89,673. Many of the top 4-digit industries display very high average earnings with six showing average earnings above $100,000.

Table 27: Employment & Earnings, Top 20 4-Digit NAICS, Sudbury

NAICS (4-digit)	Description	2018 Jobs, Sudbury	Sector Share of Sudbury Jobs (%)	2017 Avg. Earnings, Sudbury
6244	Child Day Care Services	788	10.8%	$35,071
9036	Education and Hospitals (Local Government)	783	10.8%	$89,673
5413	Architectural, Engineering, and Related Services	441	6.1%	$140,627
5415	Computer Systems Design and Related Services	441	6.0%	$172,373
7225	Restaurants and Other Eating Places	396	5.4%	$26,457
4451	Grocery Stores	298	4.1%	$30,630
4411	Automobile Dealers	219	3.0%	$79,416
4238	Machinery, Equipment, and Supplies Merchant Wholesalers	213	2.9%	$115,831
7139	Other Amusement and Recreation Industries	213	2.9%	$23,980
6231	Nursing Care Facilities (Skilled Nursing Facilities)	204	2.8%	$52,214
5613	Employment Services	162	2.2%	$64,005
6241	Individual and Family Services	157	2.2%	$30,443
5617	Services to Buildings and Dwellings	147	2.0%	$57,108
9039	Local Government, Excluding Education and Hospitals	143	2.0%	$101,526
5242	Agencies, Brokerages, and Other Insurance Related Activities	129	1.8%	$101,085
6212	Offices of Dentists	108	1.5%	$69,249
5417	Scientific Research and Development Services	108	1.5%	$132,626
8131	Religious Organizations	106	1.5%	$25,602
8121	Personal Care Services	102	1.4%	$32,740
7211	Traveler Accommodation	97	1.3%	$42,470
TOTAL		**5,255**	**72.1%**	

Source: EMSI

Table 28 shows the historical and projected job growth in Sudbury, by sector. Between 2013 and 2018, the Health Care and Social Assistance, and Professional, Scientific, and Technical Services sectors

[15] Includes wages and supplemental benefits

experienced the most growth in Sudbury, in terms of the number of jobs. Both sectors are expected to continue to drive growth through 2023. The addition of jobs to the Child Day Care Services (NAICS 6244), Computer Systems Design and Related Services (NAICS 5415), and Specialized Design Services (NAICS 5414) industries are large contributors to the growth in these sectors. Only two sectors showed declines: Manufacturing and Finance, and Insurance. Neither of these sectors accounts for a substantial share of the town's economy (each less than 3% of jobs), and employment declines over the study period were minimal.

Table 28: Sector Job Growth, Sudbury

NAICS	Description	2013 Jobs	2018 Jobs	2023 Jobs	2013 - 2018 Change	2013 - 2018 % Change	2018 - 2023 Change	2018 - 2023 % Change
62	Health Care and Social Assistance	1,437	1,603	1,739	166	12%	136	8%
54	Professional, Scientific, and Technical Services	1,235	1,346	1,410	111	9%	64	5%
71	Arts, Entertainment, and Recreation	193	277	327	84	44%	50	18%
81	Other Services (except Public Administration)	511	574	617	63	12%	43	7%
72	Accommodation and Food Services	466	521	548	55	12%	27	5%
90	Government	977	1,026	1,069	49	5%	43	4%
42	Wholesale Trade	497	536	533	39	8%	(3)	(1%)
23	Construction	175	202	210	27	15%	8	4%
44	Retail Trade	847	870	873	23	3%	3	0%
56	Administrative and Support and Waste Management and Remediation Services	389	411	418	22	6%	7	2%
22	Utilities	0	21	12	21	Insf. Data	(9)	(43%)
53	Real Estate and Rental and Leasing	71	83	84	12	17%	1	1%
61	Educational Services	80	90	97	10	13%	7	8%
48	Transportation and Warehousing	50	56	60	6	12%	4	7%
11	Agriculture, Forestry, Fishing and Hunting	0	0	0	0	0%	0	0%
21	Mining, Quarrying, and Oil and Gas Extraction	0	0	0	0	0%	0	0%
51	Information	54	54	52	0	0%	(2)	(4%)
99	Unclassified Industry	0	0	0	0	0%	0	0%
52	Finance and Insurance	209	206	196	(3)	(1%)	(10)	(5%)
31	Manufacturing	169	147	90	(22)	(13%)	(57)	(39%)
55	Management of Companies and Enterprises	<10	<10	0	Insf. Data	Insf. Data	Insf. Data	Insf. Data
TOTAL		**7,361**	**8,023**	**8,334**	**662**	**9%**	**311**	**4%**

Source: EMSI

Occupations

Table 29 below compares employment by 2-digit SOC occupation in the town, county, MSA, and nation. Education, Training, and Library Occupations are the top employing occupation category in Sudbury at 15.1%. This is higher than the other three study areas and driven by the high employment share of public schools and childcare in Sudbury. Office and Administrative Support Occupations are the second

most prevalent occupations in Sudbury with 12.1% of jobs, and are the top occupation category throughout the other three study areas.

Table 29: Employment by 2-Digit SOC Code, 2018

SOC (2-digit)	Description	2018 Jobs, Sudbury	Sector Share of Sudbury Jobs (%)	Sector Share of Middlesex County Jobs (%)	Sector Share of Boston MSA Jobs (%)	Share of US Jobs (%)
25-0000	Education, Training, and Library Occupations	1,097	15.1%	7.0%	6.4%	5.9%
43-0000	Office and Administrative Support Occupations	879	12.1%	14.5%	15.2%	15.5%
41-0000	Sales and Related Occupations	726	10.0%	8.3%	8.8%	9.9%
39-0000	Personal Care and Service Occupations	609	8.4%	3.9%	4.2%	3.7%
11-0000	Management Occupations	526	7.2%	8.8%	7.9%	5.1%
35-0000	Food Preparation and Serving Related Occupations	523	7.2%	6.9%	8.2%	8.9%
15-0000	Computer and Mathematical Occupations	376	5.2%	6.7%	4.6%	3.0%
53-0000	Transportation and Material Moving Occupations	304	4.2%	4.4%	4.8%	6.8%
17-0000	Architecture and Engineering Occupations	287	3.9%	3.3%	2.3%	1.7%
13-0000	Business and Financial Operations Occupations	271	3.7%	5.9%	6.0%	5.2%
37-0000	Building and Grounds Cleaning and Maintenance Occupations	268	3.7%	3.6%	3.3%	3.2%
29-0000	Healthcare Practitioners and Technical Occupations	242	3.3%	5.1%	6.6%	5.8%
49-0000	Installation, Maintenance, and Repair Occupations	220	3.0%	2.9%	3.0%	4.0%
31-0000	Healthcare Support Occupations	188	2.6%	2.4%	2.8%	2.8%
51-0000	Production Occupations	152	2.1%	4.1%	3.9%	6.1%
47-0000	Construction and Extraction Occupations	141	1.9%	3.4%	3.2%	4.0%
21-0000	Community and Social Service Occupations	122	1.7%	1.9%	2.1%	1.7%
27-0000	Arts, Design, Entertainment, Sports, and Media Occupations	102	1.4%	1.5%	1.6%	1.4%
33-0000	Protective Service Occupations	101	1.4%	2.0%	2.3%	2.4%
19-0000	Life, Physical, and Social Science Occupations	83	1.1%	2.4%	1.5%	0.8%
23-0000	Legal Occupations	44	0.6%	0.6%	0.9%	0.8%
55-0000	Military-only occupations	19	0.3%	0.2%	0.2%	0.6%
45-0000	Farming, Fishing, and Forestry Occupations	<10	0.1%	0.2%	0.2%	0.8%
99-0000	Unclassified Occupation	0	0.0%	0.0%	0.0%	0.0%
Total		**7,285**	**100.0%**	**100.0%**	**100.0%**	**100.0%**

Source: EMSI

Preschool and Kindergarten Teachers employs the most workers of any 4-digit SOC occupation in Sudbury with 364 jobs in 2018, which constitutes 5% of total jobs. Childcare Workers and Teacher Assistants follow with 235 and 232 jobs, respectively. Many of these jobs can be attributed to childcare and preschool centers within the town including Next Generation Children's Center, Sudbury Extended

Day, Leap School and Summer Fun, Sunny Hill Preschool, and others. General and Operations Managers have the highest average hourly wages of the top 20 occupations with earnings of $68.30 per hour. Earnings vary widely across this list of occupations with a minimum of $12.60 per hour for Cashiers.

Table 30: Employment & Earnings, Top 20 4-Digit SOC, Sudbury

SOC (4-digit)	Description	2018 Jobs, Sudbury	Sector Share of Sudbury Jobs (%)	2018 Avg. Hourly Earnings, Sudbury
25-2010	Preschool and Kindergarten Teachers	364	5.0%	$19.33
39-9010	Childcare Workers	235	3.2%	$14.32
25-9040	Teacher Assistants	232	3.2%	$16.65
41-2030	Retail Salespersons	210	2.9%	$14.74
25-2020	Elementary and Middle School Teachers	199	2.7%	$37.82
15-1130	Software Developers and Programmers	187	2.6%	$55.70
43-6010	Secretaries and Administrative Assistants	164	2.3%	$24.16
11-1020	General and Operations Managers	155	2.1%	$68.30
35-3020	Fast Food and Counter Workers	152	2.1%	$13.35
41-2010	Cashiers	148	2.0%	$12.60
39-9020	Personal Care Aides	137	1.9%	$14.99
41-4010	Sales Representatives, Wholesale and Manufacturing	128	1.8%	$45.26
37-2010	Building Cleaning Workers	127	1.7%	$17.36
43-9060	Office Clerks, General	123	1.7%	$19.75
25-2030	Secondary School Teachers	120	1.7%	$38.24
31-1010	Nursing, Psychiatric, and Home Health Aides	118	1.6%	$15.94
37-3010	Grounds Maintenance Workers	118	1.6%	$18.93
53-7060	Laborers and Material Movers, Hand	114	1.6%	$16.38
43-4050	Customer Service Representatives	108	1.5%	$21.84
35-3030	Waiters and Waitresses	107	1.5%	$14.96
TOTAL		**3,246**	**44.6%**	

Source: EMSI

Earnings by Occupation

Median annual earnings are lower in Sudbury than in the surrounding county and MSA. Median annual earnings for jobs within Sudbury are $44,300 which is considerably lower than the median earnings of Sudbury residents which is $81,609.[16] This points to a mismatch between resident skills and the types of employment opportunities in town, and explains the high level of cross-commuting illustrated in Table 31.

[16] US Census American Community Survey 2017 5-Year Estimates.

Table 31: Median Annual Earnings by Occupation

SOC	Description	Median Annual Earnings, Sudbury	Median Annual Earnings, Middlesex County	Median Annual Earnings, Boston MSA	Median Annual Earnings, US
11-0000	Management Occupations	$110,635	$116,953	$110,678	$91,240
13-0000	Business and Financial Operations Occupations	$78,049	$77,620	$75,980	$67,068
15-0000	Computer and Mathematical Occupations	$97,903	$98,055	$93,331	$82,563
17-0000	Architecture and Engineering Occupations	$86,638	$91,935	$87,020	$78,218
19-0000	Life, Physical, and Social Science Occupations	$73,920	$77,738	$75,160	$65,911
21-0000	Community and Social Service Occupations	$47,566	$46,219	$45,903	$43,437
23-0000	Legal Occupations	$84,205	$86,199	$88,484	$78,501
25-0000	Education, Training, and Library Occupations	$45,182	$61,562	$58,654	$47,113
27-0000	Arts, Design, Entertainment, Sports, and Media Occupations	$44,581	$47,833	$47,079	$41,378
29-0000	Healthcare Practitioners and Technical Occupations	$77,971	$77,384	$80,493	$65,708
31-0000	Healthcare Support Occupations	$34,201	$34,441	$34,014	$28,605
33-0000	Protective Service Occupations	$53,863	$51,294	$51,317	$39,855
35-0000	Food Preparation and Serving Related Occupations	$26,710	$26,570	$26,438	$21,829
37-0000	Building and Grounds Cleaning and Maintenance Occupations	$31,412	$33,652	$32,481	$24,631
39-0000	Personal Care and Service Occupations	$27,107	$29,665	$28,881	$23,324
41-0000	Sales and Related Occupations	$34,723	$35,249	$32,729	$28,699
43-0000	Office and Administrative Support Occupations	$42,098	$42,697	$41,602	$34,781
45-0000	Farming, Fishing, and Forestry Occupations	Insf. Data	$31,468	$30,717	$24,340
47-0000	Construction and Extraction Occupations	$51,240	$53,230	$50,991	$39,376
49-0000	Installation, Maintenance, and Repair Occupations	$51,688	$53,463	$51,793	$43,174
51-0000	Production Occupations	$39,303	$41,027	$38,347	$33,907
53-0000	Transportation and Material Moving Occupations	$33,179	$35,003	$35,083	$31,883
55-0000	Military-only occupations	$0	$41,847	$40,444	$34,602
TOTAL		$44,300	$51,506	$47,837	$37,069

Source: EMSI

Commuting Patterns

In 2015, there were 760 people who were both employed and living in the Town of Sudbury. Over 90% of resident workers (7,260) commute out of Sudbury for work, while over 88% of workers (5,649) commute into the town for work.

Figure 21: Commute Patterns, Sudbury

Table 32 on the following page shows the industry of employment of Sudbury residents compared to jobs located in Sudbury. This data provides insight into how the skills of Sudbury's resident workforce compare to the employment opportunities available in town. Industries in which a high share of residents work but represent a comparatively smaller share of the town's employment base are industries for which residents must commute out of Sudbury for job opportunities. Collectively, Finance and Insurance, Real Estate and Rental and Leasing; and Manufacturing, stand out as industries that collectively employ a high share of residents (approximately 25%), but account for just 6% of Sudbury jobs.

Likewise, industries with a higher share of jobs than residents must attract workers from out of town. Wholesale Trade, one of the top industries in Sudbury in terms of employment, has more than double the share of jobs than residents. The Industrial Machinery and Equipment Merchant Wholesalers subindustry (NAICS 423830) is a major driver of Wholesale Trade jobs in Sudbury. In 2018, this subindustry had 221 jobs within the town with average earnings per job of $116,295.

Table 32: Industry of Employment of Residents vs. Sudbury Job Base

NAICS (2-digit)	Description	Sudbury Residents Employed by Industry	Median Annual Earnings	Share of Sudbury Residents Employed in Industry	Share of Sudbury Jobs in Industry
11 & 21	Agriculture, Forestry, Fishing and Hunting, and Mining	6	-	0%	0%
23	Construction	206	$ 54,886	2%	2%
31	Manufacturing	1,181	$ 125,396	13%	2%
42	Wholesale Trade	91	$ 93,664	1%	7%
44	Retail Trade	583	$ 30,190	7%	12%
22 & 48	Transportation and Warehousing, and Utilities	140	$ 85,263	2%	1%
51	Information	398	$ 148,393	4%	1%
52 & 53	Finance and Insurance, and Real Estate and Rental and Leasing	1,047	$ 128,472	12%	4%
54, 55, & 56	Professional, Scientific, and Technical Services; Management; Administrative and Support; and Waste Management and Remediation Services	2,178	$ 138,269	24%	21%
61 & 62	Educational Services and Health Care and Social Assistance	2,055	$ 60,481	23%	21%
71 & 72	Arts, Entertainment, and Recreation; Accommodation and Food Services	597	$ 5,855	7%	11%
81	Other Services (except Public Administration)	279	$ 20,347	3%	5%
90	Government	189	$ 76,542	2%	15%
TOTAL		**8,950**	**$ 91,418**	**100%**	**100%**

Source: ACS 2017 5-Year Estimates; EMSI

Retail Trade; Arts, Entertainment, and Recreation and Accommodation and Food Services also have more jobs than residents. Grocery Stores (NAICS 4451), Automobile Dealers (NAICS 4411), Other Amusement and Recreation Activities (NAICS 7139), and Restaurants and Other Eating Places (NAICS 7225) are responsible for a large number of the jobs in these sectors.

Local Labor Force

Labor Force Characteristics

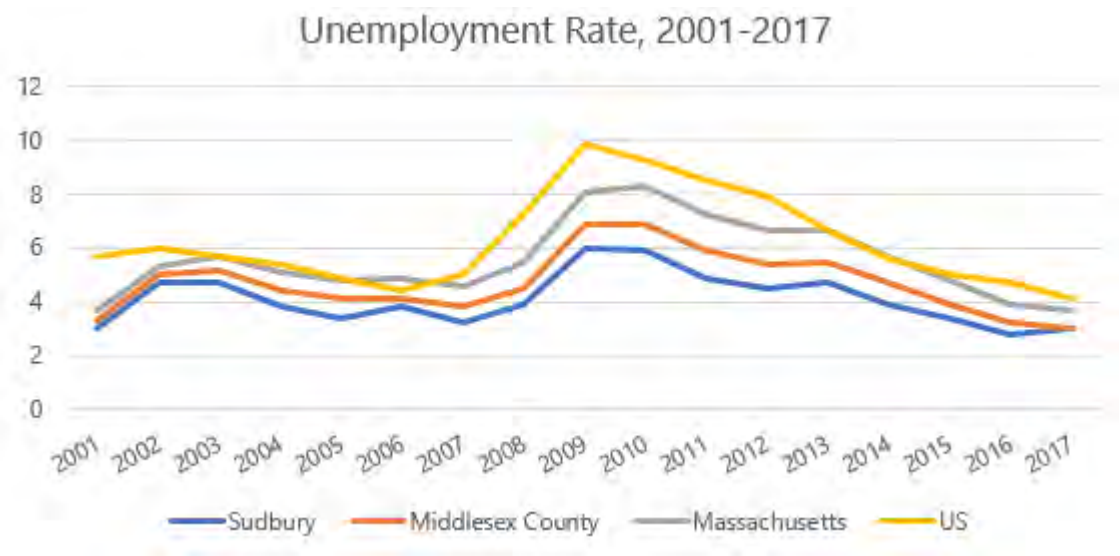
To understand how Sudbury's labor force compares to its neighbors, we compared the town's unemployment and labor force participation rates to those of the seven towns that border Sudbury. Table 33 compares unemployment rates for 2017 across the eight towns, the county, and the state according to the Bureau of Labor Statistics. Three adjacent towns and the state show a higher unemployment rate than Sudbury, while four towns and the county show unemployment rates that are lower than that of Sudbury.

Table 33: Unemployment Rate Comparison, 2017

Geography	Unemployment Rate, Not Seasonally Adjusted
Hudson	3.8%
State of MA	3.7%
Maynard	3.2%
Marlborough	3.1%
Sudbury	3.0%
Middlesex County	3.0%
Framingham	3.0%
Concord	3.0%
Wayland	2.8%
Stow	2.8%

Source: US Bureau of Labor Statistics

Historically, Sudbury's unemployment rate has been below that of the county, state, and nation.



Source: US Bureau of Labor Statistics

Figure 22: Unemployment Rate, 2001-2017

Table 34 displays the labor force participation rates (LFPR)[17] in 2017 for Sudbury and surrounding towns, the county, and the state. Sudbury saw an LFPR of 65.7% in 2017, which was less than the county, state, and most surrounding towns. This indicates a lower than average share of the town's population is part

[17] The US Census Bureau defines the Labor Force Participation Rate as the proportion of the total 16 years old and over population that is in the labor force. The labor force consists of people classified as employed or unemployed. Unemployed is defined as (1) neither "at work" nor "with a job but not at work" during the reference week, and (2) were actively looking for work during the last 3 weeks, and (3) were available to accept a job.

of the labor force, and a higher than average share of individuals are in groups who choose not to work, such as students, homemakers, and retirees.

Table 34: Labor Force Participation Rate, 2017

Geography	Labor Force Participation Rate
Marlborough	73.9%
Maynard	72.2%
Framingham	71.7%
Stow	71.4%
Middlesex County	69.8%
Hudson	68.7%
Wayland	68.4%
State of MA	67.3%
Sudbury	65.7%
Concord	56.1%

Source: ACS 2013-2017 5-Year Estimates

Major Employment Centers

Employment in Sudbury is primarily clustered along the Route 20/Boston Post Road corridor, as exhibited in Figure 23. This area, particularly near the intersections of Union Avenue and Nobscot Road, is the main commercial hub of the town. Many retailers, including chain stores and local businesses, are located in this area. Meadow Walk Sudbury, a new mixed-use development located at the center of this cluster, includes 75,000 square feet of retail space anchored by a Whole Foods and is currently still being leased. The development also includes 250 luxury apartments, 60 active-adult condominiums, and 48 assisted-living units.[18]

The second area of concentration as shown on the map to the northwest of the Route 20/Boston Post Road cluster is Sudbury Public Schools' Administrative Offices, to which all school district employment is attributed. On a day-to-day basis, however, the school district staff report to individual schools throughout the town.

[18] http://www.meadowwalksudbury.com/

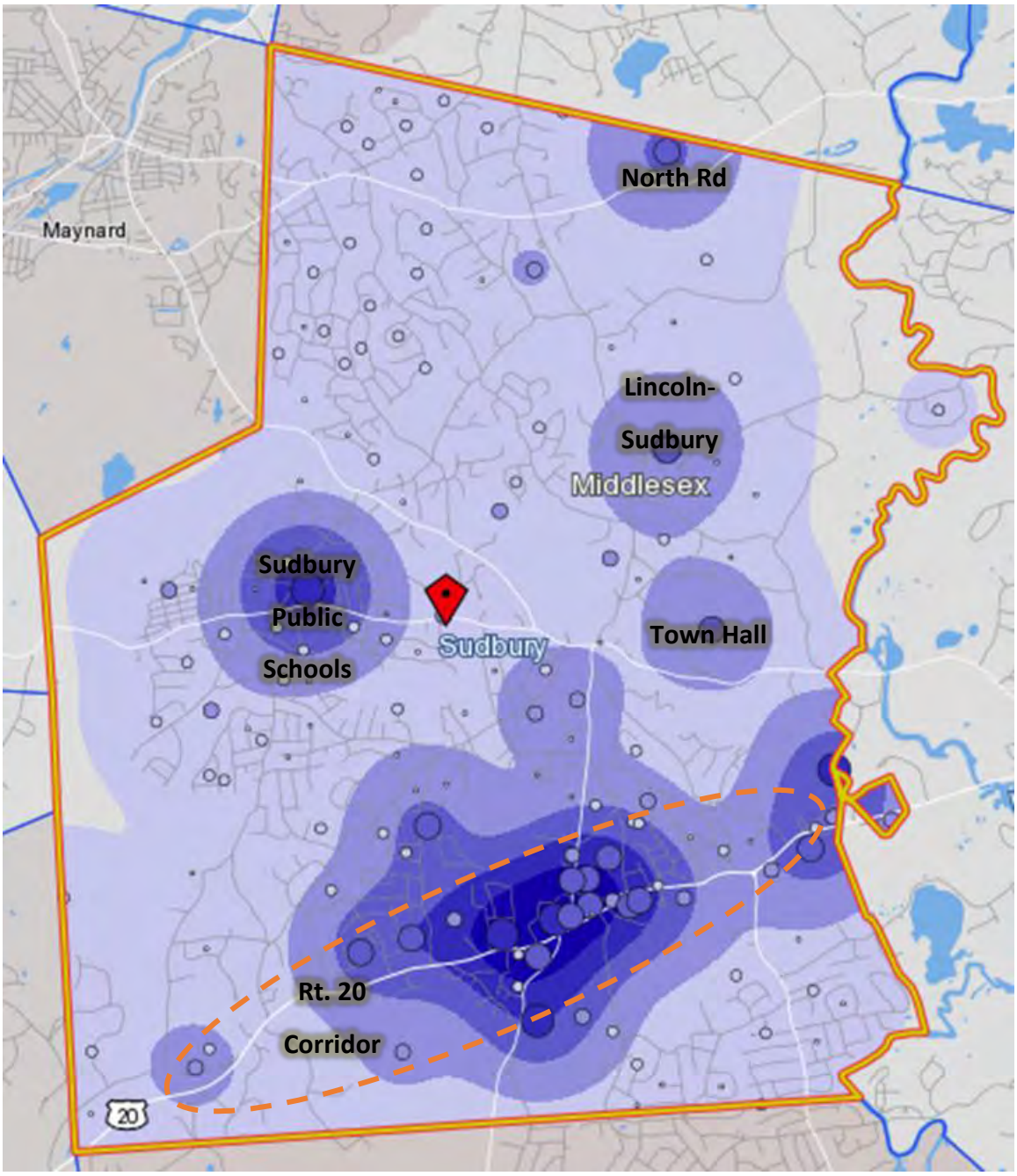


Figure 23: Jobs per Square Mile, Town of Sudbury, 2015

Major Employers

Table 35 below provides details on the Town of Sudbury's largest employers. According to the Massachusetts Executive Office of Labor and Workforce Development, there are 17 establishments that employ at least 100 workers. This list encompasses a broad array of 4-digit industries, the most common of which being Grocery Stores (NAICS 4451), Elementary and Secondary Schools (NAICS 6111), and Nursing Care Facilities (NAICS 6231). Each of these contains two of the town's largest employers.

Table 35: Sudbury Employers with 100+ Employees

Employers with 100+ Workers, Town of Sudbury			
Company Name	Number of Employees	NAICS	Description
Sudbury Farms	250-499	4451	Grocery Stores
A Blade of Grass LLC	100-249	5617	Services to Buildings and Dwellings
Adtech Systems	100-249	4431	Electronics and Appliance Stores
Bosse Sports	100-249	7139	Other Amusement and Recreation Industries
Bridges by Epoch at Sudbury	100-249	6231	Nursing Care Facilities
Curtis Middle School	100-249	6111	Elementary and Secondary Schools
Lincoln Sudbury Regional High	100-249	6111	Elementary and Secondary Schools
Longfellow's Wayside Inn	100-249	7121	Museums, Historical Sites, and Similar Institutions
MA State Police Crime Lab	100-249	9211	Executive, Legislative, and Other General Government Support
Method's Machine Tools Inc.	100-249	4238	Machinery, Equipment, and Supplies Merchant Wholesalers
Shaw's Supermarket	100-249	4451	Grocery Stores
SPEC Center	100-249	6213	Offices of Other Health Practitioners
Staples Industrial	100-249	4214	Professional and Commercial Equipment and Supplies Wholesalers
Sudbury Pines Extended Care	100-249	6231	Nursing Care Facilities
Whole Foods Market	100-249	4451	Grocery Stores
Wingate At Sudbury	100-249	6231	Nursing Care Facilities
Winnetu Inn & Resort	100-249	7211	Traveler Accommodation

Source: Massachusetts Office of Labor and Workforce Development

Retail Businesses

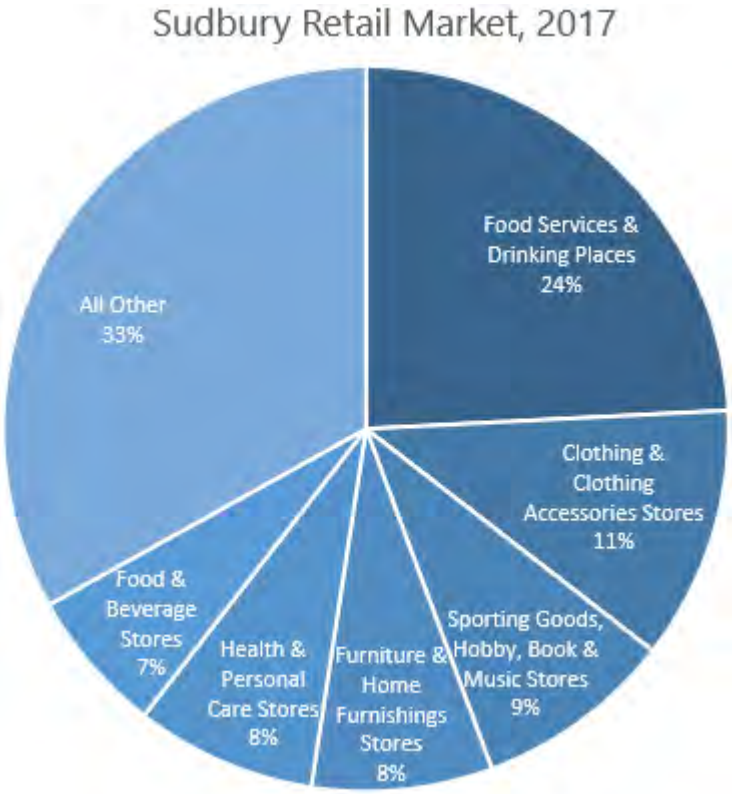
Of the retail businesses located within Sudbury, 24% are Food Services and Drinking Places. This is followed by Miscellaneous Store Retailers (13%) and Clothing and Clothing Accessories Stores (11%). Table 36 and Figure 24 display the breakdown of top retail businesses by 3-digit NAICS industry in Sudbury.

Table 36: Sudbury Retail Businesses, 2017

Industry Group	NAICS	Number of Businesses
Food Services & Drinking Places	722	30
Miscellaneous Store Retailers*	453	16
Clothing & Clothing Accessories Stores	448	14
Sporting Goods, Hobby, Book & Music Stores	451	11
Furniture & Home Furnishings Stores	442	10
Health & Personal Care Stores	446	10
Food & Beverage Stores	445	8
Motor Vehicle & Parts Dealers	441	7
Bldg Materials, Garden Equip. & Supply Stores	444	7
Nonstore Retailers	454	5
Electronics & Appliance Stores	443	3
Gasoline Stations	447	2
General Merchandise Stores	452	1
TOTAL		**124**

Source: ESRI

*Miscellaneous Store Retailers includes: Office supplies, Stationary, and Gift Stores; Used Merchandise Stores; and Florist.



Source: ESRI

Figure 24: Sudbury Retail Businesses, 2017

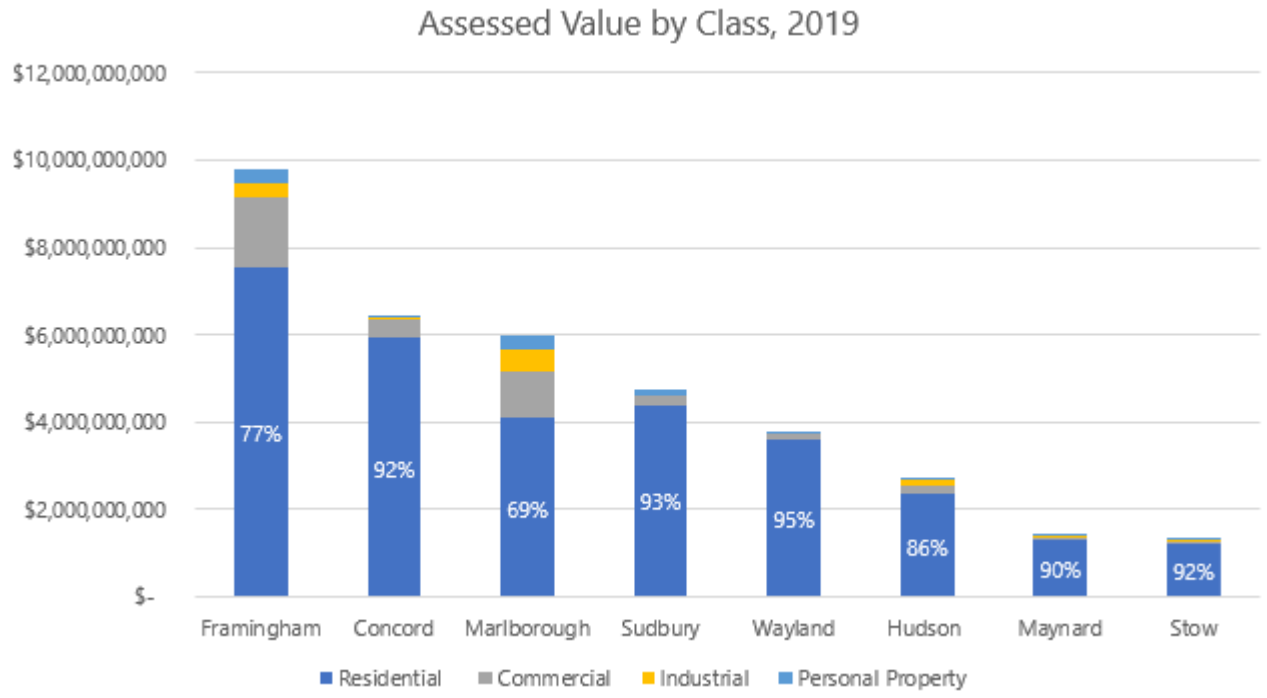
Municipal Fiscal Health

This section compares multiple fiscal indicators of Sudbury and surrounding Towns, based on data provided by the Massachusetts Department of Revenue.

Sudbury relies heavily on its residential tax base with 93% of overall assessed value. Both its residential and commercial tax rates fall in the middle of the range of neighboring communities. Per capita spending is on the higher end of neighboring Towns, with the majority of revenues coming from tax levies.

Value by Property Class

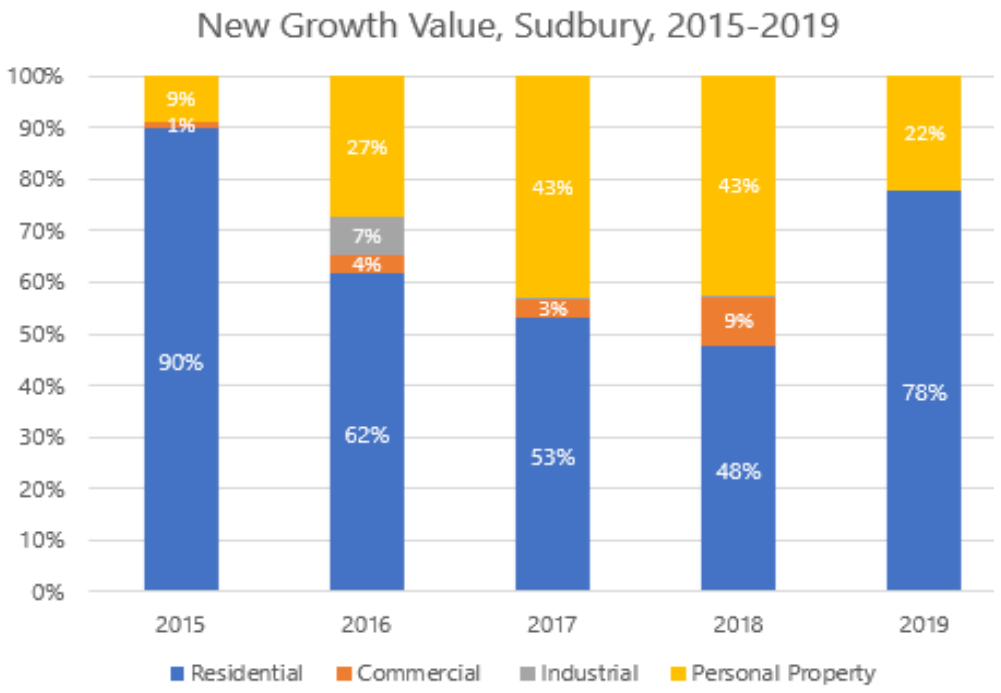
Sudbury's total assessed value of $4.7 billion puts it in the middle compared to its neighbors. It has a high residential tax base at about 93%, which is similar to many of its neighbors. Only 1% of Sudbury's tax base is industrial and 4% is commercial.



Source: Division of Local Services, MA Department of Revenue

Figure 25: Assessed Value by Property Class, 2019

New growth in Sudbury can predominantly be attributed to the residential property class. 78% of new growth in 2019 is attributed to the residential property class which is up from 48% in 2018. Personal property has consistently been the second-largest driver of new growth and, in 2019, 22% of new growth was attributed to this property class.

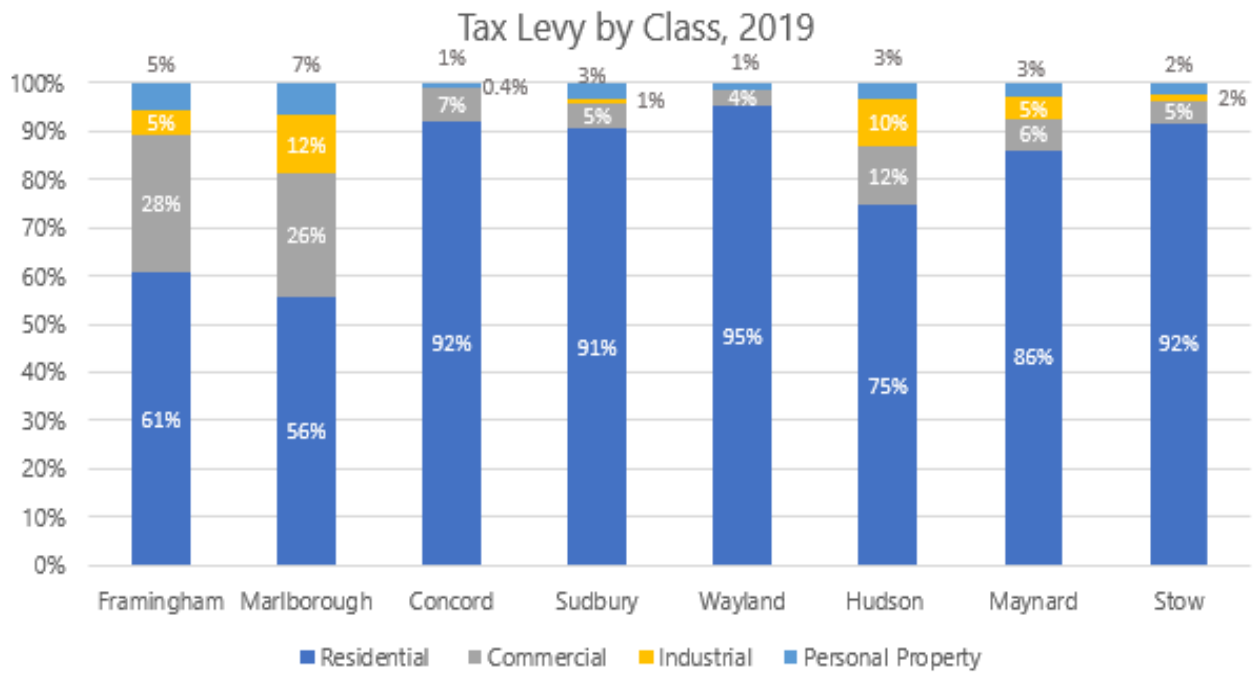


Source: Division of Local Services, MA Department of Revenue

Figure 26: New Growth, Sudbury, 2015-2019

Tax Levy by Property Class

The chart below compares the makeup of the tax levy by property class for 2019. Contribution to the tax levy by class varies across the Towns with Sudbury having 91% sourced from the residential property class, 5% from commercial, 1% from industrial, and 3% from personal property. Residential makes up the largest portion of the tax levy for all Towns, with three Towns having an even higher portion of their tax levy attributed to residential than Sudbury.



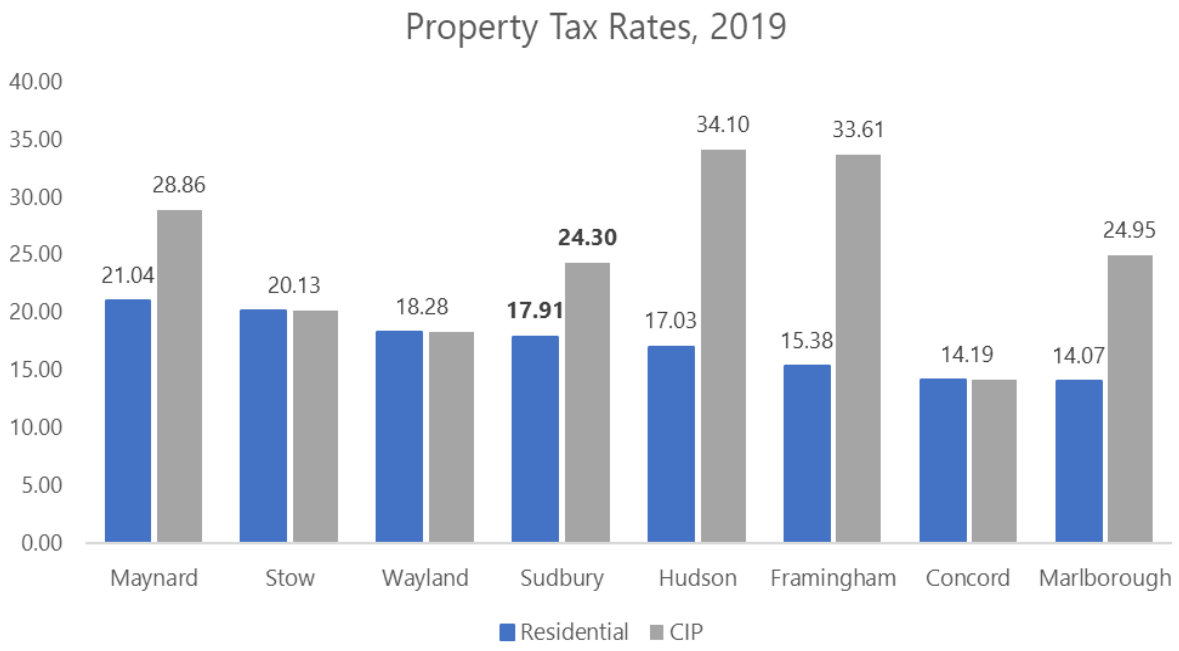
Source: Division of Local Services, MA Department of Revenue

Figure 27: Tax Levy by Class, 2019

Property Tax Rates

In terms of 2019 tax rates, Sudbury falls in the middle when compared to the seven neighboring Towns. Sudbury has a split tax rate with a rate of $17.91 for residential property and a rate of $24.30 for commercial, industrial, and personal property (CIP). Maynard, Hudson, Framingham, and Marlborough also have a split rate.

Sudbury's residential property tax rate of $17.91 is lower than three surrounding Towns and higher than four. Residential property tax rates of these Towns range from $14.07 to $21.04. Sudbury's CIP property tax rate is lower than that of four neighboring Towns and higher than that of three neighboring Towns. CIP property tax rates have a broader range than residential property tax rates, ranging from $14.19 to $34.10.

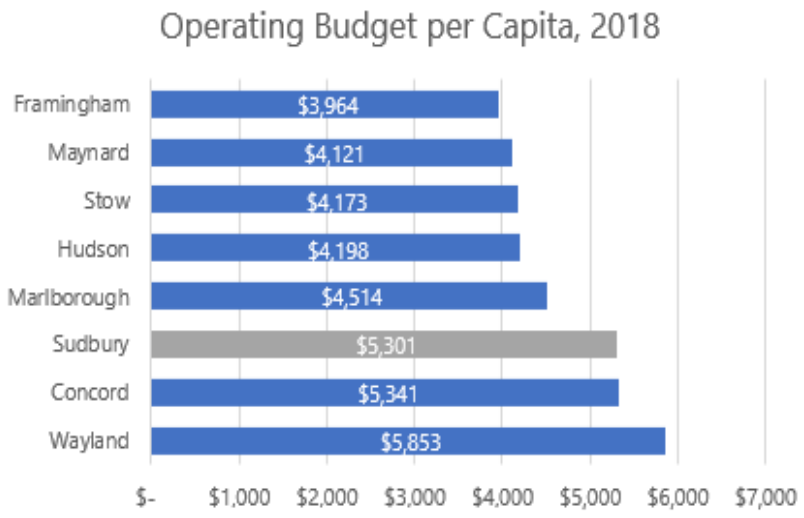


Source: Division of Local Services, MA Department of Revenue

Figure 28: Property Tax Rates, 2019

Per Capita Spending

Sudbury spent $5,301 per capita in 2018, which is on the higher end when compared to its neighboring Towns. Figure 29 shows each Town's operating budget per capita in 2018. Sudbury's per capita spending is above spending in Framingham, Maynard, Stow, Hudson, and Marlborough, but below that of Concord and Wayland.



Source: Division of Local Services, MA Department of Revenue

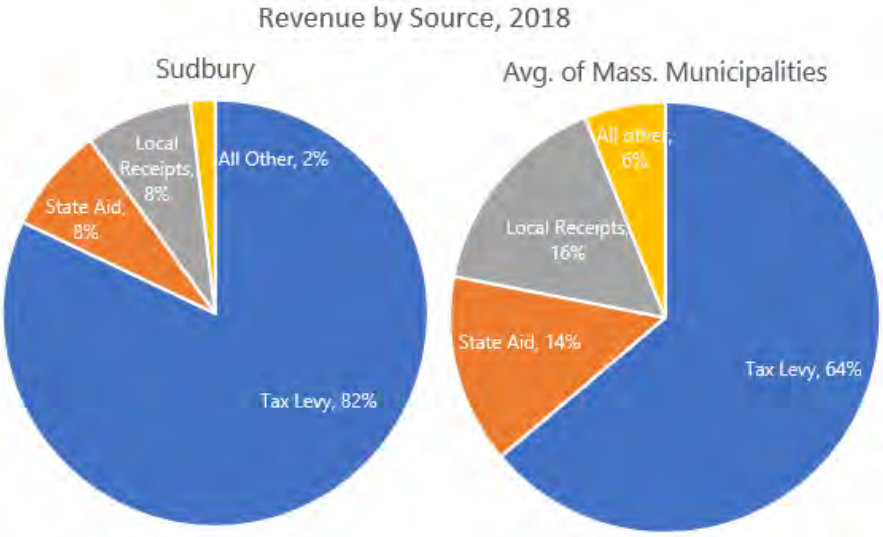
Figure 29: Operating Budget per Capita, 2018

Budget Composition

The pie charts below outline the sources of revenue and expenditures for the Town of Sudbury for 2018. About 82% of revenues for 2018 were sourced from tax levies (real and personal property tax) which is higher than the average for all Massachusetts municipalities (64%).

Local Receipts consist of local fees, fines, permits, and other charges, including penalties and licenses. The largest component of local receipts is the automobile excise tax. These receipts are relatively small compared to property tax revenues.

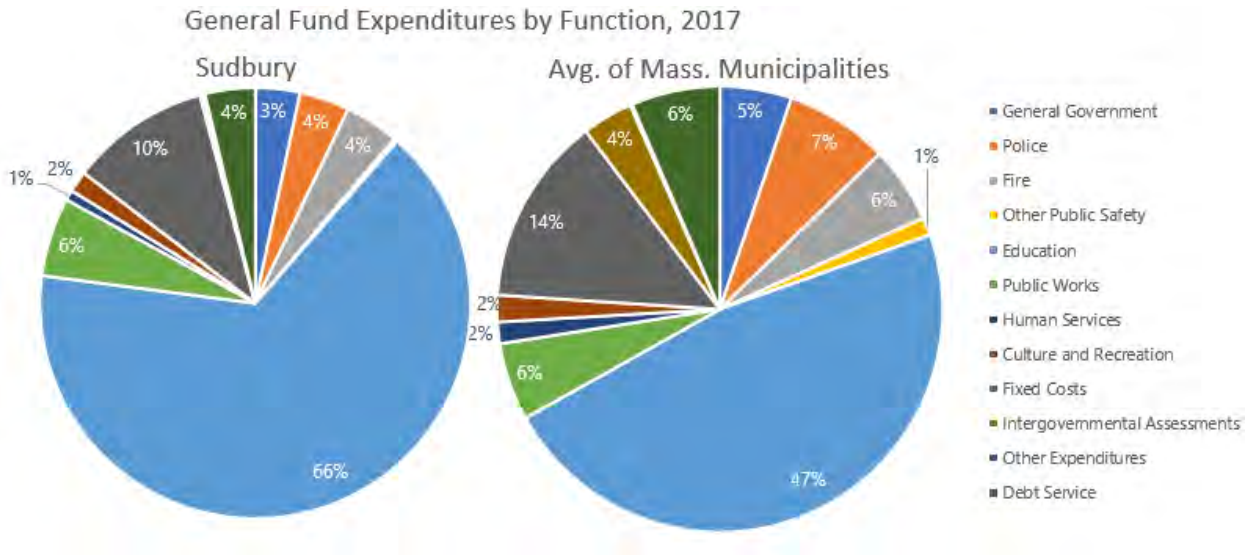
State Aid consists primarily of Chapter 70 School Aid (76%) and Unrestricted General Government Aid (22%), which includes distributions from state lottery revenues and other sources. State aid is distributed to municipalities based on various complex formulas, primarily based on household incomes and the property wealth (aggregate assessed value) of each of the state's communities. As an affluent community, Sudbury receives a relatively low level of State Aid: 8% of municipal revenues compared to an average of 14% across all municipalities.



Source: Division of Local Services, MA Department of Revenue

Figure 30: Avg. Revenue by Source, 2018

On the expenditure side, more than half of the budget (66%) was attributed to Education compared to an average of 47% across all Massachusetts cities and towns. Other significant expenditures in Sudbury include Fixed Costs consisting primarily of health insurance and pension costs (10%), and Public Works (6%).



Source: Division of Local Services, MA Department of Revenue

Figure 31: General Fund Expenditures by Function, 2017

Historic and Cultural Resources

Among the oldest towns in New England, Sudbury has one of the longest-running Town Meeting forms of government. The town boasts a rich history and strong cultural resources. For example, the Wayside Inn, one of Sudbury's historic landmarks, is said to be the nation's oldest operating inn which started operating in 1716 as How's Tavern. The Wayside Inn's longevity is accredited to Henry Ford who purchased the property in 1923, restored it, and donated it to a charitable foundation which continues the operation today. Sudbury also played a significant role in King Philip's War, contributing the most militia members of any town and serving as the site of a battle in 1676. These, along with historical farms, houses, cemeteries, churches, parks, schools, and landscapes, as well as events, define the character of Sudbury and contribute to its sense of place and quality of life. The Town of Sudbury is committed to preserving its rich historical heritage through a strong preservation effort.

Historic Overview

Named after a town in the County of Suffolk in eastern England, Sudbury was incorporated in 1639 and included its current area plus most of the area within the present Towns of Wayland (split off in 1780) and Maynard (split off in 1871). Before the first permanent European settlements in Sudbury in 1638, the area was home to Nipmuc Indians. The Nipmuc people are descendants of the indigenous Algonquian peoples of Nippenet which means 'the freshwater pond place.

Repeated contact with European settlers and explorers in the 1500s and early 1600s caused multiple epidemics of smallpox and other European diseases in Native American tribes. As a result, many Native Americans died and very few were known to visit the area at the time of Sudbury's founding.

The number of permanent European residents of Sudbury in early 1639 was about 130, many of whom came from different boroughs, parishes, and towns in England. To better structure the town, Sudbury's founders had begun to develop not only a new community, but a new government system based on the idea of giving political power directly to its citizens. Through this effort, the Town Meeting structure was developed which borrowed from each system of local government the settlers came from and modeled after the New England Congregational Church meeting.[19] The Town Meeting structure was adopted by other towns in the Massachusetts Bay and Plymouth colonies, and remains an important civic feature across the Commonwealth today.

Reverend Edmund Brown was chosen as the Town's first minister. He and the European settlers planned their new land to operate differently from England's parish/Town governing system. In doing this, the Town Meetings functioned differently from the church.

[19] The History of Sudbury, Massachusetts, 1638-1889, Alfred Sereno Hudson
https://archive.org/stream/historyofsudbury00huds/historyofsudbury00huds_djvu.txt

Before the 1670s, there was relatively peaceful coexistence between the neighboring Native Americans and the European immigrants. This all changed when King Phillip's War erupted in 1675. Captain Samuel Wadsworth and his men fought to their death at a battle in the Town's Green Hill area defending the site and winning the war, which lasted until August 1676. Captain Wadsworth and his troops were later buried in the Wadsworth Cemetery near today's King Philip Historic District.

At the start of the American Revolutionary War in 1775, Sudbury's territory included the present Town of Wayland and part of the present Town of Maynard with a population about 2,160. Due to its large size, the Town of Sudbury was able to supply men to participate in the war. Almost all of the adult male population of about 500 living within the Town boundaries fought in the Revolutionary War and about half of them were experienced soldiers.

In the early 19th century, the Town continued to change and grow with more people, a railroad system (1871), and businesses like Enoch Kidder's leather shop on the corner of Boston Post Road and Concord Road, along with a gristmill, sawmill, and machine shops. In the later 19th century, education and culture began to develop in town. In 1861, the Goodnow Library was bequeathed to the Town by John Goodnow.

By the early 20th century, the Town was dealing with automobile traffic and excessive speeding. In 1905, it was estimated that about 100 cars per day were passing along the Boston Post Road, which was significant at the time.[20] In the 1920s, Henry Ford made an impact in Sudbury by purchasing the Wayside Inn and surrounding properties, and building a chapel and fieldstone grist mill. In addition, Mr. Ford moved the Redstone School to its current site, and employed and trained many young boys in the area via The Wayside Inn Trade School.

By the 1920s and 1930s, commercial farming was thriving with many commercial trucks, chicken, and fox farms. While business was booming, fire disasters were a major concern as there was limited capacity to combat fires adequately. Some notable fire disasters in town occurred at Hunt's Store in 1922, the Sudbury Music Hall in 1925, and the original Town Hall in 1930. Soon after the last fire in 1930, the Town formed its first Fire Department comprised of local farmers and businessmen.

Before the 1940s, Sudbury was a rural community with many small farms and a steady population. After World War II, Sudbury's population and industry grew rapidly. The first Police Department was formed in the 1940s with the Chairman of the Board of Selectmen serving as acting chief, and one full-time officer kept a small office at the Town Hall. By the 1950s, the population was at the highest in the Town's history and talk about how to fund services for residents had started. To address these issues the Planning Board appointed an Industrial Development Board to expand the commercial base in town. As a response, Raytheon opened in 1958 employing 2,100 people. Shortly after that Sperry Rand opened in 1960, followed by Star Market and then First National supermarket which is now known as Sudbury

[20] Sudbury Chamber of Commerce, https://www.sudbury.org/home

Farms. While these businesses were opening and operating many of the schools in town were being constructed. Lincoln-Sudbury Regional High School in 1956, followed by Peter Noyes and Ephraim Curtis middle schools, and the three elementary schools. Following the schools were services such as the first Post Office, expansion of the Goodnow Library, and first Police Station, all in the 1960s.

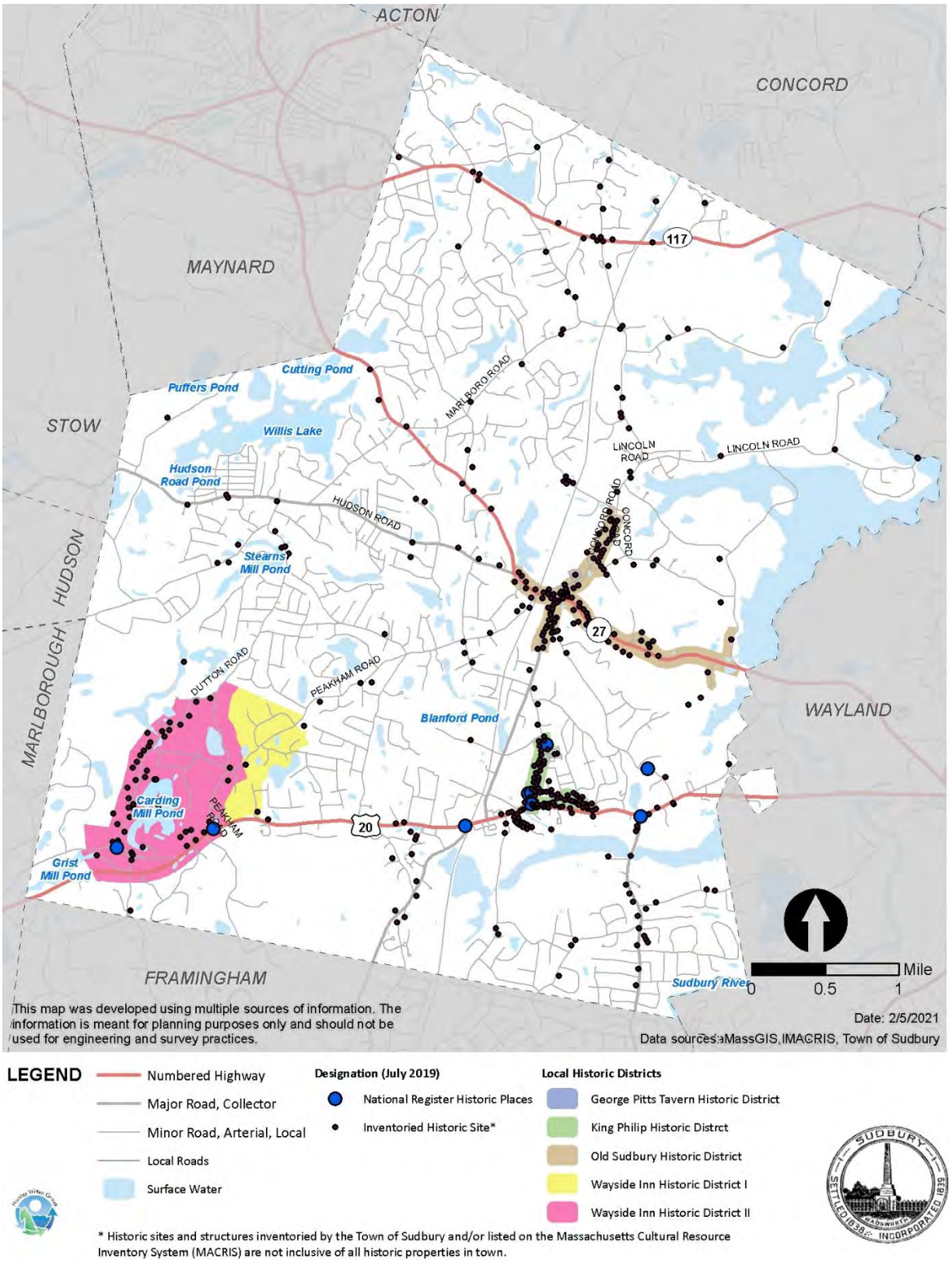
Resource Inventories

With its rich history Sudbury has a variety of noteworthy sites, many of which are listed on the National and State Registers of Historic Places as shown on Map 7. In addition to many buildings, Sudbury is home to a variety of other historic neighborhoods, farms, and landscapes, including the town's many ponds and streams that contribute to Sudbury's overall scenic character. There are over 400 historic sites inventoried in the Massachusetts Cultural Resources Information System (MACRIS).[21] Sudbury, like many communities in the country, started off as a rural community with many small farms.

Of special note is the Homer House. It was built in 1793 by Elisha Wheeler and Asher Goodnow. The house was later purchased by Ella and James Willis who conducted many business operations in the building including a general store and Post Office on the first floor, and ballroom for local dancers in the larger room on the second floor.[22] In 1897, the house was purchased by Reverend Edwin Barrett Hosmer. He lived there with his wife, Abbie Louisa Ames, and five children including daughter Florence Ames Hosmer. Miss Hosmer went on to become a well-known artist. She deeded her house to the Town of Sudbury in 1959. The stipulation in her will was the house and all of its contents be on display to the general public as a living memorial to her father. Miss Hosmer resided in the house until her death in 1979. Before her passing she donated over 450 of her paintings to the Town, which are displayed throughout the house. Today, the Hosmer House is open to the public on certain dates and by appointment.

Developing inventories is one way to understand what resources exist as well as heighten public awareness of these resources. Protection can also come from the federal, state, or local level through formal designations as shown on Map 7. The following provides an overview of these types of designations and how they are established.

[21] http://mhc-macris.net/
[22] Hosmer House, https://s3-us-west-2.amazonaws.com/cdn.sudbury.ma.us/wp-content/uploads/sites/300/2014/08/HosmerHouse.pdf?version=ee1cd199d20b1d5fc26175a6cbca3eb7



Map 7: Historic Resources in Sudbury

National Register of Historic Places

The National Register of Historic Places is the official list of the nation's historic places worthy of preservation. It is a federal program of the National Park Service that coordinates and supports public and private efforts to identify, evaluate, and protect America's historic and archeological resources. The process of designation begins with the local Historical Commission which evaluates applications to get a property listed on the National Register of Historic Places. The property must meet at least one of the following criteria:

- Association with events that have made a significant contribution to the broad patterns of our history;
- Association with the lives of persons significant in our past;
- Embodiment of distinctive characteristics of a type, period, or method of construction, or that represent a significant and distinguishable entity whose components may lack individual distinction; or
- Likelihood of yielding information significant in history or prehistory.

The Sudbury Historical Commission forwards their recommendation to the Massachusetts Historical Commission where they determine whether it meets the criteria for listing in the National Register as an individual property or as part of a National Register District. A National Register District nomination occurs if the property is located within areas containing other significant properties.

The National Register status does not place any constraints on private properties when using private funding. However, if using state or federal funding, permits, or licensing, the Massachusetts Historical Commission will review alterations. The Sudbury Historical Commission might reference the National Register status when it reviews Demolition Permits through the Demolition Delay Bylaw discussed later in this section.

State Register of Historic Places

The State Register of Historic Places was established in 1982 as a comprehensive listing of the buildings, structures, objects, and sites that have received local, state, or national designations based on their historical or archaeological significance. Properties are included on the State Register if they are:

- Listed in or determined eligible for listing in the National Register of Historic Places
- Within local historic districts
- Local, state, and national landmarks
- State archaeological landmarks
- Properties with preservation restrictions

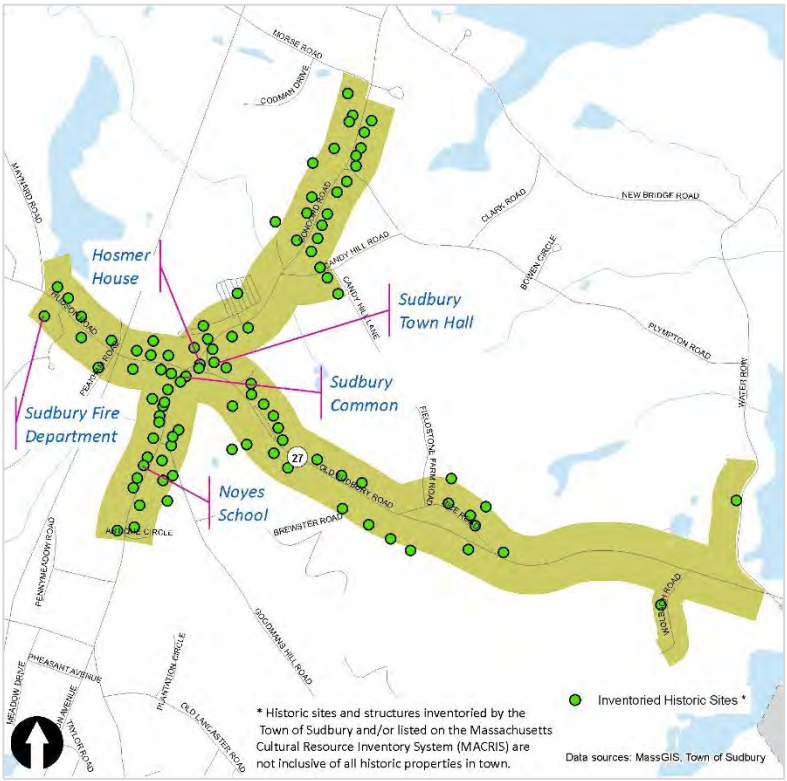
The State Register of Historic Places is published once a year by the Massachusetts Historical Commission.

Local Historic Districts

Massachusetts municipalities are given the authority to create local historic districts through Chapter 40C of the Massachusetts General Laws. They are established by ordinance or bylaw adopted at Town Meeting by a two-thirds vote. However, in Sudbury, the process is slightly different as the creation of local historic districts is governed by a Special Act, Section 13 of Chapter 40 of the Acts of 1963.
While still requiring a two-thirds vote by a Town Meeting or a Special Town Meeting, a Warrant Article to propose the creation of a new local historic district can be brought forth in any manner prescribed for all other types of Warrant Articles. As part of this process, the Planning Board is required to hold a duly advertised public hearing, and report its findings and recommendation to the Town Meeting. A historic district may include multiple properties or a single property.

Old Sudbury Historic District

The Old Sudbury Historic District (1963), also known as the Sudbury Center Historic District, was the first district to be established in town under Chapter 40 of the Acts of 1963. In 1967, at the Annual Town Meeting, the boundaries were expanded along Hudson Road to the railroad tracks. The boundaries were expanded again in 1967 along Hudson Road to the intersection with Maynard Road. The last expansion of this District was in 2000, and today the Old Sudbury Historic District covers Route 27/Old Sudbury Road between Water Row and Maynard Road, and Concord Road between Morse Road and Penny Meadow Road.

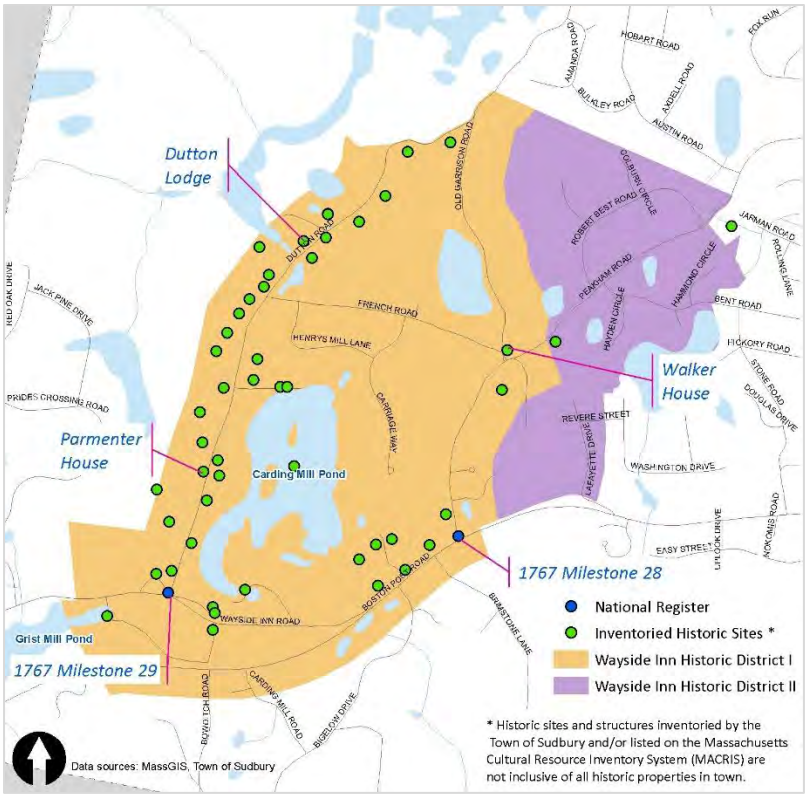


Map 8: Old Sudbury Historic District

The Old Sudbury Historic District is comprised of 98 buildings on the National Register of Historic Places that span over 300 years of growth and development in the community. These sites include the First Parish Meetinghouse, Hosmer House, Loring Parsonage, Town Hall, the Fire Department building, Noyes School, Sudbury Common, and many more. The Town Center was located at the heart of the District in 1723 when the West Meetinghouse was built. Previously, there was a single meetinghouse located near the Sudbury River at what is now known as Wayland's North Cemetery. The first meetinghouse was built in Sudbury shortly after the Town was incorporated in 1639 and served as a place for both worship and Town Meetings. At the time, voters were legally required to attend church both for services and Town Meetings. For the residents on the west side of the river, it was a treacherous passage in the winter.

Eventually, the petition to build a second meetinghouse was granted and in 1722 the Reverend Israel Loring crossed the river to become the preacher there. The Loring Parsonage was constructed soon after so he and his family could better serve the growing population on the other side of the river. Reverend Loring lived and worked there until his death in 1772. Today, the Loring Parsonage is being repurposed for the Sudbury History Center.[23]

It was also in this District that, on the morning of April 19, 1775, over 300 of Sudbury's men gathered to march to Concord to take part in the Battles of Lexington and Concord at the start of the American Revolution.[24]



Map 9: Wayside Inn Historic Districts

Wayside Inn Historic Districts

The Wayside Inn Districts I and II (1967) were collectively the second historic district to be established in Sudbury. The Districts run from Dutton Road to Boston Post Road/Route 20 and from Peakham Road to Austin Road. In this area is the famous Wayside Inn which claims to be the nation's oldest and longest-running inn. The Inn was made famous by Henry Wadsworth Longfellow when he wrote Tales of the Wayside Inn shortly after his first visit to the Red Horse Inn.[25] Also in this District is the Redstone Schoolhouse, which is said to be where Mary and her little lamb went to school from the famous nursery rhyme "Mary Had A Little Lamb."[26]

The District has 36 designated Local Historic Places including Dutton Lodge, the Parmenter House, Carding Millpond, the Walker House, and more. The District also has one site on the National Register of Historic Places, a 1767 Milestone.

[23] *Sudbury Historic Society*, http://www.sudbury01776.org/historycenter_2.html
[24] *Sudbury's Historic Districts*, https://sudbury.ma.us/historicdistricts/historicdistricts/
[25] *Sudbury History*, https://www.sudbury.org/
[26] *The Redstone Schoolhouse*, https://www.atlasobscura.com/places/the-redstone-schoolhouse-sudbury-massachusetts

King Philip Historic District

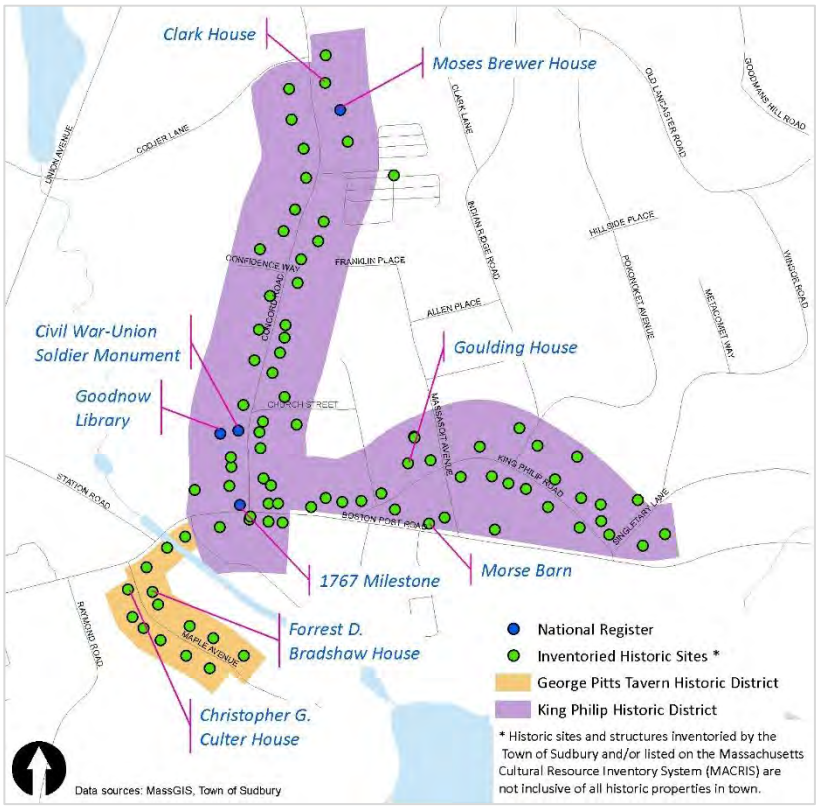
The King Philip Historic District was established at the 1972 Annual Town Meeting and expanded at the 2005 Annual Town Meeting. The District sits on Concord Road between Codjer Lane and Boston Post Road/Route 20. This area is historically significant in that it was the site of the King Philip's War Battle of 1676 where Captain Samuel Wadsworth and his troops were killed. The men were honored by erecting the Wadsworth Monument which now appears on the Town seal.

In this District are four designated National Register of Historic Places — Moses Brewer House, Goodnow Library, Civil War-Union Soldier Monument, and a 1767 Milestone. The District also includes 64 designated Local Historic Places including the Goulding House (the oldest existing home in Sudbury), the Clark House, Morse Barn, and many more.

George Pitts Tavern Historic District

Adjacent to the King Philip Historic District is the George Pitts Tavern Historic District created in 2008, located along Boston Post Road/Route 20 and Maple Avenue. The District is significant in that it was the location of the famous 1721 Town Meeting that approved the building of a new church in western Sudbury, which ultimately separated Wayland from Sudbury.[27]

The District consists of 18 designated Local Historic Places including the Forrest D. Bradshaw House, the Christopher G. Cutler House, and others.



Map 10: King Philip and George Pitts Tavern Historic Districts

Cultural Landscapes

Sudbury is defined by its open space and cultural landscapes which stem from its historic farming identity. While farming has decreased over the years, there are 14 landscapes in town and some still practice small scale farming. Table 37 highlights currently landscape assets in town.

[27] *Sudbury's Historic Districts*, https://sudbury.ma.us/historicdistricts/historicdistricts/

Table 37: Cultural Landscapes in Sudbury

Farm/Location	Use
J P Bartlett	Landscape, Nursery
Cavicchio Greenhouses	Landscape, Nursery
Sienna Farm	Vegetable
Verrill Farm (based in Concord but active in Sudbury)	Vegetable
Fairbank Farm	N/A
Twillingate Farm	Nursery
Blue Meadow Farm	Equestrian
Stone Tavern Farm	Small Farm Stand and Hay Fields
Pantry Brook Farm	N/A
Nobscot Farm	N/A
Water's Edge Farm	Equestrian
Charlesgate Equestrian	Equestrian
Fairview Farm	Landscape, Nursery
Broadacres Farm	N/A

Source: Town of Sudbury

Massachusetts Heritage Landscape Inventory Program

Sudbury is one of 37 communities in the Freedom's Way Heritage Association. In 2006, the Massachusetts Department of Conservation and Recreation and the Freedom's Way Heritage Association collaborated to produce the Heritage Landscape Inventory Program. The primary goal of the program is to help communities identify a wide range of landscape resources, particularly those that are significant to the town and provide strategies for preserving them.

A reconnaissance report was prepared for each of the 37 communities as part of Freedom's Way Landscape Inventory. In Sudbury, the inventory identified eight High Priority Heritage Landscapes (listed alphabetically):

Heritage landscapes are special places created by human interaction with the natural environment that help define the character of a community and reflect its past. They are dynamic and evolving; they reflect the history of a community and provide a sense of place; they show the natural ecology that influenced land use patterns; and they often have scenic qualities. The wealth of landscapes is central to each community's character, yet heritage landscapes are vulnerable and ever changing. For this reason, it is important to take the first steps towards their preservation by identifying those landscapes that are particularly valued by the community – a favorite local farm, a distinctive neighborhood or mill village, a unique natural feature or an important river corridor.

- MA Department of Conservation and Recreation, Freedom's Way Heritage Association

1. Hop Brook Corridor
2. Hunt-Bent Farm
3. Indian Grinding Stone
4. Nobscot Reservation
5. Sudbury River Corridor
6. Town Center
7. Water Row Corridor
8. Wayside Inn Complex

For each of the landscape, the reconnaissance report provides recommendations for preservation and enhancement of the landscape's features and attributes.

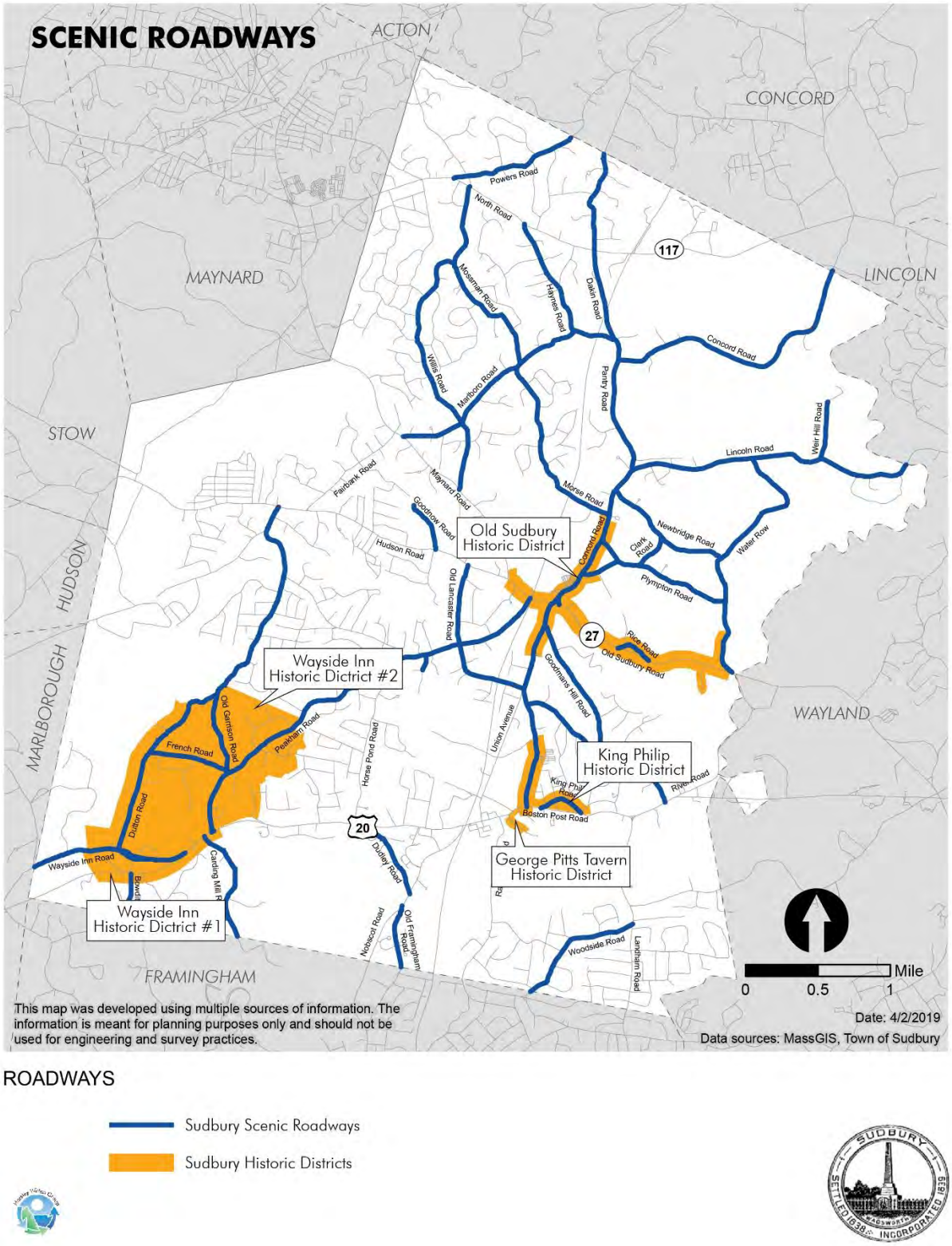
Scenic Roadways

Sudbury adopted a Scenic Roads Bylaw in 2003. The purpose of the bylaw is to protect the scenic quality and character of Sudbury's town roads by establishing rules and regulations governing modifications within the public right of way. The bylaw governs the cutting or removal of trees, and the tearing down or alteration of stone walls during repair, maintenance, reconstruction, paving, or other alterations of roads that hold the scenic designation.

There are 32 roads in Sudbury that have been designated with the Scenic Roadway status. These roads are rich in scenic value because of their stone walls, tree canopies, views of rivers, marshlands, mill ponds, farmlands, and historic buildings. Many of the roads in town date back to Colonial times, some began as old Native American paths between encampments, and most of the designated roads appear on the 1830 or 1875 street maps of Sudbury. The narrow width and curved routes of these roadways are important characteristics for the Town to preserve. As shown in Map 11, Sudbury's Historic Districts are all located in areas where there are many Scenic Roadways. Scenic Roadways include:

- Bowditch Road
- Brimstone Lane
- Candy Hill Road
- Clark Road
- Concord Road
- Dakin Road
- Dudley Road
- Dutton Road
- French Road
- Goodman's Hill Road
- Goodnow Road
- Haynes Road
- King Philip Road
- Lincoln Road
- Marlboro Road
- Morse Road Mossman Road
- Newbridge Road
- Old County Road
- Old Framingham Road
- Old Garrison Road
- Old Lancaster Road
- Pantry Road
- Peakham Road
- Plympton Road
- Powers Road
- Rice Road
- Water Row
- Wayside Inn Road
- Weir Hill Road
- Willis Road
- Woodside Road

Historically, commerce began to center around the major transportation routes passing through Sudbury dissected by the three major stagecoach routes. The Boston-Worcester line ran through south Sudbury along the "great road," today's Boston Post Road/Route 20. Built in 1790 as the link between Boston and Albany, it now extends to the West Coast. The Boston-Berlin line ran through the center of town along Route 27, and the northern route or Fitchburg Highway traversed the modern-day Route 117. No major highways run through Sudbury, however, the old coach roads still remain the major autoroutes.



Map 11: Scenic Roadways in Sudbury

Tools to Protect Historic Resources

The Town of Sudbury has, through several means, acted to protect and preserve its historic and cultural resources as development and growth continues in town.

General and Zoning Bylaws

Wayside Inn Historic Preservation Zone

The Wayside Inn Historic Preservation Zone is a residential zoning district with a minimum lot size of five acres. Single-family dwellings are allowed by right and other types of residential developments, such as cluster, flexible, and senior residential communities, require a Special Permit from the Planning Board. Residential apartments or businesses on second or third floors of structures, incentive senior developments, and residential care facilities are prohibited. Other uses allowed by right in the zone include farming and farm stands as well as religious, educational, childcare, and family care uses.

Historic Districts and the Zoning Bylaw

While not part of the Zoning Bylaw, they are included in the Town's official Zoning Map and highlighted in the Sudbury Zoning Bylaw for informational purposes.

Demolition Delay of Historically Significant Buildings, Structures, or Sites

This purpose of this bylaw is to protect the historic and aesthetic qualities of Sudbury through preservation, rehabilitation, or restoration, whenever possible, of buildings, structures, or archeological sites that constitute or reflect distinctive features of the Town's architectural or historic resources. The bylaw provides the opportunity to develop preservation solutions for properties threatened by demolition. It allows the property owner, the Sudbury Historical Commission (SHC), and other Town departments the time to find grants or other resources to purchase, preserve, rehabilitate, or restore the building or structure.

The bylaw applies to the following structures:

- A building or portion thereof, structure, or archeology site listed on the National Register of Historic Places or the State Register of Historic Places, or the subject of a pending application or listing on either of said Registers.
- A building or portion thereof, structure, or archeology site located within 200 feet of the boundary line of any federal, state, or local historic district.
- A building, or portion thereof, structure, or archeology site included in the Inventory of the Historic and Prehistoric Assets of the Commonwealth or designated by the SHC for inclusion in the inventory.
- Homes listed in the "Old Homes Survey" of the SHC, plus those structures or portion thereof constructed prior to January 1, 1940 town-wide or any building or portion thereof or structure of indeterminate age.

The bylaw does not apply to any building or structure located in a local historic district which is subject to regulation under Chapter 40 of the Acts of 1963.

When an applicant submits for a Demolition Permit to the Building Inspector, the SHC is notified within five days. The Demolition Delay Bylaw outlines procedures the SHC must follow in order to determine if the structure is historically significant and, if found to be, the process by which steps are taken for preservation, rehabilitation, or restoration. There are also procedures for emergency demolition of a building or structure which poses a serious and imminent threat to public health or safety.

Scenic Roads Bylaw

The purpose of the Scenic Roads Bylaw is to protect the scenic quality and character of the Town's roads. The objectives of the bylaw are:

- To maintain the natural beauty and scenic qualities along scenic roads in the Town of Sudbury.
- To enhance the rural character of scenic roads of the Town and encourage compatibility with existing roadside features.
- To implement more fully the provisions of the state Scenic Road Act, Massachusetts General Laws Chapter 40, Section 15C.

As noted above, the Planning Board is the local authority responsible for reviewing road repair, maintenance, construction, reconstruction, paving, or other alterations that will involve the cutting or removal of trees, or the tearing down or alteration of stone walls, or portions thereof on a scenic road. To designating a new road as scenic, the Planning Board will hold a public hearing that includes notification to the Board of Selectmen, Town Tree Warden, Director of Public Works, Conservation Commission, Historical Commission, and the Historic Districts Commission. A majority vote at Town Meeting is required for designation.

Town Committees, Commissions, and Boards

Sudbury Historical Commission

The Sudbury Historical Commission was formed in 1968 by a Special Town Meeting vote. It presides over preservation, protection, and development of historical or archaeological assets of the Town under Section 8D of Chapter 40 of the General Laws of the Commonwealth. The Historical Commission has jurisdiction over all historic buildings, structures, and properties owned or acquired by the Town (see **Error! Reference source not found.**).

The Historical Commission also administers the Town's Demolition Delay of Historically Significant Buildings, Structures, or Sites Bylaw. This covers buildings and structures outside of Local Historic Districts built before 1940, on the National Register or State Register, and/or in Sudbury's Historic Homes Survey which is the Town's record of historic structures and areas of historic interest.

The intent of this bylaw is to provide an opportunity to develop preservation solutions for properties threatened with demolition for up to six months; and to allow the Sudbury Historical Commission and other appropriate Town departments time to find grants or some person or group willing to purchase, preserve, rehabilitate, or restore the building or structure.

The Historical Commission also serves as the contact in state and federal historic preservation review processes.

Sudbury Historic Districts Commission

The Sudbury Historic Districts Commission (HDC) was formed in 1962 after the Board of Selectmen modified the original group, which was the Historic District Study Committee, and after passage of the Special Act, Chapter 40 of the Acts of 1963. Today, the HDC operates under the mission of preserving and protecting buildings, places, and other areas of historical or architectural significance. The HDC is responsible for reviewing proposed alterations to buildings and structures located within the Town's local historic districts including exterior architectural and color features of buildings, landscaping, stone walls, and signs. The HDC also studies proposed modifications to the Historic Districts Bylaw. The HDC consists of five members appointed by the Board of Selectmen as follows:

- One registered architect (if none available, a person the Selectmen deem qualified)
- Three registered voters living in a Historic District (if possible)
- One (of two nominees) by the Historical Commission

Sudbury Planning Board

The Sudbury Planning Board is responsible for administering the Town's Scenic Roads Bylaw.

Community Preservation Committee

Sudbury was one of the first communities in the Commonwealth to adopt the Community Preservation Act (CPA) in 2002.[28] The CPA allows cities and towns to adopt a property tax surcharge with revenues from this surcharge (plus state matching funds) to be used for open space preservation, the creation of recreation opportunities, the creation of community housing, and the preservation of historic buildings and landscapes. The Community Preservation Committee reviews and recommends requests for CPA funds. Since the surcharge went into effect with the start of Fiscal Year 2003 on July 1, 2002, the Town has collected almost $15 million in funding for historic preservation, land protection, and related efforts.

[28] Community Preservation Committee Report

Non-Profit and Community Organizations

Goodnow Library Trustees

The Goodnow Library curates the Local History Collection[29] which is intended to preserve, collect, describe, exhibit, and make publicly accessible materials that document the history of Sudbury and its inhabitants. Notable collections are:

- Barton Collection: Personal papers, publications, and artifacts from the estate of George H. Barton noted geologist, explorer, and professor at the Massachusetts Institute of Technology.
- Goodnow Collection: Includes publications from the Goodnow Family Association, biographical information, various genealogies, books, "Goodenow's Ghosts" dating from 1981 to present, and the key to John Goodnow's tomb.
- Loring Papers: Diaries, notes, and sermons of the Revered Israel Loring dating from 1748-1765. Transcriptions are available.
- Parmenter Collection: Diaries, books, photographs, and other items dating from the late 1800s to 1978 which belonged to Gilbert, John Robert, and Mary F. Parmenter. This collection highlights local life and three prominent families (Bent, Haynes, and Parmenter).
- Rice Collection: Includes publications from the Edmund Rice Association as well as copies of the Dunster papers from the Harvard University Archives.
- Vincent Collection: Native American artifacts from a cremation pit dating to approximately 1520 BC uncovered along Dudley Road in Sudbury.

Town documents are also available including Town Meeting records and reports dating back to 1644, official warrants from 1940, tax records from 1778, and Town bylaws from 1937 to 2001, among other documents. The Library's historical collections are available to the general public on a limited basis for research involving local, genealogical, and/or historical issues. In recent years Town Meeting has approved funding for digitizing local archives.

Sudbury Historical Society

The Sudbury Historical Society[30] is a non-profit organization dedicated to bringing the rich history of the Sudbury Plantation into the lives and activities of the people of Sudbury. It was founded in 1956 by history-minded citizens of Sudbury. In 1970, it absorbed the Goodman Society (founded in 1890) and its predecessor the Historical and Improvement Society. Since 1998, thanks to the generosity of the Town's Selectmen, the Society has been headquartered in the second floor of the Sudbury Town Hall. As of this report, the Society is soon scheduled to move next door to the Loring Parsonage where it will operate the new Sudbury History Center.

[29] https://goodnowlibrary.org/resources/local-history-and-genealogy/
[30] http://sudbury01776.org/

The Society achieves its mission by:

- Educating and raising the interest of citizens of Sudbury in a finer public spirit, through understanding of the traditions and history of the Town.
- Collecting, studying, and conserving artifacts and records relating to the history of Sudbury and its people.
- Providing public programs and events relevant to the local history of Sudbury.
- Providing age-appropriate educational materials, research, and tours related to the town's history for the Town's children and students.
- Assisting anyone looking for information on Sudbury history.
- Supporting academic research into the history of the Town.

Sudbury Foundation

The Sudbury Foundation[31] was established in 1952 by Herbert and Esther Atkinson as a vehicle for their personal philanthropy. Long-time residents of Sudbury (they lived in the former Babe Ruth house on Dutton Road), the couple operated the Sudbury Laboratory, a successful small business specializing in soil testing kits. As their business prospered the Atkinsons shared their good fortune with others, both directly and through the Foundation they created. The couple had no children and when they died, they left their entire estate to the Foundation to carry on their charitable work.

Today, the Foundation awards grants and scholarships in excess of $1.3 million annually. Funding is designed to strengthen the Foundation's nonprofit partners who are working to solve some of the most pressing social issues. Among the many funding categories of the Foundation, it supports the preservation of the Town's natural, historic, and other cultural assets that celebrate the Town's history. The Foundation also manages the historic Grange Hall in Sudbury Town Center which has a conference room available as a community meeting space for Sudbury Town committees and local nonprofits.

Sudbury Valley Trustees

The Sudbury Valley Trustees (SVT) is a member-supported, 501(c)3 nonprofit organization that works in a 36-community region between Boston and Worcester. Its mission is to protect natural areas and farmland for wildlife and people in the 36 communities that surround the Sudbury, Assabet, and Concord Rivers. Through its conservation efforts it supports historic preservation by protecting important historic landscapes, such as farmland and open spaces, that contribute to the character of the communities it works in.

Cultural Resources

In addition to a multitude of historical resources, Sudbury has many cultural opportunities that further contribute to its overall sense of place and community. Residents can enjoy Sudbury's small-town atmosphere and still have access to diverse experiences around the arts and other enriching

[31] https://sudburyfoundation.org/

opportunities. Civic and community organizations offer events, membership, and programming on a wide range of topics, giving residents places to learn and connect.

Sudbury Cultural Council

The Sudbury Cultural Council (SCC)[32] was established in 1982 as a part of a statewide program to develop cultural programs in local communities. The SCC supports and promotes community originated projects and activities in the arts, humanities, and interpretive sciences to benefit the residents of Sudbury. Members are residents appointed by the Board of Selectmen to disperse public funding allocated by the Massachusetts Cultural Council (MCC), a state agency whose budget is determined annually by the state legislature in July of each year. MCC divides this funding to each Massachusetts community using a formula that includes population and economic status, although the Town is permitted to raise additional funds through donations and events. Applications are accepted by the SCC typically in October on an annual basis. The SCC also works collaboratively with organizations in the community, helping them develop ideas for programs and events.

Local Arts & Cultural Organizations

There are many organizations outside of town government that support the arts and bring cultural experiences to Sudbury. Below is only a select list.

Religious Institutions	
Our Lady of Fatima	St. Anselm's Church
Congregation B'nai Torah	Sudbury United Methodist Church
Congregation Beth El	St. John Evangelical Lutheran Church
Presbyterian Church in Sudbury	First Parish of Sudbury (Unitarian Universalist)
St. Elizabeth's Episcopal Church	Memorial Congregational Church
New Church of Boston	Chabad Jewish Center of Sudbury
Fraternal Organizations	
Knights of Columbus	
Special Interest Organizations	
Sudbury Garden Club	Chinese American Association of Sudbury
Sudbury Historical Society	Goodnow Library Foundation
Sudbury Boy and Girl Scouts	Sudbury Savoyards
Sudbury Art Association	The Thursday Garden Club of Sudbury
Hope Sudbury	Friends of the Goodnow Library

[32] https://sudbury.ma.us/culturalcouncil/

Town Services

The Town of Sudbury offers services to residents and businesses that protect the health, safety, and welfare of the community. The local government provides public library services, infrastructure maintenance, and public safety, among other items. It also has a Park and Recreation Department with different facilities and programming as well as public schooling for children pre-kindergarten through high school.

Public Safety

Police Department

The Police Department consists of 40 personnel: The Police Chief, two Lieutenants, six Sergeants, 19 Officers, one Student Officer, nine Civilian Dispatchers, and two Administrative Personnel.

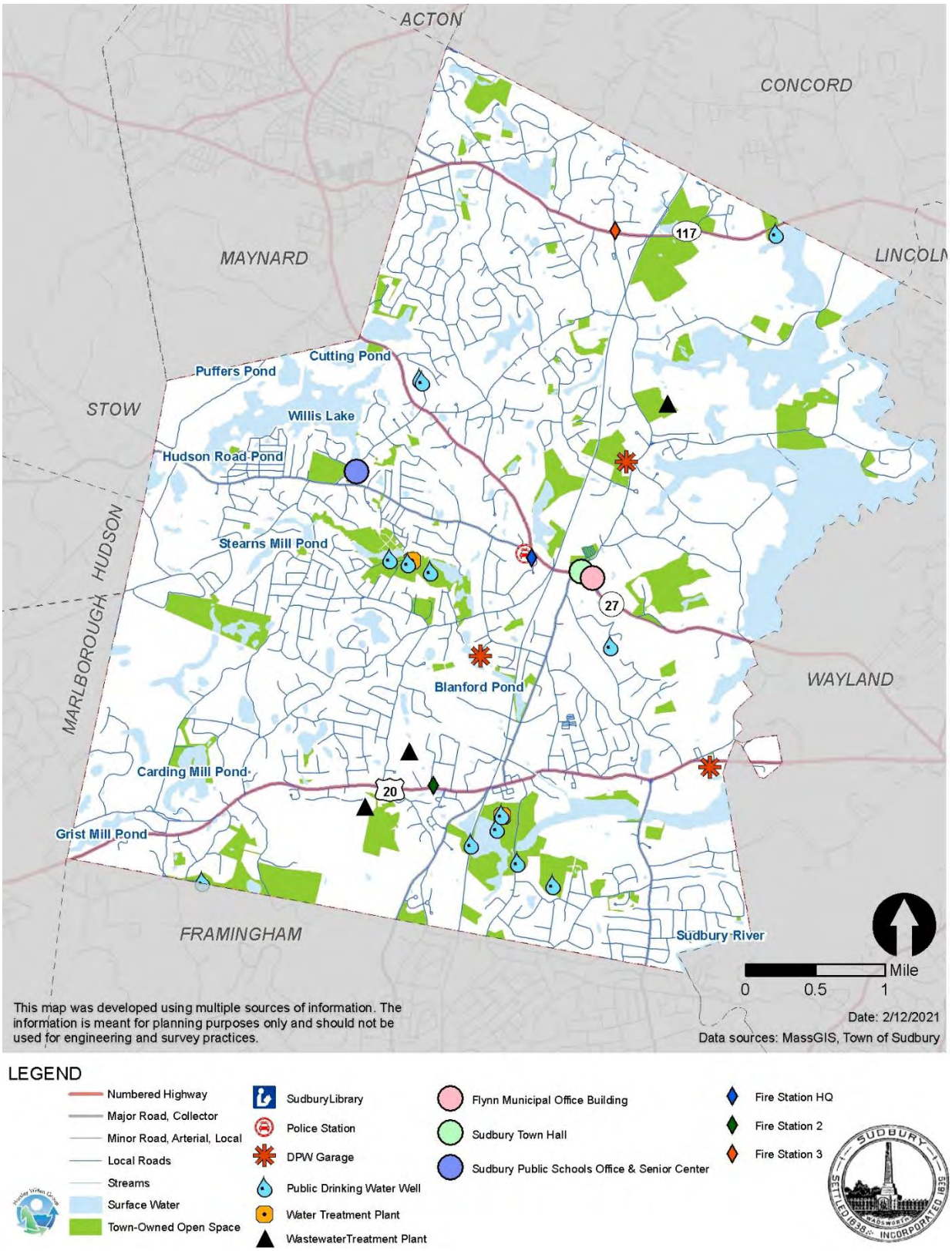
The department is located in a 14,540 square-foot building at 75 Hudson Road (Map 12), newly constructed in 2015. It replaced the old station on Boston Post Road/Route 20, which was constructed in the late 1950s. In addition to the newly constructed building, the Police Department transitioned to a new record management system reported in the 2017 Annual Report. It was noted the new system allows the department to manage better, analyze, and interpret various forms of data to include accidents and crimes.

The department receives approximately 18,000 calls per year with a noticeable increase in identity theft calls. The most common incident reports are car break-ins. The Police Department has noted an increase in the opioid crisis in town. In 2018, there were five deaths related to opioids and the victims were all under 30 years old.

Table 38: Number of Police Department Calls, 2008-2018

Year	911 Calls	Total Incidents	Motor vehicle accidents
2008	3,981	18,153	613
2009	3,501	18,812	526
2010	3,711	17,716	606
2011	3,646	15,140	580
2012	3,404	15,498	519
2013	3,098	16,036	521
2014	3,098	16,459	540
2015	3,117	17,136	474
2016	3,312	16,629	542
2017	n/a	13,802	560
2018	n/a	16,360	542

Source: Sudbury Annual Town Reports



Map 12: Town Services & Facilities

The increase in mental health issues over the course of the year led the Police Department to develop the Jail Diversion Program as a tool to battle cases involving substance abuse, mental health crisis, and social welfare issues. Through the program a full-time clinician can respond alongside Police officers to calls involving people who are experiencing a mental health or substance use crisis. The goal of the clinician is to prevent an arrest and costly hospital visit through treatment-based alternatives. The Towns of Sudbury and Hudson currently share the clinician on a rotating basis.

In addition to protecting the community, the Sudbury Police Department is also committed to serving the community's youth. The department leads the STAR program (Students Thinking and Acting Responsibly in Sudbury) through which they collaborate with schools to address current challenges facing students.

Fire Department

As shown on Map 12, the Town has three full-time Fire Stations: the Headquarters at 77 Hudson Road, Station #2 at 550 Boston Post Road/Route 20, and Station #3 at 268 North Road/Route 117. The Headquarters was constructed in 1992 and includes sleeping quarters, a dispatch room, a conference/ training room, and truck storage for six vehicles. Station #2 was built in 1961 and consists of a two-person living quarter with one bunkroom, one bathroom, and two bay doors with space for fire equipment. The last major renovation was in 1997, which included a new roof. According to the 2017 Sudbury Annual Report, Station #2 needs to be expanded to allow for a second ALS ambulance to run from that station, adequate space for more staffing, and accommodations for female firefighters.

The Fire Department consists of 43 personnel: The Fire Chief, the Assistant Fire Chief, four Captains, four Lieutenants, 32 Firefighters, and one civilian Senior Admin/Financial Analyst. Of these 43 personnel, 26 are State Certified Paramedics, and 16 are State Certified Emergency Medical Technicians.

The Fire Department is responsible for the protection of multiple types of risks and services. On average, the Fire Department responds to 2,200 emergency calls and performs numerous fire prevention inspections each year.

Table 39: Number of Fire Department Calls, 2008-2019

Year	Total Calls	Medical	Fire	Year	Total Calls	Medical	Fire
2008	1,955	55%	45%	2014	2,025	57%	43%
2009	2,043	57%	43%	2015	2,260	56%	44%
2010	2,345	52%	48%	2016	2,207	58%	42%
2011	2,332	52%	n/a	2017	2,067	62%	38%
2012	2,063	57%	n/a	2018	2,282	59%	41%
2013	1,947	56%	44%	2019	2,332	60%	40%

Source: Sudbury Annual Town Reports

The Fire Department's responsibilities include, but are not limited to:

- Enforcing all fire prevention laws
- Enforcing the fire prevention regulations of the Commonwealth of Massachusetts
- Enforcing local bylaws related to public safety
- Inspecting smoke alarms in all new homes and homes being resold
- Inspecting carbon monoxide detectors in all homes being resold
- Inspecting oil burners and oil tank installations, underground/aboveground storage tanks that hold flammable liquids, and liquefied petroleum gas storage
- Inspection of commercial fire alarms and sprinklers systems
- Issuing permits for the storage of explosive materials (such as black or smokeless powders) and for open burning from January 15 – May 1
- Monitoring blasting operations
- Organizing and leading the Fire Prevention Education Programs for children and senior adults

Public Safety Dispatch Center

There are nine Civilian Dispatchers in Town that handles calls. Sudbury Police and Fire Dispatch Centers were combined in the fall of 2012 to eliminate call transfers.[33] Additionally, as of March 2019, the Police Department started receiving cellular 911 calls directly. Prior to 2012, 911 medical calls were answered by the Massachusetts State Police Communications Center which identified the jurisdiction and then transferred the call to the relevant Police Department dispatcher. If the call was medical or fire-related, it would be transferred a second time to the Fire Department dispatcher. Local calls now reach the Sudbury Police and Fire Departments much faster and more efficiently.

Community Emergency Response Team

The Sudbury Community Emergency Response Team (CERT) is a volunteer program that educates and trains citizens to be better prepared to respond to emergency situations in the community. During emergency situations, if needed, members of the CERT team are deployed at the direction of the Fire Chief to provide critical support to first responders, provide immediate assistance to victims, and organize volunteers at a disaster site.

According to the Fire Chief, 62% of calls are for Emergency Medical Services and the rest are fire-based calls. In 2018, there were a total of 2,300 calls. The most notable shift has been in calls originating from the Avalon Sudbury apartments which increased by 115 calls alone since July of 2018.

Medical Reserve Corps (MRC)

Similar to CERT, the Medical Reserve Corps is comprised of volunteers. MRC is a system set up to organized volunteer groups that will be deployed during emergency times in town. The group was

[33] Town Website, *Public Safety Dispatch Center*, https://sudbury.ma.us/police/2012/09/19/public-safety-dispatch-center/

established by the Board of Selectmen and Board of Health to help organize medical, public health, and other volunteer efforts in the community. The Sudbury Board of Health Nurse leads the group in activities such as volunteer drills, recruitment efforts, and shelter opening and planning.

Public Works

The Department of Public Works (DPW) oversees the maintenance and operations of the Town's public infrastructure and services. The DPW has five divisions with a total of 32 employees: Engineering (four), Highway (21), Transfer Station/ Recycling Center (two), Cemetery (three), and Parks and Grounds (two).

Engineering

The Engineering Division consists of the Deputy Director of Public Works and four engineers.[34] The division provides engineering services to numerous Town boards and committees, Sudbury Public Schools, and Town departments (Police, Fire, Planning and Community Development, and Conservation) as well as the Sudbury Water District. The division provides the following services:

- Oversees plans, design, and construction of roadway projects.
- Assists with maintaining compliance with various state and federal programs such as the National Pollutant Discharge Elimination System (NPDES) Phase II Stormwater Permit.
- Manages the Town's Street Opening Permits.
- Reviews development and redevelopment plans to ensure roadway and utility changes conform to the Town's construction standards.
- Inspects modifications and expansions to the roadway and stormwater networks.
- Maintains the municipal Geographical Information System (GIS).
- Guards a large collection of irreplaceable paper plans and documents.

Highway

The Highway Division is responsible for the maintenance and repair of the Town's roadway and sidewalk infrastructure, including:

- Drainage maintenance
- Pavement markings and management
- Granite and bituminous curbing
- Street and regulatory signage
- Snow plowing and sanding
- Street sweeping
- Stormwater utilities
- Traffic islands
- Pothole, sign, and vandalism repair

[34] https://sudbury.ma.us/

Recent infrastructure improvements were made to improve water quality and meet the requirements of the Town's NPDES Phase II Stormwater Permit. In 2017, the Town along with contracted personnel designed, engineered, and installed a large, dual (3,000 gallon inside a 7,000 gallon) tight tank at the Fire Station to capture and contain wash water used to clean vehicles. The division also switched from a sand/salt mix to using straight salt and pre-treated salt for winter snow and ice treatment to minimize the amount of sand entering and further diminishing the capacity of the stormwater conveyance system.[35]

Transfer Station/Recycling Center

The Transfer Station is a facility set up for Sudbury residents to properly dispose of and/or recycle common household items and non-hazardous waste. The division manages the collection of refuse and recycling from approximately 25% of the town. Items that can be recycled at this facility include newspapers, mixed paper, cardboard, glass, aluminum cans, plastic, automobile batteries, used motor oil, and scrap metal.

Cemetery

The Cemetery Division is responsible for the operation and maintenance of seven Town cemeteries: Mount Pleasant, New Town Cemetery, Old Town Cemetery, Revolutionary, St. Elizabeth's Memorial, Bay View Cemetery, and Wadsworth Cemetery. They also perform grave openings and interments.

Parks & Grounds

The Parks and Grounds Division is responsible for the maintenance of athletic fields, buildings, open space, and conservation land owned and managed by the Town. The division's responsibilities include the following:

- Mowing
- Aerating
- Fertilizing
- Irrigation and System Maintenance
- Weed and Insect Control
- Litter Clean-Up
- Leaf Removal
- Leveling
- Grading and Marking Fields
- Fence and Vandalism Repairs
- Shrub and Tree Care
- Support of Town Offices and Civic Activities

Comprehensive Wastewater Management Plan

Since 1995, the Town of Sudbury has been studying wastewater options for the Boston Post Road/Route 20 business corridor. Currently, businesses use on-site treatment systems which limit the types of establishments allowed and their size. Finding a wastewater treatment solution will protect Sudbury's drinking water in the Boston Post Road/Route 20 aquifer area, assist businesses with their wastewater

[35] https://s3-us-west-2.amazonaws.com/cdn.sudbury.ma.us/wp-content/uploads/sites/342/2018/05/2017TownReport.pdf?version=0be9215c46e09a0e268d7bea5325834c

disposal, and open opportunities for economic development along the roadway. Without alternative wastewater disposal there is a risk of groundwater contamination and loss of business.

The DPW began working with Woodard and Curran in 2018 to develop a Comprehensive Wastewater Management Plan (CWMP). The CWMP will take all the wastewater planning the Town has done to date and combine into a single plan which can be used to assess needs comprehensively, evaluate alternatives, coordinate with local and regional planning goals, and develop a coordinated public outreach program to engage residents and businesses. The CWMP will give the Town a 20-year planning document to address wastewater needs and the leverage it needs to qualify for state grants and loans for a wastewater treatment system and facility.

In August 2018, the Town was approved to borrow up to $500,000 from the State Revolving Fund (SRF). It is also eligible for a grant from the MassWorks Infrastructure Program which could offset SRF borrowing and lower individual costs for connecting to a new wastewater treatment system. In the spring of 2019, the DPW received Town Meeting approval to apply for SRF borrowing. Next steps are to complete the CWMP and submit an SRF loan application. Through the CWMP development process a recommended wastewater treatment solution will be determined. It is estimated construction of a new facility will take two years to complete.

Sudbury Water District

The Sudbury Water District is an independent public body established in 1934 under Chapter 100 of the Massachusetts General Laws. The District is responsible for the treatment and delivery of clean water within the Town of Sudbury.[36] There are seven field personnel and three office staff.

Sudbury's water comes from three underground aquifers (Raymond Road, Hop Brook, and Great Meadow) and is pumped from nine gravel-packed wells located throughout town.[37] The District has four storage tanks located throughout the town with a storage capacity ranging from 0.35 to 3.0 million gallons, totaling 6.35 million gallons.

The Sudbury Water District has many projects lined up to continue improving water quality and serve the growing population. Its 2018 Annual Report lists the following recent and current capital improvements:

- New water main on Maynard Road installed; currently installing new service connections to property lines of residents.
- Near completion of upgrades to Well Number 4, the highest quality water among all the wells, located off Warren Road.

[36] http://www.sudburywater.com/history/
[37] *The 2017 Water Quality Report* http://www.sudburywater.com/wp-content/uploads/2018/06/SWD-2017-Water-Quality.pdf

- Improving the supply line from Well Number 7 to the treatment plant on Raymond Road.
- Improving the operation of the water storage tank off Bigelow Drive.
- Moving to a new administrative office, shop, and storage space on Raymond Road.

In addition to these projects, the Water District is developing a Water Master Plan.[38] The master plan will assess the existing infrastructure, develop risk and consequences of failure, and set priorities for infrastructure improvements.

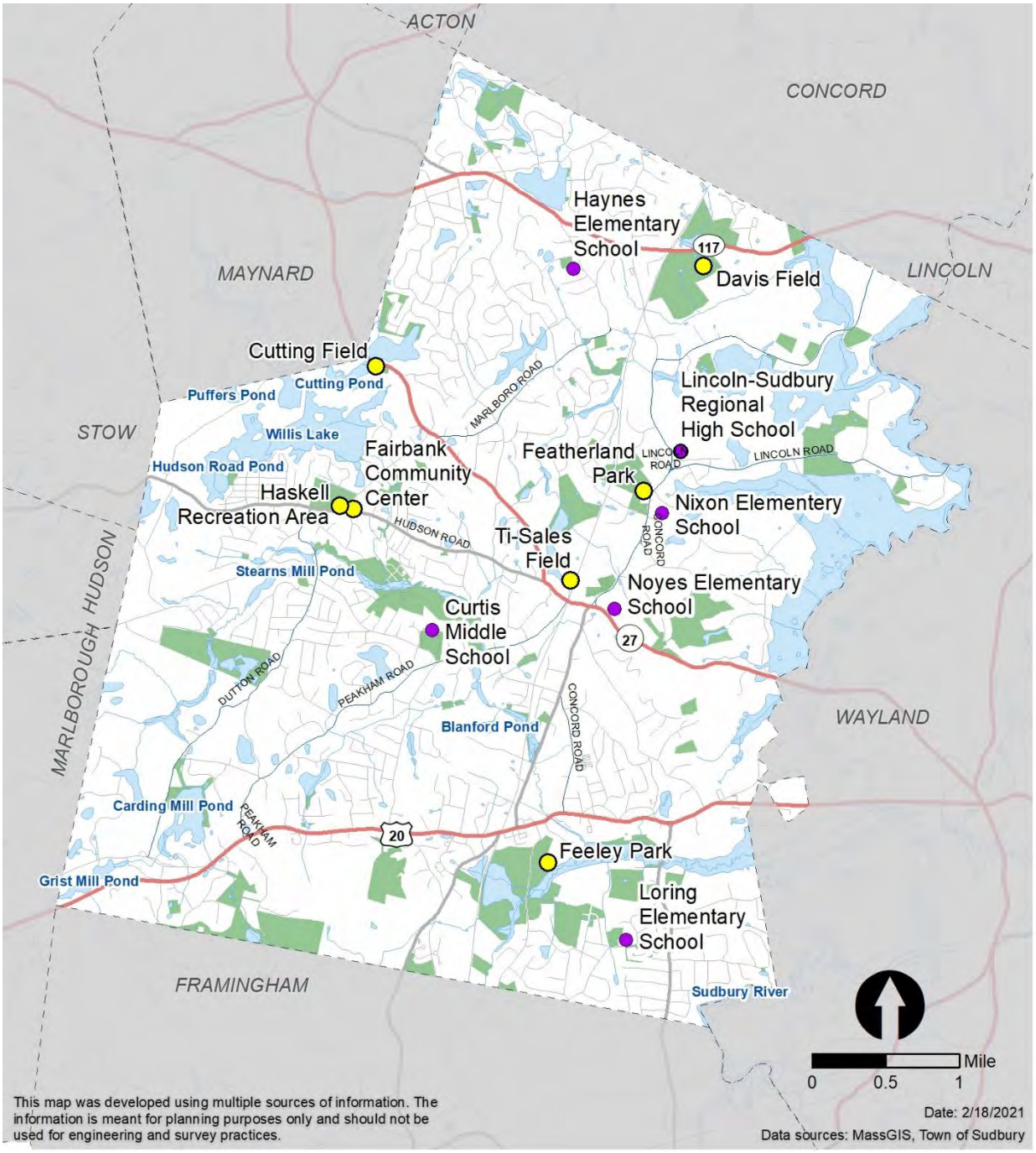
Park and Recreation

The Park and Recreation Department provides recreation activities, facilities, and general amenities to the public. The department also offers a wide range of programming for all ages and all interests, from educational instruction to sports to summer camps. The Park and Recreation Department is managed by six staff including a Director, an Administrative Assistant, an Aquatic Supervisor, an Aquatics Program Coordinator, a Recreation Program Coordinator, and a Youth and Teen Coordinator. Staff at Atkinson Pool also includes two aquatics staff, a lifeguard, and many part-time and seasonal employees. There are also five Park and Recreation Commission members.

The following are municipal recreational resources available in Sudbury (see Map 13).

- Cutting Field is used by many community groups for soccer and lacrosse.
- Davis Field has been the site for soccer, lacrosse, and other activities.
- Fairbank Community Center is home to the Atkinson Pool which consists of an eight-lane, 25-yard lap pool and separate diving well. The pool is open to Sudbury residents and non-residents with the payment of a daily fee. The center also has a volleyball area, basketball courts, program rooms, and a gym.
- Featherland Park offers a softball field, pickleball courts, basketball courts, Little League baseball fields, public tennis courts, and an area for public ice-skating in the winter months, weather permitting.
- Feeley Park has areas for baseball, softball, pickleball, and tennis.
- Haskell Recreation Area, which is near the Fairbank Community Center, provides fields for soccer and lacrosse, Haskell Playground, a full-size baseball diamond, and a walking trail around the field.
- School fields are made available to the Park and Recreation Department during non-school hours and provide a further valuable recreational resource.
- Ti-Sales Field is used for Ultimate Frisbee teams.

[38] *Sudbury Water District 83rd Annual Report*, file:///H:/Projects/2018/18085%20Sudbury%20Master%20Plan/Background%20and%20Research/Town%20Services/Sudbury-Water-Annual-Report_2018.pdf



LEGEND

- Numbered Highway
- Major Road, Collector
- Local Roads
- Streams
- Surface Water
- Schools
- Town-Owned Recreation and Conservation Areas

Map 13: Recreation Resources

Health Department

The Health Department has eight staff members who are responsible for addressing the public health needs in Sudbury including the Department Director, Public Health Nurse (Board of Health), Social Worker, Mental Health Outreach Case Manager, and two social work interns as well as two administrative staff. In the department, community-based nursing services are provided by the Board of Health Nurse. Mental health-care services are provided through the Community Social Workers.

Environmental Health Issues

The Health Department conducts site evaluations for subsurface sewage disposal, and issues permit/licensing and inspections of food service establishments, public swimming pools, stables, septic installers and haulers, septic system and private well installations, and summer camps. It is also involved with other municipal departments addressing housing code violations, mosquito control, hazardous waste, animal/rabies control, public groundwater supplies, and emergency preparedness.

Over the past five years, the Health Department revised the Board of Health regulations to be more aligned with current environmental and public health goals and objectives. This was done by reevaluating regulations to determine those that were no longer relevant today and drafting new policies more consistent with current standards, technology, renewable energy, etc. This work also included coordination with the Conservation Office to ensure definitions of natural features were consistent.

Board of Health regulations recently revised or currently under review include:

- Tobacco Control — Revised 2018
- Fee Schedule — Revised 2016
- Stables and Keeping of Animals — 2012 (In need of revisions)
- Commercial Refuse Hauler — 2012
- Floor Drain — 2011
- Outdoor Hydronic Heater — 2011
- Sewage Disposal — 1998 (Currently being revised)
- Domestic Water Supply-Potable Well — 1981 (In need of revisions)

Community Social Worker

The Health Department is also responsible for the social service needs of the community. Its social workers focus on providing community education on public health issues through the Town's website, newsletter, TV, events, etc. They also collaborate with community groups and Town departments such as the Police and Fire Departments to address community needs and concerns and to strengthen community connections. Some of their services consist of:

- Providing referrals to services related to mental health, medical, parenting, housing, finances, basic needs, etc.
- Disseminating information on area resources and services for the elderly, individuals with disabilities, children and families, low-income individuals, and those with a variety of other specialized needs.
- Assisting the community by connecting residents with community supports to help complete applications for services such as food stamps, social security disability, fuel assistance, Department of Mental Health (DMH) and Mass Health programs, etc.
- Accepting and reviewing applications for the HOPE Sudbury Fund.
- Receiving and managing community donations.

To date, the social workers continue to provide services to address needs within the community and to increase overall wellbeing and self-sufficiency. These services were offered in part due to many volunteers. The annual Social Worker Stats shows an increase in many services in Town from 2017 to 2018, such as food pantry delivery, HOPE applications, and referrals. The overall number of individuals served also increased from 1,090 in 2017 to 1,634 in 2018, with the highest assistance occurring during the holiday season (November and December).

Board of Health Nurse

The Board of Health Nurse provides numerous community health services in town, such as:

- Investigates and reports all communicable diseases to the Massachusetts Department of Public Health for the Town of Sudbury.
- Facilitates educational activities throughout Town and partners with various departments and organizations.
- Provides flu clinics for town residents and Town employees in the fall.
- Offers blood pressure and glucose screening for all town residents at the Sudbury Senior Center, Goodnow Library, and at the Sudbury Housing Authority.
- Leads the Medical Reserve Corp volunteer drills and recruitment.
- Licensed and inspected all recreation camps in the town.

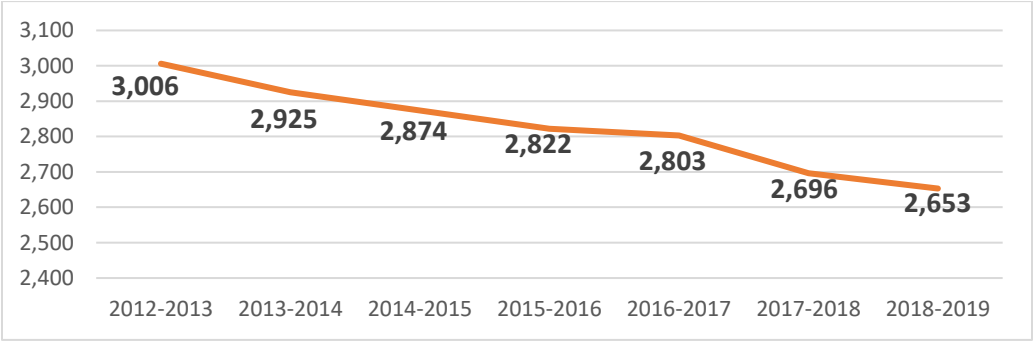
School Facilities

Sudbury Public School District

The Sudbury Public School District (SPS) serves the pre-K to grade 8 student population in town. It includes four elementary schools (grades pre-K to grade 5) and one middle school (grades 6 to 8) (See Map 13):

- Curtis Middle School
- Haynes Elementary School
- Nixon Elementary School
- Loring Elementary School
- Noyes Elementary School

For the past six years, the district has been seeing a slow decline in enrollment, as shown in Figure 32. In the 2018-2019 school year, enrollment was 2,653, a 12% decrease since the 2012-2013 school year which had 3,006 students.



Source: MA Department of Elementary and Secondary Education Demographics Study (2019)

Figure 32: Student Enrollment of Sudbury School District, 2012-2019

The Town has been working to improve the school facilities. According to the 2017 Capital Projects and Town Meeting Articles, funding was requested for improvements to school facilities including:

- Replacement of a rooftop HVAC unit at either the Curtis Middle School or the Loring School.
- Improvements to sidewalks and parking lots at all SPS schools, including a crosswalk at Nixon Elementary.
- Maintenance of school storage and shed buildings.
- Improvements to security and access control by installing electronic card access and exterior security cameras at all SPS schools. [39]

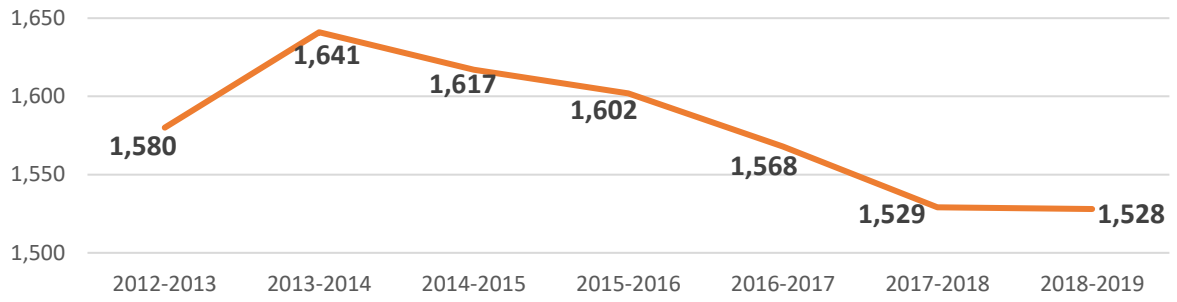
In 2018 SPS committed to modernizing school playgrounds by using the Universal Design concept, which allows for multigenerational recreational spaces and also makes all playgrounds compliant with the Americans with Disabilities Act (ADA) and the Massachusetts Architectural Access Board. [40]

[39] Capital Project and Town Meeting Article FY 2017, https://s3-us-west-2.amazonaws.com/cdn.sudbury.ma.us/wp-content/uploads/sites/290/2016/02/Capital-Projects-FY17.pdf?version=cc439ceea65474d208766cd4bf569f10

[40] Town of Sudbury, Project Submission Form, *Playground Modernization for Sudbury Public Schools* https://sudbury.ma.us/cpc/wp-content/uploads/sites/275/2017/09/FY18-STM-Project-Form-Playground-Modernization-for-Sudbury-Public-Schools.pdf?version=d283e95d19e03e7cde299b290034ae15

Lincoln-Sudbury School District

The Lincoln-Sudbury School District oversees the Lincoln-Sudbury Regional High School (LSRHS) where the majority of high school students in Sudbury and Lincoln attend. The school is located in Sudbury and serves grades 9 to 12. LSRHS is organized in a "house system" where students are divided into four houses. Each house is staffed by an associate principal, school guidance counselors, a clinical counselor, and a house assistant. Similar to the Sudbury School District, enrollment has been declining for the past five years, as shown in Figure 32. Since the 2013-2014 school year, enrollment has been declining slowly but has remained largely flat since 2017.



Source: MA Department of Elementary and Secondary Education Demographics Study (2019)

Figure 33: Student Enrollment of Lincoln-Sudbury Regional High School, 2012-2019

Lincoln-Sudbury Adult Education

The Lincoln-Sudbury School District offers various courses and activities for adults. The adult education program aims to engage in activities to gain new forms of knowledge, skills, attitudes, or values leading to personal fulfillment as a lifelong learner.

Minuteman Regional Vocational Technical High School District

Since its founding in 1971, Sudbury has been a member of the Minuteman Regional Vocational Technical High School District. The regional high school is located in Lexington and offers career and technical education in a variety of majors. The Minuteman district included 16 members communities, however, in 2016, that membership dropped to ten when Sudbury, along of five other towns — Boxborough, Carlisle, Lincoln, Wayland, and Weston — voted to leave the district.

The Board of Selectmen created the Vocational Education Options Committee on July 22, 2014 to generate, evaluate, and report on best options for the Town of Sudbury in selecting a vocational school for local students. The Board of Selectmen dissolved the committee on May 17, 2016.

In April 2016, Vocational Education Guidance Committee was established to evaluate the vocational high school choices for Sudbury students beginning in the school year 2017-2018 and to make a recommendation to the Town, Board of Selectmen, and stakeholders regarding the school for Sudbury.

Goodnow Library

The Goodnow Library was the second free public library established in Massachusetts, opening on April 4, 1863. The library was bestowed on the Town by Sudbury native John Goodnow. It is managed by eight staff members, including a Library Director, Assistant Director, and many volunteers. Today, the library is home to more than 300,000 circulating items and is visited by about 175,000 patrons a year including about 26,000 children. The library has seen an increase in families with school-age children and older residents.

Goodnow Library offers many programs and services to the residents of Sudbury and nearby communities including book clubs, meeting rooms, museum passes, and technology. The library also provides:

- Children's Services — weekly programs, diverse learning materials, holiday events, summer reading programs, and recreational materials.
- Adult Services and Summer Reading Program — monthly writing workshop series and weekly hobby meet-ups for people with various interests. Home delivery is provided to the Town's older population.
- Teen Services — programs including maker space, book clubs, crafts, robotics, computer, and gaming programs as well as college admission application assistance and 3D design. The library also has a teen room which offers a space for middle and high school students to talk, study, relax, and read.

The Goodnow Library also collaborates with various Town departments on community activities and services. The departments of Public Works, Police, and Fire collaborate with the library to bring Sudbury Truck Day every year. The family-friendly event allows kids to come and see a variety of trucks from each department. The event brings hundreds of families from Sudbury and nearby towns to the library. Additionally, the library also works the Sudbury Senior Center on homebound deliveries.

The Library uses its 2018-2022 Strategic Plan[41] to allocate resources and make decisions that address the needs of staff and the community as a whole.

Senior Services

Senior Center

The Sudbury Senior Center is located in the Fairbank Community Center. It was opened as an addition to the north side of the Fairbank building in 1990 serving about 1,625 residents. Today it is a focal point for Sudbury seniors by providing social, recreational, and educational activities, as well as support services such as shopping and medical transportation volunteers (FISH). In 2017, the Center reported serving an

[41] https://goodnowlibrary.org/wp-content/uploads/sites/380/2017/10/Goodnow-Library-Strategic-Plan-2018-2022.pdf

estimated 3,929 residents,[42] and there are approximately 24,000 visits or service units per year. The center is operated by five staff including a Director, Program Coordinator, Administrative Coordinator, Outreach Information Specialist, and Volunteer Program Coordinator. The center also operates with the assistant of many volunteers.

The Senior Center collaborates with many organizations within the community including the Chinese American Association of Sudbury to bring people together and to enhance activities at the center. Programs and services offered at the center include nutrition, transportation, handyman, and health services.[43] In addition to these services the Center also offers the following programs for seniors:

- Art and Crafts Classes and Presentations
- Clinics and Health Sessions
- Fitness Classes
- LINC (Learning Intergenerational Community) Intergenerational Events
- Lifelong Learning
- Lunch and Learn
- Property Tax Work-Off Program
- Travel: Day trips and Extended Trips
- Social and Recreational Activities

One of the services the Senior Center offers that benefits not only seniors, but the Town as a whole is the Tax Work of Program. Through the Senior Center eligible Sudbury seniors and veterans may be able to work in a Town department and "earn" a tax abatement for the following year. In the past years, there's been seniors and veterans working at the Town Clerk's office, the Sudbury Senior Center, the IT Department, the DPW, and the Sudbury Public Schools. In addition to working in the program, many of the participants also dedicate volunteer hours in their departments.

Volunteerism is very important at the Senior Center. Many of the programs and services rely heavily on people dedicating their time to help the center. In the 2017 Annual Report, the center logged 4,486.5 volunteer hours. The volunteer program includes activities such as shopping, lawn cleanup, health clinics, Friends in Service Helping (FISH) Drivers, home delivery meals, and more.

Council on Aging

The Council on Aging (COA) is a nine-member volunteer board appointed by the Board of Selectmen to advocate for the needs of Sudbury's older residents. The mission of COA is to:

- Identify the needs of the older adult population.

[42] https://s3-us-west-2.amazonaws.com/cdn.sudbury.ma.us/wp-content/uploads/sites/342/2018/05/2017TownReport.pdf?version=0be9215c46e09a0e268d7bea5325834c
[43] https://sudburyseniorcenter.org/

- Educate the community.
- Design, promote, and implement services to fill needs of the older adult population.
- Coordinate existing services in the community.
- Encourage and support any programs that are designed to assist older adults in the community.[44]

The COA also works with the Commonwealth of Massachusetts Executive Office of Elder Affairs to stay abreast of all state and federal legislation concerning funding, information exchange, and program planning that may impact older adults.

As a recognition of the need to prepare for the aging population in Sudbury, the COA and the Senior Center spent time learning how to become a more "age and dementia-friendly" or "livable" town. In 2019, they released *Livable Sudbury: A Community Needs Assessment*. The report includes a self-assessment that identified areas needing improvement, and established goals and recommendations toward that end. The overall purpose of the research in the report is to inform Sudbury's effort to be "all-age" friendly and inclusive in pursuit of a more livable community for all residents.[45] It is an important document in the development of policies of the Sudbury Master Plan and other documents used by decision-makers.

Veterans Services

The Veterans Agent Department is managed by two employees, a Veteran Agent, and Administrative Assistant. The department assists Sudbury residents in acquiring benefits through federal and state programs offered to veterans, active-duty personnel, and families. Programs provided for those who qualify address financial, burial, education, housing, and medical needs, among other services.

The Veterans' Agent gets assistance from the Veterans Advisory Committee. The mission of the five-member committee is to advise the Agent and provide input as to the health of the veteran community and those specific areas of interest that most concern or impact the town's veterans.

Energy Conservation and Renewable Energy

The Town has been working actively to promote energy savings and renewable energy generation.

Energy and Sustainability Committee

In 2009, the Board of Selectmen created the Energy and Sustainability Committee to help develop and implement policies, programs, and projects that will promote energy savings, renewable energy generation, and sustainability planning. The Committee also provides energy efficiency consulting to Town committees, and the local and regional schools. The Committee collaborates with Town and school personnel to determine best approaches for improving the energy efficiency of Town and school

[44] https://sudbury.ma.us/councilonaging/members/
[45] https://sudburyseniorcenter.org/wp-content/uploads/sites/381/2019/02/Livable-Sudbury-Report.pdf

buildings and vehicles, investigates alternative energy technologies, and identifies funding opportunities to help the Town achieve its energy and sustainability goals.

Massachusetts Green Communities

The Green Communities Designation and Grant Program is an initiative of the Massachusetts Department of Energy Resources (DOER) that provides a road map along with financial and technical support to municipalities that meet specific clean energy goals established by DOER.[46] In addition to receiving the title of "Green Community," a city or town that receives this designation is qualified for special energy efficiency and renewable energy initiatives and incentives offered by DOER.

In 2010, Sudbury was one of the first in a group of 35 municipalities to be designated as a Green Community.[47] The Town received incentives to fund energy conservation measures, lighting, weatherization, and rooftop unit replacement in municipal facilities including Goodnow Library, the DPW Building, the Public Safety Complex, Town Hall, and the Center Office Building.

Renewable Energy – Solar

Since becoming a Green Community and with the help of the Energy and Sustainability Committee, the following renewable energy projects have been achieved.

> On November 13, 2013, Sudbury officially launched a photovoltaic solar facility on the Town's closed landfill at 20 Boston Post Road. The solar array operates at no cost to the Town and has produced approximately $700,000 in revenue and provided $28,000 in Payment In Lieu of Taxes.
>
> In May 2015, the Lincoln-Sudbury Regional High School Solar Canopy was installed over the school's primary parking lot. The 3,600-panel solar canopy is the first of its kind at a Massachusetts high school. This canopy saves the Lincoln-Sudbury Regional High School over $100,000 per year in energy costs and the solar generation offsets over 1,000 tons of carbon dioxide equivalent (CO2e) annually.
>
> In 2017, the Town of Sudbury approved a Town-Wide Electricity Aggregation Program for residents and businesses to purchase electricity from different renewable energy options. The primary goal of this program is to provide annual savings and rate stability. After a competitive bid process, Dynegy was selected as the Town's electricity supplier for 36 months effective August 2017 through August 2020.

[46] https://www.mass.gov/guides/becoming-a-designated-green-community
[47] https://www.mass.gov/files/documents/2019/05/02/map-summary-green-communities-240.pdf

Town-Owned/Managed Communications

The Town of Sudbury recognizes the importance of disseminating information to its residents efficiently and effectively. The Town has worked to improve the line of communication by not only operating its Town website, but also including social media and Sudbury TV as ways to reach residents.

Website

The inclusive Town website consists of information about Town departments, boards, commissions, committees, schools, and projects. Exploring the website, residents can find information about each topic in its designated web page. Also, on the website are job listings, community events, Town newsletters, and all other information relating to the Town.

Sudbury TV

Founded in June of 2008 by members of Sudbury's Cable Committee, Sudbury TV provides local TV services to the Town. They connect people to important events in town such as:

- Town Government and Committee Meetings
- Locally produced programming including interviews, interest shows, Town and political forums, Senior Center, library, and other local organization presentations and events
- School events, graduation, musical presentations, and sports
- The HOPE Sudbury Telethon
- Publicly available shows of interest

Volunteerism

Volunteering offers vital help to people in need while creating and cultivating a community that cares. In Sudbury, volunteerism is embedded in many components of the Town's operation. For example, the public safety component consists of paid staff and volunteers working collectively to keep residents safe and healthy. Volunteer groups such as Community Emergency Response Team and the Medical Reserve corps dedicate their time to ensure safety in the community, especially during emergencies.

The Health Department also relies on volunteers to achieve many of its department goals, especially its social service responsibilities. Along with the Town Social worker, volunteers help with food pantry delivery especially during the holiday seasons. In 2019, the Social Worker helped launched the Neighbor Brigade chapter in Sudbury. See below for more information.

The education component in Town consists of many volunteers as well. In the Sudbury school system, many of the schools have opportunities for parents to volunteer and be actively engaged in the school system. The Goodnow Library also relies on volunteers. The library utilizes teens and adult volunteers for various educational activities at the library.

Neighbor Brigade (Sudbury Chapter)

Neighbor Brigade establishes community-specific networks of volunteers that can be mobilized to help Sudbury residents facing crisis manage day-to-day tasks. Residents in need can request assistance online for free services including:

- Meal Delivery
- Rides to Medical Appointments
- Basic Household Chores
- Dog Walking and Light Pet Care

Open Space and Recreation

The Town owns and maintains recreation and open space land to meet diverse objectives including public access to nature, opportunities for active recreation, and protection of critical natural resources. These resources are managed primarily by the Park and Recreation Department and Conservation Coordinator. The Conservation Commission and Park and Recreation Commission also play key roles in developing policies and management strategies for these properties. Other entities own recreation and open space lands with public access in Sudbury, including federal and state agencies and non-profit organizations.

Open Space & Recreation Plan

The Town uses its 2009-2013 Open Space and Recreation Plan (OSRP) to plan for recreation and open space needs. It outlines the Town's goals and objectives, and includes resource inventories, priorities for resource protection, needs of the community, and an action plan to meet those needs. It is intended to be updated every seven years. The OSRP is a companion to the Master Plan and much of the information is referenced and summarized here.

The goals identified in the plan are:

1. Preserve town character through the permanent protection of undeveloped land, surface water bodies and wetlands, agricultural lands and uses, publicly cherished viewscapes and historic sites.
2. Protect land areas and migration corridors for the well-being of indigenous flora and fauna.
3. Protect the quality and quantity of the Town's water supply, through both aquifer protection and water use education.
4. Protect and restore the quality of the town's ponds and waterways.
5. Provide and maintain a diversity of conservation and recreation land uses reflecting the interests and needs of the whole community, including opportunities for both active and passive recreation.
6. Develop and maintain trail linkages by connecting old or creating new walkways and trails for non-motorized recreational vehicles, such as bicycles.
7. Continue to provide outreach to increase awareness among residents of the range of the Town's open space and recreational assets, and their possible uses and entry points.

The OSRP is currently being updated.

Open Space and Recreation Land

The term "Open Space" is defined in the Massachusetts Open Space and Recreation Plan Handbook (2008) as "conservation land, forested land, recreation land, agricultural land, corridor parks and amenities such as small parks, green buffers along roadways or any open area that is owned by an

agency or organization dedicated to conservation. However, the term can also refer to undeveloped land with particular conservation or recreation interest. This includes vacant lots and brownfields that can be redeveloped into recreation areas. Some open space can be used for passive activities such as walking, hiking, and nature study, while others are used for more active recreational uses including soccer, tennis, or baseball." Because open space land can be both public and private property, public access can vary.

In Sudbury, there is approximately 15,842 acres land area, 32% of which are conservation and recreational open space (Table 40). 53% of the conservation and recreational open space lands are protected under Article 97 (legal protection to ensure lands acquired for conservation purposes are not converted), while 44% are not, and 3% are unknown. The inventory includes properties that are owned by public, private, and non-profit entities, and have different levels of legal protection from future development. This inventory is depicted in Table 40. These numbers might change as the Town is currently updating its Open Space and Recreation Plan.

Table 40. Inventory of Recreation and Open Space Land (2019)

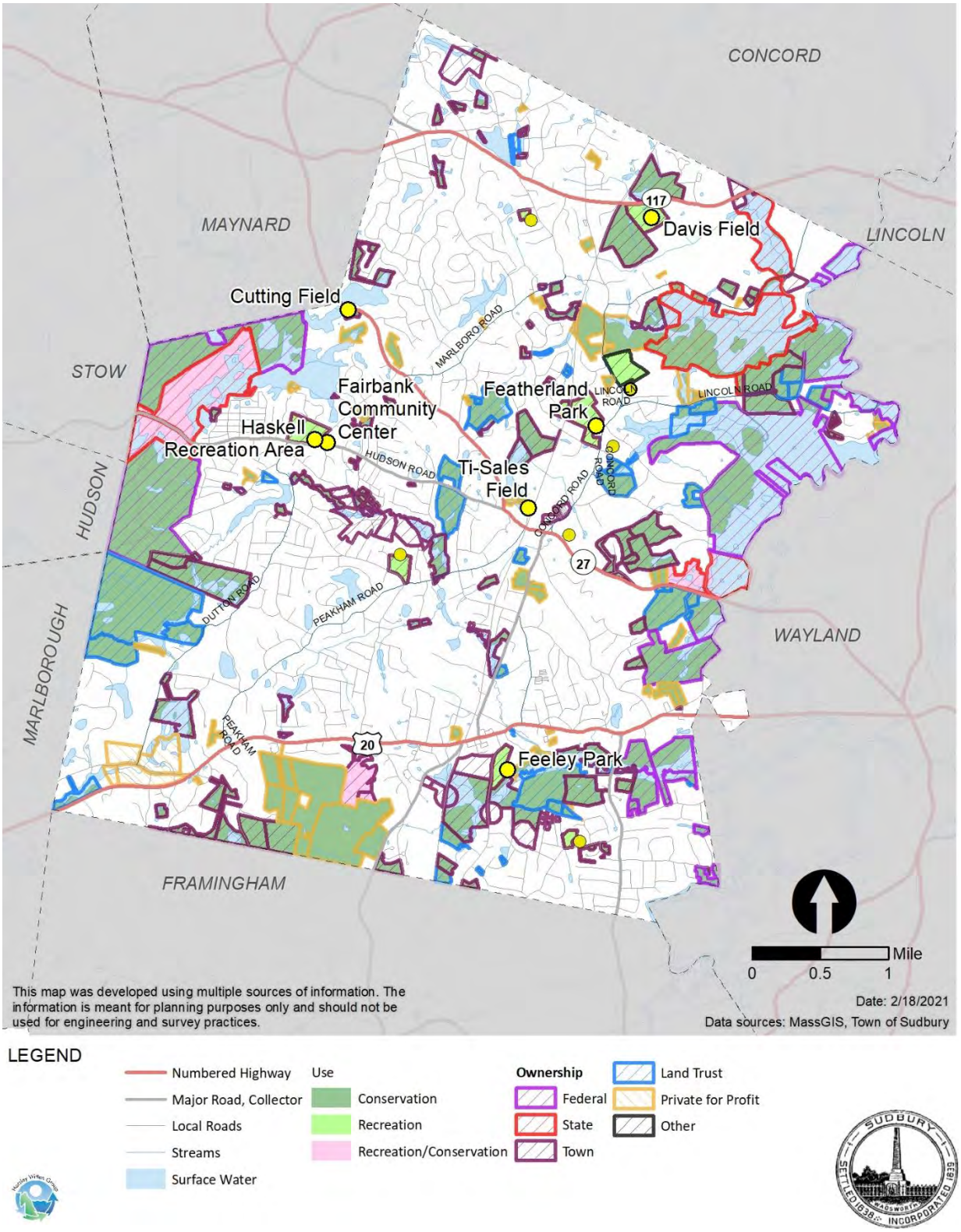
Landowner	Acreage
Private	647
Federal	1,364
State (Incl. Sudbury Water District)	726
Town	1,430
Sudbury Valley Trustees	673
Other (Lincoln-Sudbury Regional School District)	29
TOTAL	**4,869**

Source: MassGIS August 2019

Recreational Resources

Recreation, as a municipal service, focuses on developed facilities such as playgrounds, baseball fields, and basketball courts as well as organized programming offered through the Sudbury Park and Recreation Department. Town facilities are also shown on Map 14 and include:

- Fairbanks Community Center is approximately 40,000 square feet and home to the Recreation Department (including Atkinson Pool), the Sudbury Senior Center, and the administrative offices of Sudbury Public Schools (see discussion of the senior center and schools in Town Services). The Recreation Department provides 690 programs serving 9,700 participants. In 2015, the pool had over 72,000 users. In addition to regular recreation programming, the Department hosts a teen center, preschool, summer camp, and increased programming on Wednesdays when Sudbury Public Schools have a half day.
- Feeley Park has areas for baseball, softball, pickleball, and tennis.
- Davis Field is used for soccer, lacrosse, and other activities.



Map 14: Recreation and Open Space Resources

- Haskell Recreation Area, which is near the Fairbank Community Center, provides fields for soccer and lacrosse, Haskell Playground, a full-size baseball diamond, and a walking trail around the field.
- Featherland Park offers a softball field, pickleball courts, basketball courts, Little League baseball fields, public tennis courts, and an area for public ice-skating in the winter months, weather permitting.
- Ti-Sales Field is used for Ultimate Frisbee teams.
- Cutting Field is used by many community groups for soccer and lacrosse.
- Public school fields are made available to the Park and Recreation Department during non-school hours and provide a further valuable recreational resource. These include the community field, soccer and lacrosse turf fields, and softball field.

Lincoln-Sudbury High School teams frequently use town facilities, including:

- Baseball diamond at Haskell field
- Baseball diamond at Feeley field
- Softball diamond at Haskell field
- Tennis courts at Featherland field

In 2019, the Town added to its recreation resources with the purchase of Camp Sewatora and Broadacres Farm. The current use of the properties remained the same as the Town evaluate options for each site.

Open Space Land

Open space land in Sudbury is both publicly and privately held and has different levels of public access and protection.

Chapter Lands Tax Program

As of July 2018, the Town of Sudbury has a total of 1,019.26 acres of land in the Chapter 61, 61A, and 61B programs. The voluntary program offers a property tax break for landowners willing to commit to keeping some or all of their land undeveloped for a specified period. Table 41 shows the types of land and the number of acres in Town that are in the program. One property in Town has land that is designated as both Chapter 61 and 61B.

Table 41: Chapter 61 Properties

Type	Program Acres
Chapter 61 (Forestry)	11.64
Chapter 61 A (Agriculture)	735.69
Chapter 61 B (Recreation)	233.63
Chapter 61 & 61B	38.3
Total	**1,019.26**

Source: Town of Sudbury Conservation Coordinator

Public Land

There are approximately 3,417 acres of land dedicated to open space and recreation with public access, including Town recreation facilities, that are owned by different government entities. There are approximately 241 acres of areas without site names. Properties that were identified are shown in Table 42, as well as their protection status. Some of these lands are permanently protected and others are not.

Table 42: Public Land with Public Access

Property	Acres	Owner	Protection Status
Assabet River National Wildlife Refuge	473	Federal	No
Barton Farms Conservation Area	16	Town	Yes
Broadacres Farm	34	Town	Yes
Camp Sewataro	44	Town	Yes
Carding Mill Pond Conservation Area	43	Town	Yes
Crystal Lake Parcel	3	Town	Yes
Davis Farm Conservation Area	61	Town	Yes
Flintlock Lane Conservation Area	1	Town	Yes
Forest Street Parcel	4	Town	Yes
Frost Farm Conservation Area	46	Town	Yes
Great Meadows National Wildlife Refuge	891	Federal	No
Haynes Meadow	22	Town	Yes
Hopbrook Marsh Conservation Land	96	Town	Yes
Hunt Road Conservation Area	2	Town	Yes
Johnson Farm Conservation Area	33	Town	Unknown
Kato Drive Conservation Area	6	Town	Yes
Lincoln Meadows	71	Town	Yes
Mahoney Farm	7	Town	Yes
Marlborough-Sudbury State Forest	240	State	Yes
Mineway Brook Parcel	4	Town	Yes
Morse Road Conservation Area	3	Town	Yes
Newfell Conservation Area	20	Town	Yes
Nobscot Reservation	108	Town	Yes
Pantry Brook WMA	403	State	Yes
Parcel Near Water Row	5	Town	Yes
Piper Farm Conservation Area	63	Town	Yes
Poor Farm Meadow Conservation Land	55	Town	Yes
Raymond Reservation	109	Town	Yes
Waite Parcel	7	Town	Yes
Wake Robin Conservation Area	49	Town	Yes
Wash Brook Parcel	29	Town	Yes
Total	**2,948**		

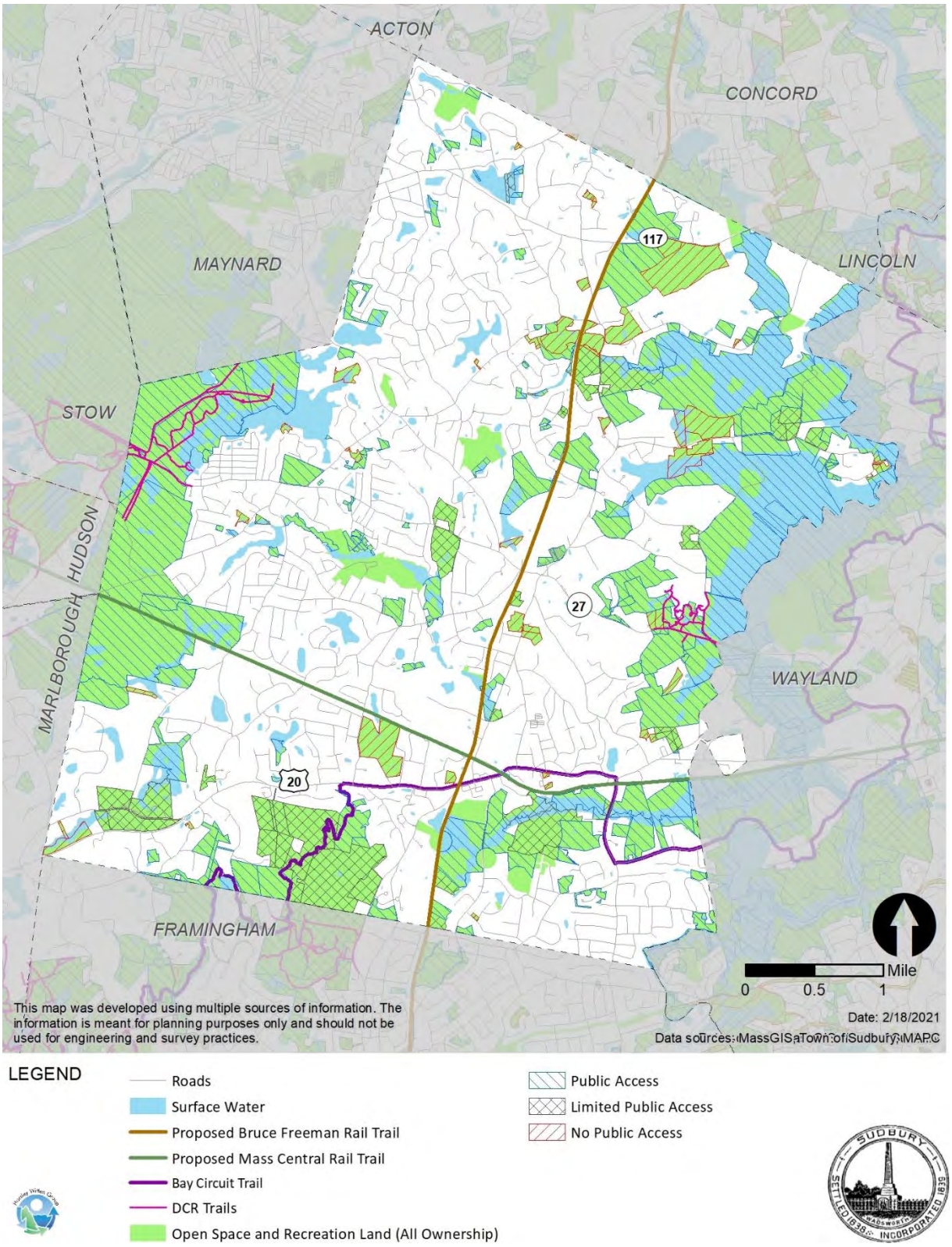
Source: MassGIS, May 2019, Town of Sudbury

Non-Profit Land

The non-profit land includes properties owned the Sudbury Valley Trustees (SVT) and the Sudbury Water District. These two entities are dedicated to protecting natural resources in town. SVT is a non-profit conservation organization to conserving land and protecting wildlife habitat in the Concord, Assabet, and Sudbury River basins. The Sudbury Water District provides an adequate supply of high-quality water to all District consumers.

Trails

Sudbury has an extensive trail network that connects many of the Town's conservation areas (

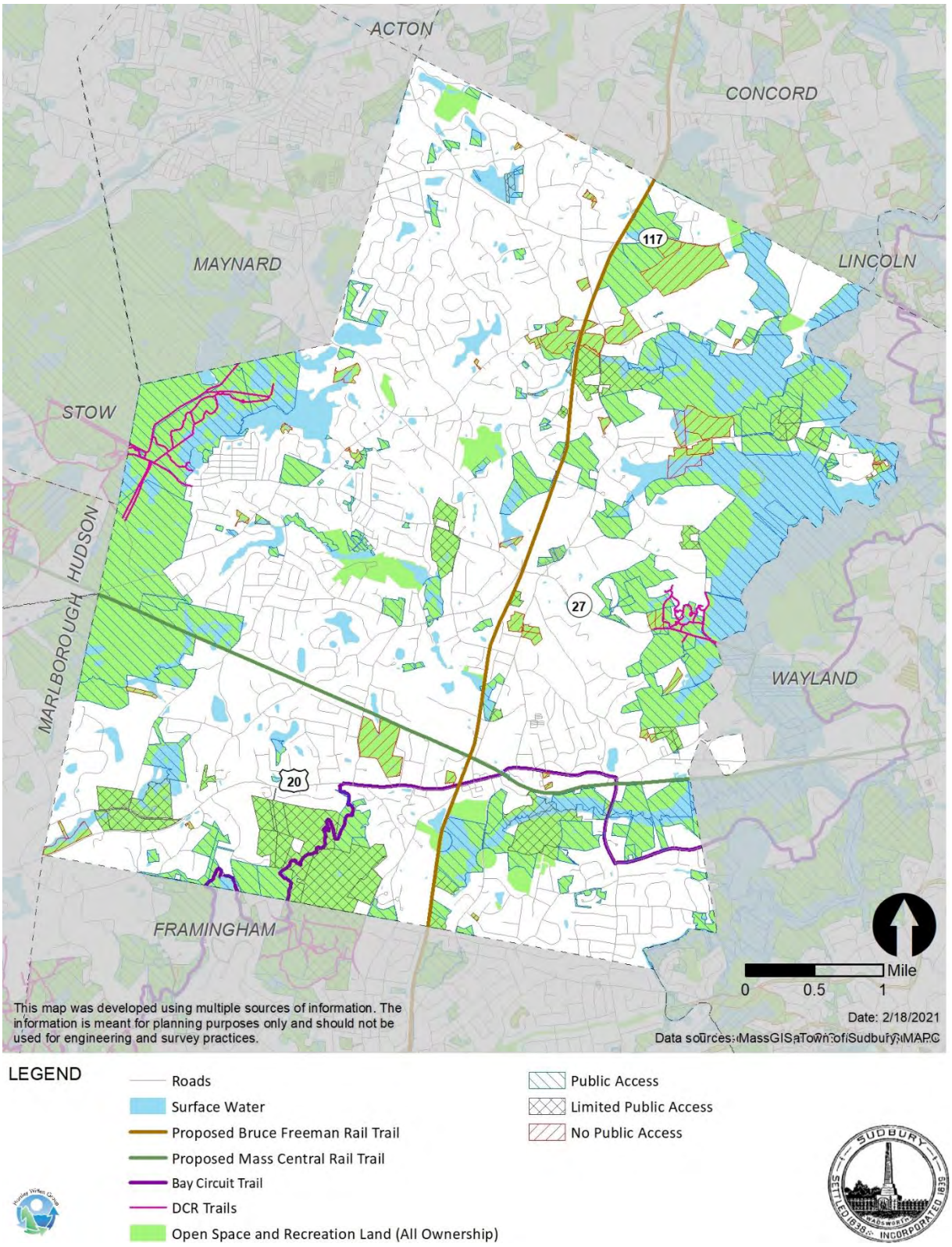


Map 15), including:

- Hop Brook Conservation Area
- Tippling Rock Conservation Area
- Barton Farm
- Nobscot Conservation Area
- Davis Farm
- Lincoln Meadow
- Haynes Meadow
- King Philip Woods
- Piper Farm
- Frost Farm
- Poor Farm Meadow
- Cutting Farm Conservation Land

The Conservation Commission offers programs and guided hikes.[48]

[48] Information about these areas and permitted uses are available at the Conservation Commission's website: https://sudbury.ma.us/conservation_lands/. The land use policy is found here: https://s3-us-west-2.amazonaws.com/cdn.sudbury.ma.us/wp-content/uploads/sites/273/2014/08/conslandregs090713final.pdf?version=9f3bc00832b72481c6f31dcfdd1fc3e5.



Map 15: Walking and Biking Trails in Sudbury

Recreation and Conservation Protection Tools

Town Committees and Local Organizations

Park and Recreation Commission

The Park and Recreation Commission members are elected by residents. It is a policy-making board responsible for ensuring high-quality year-round indoor and outdoor recreation facilities for Sudbury residents of all ages. It works closely with the Park and Recreation Department.

Sudbury Conservation Commission

The Conservation Commission was formed in 1962 to protect local natural resources and features. One of the Conservation Commission's most important responsibilities is protecting the ecological integrity of Sudbury's wetlands and the surrounding landscape. The Commission is also responsible for implementing and enforcing the Massachusetts Wetlands Protection Act and the Sudbury Wetlands Administration Bylaw. Its members work hard to educate Sudbury residents and businesses about living responsibly with wetlands, providing a homeowner's guide to wetlands, and information on the Town's Tree Removal Bylaw, among other resources.

Land Acquisition Review Committee

The Land Acquisition Review Committee (LARC) is a committee appointed by the Board of Selectmen to evaluate properties as they become available to the Town for conservation, recreation, municipal use, or development. Properties may come to be reviewed by LARC for a variety of reasons, including outright offers to the Town for purchase or the Town's exercise of right-of-first-refusal on Chapter Program lands. Evaluations determine the appropriateness for purchase or preservation by the Town, considering the following needs of the community:

- To preserve the character of Sudbury so defined by the Master Plan.
- To provide alternative housing so defined by the Housing Plan.
- To preserve and protect open space for conservation and recreation purposes, utilizing the Open Space and Recreation Plan.
- To provide for community activities.
- To preserve for future town/school use.
- To enhance municipal revenue, including commercial potential of properties.
- To protect natural resources, including water resources.

Sudbury Valley Trustees

The Sudbury Valley Trustees (SVT) is a 501(c)3 non-profit organization that focuses on protecting natural areas and farmland that surrounds the Sudbury, Assabet, and Concord Rivers. SVT and the Town of Sudbury collaborate to protect large and small tracts of land. SVT owns about 673 acres of land in town as of 2019.

Program and Policies

Conservation Easements and Restrictions

Conservation easements or restrictions are voluntary, legal agreements between the landowner and a conservation agency that permanently limits the development rights of the land but does not change the ownership of the land. Landowners retain many of their rights, including the right to own and use the land, sell it, and pass it on to their heirs. However, because the conservation easement or restriction is a legal document, all future owners of the property are required to abide by the easement stipulations.

Landowners can also participate in the Agricultural Preservation Restriction (APR) Program.[49] The program offers to pay farmland owners the difference between the "fair market value" and the "agricultural value" of their farms in exchange for a permanent deed restriction which keeps valuable farmland soil from being built on by development companies for non-agricultural purposes.

Community Preservation Act (CPA)

The Town of Sudbury has been committed to protecting and preserving its open space and recreational land for years. Sudbury was one of the first communities in the Commonwealth to adopt the Community Preservation Act (CPA) in 2002.[50] CPA allows cities and towns to adopt a property tax surcharge with revenues from this surcharge (plus state matching funds) to be used for open space preservation, the creation of recreation opportunities, the creation of community housing, and preservation of historic buildings and landscapes. Since the surcharge went into effect with the start of Fiscal Year 2003 on July 1, 2002, the Town has collected almost $15 million in funding for land protection and related efforts. In the same year the Town adopted CPA, it also formed the Community Preservation Committee. The committee consists of nine members who focus on:

- Studying the needs, possibilities, and resources of the Town regarding community preservation.
- Making recommendations to the legislative body for the acquisition, creation, and preservation of open space.
- Recommending funding allocations for preservation at Town Meetings.

Chapter Land Tax Program

The Chapter Land Tax Program[51] is a special designated tax status that offers a property tax break for landowners willing to commit to keeping some or all their land undeveloped and in use for forestry, agriculture, or recreation for a specified period. Properties are disqualified for the program if their application is not renewed, the property use is developed, or the property is under agreement for sale. The Town has a right of first refusal to purchase enrolled properties if the sale or development of the property is proposed during the Chapter enrollment period.

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[49] https://www.mass.gov/service-details/agricultural-preservation-restriction-apr-program-details
[50] Community Preservation Committee Report
[51] https://www.mass.gov/service-details/forest-tax-program-chapter-61

Article 97

To ensure clean water and undeveloped open space, Article 97 of the Amendments to the Massachusetts Constitution provides that property acquired for conservation purposes should be used for only conservation purposes only.

Natural Resources

Much of Sudbury's character is shaped by its open spaces, historic landmarks, conservation trails, scenic roads, and residents' love of the land. Natural resources provide important environmental, social, and economic benefits, including habitat for plants and animals, flood protection, recreation, economic livelihood, and improved air and water quality. Protection and management of these areas are important for the long-term health of a community and its resilience in the face of a changing climate.

Watersheds & Water Resources

Watersheds

Sudbury is located within the Sudbury-Assabet-Concord (SuAsCo) River watershed, which can be divided into nine sub-watersheds as shown in Map 16.[52] These were established by the Ponds and Waterways Committee, and allowed it to focus on manageable areas and to develop plans that are unique to the ecology of each watershed. Apart from the Goodnow Watershed, all of the other watersheds cross into neighboring towns emphasizing the regional nature of this issue. Additionally, all watersheds drain into the Sudbury River except for the Cutting and Powder Mill watersheds which drain into the Assabet River.

Protecting Sudbury's water resources ensures residents have access to clean source water for drinking and recreation. Residents depend primarily on groundwater from public wells associated with the Sudbury Water District. Maintaining the health of the rivers and land throughout the watersheds optimizes Sudbury's water quality and quantity for current and future usage.

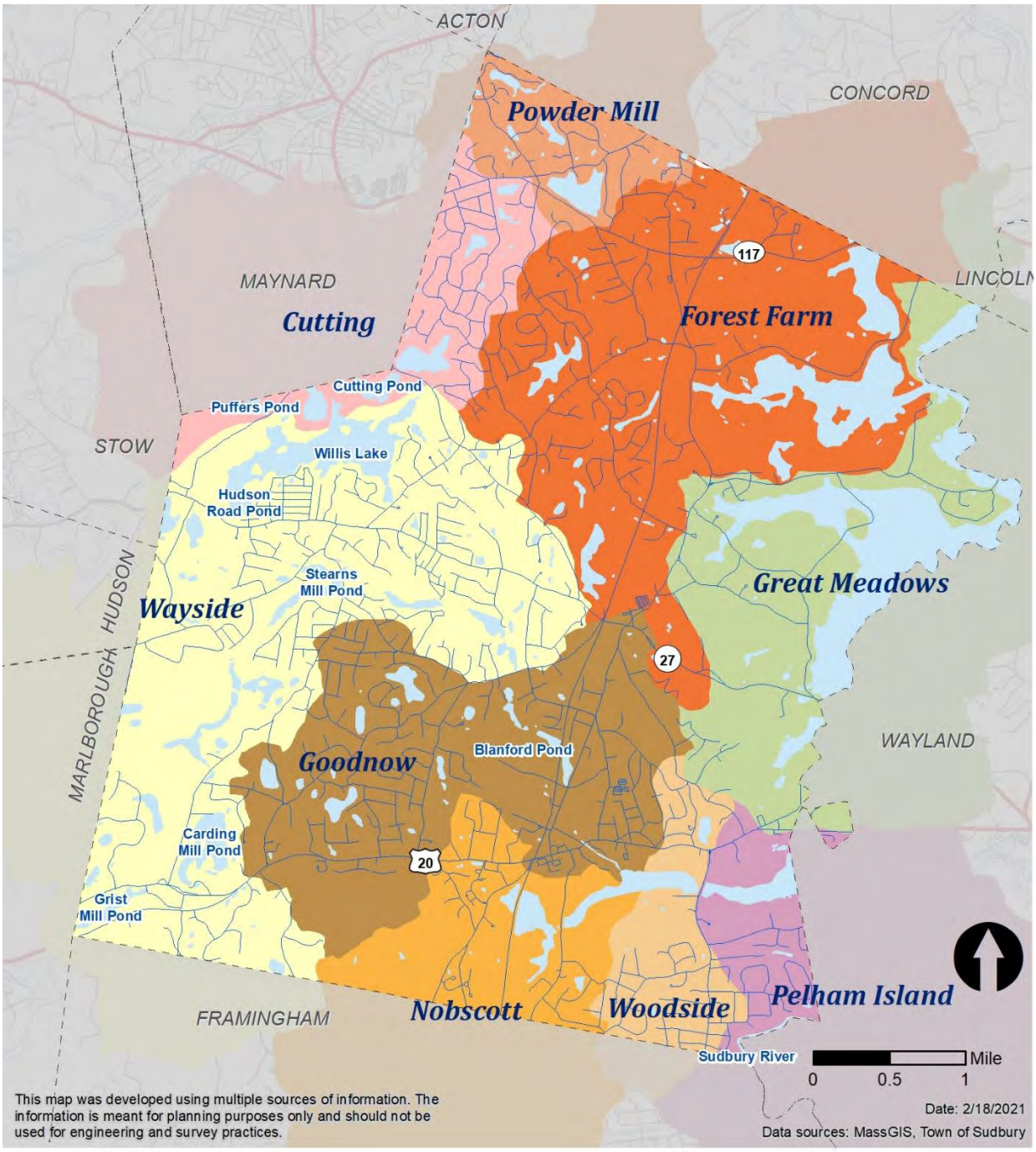
Surface Water Resources

In total, there are reportedly 190 ponds and 45 streams in Sudbury. Approximately 36% of unnamed ponds are on public lands. Major water resources include the Sudbury River and five small water bodies: Willis Pond, Carding Mill Pond, Grist Mill Pond, Cutting Pond, and Stearn's Mill Pond.

Sudbury River

The 29-mile-long Sudbury River was designated by Congress as a federally protected Wild and Scenic River in 1999 along with the Assabet and Concord Rivers. It is connected to the Great Meadow National Wildlife Refuge and is the largest body of water accessible in the town for numerous recreational uses such as hiking, birding, fishing, and boating.

[52] Ponds and Waterways Master Plan 2010



LEGEND

- Numbered Highway
- Major Road, Collector
- Minor Road, Arterial, Local
- Local Roads
- Streams
- Surface Water

Map 16: Watersheds & Surface Water

The Sudbury River has one of the most significant sediment contamination problems in the nation, especially mercury, which is prevalent in the region and also comes from atmospheric deposition. Over the years, nutrients have entered the river from point sources such as wastewater treatment plants and nonpoint sources such as stormwater runoff, which is not related to mercury, causing contamination of the water. Consequently, fish in the Sudbury River are unsafe for human consumption. The river also suffers from invasive species such as purple loosestrife and water chestnuts.[53]

Willis Pond

The largest pond in Sudbury, Willis Pond, is shallow and weedy but provides some recreational opportunities such as fishing, boating, and ice skating. The pond is in the Wayside Watershed and its outlet flows into Hop Brook through Run Brook. The north shore of the pond is unpopulated wetland bordering on the Assabet River National Wild Refuge.

Cutting Pond

Cutting Pond is privately owned and is located in the Cutting Watershed. The area offers public access through the Cutting Recreational Land. On the east side of the pond is recreational land, a parking area, a canoe launch, and a small picnic area. Many wetlands and wildlife habitat surround the pond.

While this area is protected from development as part of the Assabet River National Wildlife Refuge, it is still vulnerable to being affected by stormwater runoff from nearby developed areas.

Stearns Mill Pond

Formed in the 1600s when a dam was constructed along Hop Brook for power generation. Stearn's Mill Pond is now a popular spot for recreational activities such as fishing.[54] The area around the pond has recently been purchased by the Town and is being developed with a small parking lot and picnic area. The area is primarily surrounded by private property.

Carding Mill Pond

Carding Mill Pond, the second largest pond in Sudbury, is downstream from the Wayside Inn, the Grist Mill, and the Easterly Wastewater Treatment Plant (located in neighboring Marlborough). The pond is surrounded by private homes and a small, Town-owned, publicly accessible conservation area to the west. The pond[55] is vulnerable to nutrient pollution due to discharges from the treatment plant and has problems with weed growth.

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[53] Ponds and Waterways Master Plan 2010

[54] *Wayside Watershed Inventory*, file:///H:/Projects/2018/18085%20Sudbury%20Master%20Plan/Background%20and%20Research/Natural%20Resources/WaysideWatershedInventory.pdf

[55] Sudbury Open Space Recreation Plan 2009-2013

Grist Mill Pond

Located in the southwest corner of Sudbury, Grist Mill Pond offers fishing and bird watching.[56] Public trails touch the southern side of the pond through the Hop Brook property and the eastern side of the pond through the Wayside Inn property. The northern side is connected to private property. Much like the Carding Mill Pond, the Grist Mill Pond suffers from phosphorous-laden discharges from the Easterly Wastewater Treatment Plant in Marlborough.

Wetlands

There are a variety of wetland types in Sudbury from forested and shrub swamps to deep water marshes to ponds, lakes, and streams (Map 17). All are important water resources in town, playing a critical role in flood control and water quality maintenance as well as providing visual variety, wildlife habitats, and support for a healthy environment.

The Town also has wooded wetlands which occur on the fringe of the river floodplain. Such areas are used as a shelter for deer and other mammals during the winter season. According to the 2009-2013 Open Space and Recreation Plan, about 30% of Sudbury is wetlands.

Great Meadows National Wildlife Refuge has 548 acres of wetlands and is the largest public open space area in Sudbury. The area is adjacent to upland along the Sudbury River and has many recreational opportunities.

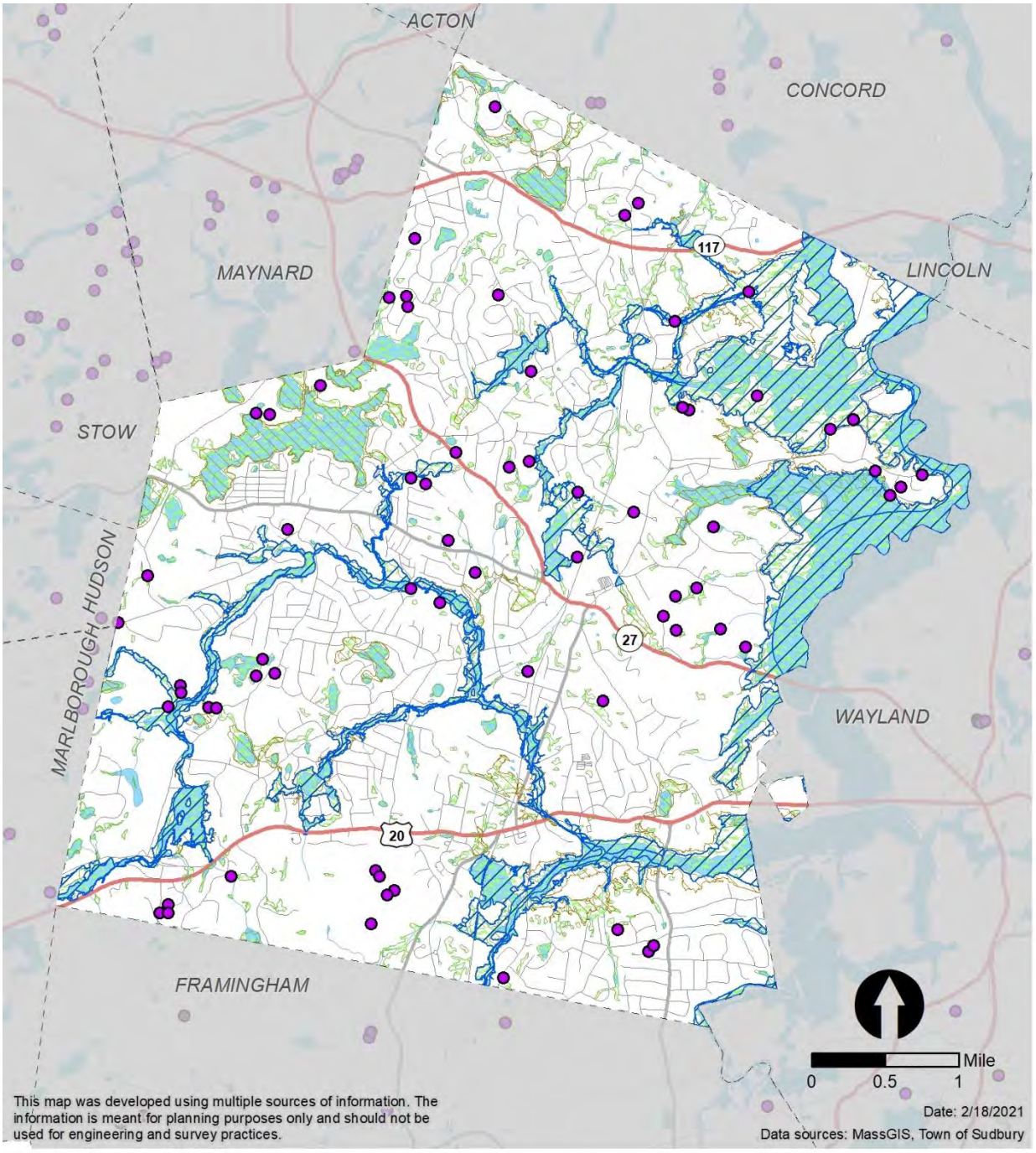
Floodplains

While rivers and streams provide valuable water resources, they can be prone to flooding during rain events. Floodplains are low-lying areas along rivers and streams that collect overflow. When periodic flooding occurs in these areas, sediments and nutrients are redistributed, creating rich soil deposits that often support unique plant life. Undeveloped floodplains are important in controlling erosion, buffering against catastrophic flooding, and serving as significant habitat for wildlife.

The largest floodplains in Sudbury are associated with the Sudbury River and its tributaries. The river's floodplain is a protected open space owned by the US Fish and Wildlife Service and the Massachusetts Department of Environmental Management. The river has been noted to raise more than twelve feet during certain times of the year. The surrounding floodplains serve as giant sponges that detain floodwaters and protect downstream areas more suitable for development from severe flooding.

The Federal Emergency Management Agency (FEMA) maps an area's potential flood risk on Flood Insurant Rate Maps (FIRMs). Shown on Map 17 are the primary risk classifications used in Sudbury which

[56] Ponds and Waterways Committee, *Public Access to Water Bodies in Sudbury* https://sudbury.ma.us/pwc/wp-content/uploads/sites/333/2015/01/Sudbury-Waterways-Public-Access.pdf



LEGEND

- Numbered Highway
- Major Road, Collector
- Local Roads
- Wetlands
- Streams
- Surface Water
- Certified Vernal Pools (May 2019)

Flood Zones

- AE (100 yr.) 1% Annual Chance Flood Hazard
- X (500 yr.) 0.2% Annual Chance Flood Hazard

Map 17: Water Resources

are AE Zone (1% annual chance of flooding and the base flood elevation is known) and X Zone (.2% annual chance of flooding, 500-year floodplain).

Vernal Pools

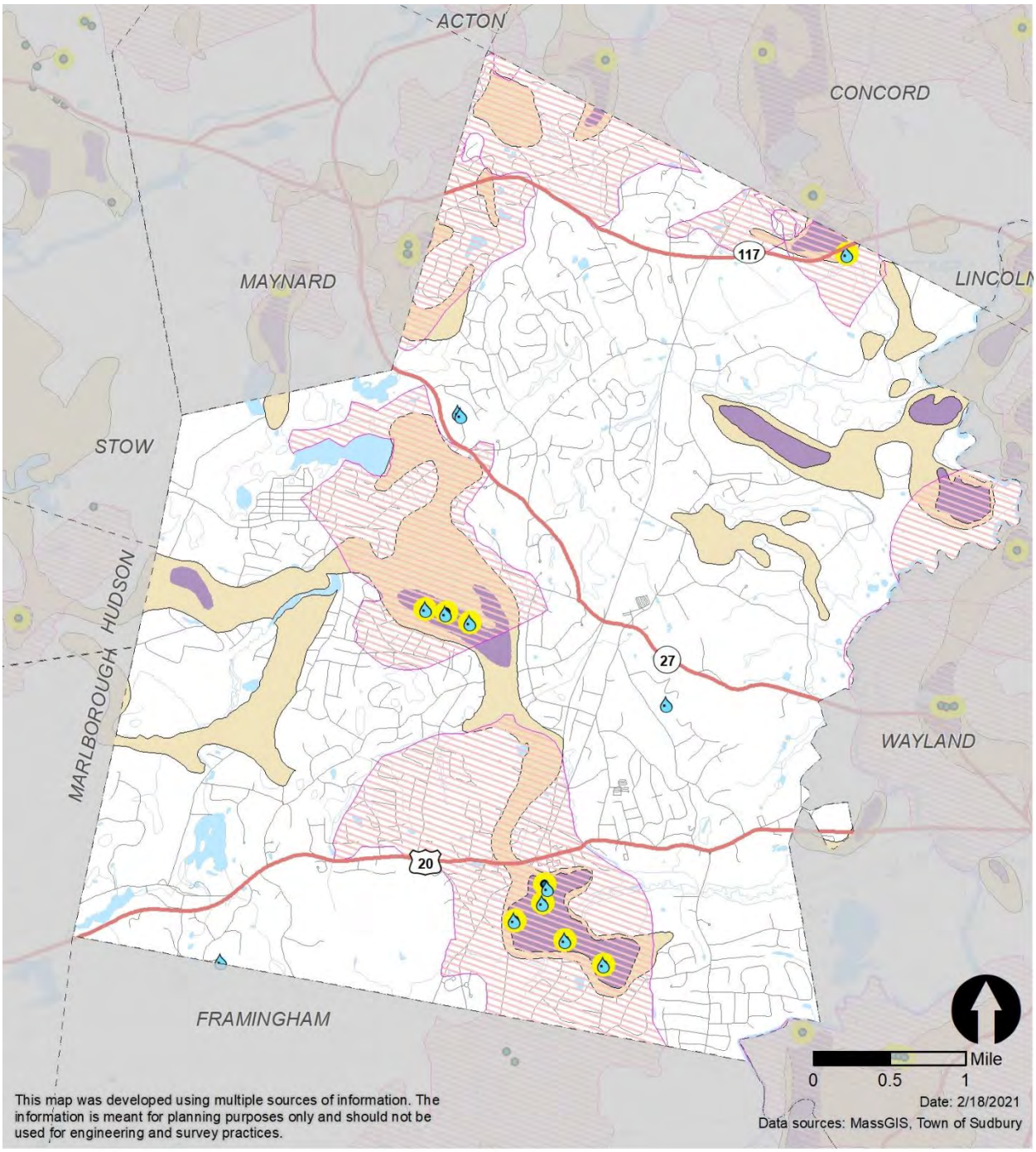
Vernal pools are temporary pools of water that provide habitat for distinctive plants and animals. They are generally small, shallow ponds characterized by lack of fish and by periods of dryness. Vernal pool habitat is extremely important to a variety of wildlife species for breeding, feeding, and other critical functions. Vernal pools receive certification by the Natural Heritage and Endangered Species Program (NHESP) according to the Guidelines for the Certification of Vernal Pool Habitat (Massachusetts Division of Fisheries & Wildlife, 2009), and are protected if they fall under the jurisdiction of the Massachusetts Wetlands Protection Act Regulations (310 CMR 10.00). Certified vernal pools are also afforded protection under the state Water Quality Certification regulations (401 Program), the state Title 5 regulations, and the Forest Cutting Practices Act regulations. As can be seen in Map 17, there are dozens of NHEPS Certified Vernal Pools spread all across Sudbury.

Aquifers

Map 18 shows the groundwater resources in Sudbury. Sudbury Water District supplies public drinking water from gravel packed ground wells in three separate aquifers: Raymond Road, Hop Brook, and Great Meadow. While Sudbury generally has conditions suitable for public wells, five of the Town's nine public water wells are in aquifers with a high vulnerability to contamination and pollution, specifically from the Boston Post Road/Route 20 business corridor.

Each public water supply well has an associated Zone I and Zone II. Zone I is the area closest to a well. Per the Massachusetts Drinking Water Regulations (310 CMR 22.00) it should be owned or controlled by the water supplier and limited to water supply activities. Zone II consists of the primary recharge area for the aquifer as defined through a hydrogeologic study. Each well in Sudbury has a Zone I radius of 400 feet.[57]

[57] 2017 Water Quality Report, http://www.sudburywater.com/wp-content/uploads/2018/06/SWD-2017-Water-Quality.pdf



LEGEND

- Numbered Highway
- Local Roads
- Streams
- Surface Water
- Public Water Supply Well (DEP)
- Zone I Water Supply Protection
- Zone II Water Supply Protection
- Aquifers
  - High yield (> 300 gallons per minute)
  - Medium yield (100-300 gpm)

Map 18: Groundwater Resources

Impaired Waters

According to the Massachusetts Department of Environmental Protection about 40% of the lakes, ponds, rivers, wetlands, and coastal waters in the nation are listed as impaired waters due to pollution. Under the Clean Water Act, MassDEP assesses the quality of its water bodies and reports its findings to the U.S. Environmental Protection Agency periodically. If a water body is not meeting its designated uses (such as habitat for fish and wildlife, fish consumption, or recreational uses, among others), it is considered impaired, and MassDEP must develop a plan to improve water quality. MassDEP is required to develop a total maximum daily load (TMDL) which is a pollution "budget" that calculates the maximum amount of a pollutant that can occur in a waterbody. A TMDL is a tool used by states to reduce pollutants by allocating a portion of the maximum amount allowed to the various sources of the pollutant. In the impaired water assessment, each waterbody is categorized from 1 to 5 (most impaired).

In the Massachusetts Year 2016 Integrated List of Waters, Carding Mill Pond, Grist Mill Pond, and the majority of the Sudbury River were listed as category 5.[58] The categorization indicates the water to be impaired or threatened for one or more uses and requiring a TMDL. Willis Pond, Stearn's Mill Pond, and part of the Sudbury River were listed as category two which indicate waters that are supporting some uses but are not assessed for all other uses. Cutting Pond is not assessed. TMDLs have yet to be developed for impaired waters in Sudbury.

Table 43: Impaired Waterbodies in Sudbury

Waterbody	Category	Location of Impairment	Source of Impairment
Sudbury River	5	Outlet Saxonville Pond, Framingham to the confluence with Hop Brook (the lower portion of Hop Brook was identified as Wash Brook on USGS quads prior to 1987), Wayland	Mercury in Fish Tissue
Sudbury River	5	Confluence with Hop Brook (the lower portion of Hop Brook was identified as Wash Brook on USGS quads prior to 1987), Wayland to the confluence with Assabet River (forming headwaters Concord River), Concord	Mercury in Fish Tissue
Sudbury River	5	From the Fruit Street bridge Hopkinton/Westborough to the inlet of Framingham Reservoir #2, Ashland (formerly part of the segment MA82A-02).	Mercury in Fish Tissue
Sudbury River	5	Outlet Framingham Reservoir #1, Framingham to the inlet of Saxonville Pond, Framingham (formerly part of segment MA82A-02).	Mercury in Fish Tissue

[58] Massachusetts Year 2016 Integrated List of Waters, https://www.mass.gov/files/documents/2017/08/zu/16ilwplist.pdf

Waterbody	Category	Location of Impairment	Source of Impairment
Carding Mill Pond	5	In Sudbury	Dissolved oxygen saturation, Excess Algal Growth, Phosphorus, and Aquatic Plants
Grist Mill Pond	5	Sudbury/Marlborough	Dissolved oxygen saturation, Excess Algal Growth, Phosphorus, fecal coliform, and Aquatic Plants

Source: Massachusetts Year 2016 Integrated List of Waters

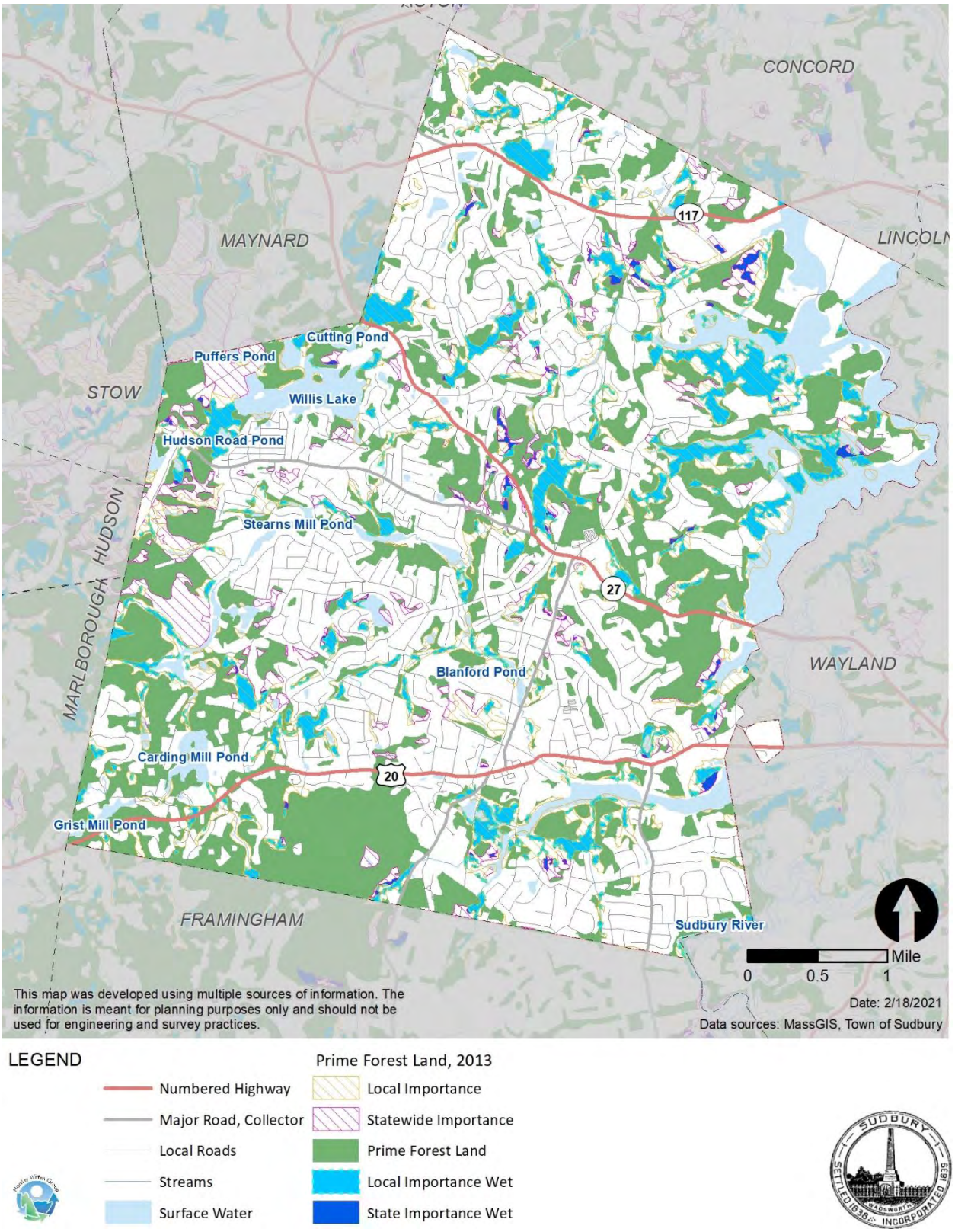
Forested Areas

Sudbury forested areas provide habitat, biodiversity, and ecosystem protection as well as recreational opportunities such as hiking, bird watching, and viewing of woods, marshes, and wetlands. Most of the forested areas are wooded with a mixture of mixed oak, oak/white pine, white pine, and pitch pine forest types. The Town has worked hard to protect large wooded areas despite many new housing developments.

Forested areas in the Town include:

- Nobscot Boy Scout Reservation
- Wayside Inn Historic District
- Sudbury Valley Trustees (SVT) Memorial Forest and Desert Natural Area
- Assabet River National Wildlife Refuge
- Great Meadows National Wildlife Refuge
- Pantry Brook Wildlife Management Area
- Davis Conservation Land
- Hop Brook Marsh Conservation Land
- SVT Round Hill Reservation and Lincoln Meadows Conservation Land
- Poor Farm Conservation Area (Meachen property)
- King Philip Conservation Area

Map 19 shows prime forest lands in Sudbury as determined primarily by the Department of Natural Resources Conservation at the University of Massachusetts at Amherst and MassGIS Soils data. Potentially forested land is divided into nine different categories based on potential average timber productivity. This map may help the Town prioritize future conservation of forested areas.



Map 19: Forested Land

Rare, Threatened, & Endangered Species

Sudbury's wide variety of habitat types are the foundation for a rich diversity of wildlife. Map 20 shows priority habitat and natural communities. Priority Habitat is the geographical extent of habitat for all state-listed plant and animal species. The NHESP database lists 26 such species observed in Sudbury. The population status of rare animals is defined in the Massachusetts Endangered Species Act (MESA) as:

- *Special Concern Species* have either experienced a decline that could threaten the species without intervention, or whose populations are so small, localized, or dependent upon specialized habitats that they could become threatened.
- *Threatened Species* are likely to become endangered in the foreseeable future.
- *Endangered Species* are in danger of extirpation from Massachusetts.

Table 44: Rare species observed in Sudbury

Taxinomical Group	Scientific Name	Common Name	MESA Status	Most Recent Observation
Vascular Plant	Carex tetanica	Fen Sedge	SC	1902
Vascular Plant	Eriophorum gracile	Slender Cottongrass	T	1905
Vascular Plant	Listera cordata	Heartleaf Twayblade	E	1897
Vascular Plant	Nabalus serpentarius	Lion's Foot	E	1931
Vascular Plant	Platanthera dilatata	Leafy White Orchis	T	Historic
Vascular Plant	Scheuchzeria palustris	Pod-grass	E	1896
Vascular Plant	Scirpus longii	Long's Bulrush	T	2008
Vascular Plant	Scleria triglomerata	Tall Nut-sedge	E	1899
Vascular Plant	Sphenopholis pensylvanica	Swamp Oats	T	1896
Vascular Plant	Viola brittoniana	Britton's Violet	T	1931
Reptile	Emydoidea blandingii	Blanding's Turtle	T	2008
Reptile	Glyptemys insculpta	Wood Turtle	SC	2018
Reptile	Terrapene carolina	Eastern Box Turtle	SC	2017
Butterfly/Moth	Catocala herodias gerhardi	Gerhard's Underwing	SC	2015
Butterfly/Moth	Zanclognatha martha	Pine Barrens Zanclognatha	SC	2015
Bird	Botaurus lentiginosus	American Bittern	E	2008
Bird	Caprimulgus vociferus	Eastern Whip-poor-will	SC	2015
Bird	Cistothorus platensis	Sedge Wren	E	1945
Bird	Gallinula chloropus	Common Moorhen	SC	2017
Bird	Ixobrychus exilis	Least Bittern	E	2009
Bird	Podilymbus podiceps	Pied-billed Grebe	E	2010
Beetle	Cicindela purpurea	Cow Path Tiger Beetle	SC	1923
Beetle	Cicindela rufiventris hentzii	Eastern Red-bellied Tiger Beetle	T	Historic
Amphibian	Ambystoma laterale	Blue-spotted Salamander	SC	2018
Amphibian	Ambystoma opacum	Marbled Salamander	T	1896

T: Threatened; E: Endangered; SC: Special Concern

Source: National Heritage and Endangered Species Program, Rare Species by Town View

The “natural communities” depicted on Map 20 represent important groups of plants and associated animals classified and described by their dominant biological and physical features. Massachusetts gives conservation priority to types of natural communities that have limited distribution in the state and/or around the globe (together considered to be Priority Types of Natural Communities for Conservation or “Priority Natural Communities”).

Farmland

For many years much of the land in Sudbury was farmland. Today the Town has approximately 1,300 acres of prime agricultural soils, the majority of which are located on the north end of Sudbury between North Road/Route 117 and Concord Road (Map 21). There are other scattered fields along Lincoln Road, Horse Pond Road, Marlboro Road, Morse Road, and south of Boston Post Road/Route 20 on Nobscot Road. J.P. Bartlett’s Wholesale Greenhouse on Boston Post Road/Route 20 and Cavicchio Greenhouses on Union Avenue are two of the largest agricultural operations in the Commonwealth of Massachusetts.

Protecting Natural Resources

Town Committees and Commissions

Sudbury Ponds and Waterways Committee

The purpose of the Sudbury Ponds and Waterways Committee is to advise the Board of Selectmen on the condition of the Town's major ponds, waterways, and tributaries, and to recommend remediation strategies where necessary in order to enhance opportunities for both active and passive recreational use as appropriate. The Committee was formed in 2005 to study and establish strategies and options for the remediation and sustainability of all publicly owned ponds and waterways throughout the town. In 2010, the Committee completed its Master Plan to document its activities and plan for future efforts.

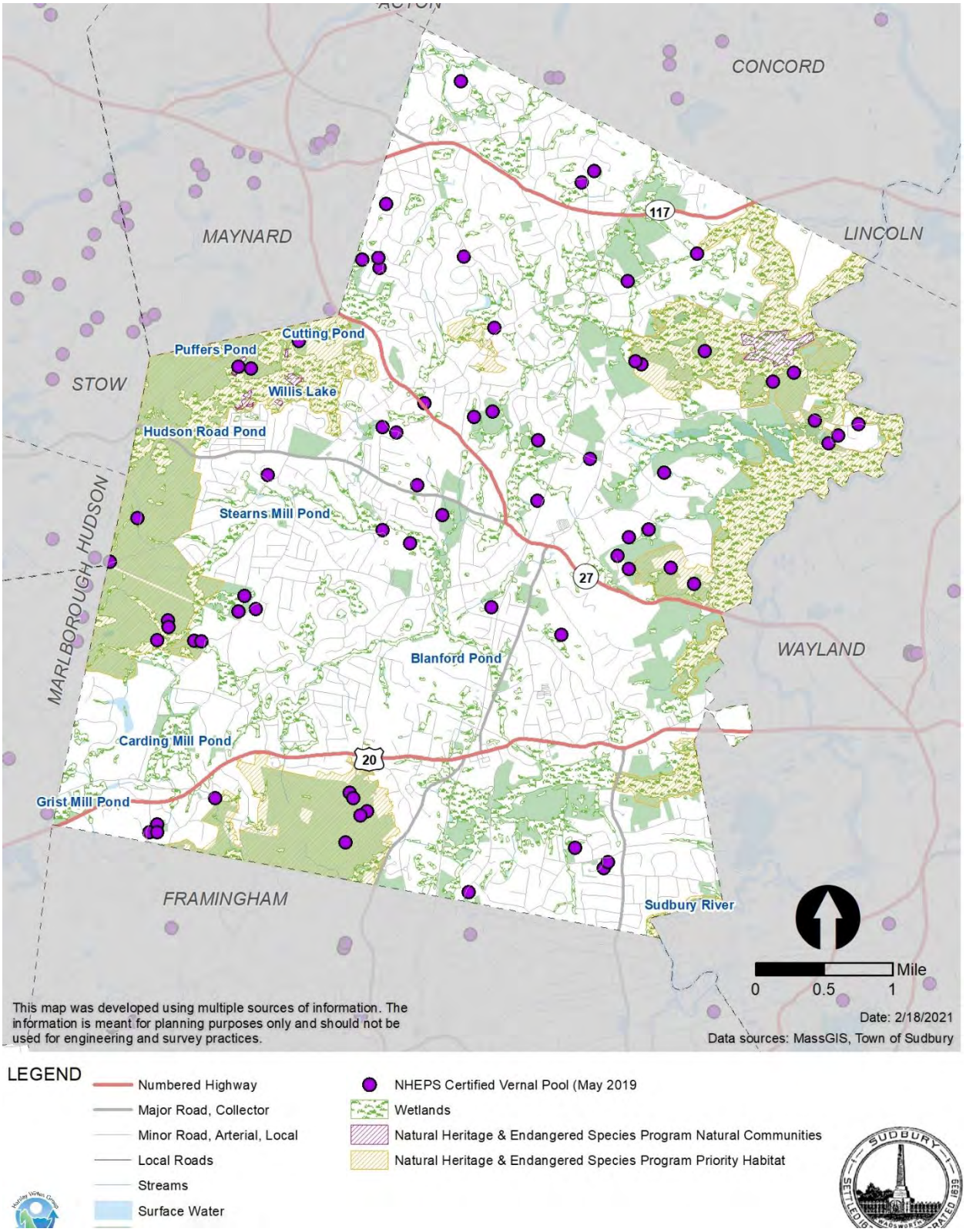
Sudbury Conservation Commission

The Sudbury Conservation Commission was established in 1962 to protect local natural resources and features, and to act as stewards of the Town’s conservation properties. One of its most important responsibilities is protecting the ecological integrity of Sudbury’s wetlands and the surrounding landscape. The Commission is responsible for implementing and enforcing the Massachusetts Wetlands Protection Act and the Sudbury Wetlands Administration Bylaw.

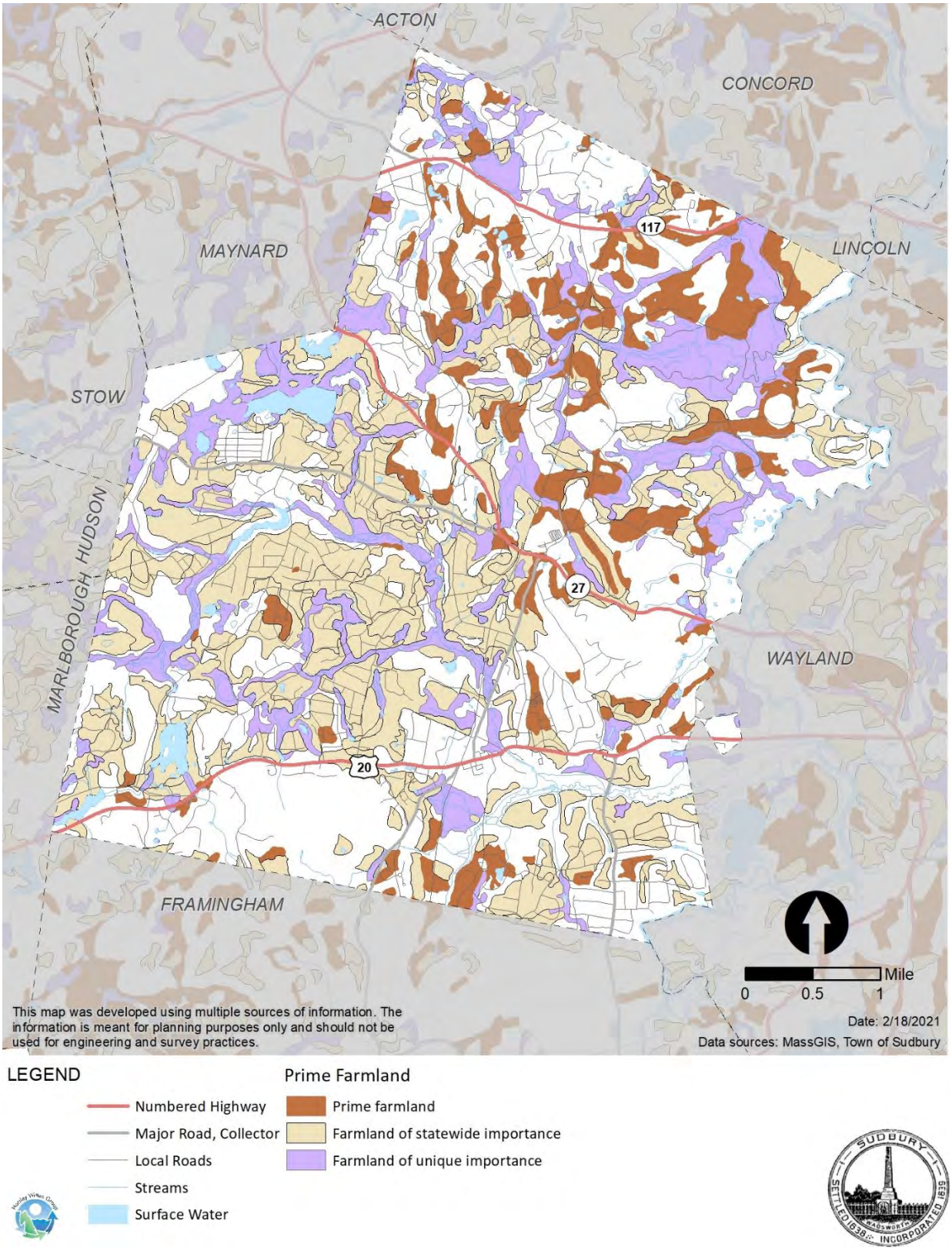
General and Zoning Bylaws

Sudbury Wetlands Administration Bylaw

This bylaw aims to protect surface water by prohibiting filling, dredging, building upon, degrading, polluting, and discharging into surface water resources such as any freshwater wetlands, marshes, wet meadows, etc.



Map 20: Priority Habitat for Rare Species



Map 21: Prime Farmland

Stormwater Management Bylaw Regulations

Stormwater management regulations were set to protect, maintain, and enhance public health, safety, and environment. The rules set minimum requirements and procedures to control the adverse effects of soil erosion and sedimentation, construction site runoff, increased post-development stormwater runoff, decreased groundwater recharge, and nonpoint source pollution associated with new development, redevelopment, and other land alterations.

Zoning Overlay Districts

On top of the general environmental performance standards woven throughout the bylaws, the Town has two specific zoning overlay districts designed to protect flood plains and water resources.

Flood Plain Overlay District

This overlay prohibits fill, new construction, substantial improvements, and other development that would increase the 100-year flood level within the Flood Plain Overlay District without a Special Permit from the Zoning Boards of Appeals.

Water Resource Protection Overlay District

This overlay controls development and land use within aquifers and their recharge areas to protect the available supply and quality of drinking water for the Town. Only water supply activities are allowed in Zone I. Zone II prohibits business, industrial, research, or institutional uses discharging more than 1,000 gallons per day per 40,000 square feet of lot area.[59]

Subdivision Rules and Regulations: Low Impact Development

One of the management plans outlined in the Stormwater Management Bylaw Regulations is Low Impact Development (LID). LID is an ecosystem-based design approach to land development and managing stormwater runoff often referred to as "green infrastructure."[60] LID focuses on conservation and the use of on-site natural features to protect water quality.

Open Space and Recreation Plan

The 2009-2013 Open Space and Recreation Plan, which is currently being updated, is used by the Town in preserving land and protecting open space. It inventories the Town's environmental, open space, and recreational resources; identifies resource protection, community, and resource management needs; and provides an action plan over the next seven years to meet those needs. The goals identified in the plan are:

[59] *Zoning Bylaws, 2017*, https://s3-us-west-2.amazonaws.com/cdn.sudbury.ma.us/wp-content/uploads/sites/270/2017/08/2017-Zoning-Bylaw.pdf?version=fdcf73cffa742f47d98f673651763632

[60] *Stormwater Management Bylaw Regulations*, http://www.mapc.org/wp-content/uploads/2017/11/Sudbury-Stormwater-Regulations-Final-Approved-2009.pdf

1. Preserve Town's character through the permanent protection of undeveloped land, surface water bodies and wetlands, agricultural lands and uses, publicly cherished viewscapes and historic sites.
2. Protect land areas and migration corridors for the well-being of indigenous flora and fauna.
3. Protect the quality and quantity of the Town's water supply, through both aquifer protection and water use education.
4. Protect and restore the quality of the Town's ponds and waterways.
5. Provide and maintain a diversity of conservation and recreation land uses reflecting the interests and needs of the whole community, including opportunities for both active and passive recreation.
6. Develop and maintain trail linkages by connecting old or creating new walkways and trails for non-motorized recreational vehicles, such as bicycles.
7. Continue to provide outreach to increase awareness among residents of the range of the Town's open space and recreational assets, and their possible uses and entry points.

Land Use

In a community Master Plan "land use" examines the physical characteristics of land across a community and the policies/regulations that will shape land use into the future. It looks at where certain activities occur and what they look like as it impacts where residents work, shop, live, and play. By assessing development trends and patterns, the community can identify assets to protect and determine areas suitable for development and redevelopment.

In many ways, this chapter synthesizes information from several other focus areas within the Baseline Report. This chapter provides an opportunity to step back from the very detailed inventories provided in other chapters to examine the Town from a "high altitude" perspective, looking at overall patterns and town-wide trends that affect how land will be used in the future.

What Shapes Land Use?

The way land is used by the people or agencies that own it is shaped by a wide variety of factors, many of which lie outside the purview of the municipality (e.g., economic trends, financing, etc.). However, the municipality ultimately plays a major role in determining land use and the policies adopted at the local level are extremely important in determining the future of land use across the community. This section provides a brief overview of some of the items that affect municipal planning and decision-making relative to land use.

Historic Development Patterns

New England represents one of the earliest areas in the country where European settlers established the first communities that would later emerge as cities and towns. Equally important as the settlements that were scattered across the region were the transportation routes that connected them. While connections were often established using rivers, routes over land were incredibly important to the survival and vitality of municipalities and shaped long-term land-use patterns over centuries. Most notably today in Sudbury, roads like Concord Road, Hudson Road, Maynard Road, and others illustrate the primary travel routes between village centers. These routes were the lifeblood of each village center they served and fostered the more compact mix of commercial, government, religious, and residential uses we still see today.

Environmental Constraints

The development of land is directly shaped by a series of environmental constraints that may or may not be present. For example, the presence of wetlands, streams, or a high groundwater table can create challenges for stormwater management, site development (e.g., excavation), and wastewater disposal. As another example, steep slopes and bedrock outcrops may force developers to consider large-scale excavation or blasting in order to make a site developable. Aside from the physical challenges these conditions create, they are often accompanied by more stringent regulations designed to protect the natural environment as well as potential impacts on neighboring properties. One of the most important

environmental constraints in Sudbury is the aquifer that supplies the Town's drinking water. The Town effectively uses the projected water quality standards associated with drinking water as a way to regulate land use activity through its Water Resource Protection Overlay District.

Zoning and Local Regulations

The most direct and powerful influence on land use patterns in present-day Sudbury, and moving forward, is local land use regulation. Overall, the Town's Zoning Bylaw is the most influential document in local land use regulation. However, there is a collection of agencies and regulatory documents that have jurisdiction over a variety of issues in Sudbury (Table 45). The Zoning Bylaw is grounded in a community's Master Plan and generally reflects the Future Land Use Map contained in that document. This chapter provides a more detailed summary of Sudbury's Zoning Bylaw below.

Table 45: Summary of Local Land Use Regulation in Sudbury

Document	Primary Authority	Scope
Zoning Bylaw	Building Inspector, Planning Board, Zoning Board of Appeals	Primary document for what is allowed, where it is allowed, and intensity of use.
Rules and Regulations Governing the Subdivision of Land	Planning Board	Rules for subdividing lots and establishing roads.
Wetlands Bylaw	Conservation Commission	Protection of wetlands and surface waters.
Historic Districts Commission General Guidelines	Historic Districts Commission	Protection of historic resources in four districts.
Board of Health Regulations	Board of Health	Septic system approval. *

*The role of the Board of Health goes well beyond approving septic systems. However, this responsibility represents its highest influence over land use.

Infrastructure

The presence of infrastructure can facilitate larger, more intense development in areas designated for growth. It can also help to resolve some of the issues raised by environmental constraints. Most notably for land use, the presence of centralized water supply and/or sewer disposal. The Boston Post Road/Route 20 Corridor is an area in Sudbury designated for growth, but also exhibits constraints to development due to wastewater management needs. The 2001 and 2012 corridor studies noted commercial property owners are "increasingly having difficulty treating and disposing of wastewater in an economically feasible manner due to physical and regulatory constraints (e.g., soil conditions, depth to groundwater, aquifer protection, Title 5 regulations, etc.)."[61]

Since 1995, the Town of Sudbury has been studying wastewater options for the Boston Post Road/Route 20 business corridor. In the spring of 2019, the Department of Public Works (DPW) received Town Meeting approval to borrow up to $500,000 from the State Revolving Fund (SRF) to complete the Comprehensive Wastewater Management Plan (CWMP). The CWMP will take all the wastewater

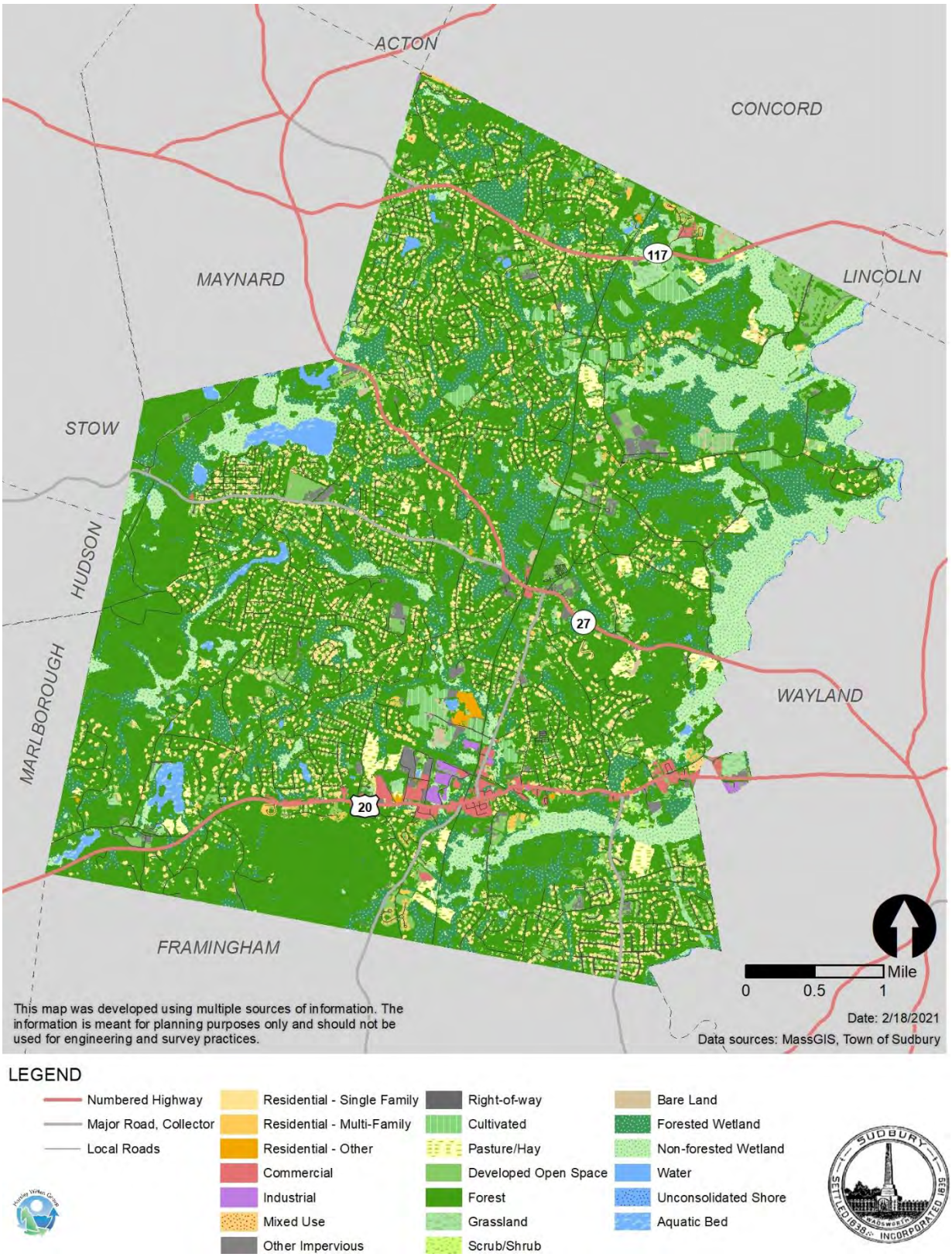
[61] Report Town of Sudbury, *Project Evaluation Report.* 2001 and 2012

planning the Town has done to date and combine them into a single plan which can be used to assess needs comprehensively, evaluate alternatives, coordinate with local and regional planning goals, and develop a coordinated public outreach program to engage residents and businesses. The CWMP will give the Town a 20-year planning document to address wastewater needs and the leverage it needs to qualify for state grants and loans for a wastewater treatment system and facility. Through the CWMP development process, a recommended wastewater treatment solution will be determined. It is estimated construction of a new facility will take two years to complete. The next step for the Department of Public Works (DPW) in the process is to submit a State Revolving Fund (SRF) loan application.

Recent Development Trends

Sudbury is primarily a residential community with large tracts of open land and an impressive inventory of natural resources (Map 22). A snapshot of land coverage today can be created with 2016 data available through the Massachusetts Bureau of Geographic Information (MassGIS).[62] These data detail what is happening on the ground (impervious surfaces like buildings or roadways, or natural areas such as wetlands and forest) and how the land is being used as classified by local tax assessors to categorize a use for an entire parcel (residential, commercial, etc.). A combination of these attributes gives us a picture of Sudbury's landscape. Most of the land is considered open space and natural resources (Table 46 and Map 22), making up approximately 87% of the Town's total land area. This includes forested areas (50.4%), forested and non-forested wetlands (22.8%), and developed open space (10.4%). Large natural resource systems are associated with the Assabet River National Wildlife Refuge to the west and the Great Meadows National Wildlife Refuge to the east along the Sudbury River. Forested and wetlands on private property also contribute to this significant number. Residential uses, predominately single-family homes, are found throughout Sudbury, and commercial and industrial uses are concentrated along Boston Post Road/Route 20.

[62] It should be noted that the 2016 MassGIS data does not conform to the classification schemes and feature delineation of previous land use GIS data the agency prepared (1951-1999 and 2005); therefore, an analysis of changes in land uses over time with GIS data cannot be done with these data.



Map 22: Sudbury Current Land-Use, 2016

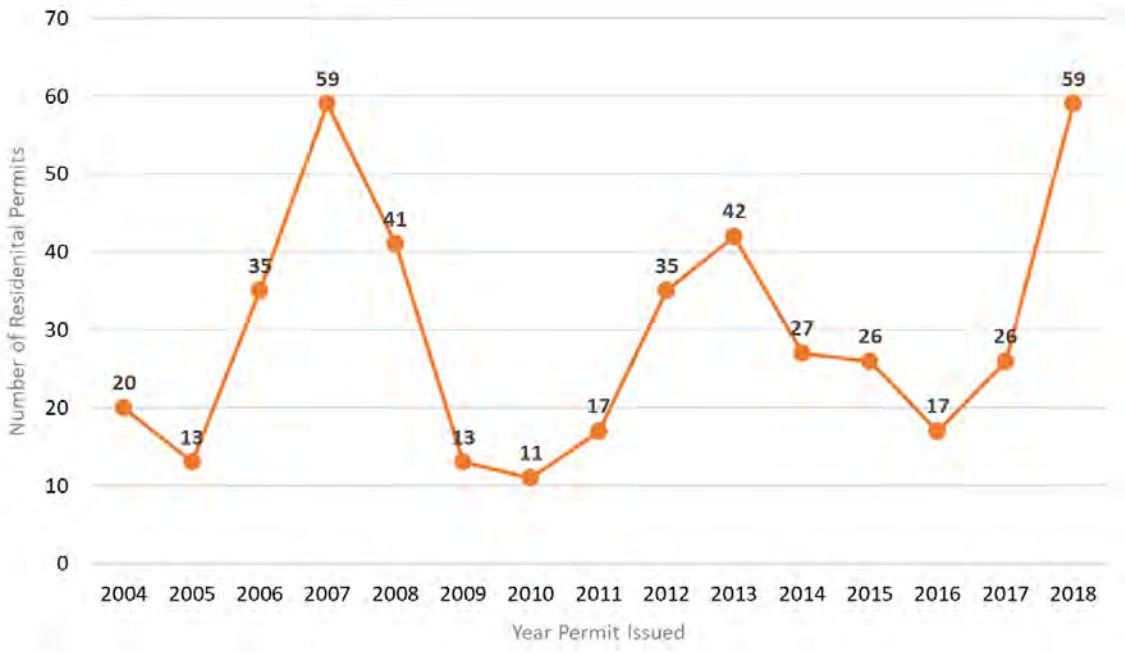
Table 46: Land Coverage Summary (2016)

Land Use	Acreage	% of Total Land Area
IMPERVIOUS*	62,828	9.8%
Residential - Single Family	2,259	0.4%
Residential - Multi-family	908	0.1%
Residential - Other	25,023	3.9%
Commercial	5,036	0.8%
Industrial	1,208	0.2%
Mixed Use	588	0.1%
Right-of-way	7,325	1.1%
Other Impervious	20,481	3.2%
AGRICULTURAL	19,207	3.1%
Agricultural	515	0.1%
Cultivated	9,363	1.5%
Pasture/Hay	9,329	1.5%
OPEN SPACE & NATURAL RESOURCES	559,076	87.2%
Developed Open Space	66,579	10.4%
Forest	323,136	50.4%
Grassland	9,848	1.5%
Scrub/Shrub	2,191	0.3%
Bare Land	1,763	0.3%
Forested Wetland	88,389	13.8%
Non-Forested Wetland	57,594	9.0%
Water	5,864	0.9%
Aquatic Bed	3,712	0.6%
TOTAL ACRES	**641,111**	**-**

* Any type of surface that does not absorb rainfall.

Source: MassGIS Land Use 2016

Since 2004, residential permit activity in Sudbury has fluctuated with national trends, with the housing boom in the mid 2000s, the recession that followed in 2008, and the steady growth into the late 2010s. Permits issued in 2018 matched those just before the 2008 recession at 59 (Figure 34). Details on the type of residential construction is most readily available from 209 and shows the majority of construction in the last ten years. Nearly 90% has been single-family homes and condominiums (Table 47).



Source: Sudbury Building Department

Figure 34. Residential Permits Issued by Year, 2004-2018

Table 47. Types of Residential Structured Permitted, 2009-2018

Year	Single Family & Condo	Two Family	Multi Family (3+)	Total Permits
2009	13	0	0	13
2010	9	2	27	38
2011	15	2	2	19
2012	25	10	17	52
2013	25	0	17	42
2014	27	0	0	27
2015	26	2	0	28
2016	17	0	0	17
2017	26	2	30	58
2018	59	0	8	67
Total by Type	242	18	101	273

Source: Sudbury Building Department

Land Use Regulations and Policies

Zoning

The Sudbury Zoning Bylaw and Zoning Map are the primary tools the Town uses to direct development. Zoning regulations are set to promote the appropriate use of land throughout Sudbury as well as to preserve and protect the town's character. The regulations dictate where development happens, what it looks like, and other standards that must be met.

Table 48 shows that 92% of the Town is zoned primarily for residential use, 5% for open space, and the remaining for industrial or research uses. Surface water bodies are not zoned. While not the Official Zoning Map, Map 23 shows the location of local zoning districts in Sudbury.

Overlay Districts

Sudbury has seven zoning overlay districts shown on Map 24. Overlay districts are used by communities to impose either more stringent or less stringent standards than the underlying zoning district. More stringent standards may be required to protect drinking water quality or other critical natural resources. Less stringent standards may be applied to allow more flexibility in development requirements to encourage the desired type of project, development, or use in an area like the commercial corridor along the Boston Post Road/Route 20 and Union Avenue.

Flood Plain Overlay District

The Flood Plain Overlay District is used to preserve and protect the town's streams and other watercourses, and adjoining land; the health and safety of persons and property against the hazards of flooding; and the community against the detrimental use and development of lands adjoining such watercourses. The district includes all "special flood hazard areas inundated by 100-year flood" within the town designated as Zones A and AE on the Middlesex County Flood Insurance Rate Map (FIRM), issued Federal Emergency Management Agency (FEMA). The areas in the overlay district are deemed to be vulnerable to seasonal or periodic flooding; therefore, the use of land in the district is considered to be dangerous to the health and safety of the occupants. Protection is achieved primarily with limitations on allowable uses, and compliance with state and local environmental policies.

Water Resource Protection Overlay District

The purpose of the Water Resource Protection Overlay District is to protect, preserve, and maintain water resources in town against pollution and contamination, monitor water quality, and promote health and safety of the community. The district is established using the Massachusetts Department of Environmental Protection wellhead protection zones. Protection is achieved primarily with limitations on allowable uses and establishing performance standards for activities like storage of hazardous materials and stormwater management.

Melone Smart Growth Overlay District

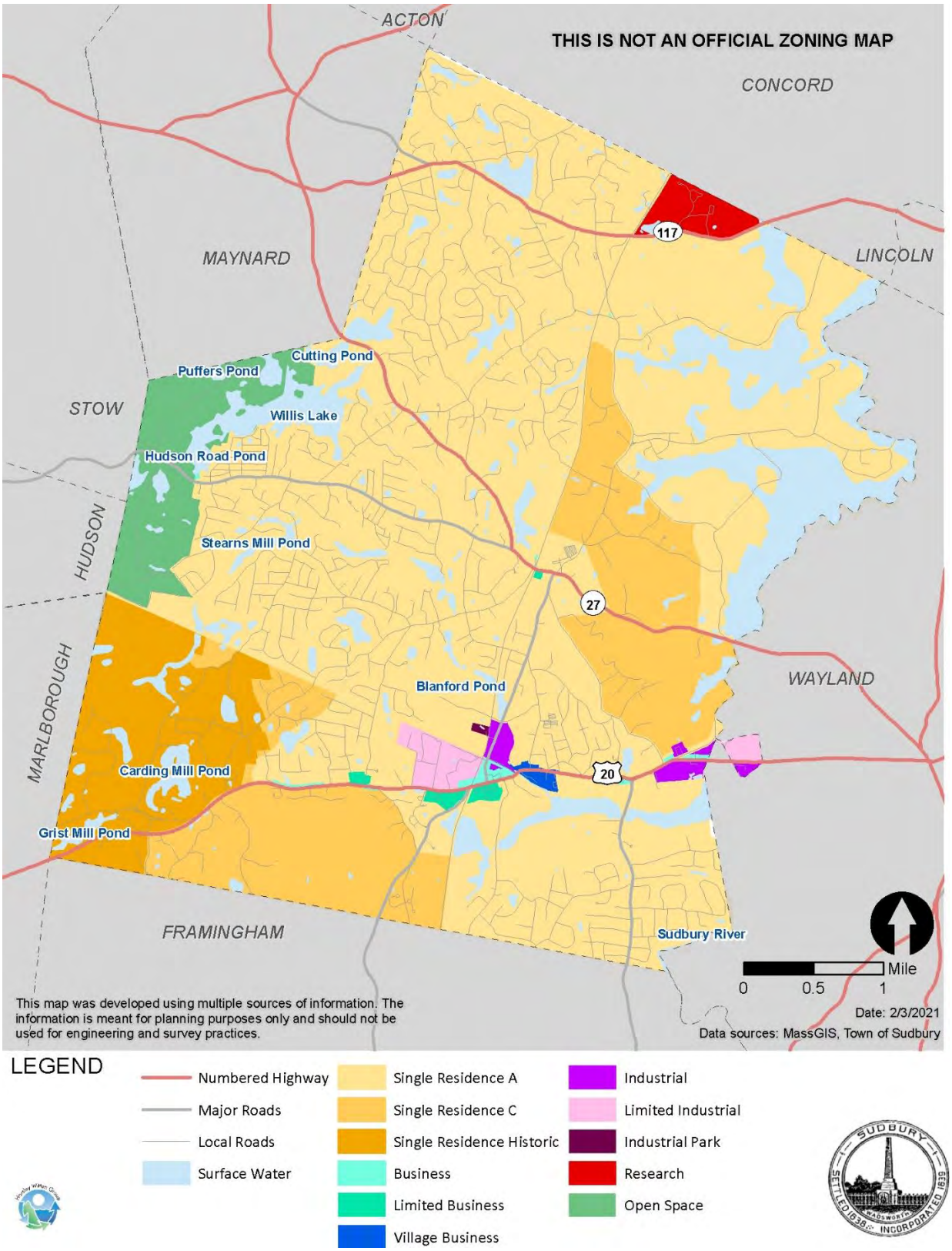
The purpose of this district is to encourage smart growth development in town with sustainable design and better transportation infrastructure. The district aims to improve housing choice in Sudbury and meet the goals of the Town's Housing Production Plan by providing affordable and multi-family unit projects with architecture and landscaping that fits the character of the community.

Table 48: Sudbury Zoning Bylaw Summary (2018)

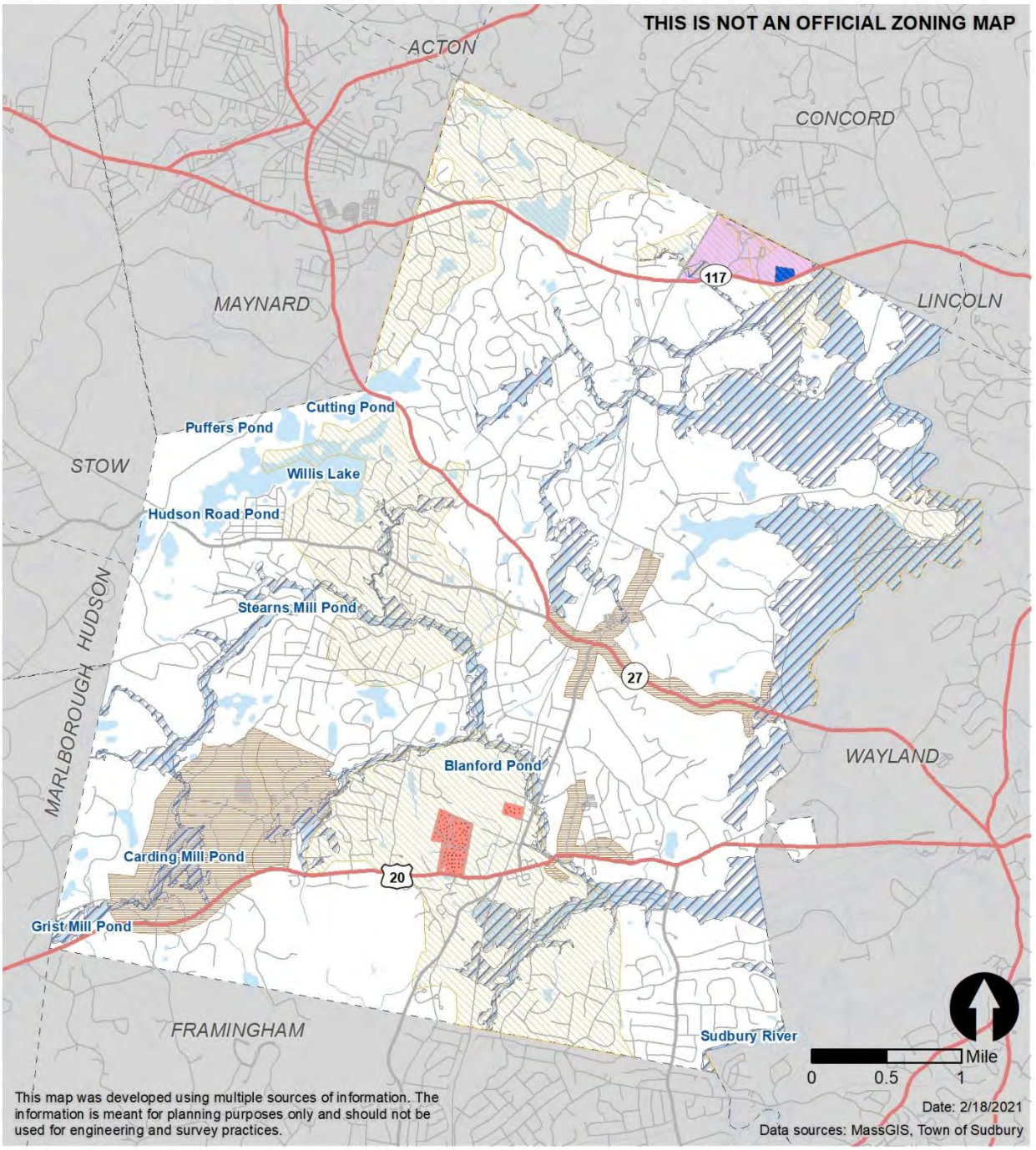
District	Description of Uses[1]	Acreage	% of Total Land Area	Minimum Lot Size	Maximum Height
Single Residence A	Allows primarily single-family housing. Special Permits can be issued for a variety of specialized residential uses including Cluster Development, Incentive Senior Development, and others.	10,880	69.8%	40,000 SF	2.5 stories
Single Residence C[2]	Allowable uses are the same as Single Residence A district.	2,291	14.7%	60,000 SF	2.5 stories
Wayside Inn Historic Preservation	Allows single-family housing and protects and preserves historic resources.	1,166	7.5%	5 acres	2.5 stories
Business	Allows primarily commercial development and light manufacturing.	44	0.3%	-	2.5 stories
Limited Business	Allows uses similar to the Business district, but also allows some forms of residential development by Special Permit from the Zoning Board of Appeals.	53	0.3%	-	2.5 stories
Village Business	Allows single-family housing, apartments on second/third floor, and some commercial uses.	30	0.2%	-	2.5 stories
Industrial	Allows primarily industrial and institutional uses.	93	0.6%	-	2 stories
Limited Industrial	Allows industrial uses, institutional uses, and some forms of retail and financial uses.	143	0.9%	100,000 SF	2 stories
Industrial Park	Allows industrial, and business or professional office uses.	7	0.04%	100,000 SF	2 stories
Research	Allows primarily commercial development and industrial uses such as lab facilities.	151	1.0%	8 acres	3 stories
Open Space	Allows recreational activities such as boating and fishing, as well as forestry, grazing, and farming.	721	4.6%	-	2 stories

[1] These descriptions provide the general focus of each district, and more detailed information is found in Appendix A of the Zoning Bylaw. As with many communities, municipal and institutional uses (e.g., facilities, schools, etc.) are allowed in many of the districts. Also, the exemptions from M.G.L. Chapter 40A, Section 3 apply.

[2] There is no Single Residence B District.



Map 23: Sudbury Zoning



LEGEND

- Numbered Highway
- Major Road, Collector
- Minor Road, Arterial, Local
- Streams
- Surface Water
- Flood Zone (100 yr.)
- Historic Districts
- Mixed-use Overlay Districts
- North Road Overlay District
- Melone Smart Growth Overlay District
- Water Resource Protection

Map 24: Sudbury Overlay Districts

Mixed-Used Overlay District

The purpose of the Mixed-Used Overlay District is to encourage redevelopment along the Boston Post Road/Route 20/Union Avenue commercial corridor to diversify and expand the town's commercial base and improve aesthetic character along the corridor. The district was used to permit the Meadow Walk Sudbury Master Development Plan in 2016. While there are many areas in town that are mixed-use, there are only two areas zoned for these types of uses.

North Road Residential Overlay District

The North Road Residential Overlay District was created to encourage development along the North Road/Route 117 corridor and improve the aesthetic character of the area by revitalizing underutilized properties. The redevelopment aims to include multi-family, active streetscape, and enhance the vitality of businesses by diversifying and expanding the town's economy and local job opportunities.

Historic Districts

The purpose of the Historic Districts is to preserve and protect buildings, places, and districts of historical or architectural significance. While not part of the Zoning Bylaw, they are included in the Town's Official Zoning Map and highlighted in the Sudbury Zoning Bylaw for informational purposes. These districts include the Old Sudbury Historic District, Wayside Inn Historic Districts (No. 1 and 2), King Philip Historic District, and George Pitts Tavern Historic District.

Wireless Services Overlay District

The purpose of this overlay district is to provide wireless services with minimal harm to the public health, safety, and general welfare of the inhabitants of Sudbury, and to regulate the installation of such facilities. The Wireless Services Overlay District is shown on Map 24, however, according to the Sudbury Bylaw, overlay district consists of the following parcels of land:

- Sudbury Landfill property, Assessor's Map No. K12, Parcel 002
- Former Melone property, Assessor's Map No. C12, parcel 100
- Sudbury Water District Borrow Pit, North Road, Assessor's Map No. C12, Parcel 004
- Raymond Road well field area, including Feeley Park and surrounding Town and Water District land, Assessor's Map Nos. L08, Parcels 001, 002, 008, 009, 010, 012 and M08, Parcel 021
- Highway Department property, Old Lancaster Road, Assessor's Map No. H08, Parcel 049
- All property and buildings owned by the Town of Sudbury, exclusive of school buildings, school properties and cemeteries.

It also includes all properties within Business, Limited Business, Village Business, Industrial, Limited Industrial, Industrial Park and Research districts.

SUDBURY MASTER PLAN

ACTION PLAN
VOLUME III

Adopted by the Sudbury Planning Board [date placeholder]

TABLE OF CONTENTS

INTRODUCTION 1

WHAT IS THE SUDBURY MASTER PLAN? 2

WHO DEVELOPED THE MASTER PLAN? 2

WHAT ARE THE PIECES OF THE MASTER PLAN? 3

THE ACTION PLAN 5

RESOURCES, EXPECTATIONS, AND TRADEOFFS 6

SETTING PRIORITIES 7

UPDATES AND ACCOUNTABILITY 11

ACTION PLAN MATRIX 13

Prepared in consultation with:

Horsley Witten Group

FITZGERALD & HALLIDAY, INC.
Innovative Planning, Better Communities

camoin associates
ECONOMIC DEVELOPMENT

310 Ltd

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Master Plan Steering Committee

John Sugrue, Chair
Member-at-Large

Susan Asbedian-Ciaffi, Vice Chair
Member-at-Large

Daniel Carty
Board of Selectmen

Janie Dretler
Board of Selectmen

Nathalie Forssell
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Patricia Guthy
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Ellen Joachim
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Lisa Kouchakdjian
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Council on Aging

John Riordan
Zoning Board of Appeals

Lee Swanson
Historic Districts Commission

Frederick Taylor
Historic Districts Commission (Alternate)

Richard Williamson
Parks and Recreation Commission

Planning Board

Stephen Garvin
Chair

Charles Karustis
Vice Chair

John Hincks
Clerk

Justin Finnicum
Member

John Sugrue
Member

Anuraj Shah
Associate Member

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Director of Planning and Community Development

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Sudbury Town Hall.
Photo Credit: John Phelan.

INTRODUCTION

WHAT IS THE SUDBURY MASTER PLAN?

The Sudbury Master Plan sets the course for our future. It expresses our aspirations as a community to protect and support what we love about living in Sudbury and sets a course for the future. The Sudbury Master Plan looks at where we are, where we want to go, and how we are going to get there. It helps us be proactive and strategic about what happens in Sudbury over the next 20 years. Because it outlines our future path, it will be used to guide public and private investments. It shows what we want to preserve, where the community should be strengthened, and what could be transformed to meet current and future needs of residents and the business community based on community wide values.

WHO DEVELOPED THE MASTER PLAN?

The Sudbury Master Plan was shaped by the community. Led by the Master Plan Steering Committee, the Town used a variety of methods to gather feedback, disseminate information about the Master Plan and update residents, businesses, workers, and Town staff. These tools included:

- Larger public events, such as forums and open houses
- Smaller focus groups
- Online and paper surveys
- Interviews with stakeholders
- Attendance at local events
- Editorials and news articles in the Sudbury Town Crier
- The Master Plan Steering Committee website

Additionally, the Master Plan Steering Committee held, at a minimum, monthly meetings, which were open to the public and also were recorded and broadcast by Sudbury TV. Many residents took advantage of these meetings, offering their insights and personal experiences of living and working in Sudbury.

Who uses the Master Plan?

The Town uses it to...
- Help prioritize decisions
- Prioritize important projects
- Support funding and grant requests
- Justify capital improvements
- Place decisions in historical context
- Advocate for residents and local businesses

The **Board of Selectmen** and **Town Boards, Committees, and Commissions** use it to...
- Serve as a strategic framework for decision making
- Justify regulatory decisions and investment of public funds
- Guide regulatory reform

Residents and **Community Groups** use it to...
- Guide their volunteer activities to ensure everyone in Town is rowing in the same direction

The **State** uses it to...
- Learn about Sudbury's priorities and respect them in state plans

Private Developers use it to...
- Understand the community's vision

*Everyone should use it as a reminder that Sudbury is a **great** place to live!*

WHAT ARE THE PIECES OF THE MASTER PLAN?

The Sudbury Master Plan is made up of three volumes: *Baseline Report*, *Master Plan*, and *Action Plan*.

BASELINE REPORT

The *Baseline Report* is a snapshot of existing conditions as they relate to neighborhoods, parks, roadways, public services and facilities, the local economy, historic and natural assets, and other items that define the quality of life in Sudbury. It includes inventories across numerous departments and resources, as well as population and build-out projections. This information was collected through Town staff interviews, outreach to key stakeholders, and reviews of existing reports and other documentation. The purpose of Baseline Report is to provide the foundation for sound policy development moving forward.

MASTER PLAN

The *Master Plan* is the primary document for setting policies and strategies in Sudbury. It identifies the formative issues that will shape policy in all areas. It lays out the framework for how the Town will reach its vision. Public input from workshops, open houses, surveys, focus groups, and interviews guided its development. The Master Plan sets short-, mid-, and long-term goals and will be used by Town leaders, staff, boards, committees, and other decision makers.

ACTION PLAN

The final volume, the *Action Plan*, this document, details how the Master Plan is implemented. It includes individual action items needed to address community issues and needs. An advocate, such as a Town department, board, committee, or commission, is identified along with implementation timeframes. However, many of these actions will require stakeholder input or committees to complete. Since the Master Plan has a 20-year outlook, action items are divided into easy wins (completed within three years), short-term (completed within five years), mid-term (completed between five and 10 years), and long-term (completed in 10 to 20 years) periods. It is important to note that the Action Plan and Master Plan are companion documents and should be read together to understand the full context of action items.

Note to the reader:
The relationship between the Master Plan (Volume 2) and the Action Plan (Volume 3) is particularly important. The Master Plan provides the policy context and framework for how these actions were developed. Readers who have questions about how a particular action was formulated should refer back to the Master Plan (Volume 2) for an explanation.

Tribute of Sudbury - Revolutionary War.
Photo Credit: Parker Sorenson, FHI.

THE ACTION PLAN

Once a Master Plan is adopted, the implementation phase begins. This document, the Action Plan, represents the third volume in the Sudbury Master Plan document set. The volume begins by discussing the challenges related to the Plan's implementation including limits on resources and ways the Town can set priorities. Proposed high priority action items were based on the urgency of the action to meet a current need as well as available resources (financial and technical), staff capacity, and other factors at the time the Master Plan was developed. As resources or staffing are acquired over time, other items may assume a higher level of importance.

The second section of this volume provides ideas about how to weave the document into everyday operations in local government and create a system of tracking, updates, and accountability. Following these discussions, an Action Plan Matrix is provided that includes all action items identified in Volume 2 of the Master Plan set, supplemented by an advocate and an estimated time for completion.

RESOURCES, EXPECTATIONS, AND TRADEOFFS

The Action Plan Matrix identifies an advocate for each action or project, which is usually Town staff or a Board/Committee/Commission. The advocate will ensure that decision makers recognize the action's importance to the larger vision of Sudbury and champion its progress. An advocate will be supported by other municipal entities in the action item's progress towards completion. In some cases, an action may be led by an existing entity or new special committee once the advocate has secured its path forward. It is important to understand no Town department has the staff needed to take on **all** the action items assigned to them at once. Further, in the case of boards, committees, and commissions, these bodies often have regular responsibilities (e.g., permit application review) that consume much of their meeting time and taking on special projects might be a challenge. These limitations highlight the importance of prioritization and making tradeoffs. They also highlight the importance of regular communication about Master Plan efforts updates, which will be discussed further below in Updates and Accountability.

Acknowledging tradeoffs in implementation is one way to help manage expectations in the community, but it is also important to note the role the Planning and Community Development Department plays in this implementation process. The majority of action items in the Action Plan have this department identified as the advocate. This is a common predicament with Planning Staff in the wake of a freshly adopted Master Plan. At the time this plan was adopted, Sudbury's Planning and Community Development Department included two professionally trained planners and three support staff shared across a variety of other Boards and Departments. Based on the research performed during the Master Plan process, current staff is working beyond its capacity especially when special projects are added to usual daily responsibilities.

Moving forward, additional planning staff is recommended, and more than one new staff member could easily be accommodated depending on how much of the Action Plan will be taken on. Specific recommendations include an Economic Development professional, resiliency staff, and, potentially, some level of investment in a grant writer. Additionally, the value of the Town's Social Worker was acknowledged repeatedly during the Master Plan process and numerous stakeholders called for increasing staff to effectively meet the demands placed on this department.

Regardless of any increases in staffing or financial allocations, the Town will need to set priorities and most communities look to the Planning Board to lead these discussions. As the agency identified in state law as the approving body for a Master Plan, Planning Boards are in a unique position of authority and must coordinate closely with the Board of Selectmen, Town Manager, and Town Meeting when considering action items that should have the Town's full attention.

SETTING PRIORITIES

The following pages identify ways the Planning Board can prioritize different actions and projects to make the most of staff and financial resources.

Sunset at Nine Acre Corner.
Photo Credit: Sophie Gates.

"BIG IDEA" ACTION ITEMS

One of the important items to consider is the scope of a particular project (or string of related projects) called for in the Master Plan. While it is rewarding to look for "low hanging fruit," focusing too much attention on easy wins can push larger efforts into a state of inertia. Long-term projects, initiatives that may take 10 to 20 years to reach completion, often require careful planning, specific touchstones, and thus constant attention in order to reach successful conclusions. It should also be noted these initiatives, because of their complexity, provide multiple cross-cutting benefits to the community.

FEATURED BIG IDEA PROJECTS

Route 20 Corridor	Route 20 development is a complex effort that will likely take at least a decade to yield significant results. The Master Plan calls for continued detailed study of urban design issues, wastewater implementation, and circulation strategies in order to unlock the development potential of the area. Major investment in public infrastructure and regulatory reform will take years to implement before property owners can consider their own significant investments. Such benefits could include increases in the stock of diverse housing, expansion of the commercial tax base, and transformation of underutilized commercial land into walkable mixed-use nodes. As these investments are made, it will be important to monitor any trends that result from the COVID-19 pandemic of 2020, including businesses that never reopened, commercial space that remained vacant because of these closures, and reduced traffic congestion.
Coordinated Town-Wide Historic Preservation Program	The Master Plan acknowledges the amazing inventory of historic and archaeological resources in Sudbury and a strong foundation of local preservation efforts. However, the plan also calls for a more robust town-wide program that includes high-tech management of town data, increased educational and training opportunities for town staff, regulatory reform, and a comprehensive preservation strategy. Coordinating the efforts of a broad range of stakeholders and getting all parties (including municipal leadership) "rowing in the same direction" will be a labor intensive and complex process. The benefits for Sudbury would be far-reaching and include better protections for historic resources, including historic landscapes such as open fields and agriculture, standardized processes for identifying and protecting historic assets, and economic gains by elevating Sudbury's status as one of the most historically rich communities in the region.

"HIGH IMPACT" ACTION ITEMS

Another important perspective for implementation involves identifying those singular actions or projects that will have a major positive impact on the community as a whole. These "high profile" projects can be an important focal point of the implementation, not only because of the potential positive impact, but because they add excitement and credibility to the planning process. Three projects that fit this description are noted below and should remain a high priority for implementation.

FEATURED HIGH IMPACT PROJECTS

Bruce Freeman Rail Trail	This rails to trails project is part of a much larger multi-use path system that connects eight communities in the region, from Lowell to Framingham. In Sudbury, the trail runs the length of the community (north/south) practically down the middle of the Town. Several schools, the historic Town Center, and mixed-use development along Route 20 are in close proximity to the Trail. This pathway will have an immediate impact on the community, providing access to important points of interest by means other than the automobile.
Mass Central Rail Trail	At the time the Master Plan was adopted, planning for the Mass Central Rail Trail, part of the Eversource Transmission Reliability Project, was in the permitting phase. There was significant resistance on the part of the Town to use this corridor for buried high voltage transmission lines. Irrespective of the issue around transmission lines, the Town recognizes the potential high positive impact this recreational resource could have. Running through town east/west, the Mass Central Rail Trail would add to the regional access created by the Bruce Freeman Rail Trail and would also create opportunities for residents to connect to points on Route 20 by means other than automobile travel.
Comprehensive Wastwater Master Plan	At the time this Master Plan was adopted, Sudbury was undergoing a comprehensive study to evaluate town-wide alternatives for wastewater management. The results of this project will play a critical role in framing the future development potential for the Route 20 corridor.

"CRITICAL PATH" ACTION ITEMS

There are a number of action items in the Master Plan that serve as a keystone for future implementation. Without addressing these particular action items early in the implementation phase, other actions either could not be pursued or would suffer in some way. These items should be considered high priorities because they unlock the ability of the Town to achieve more widespread, strategic, and in some cases, well-funded, implementation of these projects. In many instances, these critical path action items are plans and studies that take a "deep dive" into initiatives that are ongoing in the community.

FEATURED CRITICAL PATH PROJECTS

Route 20 Corridor Visioning Study	Studies to date on the Route 20 Corridor have focused on preliminary wastewater assessments and the redevelopment potential of a small number of commercial parcels. Before any major rezoning effort occurs or any major wastewater infrastructure is installed, more intensive study is required.
Town-wide Historic Preservation Plan	Sudbury's historic preservation efforts are complex and the inventory of assets has yet to be fully documented. In order for the Town to reap the full benefits for future generations from these structures, sites, and landscapes, a comprehensive Preservation Plan would be a worthwhile undertaking and investment.
Facilities Assessment and Maintenance Plan	During the Master Plan process, the Town showed significant interest in developing a more proactive and cost-effective approach to facilities management. Similar to the issues surrounding the Town's historic assets, developing a multi-year maintenance plan with concrete costs is a complex undertaking but a vital investment. Importantly, this type of plan could also be a milestone in the Town's ongoing efforts to make and ensure that Town facilities are accessible to people with disabilities and meet ADA requirements, as well as address many of the concerns raised in the *Livable Sudbury* Report.

FEATURED CRITICAL PATH PROJECTS

Housing Strategy	Sudbury has made considerable progress, in recent years, toward providing more affordable housing options within the community, including exceeding the state statutory threshold of 10% subsidized housing in town. However, not all the units counted towards the 10% are subsidized and include market-rate units. Only 6.8% are available for low and moderate income households. Based on discussions during the Master Plan update process, Sudbury shows interest in a more comprehensive housing strategy that may yield a much more diverse housing stock over the next two decades. Developing a Housing Strategy would provide an opportunity to achieve this goal.
Comprehensive Wastewater Master Plan	Not only is this a high impact project, it is also a critical path action. Completing the master plan will give the Town clear alternatives for wastewater management and bring certainty for other public and private investments along the Route 20 and other areas of Town, as determined.

UPDATES AND ACCOUNTABILITY

Experience in other communities has shown Master Plan implementation can be much more effective if the Town establishes some modest annual reporting/tracking mechanisms. This may be easier to work into operations if the reporting for the Master Plan is woven into an existing annual report process. For example, each department submits a budget request (including capital expenses) annually to help the Finance Director, Board of Selectmen, and Town Manager begin the budget process. There may be a way to have departments report on any progress related to Master Plan action items as part of this reporting.

Another approach used by many communities is the development of a Master Plan Implementation Committee (MPIC) to oversee the Plan's implementation. The MPIC is usually established and staffed by member of the Board of Selectmen and is responsible for coordinating and monitoring implementation of the Master Plan. It would be tasked with assessing the status of specific tactical actions, evaluating priorities, and suggesting new implementation techniques where/if appropriate. As part of its responsibilities, the MPIC would be empowered to pursue the following:

- The MPIC would meet at least biannually and would be, with the assistance of the Planning and Community Development Department, the primary coordinators for gathering the information needed to track progress.

- MPIC members would be responsible for annually contacting all entities identified as the Advocate in the Action Plan, with follow up contact if necessary. The Planning and Community Development Department would prepare a checklist for each advocate noting the action items for which they are accountable. This sheet will provide space for Advocates to report on the status of the actions. It will also note any actions that have more than one lead agent.
- Once received, the MPIC would compile all the responses into an Annual Master Plan Report, and work with the designated Advocate, noting any discrepancies. This report will also include a summary of the major successes of the past year, explanations or justifications for any actions that appear to be inconsistent with the goals and strategies of the Master Plan, implementation plans for the coming year, and recommendations, if any, on future Master Plan updates.

At its formation, the MPIC can discuss the best approaches to tracking and reporting progress on the Action Plan. Consulting with other communities that use similar committees can be helpful.

ACTION PLAN MATRIX

The *Action Plan Matrix* lists the action items presented in *The Master Plan*. This schedule identifies the anticipated timeframe for completing each action: Short-Term (completed within 5 years), Mid-Term (completed in 5 to 10 years), and Long-Term (completed in 10 years or more). Actions can also be ongoing, meaning they address activities the Town frequently faces.

Implementation of this schedule requires the coordination of multiple Town departments as well as boards, commissions, and committees. This schedule identifies an advocate for each action item. The advocate will ensure that decision makers recognize the action's importance to the larger vision of Sudbury and champion its progress. An advocate will be supported by other municipal entities in the action item's progress towards completion. In some cases, an action may be led by an existing entity or new special committee once the advocate has secured its path forward.

ROUTE 20 CORRIDOR

Volume 2 - Master Plan provides background and context for these action items in the Route 20 Corridor chapter.

ACTION ITEM	ADVOCATE	TIMEFRAME
A. Sudbury will work to develop a strong vision for the Route 20 Corridor and remove barriers to achieving that vision.		
A.1 Complete a Comprehensive Wastewater Management Study that includes recommendations. ***Critical Path Action Item and High Impact Project***	**Dept. of Public Works**	**Short-Term (within 5 years)**
A.2 Fund and commission wastewater solution(s) for the Route 20 Corridor identified in the Comprehensive Wastewater Management Study (See above Action A.1).	**Dept. of Public Works**	**Short-Term (within 5 years)**
A.3 Fund and commission a Visioning Study for the Route 20 Corridor that will provide detailed buildout visualizations of future development scenarios. Identify preferred elements from each scenario. ***Critical Path Action Item***	**Planning & Community Development**	**Short-Term (within 5 years)**
A.4 Develop and adopt zoning for target areas on the Route 20 Corridor that will allow developers to build environmentally sustainable, accessible, and attractive projects.	**Planning & Community Development**	**Mid-Term (5 - 10 years)**
A.5 Revisit the Water Resource Protection Overlay District to determine whether this zoning tool is still functioning as intended. Revise the Zoning Bylaw as appropriate.	**Planning & Community Development**	**Mid-Term (5 - 10 years)**

ACTION ITEM	ADVOCATE	TIMEFRAME
A.6 Ensure housing proposed within the Route 20 Corridor, either as standalone developments or part of a mix-used project, follow policies outlined in **Housing**.	**Planning & Community Development**	**Ongoing**
A.7 Continue to identify transportation improvement opportunities (policies, amenities, or new infrastructure) that connect Route 20 to other areas of Sudbury by means other than a car, such the proposed rail trails, walkway improvements, or shuttle services for commuters, seniors, and youth (see **Transportation and Connectivity** Policy B).	**Planning & Community Development**	**Ongoing**
B. Identify ways to reduce congestion along Route 20 in order to connect the corridor with other key nodes in the community.		
B.1 Provide incentives for private commercial property owners on the Route 20 Corridor to incorporate site elements conducive to transit ridership. These could include interior circulation routes for shuttles and some dedicated parking spaces for shuttle riders.	**Planning & Community Development**	**Short-Term (within 5 years)**
B.2 Evaluate the potential for using a new "back road" or "access road" or other connectivity strategies to keep automobiles from re-entering the Route 20 Corridor unnecessary.	**Planning & Community Development**	**Mid-Term (5 - 10 years)**
B.3 Use incentives or requirements for new development along the Route 20 Corridor that connect Route 20 to future rail trails in Sudbury in a way that enhances local and regional access. This may include leveraging public and private investments for new infrastructure.	**Planning & Community Development**	**Ongoing**
B.4 Revisit the Route 20 commuter shuttle and other regional transit programs to determine if it is meeting commuter needs.	**Transportation Committee**	**Ongoing**

ECONOMIC DEVELOPMENT

Volume 2 - Master Plan provides background and context for these action items in the Economic Development chapter.

ACTION ITEM	ADVOCATE	TIMEFRAME
A. Sudbury will develop capacity to support economic development efforts, including taking an active approach to business, attraction, retention, and expansion.		
A.1 Hire an economic development planner tasked with managing projects specific to economic development and working on business retention, expansion, and outreach/relationship building. The economic development planner, through the Planning and Community Development Department, will lead the remaining actions under this goal.	**Board of Selectmen**	**Short-Term (within 5 years)**
A.2 Develop a comprehensive economic development strategy for the town.	**Planning & Community Development**	**Short-Term (within 5 years)**
A.3 Develop incentives to attract the types of businesses that Sudbury residents currently leave town to patronize, particularly food service, entertainment, private recreation, and recreation-oriented retail.	**Planning & Community Development**	**Short-Term (within 5 years)**
A.4 Survey existing businesses to understand issues and promote retention.	**Planning & Community Development**	**Short-Term (within 5 years)**
A.5 Partner with private property owners, businesses, and other economic development stakeholders to develop modern flexible office and meeting space that supports existing and new professionals within the town who may currently work from home.	**Planning & Community Development**	**Mid-Term (5-10 years)**
A.6 Partner with private property owners, businesses, and other economic development stakeholders to develop a small-scale entrepreneurial/maker space to support light manufacturing/assembly businesses.	**Planning & Community Development**	**Mid-Term (5-10 years)**
A.7 Work with local commercial real estate agents to assist existing businesses seeking to expand by helping locate appropriate space in Town.	**Planning & Community Development**	**Ongoing**
A.8 Strengthen relationships with economic development stakeholders, such as the Sudbury Chamber of Commerce, to assist with capacity building for economic development efforts.	**Planning & Community Development**	**Ongoing**
B. Sudbury will work with property owners and other stakeholders to ready sites for development or redevelopment.		
B.1 Work with local commercial real estate agents to promote sites in Sudbury for commercial development, especially redevelopment sites along the Route 20 corridor.	**Planning & Community Development**	**Short-Term (within 5 years)**

ACTION ITEM	ADVOCATE	TIMEFRAME
B.2 Work with commercial property owners to modernize existing commercial spaces through façade programs, revolving loan funds, etc.	**Planning & Community Development**	**Mid-Term (5-10 years)**
C. Sudbury will develop a strategy for its ongoing fiscal health.		
C.1 Develop strong fiscal strategies and policies that prioritize short- and long-term expenditures and balance costs against revenues.	**Board of Selectmen**	**Short-Term (within 5 years)**
C.2 Modify zoning to promote the type and scale of development aligning with current retail and office market trends, including mixed-use buildings, walkability, connectivity, integration with housing options, etc. Consider using an overlay district to implement this regulatory change. (See **Route 20 Corridor**.)	**Planning & Community Development**	**Mid-Term (5-10 years)**

TRANSPORTATION AND CONNECTIVITY

Volume 2 - Master Plan provides background and context for these action items in the Transportation and Connectivity chapter.

ACTION ITEM	ADVOCATE	TIMEFRAME
A. Sudbury will remain active in regional efforts to coordinate transportation planning across multiple municipalities.		
A.1 Study the need for and establish park and ride locations.	**Planning & Community Development**	**Short-Term (within 5 years)**
A.2 Coordinate with the state, MassDOT, Metropolitan Area Planning Council (MAPC), Massachusetts Bay Transportation Authority (MBTA), MetroWest Regional Transit Authority (MWRTA), and adjacent towns to establish and enhance connections between key destinations.	**Planning & Community Development**	**Ongoing**
A.3 Solicit support from legislators as needed to prioritize and implement regional connectivity projects.	**Board of Selectmen**	**Ongoing**
B. Sudbury will continue to identify, design, and install physical improvements to its roadway system in a way that increases public safety and pedestrian/bicycle mobility and ensures compliance with state and federal accessibility regulations.		
B.1 Implement the projects in the Complete Streets (Phase II) Prioritization Plan. Coordinate and prioritize infrastructure improvements that support economic development and housing initiatives.	**Dept. of Public Works**	**Short-Term (within 5 years)**
B.2 Study traffic signal synchronization opportunities along Route 20.	**Dept. of Public Works**	**Short-Term (within 5 years)**
B.3 Evaluate appropriate strategies that can reduce vehicular traffic volumes (transportation demand management) in preparation for future larger development proposals.	**Planning & Community Development**	**Short-Term (within 5 years)**
B.4 Explore access management strategies to reduce congestion and improve safety along major roadways, particularly commercial areas along Route 20, including, but not limited to: **a.** Identify opportunities for shared driveways and/or other connections between adjacent commercial properties. **b.** Evaluate frontage of rear roads between multiple properties to create connectivity between adjacent commercial properties to better serve businesses with reduced driveways and road access points. **c.** Study with MassDOT to determine if syncing signalized intersections can improve traffic flow.	**Planning & Community Development**	**Short-Term (within 5 years)**
B.5 Prioritize streets for burying overhead utility lines and research state and federal funding opportunities.	**Planning & Community Development**	**Mid-Term (5-10 years)**

ACTION ITEM	ADVOCATE	TIMEFRAME
C. Sudbury will foster the continued creation of the Bruce Freeman Rail Trail (BFRT) and other walking and biking networks throughout Town.		
C.1 Complete the construction of Phase I of the BFRT. ***High Impact Project***	**Planning & Community Development**	**Short-Term (within 5 years)**
C.2 Conduct environmental studies, acquire required permits and approvals, prepare engineering designs and construction drawings, and construct the extension of the BFRT on the newly acquired CSX-owned corridor. ***High Impact Project***	**Planning & Community Development**	**Short-Term (within 5 years)**
C.3 Work with Friends of the BFRT on signage and wayfinding, safe roadway crossings, features, and amenities for those with disabilities, and trail maintenance policies. ***High Impact Project***	**Planning & Community Development**	**Short-Term (within 5 years)**
C.4 Pursue grants to fund trail connections. ***High Impact Project***	**Planning & Community Development**	**Ongoing**
D. Sudbury will map key destination points within the community and will work to close gaps in the pedestrian and bicycle network accessing these destinations and creating and improving access for those with disabilities.		
D.1 Work with community businesses and organizations to create marketing plans to attract rail trail users to visit local shops and amenities.	**Planning & Community Development**	**Short-Term (within 5 years)**
D.2 Create an inventory of destination points, including but not limited to civic institutions such as schools and libraries, commercial areas, recreational assets, and historical and cultural places in the community. Identify opportunities to connect destinations points with an expanded walkway and bicycle network (See also **Route 20 Corridor** A.7).	**Planning & Community Development**	**Short-Term (within 5 years)**
D.3 Update the walkway inventory conducted in 2000 by the Sudbury Walkway Committee to include completed walkways. Identify locations of the existing network that are not accessible for those with disabilities. Along with outcomes from D.2, prioritize future walkway segments.	**Planning & Community Development**	**Mid-Term (5-10 years)**
D.4 Create an open dialogue with property owners with key frontage areas as a means of educating and engaging owners about benefits of closing gaps within the pedestrian and bicycle network.	**Planning & Community Development**	**Mid-Term (5-10 years)**
D.5 Explore the possibility of creating a toolkit that can be given to property owners located in frontage areas so that they may better understand some of the benefits of pedestrian infrastructure such as increased property values. Develop and implement an educational campaign with key stakeholders.	**Planning & Community Development**	**Long-Term (more than 10 years)**

ACTION ITEM	ADVOCATE	TIMEFRAME
D.6 Pursue grant opportunities and funding available for the creation of walkways. Grant programs to pursue include but are not limited to Complete Streets Funding, Transportation Alternatives Program (TAP), Safe Routes to School, and others.	**Planning & Community Development**	**Ongoing**
E. Sudbury commits to be a community where people of all ages and abilities and financial means are able to get where they need to go locally and regionally without use of personal automobiles.		
E.1 Identify specific measures to address gaps in transportation services for persons with disabilities and identify funding sources required to ensure access.	**Council on Aging and Commission on Disability**	**Short-Term (within 5 years)**
E.2 Rethink the existing school busing cost structure to encourage bus use and discourage car drop-off/pick-up of students at Ephraim Curtis Middle School and local elementary schools. Also see Actions D.2 and D.3.	**Sudbury Public Schools**	**Short-Term (within 5 years)**
E.3 Manage parking resources and explore options for shared parking near trails.	**Planning & Community Development**	**Mid-Term (5-10 years)**
E.4 Continue to work with MAPC through their Making the Connections micro transit pilot project to identify and fill gaps in connectivity between modes and destinations.	**Planning & Community Development**	**Ongoing**
E.5 Continue to coordinate with Sudbury Senior Center and Commission on Disability in the evaluation of its transportation services to ensure that needs of the entire community are being met and identify gaps in services. Identify opportunities to expand existing services for older residents and persons with disabilities and investigate new types of services such as ride-share programs. Identify funding sources required to ensure access.	**Council on Aging**	**Ongoing**
E.6 Coordinate with MetroWest Regional Transit Authority (MWRTA) to expand accessible service along major roadways in Sudbury wherever possible.	**Transportation Committee**	**Ongoing**
E.7 Ensure future housing development, particularly those with SHI units, include resources and access to existing local shuttle services, walking and bicycling amenities, and connections to regional transportation networks. Partner with the Sudbury Housing Authority and Sudbury Housing Trust in this effort.	**Planning & Community Development**	**Ongoing**

HISTORIC AND CULTURAL IDENTITY

Volume 2 - Master Plan provides background and context for these action items in the Historic and Cultural Identity chapter.

ACTION ITEM	ADVOCATE	TIMEFRAME
A. Sudbury will address historic preservation needs and emphasize collaboration among its local historic preservation groups and coordinate their efforts town-wide.		
A.1 Create a Historic and Archaeological Working Group comprised of preservation organizations, Town boards, committees, and commissions, Town officials, and citizens whose mission is to advance the protection, preservation, and development of historical archaeological resources and town character. ***Big Idea Project***	**Planning & Community Development**	**Short-Term (within 5 years)**
A.2 Appropriate funding for and develop a town-wide Historic Preservation Plan with the involvement of stakeholders. Items addressed in the plan could include, but will not be limited to: **a.** Ongoing survey and study of non-documented and under-documented historic and archaeological resources and/or those not fully understood. **b.** A clear description of the responsibilities of each historic resource stakeholder in the community, including the Town boards, committees, and commissions, historic property owners (homeowners and businesses), and the Town. **c.** An assessment of needs and gaps in Sudbury's historic preservation administrative capacity, funding, and infrastructure. **d.** An audit of existing historic preservation regulatory tools, how their effectiveness can be strengthened, and adopting new tools for preservation protections. **e.** Identifying the appropriate situations for purchasing property, regulating property, and educating property owners to achieve historic preservation. **f.** Developing a Town Center Master Plan. ***Critical Path Action***	**Historical Commission**	**Short-Term (within 5 years)**
A.3 Re-evaluate the purpose, scope, and adequacy of regulatory tools to protect Sudbury's historical and cultural resources.		
a. Examine existing historic district policies: Determine the need to expand or reduce boundaries based on historic resources and the effect of these changes on area character. Define how historic district boundaries are drawn and if the 300-foot setback from the public right of way is an effective determinant of a boundary. Add provisions for landscape regulations.	**Historic Districts Commission**	**Short-Term (within 5 years)**

ACTION ITEM	ADVOCATE	TIMEFRAME
b. Examine the effectiveness of the Demolition Delay Bylaw to protect properties outside historic districts and lessen its impact on properties that have no historic value. Consider ways to update it.	**Historical Commission**	**Short-Term (within 5 years)**
c. Consider establishing a Minimum Maintenance Bylaw or a Demolition by Neglect Bylaw to maintain historic properties and protect them from demolition.	**Historical Commission**	**Short-Term (within 5 years)**
A.4 Develop a sophisticated and accessible platform for the Towns' historic and archaeological resources inventory that can be used to support local permit review and educate residents and property owners. **a.** Create a complete digital inventory of historic structures, sites, landscapes, roads, and significant features (i.e. stone walls) throughout Sudbury. **b.** Identify and inventory historic structures, buildings, sites, and landmarks that have not been inventoried or those inventories which are out of date. **c.** Work with the Sudbury Historical Society and the Goodnow Library to include link historic photos of Sudbury with property addresses as part of the platform. **d.** Link with GIS data to better inform and shape the effectiveness of preservation and planning policies.	**Planning & Community Development**	**Long-Term (more than 10 years)**
B. Sudbury will continue to develop educational resources and materials related to historical and archaeological resources in the community.		
B.1 Develop a Historic Preservation Primer for all local boards, commissions, and committees that clearly describes the variety of historic preservation regulatory tools in the community, powers, and limitations, and how they function together.	**Historical Commission**	**Short-Term (within 5 years)**
B.2 Increase awareness and support among residents about the value and benefits of Historic Preservation tool protections. Consider an education campaign for local realtors, Chamber of Commerce, community leaders, and other stakeholders.	**Historical Commission**	**Short-Term (within 5 years)**
B.3 Develop more robust resources for historic homeowners, such as a historic design library, better online resources the Town's webpage, and public seminars on how to preserve historic homes (how to restore historic windows, historic property maintenance, etc.), to encourage more proactive maintenance and restoration of properties.	**Historical Commission**	**Short-Term (within 5 years)**

ACTION ITEM	ADVOCATE	TIMEFRAME
B.4 Working in collaboration with the Historical Society, the Historical Commission, the Wayside Inn, the Sudbury Cultural Council, and other interested parties, develop materials focused on Sudbury's historical resources to support the local tourist economy. This would include connections to the rail trails, incorporating historical railroad elements and capitalizing on bicycle and pedestrian use to attract tourism.	**Historical Commission**	**Short-Term (within 5 years)**
B.5 Create a more descriptive and informative Historic Districts Design Guidelines. Review guidelines from other Massachusetts communities as a first step.	**Historic Districts Commission**	**Short-Term (within 5 years)**
C. Sudbury will continue to foster a vibrant local arts and culture network.		
C.1 Coordinate efforts between local arts and cultural groups and the Commission on Disability to increase access and offerings related to the arts for people with disabilities.	**Commission on Disability**	**Short-Term (within 5 years)**
C.2 Encourage collaboration between local arts, cultural, historic organizations, and the local business community to create community-wide events and programming.	**Town Manager**	**Short-Term (within 5 years)**
C.3 Continue to provide local artists and arts organizations with access to municipal facilities as appropriate to display art, hold classes, and publicize events.	**Town Manager**	**Ongoing**
C.4 Work with Sudbury Public Schools and Lincoln-Sudbury Regional High School on special projects that engage students with local historic resources and cultural entities.	**Cultural Council**	**Ongoing**

NATURAL ENVIRONMENT

Volume 2 - Master Plan provides background and context for these action items in the Natural Environment chapter.

ACTION ITEM	ADVOCATE	TIMEFRAME
A. Sudbury will take proactive measures to protect the Town's drinking water supply.		
A.1 Revisit the Water Resource Protection Overlay District to determine whether this zoning tool is still functioning as intended. Revise the Zoning Bylaw as appropriate. (see **Route 20 Corridor**).	**Planning & Community Development**	**Mid-Term (5-10 years)**
A.2 Review all local regulations that govern development above the aquifer (e.g., Bylaws, Board of Health, Conservation, Subdivision) to ensure provisions protect water quality and allow for groundwater recharge to the greatest extent practicable.	**Planning & Community Development**	**Long-Term (more than 10 years)**
A.3 Monitor lands above the aquifer for opportunities to implement conservation strategies, such as property acquisition and conservation restrictions. See **Conservation and Recreation**.	**Conservation Commission**	**Ongoing**
A.4 Continue coordination with the Sudbury Water District as it plans for future investments.	**Planning & Community Development**	**Ongoing**
B. Sudbury commits to implementing best management practices for stormwater management.		
B.1 Identify opportunities to install green infrastructure on Town properties in existing or planned infrastructure.	**Dept. of Public Works**	**Short-Term (within 5 years)**
B.2 Where appropriate, incorporate language into the Zoning Bylaws and Subdivision Rules and Regulations that limits the area of alteration on a site, protects steep slopes, and limits the removal of existing native vegetation or trees on a site. Encourage these best practices in cluster developments.	**Planning & Community Development**	**Mid-Term (5-10 years)**
B.3 Revise all local regulations (e.g., Zoning, Board of Health, Conservation, Subdivision) to encourage the use of porous/pervious materials to take the place of traditional impervious cover where appropriate.	**Planning & Community Development**	**Long-Term (more than 10 years)**
B.4 Continue to support the implementation of the Town's Stormwater Water Management Program Plan with adequate staffing, equipment, and financial resources. See **Town Services, Facilities, and Infrastructure**.	**Dept. of Public Works**	**Ongoing**
B.5 Prioritize green infrastructure to manage stormwater as part of future public and private projects and investments. Add language to Sudbury's Stormwater Bylaw.	**Dept. of Public Works**	**Ongoing**

ACTION ITEM	ADVOCATE	TIMEFRAME
C. Sudbury is commitsted to enhancing and maintaining the quality of surface water resources.		
C.1 Monitor lands around ponds and waterways for opportunities to implement conservation strategies, such as property acquisition, conservation restrictions, and public education about the water quality impacts of fertilizer use, among other strategies (see Action E.2 below and **Conservation and Recreation**).	**Ponds & Waterways Committee**	**Ongoing**
C.2 Continue to implement strategies in the Ponds and Waterways Master Plan.	**Ponds & Waterways Committee**	**Ongoing**
C.3 Continue participation in regional planning and management efforts in the SuAsCo River watershed.	**Planning & Community Development**	**Ongoing**
D. Sudbury encourages polices and development standards that protect and improve the Town's natural resources.		
D.1 Require the use of low impact design standards for projects near sensitive environmental resources and encourage town wide as appropriate.	**Planning & Community Development**	**Short-Term (within 5 years)**
D.2 Evaluate the effectiveness of Sudbury's Wetland Bylaw and Regulations and revise as needed to best protect wetlands.	**Conservation Commission**	**Mid-Term (5-10 years)**
D.3 Identify opportunities to restore the Town's floodplain areas to natural states wherever possible (see **Resiliency**).	**Planning & Community Development**	**Mid-Term (5-10 years)**
D.4 Develop a forestry management plan to address publicly owned forested areas.	**Conservation Commission**	**Mid-Term (5-10 years)**
D.5 Develop a tree preservation bylaw that defines tree preservation and replanting standards for public and private properties. Consider mitigation requirements such as a tree fund or tree bank.	**Planning & Community Development**	**Mid-Term (5-10 years)**
D.6 Monitor lands that support important wildlife habitat for opportunities to implement conservation strategies, such as property acquisition and conservation restrictions (see **Conservation and Recreation**).	**Conservation Commission**	**Ongoing**
E. Sudbury will educate private property owners about the community-wide benefits of healthy natural resources on their land.		
E.1 Promote land management programs for private property owners, including Chapter 61 programs.	**Conservation Commission**	**Short-Term (within 5 years)**

ACTION ITEM	ADVOCATE	TIMEFRAME
E.2 Continue to educate the public about how they can implement best practices for stormwater management on their properties. Examples include rain gardens, rain barrels, and reduced impervious surfaces.	**Planning & Community Development**	**Short-Term (within 5 years)**
E.3 Educate residents about the impacts of fertilizers and lawn chemicals on local waterways and promote and encourage the use of alternative environment-friendly options.	**Conservation Commission**	**Short-Term (within 5 years)**
E.4 Educate residents about the importance of tree cover and the use of selective clearing of forested areas.	**Conservation Commission**	**Short-Term (within 5 years)**

CONSERVATION AND RECREATION

Volume 2 - Master Plan provides background and context for these action items in the Conservation and Recreation chapter.

ACTION ITEM	ADVOCATE	TIMEFRAME
A. Sudbury will use existing plans to help address the conservation and recreation needs of the community.		
A.1 Support the implementation of the Open Space & Recreation Plan Action Plan. Ensure the plan takes a big-picture approach to the design and programming of the Town's parks and open space resources.	**Planning & Community Development**	**Ongoing**
A.2 Encourage and support on-going updates of conservation plans like Ponds and Waterways Master Plan and Land Management Plan for the Watersheds of the Sudbury Reservoirs.	**Ponds & Waterways Committee**	**Ongoing**
A.3 Be proactive to ensure that outdoor areas, such as athletic fields and trails, are accessible to all residents and that accommodations are in place to make this possible, using federal and state ADA standards and universal design principles.	**Park & Recreation Dept.**	**Ongoing**
B. Sudbury will continue to be proactive about identifying and prioritizing lands of interest for conservation.		
B.1 Continue the work of the Community Preservation Committee, the Land Acquisition Review Committee, and regional partners like Sudbury Valley Trustees.	**Planning & Community Development**	**Ongoing**
B.2 Promote opportunities for public use as part of property acquisition to ensure community benefits and continued support of land acquisition initiatives.	**Planning & Community Development**	**Ongoing**
B.3 Continue planning efforts to increase public conservation and recreational benefits of Sewataro and Broadacre properties.	**Conservation Commission & Parks and Recreation Dept.**	**Ongoing**
C. Sudbury will work to increase programming to meet needs for organized activities. (See Sudbury Open Space and Recreation Plan)		
C.1 Make grading improvements to existing fields, such as Davis and Feeley Fields.	**Parks & Recreation Dept.**	**Short-Term (within 5 years)**
C.2 Add LED lighting to artificial turf fields to allow usage at night.	**Parks & Recreation Dept.**	**Short-Term (within 5 years)**
C.3 Ensure indoor and outdoor activities and programs for residents that are accessible and support the participation of those individuals living with disabilities.	**Parks & Recreation Dept.**	**Ongoing**
C.4 Continue implementation of the Athletic Fields Needs Assessment and Master Plan.	**Parks & Recreation Dept.**	**Ongoing**

ACTION ITEM	ADVOCATE	TIMEFRAME
D. Sudbury recognizes the importance of communication between the Town and residents and will enhance the effort to inform people of conservation efforts.		
D.1 Develop public education materials that explain the local acquisition process and promote conservation efforts.	**Planning & Community Development**	**Short-Term (within 5 years)**
D.2 Collaborate with the Land Acquisition Review Committee to improve acquisition process education in Sudbury.	**Planning & Community Development**	**Short-Term (within 5 years)**
E. Sudbury will commit to enhancing connections between open space areas, parks, schools, and historic resources with residential areas for walking/biking, which will increase recreational opportunities and access to these resources.		
E.1 Support the completion the BFRT and ensure accessibility in compliance with ADA regulations.	**Bruce Freeman Rail Trail Design Task Force**	**Short-Term (within 5 years)**
E.2 Continue the expansion of the BFRT through the CSX Corridor property. (See **Transportation and Connectivity** Action C.2)	**Planning & Community Development**	**Short-Term (within 5 years)**
E.3 Identify gaps and opportunities to link conservation and recreation resources, residential areas, schools, historic places, etc. by strategically expanding the existing network of walkways. (See **Transportation and Connectivity**)	**Planning & Community Development**	**Mid-Term (within 5 years)**
E.4 Continue to discuss the design of the proposed Mass Central Rail Trail with regional and state partners.	**Board of Selectmen**	**Ongoing**
F. Sudbury will work with local organizations such as the Senior Center, Council on Aging as well as other Town departments to connect residents with conservation areas in the community.		
F.1 Increase programming in conservation areas for all residents, particularly seniors, youth, and those living with disabilities.	**Conservation Commission**	**Short-Term (within 5 years)**
F.2 Create more community gardens or similar amenities that are accessible to people of all abilities, include seating and gathering areas for the multi-generational experience.	**Conservation Commission**	**Short-Term (within 5 years)**
F.3 Work with Sudbury Public Schools and the Lincoln-Sudbury Regional High School to incorporate awareness and direct experience of conservation areas into arts, science, and history curricula.	**Conservation Commission**	**Mid-Term (within 5 years)**

TOWN FACILITIES, SERVICES, AND INFRASTRUCTURE

Volume 2 - Master Plan provides background and context for these action items in the Town Facilities, Services, and Infrastructure chapter.

ACTION ITEM	ADVOCATE	TIMEFRAME
A. Sudbury will plan for and implement changes to its services and facilities that anticipate the needs of an aging population consistent with Livable Sudbury: A Community Needs Assessment and the American's with Disabilities Act.		
A.1 Convene a Livable Sudbury Working Group with leadership from the Council on Aging, Senior Center, and Livable Sudbury Ambassador, and representation from public safety (Police, Fire, EMA), Planning & Community Development, the Library, and the Commission on Disability among other municipal departments, to prioritize and implement the potential action items in *Livable Sudbury*.	**Council on Aging**	**Short-Term (within 5 years) then Ongoing**
B. Sudbury will commit to research and, where appropriate, invest in technology that will enhance municipal services.		
B.1 Invest in upgrades to GIS data that will help visualize and, where applicable, analyze data for the Assessor's Office, Planning & Community Development, Dept. of Public Works, public safety, the Historical Commission, and others.	**Board of Selectmen**	**Short-Term (within 5 years)**
B.2 Dedicate resources to explore the coordination and implementation of new technology across multiple departments to produce reports for each department on possible investments and returns.	**Board of Selectmen**	**Mid-Term (5-10 years)**
B.3 Explore the possibility of using Asset Management software as part of planning for facilities maintenance and capital expenditures.	**Facilities Dept.**	**Mid-Term (5-10 years)**
B.4 Continue to study the ongoing evolution of wireless technology and supporting infrastructure and dedicate funds to this type of study if needed. Revisit the Wireless Service Overlay District as necessary.	**Planning Board**	**Mid-Term (5-10 years)**
C. Sudbury will commit resources to increasing revenue to the Town.		
C.1 Hire an economic development planner tasked with managing projects specific to economic development and working on business retention, expansion, and outreach/relationship building. (See Economic Development)	**Board of Selectmen**	**Short-Term (within 5 years)**
C.2 Evaluate the most effective way to increase grant writing capacity for the Town and commit resources accordingly. This may or may not include additional staffing.	**Board of Selectmen**	**Short-Term (within 5 years)**
D. Sudbury recognizes the value of well-planned maintenance and asset management programs and include these practices into the everyday provision of municipal services.		

ACTION ITEM	ADVOCATE	TIMEFRAME
D.1 Develop a comprehensive Facilities Assessment and Maintenance Plan that includes a Capital Needs Assessment for every municipal building. ***Critical Path Action***	**Facilities Dept.**	**Short-Term (within 5 years)**
D.2 Consider the development of a more formal Asset Management Program that emerges from the Facilities Assessment and Maintenance Plan.	**Town Manager**	**Short-Term (within 5 years)**
D.3 Ensure the Facilities Assessment and Maintenance Plan addresses any state or federal compliance requirements (e.g., MS4 stormwater program).	**Town Manager**	**Short-Term (within 5 years)**
D.4 Develop educational materials for the public to raise awareness of the need for maintenance related to municipal facilities.	**Facilities Dept.**	**Short-Term (within 5 years)**
D.5 Develop sustainability goals for Town facilities, infrastructure, and operations.	**All Departments, Town Manager**	**Short-Term (within 5 years)**
E. Sudbury is committed to be a community where people of all ages and abilities enjoy access to municipal services, facilities, and public discussion.		
E.1 Ensure all digital material developed by the Town and posted on its website is accessible to people with disabilities (see **Public Health and Social Wellbeing** Policy C).	**Town Manager**	**Short-Term (within 5 years)**
E.2 As part of the Self Evaluation of Town facilities, properties, and services, develop a Transition Plan to meet the regulatory requirements outlined in ADA. Coordinate the Transition Plan with the State Historic Preservation Office and the State Architectural Review Board for all facilities located in in the Town.	**Facilities Dept.**	**Short-Term (within 5 years)**
E.3 Ensure the Town achieves and maintains compliance with Title II of ADA.	**Town Manager**	**Ongoing**

HOUSING

Volume 2 - Master Plan provides background and context for these action items in the Housing chapter.

ACTION ITEM	ADVOCATE	TIMEFRAME
A. Sudbury will actively pursue housing strategies that will diversify its housing stock in ways that are consistent with the character of existing districts.		
A.1 Prepare for future development proposals by identifying areas where missing middle housing (market-rate options that meet the demand for housing types other than single family homes or larger multi-family complexes) could serve as a transition between mixed-use/multi-family developments and surrounding residential neighborhoods. Explore zoning changes.	**Planning & Community Development**	**Short-Term (within 5 years)**
A.2 Prepare for future development proposals by identifying larger developable parcels where missing middle housing types may be appropriate as part of a town-wide Housing Strategy to provide both home ownership and rental opportunities.	**Planning & Community Development**	**Short-Term (within 5 years)**
A.3 Adopt new or revised zoning bylaws to enable development consistent with A.2 above.	**Planning & Community Development**	**Mid-Term (5-10 years)**
A.4 Pursue regulatory changes (potentially an overlay district) and infrastructure investments that will allow for higher density housing within the Route 20 Corridor area (see **Route 20 Corridor**).	**Planning & Community Development**	**Mid-Term (5-10 years)**
A.5 Ensure zoning allows or requires the inclusion of housing types that will be much more affordable than typical single-family homes in Sudbury. Where a new Housing Production Plan or Housing Strategy is developed, new development should be consistent with the strategies in that plan. Partner with the Sudbury Housing Authority and Sudbury Housing Trust in this effort.	**Planning & Community Development**	**Mid-Term (5-10 years)**
B. Sudbury will continue to support a sophisticated local network of organizations committed to meeting local housing needs.		
B.1 Develop a town-wide Housing Strategy that will enable the Town to meet local needs and maintain its SHI stock above 10%. Ensure that the needs of those who require accommodations and accessible housing are addressed. Develop a Housing Strategy which would include active engagement of the Housing Trust, Sudbury Housing Authority, and RHSO. ***Critical Path Action***	**Planning & Community Development**	**Short-Term (within 5 years)**
B.2 Provide resources for the continued training and education of municipal staff and board members on issues related to housing.	**Planning & Community Development**	**Short-Term (within 5 years)**
B.3 Continue active support for and participation in the Regional Housing Services Office (RHSO).	**Planning & Community Development**	**Ongoing**

RESILIENCY

Volume 2 - Master Plan provides background and context for these action items in the Resiliency chapter.

ACTION ITEM	ADVOCATE	TIMEFRAME
A. Sudbury recognizes it is vulnerable to the impacts of natural hazards and climate change and must build capacity to be more resilient.		
A.1 Hire municipal resiliency staff that can work with multiple departments, boards, and committees to plan for and implement strategies that will build the Town's resiliency to the impacts of natural hazards and climate change.	**Town Manager**	**Short-Term (within 5 years)**
A.2 Maintain the network of stakeholders that participated in the Municipal Vulnerability Preparedness (MVP) process to continue implementation of the workshop outcomes. Consider periodic update meetings to evaluate progress and revisit priorities as needed.	**Planning & Community Development**	**Short-Term (within 5 years)**
A.3 Develop outreach programs and materials to educate residents and businesses about the efforts the Town is doing to be more resilient and how they can contribute and be a part of the process (see **Natural Environment**).	**MVP Committee**	**Short-Term (within 5 years)**
A.4 Continue to pursue implementation funding from the MVP program to implement the MVP workshop outcomes. Research additional federal, state, and regional funding sources that can support these initiatives.	**Planning & Community Development**	**Ongoing**
A.5 Continue to stay current on climate change data as it becomes available. Incorporate changes to address these new issues into local policies and regulations as appropriate, including the Hazard Mitigation Plan (HMP).	**Planning & Community Development**	**Ongoing**
A.6 Monitor lands with natural resources, such as wetlands and others with flood storage capacity, for opportunities to implement conservation strategies, such as property acquisition and conservation restrictions (see **Conservation and Recreation**).	**Conservation Agent**	**Ongoing**
B. Sudbury understands that the Hazard Mitigation Plan (HMP) is an important document to help it prepare for and recover from natural hazard events.		
B.1 Update the Sudbury HMP every five years to measure progress of the plan's goals, to update new goals into the plan and thereby remain eligible for Federal Emergency Management Agency (FEMA) funding.	**Fire Chief**	**Ongoing**
B.2 Coordinate annual updates from the HMP Committee with annual updates from the Master Plan Implementation Committee.	**Fire Chief**	**Ongoing**
C. Sudbury is committed to conserving energy and using renewable energy sources to reduce costs as well as its carbon footprint.		

ACTION ITEM	ADVOCATE	TIMEFRAME
C.1 Research and develop carbon and climate related goals and create a carbon reduction plan.	**Planning & Community Development**	**Short-Term (within 5 years)**
C.2 Create informational mechanism(s) to connect businesses and residents with renewable energy resources. Examples include: a page on the Town's website, developing and/or distributing pamphlets and informational materials available through regional and state entities, such as the Massachusetts Clean Energy Center to the Town.	**Planning & Community Development**	**Mid-Term (5-10 years)**
C.3 Continue to upgrade Town facilities and buildings to improve the energy efficiency.	**Facilities Dept.**	**Ongoing**
C.4 Continue to identify opportunities to install solar energy systems on Town properties.	**Facilities Dept.**	**Ongoing**
D. While the impacts of the COVID-19 pandemic are still unknown, Sudbury recognizes the need to understand the current snapshot of the Town's social and economic situation as a result and plan for future public health events that impact its ability to deliver Town services and will have social and economic effects on the community.		
D.1 Identify data that can help explain the impacts of the COVID-19 pandemic or similar events, including data the Town already collects and new data points needed.	**Town Manager**	**Short-Term (within 5 years)**
D.2 Identify where the Town was successful in delivering Town services and functions and where gaps existed during the COVID-19 pandemic, and design plans to address these short falls.	**Town Manager**	**Short-Term (within 5 years)**
D.3 Collaborate with neighboring communities and state and regional partners to collect and analyze data that will help measure the impacts of COVID-19 and develop policies to address future pandemics.	**Town Manager**	**Short-Term (within 5 years)**

PUBLIC HEALTH AND SOCIAL WELLBEING

Volume 2 - Master Plan provides background and context for these action items in the Public Health and Wellbeing chapter.

ACTION ITEM	ADVOCATE	TIMEFRAME
A. Sudbury will work to build capacity and support existing networks of municipal departments, as well as neighboring communities, that are working on public health issues, including opioid addiction, mental health, social isolation, dementia, etc.		
A.1 Increase staffing to support public health work and utilize volunteers in the community to assist with educating and serving residents.	**Board of Selectmen**	**Short-Term (within 5 years)**
A.2 2 Identify opportunities to work with neighboring communities and regional networks to share resources and information to address common public health issues.	**Board of Health**	**Short-Term (within 5 years)**
B. Sudbury will consider social determinants and integrate health policies into other aspects of municipal planning decisions.		
B.1 Conduct community needs assessments to identify gaps in health and social services for residents, particularly seniors, residents living with disabilities, and low-income families and individuals. Use *Livable Sudbury* as a starting point to expand an assessment of needs to other populations in the community.	**Board of Health**	**Short-Term (within 5 years)**
B.2 From the outcomes of the community needs assessment, engage the community to prioritize strategies to address gaps and strengthen opportunities.	**Board of Health**	**Short-Term (within 5 years)**
C. Sudbury will work to diversify and expand communication tools and strategies about public health issues and locally available services.		
C.1 Create integrated communication channels and ensure that municipal digital materials are accessible to people with disabilities (See **Town Facilities, Services, and Infrastructure** Policy E).	**Town Manager**	**Short-Term (within 5 years)**
C.2 Collaborate with local organizations such as the Senior Center, the Commission on Disability, and the Town Social Worker to share/ disseminate information with its constituents as well as the community in general.	**Town Manager**	**Short-Term (within 5 years)**
D. Sudbury will work to connect public health resources with transportation options.		
D.1 Continue to support the Council on Aging/ Senior Center to enhance transportation services such as Sudbury Connect and FISH (see **Transportation and Connectivity**).	**Council on Aging**	**Short-Term (within 5 years)**
D.2 Include access to public health resources in the "Making the Connections" pilot study (see **Transportation and Connectivity**).	**Transportation Committee**	**Short-Term (within 5 years)**

ACTION ITEM	ADVOCATE	TIMEFRAME
E. Sudbury will work to strengthen social and civic engagement to bring residents together.		
E.1 Evaluate such opportunities based on participation costs and consider including free events or costs based on a sliding scale.	**Parks & Recreation Dept.**	**Short-Term (within 5 years)**
E.2 Explore ways to create an outdoor accessible community common space for residents to utilize for activities like outdoor picnic and summer concerts and events.	**Parks & Recreation Dept.**	**Mid-Term (5-10 years)**
E.3 Ensure the civic participation, such as participation in Town Meeting and other Town-sponsored events for public input and engagement, continues to be accessible, inclusive, and equitable.	**Board of Selectmen, Town Manager, Town Clerk**	**Ongoing**
E.4 Continue to find opportunities through the Parks and Recreation Department, Library, Senior Center, and local organizations to create family-friendly, all-ages, and all abilities community events year-round.	**Parks & Recreation Dept., Library, Council on Aging, Comission on Disability**	**Ongoing**

APPENDIX G: NUTRIENTS AND 303(d) LIST

Massachusetts Year 2016 Integrated List of Waters

Final Listing of the Condition of Massachusetts' Waters Pursuant to Sections 305(b), 314 and 303(d) of the Clean Water Act

CN 470.1

Commonwealth of Massachusetts
Executive Office of Energy and Environmental Affairs
Kathleen A. Theoharides, Secretary
Massachusetts Department of Environmental Protection
Martin Suuberg, Commissioner
Bureau of Water Resources
Kathleen Baskin, Assistant Commissioner

NOTICE OF AVAILABILITY

This report is available via the Massachusetts Department of Environmental Protection's (MassDEP) website: http://www.mass.gov/eea/agencies/massdep/water/watersheds/total-maximum-daily-loads-tmdls.html

DISCLAIMER

References to trade names, commercial products and manufacturers in this report does not constitute endorsement.

Cover photo: Blackstone River, Millville, MA by Therese Beaudoin

Massachusetts Year 2016 Integrated List of Waters

Final Listing of the Condition of Massachusetts' Waters Pursuant to Sections 305(b), 314 and 303(d) of the Clean Water Act

Prepared by:

Massachusetts Division of Watershed Management
Watershed Planning Program

CN: 470.1

December, 2019

Massachusetts Department of Environmental Protection
Division of Watershed Management
Watershed Planning Program
8 New Bond Street
Worcester, Massachusetts 01606

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Table of Contents

List of Tables and Figures iii
List of Acronyms and Abbreviations iv
EXECUTIVE SUMMARY vii
INTRODUCTION 1
MASSACHUSETTS SURFACE WATER ATLAS 2
COSTS AND BENEFITS OF CLEAN WATER 5
AN OVERVIEW OF THE MASSACHUSETTS WATER QUALITY MANAGEMENT PROGRAM 7
The Continuing Planning Process 7
Surface Water Quality Standards 7
Monitoring and Assessment – Rivers, Lakes and Estuaries 9
Monitoring and Assessment – Wetlands 14
TMDL Program 15
Surface Water Discharge Permitting and Stormwater Programs 18
Sustainable Water Management and the Water Management Act 19
Nonpoint Source Program 20
Clean Water State Revolving Fund (SRF) 21
Wetlands Management Programs 21
ASSESSMENT UNIT DEFINITIONS FOR MASSACHUSETTS 22
INTEGRATED ASSESSMENT AND LISTING OF MASSACHUSETTS' WATERS 24
Sources of Information 24
Data Acceptability 26
Consolidated Assessment and Listing Methodology (CALM) 27
Shared Waters 29
DEVELOPMENT OF THE 2016 INTEGRATED REPORT 29
List Categories 1 - 4 30
The 303(d) List of Impaired Waters - List Category 5 33
Waters Impaired by Nutrients 34
Biological Assessments 35
Cold Water Fisheries 35
Fish Consumption Advisories 36
Waters Impaired by Mercury 36
Predictive Models and Evaluated Information 37
PRIORITIZING WATERS FOR TMDL DEVELOPMENT 37
Bacteria TMDLs 39
The Massachusetts Estuaries Project (MEP) 39
Long Island Sound Nitrogen TMDL Implementation 40
Assabet River Phosphorus TMDL Implementation 40

Monitoring and Related Activities for the Blackstone River 41
Mitigating Cranberry Farming Impacts – TMDL Development and Implementation 41
Mystic River Phosphorus Loading Analysis 42
The CWA Section 303(d) Program Long-term Vision – 2016 - 2022 42
BIBLIOGRAPHY 44
General References 44
Watershed Assessment Reports 49
TMDL Documents 52
INTEGRATED LIST CATEGORIES 58
Category 1 waters - “Waters attaining all designated uses” 60
Category 2 waters - "Attaining some uses; other uses not assessed" 61
Category 3 waters - "No uses assessed" 89
Category 4a waters - "TMDL is completed" 111
Category 4b waters - "Impairment controlled by alternative pollution control requirements" 133
Category 4c waters - "Impairment not caused by a pollutant – TMDL not required" 134
Category 5 waters - The 303(d) List – "Waters requiring a TMDL” 144
Appendix 1 - Assessment units and integrated list categories presented alphabetically by major watershed 229
Appendix 2 - Impairments *added* to categories 4 or 5 of the integrated list in 2016 325
Appendix 3 - Impairments *removed* from categories 4 or 5 of the integrated list in 2016 343
Appendix 4 - Changes made between the *proposed* and *final* versions of the 2016 integrated list 363

List of Tables and Figures

Table No.	Title	Page
1	Surface Water Atlas for Massachusetts.	3
2	List of ADB cause codes changed for the purposes of converting to the new ATTAINS database.	11
3	List of TMDLs approved by the EPA for Massachusetts waters. TMDLs newly approved for the 2016 reporting cycle are indicated in bold.	15
4	Approximate number of sites monitored from 2005 – 2011 by the DWM/WPP. Table includes all water types (rivers, streams, lakes and ponds). Sites vary with respect to sampling frequency, methodology and parametric coverage. Most data from 2005 – 2009 and selected data from 2010 – 2011 were used to complete watershed assessments for the 2016 integrated reporting cycle pursuant to the requirements of CWA ss. 305(b) and 303(d).	30
5	Total Maximum Daily Loads (TMDLs) scheduled by the MassDEP for development during FY2019-FY2020.	37

Figure No.	Title	Page
1	Major drainage systems, river basins (i.e., watersheds) and coastal drainage areas of Massachusetts with their unique Stream and River Inventory System (SARIS) code numbers, as assigned by Halliwell et al. 1982. These river basins and coastal drainage areas serve as the fundamental planning units of MassDEP's surface water monitoring, assessment and management programs.	4
2	Assessment Units (AUs) included in the Assessment and Total Maximum Daily Load Tracking and Implementation System (ATTAINS) for Massachusetts. AUs newly added for the 2016 assessment and listing cycle are highlighted in red. ATTAINS contains a total of 1,157 lake, 1,028 river and 290 estuarine AUs for 2016.	24
3	Designated use assessment and listing decisions updated by the MassDEP for the 2016 CWA 305(b)/303(d) reporting cycle. A statewide assessment and listing decision update was completed for the fish consumption, shellfish harvesting, primary and secondary contact recreation and aesthetic uses. The support status of the aquatic life use was also updated for waters in 15 watersheds and/or coastal drainages. Individual watersheds and drainage areas are identified in Figure 1.	31

List of Acronyms and Abbreviations

ADB	Assessment Database
AU	Assessment Unit
AUID	Assessment Unit Identifier
ATTAINS	Assessment and TMDL Tracking and Implementation System
AWQC	Ambient Water Quality Criteria
BMPs	Best Management Practices
CALM	Consolidated Assessment and Listing Methodology
CAMIS	Coastal and Marine Inventory System
CAPS	Conservation Assessment and Prioritization System
CPP	Continuing Planning Process
CSOs	Combined Sewer Overflows
CWA	Clean Water Act
CWMP	Comprehensive Wastewater Management Plan
DCR	Massachusetts Department of Conservation and Recreation
DFG	Massachusetts Department of Fish and Game
DMF	Massachusetts Division of Marine Fisheries
DPH	Massachusetts Department of Public Health
DQOs	Data Quality Objectives
DWM-WPP	Division of Watershed Management-Watershed Planning Program
EEA	Massachusetts Executive Office of Energy and Environmental Affairs
EPA	U.S. Environmental Protection Agency
GIS	Geographic Information Systems
IBI	Index of Biological Integrity
IEI	Index of Ecological Integrity
IR	Integrated Report
IUP	Intended Use Plan
LIS	Long Island Sound
MassDEP	Massachusetts Department of Environmental Protection
MassGIS	Massachusetts Geographic Information System
MEP	Massachusetts Estuaries Project
MS4	Municipal Separate Stormwater Sewer Systems
MyRWA	Mystic River Watershed Association
NEIWPCC	New England Interstate Water Pollution Control Commission
NHD	National Hydrography Dataset
NPDES	National Pollutant Discharge Elimination System
NPS	Nonpoint Source
ORW	Outstanding Resource Water
OWOW	Office of Wetlands, Oceans and Watersheds
PALIS	Pond and Lake Information System
PPA	Performance Partnership Agreement
QC	Quality Control
QAPP	Quality Assurance Project/Program Plan
RBP	Rapid Bioassessment Protocols
SARIS	Stream and River Inventory System
SLAM	Site-level Assessment Methodology
SMAST	UMass-Dartmouth School of Marine Science and Technology
SRF	Massachusetts State Revolving Fund

SWMI	Sustainable Water Management Initiative
SWQS	Surface Water Quality Standards
TMDL	Total Maximum Daily Load
UBWPAD	Upper Blackstone Water Pollution Abatement District
USGS	U.S. Geological Survey
WBP	Watershed-based Plan
WLA	Waste Load Allocation
WMA	Water Management Act
WPA	Wetlands Protection Act
WWTP	Wastewater Treatment Plant

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EXECUTIVE SUMMARY

The *Final Massachusetts Year 2016 Integrated List of Waters* (Integrated Report or IR) is submitted to the U.S. Environmental Protection Agency (EPA) in fulfillment of reporting requirements of sections 305(b), 303(d) and 314 of the Clean Water Act (CWA). Section 305(b) of the CWA codifies the process whereby waters are evaluated with respect to their attainment of designated uses such as habitat for fish, other aquatic life and wildlife, fish and shellfish consumption, and primary (e.g., swimming) and secondary (e.g., boating) contact-recreation. Under Section 314 states are requested to report on the trophic status of their lakes and ponds. Finally, Section 303(d) of the CWA requires states to identify those waterbodies that are not expected to meet surface water quality standards after the implementation of technology-based controls and to prioritize and schedule them for the derivation of total maximum daily loads (TMDLs).

Extensive revisions were made to the *Massachusetts Consolidated Assessment and Listing Methodology (CALM) Guidance Manual* in anticipation of the 2016 CWA assessment and reporting cycle. The 2016 CALM Guidance Manual (MassDEP 2016a) incorporates evaluation methods for long-term continuous monitoring datasets (e.g., dissolved oxygen and temperature), screening methods to determine whether or not conditions are natural, more detailed screening guidelines used to make nutrient enrichment decisions and updated evaluation methods for toxic pollutants. In addition, guidance was developed for the documentation and submittal to MassDEP of external data from nongovernmental sources, such as volunteer monitoring groups, that wish to have their data considered for use in assessing and listing waters. The 2016 CALM Guidance Manual can be found at https://www.mass.gov/service-details/water-quality-assessments.

Also new for the 2016 assessment and listing cycle was the complete transfer of all of MassDEP's assessment and listing decisions from the Assessment Database (ADB) to the Assessment and Total Maximum Daily Load Tracking and Implementation System (ATTAINS), EPA's online system for tracking water quality assessment data (i.e., use attainment, causes and sources of impairment), as well as the status of TMDL development for waters impaired by pollutants. Like the ADB before it, ATTAINS was designed to improve the quality and consistency of water quality reporting and reduce the burden of preparing reports under sections 305(b), 303(d), 314 and 319 of the CWA. In addition, ATTAINS offers several new enhancements by combining additional tracking systems (e.g., TMDL) and providing on-line reporting within a comprehensive Water Quality Framework. MassDEP's conversion to ATTAINS was actually carried out after the release for public review and comment of the *Proposed Massachusetts Year 2016 Integrated List of Waters* but prior to the completion of this final version.

The Final *Massachusetts Year 2014 Integrated List of Waters* was submitted to the EPA on December 11, 2015 and the 303(d) List was approved on February 23, 2016. Since that time, MassDEP made a concerted effort to validate and report on its back-logged monitoring data, and to streamline the assessment and listing process. This culminated in the completion, for the 2016 integrated reporting cycle, of a statewide assessment (i.e., all watersheds) of the shellfish harvesting, primary and secondary contact recreation and aesthetic uses, as well as the assessments of the aquatic life use-attainment status of 15 watersheds and/or coastal drainage systems.

The 2016 IR assigns each of 2,475 assessment units (AUs) to one of the following five categories depending upon their status with respect to the support of their designated uses:

1) Unimpaired and not threatened for all designated uses;
2) Unimpaired for some uses and not assessed for others;
3) Insufficient information to make assessments for any uses;
4) Impaired or threatened for one or more uses, but not requiring the calculation of a Total Maximum Daily Load (TMDL); or
5) Impaired or threatened for one or more uses and requiring a TMDL.

The following table summarizes, by waterbody type, the number and total sizes of AUs appearing in each category of the 2016 IR.

Integrated List Category	Rivers		Lakes		Coastal Waters		Total AUs
	AUs	Size (miles)	AUs	Size (acres)	AUs	Size (sq. mi.)	
1	0	0.0	0	0.0	0	0.0	*0*
2	376	1,273.9	30	1,445.0	24	32.6	*430*
3	163	383.8	539	31,451.6	5	0.4	*707*
4a	38	112.6	127	46,318.0	144	74.3	*309*
4b	0	0.0	0	0.0	0	0.0	*0*
4c	32	125.8	200	14,691.5	0	0.0	*232*
5	419	1,934.1	261	24,432.0	117	136.9	*797*
Totals	*1,028*	*3,830*	*1,157*	*118,338*	*290*	*244*	*2,475*

When formulating the 2016 IR, a total of 340 new water bodies (AUs) were added to all list categories of the previous version (i.e., 2014) based on new assessments, including those resulting from public comments. Forty-seven (47) AUs were either renumbered or removed entirely from the 2014 IR, resulting in a net increase of 293 total AUs included in the 2016 IR. Appendices 2 and 3 to this document summarize the impairment causes *added to* and *removed from* the IR, respectively.

A total of 359 impairments were added to new or existing AUs, 310 of which are pollutants requiring the development of TMDLs (see Appendix 2). The number of new impairments requiring TMDL development represents a worst-case scenario, however, because, in many cases, more than one 303(d) impairment cause can be addressed by a single TMDL. For example, a TMDL for phosphorus will address such additional impairments as chlorophyll, harmful algae blooms, nutrient eutrophication biological indicators, and dissolved oxygen supersaturation. The remaining 49 non-pollutant impairments will require the implementation of various types of pollution control plans.

In addition to the above changes, new assessments led to the removal of 183 impairments from the IR due to water quality standards attainment or the original listing basis was incorrect, and 152 impairments were identified as covered by new or existing EPA-approved TMDLs. Because EPA only approves TMDLs for 303(d)-listed pollutants, 95 of these new impairments were added to, and simultaneously removed from, the 303(d) list within this same reporting cycle. As a result, these new impairments appear as removals from Category 5.

The *Proposed Massachusetts Year 2016 Integrated List of Waters* was placed on the MassDEP web site at https://www.mass.gov/total-maximum-daily-loads-tmdls. Notice of its availability for public review and comment appeared in the August 23, 2017 edition of the Massachusetts Environmental Monitor and was provided directly to over one hundred different watershed associations and other interested parties. The public comment period ended on October 23, 2017. Sixteen (16) comment letters were received, and responses to those comments are presented in *Massachusetts Year 2016 Integrated List of Waters Responses to Public Comments Pertaining to the Proposed Listing of the Condition of Massachusetts' Waters Pursuant to Sections 305(b), 314 and 303(d) of the Clean Water Act* published under separate cover (MassDEP 2018a). Adjustments were made to the 2016 integrated list as described in the public comment document and as the result of discussions with the EPA during the final review and approval process. All changes made between the release of the proposed list (i.e., public review draft) and the final version are summarized in Appendix 4.

INTRODUCTION

The Federal Water Pollution Control Act of 1972 and subsequent Amendments in 1977, 1981 and 1987 are collectively known as the Clean Water Act (CWA). The objective of this statute is to restore and maintain the chemical, physical, and biological integrity of the Nation's waters. As one step toward meeting this goal each state must administer a program to monitor and assess the quality of its surface and groundwater and provide periodic status reports to the U.S. Environmental Protection Agency (EPA), the U.S. Congress, and the public. S. 305(b) of the CWA codifies the process whereby waters are evaluated with respect to their capacity to support designated uses as defined in each of the states' surface water quality standards (SWQS). These uses include aquatic life support, fish and shellfish consumption, drinking water supply, and primary (e.g., swimming) and secondary (e.g., boating) contact-recreation. The 305(b) process entails assessing each of these uses for rivers, lakes and coastal waters. Causes and sources of impairment are identified wherever possible.

S. 303(d) of the CWA and the implementing regulations at 40 CFR 130.7 require states to identify those water bodies that are not expected to meet SWQS after the implementation of technology-based controls and to prioritize and schedule them for the development of total maximum daily loads (TMDLs). A TMDL establishes the maximum amount of a pollutant that may be introduced into a water body and still ensure attainment and maintenance of water quality standards. Furthermore, a TMDL must also allocate that acceptable pollutant load among all potential sources. The formulation of the 303(d) *List of Impaired Waters* (303(d) List) includes a more rigorous public review and comment process than does reporting under s. 305(b), and the final version of the list must be formally approved by the EPA.

Prior to 2002 states prepared and submitted to the EPA both a biennial *Summary of Water Quality Report* in accordance with the requirements of s. 305(b) as well as a separate s. 303(d) List. On November 19, 2001 the EPA released guidance for the preparation of an optional integrated report (IR) that would combine reporting elements of both ss. 305(b) and 303(d) of the CWA. This IR format allows states to provide the status of all their assessed waters in a single, multi-part list.

States choosing this option can list each Assessment Unit (AU) (i.e., water body or segment thereof) in one of the following five categories (Note: Massachusetts' IR category titles have been modified slightly from the EPA guidance and Category 4 has been divided into subcategories -- see text for explanation):

1) Unimpaired and not threatened for all designated uses;
2) Unimpaired for some uses and not assessed for others;
3) Insufficient information to make assessments for any uses;
4) Impaired or threatened for one or more uses, but not requiring the calculation of a TMDL; or
5) Impaired or threatened for one or more uses and requiring a TMDL.

The Massachusetts Department of Environmental Protection (MassDEP) has modified the above wording of the category titles contained in the EPA guidance, and Category 4 has been divided into three sub-categories, as explained later in this report. Nonetheless, waters listed in Category 5 constitute the 303(d) List and, as such, are to be reviewed and approved by the EPA. The remaining four categories are submitted in fulfillment of the requirements under s. 305(b), essentially replacing the old 305(b) report format. The MassDEP prepared IRs in accordance with EPA guidance every other year from 2002 through 2014. The EPA subsequently approved each of these. The final approved version of the *Massachusetts 2014 Integrated List of Waters* (2014 IR) (MassDEP 2015a) and EPA approval documents, can be found at https://www.mass.gov/total-maximum-daily-loads-tmdls.

A memorandum entitled "Information Concerning 2016 Clean Water Act Sections 303(d), 305(b) and 314 Integrated Reporting and Listing Decisions" (August 13, 2015) from Benita Best-Wong, Director of the EPA's Office of Wetlands, Oceans and Watersheds (OWOW), to that agency's regional Water Division Directors recommends that states prepare their 2016 IRs consistent with previous EPA IR guidance, including EPA's 2006 IR Guidance, which is supplemented by EPA's 2008, 2010, 2012, 2014 and 2016 IR memoranda. The

2016 IR guidance, along with all of EPA's clarifying guidance pertaining to s. 303(d) reporting can be accessed at http://www.epa.gov/tmdl/integrated-reporting-guidance.

Following the completion of the 2014 reporting cycle, the MassDEP made substantial improvements to the process by which water body assessments are carried out. These revisions are embodied in the *Massachusetts Consolidated Assessment and Listing Methodology (CALM) Guidance Manual for the 2016 Reporting Cycle* (MassDEP 2016a) which represents the first major revision of the CALM since it was first published in 2012 (MassDEP 2012). New enhancements to the CALM include a description of how new kinds of data and information, such as long-term dissolved oxygen and temperature data, are used to make assessments, and clarification on the use of response indicators for assessing impairments associated with nutrients.

This report opens with some descriptive statistics pertaining to the surface water resources of Massachusetts, followed by a brief analysis of the costs and benefits of clean water, and an overview of MassDEP's water quality management program. Next, a general description of the methods used to assess and categorize the use-attainment status of Massachusetts' waters is presented. Water quality issues of special concern in Massachusetts are also briefly discussed. A section entitled "Prioritizing Waters for TMDL Development" is included that reflects the most recent schedule for completing TMDLs negotiated between MassDEP and the EPA as part of their Performance Partnership Agreement (PPA). Following this introductory material, all of Massachusetts' assessed water bodies (i.e., AUs) are presented by major watershed (see Figure 1) in individual tables corresponding to the IR categories defined above. Finally, appendices are provided to assist the reader in navigating the multi-part list. Appendix 1 presents a description of every AU included in the IR and indicates the list category in which each AU appears. Appendices 2 and 3 list the impairments *added to* and *removed from* categories 5 and 4c of the IR for 2016.

MASSACHUSETTS SURFACE WATER ATLAS

The Commonwealth of Massachusetts ranks 45th out of the 50 states in surface area (approx. 8,300 sq mi of dry land and inland water combined), yet its estimated (2014) 6,745,408 inhabitants place it 14th in population (US Census Bureau 2015). More than 75 percent of the population resides in the eastern one-third of the state.

Massachusetts encompasses two geological provinces: the Coastal Plain and the New England Upland. Cape Cod and the Islands form the coastal plain and consist of low hills and plains covering unconsolidated sediments that form the most productive aquifers in the state. The New England Upland province consists of till and stratified drift above metamorphic and igneous rocks, and provides small productive aquifers. Groundwater is used for water supply in small communities and almost exclusively on Cape Cod and the Islands. Surface water is the major source of water supply for all the major urban areas in the state, since no other source is capable of meeting these demands. Surface water in the state is relatively plentiful and of high quality, but it is not distributed in proportion to the distribution of the population. Two thirds of Massachusetts' residents depend upon surface water for their needs. The Massachusetts Water Resources Authority supplies communities in the greater Boston area (about half the state usage of surface water) from Quabbin and Wachusett reservoirs in the central uplands.

Annual precipitation averages about 44 inches and is fairly evenly distributed throughout the state. Average annual evaporation of free water surfaces ranges from about 26 inches in Western Massachusetts to about 28 inches in the eastern half of the state. Yearly runoff ranges from about 20 inches in Cape Cod to about 32 inches in the northwestern corner of the state. The lowest runoff generally occurs during July, August and September. Runoff is highest in March in the eastern sections of the state and April in the western sections and at higher elevations.

A summary of general surface water resource statistics for Massachusetts is provided in Table 1. Massachusetts incorporates all or a portion of nine major drainage systems – Hudson, Housatonic,

Connecticut, Thames, Narragansett Bay, Mount Hope Bay, Boston Harbor, Merrimack and Coastal – that, in turn, comprise 33 smaller river basins (i.e., watersheds) and coastal drainage areas that generally serve as the fundamental planning units of Massachusetts' surface water monitoring, assessment and management programs described throughout this report (see Figure 1).

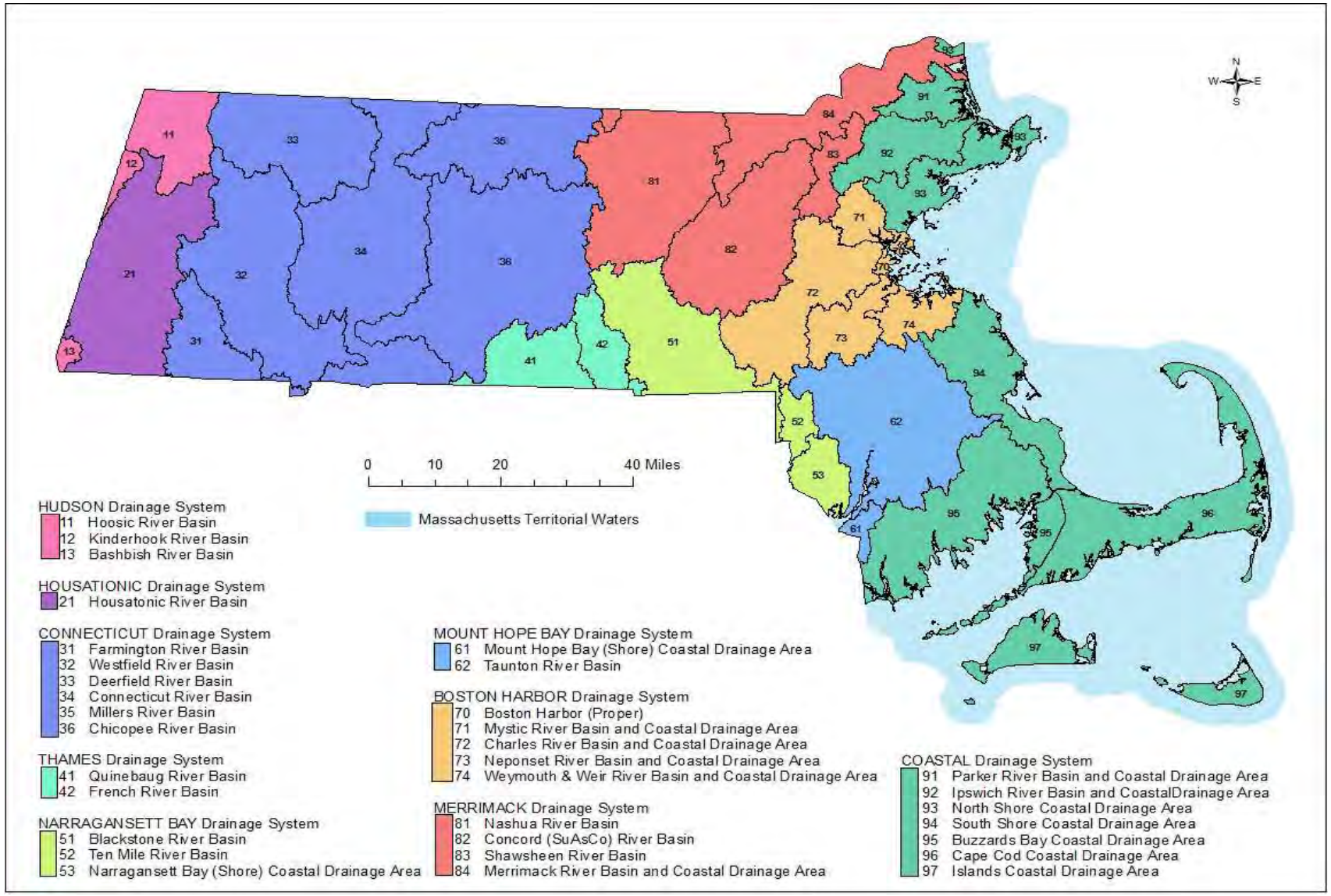
Table 1. Surface Water Atlas for Massachusetts.

Water Type [Scale] (units)	Value	Data Source*
Rivers [1:24,000]		
Perennial river/streams (miles)	10,033	UMass NHD Hydrography Project[1]
Intermittent streams (miles)	3,684	UMass NHD Hydrography Project[1]
Ditches and Canals (miles)	202	UMass NHD Hydrography Project[1]
Lakes [1:25,000]		
Number of Lakes and Ponds >= 5 acres	2,622	MassGIS - MassDEP Hydrography[2]
Area of Lakes and Ponds >= 5 acres (acres)	153,514	MassGIS - MassDEP Hydrography[2]
Coastal Waters [1:25,000]		
Coastal Waters (square miles)	2,726	MassGIS – MassDFG Designated Shellfish Growing Areas[3]
Total Tidal Shoreline (miles)	1,519	U.S. Coast and Geodetic Survey[4]
Wetlands [1:5,000]		
Marine and Estuarine Wetlands (acres)	107,525	MassDEP Wetlands Program[5,6]
Freshwater Vegetated Wetlands (acres)	467,331	MassDEP Wetlands Program[5,7]
Total Area of Wetlands (acres)	574,856	MassDEP Wetlands Program

***Data Sources (See General References in Bibliography):**

[1] Rees et al. 2010
[2] MassGIS 2010
[3] MassGIS 2015
[4] NOAA 1975, Maietta 1984, Gil 1985
[5] 2005 wetlands map layer (in preparation)
[6] does not include 34,777 acres of eel grass pasture
[7] open water and agricultural cranberry bogs excluded

Figure 1. Major drainage systems, river basins (i.e., watersheds) and coastal drainage areas of Massachusetts with their unique Stream and River Inventory System (SARIS) code numbers, as assigned by Halliwell et al. 1982. These river basins and coastal drainage areas serve as the fundamental planning units of MassDEP's surface water monitoring, assessment and management programs.



COSTS AND BENEFITS OF CLEAN WATER

The benefits to society of clean water can hardly be over-stated. Adequate supplies of clean water are essential to the survival and propagation of fish, shellfish and other aquatic life, as well as terrestrial vegetation and wildlife and the humans that rely on these organisms for food. Furthermore, humanity's dependence on clean water for domestic, industrial and recreational purposes is placing ever-increasing demands on limited water supplies. While the value to society of maintaining clean water is intuitive and fairly easily understood in a qualitative sense, a comprehensive economic analysis of the benefits of clean water can be far-reaching and complex. Sometimes it is useful to turn the question around: "What is the cost to society, in terms of public health, economics or other factors, of NOT achieving sound water quality conditions?" For example, drinking water contaminated with pathogens is estimated to sicken 20 million Americans each year (Reynolds *et al.* 2008). The Centers for Disease Control estimates that the cost of hospitalizations for waterborne diseases could exceed $500 million annually (CDC 2010), and in 2005, U.S. consumers paid over $50 million for bottled water in response to drinking water contamination (Zivin, *et al.* 2011).

Property values for single-family homes have been shown to decrease by up to 10% due to their proximity to polluted water ways (Braden *et al.* 2006). In 2007, the State of New Hampshire reported that a decrease in water clarity or purity would result in a loss of $51 million in sales, $18 million in income, and 810 jobs due to decreased recreation (Nordstrom 2007). Finally, Dodds *et al.* (2009) evaluated the economic impacts of human-induced eutrophication on US freshwaters and estimated that $2.2 billion are lost annually in recreational usage, waterfront property values, water treatment costs and spending on the recovery of threatened and endangered species.

An analysis such as this typically involves comparing the costs of maintaining or restoring water quality with the socioeconomic benefits realized when the desired water quality condition is achieved. In a strict sense, this "cost-benefit analysis" has an underlying premise that a threshold exists beyond which the cost to attain the use may exceed the benefit gained, but this most certainly has implications for resources such as air and water that are essential to life on this planet. And, whereas it is possible to assign monetary costs to the construction and operation of water and wastewater treatment facilities or other activities aimed at restoring water quality, it is often more difficult to predict the value of the benefit gained from achieving water quality goals. Typically, these gains are measured by indicators such as increases in the number of fishing licenses sold, decreases in the number of shellfish bed or beach closures, or increases in property values associated with good quality waters. The aesthetic value placed on clean water, on the other hand, is more difficult to measure economically and may vary considerably from one person to the next. Another significant factor limiting the utility of this kind of analysis is the lack of data and information pertaining to the impacts of water pollution on public health and the economy. For example, the incidence of water-borne illnesses associated with swimming in contaminated waters goes largely unreported, making the resultant savings in health costs associated with the cleanup of those waters, to say nothing of the human suffering, difficult to estimate.

A complete assessment of the socioeconomic costs and benefits associated with restoring and maintaining the integrity of Massachusetts' waters is beyond the scope of this report. Nonetheless, a few examples of the financial commitments made to the protection and restoration of water resources, and the value of selected enterprises relying on those resources, can serve to illustrate the magnitude of the socioeconomic affects of clean water. The most significant financial commitment to the protection and restoration of water resources is the funding, through the State Revolving Fund (SRF) of both wastewater collection and treatment infrastructure and drinking water treatment and distribution systems. In 2015 approximately $246 million and $81 million in funding were allocated for wastewater and drinking water infrastructure, respectively (MassDEP *et al*. 2015). This program, along with its predecessor Construction Grants Program, represents the single largest financial commitment to clean water in Massachusetts and is estimated to be over $8 billion from 1968 to the present.

The construction grant and loan programs are by no means the only sources of capital used to ensure clean water. Private industries and institutions pay for the installation and operation of wastewater treatment and pre-treatment facilities. Furthermore, water and wastewater infrastructure will not do the job alone. For

example, the management of nonpoint sources (NPS) of pollution is best accomplished through the implementation of best management practices (BMPs) and responsible land use, so resources are needed to increase public awareness and stewardship. NPS pollution reductions through the application of BMPs are a cost-effective alternative to mechanical water treatment. Practicing water conservation instead of building and operating a water filtration plant can treat drinking water at one fifth of the cost. Planting, or improving, forest buffers instead of building and operating a wastewater treatment plant can reduce nitrogen inputs for less than half the cost. Constructed wetlands can treat wastewater at one sixth the cost of conventional treatment methods. Wetlands in the Boston area have been shown to provide $42,000 worth of flood protection per acre (EPA 2012). The CWA s. 319 addresses the identification and management of nonpoint sources of pollution and provides grant monies for the implementation of BMPs and public education programs. Many other agencies, as well as non-governmental organizations, such as private institutions, watershed associations and citizen environmental advocacy groups, commit time and financial support to educating the public and promoting behaviors that will lead to cleaner waters in Massachusetts. It is difficult, however, to put a price tag on all of this good work.

As stated earlier, it is even more challenging to estimate the magnitude of the economic benefit associated with clean water than it is the costs of achieving clean water. Economic benefits from clean water in Massachusetts are reflected in data and information on sport and commercial fisheries, recreation in and on the water, tourism, and property values. The following statistics may help to illustrate the extent of these benefits, but they are by no means comprehensive or complete. The US Fish and Wildlife Service and US Census Bureau (2013) reported that 532,000 recreational anglers fished a total of 8.3 million days in Massachusetts in 2011. Associated expenditures were $455 million dollars. This includes food, lodging, transportation, fishing gear and associated equipment, licenses and fees, etc.

More recent information pertaining to revenues generated through the sale of fishing licenses and shellfishing permits in Massachusetts is summarized in the 2014 annual reports of the Massachusetts Division of Fisheries and Wildlife and Division of Marine Fisheries, respectively. Sales of freshwater fishing licenses exceeded $2.9 million in FY2014, while over $1.9 million in permit fees were collected from commercial fishermen, fish and shellfish dealers and other marine fisheries permittees.

The marine finfish and shellfish harvests for 2014 grossed in excess of $500 million (MADFG 2014a). Because most finfish and shellfish species that comprise this commercial catch rely on near-shore waters and river estuaries for all or a portion of their lifecycles, the quality of freshwaters and their watersheds has a direct effect on the health of the offshore fishery. Reductions in ground stocks of commercially valuable fishes have been documented in the waters off New England for several years now, and this serious problem is likely attributed to a combination of environmental degradation, over-fishing and other factors that are difficult to quantify. Therefore, it is difficult to predict with certainty the direct monetary benefits to the commercial fishery from various steps taken to achieve clean water in Massachusetts' watersheds and coastal waters. Nonetheless, it stands to reason that a recovery in Massachusetts' marine fisheries cannot be accomplished if clean water is not restored and maintained in those near-shore waters. The Massachusetts Estuaries Project is currently addressing several water quality issues as they pertain to near-shore waters (see https://www.mass.gov/guides/the-massachusetts-estuaries-project-and-reports).

The Massachusetts tourism industry brought in $20.7 billion in direct spending in 2016 that generated $1.4 billion in state and local taxes and supported 139,100 jobs (see https://www.massvacation.com/travel-trade/getting-around/stats-reports/). It is assumed that two-thirds of this travel was for leisure and that a substantial number of tourists were involved with water-related activities such as swimming, boating, fishing and viewing wildlife. Furthermore, much of Massachusetts' cultural history centers on its waterways that provided food and transportation to its' endemic people and early settlers and hydropower and navigation during the industrial revolution. The aesthetic value of these waters and associated sites of interest is enhanced immeasurably by clean water. Again, although not quantified here, it is evident that the Massachusetts travel industry benefits directly from clean water and that ongoing pollution abatement will result in further economic gains for tourism. Finally, several studies have concluded that clean water has a positive effect on adjacent property values. For example, a study in Maine (Michael *et al*. 1996) demonstrated that lakefront properties were up to $200 higher per frontage foot when water quality was

good. Similarly, others have shown that water clarity is essential to the enjoyment of lakes and ponds and that people are willing to pay to ensure that clean water is maintained. See, for example, Krysel et al. 2003.

In summary, a detailed analysis of the socioeconomic benefit of clean water to Massachusetts' residents would be complex and time-consuming and would be better undertaken as a separate study. Nonetheless, from the examples presented, it should be evident that the restoration and maintenance of clean water, while not inexpensive, result in enormous benefit to the economy and quality of life in Massachusetts.

AN OVERVIEW OF THE MASSACHUSETTS WATER QUALITY MANAGEMENT PROGRAM

The Continuing Planning Process

Section 303(e) of the CWA and the implementing regulations at 40 CFR 130.5 require each state to establish and maintain a continuing planning process (CPP) that defines and documents the implementation of a comprehensive water quality management program. While the format of the CPP is left to the discretion of the state, it must address, at a minimum, nine essential processes or water quality management program elements required by the CWA. The EPA is responsible for periodically reviewing the adequacy of each state's CPP, and cannot approve any permit program under Title IV of the CWA for any state which does not have an approved CPP.

Massachusetts first documented its water quality management program in a CPP report in 1973. Five subsequent revisions, completed during the period 1976 - 1990, followed guidance presented in the *State Continuing Planning Process Handbook,* published in 1975 by the EPA. Massachusetts' CPP documents included descriptions of the SWQS, water quality monitoring and assessment programs, river basin (s. 303e) and area-wide (s. 208) wastewater planning, TMDLs and waste load allocation (WLA), and NPS pollution control.

As time went on, most of the information presented in the CPP documents was also presented, often in more detail, in separate reports required by the EPA as part of the annual EPA-State Performance Partnership Agreements (PPA), and less emphasis was placed on the periodic production of a separate CPP document. For example, ongoing revisions to the SWQS classified Massachusetts' surface waters, designated beneficial uses, assigned criteria that were to be attained in order to support those uses, and specified antidegradation provisions. In addition, 305b reports presented the status of Massachusetts' surface waters with respect to their designated use attainment, and the 303(d) lists presented waters impaired by pollutants and set priorities for deriving TMDLs for those waters. In 2002 these two reporting requirements were combined into one integrated report (IR) format, and this report, prepared every two years, includes descriptions of most of the program elements called for in EPA's CPP guidance. Finally, Massachusetts prepares periodic updates to its Nonpoint Source Management Plan (NPS Plan), and is developing guidance for the production of individual watershed-based plans (WBP) that are a prerequisite for funding nonpoint pollution control projects in accordance with s. 319 of the CWA.

In summary, the CPP refers to the ongoing administration, by the MassDEP, of a comprehensive water quality management program, as mandated by the CWA. It should be thought of as a system of program elements aimed at establishing SWQS, monitoring and assessing waters, deriving WLAs and TMDLs, and planning and implementing measures to restore impaired waters. While this program was described in a separate document in the past, this information is now provided within the context of the EPA-State PPA and associated reporting elements and deliverables.

Surface Water Quality Standards

The establishment of achievable goals for surface waters is fundamental to their restoration and protection. To this end, states adopt water quality standards that ascribe these goals in the form of beneficial uses that are assigned to specific defined water bodies. For example waters may be designated for the support of aquatic life, recreational use, and fish and shellfish consumption. Water quality standards also

specify criteria that water bodies must meet in order to support their assigned uses. Criteria may be expressed as numerical values that should not be exceeded in ambient water, such as the geometric mean of all *E. coli* samples shall not exceed 126 colonies per 100 mililiters (ml), or a minimum instream dissolved oxygen concentration of 5 miligrams per liter (mg/l). Alternatively, water quality standards may include narrative statements that waters shall be free from constituents in concentrations that would impair their intended uses.

The Massachusetts SWQS are found at 314 CMR 4.00 and are available online at https://www.mass.gov/regulations/314-CMR-4-the-massachusetts-surface-water-quality-standards. The SWQS assign all inland and coastal and marine waters to classes according to the intended beneficial uses of those waters. For example Class A waters are waters designated as a source of public water supply and their tributaries. They should also be suitable for supporting aquatic life, recreational uses such as swimming and boating and fish consumption. Class B waters are not water supplies, but are designated for all of the other uses cited above for Class A. Finally, Class C waters should be suitable for aquatic life and recreational uses where contact with the water is incidental, such as boating and fishing, but may not be suitable for swimming, diving or water skiing. Inland waters are also subcategorized as to fishery type (cold water fishery, warm water fishery or aquatic life) based on their natural capacity to support these resources. Likewise, Massachusetts' coastal and marine waters are assigned to classes (i.e., SA, SB and SC) that distinguish shellfish harvesting and recreational uses while providing suitable habitat for wildlife, fish and other aquatic life. In all cases, minimum criteria (e.g., dissolved oxygen, temperature, etc.) are specified for each class based on the most sensitive use designated to that class. Additional criteria that apply to all surface waters are also included in the SWQS.

Some waters are designated for special protection under the antidegradation provisions of the SWQS. These provisions restrict or prohibit the authorization of wastewater discharges to critical resource waters. Most notable is the Outstanding Resource Water (ORW) designation that applies to all Class A waters and certain Class B, Class SA and Class SB waters. These waters exhibit exceptional socio-economic, recreational, ecological and/or aesthetic qualities. ORWs include, but are not limited to, Class A public water supplies and their bordering vegetated wetlands, and vernal pools certified as such by the DFG. Other waters designated as ORWs may include those protected by special legislation, as well as selected waters found in national parks, state forests and parks, or areas of critical environmental concern.

The adoption of water quality standards is a public process and the CWA specifies that states hold public hearings at least once every three years (i.e., triennial review) to review and, where appropriate, revise their water quality standards. The MassDEP adopted the most recent revisions to the SWQS on December 29, 2006. These were subsequently submitted to the EPA for review in January 2007, and on March 26, 2007 the EPA approved some revisions while indicating that the remaining revisions proposed by the MassDEP were still under review. In September 2007, the EPA approved an additional set of the revisions adopted in 2006. MassDEP acknowledges that considerable time has elapsed since the last revision of the SWQS. Nonetheless, MassDEP has been working diligently to complete revisions to the standards that reflect the latest scientific information available, and to release a new version for public review and comment sometime late in 2018 or early 2019. While taking longer to prepare than had been hoped, this regulatory package is also more comprehensive than originally planned and will include, among other changes, improvements to the surface water classification tables 1 through 27 (within section 314 CMR 4.06) including the listing of approximately 150 new cold water streams; an update to the Site-specific Criteria Table 28; the adoption of EPA's 2012 recommended recreational criteria for bacteria; and the development and incorporation of a new toxic pollutants table listing ambient water criteria for aquatic life and human health.

From this brief overview it should be evident that the process of assessing surface waters (305b) and listing impairments (303d) is inextricably linked to the SWQS, as they define the uses that are to be evaluated for any given water body as well as the criteria for determining whether or not those uses are, in fact, supported. Furthermore, revisions to the SWQS from one triennial review to the next may alter the methodology used to make assessment and listing decisions, and resulting changes to that methodology would be reflected in the next revision of the CALM document.

Monitoring and Assessment – Rivers, Lakes and Estuaries

Most elements of the MassDEP's existing surface water monitoring program are administered by personnel of the Division of Watershed Management's Watershed Planning Program (DWM-WPP). Current and proposed surface water monitoring program elements are presented in *A Strategy for Monitoring and Assessing the Quality of Massachusetts' Waters to Support Multiple Water Resource Management Objectives 2016 - 2025* (the Monitoring Strategy) (MassDEP 2018b). The ultimate goal embodied in the Monitoring Strategy is to implement a comprehensive monitoring program that serves all water quality management needs and addresses all water body types. As such, the monitoring program is designed to provide data and information from streams, rivers, lakes, reservoirs, estuaries, coastal areas and wetlands to support the five major objectives listed below.

1) Assess the status or condition of Massachusetts' waters
2) Develop, implement and evaluate pollution control strategies
3) Develop policies and standards and identify emerging issues
4) Measure the effectiveness of water quality management programs
5) Maintain reserve monitoring capacity to respond to unforeseen data needs

Major themes inherent in both the MassDEP's water management programs and the monitoring elements that support them are 1) the focus on the watershed as the fundamental planning unit for water quality management, 2) the assessment of biological communities, such as aquatic macroinvertebrates and fish, as the most reliable indicators of water quality conditions and ecosystem health, 3) the application of new technology and streamlined systems for data processing and analysis to support monitoring and assessment activities, and 4) the formation and reliance on partnerships and collaboration to meet water quality goals.

Massachusetts' water monitoring programs include both deterministic (targeted) and probabilistic (random) sampling networks and encompass both rotating watershed monitoring cycles as well as non-rotating, priority-driven schedules. The EPA encourages states to adopt networks of randomly selected sampling sites that will allow for statistically unbiased assessments that can be applied at larger scales (e.g., statewide). Because statistically-valid inferences can be drawn for an entire population of waterbodies by sampling a set of sites randomly selected from that population, a probabilistic design can, with a single sample, provide a snapshot of the percentage of waters attaining water quality standards and supporting designated uses. A single sample, however, does not allow for the assessment of individual waterbodies. Therefore, MassDEP has added adequate spatial, temporal and analytical coverage to its random survey designs to assess the designated use support status, and identify causes and sources of impairment, for individual waterbodies. MassDEP recently completed a five-year probabilistic survey of wadeable streams and applied a similar sampling design to lakes and ponds during 2016 – 2018.

In addition to the state-scale statistical monitoring described above, the MassDEP performs deterministic or targeted monitoring to obtain the data and information needed to assess the condition of site-specific water bodies and wetlands, assess specific designated uses such as fish consumption, identify causes and sources of impairments in all water body types, and to develop, implement and measure the effectiveness of control strategies, such as TMDLs, watershed-based plans, wastewater discharge permitting under the National Pollutant Discharge Elimination System (NPDES) and BMPs.

Watershed protection is the dominant theme of many state water quality management programs, and the EPA has endorsed this approach by providing financial and technical support for watershed-based water quality management activities. In 1993 the MassDEP placed the 27 major watersheds and coastal drainage areas in Massachusetts on a rotating five-year schedule to synchronize monitoring, assessment and other components of its watershed management program. The goal was to allocate one year to each of five water management steps or phases (i.e., Year 1 – planning; Year 2 – monitoring; Year 3 – assessment; Year 4 – implementation of control strategies; and Year 5 – effectiveness evaluation), after which the process would begin again. Five years later the watershed approach to water quality

management was formally adopted by the Massachusetts Executive Office of Environmental Affairs (EOEA), now the Executive Office of Energy and Environmental Affairs (EOEEA), through the implementation of its Watershed Initiative to include multiple organizations and interested parties.

Although short-lived as a formal program, the Watershed Initiative established partnerships between a variety of government agencies, NGOs and other stakeholders all focused on the restoration and protection of Massachusetts' watersheds. Because resources were limited across all state agencies, care was taken to avoid duplication of effort, and emphasis was placed on sharing environmental data and information among all interested parties. Over the years the number of external data providers has increased substantially, providing new and varying sources of information to support water management decision-making. For example, s. 604(b) water quality planning and assessment grants to outside parties have substantially supported NPS and other assessments. Other parties include: volunteer monitoring organizations, academic institutions, government agencies, stream teams, watershed associations, NPDES permit holders and environmental consultants. MassDEP continues to work collaboratively with these groups to optimize the utilization of their data. In doing so, MassDEP can focus its monitoring efforts in areas that are not covered by outside parties. The acquisition of valid scientific data is achieved, in part, by ensuring that interested monitoring parties develop standard operating procedures (SOPs) and quality assurance project plans (QAPPs) that will increase the likelihood that these external data sources can be used to fulfill selected CWA requirements (e.g., s. 305b/303d assessment and listing functions).

Results of the MassDEP's monitoring efforts, combined with all other credible data and information, constitute the basis for making water quality assessment and listing decisions in accordance with the requirements set forth in ss. 305(b) and 303(d) of the CWA. Details pertaining to the assessment process are presented in the 2016 CALM Guidance Manual (see "Integrated Assessment and Listing of Massachusetts' Waters" later in this report). Use-attainment determinations are made for each water body segment for which adequate data and information are available. However, many waters are not assessed for one or more uses in any given assessment cycle, and many small and unnamed streams and ponds have never been monitored and assessed. In the past, individual use assessment decisions, along with supporting water quality data and information, were documented in individual watershed assessment reports. These are listed in the Bibliography and are available for all of Massachusetts' watersheds and coastal drainage areas at https://www.mass.gov/service-details/water-quality-assessments. It should be noted, however, that these reports may no longer represent the most recent assessments completed by the MassDEP for these watersheds. Following the 2012 integrated reporting cycle the MassDEP discontinued the publication of individual watershed assessment reports in order to streamline the process and complete the assessments in a more timely fashion.

Prior to the 2016 assessment and listing cycle, MassDEP stored its water body assessments in EPA's Assessment Database (ADB). The ADB is a relational database that stores water quality assessment information for individual AUs (i.e., lakes, river and coastal waters), including use attainment decisions, and causes and sources of impairment. With the completion of the *Final Massachusetts Year 2016 Integrated List of Waters* MassDEP transferred all assessment and listing decisions from the ADB to the Assessment and Total Maximum Daily Load Tracking and Implementation System (ATTAINS), EPA's new online system for tracking water quality assessment data, as well as the status of TMDL development for waters impaired by pollutants. Like the ADB before it, ATTAINS was designed to improve the quality and consistency of water quality reporting and reduce the burden of preparing reports under sections 305(b), 303(d), 314 and 319 of the CWA. In addition, ATTAINS offers several new enhancements by combining additional tracking systems (e.g., TMDL) and providing on-line reporting within a comprehensive Water Quality Framework. Because impairment cause codes vary slightly between the two databases, some ADB causes were mapped to new codes when making the conversion to ATTAINS and, therefore, some impairment causes in the final 2016 IR appear slightly different than those in the proposed version, including the names used when delisting causes from the 2014 303(d) list (shown in Appendix 3). A list of ADB causes and the corresponding ATTAINS translations is presented in Table 2. (Note that some causes differ in the two databases by as little as a change in punctuation).

Table 2. List of ADB cause codes changed for the purposes of converting to the new ATTAINS database.

ADB CAUSE	2014 ATTAINS PARAMETER	2016 ATTAINS PARAMETER
2,3,7,8-Tetrachlorodibenzo-p-dioxin (only)	2,3,7,8-Tetrachlorodibenzo-p-dioxin	2,3,7,8-Tetrachlorodibenzo-p-dioxin
Abnormal Fish Histology (Lesions)	Abnormal Fish Deformities, Erosions, Lesions, Tumors (DELTS)	Abnormal Fish Deformities, Erosions, Lesions, Tumors (DELTS)
Ambient Bioassays -- Chronic Aquatic Toxicity	Ambient Bioassays - Chronic Aquatic Toxicity	Ambient Bioassays - Chronic Aquatic Toxicity
Ammonia (Un-ionized)	Ammonia, Un-ionized	Ammonia, Un-ionized
Aquatic Macroinvertebrate Bioassessments	Benthic Macroinvertebrates	Benthic Macroinvertebrates
Chromium (total)	Chromium, Total	Chromium, Total
Debris/Floatables/Trash	Debris/Floatables/Trash	Debris
		Trash
Dissolved oxygen saturation	Dissolved Oxygen Supersaturation	Dissolved Oxygen Supersaturation
DDT	DDT (dichlorodiphenyltrichloroethane)	-- [1]
Escherichia coli	Escherichia Coli (E. Coli)	Escherichia Coli (E. Coli)
Excess Algal Growth	Excess Algal Growth	Algae
Fish Kills	Fish Kill(s)	Fish Kill(s)
Fishes Bioassessments	Fish Bioassessments	Fish Bioassessments
Fish-Passage Barrier	Fish Passage Barrier	Fish Passage Barrier
Foam/Flocs/Scum/Oil Slicks	Foam/Flocs/Scum/Oil Slicks	Flocculant Masses
		Oil And Grease
		Scum/Foam
Habitat Assessment (Streams)	Habitat Assessment	Habitat Assessment
Harmful Algal Bloom	-- [1]	Harmful Algal Blooms
Low flow alterations	Low flow alterations	Dewatering
Nitrogen (Total)	Nitrogen, Total	Nitrogen, Total
Nonnative Fish, Shellfish, or Zooplankton	-- [1]	Non-Native Fish/Shellfish/Zooplankton
Other (Contaminants in Fish and Shellfish) [2]	Other (Contaminants in Fish and Shellfish) [2]	Cause Unknown (Contaminants in Fish and/or Shellfish) [2]
Other (Contaminants in Shellfish) [2]	Other (Contaminants in Shellfish) [2]	Cause Unknown (Contaminants in Fish and/or Shellfish) [2]

ADB CAUSE	2014 ATTAINS PARAMETER	2016 ATTAINS PARAMETER
Other (Fish Population Imbalance) [2]	Other (Fish Population Imbalance) [2]	Cause Unknown (Fish Population Imbalance) [2]
Other (Priority Organics) [2]	Other (Priority Organics) [2]	Other Organics
Other (Unspecified Metals and Non-Priority Organics) [2]	Other (Unspecified Metals and Non-Priority Organics) [2]	Metals
		Other Organics
Other (Unspecified Metals and Priority Organics) [2]	Other (Unspecified Metals and Priority Organics) [2]	Metals
		Other Organics
Other (Unspecified Metals in Sediment and Priority Organics) [2]	Other (Unspecified Metals in Sediment and Priority Organics) [2]	Other Organics
		Unspecified Metals in Sediment
Other (Unspecified Metals in Sediment) [2]	Other (Unspecified Metals in Sediment) [2]	Unspecified Metals in Sediment
Other (Unspecified Metals) [2]	Other (Unspecified Metals) [2]	Metals
Other (Unspecified Nutrients) [2]	Other (Unspecified Nutrients) [2]	Nutrients
Other flow regime alterations	Flow Regime Modification	Flow Regime Modification
Oxygen, Dissolved	Dissolved Oxygen	Dissolved Oxygen
PCB in Fish Tissue	PCBs in Fish Tissue	PCBs In Fish Tissue
Phosphorus (Total)	Phosphorus, Total	Phosphorus, Total
Polychlorinated biphenyls	Polychlorinated Biphenyls (PCBs)	Polychlorinated Biphenyls (PCBs)
Secchi disk transparency	Secchi disk transparency	Transparency / Clarity
Sediment Bioassays -- Acute Toxicity Freshwater	Sediment Bioassay (Acute Toxicity Freshwater) [2]	Sediment Bioassay (Acute Toxicity Freshwater) [2]
Sediment Bioassays -- Chronic Toxicity Freshwater	Sediment Bioassay (Chronic Toxicity Freshwater) [2]	Sediment Bioassay (Chronic Toxicity Freshwater) [2]
Sediment Screening Value (Exceedence)	Sediment Screening Value (Exceedance)	Cause Unknown (Sediment Screening Value (Exceedence)) [2]
Sulfide-Hydrogen Sulfide	Hydrogen Sulfide	Hydrogen Sulfide
Taste and Odor	Taste and Odor	Odor
Temperature, water	Temperature	Temperature
Total Dissolved Solids	Total Dissolved Solids (TDS)	-- [1]

[1] "--" indicates ATTAINS parameter name not used in the respective reporting cycle.
[2] Text shown in parentheses is not part of the ADB cause or ATTAINS parameter name, but is provided as further explanation of the impairment from the cause comment field in the ADB or ATTAINS database.

Following EPA's approval of the 303(d) List, the assessment and listing decisions are made available through an ArcGIS 10 geodatabase file and its supporting shapefiles and databases that can be downloaded from the MassGIS website (see "Consolidated Assessment and Listing Methodology (CALM)" later in this report).

Monitoring and Assessment – Wetlands

The EPA encourages states to integrate wetlands into their water quality programs and to report on the status of their wetlands as part of the CWA s. 305(b) reporting process. Unlike rivers, lakes and estuaries, however, Masachusetts' wetlands are not defined as individual AUs and assessed in accordance with the CALM. Furthermore, the results of wetland assessments are not stored in ATTAINS, and individual wetlands are not assigned to categories of the IR. Details pertaining to the MassDEP's Wetland Monitoring and Assessment Program can be found online and are briefly described below (see https://www.mass.gov/guides/wetlands-information). The results of the first MassDEP pilot study assessing 45 forested wetlands in the Chicopee Watershed are also summarized.

Consistent with EPA's recommendations, the MassDEP's Wetlands Program has been working collaboratively with the University of Massachusetts at Amherst (UMass-Amherst) and the Massachusetts Coastal Zone Management Program since 2006 to develop a strategy to monitor and assess wetlands for purposes of reporting on the status and trends of all wetlands across the state and for developing criteria to monitor and assess the physical, chemical and biological integrity of wetlands for reporting under s. 305(b) of the CWA. The central feature of the Massachusetts strategy is the Conservation Assessment and Prioritization System (CAPS), a landscape-level assessment model that has been developed by UMass-Amherst (see http://www.umasscaps.org/about/index.html). CAPS combines land-cover mapping derived from geographic information systems (GIS) and aerial photography with 26 inland and coastal stressor or resiliency metrics, each representing a stressor on the environment, to calculate a value between 0 and 1 for each 30 square meter plot on the landscape. A complete list of metrics can be found at: http://www.umasscaps.org/about/metrics.html. The CAPS computer model can analyze individual metrics, or combine them to derive an Index of Ecological Integrity, or IEI. Wetland IEI values generated from the CAPS model define a continuous gradient that is inversely proportional to the magnitude of stressors acting on those wetlands (generalized stressor gradient). High IEI scores (approaching 1.0) are indicative of communities that are relatively free from stressors. The IEI is a *predictor* of the capacity of a wetland to sustain its ecological condition in the long term and to recover from stress.

Because CAPS does not use field-based information to assess ecological conditions on the ground, site-level assessment methodologies (SLAMs) are being developed that utilize actual measurements of biological integrity in the field to evaluate wetland condition and calibrate the CAPS model. Efforts are ongoing to identify dose-dependent relationships that may exist between the field data and the metrics modeled in CAPS, and to develop Indices of Biological Integrity (IBIs) to incorporate into the SLAMs. IBIs are metrics used to quantify changes in biological communities in response to adverse human activity and can serve as indicators of particular stressors acting on a wetland or water body, as well as providing a composite score for biological condition. To date, SLAMs have been developed for forested wetlands and salt marshes and these have been used to sample 219 forested wetland sites and 175 salt marsh sites that were randomly selected along a gradient of IEI values. These data, along with data from 490 wadable streams collected by the DWM-WPP have been used to test and validate the CAPS predictions and modify (as needed) the CAPS models; and to develop IBIs for use in assessing site-specific wetland condition.

In September 2013, the IBI development work was documented in a report entitled: *Empirically Derived Indices of Biotic Integrity for Forested Wetlands, Coastal Salt Marshes and Wadable Freshwater Streams in Massachusetts.* This report describes the effort to develop IBI's and the results. In summary, 60 of 164 separate IBI's created for single taxonomic groups (and sampling methods) across stressor metrics and

ecological systems were deemed statistically and ecologically reliable. This report is available at http://www.mass.gov/eea/docs/dep/water/resources/a-thru-m/ibifin.pdf

Also in 2013 the MassDEP Wetland Program was awarded a Wetland Program Development Grant by the EPA to use the monitoring and assessment tools developed to date to conduct a pilot study on forested wetlands in the Chicopee River Watershed and use CAPS model to assess those sites. This work was undertaken in 2014 to coincide with the MassDEP's five-year watershed monitoring and assessment cycle and consisted of a landscape level GIS-based assessment using the CAPS model, and a SLAM based on IBI's developed specifically for forested wetlands. A brief summary of the results of this pilot study is presented below. The complete report (MassDEP 2016b) is available online at https://www.mass.gov/lists/wetlands-monitoring-and-assessment-final-reports-and-data .

The application of the CAPS landscape level GIS-based model revealed that the primary causes of ecological stress on forested wetlands in the Chicopee Watershed are: 1) loss of terrestrial connectedness; 2) loss of similarity; 3) the presence of non-native invasive plant species; and 4) the loss of aquatic connectedness. Based on this assessment, strategies were identified to alleviate these sources of stress. Recommended measures include: the establishment of terrestrial wildlife passage structures between areas of similar forested wetland habitat; protection of buffer zones; improvement of stream crossings to meet the Massachusetts Stream Crossing Standards; and the identification and control of non-native plant species infestations.

In addition to the CAPS landscape-level assessment, site-level assessments were conducted at 45 targeted sites throughout the watershed to assess the actual wetland condition at those sites, and to evaluate the reliability of the CAPS landscape-level predictions. Forty of the wetlands chosen for site-level assessments had received low IEI values (0.10-0.25) from the CAPS analysis and, therefore, were predicted to be impaired. The IEI scores for the five remaining sites ranged from 0.75-0.90, forecasting little or no impairment. Field verification of wetland condition at each site was carried out by sampling vascular plants and applying the resulting IBI values to determine whether sites met expectations. All 40 sites with low IEI values also exhibited low IBI values calculated from the field data, thus confirming the impaired wetland conditions predicted by the CAPS model. Alternatively, three out of the five sampled sites for which the CAPS model yielded high IEI scores (i.e., predicted little or no impairment) actually exhibited low IBI values indicative of impaired conditions. Upon further investigation it was determined that two of the three sites not meeting expectations were, in fact, stressed due to beaver activity; however, the inconsistent findings at the third site could not be fully explained without further investigation. Although the model did not predict what stressor caused two of the sites to fail, it did correctly identify stressed biological condition. While the beaver activity is naturally stressing the forested wetland condition, the result may be a healthy shrub or emergent wetland. Regardless, no corrective action was recommended for these two sites.

In summary, the CAPS model predicted that 40 forested wetland sites throughout the Chicopee Watershed would exhibit low ecological integrity based on the developed landscape around each site, and the sampling and IBI analysis accurately reflected the impaired condition of these sites. These, and likely many other sites, are adversely affected by the developed landscape, and opportunities for restoration should be actively evaluated to improve wetland condition at all low IEI forested wetlands in the watershed.

TMDL Program

Section 303(d) of the CWA and the EPA's Water Quality Planning and Management Regulations (40 CFR Part 130) require states to develop TMDLs for water bodies that are not meeting designated uses under technology-based controls. The TMDL process establishes the maximum allowable loading of pollutants that a water body can receive and still meet the SWQS established for protecting public health and maintaining the designated beneficial uses of those waters. Through this process states implement water quality-based controls to reduce pollutant loadings from both point and nonpoint sources and restore and maintain the quality of their water resources. TMDL implementation is accomplished through adherence to prevailing regulations and program requirements such as those governing the NPDES permits for point

source control, watershed-based plans and s. 319 guidelines for managing nonpoint source pollution, and the stormwater management performance standards upheld by conservation commissions under the Wetlands Protection Act. Furthermore, funding priority for CWA s. 319 grants and the SRF is given to watershed clean-up projects that are consistent with TMDL Program requirements.

The EPA tracks the states' progress with completing TMDLs in ATTAINS which can be accessed at http://www.epa.gov/waterdata/assessment-and-total-maximum-daily-load-tracking-and-implementation-system-attains. This system assigns a unique identification number to each approved TMDL which is included for reference in categories 4a and 5 of the 2016 IR. All of the TMDLs approved by the EPA for Massachusetts' waters through January 2016 are presented by EPA TMDL number in Table 3, and full citations are provided in the Bibliography. TMDLs approved on or after September 25, 2014 are included for the first time in this (2016) reporting cycle. Several TMDLs were approved by the EPA since January, 2016 (see Table 5). However, waters covered by these TMDLs will be reported as such for the first time in the 2018 IR. Individual TMDL documents are available at https://www.mass.gov/total-maximum-daily-loads-tmdls.

A specific time frame for developing TMDLs is not set forth in either the statute or regulation governing the TMDL program. Because TMDLs can take several years to develop, ongoing commitments to complete specific TMDLs are now included in each State-EPA PPA, and the most recent PPA and associated MassDEP Work Plan reflect the current priorities for TMDL development (see "Prioritizing Waters for TMDL Development" later in this report).

Table 3. List of TMDLs approved by the EPA for Massachusetts waters. TMDLs newly approved for the 2016 reporting cycle are indicated in **bold**.

EPA TMDL Number	TMDL Report Title	Approval Date
5, 6	Total Maximum Daily Loads of Phosphorus for Selected Connecticut Basin Lakes *(CN 112.0)*	April 12, 2002
175, 360, 361, 379	Total Maximum Daily Loads of Phosphorus for Selected Northern Blackstone Lakes *(CN 70.1)*	May 2, 2002
444	Total Maximum Daily Loads of Phosphorus for Lake Quinsigamond and Flint Pond *(CN 115.0)*	June 28, 2002
498, 550	Total Maximum Daily Loads of Phosphorus for Selected Northern Blackstone Lakes *(CN 70.1)*	May 2, 2002
644	Total Maximum Daily Loads of Phosphorus for Lake Quinsigamond and Flint Pond *(CN 115.0)*	June 28, 2002
651, 653	Total Maximum Daily Loads of Phosphorus for Selected Connecticut Basin Lakes *(CN 112.0)*	April 12, 2002
671	Total Maximum Daily Load of Phosphorus for Leesville Pond *(CN 117.0)*	June 28, 2002
675	Total Maximum Daily Loads of Phosphorus for Selected Connecticut Basin Lakes *(CN 112.0)*	April 12, 2002
722	Total Maximum Daily Loads of Phosphorus for Selected Chicopee Basin Lakes *(CN 118.0)*	April 12, 2002
726	Total Maximum Daily Loads of Phosphorus for Selected Connecticut Basin Lakes *(CN 112.0)*	April 12, 2002
804, 862, 938	Total Maximum Daily Loads of Phosphorus for Selected Northern Blackstone Lakes *(CN 70.1)*	May 2, 2002
1332	Total Maximum Daily Loads of Phosphorus for Selected Chicopee Basin Lakes *(CN 118.0)*	April 12, 2002
2319	Total Maximum Daily Loads of Phosphorus for Salisbury Pond *(CN 114.0)*	June 28, 2002
2323	Total Maximum Daily Loads of Phosphorus for Indian Lake *(CN 116.0)*	June 28, 2002
2353	Total Maximum Daily Loads of Phosphorus for Lake Boon *(CN 119.0)*	June 28, 2002

2354-2371, 2373-2375	Total Maximum Daily Loads of Phosphorus for Selected French Basin Lakes *(CN 110.0)*	July 12, 2002
2377, 2382, 2385, 2389-2392	Total Maximum Daily Loads of Phosphorus for Selected Northern Blackstone Lakes *(CN 70.1)*	May 2, 2002
2586	Total Maximum Daily Loads of Bacteria for Little Harbor *(CN 120.0)*	September 12, 2002
2587	Total Maximum Daily Loads of Bacteria for the Shawsheen River Basin *(CN 122.0)*	September 12, 2002
2592	Total Maximum Daily Loads of Bacteria for Neponset River Basin *(CN 121.0)*	June 21, 2002
2615	Bare Hill Pond, Harvard, MA. (MA81007) TMDL *(CN 14.0)*	November 2, 1999
3626, 3629-3631, 3633	Total Maximum Daily Loads of Phosphorus for Selected Chicopee Basin Lakes *(CN 118.0)*	April 12, 2002
4115, 4117, 4118, 4123-4125, 4127, 4128, 4133, 4134, 4136, 4137, 4140, 4141, 4144, 4145	Total Maximum Daily Loads of Phosphorus for Selected Millers Basin Lakes *(CN 123.2)*	February 5, 2003
22512	Bacteria TMDL for Muddy Creek, Chatham and Harwich, Massachusetts. *(CN 208.0)*	April 28, 2005
22513	Bacteria Total Maximum Daily Load for Frost Fish Creek, Chatham, Massachusetts. *(CN 207.0)*	April 28, 2005
30702	Bacteria TMDL for Kickamuit River. *(CN 285.0)*	September 29, 2006
32364-32366, 32370-32374, 32376, 32377, 32379-32383	Total Maximum Daily Loads for Pathogens within the Charles River Watershed *(CN 156.0)*	May 22, 2007
32532, 32534, 32535, 32537, 32638	Great, Green and Bournes Pond Embayment Systems Total Maximum Daily Loads for Total Nitrogen *(CN 181.0)*	July 18, 2007
33780, 33781, 33786-33799	Pleasant Bay System Total Maximum Daily Loads for Total Nitrogen *(CN 244.0)*	October 24, 2007
33811-33815	Nitrogen TMDL Report for the Quashnet River, Hamblin Pond, Little River, Jehu Pond, and Great River in the Waquoit Bay System *(CN 218.0)*	November 7, 2007
33826	Total Maximum Daily Load for Nutrients in the Lower Charles River Basin, Massachusetts *(CN 301.0)*	October 17, 2007
33846	Total Maximum Daily Loads of Total Phosphorus for Quaboag & Quacumquasit Ponds *(CN 216.1)*	November 28, 2007
33858	Centerville River – East Bay System Total Maximum Daily Loads for Total Nitrogen *(CN 248.0)*	December 18, 2007
33880	Northeast Regional Mercury Total Maximum Daily Load *(MassDEP CN 376.0)*	December 20, 2007
33965-33969	Popponesset Bay Total Maximum Daily Loads for Total Nitrogen *(CN 217.0)*	January 22, 2008
33988-33993	Three Bays System Total Maximum Daily Loads for Total Nitrogen *(CN 242.0)*	February 13, 2008
34009	Little Pond Embayment System Total Maximum Daily Loads for Total Nitrogen *(CN 246.0)*	March 3, 2008
34284, 34328, 34331, 34332	West Falmouth Harbor Embayment System Total Maximum Daily Loads for Total Nitrogen *(CN 243.0)*	May 5, 2008
34345	Oyster Pond Embayment System Total Maximum Daily Loads for Total Nitrogen *(CN 245.0)*	May 5, 2008
34917, 34918	West Falmouth Harbor Embayment System Total Maximum Daily Loads for Total Nitrogen *(CN 243.0)*	May 5, 2008
35069	Phinneys Harbor Embayment System Total Maximum Daily Loads for Total Nitrogen *(CN 247.0)*	February 5, 2008
35085-35089, 35096, 35097	Bacteria TMDL for the Palmer River Basin *(CN 182.0)*	September 22, 2004
35103-35109	Assabet River Total Maximum Daily Load for Total Phosphorus *(CN 201.0)*	September 23, 2004

36011, 36012	Nantucket Harbor Embayment System Total Maximum Daily Loads for Total Nitrogen *(CN 249.0)*	May 12, 2009
36170-36172	Pathogen Total Maximum Daily Load for the Buzzards Bay Watershed *(CN 251.1)*	May 15, 2009
36219-36222, 36228-36231	Stage Harbor/Oyster Pond, Sulphur Springs/Bucks Creek, Taylors Pond/Mill Creek Total Maximum Daily Load Re-evaluations for Total Nitrogen *(CN 206.1)*	June 22, 2009
36582-36585	Pathogen Total Maximum Daily Load for the Three Bays Watershed, Barnstable, MA *(CN 309.0)*	August 28, 2009
36771-36772	Pathogen Total Maximum Daily Load for the Cape Cod Watershed *(CN 252.0)*	August 28, 2009
38912, 38914	Final Total Maximum Daily Load for Phosphorus for White Island Pond, Plymouth/Wareham, MA. *(CN 330.2)*	July 20, 2010
38903-38909	Final Pathogen TMDL for the Narragansett/Mt. Hope Bay Watershed *(CN 351.0)*	July 21, 2010
40307-40310	Final Pathogen TMDL for the Taunton River Watershed *(CN 256.0)*	June 16, 2011
40317-40319	Total Maximum Daily Load for Nutrients in the Upper/Middle Charles River, Massachusetts. *(CN 272.0)*	June 10, 2011
42353-42369	Addendum: Final Pathogen TMDL for the Cape Cod Watershed. *(CN 252.5)*	August 28, 2012
42392-42411	Northeast Regional Mercury Total Maximum Daily Load Addendum for Massachusetts. *(CN 377.0)*	September 20, 2012
50120-50123	Final Pathogen TMDL for the North Coastal Watershed. *(CN 155.0)*	October 25, 2012
54840, 54842, 54860, 54861	Addendum: Final Total Maximum Daily Loads of Bacteria for Neponset River Basin. *(CN 121.5)*	July 3, 2013
61706, 61708, 61710, 61713, 61715, 61716, 61718, 61720, 61721, 61723-61725, 61727, 61728, 61730, 61731, 61734, 61735, 61737, 61738, 61739	**Final Pathogen TMDL for the South Coastal Watershed. *(CN 255.0)***	**September 25, 2014**
64145-64149, 64151	**Final Nitrogen TMDL for Lewis Bay and Halls Creek. *(CN 314.0)***	**April 15, 2015**
64380	**Final Nitrogen TMDL for Edgartown Great Pond System. *(CN 318.0)***	**June 24, 2015**
64480-64482	**Final Nitrogen TMDL for Madaket Harbor and Long Pond Estuarine System. *(CN 283.0)***	**July 30, 2015**
64583, 64584	**Final Nitrogen TMDL for Lagoon Pond Estuarine System. *(CN 390.1)***	**September 2, 2015**
64662	**Final Nitrogen TMDL for Farm Pond Estuarine System. *(CN 391.1)***	**October 2, 2015**
65320, 65321	**Final Nitrogen TMDL for Sengekontacket Pond Estuarine System. *(CN 310.1)***	**January 7, 2016**

Surface Water Discharge Permitting and Stormwater Programs

Information pertaining to the Surface Water Discharge Permitting Program can be accessed at https://www.mass.gov/service-details/surface-water-discharge-permitting-npdes. Wastewater discharges to surface waters in Massachusetts are governed by permits issued in accordance with both the SWQS and guidelines set forth as part of the federal NPDES permit program. This system establishes levels of effluent quality that must be achieved at municipal, institutional and industrial treatment facilities to ensure

that water quality standards are met in the receiving waters. Massachusetts has not been delegated the authority to issue NPDES permits by the EPA. Therefore, the EPA retains the responsibility for the administration of the program, including drafting the discharge permits, conducting public hearings and issuing the final permit. The MassDEP must provide state certification of the final draft permit prior to issuance in accordance with s. 401 of the CWA. The MassDEP also is a signatory to the final permit, making it a joint permit. This process results in a final discharge permit that is valid under both federal and state law, so each permitting agency has the independent right to enforce its terms and conditions. The CWA requires that discharges satisfy both minimum technology and water quality requirements.

The EPA's Stormwater Management Program began in the late 1990s with the regulation of medium (100,000 populace served) and large (250,000 served) municipal separate stormwater sewer systems (MS4), a wide range of industrial activities (controlled through the EPA's multi-sector general permits) and construction activities involving the disturbance of land area greater than five acres. Rather than limiting the concentration of individual constituents in stormwater, permit conditions emphasized the use of BMPs to manage stormwater. Facilities and construction sites are required to develop and implement stormwater management plans to control runoff, limit transport of pollutants off-site and to mitigate erosion and other habitat alterations associated with stormwater runoff.

The scope of the stormwater program was expanded in 2003 to include small municipalities (i.e., 237 cities and towns in Massachusetts), and public entities that operate MS4 systems, such as highways, parks, colleges and correctional facilities. The program requirements, established in 1999 by the EPA Storm Water Phase II regulations, are being implemented in over two-thirds of the municipalities in Massachusetts and several dozen other public MS4 systems through the use of general permits. The 2016 Massachusetts Small MS4 General Permit was signed April 4, 2016, and published in the Federal Register on April 13, 2016. The permit was to become effective July 1, 2017; however, the effective date was potponed to July 1, 2018. The final permit reflects modifications to the 2014 draft small MS4 general permit released for comment on September 30, 2014 and replaces the 2003 small MS4 general permit for MS4 operators within Massachusetts. The final permit, appendices, and response to comment documents, as well as the postponement notice can all be viewed on EPA's website at https://www.epa.gov/npdes-permits/massachusetts-small-ms4-general-permit. Additional information pertaining to the management of stormwater in Massachusetts can be found online at https://www.mass.gov/service-details/stormwater.

Sustainable Water Management and the Water Management Act

Maintaining sufficient stream flow and reservoir levels to support fish, other aquatic life and wildlife, while responding to increased anthropogenic demands for water, is a major challenge facing Massachusetts' environmental officials and its citizenry. Massachusetts receives 44 inches of precipitation in an average year, which is plentiful compared to other parts of the country, and most of the time provides enough water to meet the needs of people and the environment. However, during the summer and fall months, when evaporation and human demands are highest and stream flows are naturally lowest, the wide variety of human and ecological needs cannot always be met. In extreme cases this has resulted in streams drying up, seasonally, resulting in a loss of fish and other aquatic species dependent on those habitats.

The MassDEP is primarily addressing stream flow depletion through the implementation of the Massachusetts Water Management Act (WMA). Enacted in 1985, the WMA regulates all withdrawals from ground and surface water sources that exceed an average annual volume of 100,000 gallons per day (gpd). The WMA allowed all withdrawals of this magnitude that existed between 1981 and 1985 to be registered if the applicant applied by January 4, 1988. The MassDEP allows registrants to continue these historic withdrawals provided that they meter or otherwise verify their actual water use and that they report their usage annually. New withdrawal points or increased withdrawal volumes from registered points exceeding the WMA threshold of 100,000 gpd sought after 1985 are required to obtain a withdrawal permit.

Massachusetts launched the Sustainable Water Management Initiative (SWMI) in 2010 to develop a water policy that balances ecological needs along with the need to support long term economic growth and development. The SWMI was initiated by the Massachusetts Executive Office of Energy and Environmental Affairs in partnership with the MassDEP, the Department of Conservation and Recreation (DCR), and the Department of Fish and Game (DFG) and included input from a wide range of stakeholders. Its purpose was to reevaluate the way water is managed so that there is enough for the many and sometimes competing long-term water needs of our communities and aquatic ecosystems. A SWMI Framework, based on extensive scientific analyses and an active public review process, was released in November of 2012 (EEA 2012). In November 2014, MassDEP promulgated new WMA regulations that incorporate key components of the SWMI.

The WMA permit application review process considers other withdrawals within the same watershed. This process includes an analysis of the potential local impacts that may result from the proposed withdrawal. Included in this local impact analysis is the identification of resources affected by water level fluctuations and a determination of acceptable groundwater levels for those resources. The impact of water withdrawals on surface water quantity and quality, as well as the effects of induced infiltration on the quality of the withdrawal water, are considered as a part of the review. Water conservation measures are included in WMA permits that reflect the state water conservation standards promulgated by the EEA and Water Resources Commission. Water conservation standards that are included as permit conditions include: meeting an annual value of 65 residential gallons per person per day, maintaining 10 percent or less unaccounted-for water loss, and requiring seasonal reductions in nonessential outdoor uses under certain environmental conditions (e.g., drought) for public water systems. Some permittees are also required to mitigate, commensurate with impact, any impacts of their water withdrawals. For more information on the WMA see https://www.mass.gov/service-details/fact-sheet-water-management-act-registration-and-permitting.

Nonpoint Source Program

The website https://www.mass.gov/service-details/nonpoint-source-pollution presents a definition of nonpoint source pollution and describes the measures and programs currently aimed at its control. In the past the EPA and the states have focused water pollution abatement programs on the control of point sources through waste load allocation and NPDES permitting. Nonpoint source pollution is not as easily assessed nor controlled, for it is intricately linked with the use of the land and land-use is typically regulated at the local level. For this reason federal and state efforts are aimed at educating local officials and the general public with respect to the importance of land-use planning and zoning, the use of BMPs to control stormwater and other measures for preventing nonpoint pollution. Critical to the success of this approach is the establishment of partnerships between all of the parties that have an interest in the process. By bringing these parties together, problems are identified and prioritized and innovative solutions are developed. Moreover, the watershed represents a logical planning unit on which to focus this effort.

The Massachusetts NPS Plan was originally developed by the MassDEP in 1988 pursuant to s. 319 of the CWA. In April 2013, the EPA issued new Nonpoint Source Program and Grants Guidelines for States and Territories (Guidelines). The Guidelines continued to promote the use of s. 319 funding for developing and implementing WBPs to protect unimpaired waters and restore impaired waters. WBPs are required for all projects implemented with s. 319 incremental dollars, and are recommended for all watershed projects, whether they are designed to protect unimpaired waters, restore impaired waters, or both. The new Guidelines also required states to update their NPS plans. The most recent revision of the Massachusetts NPS Plan (MassDEP 2014) covers the five-year period 2014 – 2019 and is available from the above website. This updated NPS Plan sets forth an integrated strategy for the prevention, control, and reduction of pollution from nonpoint sources in an effort to protect and improve the quality of the waters of Massachusetts and serves as a framework on which the changes to the SRF regulations are built. An update to the s. 6217 Coastal Nonpoint Pollution Control Program Plan was also incorporated into the revised NPS Plan. Each year Congress appropriates funds under s. 319 to assist the states with the implementation of their approved NPS plans. Implementation activities include: regulatory enforcement, technical assistance, education, training, technology transfer, and watershed restoration and demonstration

projects. Finally, the new Guidelines encourage states to incorporate the protection of healthy watersheds into state nonpoint source programs, and allow the use of 319 funds for that purpose. Since 1990, and extending through 2015, the MassDEP has administered 270 s. 319 nonpoint source management projects, which total over $48 million.

In addition to the updates to the NPS Plan, the MassDEP has revised the Nonpoint Source Management Manual. Now referred to as the Clean Water Toolkit, the manual is a compilation of nonpoint source BMPs that was first developed in 1998. Since then our understanding of nonpoint source issues and BMPs has evolved, as have the options for presenting and distributing such material. In 2003, a s. 319 grant was used to revise the original hard copy manual in electronic and web-based formats. This update was completed in 2006. The current revision adds interactive media, updated information and links and additional user-friendly tools and resources. New topics include municipal good housekeeping, low impact development, Phase II stormwater and related material. The Clean Water Toolkit can be accessed at the Nonpoint Source Program's internet site, https://www.mass.gov/service-details/nonpoint-source-pollution#2.

Clean Water State Revolving Fund (SRF)

Information pertaining to the Massachusetts SRF for water pollution abatement projects and drinking water infrastructure can be accessed at https://www.mass.gov/state-revolving-fund-srf-loan-program. Administered jointly by the MassDEP's Division of Municipal Services and the Massachusetts Clean Water Trust (the Trust), the SRF was established to provide a low-cost financing mechanism to assist municipalities and wastewater districts/authorities seeking to comply with federal and state water quality requirements. The SRF loan program receives funding from the EPA in the form of an annual grant, supplemented by state matching funds and funds paid back by previous borrowers. The Trust, in turn, leverages these funds through the sale of bonds, resulting in a much larger pool of money to loan to borrowers.

Each year the MassDEP solicits water and wastewater infrastructure projects from Massachusetts municipalities and wastewater districts to be considered for subsidized loans, which are currently offered through a two percent interest rate loan. Certain nutrient removal projects may be eligible for zero percent interest rate loans. Financial assistance is available for planning and construction of infrastructure, including new water and wastewater treatment facilities and upgrades of existing facilities; infiltration/inflow correction; drinking water distribution and wastewater collection systems; control of combined sewer overflows (CSOs); brownfields water resource infrastructure improvement; and nonpoint source pollution abatement projects, such as landfill capping, community programs for upgrading septic systems (Title 5) and stormwater remediation. In addition, non-structural projects are eligible for SRF funding; e.g., planning projects for nonpoint source problems that are consistent with the Massachusetts NPS Plan and that identify pollution sources and suggest potential remediation strategies. A priority ranking system, consisting of environmental, program and implementation criteria, is used to evaluate the proposed projects. The projects, borrowers and amounts that will be financed through the SRF are presented in annual Intended Use Plans (IUPs) that are publicly noticed for review and comment.

Wetlands Management Programs

The MassDEP administers both regulatory and non-regulatory programs aimed at the assessment and protection of the Massachusetts' valuable wetland resources. All of these programs are presented in detail at https://www.mass.gov/wetlands-protection#top. The monitoring and assessment of wetlands were described earlier in this report.

The MassDEP protects inland and coastal wetlands pursuant to the Massachusetts Wetlands Protection Act (WPA), first enacted in 1972, and the WPA regulations at 310 CMR 10.00. The WPA regulations provide strong protection of bordering vegetated wetlands, allowing for no more than 5000 square feet of alteration and requiring full replacement in most cases, and only if the altered area is replaced in a manner that will function similarly to the lost area. In Massachusetts, implementation of the WPA is administered by local conservation commissions and approximately 8,500 applications ('Notices of

Intent') are submitted each year. MassDEP is responsible for appeals, Water Quality Certifications under s. 401 of the CWA and enforcement.

In 1996 the Massachusetts Legislature amended the WPA to provide additional protection to rivers. Known as the Massachusetts Rivers Protection Act, this amendment regulates activities within a newly established wetland resource area known as the Riverfront Area. This Act extends to rivers the protection originally offered only to wetlands, with the same overall goals and purposes: protection of private and public water supply, groundwater protection, flood control, prevention of storm damage, prevention of pollution and protection of wildlife habitat, shellfish beds and fisheries.

ASSESSMENT UNIT DEFINITIONS FOR MASSACHUSETTS

When defining AUs (sometimes referred to as "segments") for reporting and listing the use-attainment status of its surface waters, Massachusetts takes into consideration any of the following:

- Water body inventory systems for rivers/streams, lakes/ponds, and coastal/marine features
- Water body type (lotic, lentic, estuarine)
- SWQS classification
- Features that affect water quality (wastewater discharges, dams, river confluences, etc.)
- Availability of recent water quality and/or biological monitoring data
- Development of TMDLs

The Massachusetts SWQS classification is the primary source for defining AUs used for CWA reporting requirements, and water bodies must be broken into smaller AUs to reflect differences in SWQS Class (e.g., B, SA, etc.) and/or qualifiers (e.g., Cold Water resource, Shellfishing, etc.). Furthermore, because each AU is generally assumed to be fairly homogeneous in water quality, AUs are established to account for changes in water quality conditions that may be expected (i.e., at the confluence of a major tributary, at a dam or at the site of a NPDES discharge).

To aid in monitoring, assessing and managing the water quality of Massachusetts' surface waters, the MassDEP (in conjunction with other agencies and institutions) developed water body inventory systems for rivers, lakes, and estuaries, where each water body was assigned a unique identifying code number tied to the watershed where it was located. The Stream and River Inventory System (SARIS) (Halliwell *et al.* 1982) was created to describe all Massachusetts' perennial streams that were named on U.S. Geological Survey (USGS) topographic maps (unnamed tributaries were originally excluded from SARIS). The SARIS numbering system was built around a nested stream hierarchy within each watershed with lower numbers corresponding to the main stem river and higher numbers corresponding to headwater tributaries. Each SARIS code is a seven-digit number starting with the two-digit number assigned to each of the 33 major watersheds in Massachusetts (see Figure 1). Each number was originally incremented by units of 25 to allow for the future addition of tributary streams. For example, the Ipswich River, located within the Ipswich River Watershed (92), was assigned a SARIS code of 9253500, and all tributaries to the Ipswich River have larger SARIS numbers. To accommodate new AUs where no SARIS number exists, new SARIS numbers are added as needed to the original inventory system (MassDEP unpublished). Likewise, approximately 3,000 lakes, ponds, reservoirs, and impoundments were included in the Pond and Lake Information System (PALIS), a numbering system originally developed by Godfrey et al. (1979) and later adopted by the MassDEP's Clean Lakes Program (Ackerman *et al*. 1984, Ackerman 1989). Each PALIS code is a five-digit number starting with the two-digit watershed number (e.g., 82109 is Walden Pond, located in the Concord River Watershed (82)). PALIS codes are maintained for defining AUs by the DWM-WPP, where they may be created, modified or deleted on occasion. Finally, the Coastal and Marine Inventory System (CAMIS) (MassDEP unpublished) has been utilized to organize coastal waters, estuaries, and harbors based on their respective drainage areas as described in SARIS, and for which no SARIS or PALIS numbers have been assigned. Each five-digit CAMIS number begins with the two-digit watershed number followed by a 9 to indicate CAMIS water bodies (e.g., 94906 is

Plymouth Harbor; portions of the South Shore coastal drainage system (94) drains to this water body). Note that Boston Harbor (proper) (70) was added as a "watershed" for assessment purposes and is utilized within CAMIS, but was not included as one of the original 32 Massachusetts watersheds described under the SARIS and PALIS systems.

Massachusetts defines AUs using the following three water body types represented by the SARIS/PALIS/CAMIS inventories described above (units given in parentheses): rivers (miles), lakes (acres), and estuaries (square miles). However, AUs were never universally established for every water body in these inventories. Rather, AUs were (and continue to be) created, over time, as actual assessments of those water bodies are carried out for the first time. Therefore, the complete inventory of all of Massachusetts' water bodies is not represented by the AUs presented in the IR. When creating AUs, names are adopted directly from the associated SARIS, PALIS or CAMIS water body, although some exceptions do occur. Descriptions also help to identify the location of the AU. For lakes, the town where the AU is located is noted in the description. For rivers, the start and end point of the AU is described in terms of such features as tributaries, headwaters, outlets from ponds, and roads/bridges. Estuarine AUs may be described either way. Unlike lakes and ponds, a river or estuary represented by a single SARIS or CAMIS number may be divided into two or more AUs (see below). Therefore, AU identifiers (AUIDs) are assigned using two formats: 1) prefix "MA" followed by the five-digit PALIS code (lakes); or 2) prefix "MA" followed by "WW-XX" (rivers and estuaries), where WW is the two-digit watershed identification number and XX is a unique number beginning with "01". Unlike the SARIS coding system there is no hierarchical numbering system used for an AUID. Each new AUID for a river or an estuary is incremented by one as it is added during a reporting cycle.

Prior to the use of geographic information systems (GIS), AUs were defined using USGS topographic maps, with sizes determined by map wheels (rivers) and planimetry (lakes and estuaries). AUs were first depicted using GIS in 2000 using two feature classes, one for linear features (rivers and a few estuaries) and one for polygon features (lakes and estuaries). Lake and river AUs were georeferenced using the 1:25,000 USGS hydrography dataset (later modified by MassDEP), which depicts water bodies based on USGS topographic quadrangle maps. Today, Massachusetts Geographic Information System (MassGIS) color orthophotos, rasterized USGS topographic base maps, and professional judgment are used to help interpret and define individual river and lake AUs. Estuaries are defined using the USGS 1:25,000 topographic maps, National Oceanic and Atmospheric Administration nautical charts at several scales, and the original inventory and planimetry of Gil (1985) and Maietta (1984), respectively. In addition, coastal boundary definitions, landmarks (such as lighthouses), rock outcroppings, the extent of shellfishing beds, and professional expertise inform the creation of estuarine AUs.

When a watershed is scheduled for an assessment update during a new CWA reporting cycle, new AUs may be established due to the availability of a sufficient amount of recent water quality or biological data (as outlined in the CALM document), as a result of a TMDL study, or as a result of public comment. Furthermore, as SWQS are updated, new information may become available that requires geospatial changes to existing AUs, such as new data that indicate support of an existing use (e.g., Cold Water resource), or changes in public water supply/ORW status. Geospatial changes may require deleting an entire AU, splitting an AU into two or more segments, or joining all or part of one AU with another AU. Whenever an AU is resegmented, the former AU identifiers are listed within the AU description.

With the completion of the 2016 IR, MassDEP concluded a major effort to clarify AU designations and descriptions and eliminate cases where AUs overlapped. Specifically, since many of Massachusetts' lakes and ponds are impounded stream reaches, several were included in earlier IR reporting cycles as both lake and stream AUs. To avoid this "double-counting" in future IRs, MassDEP began, with the 2008 reporting cycle, to review pertinent morphometric and hydrological data from impoundments as part of the watershed assessment process to determine whether they should continue to be defined and assessed as lake AUs or incorporated into stream AUs. As a general rule, those impoundments formerly identified as lake AUs, but exhibiting unidirectional flow and retention times of less than fourteen days, were eliminated and merged with their respective stream AUs.

In addition to the clarification of AUs described above, all of Massachusetts' streams designated as "Cold Water" in the SWQS, were described as AUs and added to the ADB (now ATTAINS). Additional streams in the Deerfield River Watershed, not currently designated as "Cold Water" in the SWQS, but which were found to support an "Existing 'Cold Water' Use", were also described as AUs and are now included in ATTAINS.

All of the AUs contained in ATTAINS for the 2016 CWA assessment and listing cycle are presented in Appendix 1 and are depicted in Figure 2 with 293 newly added AUs highlighted in red. A total of 1,157 lake, 1,028 river and 290 estuarine AUs are included in the 2016 reporting cycle.

INTEGRATED ASSESSMENT AND LISTING OF MASSACHUSETTS' WATERS

Sources of Information

The DWM-WPP's internal monitoring networks and program elements described earlier constitute a major source of data and information for making assessment and listing decisions, but are, by no means, the only sources utilized. Additional sources typically include monitoring data and information from other state and federal agencies and citizen monitoring organizations, as well as reports on projects resulting from state or local grants or federally funded projects through the CWA (e.g., ss. 314, 319, 604(b), etc.). For example, s. 314 provided for cooperative agreements between federal, state and local entities to restore publicly owned freshwater lakes and ponds and protect them against degradation. During the late 1970s through the early 1990s diagnostic and feasibility studies were completed for several lakes and ponds throughout Massachusetts and these were used in earlier assessment and listing decisions. Impairment information from these studies continues to carry forward into new assessment and listing cycles unless new monitoring information results in a change in the assessment and listing status. Likewise, information contained in the *Commonwealth of Massachusetts Nonpoint Source Assessment Report* (MassDEP 1989) prepared in accordance with the requirements of s. 319 is also reflected in subsequent s. 305(b) and s. 303(d) reporting elements unless more recent information has resulted in a modification of the original impairment listing.

For the assessment of some designated uses, the MassDEP is entirely reliant on data and information provided by other agencies. For example, the GIS datalayer on shellfish classification areas, maintained and updated periodically by the Massachusetts Division of Marine Fisheries (DMF), is used to assess the support status of the shellfish harvesting use. Similarly, while MassDEP collects data on mercury and other contaminants in fish tissue to support fish edibility risk assessments, the actual assessment of the fish consumption use relies on whether or not fish consumption advisories have been issued by the Massachusetts Department of Public Health (DPH).

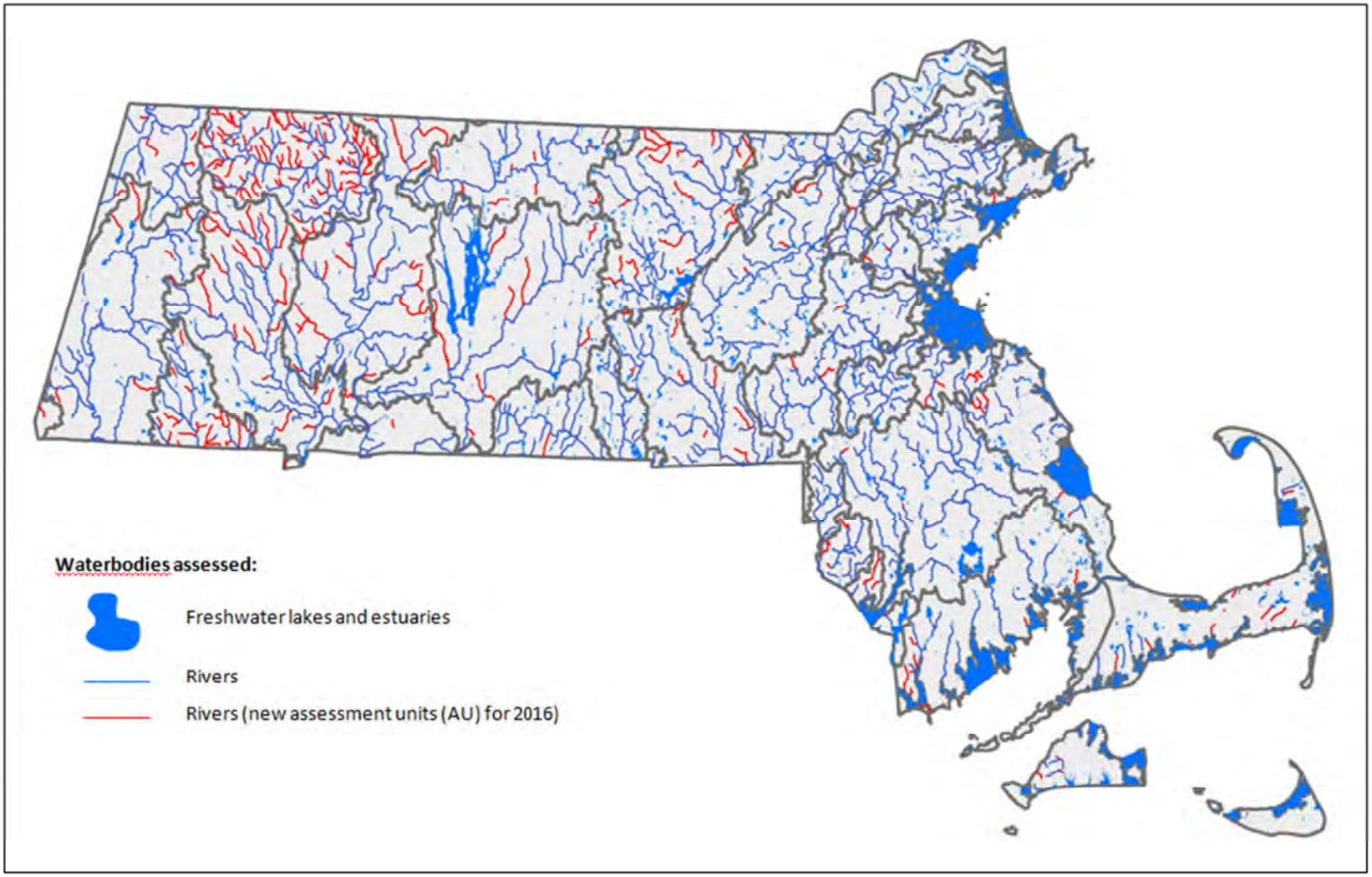
While not exhaustive, the following list highlights a number of agencies and programs from which DWM-WPP staff derive environmental data or other records to inform the integrated assessment and listing process:

- DFG fish population assessments are available statewide, primarily for freshwater riverine sites, and these are utilized in the assessment of the aquatic life use.

- DMF anadromous fishery technical reports are available for each coastal system. These reports provide data for evaluating barriers to fish passage as part of the aquatic life use assessment decision. Special studies conducted by DMF biologists (i.e., river herring habitat assessments and smelt spawning area studies) may also be utilized.

- The frequency and duration of public beach closures, at marine and DCR-managed freshwater facilities, are derived from the Beaches Bill database maintained by the DPH.

Figure 2. Assessment Units (AUs) included in the Assessment and Total Maximum Daily Load Tracking and Implementation System (ATTAINS) for Massachusetts. AUs newly added for the 2016 assessment and listing cycle are highlighted in red. ATTAINS contains a total of 1,157 lake, 1,028 river and 290 estuarine AUs for 2016.



- Whole-effluent toxicity testing data, submitted as a requirement of NPDES wastewater discharge permits, provide information on the survival of test organisms exposed to ambient river water samples, and may be used to determine the support status of the aquatic life use.

- Presumptive assessments of recreational use impairment are made downstream from CSOs discharging to waters that are not covered by variances in the SWQS.

- Stream discharge data from continuous gaging sites, as well as estimated streamflows from ungaged sites (Streamstats), are available from the USGS. Data on such water quality variables as bacteria, chloride, ammonia, metals, nutrients, polycyclic aromatic hydrocarbons, and pesticides are also available from the USGS from approximately 70 sites statewide (2005 – 2014).

- The Massachusetts Division of Ecological Restoration is managing over 150 Habitat Restoration Projects statewide involving such stream improvement measures as dam removal, tidal flow restoration, culvert size remediation and urban river revitalization. Information generated by these projects may be used as part of the aquatic life use assessment.

- Precipitation and other climatic data are available from the Global Historical Climatology Network maintained by the National Oceanic and Atmospheric Administration's National Climatic Data Center, and from DCR's Rainfall Program.

Data Acceptability

The availability of appropriate and reliable scientific data and technical information is fundamental to the assessment and listing of waters pursuant to CWA ss. 305(b) and 303(d). And, while states must consider all existing and readily available data and information when preparing lists of impaired waters to meet s. 303(d) requirements, it is the EPA's policy (EPA Order 5360.1 CHG 1) that any organization performing work for or on behalf of the EPA must establish a quality system to support the development, review, approval, implementation and assessment of data collection operations. To this end, the MassDEP describes its Quality System in an EPA-approved Quality Management Plan to ensure that environmental data are of known and documented quality and are suitable for their intended use.

Historically, the MassDEP relied most heavily on internal data collected by the DWM-WPP's ambient water quality monitoring program to support assessment and other CWA water management activities. Over the last decade the number of non-MassDEP data collectors has increased along with advances in technology that have created new opportunities for data sharing between MassDEP and non-MassDEP data collectors. Concurrently, federal and state CWA program resources for monitoring and assessment have declined in recent years. As a result, MassDEP is working to expand partnerships in data collection and the use of external or secondary data from other state and federal agencies, local governments, drinking water utilities, volunteer organizations and other sources to support CWA program needs for water quality data. The MassDEP's monitoring results, augmented by all other "external" data that are deemed reliable and usable, constitute the basis for making water quality assessments in accordance with the requirements set forth in ss. 305(b) and 303(d) of the CWA.

Section B9.3 of the DWM-WPP's *Quality Assurance Program Plan for Surface Water Monitoring and Assessment 2015 – 2019* addresses the use of secondary or external data (MassDEP 2015b). The DWM-WPP categorizes external data into three general levels, which are related to the monitoring objectives (i.e., why the data were collected):

- Educational/Stewardship-level
- Screening-level
  Regulatory/Assessment-level

While very important, data collected primarily for educational and/or stewardship purposes generally do not meet the rigor (i.e., accuracy, precision, frequency, comparability, overall confidence, etc.) required for use in water body assessments or TMDL development. It is unlikely this type of data would be used for s. 305(b) and/or s. 303(d)-related decision-making. Screening-level data are also very important, but generally fail to meet one or more DWM-WPP criteria required for direct use in assessments or TMDLs. Screening-level data may meet the data quality objectives (DQOs) specified in the original project QAPP, but not those in the DWM-WPP's monitoring program QAPP approved by the EPA for CWA activities. Screening-level data are typically used to direct future sampling efforts and as supporting evidence only. Assessment-level data have been deemed by the MassDEP, based on the DWM-WPP's external review procedures, to be directly usable for CWA decision-making. These data are typically the result of extensive planning, attention to detail, relatively stringent DQOs, training, standard lab procedures, metadata collection, project organization and data verification---all of which contribute to data that are scientifically sound and legally-defensible. Contingent on review and approval, these data can help determine whether or not a water body is meeting water quality standards.

External data can be submitted to the DWM-WPP using guidelines found on the following web site: https://www.mass.gov/guides/external-data-submittals-to-the-watershed-planning-program. All submitted external data are reviewed using a consistent procedure. Once data are received by the DWM-WPP, a standard data review spreadsheet is used to facilitate and document the review. Each potential secondary data source is evaluated using the following preliminary criteria: 1) adherence to an acceptable QAPP, including a laboratory quality assurance plan and associated standard operating procedures for field sampling and laboratory analyses; 2) use of a state-certified (or as otherwise acceptable to the MassDEP) analytical laboratory; and 3) availability of quality control (QC) data supporting the validity of the data.

Meeting these criteria provides a basic level of confidence that the data were generated using appropriate field sampling and analytical methods and that the data were assessed by the external group for accuracy, precision and representativeness. External data meeting these criteria are then further reviewed by one or more DWM-WPP staff to verify that the group's DQOs were met based on the QC data provided. These DQOs are then compared to the DWM-WPP's DQOs to look for any large discrepancies that could affect acceptability. In cases where additional information is needed, the external data group is contacted for the information. If available information is deemed insufficient to complete the review, the data are not used for performing assessments, though they may still be suitable for screening and/or stewardship purposes. Data may also be considered unusable due to poor or undocumented QAPP implementation, lack of project documentation, incomplete reporting of data or information, poor QC results and/or project monitoring objectives unsuitable for MassDEP assessment purposes. Best professional judgment is used to make the final determination regarding data validity and usability for assessment purposes. External data are not qualified by the DWM-WPP in any way, but are considered either acceptable for use or not (as a whole or in part). External data greater than five years old, with few exceptions, are generally considered unusable for assessment decisions because they are not representative of current conditons.

Consolidated Assessment and Listing Methodology (CALM)

In 2002 the EPA published the *Consolidated Assessment and Listing Methodology – Toward a Compendium of Best Practices* or CALM Document (EPA 2002) aimed at improving states' monitoring and assessment programs and making data and information more available to the public. The CALM Document provided guidance to the states on how to update and clarify the decision making process for assessing the attainment of water quality standards. Prior to the 2012 CWA integrated reporting cycle the MassDEP included its assessment procedures in individual watershed assessment reports. For the 2012 IR, however, MassDEP published a stand-alone CALM Guidance Manual (MassDEP 2012) that contained a brief summary of the SWQS that define the goals for water quality in the state, the requirements for assessing the quality of data to be used for CWA reporting, the methods of reviewing water quality data and information used by the MassDEP to make use assessment decisions, and the use

of the ADB at that time for storing and reporting those decisions in the IR format. Extensive revisions were made to the Massachusetts CALM manual in anticipation of the 2016 CWA assessment and reporting cycle. The 2016 CALM Guidance Manual (MassDEP 2016a) incorporates evaluation methods for long-term continuous monitoring datasets (e.g., dissolved oxygen and temperature), screening methods to determine whether or not conditions are natural, more detailed screening guidelines used to make nutrient enrichment decisions and updated evaluation methods for toxic pollutants. In addition, guidance was developed for the documentation and submittal to MassDEP of external data from nongovernmental sources, such as volunteer monitoring groups, that wish to have their data considered for use in assessing and listing waters. The 2016 CALM Guidance Manual can be accessed online at http://www.mass.gov/eea/docs/dep/water/resources/07v5/2016calm.pdf.

Details pertaining to how environmental data and information are utilized to make use-attainment decisions for each designated use and water body type included in the IR are presented in the 2016 CALM Guidance Manual and are not reproduced here. The determination of whether or not a water body supports its designated uses is a function of the type(s), quality and quantity of available current information. While the SWQS prescribe minimum water quality criteria to sustain the designated uses, numerical criteria are not available for every indicator of pollution. Best available guidance in the literature may be applied in lieu of actual numerical criteria. Excursions from criteria due solely to naturally occurring conditions do not constitute violations of the SWQS and are not causes of use impairment.

If possible, each designated use, within a particular AU, is individually assessed as “supporting” or “not supporting”. When too little current data or information are available to make an assessment the use is identified as having “insufficient information”. When no reliable data are available the use is “not assessed”. However, if there is some indication of water quality impairment, which is not naturally-occurring, the use is identified with an “Alert Status”. It is important to note that not all waters are assessed. Many small and/or unnamed rivers, lakes and estuarine areas have never been assessed; the status of their designated uses has never been reported in historical s. 305(b) reports or in more recent IR format; nor is information on these waters maintained in ATTAINS. These waters do not have assigned AUs and are considered “not assessed other waters”.

In addition to assessing the use-status of each AU for which data are available, s. 305(b) guidance specifies that, whenever possible, the causes and sources of impairment be identified for those AUs not supporting one or more designated use(s). A large number of cause and source codes are available for selection when storing assessments in ATTAINS. Those codes that are typically used by the MassDEP are presented in Appendix F of the 2016 CALM Guidance Manual.

Causes of use impairment may be expressed as individual variables that suggest the degree of contact with an environmental stressor, such as a water-column pollutant concentration (e.g., phosphorus, ammonia, chloride, etc.) or a level of ambient toxicity (“exposure indicators”). Other causes are expressed as “response indicators” which provide measures of integrated or cumulative reactions to exposure and stress. Algae blooms, fish kills and deleterious changes in the structural or functional integrity of aquatic macroinvertebrate communities are all examples of biological response indicators that may be identified as causes of impairment.

Sources are the discharges, land-use practices or other anthropogenic activities that contribute the pollutants or stressors that result in the impairment of one or more designated uses of a water body. Impairments may result from both point sources and nonpoint sources of pollution. Point sources discharge pollutants directly into surface waters from pipes, channels or similar conveyances and include, but are not limited to, industrial and municipal wastewater treatment facilities, CSOs and storm sewers. Nonpoint sources deliver pollutants to surface waters from diffuse origins. Examples include urban runoff that is not captured in a storm sewer, agricultural runoff, untreated landfill leachate and malfunctioning septic systems. Because water quality conditions at any site are a reflection of all of the various land uses and activities occurring within the watershed, source(s) of impairment can be difficult to identify with a high degree of certainty. MassGIS datalayers (e.g., orthophotos, land-use patterns and urbanization) and DMF sanitary survey reports are consulted when attempting to identify potential sources of pollution.

Sources can be entered into ATTAINS as either “confirmed” or “suspected” but sources of impairment generally remain unconfirmed unless a more intensive analysis, such as the development of a TMDL, is carried out.

Through the 2012 reporting cycle, the MassDEP provided details pertaining to the assessment process and its application to specific water bodies (i.e., AUs) in individual watershed assessment reports that were completed on a continuous rotating schedule. Following the 2014 reporting cycle, which did not involve any new watershed assessments, the preparation of these assessment reports was discontinued in order to streamline the assessment process and complete future assessments in a timelier manner. For the 2016 reporting cycle, assessment and listing decisions for each AU have been entered into ATTAINS. The assessment and listing decisions, along with pertinent supporting data and information, are also maintained in a watershed “repository” document that is not intended for publication.

ATTAINS automates the production of the IR by generating output files that are then assembled into a single, multi-part list, as described in more detail in the next section of this report. Following the approval of the 303(d) List (i.e., Category 5), the assessment and listing information contained in ATTAINS forms the basis for developing the subsequent IR to be completed two years later. Meanwhile, ATTAINS is populated with new information as the latest assessment and listing decisions are made. New assessments may result in changes to the listing status of AUs; however, impairments remain with AUs from one reporting cycle to the next unless new data indicate that the impairment no longer exists, a change in assessment methodology has resulted in a delisting of the impairment, or a TMDL has been approved.

A spatial representation of the assessment and listing decisions is made available to the public through an ArcGIS 10 geodatabase file and its supporting shapefiles and databases. These files can be downloaded from the MassGIS website once the IR is finalized and Category 5 (i.e., the 303(d) List) is approved by the EPA. (For the 2014 IR, see: https://docs.digital.mass.gov/dataset/massgis-data-massdep-2014-integrated-list-waters-305b303d). An interactive mapping tool is also available to provide access to this information without the need for ArcMap (https://www.mass.gov/lists/integrated-lists-of-waters-related-reports).

Shared Waters

The EPA encourages states with shared water bodies to collaborate with one another in the development of their IRs in an attempt to make assessments for those waters as consistent as possible. Many factors can contribute to discrepancies in the use attainment determinations rendered by neighboring states for the same waters. States may vary with respect to the specific goals for those waters set forth in their respective SWQS. Furthermore, differing assessment and listing methodologies, or even asynchronous rotating watershed assessment schedules may lead to assessment and listing inconsistencies between states. Prior to making individual watershed assessments the MassDEP attempts to gather all existing and readily available data and information from as many sources as possible, including neighboring states. Nonetheless, discrepancies often do exist for the reasons cited above.

DEVELOPMENT OF THE 2016 INTEGRATED REPORT

The final version of the 2014 IR (MassDEP 2015a) was submitted to the EPA on December 11, 2015 and the 303(d) List was approved on February 23, 2016. However, no new watershed assessments had been completed since the submittal of the 2012 IR. Newly approved TMDLs, the addition of a few DPH fish consumption advisories and comments received during the public review period were the only new sources of information represented in the 2014 IR. By submitting a 2014 IR with few substantative changes from 2012, MassDEP was able to focus more resources on revising the CALM Guidance Manual and developing and implementing a number of new program enhancements aimed at completing as many new watershed assessments and listing updates as possible for the 2016 IR cycle. For example, from 2005 – 2011 the DWM-WPP completed water quality and biomonitoring surveys in almost all

watersheds and coastal drainage areas (Table 4), yet, as recently as the 2014 integrated reporting cycle, data obtained during many of those surveys had not been processed and validated and, therefore, remained unavailable for making assessment and listing decisions. Data management obstacles, contributed to a considerable lag between the time the monitoring surveys were carried out and the point at which the data were available for assessments and other purposes. In addition, the increasing variety of data sources, as well as the volume and types of data available for making assessment decisions (e.g., discrete and continuous), demanded that a review and modification of the assessment process be undertaken in order to complete assessments and listing decisions more efficiently.

Concerted efforts have been made, since the 2012 cycle, to address the data management issues, streamline assessment methods and redirect resources to address the backlog of data to be processed. These efforts resulted in improved data validation procedures, automated decision matrices designed to relate data to the appropriate AUs and an expanded use of GIS applications and facilitated data flows from both MassDEP's monitoring programs, as well as those of other agencies. With the exception of the Aquatic Life Use evaluations that have been deferred to the 2018 reporting cycle (see Figure 3), as a result of these efforts, all of the 2005 – 2009 survey results, as well as data from selected monitoring projects through 2011 were used for making use-support determinations for the 2016 assessment and listing cycle.

The MassDEP's intensive efforts to validate and report on its back-logged monitoring data, and to streamline the assessment and listing process, culminated in the completion, for the 2016 integrated reporting cycle, of a statewide assessment (i.e., all watersheds) of the shellfish harvesting, primary and secondary contact recreation and aesthetic uses, as well as the assessments of the aquatic life use-attainment status of 15 watersheds and/or coastal drainages (Figure 3). For this reason, the number of changes made during the 2016 reporting cycle far exceeds that for the 2014 IR. While no new DPH fish advisories were issued since the completion of the 2014 IR, impairments of the fish consumption use were applied to seven new AUs in the Millers River Watershed for the 2016 reporting cycle because the prevailing advisory for this watershed was worded to include all tributaries joining the Millers River downstream from its confluence with the Otter River. All assessment and listing decisions were input to ATTAINS and each AU was assigned to the appropriate list category, as described in further detail below.

The IR format allows states to meet the provisions of CWA ss. 305(b), 303(d) and 314 by presenting the use-attainment status of all of their assessed waters in a single, multi-part list. To that end, the MassDEP has placed each AU in one of five categories, as described in more detail below. It should be reiterated here that ATTAINS does not contain AUs for all of the surface waters in Massachusetts. Only those waters for which assessments of one or more designated uses were actually completed at some time in the past are included in the database. Surface waters that have never been assessed are not explicitly listed in the IR and they are considered Category 3 (i.e., no uses assessed) waters by default. As water quality monitoring and data collection efforts are carried out in waters not previously assessed AUs are defined and added to ATTAINS, resulting in greater representation of Massachusetts' surface waters with each updated reporting cycle.

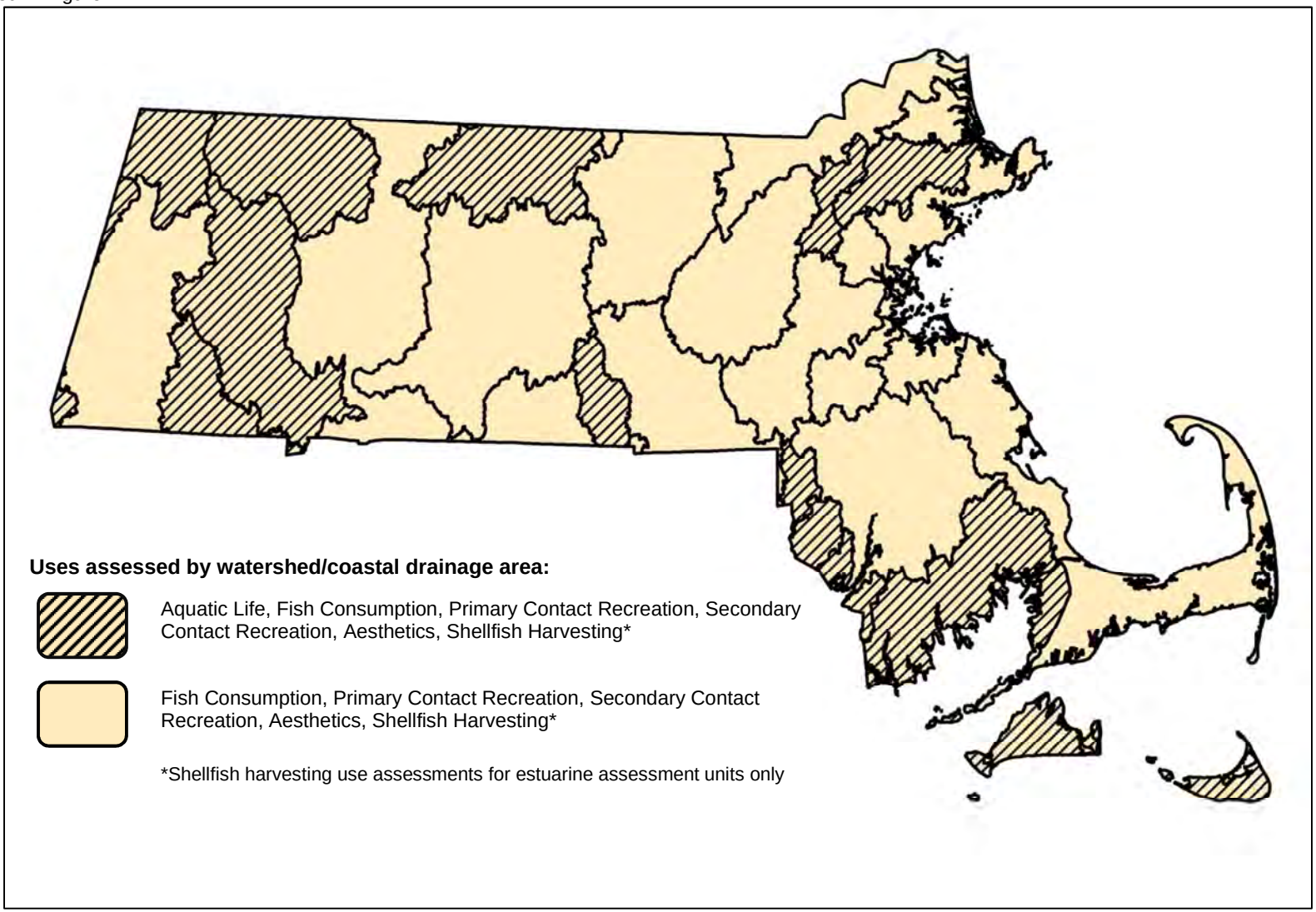
List Categories 1 - 4

Categories 1-3 include those waters whose designated uses are either supported or not assessed. Waters attaining all of their uses would be included in Category 1; however, no Massachusetts waters are listed in this category because a statewide DPH advisory pertaining to the consumption of fish precludes any waters from being in full support of the fish consumption use (see Fish Consumption Advisories later in this section). Those waters that are supporting some uses, but are not assessed for all other uses, are listed in Category 2. However, the Category 2 list does not contain AUs that support some uses but are impaired for others. Impaired waters are listed in categories 4 and 5 (see below) but supported uses are not identified in these lists due to space constraints. Finally, Category 3 contains those waters for which insufficient or no information is available to assess any of their designated uses. Waters for which assessments are determined to be insufficient for 303(d) listing are also included in Category 3.

Table 4: Approximate number of sites monitored from 2005 – 2011 by the DWM/WPP. Table includes all water types (rivers, streams, lakes and ponds). Sites vary with respect to sampling frequency, methodology and parametric coverage. Most data from 2005 – 2009 and selected data from 2010 – 2011 were used to complete watershed assessments for the 2016 integrated reporting cycle pursuant to the requirements of CWA ss. 305(b) and 303(d).

Year	Watershed	Number of Sites Monitored					
		Water quality (streams)	Macro-invertebrates	Fish population	Fish toxics	Algae	Lakes
2005	Buzzards Bay	25	9	--	2	3	6
	Deerfield	30	15	6	1	10	--
	Ipswich	15	8	1	1	4	--
	Millers	21	9	--	2	6	--
	Shawsheen	11	10	1	1	3	--
	(Multiple)	--	--	--	2	--	30
2006	Concord	31	9	--	--	--	--
	Farmington	18	11	--	--	7	4
	South Coastal	17	14	6	--	6	--
	Taunton	24	17	--	--	6	--
	Westfield	36	11	--	2	8	4
2007	Charles	32	13	4	2	26	--
	Housatonic	30	14	6	1	5	--
	Hudson	25	12	6	2	19	--
	North Coastal	21	8	6	2	8	--
	Ten Mile	22	6	--	--	--	--
	(Multiple)	--	--	--	8	--	1
2008	Blackstone	51	16	7	2	20	5
	Chicopee	49	17	6	2	17	2
	Connecticut	33	11	14	2	11	--
	Nashua	50	17	9	1	13	--
	(Multiple)	--	--	--	7	--	--
2009	Cape Cod	10	14	7	5	11	8
	Mystic	16	6	6	--	6	--
	Narragansett/Mt. Hope Bay	18	8	8	2	--	--
	Neponset	20	12	8	3	11	2
	Weymouth/Weir	23	11	7	2	6	--
	(Multiple)	--	--	--	4	--	3
2010 - 2011	(Multiple)	100	74	70	8	11	6

Figure 3. Designated use assessment and listing decisions updated by the MassDEP for the 2016 CWA 305(b)/303(d) reporting cycle. A statewide assessment and listing decision update was completed for the fish consumption, shellfish harvesting, primary and secondary contact recreation and aesthetic uses. The support status of the aquatic life use was also updated for waters in 15 watersheds and/or coastal drainages. Individual watersheds and drainage areas are identified in Figure 1.



Waters exhibiting impairment for one or more uses are placed in either Category 4 (impaired, but not requiring TMDLs) or Category 5 (impaired, and requiring one or more TMDLs) according to the EPA guidance. Category 4 is further divided into three sub-categories – 4a, 4b and 4c – depending upon the reason that TMDLs are not needed. Category 4a includes waters for which the required TMDL(s) have already been completed and approved by the EPA. However, since MassDEP chooses to list each AU in only one category, waters that have an approved TMDL for some pollutants, but not others, remain in Category 5 until TMDLs are approved for all of the pollutants impairing those waters.

Category 4b was proposed by the EPA to list waters for which pollution control measures other than TMDLs are expected to attain all designated uses. Massachusetts attempted to use this category in 2004 to list lakes and ponds impaired solely by mercury deriving from atmospheric deposition. However, the use of this category was disapproved by the EPA (see Waters Impaired by Mercury later in this section). Massachusetts is not including any waters in Category 4b for the 2016 listing cycle.

The CWA distinguishes between "pollutants" such as nutrients, metals, pesticides, solids and pathogens that all require TMDLs and "pollution" such as low flow, habitat alterations or non-native species infestations that do not require TMDLs. Non-pollutant impairments are marked with an asterisk in the IR to distinguish them from pollutants requiring TMDLs. Water bodies impaired solely by "pollution" are included in Category 4c unless there are also TMDLs approved for them, in which case they appear in Category 4a.

When developing TMDLs and pollution control strategies it is often more efficient to focus limited resources collectively on waters that exhibit the same types of impairments. For example, the Northeast Regional Mercury TMDL (see Waters Impaired by Mercury) establishes the mercury reduction goal and management strategy for multiple water bodies throughout New England that are impaired by the atmospheric deposition of mercury. In addition, the MassDEP has worked collaboratively with the EPA to derive "bundled" TMDLs and cleanup plans at the watershed scale for waters impaired by bacteria. These state- or watershed-wide TMDLs were designed such that additional waters, found to be similarly impaired subsequent to the approval of the TMDLs, could, if applicable, be proposed for coverage under those TMDLs. While these waters are addressed in supplemental documents, or addenda, to the original TMDLs, they must be reviewed by the public and approved by the EPA like any other TMDLs.

The 303(d) List of Impaired Waters - List Category 5

While the EPA guidance provides the overall framework for a five-part list of waters, the development, submittal and review of Category 5 remains subject to the prevailing regulation governing the implementation of s. 303(d) of the CWA. This regulation requires states to identify and list those water bodies that are not expected to meet SWQS after the implementation of technology-based controls and, as such, require the development of TMDLs. States must include on the lists the specific cause(s) of the impairment (if known). Finally, guidance pertaining to s. 303(d) is clear with respect to the removal of water bodies from the list. Water bodies can be removed from Category 5 when TMDLs are approved by the EPA for all pollutants impairing that water body (note that these waters are now listed in Category 4a until it is determined that they are no longer impaired). In addition, there are some instances when a previously listed water body can be removed from the 303(d) List without calculating a TMDL. These include: 1) when a new assessment reveals that the water body is now meeting all applicable water quality standards or is expected to meet those standards in a reasonable timeframe as the result of the implementation of required pollution controls; 2) when flaws in the original analysis of data and information led to an incorrect listing decision; 3) when the development of a new listing methodology, consistent with state SWQS and EPA listing requirements, and a reassessment of the data that led to the prior listing, conclude that SWQS are now attained; and 4) a determination that a previously listed water is not impaired by a pollutant.

In preparing 303(d) lists states are required to assemble and evaluate all existing and readily available data, including, but not limited to, the most recent 305(b) report and 319 nonpoint source assessment report, dilution calculations or predictive simulation models and reports by government agencies,

members of the public or academic institutions. When conducting individual watershed assessments the MassDEP relies on these and additional information sources as described earlier in this document. The development of the 2016 Category 5 (i.e., 303d) list began with a review of Category 5 waters contained in the 2014 List. To these were added previously unlisted water bodies that were determined, as the result of assessments completed since the 2014 reporting cycle, to be impaired due to the presence of one or more pollutants.

As an integral part of the assessment and listing process, waters were listed in Category 5 if they were identified as impaired (i.e., not supporting one or more intended use), the impairment was related to the presence of one or more pollutants, and the condition was not considered to be natural. However, to AUs with incomplete or anecdotal information suggesting the possibility of use impairment an "alert status" was assigned during the watershed assessment and listing process so that they may be targeted for monitoring and follow-up assessments. These water bodies were not placed on the 303(d) List because the MassDEP believed there were insufficient data to support doing so.

Waters Impaired by Nutrients

The Massachusetts SWQS do not include numeric criteria for the essential plant nutrients, nitrogen and phosphorus. Instead, narrative statements specify that waters "shall be free from nutrients in concentrations that would cause or contribute to impairment of existing or designated uses." Nonetheless, the lack of numeric criteria does not preclude the identification of nutrient-related impairments and MassDEP analysts rely on a variety of indicators of nutrient enrichment in a weight-of-evidence approach when assessing water quality conditions. Biological "response" indicators of nutrient-related impacts include the presence of nuisance growths of algae or other aquatic plants – particularly those non-rooted forms, such as duckweed and watermeal that derive nutrients directly from the water column and may exhibit blooming conditions in enriched waters – or even changes in benthic macroinvertebrate community structure. These response indicators may be collectively represented by the pollutant "Nutrient/Eutrophication Biological Indicators" when listing waters impaired by nutrients. Excessive primary productivity may also be evidenced by diel fluctuations in physico-chemical variables, such as dissolved oxygen and pH. When available, phosphorus and nitrogen data are screened against 1986 EPA recommended "Gold Book" criteria (EPA 1986)**,** but nutrient concentrations, alone, are not currently utilized to determine impairment due to nutrient overenrichment. Elevated nutrient levels may serve to corroborate the presence of "response" indicators, and may help to identify potential sources (e.g., release of phosphorus from anoxic sediments). Nutrient enrichment is not considered to be problematic when "response" indicators, as described above, are absent even if nutrient concentrations exceed their recommended "Gold Book" criteria. However, when a combination of "response" indicators considered in a weight-of-evidence scheme suggest the occurrence of nutrient pollution and nutrient concentration data exceed the applicable EPA criteria, that particular nutrient may also be identified as a cause of impairment. The following information pertaining to how the MassDEP identifies nutrient impairments in rivers, lakes and estuaries is adapted from the 2016 CALM Guidance Manual which should be consulted for more detailed information pertaining to all of these indicators.

Rivers: When nuisance growths of algae (e.g., blooms, algal mats, etc.) or macrophytes (particularly non-rooted forms) are observed on more than one site visit during the summer index period changes in physico-chemical data, such as dissolved oxygen (depletion and/or supersaturation), pH, and chlorophyll are also considered. If a combination of these indicator data strongly suggests high productivity/nutrient enrichment the aquatic life use is assessed as impaired. Total phosphorus is included as a cause of impairment if the concentrations exceed EPA's "Gold Book" criteria. For river segments with impoundments, a conservative evaluation of nutrient-related response indicators following the guidance described for lakes may be conducted.

Lakes: Indicators of nutrient enrichment in lakes typically include the occurrence of planktonic blooms (particularly cyanobacteria), extensive cover of non-rooted aquatic macrophytes, such as duckweed or watermeal, decreased Secchi disk transparency, oxygen depletion and/or supersaturation, elevated pH values and elevated chlorophyll concentrations. The frequent and persistent presence of a combination of

these indicators typically results in a decision that the aquatic life use is impaired. Total phosphorus is included as a cause of impairment if the concentrations exceed EPA's "Gold Book" criteria.

Estuaries: MassDEP analysts currently utilize the areal coverage of seagrasses or other submerged aquatic vegetation and, where applicable, the habitat health indicator analysis developed for the Massachusetts Estuaries Project (MEP), to identify nutrient impairments in estuaries and coastal embayments (Howes *et al*. 2003). Because ATTAINS does not provide a specific cause code to apply to impaired seagrass populations, the MassDEP has chosen to use "Estuarine Bioassessments" for this purpose. Assessment decisions are based on whether or not the eelgrass meadows within the AU are stable or are diminishing. For embayments in southeastern Massachusetts the MEP has generated a significant amount of enrichment indicator data based on a weight-of-evidence approach that includes several response variables (e.g., eelgrass, macroalgae, chlorophyll, dissolved oxygen, Secchi disk and total nitrogen). Since this project is intended to develop site-specific nutrient (nitrogen) thresholds for these coastal systems, their overall assessments of habitat health are utilized to make aquatic life use attainment decisions.

Biological Assessments

When determining the extent to which water bodies are supporting the aquatic life use, as designated in the SWQS, the MassDEP often relies on the results of biological surveys, with or without supplemental physico-chemical analyses. Macroinvertebrate, fish and periphyton (i.e., attached algae) communities, often in combination, are typically used for making this assessment. While these community assessments are invaluable for determining use impairment, they often do not provide insight pertaining to the cause or source of the apparent disturbance and, therefore, may not implicate "pollution" or "pollutants" as contributing factors. Nonetheless, the EPA guidance is clear with regard to the use of biological assessments for listing in Category 5 and, in most instances, the MassDEP lists those waters that exhibit impaired aquatic communities.

The MassDEP prefers to make aquatic life use determinations based on an assessment of more than one community, and waters exhibiting impaired fish and invertebrate communities, for example, are strong candidates for listing in Category 5. Nonetheless, an assessment based on a single community may also result in a decision that the aquatic life use is not supported. This depends, in part, on whether the assessment relies on a screening level of effort or a more intensive analysis. When making an aquatic life use-attainment determination from an assessment of the invertebrate community the MassDEP relies on the EPA Rapid Biomonitoring Protocol (RBP) III (Plafkin *et al*. 1989; Barbour *et al*. 1999). This protocol entails taxonomic identification to the genus and species level, thus providing more information pertaining to the environmental preferences and sensitivities to pollution and other stressors of individual taxa than is achievable by screening techniques that use only family- or order-level taxonomic resolution. The MassDEP has established the RBP III or equivalent analysis as a minimum requirement for purposes of listing waters in Category 5.

Cold Water Fisheries

The timely availability of new sources of instream temperature and fish population data, combined with increasing concern over the loss of *Salvelinus fontinalis* (brook trout) habitat in Massachusetts, resulted in the initiation of a concerted effort by MassDEP to better define the thermal requirements of cold water fishes, and to develop protocols to identify, protect, enhance, and/or restore cold water fisheries habitat. Guidance pertaining to the use of fisheries and thermal datasets to determine the use-attainment status of cold water fisheries was developed and described in the 2016 CALM. Designated and "Existing Use" cold waters were identified as impaired for the aquatic life use if cold water fish species populations were absent from them. These waters were also impaired if, despite the presence of cold water fish, recommended temperature criteria were exceeded, thus offering protection against any further loss of cold water habitat where anthropogenic influences can be minimized or mitigated.

Fish Consumption Advisories

The EPA provides guidance pertaining to the use of fish and shellfish consumption advisories when making s. 303(d) listing decisions. In short, the EPA considers a fish-consumption advisory as evidence that the fish consumption use is not supported when the advisory is based on actual fish tissue data collected from the specific water body in question. To date, the DPH has issued advisories pertaining to the presence of mercury, PCBs, PAHs, DDT and other contaminants in freshwater fish. A list and map of DPH site-specific fish consumption advisories can be found at http://www.mass.gov/eohhs/gov/departments/dph/programs/environmental-health/exposure-topics/fish-wildlife/fish/freshwater-fish-consumption-advisory-list-and-map.html. Waters subject to site-specific advisories, based on actual fish tissue analyses from those waters, are included on the 303(d) List. In 1994, the DPH issued a statewide consumption advisory due to widespread mercury contamination found in freshwater fish. This advisory was revised in 2001. Because the statewide advisory encompasses all fresh waters, these waters cannot be considered as "fully supporting" the fish consumption use.

Waters Impaired by Mercury

Waters covered by the DPH statewide advisory, as well as site-specific mercury advisories, may be impaired by local sources of mercury or by atmospheric deposition from near- and far-field sources, or both. Massachusetts, along with other northeastern states and Canadian provinces, has taken a lead role in reducing mercury pollution despite the inherent complexity of the problem (Harvey and Smith 2004). See https://www.mass.gov/guides/massdep-mercury-information for information on the Massachusetts Mercury Management Act and other initiatives underway to reduce mercury emissions in Massachusetts and the Northeast.

In 2004 the MassDEP noticed for public review and comment a document entitled *A TMDL Alternative Regulatory Pathway Proposal for the Management of Selected Mercury-Impaired Waters (CN 176.0).* This proposal, prepared as a supplement to the 2004 IR, asserted that a combination of federal, regional and state controls on mercury was the most effective means of remediating the mercury impairment to air-impacted waters and that Massachusetts was effectively implementing a comprehensive plan to address in-state mercury sources. Therefore, the establishment of water body-specific TMDLs using the traditional approach was not considered to be a wise use of resources, and would not effectively address the problem. Thus, 90 lakes and ponds impaired solely by the atmospheric deposition of mercury were removed from Category 5 (i.e., the 303d list) and placed in Category 4b (i.e., impaired, but not requiring a TMDL) of the 2004 IR. In June, 2006 the EPA partially approved and partially disapproved the 2004 303(d) List (i.e., Category 5 of the 2004 IR). Specifically, the EPA disapproved Massachusetts' decision not to list the lakes and ponds impaired by atmospheric deposition as outlined in the alternative pathway document. In their review document the EPA indicated their intent, following public review and comment, to add the 90 lakes and ponds to the Massachusetts 303(d) List as impaired by mercury. As a result, the use of Category 4b was discontinued and all waters for which site-specific mercury health advisories were in force appeared in Category 5 of the 2004 IR.

With the return of the lakes and ponds impaired solely by the atmospheric deposition of mercury to the 303(d) List, the MassDEP embarked on a collaborative effort with the five other New England states, New York State and the New England Interstate Water Pollution Control Commission (NEIWPCC) to develop a regional TMDL for mercury (CTDEP *et al*. 2007). This effort resulted in a strategy for reducing mercury concentrations in fish from Northeast water bodies so that water quality standards can be met. The strategy calls for mercury reductions at sources within the Northeast region, in states outside of the region and from outside of the United States. In the Northeast, the majority of mercury pollution derives from atmospheric deposition. Therefore, the regional TMDL is based primarily on reducing atmospheric mercury by lowering anthropogenic mercury emissions. The *Northeast Regional Mercury Total Maximum Daily Load* can be accessed at https://www.mass.gov/lists/total-maximum-daily-loads-by-watershed. Following a public information meeting on April 11, 2007 and subsequent 60-day public review period, the regional mercury TMDL was submitted to the EPA on October 24, 2007. The EPA approved the TMDL on

December 20, 2007, and the affected lakes and ponds were moved to Category 4a (i.e., water body impaired, but requisite TMDL is completed and approved) of the 2008 and subsequent lists unless they exhibited additional impairments. In a 2012 addendum to the original document, the northeast mercury TMDL was applied to 20 additional water bodies for which more recent DPH mercury advisories had been issued (MassDEP 2012).

Since 1994, MassDEP has carried out a series of research projects and long-term monitoring programs designed to measure, both spatially and temporally, the tissue burdens of mercury in fish as part of its larger efforts to understand and control the inputs and effects of mercury in the Massachusetts environment. Through the use of statistically-valid study designs, long-term trends in mercury concentration can be determined, thus providing a measure of the overall effectiveness of the multiple programs aimed at the elimination or reduction of mercury releases to the environment. Results of long-term monitoring of 23 lakes exhibited significant declines in fish mercury concentrations concomitant with decreases in mercury emissions from municipal solid waste combustors and other sources (Hutcheson *et al*. 2014). MassDEP intends to continue monitoring mercury in fish tissue as resources allow.

Predictive Models and Evaluated Information

The EPA guidelines specify the kinds of data and information that should be used when making decisions to list waters in Category 5, and this information is not restricted to direct observations (i.e., monitoring data). Rather, waters should be included in Category 5 if evaluations such as dilution calculations or predictive simulation models forecast non-attainment of water quality standards. During the 1970s and 1980s the MassDEP used steady-state, low-flow stream models to calculate waste load allocations (WLA) for point discharges. Aimed primarily at reducing instream biochemical oxygen demand and ammonia loads, the WLA were adopted in 303(e) basin plans and incorporated in individual NPDES wastewater discharge permits. As a result, secondary or advanced waste treatment were implemented where necessary across Massachusetts, although occasional reviews are still needed to assess the adequacy of existing treatment in light of anticipated increases in wastewater flows. Because of the complex and site-specific nature of remaining water quality problems (e.g., nutrients, toxics, etc.) predictive models have limited value in identifying impaired waters. In fact most modeling is now carried out for waters where impairments have already been confirmed by actual water quality or biomonitoring data. Nonetheless, predictive models continue to be utilized in combination with actual field data to fully assess water quality conditions and to derive acceptable pollutant loadings from point and nonpoint sources. Model results are considered in the 303(d) listing process in cases where those models forecast unconfirmed water quality problems. For example, when making assessment and listing decisions waters receiving CSOs are projected to violate standards even though confirmatory field data may be unavailable.

PRIORITIZING WATERS FOR TMDL DEVELOPMENT

A key component of the 303(d) listing process is establishing timelines for TMDL development. It is recommended in EPA guidance “that States develop a schedule for establishing TMDLs as expeditiously as practicable” (EPA 2005). More specifically, states must identify which TMDLs will be developed in each of the two years leading up to the next listing (i.e., 2018), and the approximate number of TMDLs to be derived for each year thereafter. Furthermore, “States need not specifically identify each TMDL as high, medium or low priority. Instead the schedule itself can reflect the State’s priority ranking.” The TMDL schedule is intended to communicate the state’s priorities to the public and the EPA and to assist with the allocation of resources to the TMDL development effort. The schedule is not subject to approval by the EPA.

A review of recent 303(d) List submittals will reveal that the major causes of surface water impairment in Massachusetts are ***bacteria*** and ***excess nutrients***. For this reason the MassDEP continues to place a high priority on developing and implementing TMDLs for these pollutants, and this is implicit in the TMDL schedule. During FY2019-FY2020 the MassDEP will focus on several TMDLs and related projects that

have been assigned high priority. These projects are tabulated and summarized in Table 5. Since many of these projects carry over from year to year, detailed schedules for beyond FY2020 cannot be developed at this time. It should be noted that the MassDEP's capacity to finalize TMDL documents is highly dependent upon the availability of both internal and external resources, such as staffing and funding.

Table 5. Total Maximum Daily Loads (TMDLs) scheduled by the MassDEP for development during FY2019-FY2020.

Project	TMDL Count	Req'd Public Mtg. Held?	Draft Tech Report[1]	Final Tech Report[1]	Draft TMDL	Projected EPA Approval of Final TMDL
Bacteria TMDLs						
Boston Harbor	33	yes	N/A	N/A	Completed	FY19
Ipswich River	9	yes	N/A	N/A	Completed	FY20
Islands	15	yes	N/A	N/A	Completed	FY20
Merrimack River	22	yes	N/A	N/A	Completed	FY20
Parker River	10	yes	N/A	N/A	Completed	FY20
Blackstone	10	yes	N/A	N/A	Completed	TBD
Chicopee	8	no	N/A	N/A	To be completed	TBD
Connecticut	9	no	N/A	N/A	To be completed	TBD
Deerfield	3	no	N/A	N/A	To be completed	TBD
F&Q	6	no	N/A	N/A	To be completed	TBD
Hoosic	6	no	N/A	N/A	To be completed	TBD
Housatonic	6	no	N/A	N/A	To be completed	TBD
Millers	9	no	N/A	N/A	To be completed	TBD
Nashua	12	yes	N/A	N/A	Completed	TBD
SuAsCo	13	yes	N/A	N/A	Completed	TBD
Ten Mile River	5	no	N/A	N/A	To be completed	TBD
Westfield	3	no	N/A	N/A	To be completed	TBD
Subtotal Bacteria	179					
Massachusetts Estuaries Project (MEP) Nitrogen TMDLs						
Allens, Wychmere, Saquatucket Harbors, Harwich	3	yes	Completed	Completed	Completed	Approved[2]
Bass River,Yarmouth, Dennis	7	yes	Completed	Completed	Completed	Approved[2]
Fiddlers Cove/Rands Harbor, Falmouth	3	yes	Completed	Completed	Completed	Approved[2]

Parkers River, Yarmouth	3	yes	Completed	Completed	Completed	Approved[2]
Quissett Harbor, Falmouth	1	yes	Completed	Completed	Completed	Approved[2]
Swan Pond, Dennis	2	yes	Completed	Completed	Completed	Approved[2]
Westport Rivers, Westport	3	yes	Completed	Completed	Completed	Approved[2]
Wild Harbor, Falmouth	3	yes	Completed	Completed	Completed	Approved[2]
Herring River, Harwich	1	yes	Completed	Completed	Completed	Approved[2]
Black Point Pond, Chilmark	1	yes	Completed	Completed	Completed	FY19
Tisbury Great Pond, Tisbury	3	yes	Completed	Completed	Completed	FY19
Waquoit Bay/Eel River, Falmouth, Mashpee	5	no	Completed	Completed	Completed	FY19
Chillmark Pond, Chillmark	1	no	Completed	Completed	Completed	FY19
Falmouth Inner Harbor, Falmouth	1	no	Completed	Completed	Completed	FY19
Megansett-Squeteague Harbor, Falmouth	2	no	Completed	Completed	In progress	FY19
Slocums & Little Rivers, Dartmouth	2	no	Completed	Completed	Completed	FY19
Wellfleet Harbor, Wellfleet, Truro, Eastham	7	no	Completed	Completed	In progress	FY19
Subtotal Nitrogen	48					
Lake Phosphorus TMDL						
Monponsett Pond	4	yes	N/A	N/A	Completed	FY19
Subtotal Phosphorus	4					
Grand Total TMDL	231					

[1] Applies to Massachusetts Estuaries Program (MEP) projects only
[2] AUs covered by these approved TMDLs will be reported as such for the first time in the 2018 IR

Bacteria TMDLs

In 2006 MassDEP began working closely with the EPA Region 1 to develop “bundled” bacteria cleanup plans for all of Massachusetts’ major watersheds. Although the goal was to complete half those TMDLs in each of 2006 and 2007, they were delayed because of a court decision in Washington, DC (on an unrelated project) that necessitated a major revision to the original approach. Since 2007, MassDEP has received the EPA’s approval of watershed-wide bacteria TMDLs for the Charles and Taunton watersheds and the Buzzards Bay, Cape Cod, Three Bays (Barnstable), Mount Hope/Narragansett Bay, North Shore and South Shore coastal drainage systems. The plan for FY2018 through FY2019 is to continue to work, as resources allow, toward the finalization of bacteria TMDLs for the following coastal watersheds: Merrimack, Ipswich, Parker and the Islands. A plan will also be developed to complete draft TMDLs to address the remainder of freshwater bacteria impairments.

The Massachusetts Estuaries Project (MEP)

The MassDEP continues to derive TMDLs for nutrient-impaired coastal embayments in southeastern Massachusetts through collaboration with the School of Marine Science and Technology (SMAST) at the

University of Massachusetts at Dartmouth (UMass-Dartmouth) and several municipalities that have been targeted for this project. This effort, referred to as the MEP, was initiated in 2001 to determine existing nutrient loads and to assist in the evaluation of future nutrient load scenarios for 89 estuaries located in 32 coastal communities. A TMDL for nitrogen was to be established for each water body, in accordance with MassDEP and EPA requirements. In 2009, the number of estuaries to be included in the MEP was reduced to 70 due to a lack of local matching funds and/or other project delays.

A linked-model is utilized to quantify nitrogen inputs to targeted bays and estuaries and to develop the TMDLs. The TMDLs, in turn, form the basis of sound wastewater and watershed management and are implemented through the formulation of Comprehensive Wastewater Management Plans (CWMP). Comprehensive wastewater management planning is a locally managed, community-wide process that evaluates current and future wastewater needs, compares alternative solutions, and selects a final plan based on cost-effectiveness and environmental results. The CWMP is a key step toward implementation of TMDLs for nitrogen in southeastern Massachusetts estuaries and many towns are currently in various stages of this planning process.

To date, a total of 103 individual nitrogen TMDLs for waters in the Buzzards Bay and Cape Cod coastal drainage systems and representing 40 of the 70 targeted MEP estuaries have been approved by the EPA. Subject to the availability of state funding and personnel resources, MassDEP will continue to assess nutrient-impaired coastal waters and develop nitrogen TMDLs for priority embayments in southeastern Massachusetts.

Long Island Sound Nitrogen TMDL Implementation

Long Island Sound (LIS) suffers from low dissolved oxygen, with excess nitrogen loading identified as the primary cause. As a result, Connecticut and New York developed a TMDL in 2001 to establish nitrogen reductions needed to meet water quality standards. The TMDL specifies a 58.5 percent reduction from nitrogen loading sources in Connecticut and New York, and reductions in the upper basin (Massachusetts, New Hampshire, and Vermont) of 25 percent for point sources and 10 percent for nonpoint sources. Massachusetts has largely achieved the reduction targets for both point and nonpoint sources. Actions taken by the states, to date, have resulted in significant nitrogen reductions in the watershed; however the LIS still does not meet water quality standards for dissolved oxygen.

In December 2015, EPA Regions 1 and 2 announced a new Nitrogen Reduction Strategy for the LIS. The strategy includes development and application of nitrogen thresholds for each of three watershed groupings: 1) coastal watersheds that directly drain to embayments or nearshore waters, 2) tributary watersheds that drain inland reaches, and 3) western LIS watersheds with large, direct-discharging wastewater treatment facilities. MassDEP will continue to work with EPA and state partners and the regulated community as the details of the strategy and timeline for its implementation proceed.

Assabet River Phosphorus TMDL Implementation

A Final Nutrient (Total Phosphorus) TMDL Report for the Assabet River, completed in 2004, established nutrient targets for the restoration of water quality in the Assabet River (http://www.mass.gov/eea/docs/dep/water/resources/a-thru-m/anuttmdl.pdf). The goal of the TMDL was to decrease the instream concentration of total phosphorus to mitigate some of the ecological effects of eutrophication on the river; these effects were, for the most part, direct consequences of the excessive growth of aquatic macrophytes. In 2007, the USGS, in cooperation with the MassDEP, initiated studies to evaluate conditions in the Assabet River prior to the upgrading of municipal wastewater treatment plants (WWTPs) to remove more phosphorus from their effluents. The USGS effort, completed in 2008, implemented a visual monitoring plan to estimate the areal extent and biomass of the floating macrophyte *Lemna minor* in five impoundments and evaluated the potential for phosphorus flux from sediments in impounded and free-flowing reaches of the river (http://pubs.usgs.gov/sir/2011/5179/). The MassDEP assumed responsibility for the visual assessments and collected monitoring data from the summer of 2009 through 2013. In addition, the MassDEP funded the USGS to conduct water quality monitoring

through April 2014 to capture changes in instream loading before and after the municipal WWTPs were upgraded. USGS published a report on this study in 2016. (https://pubs.er.usgs.gov/publication/sir20165063).

Monitoring and Related Activities for the Blackstone River

The MassDEP and the USGS have been working cooperatively since 2007 to collect water quality information pertaining to nutrient and trace metal loadings to the Blackstone River. The objectives of the study were to (1) quantify nutrient and trace metal loadings in several segments of the Blackstone River in Massachusetts and at the Massachusetts – Rhode Island state line; 2) assess and, if possible, quantify nitrogen attenuation throughout the river; and 3) evaluate and quantify, if possible, the re-suspension of both nutrients and metals in two impounded segments of the river (i.e., Riverdale Impoundment and Rice City Pond). Water samples were collected using an innovative automated sampling device designed and built by the USGS. Results of this study are reported in Zimmerman, *et al*. (2015).

From 2012 through 2016, the USGS, in cooperation with the MassDEP, installed a continuous streamflow and water-quality monitoring station on the Blackstone River at a point approximately 0.9 miles upstream from the Massachusetts-Rhode Island state line at Millville. The goal was to document nutrient reductions resulting from WWTP upgrades. The station operated continuously during that time, recording river stage, water and air temperature, specific conductance, turbidity and chlorophyll concentrations. Streamflow was monitored at a nearby site and the data were used to determine intervals for flow-proportional sampling for the determination of total nitrogen, total phosphorus and dissolved trace-metal concentrations. The USGS published this report (https://pubs.er.usgs.gov/publication/sir20175094) in January 2018.

In addition to engaging watershed associations, MassDEP staff members continue to work collaboratively with the Upper Blackstone Water Pollution Abatement District (Upper Blackstone) staff and their consultants on an ambient monitoring program for the Blackstone River. Since 2004, Upper Blackstone staff have conducted water quality monitoring of the Blackstone River. Following plant upgrades in 2009, Upper Blackstone staff implemented a routine water quality monitoring program with the goal of assessing the river's response to reduced nutrient concentrations in the wastewater treatment facility effluent. The program has consisted of monthly monitoring, from April – November, at eight river mainstem monitoring locations and typically three periphyton surveys at four locations. Macroinvertebrate sampling was also conducted in 2014 and 2015. The river sampling has been completed under a MassDEP approved Quality Assurance Project Plan since 2014. Recent (e.g., 2014 – 2016) data have been provided to MassDEP via its data portal, and will be evaluated for potential use in assessment decisions in the 2018 cycle.

Future watershed monitoring and management activities in the watershed will focus on building partnerships with interested parties at all levels of government, as well as the private citizenry, to manage point and nonpoint sources of pollution throughout the Blackstone River Watershed.

Mitigating Cranberry Farming Impacts – TMDL Development and Implementation

The MassDEP worked with several interested parties to implement the nutrient TMDL for White Island Pond (Plymouth/Wareham). The resultant benefits to the water quality of this pond are summarized in the EPA s. 319 NPS success story "Reducing Nutrients from Cranberry Bogs Improves White Island Pond" (see https://www.epa.gov/sites/production/files/2015-10/documents/ma_whiteisland.pdf). Local sources report that the White Island Pond remains clear. MassDEP has now moved on to another high priority water body, Monponsett Pond in the towns of Halifax and Hanson. The East and West basins of the pond are both a water supply and a multi-use pond system into which commercial cranberry bogs discharge floodwaters.

West Monponsett Pond, in particular, is impaired by nutrients and has exhibited repeated cyanobacteria blooms during the summer and into the fall. The situation is complicated by a legally allowed diversion of water from the East Monponsett Pond into Silver Lake as a water supply for the city of Brockton. There

are commercial cranberry bogs that are tributary to both sides of the pond. MassDEP has been sampling the ponds and the streams and two other ponds upstream of Monponsett beginning in 2001, and from 2009 up to the present. MassDEP has continued to work cooperatively with the UMass Cranberry Experiment Station and with the Cape Cod Cranberry Growers Association to provide funding for Monponsett Pond via EPA s. 319 grants focusing on low-phosphorus fertilizers and tests of experimental iron sand filters for the bogs. Results are very encouraging, with total phosphorus levels in the ponds showing a decline in concentrations. The town also funded small aluminum additions in 2013 and 2015, but blooms have continued.

MassDEP is in the process of developing phosphorus TMDLs for all four ponds in the Monponsett Pond watershed. These TMDLs were released as draft in calendar year 2016. MassDEP is currently in the process of revising the report. Due to the number of comments, MassDEP expects to put the report out for public comment a second time before submitting the final report to EPA for approval. As the report is finalized, restoration activities are continuing. In September of 2016 MassDEP awarded to the town of Halifax an EPA s. 319 grant for a larger aluminum treatment for Monponsett Pond. MassDEP expects to continue to monitor Monponsett Pond (both East and West) into 2018 to measure the effectiveness of ongoing restoration activities.

Mystic River Phosphorus Loading Analysis

Findings published in MassDEP water quality assessment reports (1999, 2004-2008) indicate that the primary causes of use impairment in the Mystic River Watershed are nutrients and pathogens, and approximately 25 river miles and several ponds appear on the 303(d) List as impaired by those stressors. High bacteria and nutrient levels are attributed to CSOs, stormwater runoff from impervious surfaces, faulty septic systems, illegal/cross connections between sewer and stormdrain systems and sediment resuspension. Excessive nutrients contribute to frequent cyanobacteria blooms, rapidly expanding populations of invasive plants and low levels of dissolved oxygen.

MassDEP is currently finalizing TMDLs for bacteria in watersheds draining to Boston Harbor that will include the Mystic sub-basin. To address the nutrient-related impairment, the Mystic River Watershed Association (MyRWA) is working collaboratively with MassDEP, EPA Region 1, USGS and the Massachusetts Water Resources Authority to collect data and information that will help guide management decisions to address these water quality concerns. Together the participating organizations are supporting a baseline water quality monitoring program that entails the collection of composite samples linked to streamflow so that annual loadings of phosphorus to the Mystic River can be estimated. Furthermore, the phosphorus loads will be related to response variables by measuring water-column total phosphorus, dissolved oxygen and chlorophyll concentrations in critical reaches of the watershed. These analyses will support efforts to calculate a phosphorus budget for the watershed, and to suggest target reductions in phosphorus inputs from various sources in order to improve water quality and ecosystem conditions in the Mystic River Watershed.

The CWA Section 303(d) Program Long-term Vision – 2016 - 2022

In 2013, the EPA announced a new framework for prioritizing and implementing TMDLs and related pollution control strategies (Vision). The guidance for this Vision, which can be found at http://www.epa.gov/sites/production/files/2015-07/documents/vision_303d_program_dec_2013.pdf, allows the states to adopt strategies for carrying out the requirements of s. 303(d) that are tailored to individual state water quality program goals and priorities. Furthermore, while the statutory and regulatory obligations to develop TMDLs for waters identified on 303(d) lists remain in place -- and TMDLs will continue to be the prevailing mechanisms for addressing those waters -- it is acknowledged in the Vision that under certain circumstances there are alternative restoration approaches that may be more immediately beneficial or practicable in achieving SWQS than pursuing the TMDL approach from the beginning. Regardless of whether states choose to derive TMDLs or opt for alternative approaches to restoring their impaired waters, the Vision guidance calls for the states to identify by 2016 their long-term 303(d) program priorities through Fiscal Year 2022 or beyond. This will provide states the opportunity to

strategically focus their efforts and demonstrate progress over time in achieving environmental results. In addition, the Vision allows states to integrate 303(d) program priorities with other water quality programs. For example, integration with water quality monitoring programs can lay the groundwork for gathering the data needed to assess baseline conditions in priority waters, to develop TMDLs, watershed-based plans or other restoration and protection plans, and to determine progress in restoring or protecting those waters. In the fall of 2016 MassDEP initiated an outreach effort with the intention of working collectively with a varied group of stakeholders to formulate a long-term statewide vision. It is currently anticipated that this effort will result in the development of a plan that will guide CWA programs.

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INTEGRATED LIST CATEGORIES

The following tables present the multi-part integrated list of waters developed in accordance with EPA guidance pertaining to sections 303(d), 305(b) and 314 of the Clean Water Act. The list contains Massachusetts water bodies (lakes, rivers, or estuaries) that have been monitored and assessed, either in past cycles or in the current cycle, and that fall into one of the categories listed below, depending upon the attainment status of their designated uses. Surface waters that have never been assessed do not appear in these tables and are considered Category 3 waters by default.

Category 1 – "Waters attaining all designated uses"
Category 2 – "Attaining some uses; other uses not assessed"
Category 3 – "No uses assessed"
Category 4a – "TMDL is completed"
Category 4b – "Impairment controlled by alternative pollution control requirements"
Category 4c – "Impairment not caused by a pollutant – TMDL not required"
Category 5 – "Waters requiring a TMDL" (i.e., the 303(d) List)

The Massachusetts Department of Public Health statewide advisory pertaining to the prohibitive consumption of finfish due to the risk of elevated mercury to sensitive populations precludes any waters from being in full support of the fish consumption use and, therefore, no waters appear in category 1.

Category 2 is the only list that presents the individual designated uses that are attained by each water body. However, it should be noted that waters appearing in categories 4a, 4c and 5, while impaired for one or more uses, may also be attaining some uses. The supported uses are not currently included in categories 4a, 4c and 5 due to space constraints.

Category 3 contains water bodies that are not assessed for any of their individual designated uses for the 2016 listing cycle unless those water bodies were listed as impaired in previous listing cycles. In that case they remain in categories 4a, 4c or 5.

Categories 4 and 5 contain water bodies that are impaired by one or more *pollutants,* requiring the development and implementation of TMDLs to restore them (listed in Category 5 – "303(d) List"), and/or *pollution* (i.e., non-pollutants), managed through alternative control measures (listed in Category 4c unless pollutants are also present). Water bodies are listed in Category 4a if all pollutants contributing to their impairment are addressed by one or more EPA-approved TMDLs. Impaired waters for which some TMDLs have been approved, but others are still needed, remain in Category 5 until TMDLs are completed for all pollutants. Non-pollutants (shown in parentheses) may occur in categories 4a, 4c or 5 depending on the presence and TMDL status of pollutants. Category 4b is reserved for waters impaired by one or more pollutants that are expected to attain their designated uses without TMDL implementation; however, Massachusetts is not including any waters in Category 4b for the 2016 listing cycle.

Appendices 1 – 3 are provided to assist the reader in navigating the multi-part list. Appendix 1 presents all water bodies on the integrated list, including a description of each water body, its size, and its category. Appendices 2 and 3 list, respectively, the impairments *added to* and *removed from* categories 4 and 5 and a brief explanation of why these changes occurred. The list categories and appendices are generated directly from the electronic database that stores all of the assessment information. Therefore, the impairment additions and removals presented in appendices 2 and 3 include minor clerical or "housekeeping" adjustments as well as more substantive changes informed by new data and information or by modifications to the assessment methodology. For example, changes in impairment names from "Chlordane" to "Chlordane in Fish Tissue", or "Mercury" to "Mercury in Fish Tissue" are listed as both removals and additions in the appendices, but do not represent actual changes in the status of the waters exhibiting these impairments. Likewise, an impairment that changed status from pollutant to non-pollutant (for example, "Aquatic Plants (Macrophytes)") appears in Appendix 3 as removal from category 5, yet the water body in question remains listed as impaired.

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Category 1 waters - “Waters attaining all designated uses”

Massachusetts is currently listing no waters in this category due to the issuance by the Massachusetts Department of Public Health of a statewide health advisory pertaining to the consumption of finfish. This advisory precludes any waters from being in full support of the fish consumption use. More information pertaining to fish consumption advisories and the assessment of the fish consumption use can be found in the section entitled “Development of the 2016 Integrated Report.”

Category 2 waters listed alphabetically by major watershed
"Attaining some uses; other uses not assessed"

					Uses Attained				
Water Body	**Segment ID**	**Description**	**Size**	**Units**	**Aesthetic**	**Fish, other Aquatic Life and Wildlife**	**Primary Contact Recreation**	**Secondary Contact Recreation**	**Shellfish Harvesting**
Blackstone									
Bacon Brook	MA51-41	Outlet Ironstone Reservoir, Uxbridge to mouth at confluence with the Blackstone River, Uxbridge.	0.60	Miles	X		X	X	
Center Brook	MA51-34	From outlet Mill Pond, Upton to mouth at confluence with West River, Upton.	2.80	Miles	X	X	X	X	
Cold Spring Brook	MA51-42	Headwaters, perennial portion north of Route 16, Uxbridge to mouth at inlet Rivulet Pond, Uxbridge.	1.10	Miles	X		X	X	
Dark Brook	MA51-49	Headwaters, outlet Dark Brook Reservoir, Auburn to mouth at inlet Stoneville Pond (east of Wallace Avenue), Auburn.	1.30	Miles	X		X	X	
Emerson Brook	MA51-29	Headwaters, outlet Lee Pond, Uxbridge to mouth at confluence with the Blackstone River, Uxbridge.	1.90	Miles	X	X	X	X	
Kettle Brook	MA51-19	Outlet Kettle Brook Reservoir #4, Paxton, to inlet Kettle Brook Reservoir #1, Leicester (excluding approximately 0.8 mile through Kettle Brook Reservoir #3 segment MA51081 and approximately 0.5 mile through Kettle Brook Reservoir #2 segment MA51080).	1.90	Miles		X			
Laurel Brook	MA51-23	Headwaters, perennial portion, north of Yew Street, Douglas to mouth at confluence with Scadden Brook near the outlet of Sawmill Pond, Uxbridge (through Bazely Pond formerly segment MA51008).	3.30	Miles		X			
Miscoe Brook	MA51-21	Headwaters, perennial portion, east of Adams Road, Grafton to mouth at inlet Silver Lake, Grafton (through Cider Millpond formerly segment MA51019).	1.90	Miles		X			
Miscoe Brook	MA51-37	Headwaters, perennial portion, from the Mendon/Upton/Northbridge corporate boundaries to mouth at confluence with Taft Pond Brook, Northbridge/Upton.	0.70	Miles		X			
Mumford River	MA51-13	Headwaters, outlet Tuckers Pond, Sutton to Douglas WWTP discharge (NPDES: MA0101095), Douglas.	4.20	Miles	X	X	X	X	
Scadden Brook	MA51-24	Headwaters, perennial portion, north of Davis Street, Douglas to mouth at inlet Lee Pond, Uxbridge (through Lee Reservoir formerly segment MA51086).	2.40	Miles		X			
Sewall Brook	MA51-44	Headwaters, west of Baypath Drive, Boylston to inlet Sewall Pond, Boylston.	2.80	Miles	X		X	X	
Spring Brook	MA51-25	Headwaters, perennial portion, north of Lovell Street, Mendon to mouth at confluence with Muddy Brook, Mendon.	1.90	Miles		X			
Taft Pond Brook	MA51-26	Headwaters, outlet Taft Pond, Upton to mouth at confluence with West River, Northbridge.	1.20	Miles	X		X	X	

* Attained uses denoted by "X". The Fish Consumption use is not supported in any waters due to the DPH statewide health advisory.

Category 2 waters listed alphabetically by major watershed
"Attaining some uses; other uses not assessed"

					Uses Attained				
Water Body	**Segment ID**	**Description**	**Size**	**Units**	**Aesthetic**	**Fish, other Aquatic Life and Wildlife**	**Primary Contact Recreation**	**Secondary Contact Recreation**	**Shellfish Harvesting**
Tinkerville Brook	MA51-22	Headwaters, perennial portion, north of Walnut Street, Douglas to Rhode Island border, Douglas.	2.40	Miles		X			
Unnamed Tributary	MA51-46	Unnamed Tributary eventually to Tatnuck Brook, headwaters, perennial portion, east of Bailey Road, Holden to mouth at confluence with unnamed tributary to Tatnuck Brook, Holden.	0.30	Miles	X		X	X	
Wallum Lake	MA51172	Douglas (size indicates portion in Massachusetts excluding approximately 30 acres; these 30 acres represent "All Interstate surface waters that are public water supply in Rhode Island from 1000 feet upstream of the State Line" which are designated as Class A/PWS/ORW in 314CMR4.00, January 2007).	109.00	Acres			X	X	
Warren Brook	MA51-47	Headwaters, west of North Street, Upton to mouth at confluence with West River, Upton.	3.60	Miles	X		X	X	
West Brook	MA51-43	Headwaters, perennial portion west of Route 290 and north of Gulf Street, Shrewsbury to culvert entrance between Baker and Elmo avenues, Shrewsbury (isolated Quinsigamond River tributary) (through Mill Pond formerly segment MA51105).	3.20	Miles	X		X	X	
Boston Harbor: Neponset									
Bubbling Brook	MA73-11	Headwaters (perennial portion), near North Street, Walpole to mouth at inlet Pettee Pond, Walpole/Westwood border.	0.90	Miles	X		X	X	
Mill Brook	MA73-12	Source northeast of Ledgewood Drive, Dover to inlet of Pettee Pond, Westwood.	2.90	Miles	X		X	X	
School Meadow Brook	MA73-06	Headwaters, outlet of Ganawatte Farm Pond, Walpole to confluence with Neponset River, Walpole.	1.90	Miles	X		X	X	
Traphole Brook	MA73-17	Headwaters west of Everett Street, Sharon, to confluence with Neponset River, Sharon.	3.90	Miles	X		X	X	
Tubwreck Brook	MA73-07	Headwaters - small unnamed pond southeast of Powissett Street, Dover to confluence with Mill Brook just southwest of Dover/Medfield border.	1.60	Miles	X		X	X	
Boston Harbor: Weymouth & Weir									
Hoosicwhisick Pond	MA74015	Milton.	23.00	Acres			X	X	
Buzzards Bay									
Aucoot Cove	MA95-09	From the boundary of Division of Marine Fisheries designated shellfishing growing area BB31.1, north and southwest from Haskell Island, Marion to the mouth at Buzzards Bay demarcated by a line drawn between Converse Point, Marion and Joes Point, Mattapoisett.	0.46	Square Miles		X	X	X	X
Barrett Pond	MA95004	Carver.	11.00	Acres			X	X	

* Attained uses denoted by "X". The Fish Consumption use is not supported in any waters due to the DPH statewide health advisory.

Category 2 waters listed alphabetically by major watershed
"Attaining some uses; other uses not assessed"

					Uses Attained				
Water Body	**Segment ID**	**Description**	**Size**	**Units**	**Aesthetic**	**Fish, other Aquatic Life and Wildlife**	**Primary Contact Recreation**	**Secondary Contact Recreation**	**Shellfish Harvesting**
Charge Pond	MA95025	Plymouth.	16.00	Acres			X	X	
College Pond	MA95030	Plymouth.	47.00	Acres			X	X	
Curlew Pond	MA95034	Plymouth.	43.00	Acres			X	X	
Dunhams Brook	MA95-73	Headwaters east of the intersection of Cornell and Main roads, Westport to the confluence with the West Branch Westport River at Hicks Cove, Westport.	1.40	Miles		X			
Fearing Pond	MA95054	Plymouth.	23.00	Acres		X	X	X	
Giles Creek	MA95-89	From Demarest Lloyd Memorial State Park, Dartmouth to mouth at Slocums River, Dartmouth.	0.06	Square Miles		X			
Horseneck Channel	MA95-87	From the outlet of The Let to the confluence with the East Branch Westport River (east of Route 88), Westport.	0.24	Square Miles		X	X	X	X
Little River	MA95-66	Dartmouth.	0.18	Square Miles		X	X	X	
Marys Pond	MA95100	Rochester.	81.00	Acres		X			
Red Brook	MA95-74	Headwaters, outlet cranberry bogs east of Bartlett Pond, Wareham to Red Brook Road, Wareham/Plymouth.	2.80	Miles		X			
Sippican Harbor	MA95-69	The waters between a line demarcating the mouth of the harbor (from Converse Point to Butler Point, Marion) and a line from Allens Point, Marion around the southeastern tip of Ram Island, then westerly from the southern tip of Ram Island, to the point of land south of Nyes Wharf, Marion excluding Blanketship Cove and Planting Island Cove (formerly reported as a portion of segment MA95-08).	1.94	Square Miles		X	X	X	X
The Let	MA95-88	From north of East Beach Road, Westport to the confluence with Horseneck Channel, Westport.	0.22	Square Miles		X			
Unnamed Tributary	MA95-75	Unnamed tributary to Bread and Cheese Brook, headwaters north of Briggs Road, Westport to confluence with Bread and Cheese Brook, Westport.	1.90	Miles		X			
Unnamed Tributary	MA95-80	Unnamed tributary to Aucoot Creek, headwaters west of Mill Street (Route 6), Marion to the Marion WWTF (MA0100030) discharge, Marion.	0.30	Miles		X			
Unnamed Tributary	MA95-81	Unnamed tributary to Aucoot Creek from the Marion WWTF (MA0100030) discharge, Marion to the boundary of the saltwater wetland, Marion.	0.70	Miles		X			
Unnamed Tributary	MA95-84	Unnamed tributary to Snell Creek, perennial portion north of Brookwood Drive, Westport to mouth at Snell Creek, Westport.	0.80	Miles	X	X	X	X	
Wenham Pond	MA95158	Carver.	46.00	Acres	X	X			

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					Uses Attained				
Water Body	**Segment ID**	**Description**	**Size**	**Units**	**Aesthetic**	**Fish, other Aquatic Life and Wildlife**	**Primary Contact Recreation**	**Secondary Contact Recreation**	**Shellfish Harvesting**
Cape Cod									
Bassing Harbor	MA96-48	Excluding Crows Pond and Ryder Cove, Chatham.	0.13	Square Miles			X	X	X
Centerville Harbor	MA96-03	From an imaginary line that extends from Dowses Beach, Barnstable to Hyannis Point, Barnstable including all waters north to the shore, Barnstable.	1.46	Square Miles		X	X	X	X
Chatham Harbor	MA96-10	Harbor, bounded on east by Cape Cod National Seashore (CCNS), with northern extent as an imaginary line drawn northeast from northern tip of Strong Island to a point on inner CCNS and western extent as an imaginary line drawn from southern tip of Strong Island south to Allen Point including waters south to an imaginary line along northern edge of South Beach Bar extending from Chatham Lighthouse to inlet created by 1987 storm, Chatham (area within CCNS designated as ORW).	2.85	Square Miles		X	X	X	X
Childs River	MA96-98	Headwaters outlet Johns Pond, Mashpee to confluence with tidal portion south of Barrows Road, Falmouth (area within Waquoit Bay ACEC desiagnated as ORW).	2.40	Miles	X		X	X	
Coonamessett River	MA96-69	Headwaters, outlet Coonamessett Pond, Falmouth to mouth at inlet Great Pond, Falmouth.	3.40	Miles	X		X	X	
Crows Pond	MA96-47	To Bassing Harbor, Chatham.	0.19	Square Miles		X	X	X	X
Falmouth Inner Harbor	MA96-17	Waters included north of Falmouth Inner Harbor Light, Falmouth.	0.05	Square Miles					X
Herring River	MA96-106	Headwaters, outlet Hinckleys Pond, Harwich to mouth at inlet Herring River Reservoir, Harwich.	2.50	Miles	X		X	X	
Hinckleys Pond	MA96140	Harwich.	164.00	Acres	X	X	X	X	
Hyannis Harbor	MA96-05	The waters from the shoreline to an imaginary line drawn from the light at the end of Hyannis breakwater, Barnstable to the point west of Dunbar Point, Barnstable.	0.68	Square Miles		X	X	X	X
Mashpee River	MA96-89	Headwaters, outlet Mashpee Pond, Mashpee to Quinaquisset Avenue, Mashpee.	2.70	Miles	X	X	X	X	
Nauset Harbor	MA96-28	The waters south of an imaginary line drawn east from Woods Cove, Orleans around the southern point of Stony Island, around the southern end of the unnamed island in the harbor, to Cape Cod National Seashore (CCNS), excluding Mill Pond, Orleans (area within CCNS designated as ORW).	0.41	Square Miles			X	X	X

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Quashnet River	MA96-90	Headwaters, outlet Johns Pond, Mashpee to just south of Route 28, Falmouth (area within Waquoit Bay ACEC designated as ORW).	4.10	Miles	X	X	X	X	
Red Brook	MA96-25	From dam (NATID: MA01037) at Red Brook Road, Falmouth/Mashpee to mouth at inlet Hamblin Pond, Falmouth/Mashpee.	0.01	Square Miles			X	X	X
Santuit River	MA96-91	Headwaters, outlet Santuit Pond, Mashpee to confluence with tidal portion south of Old Mill Road/Old Kings Road, Mashpee/Barnstable.	1.60	Miles	X	X	X	X	
Unnamed Tributary	MA96-105	Unnamed tributary to Herring River, headwaters outlet Walkers Pond, Harwich to outlet channelized wetland south of Great Western Road, Harwich.	3.30	Miles	X		X	X	
Upper Mill Pond	MA96324	Brewster.	249.00	Acres	X	X	X	X	
Wellfleet Harbor	MA96-34	The waters north of an imaginary line drawn east from the southern tip of Jeremy Point, Wellfleet to Sunken Meadow, Eastham excluding the estuaries of Herring River, Duck Creek, Blackfish Creek, and Fresh Brook, Wellfleet (area within Cape Cod National Seashore designated as ORW).	8.40	Square Miles			X	X	X
Charles									
Dopping Brook	MA72-40	Headwater oulet small unnamed pond on Holliston/Sherborn border to mouth at confluence with Bogastow Brook, Holliston/Sherborn.	2.60	Miles	X		X	X	
Hammond Pond	MA72044	Newton.	22.00	Acres		X			
Mill Brook	MA72-39	Source wetlands, Pine Street, Medfield to mouth at confluence with the Charles River, Medfield.	3.70	Miles	X		X	X	
Stony Brook	MA72-26	Headwaters, outlet Beaver Pond, Lincoln to mouth at inlet Stony Brook Reservoir, Waltham/Weston.	5.10	Miles	X	X	X	X	
Unnamed Tributary	MA72-42	Unnamed tributary to the Charles River, from outlet unnamed pond north of South Street, Natick to mouth at confluence with the Charles River, Natick.	0.30	Miles	X		X	X	
Weld Pond	MA72131	Dedham.	27.00	Acres		X			
Chicopee									
Asnacomet Pond	MA36005	Hubbardston.	126.00	Acres	X		X	X	
Atherton Brook	MA36-30	Headwaters, confluence Town Farm and Osgood brooks, Shutesbury to mouth at inlet Quabbin Reservoir, Pelham.	1.90	Miles		X			
Bottle Brook	MA36-46	Headwaters, perennial portion, east of Dunhamtown Brimfield Road, Brimfield to mouth at confluence with Quaboag River, Brimfield.	2.00	Miles	X		X	X	
Burnshirt River	MA36-37	Headwaters, outlet Stone Bridge Pond, Templeton/Phillipston to mouth at confluence with Canesto Brook, Barre (through Williamsville Pond formerly segment MA36167).	8.60	Miles	X		X	X	

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Cadwell Creek	MA36-29	Headwaters east of Route 202 and northwest of Dodge Hill, Pelham to mouth at inlet Quabbin Reservoir, Belchertown.	3.20	Miles		X			
Calkins Brook	MA36-26	Headwaters, perennial portion, southeast of Baptist Hill, Palmer to mouth at confluence with Twelvemile Brook, Wilbraham.	2.70	Miles	X		X	X	
Chicopee Reservoir	MA36033	Chicopee.	22.00	Acres			X	X	
Chicopee River	MA36-23	Red Bridge Impoundment Dam (NATID: MA00723), Wilbraham/Ludlow to Wilbraham Pumping Station (old WWTP), Wilbraham/Ludlow.	3.80	Miles	X	X	X	X	
Conant Brook	MA36-45	Headwaters, outlet Conant Brook Reservoir dam (NATID: MA00965), Monson to mouth at confluence with Chicopee Brook, Monson.	1.90	Miles	X		X	X	
Cooley Brook	MA36-38	From the outlet of Chicopee Reservoir, Chicopee to mouth at confluence with the Chicopee River, Chicopee (segment includes "braid" that confluences with the Chicopee River upstream of the mouth of Cooley Brook).	1.20	Miles		X			
Cranberry River	MA36-20	Headwaters, outlet Cranberry Meadow Pond, Spencer to mouth at confluence with Sevenmile River, Spencer (through Howe Pond formerly segment MA36073).	3.60	Miles		X			
Dunn Brook	MA36-19	From confluence with Forget-Me-Not Brook, East Brookfield/Brookfield to mouth at confluence with Quaboag River, Brookfield.	2.40	Miles	X		X	X	
East Branch Swift River	MA36-35	Headwaters, confluence of Shattuck and Popple Camp brooks, Phillipston to mouth at inlet Pottapaug Pond, Petersham (through Connor Pond formerly segment MA36039).	9.80	Miles		X			
Higher Brook	MA36-42	Headwaters, perennial portion, south of Route 21, Ludlow through Harris Pond (formely reported as segment MA36067) to mouth at Ludlow/Chicopee corporate boundary where the stream name changes to Fuller Brook.	6.30	Miles		X			
Jabish Brook	MA36-43	Headwaters, outlet Knights Pond, Belchertown to mouth at confluence with Swift River, Belchertown.	14.00	Miles	X		X	X	
Joslin Brook	MA36-44	Headwaters, outlet Lovewell Pond, Hubbardston to mouth at confluence with Mason Brook, Hubbardston.	3.30	Miles	X		X	X	
Kings Brook	MA36-48	Headwaters, west of Saint John Street, Palmer to mouth at confluence with Quaboag River, Palmer.	3.30	Miles	X		X	X	
Moose Brook	MA36-51	Headwaters, outlet small unnamed pond north of Route 32, Barre to mouth at confluence with Ware River, Hardwick.	8.00	Miles	X		X	X	
Quaboag River	MA36-14	Headwaters, outlet Quaboag Pond, Brookfield to Route 67 bridge, West Brookfield.	6.10	Miles		X	X	X	
Swift River	MA36-09	Outlet Winsor Dam (NATID: MA00588), Belchertown to Upper Bondsville Mill Dam (NATID: MA00560), Belchertown/Palmer.	5.60	Miles	X	X	X	X	

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Swift River	MA36-10	Upper Bondsville Mill Dam (NATID: MA00560), Belchertown/Palmer to mouth at confluence with Ware River, Palmer.	3.90	Miles	X	X	X	X	
Turkey Hill Brook	MA36-49	Outlet Thompsons Pond, Spencer to mouth at confluence with Sevenmile River, Spencer.	3.90	Miles	X		X	X	
Ware River	MA36-04	Dam at South Barre Reservoir (NATID: MA00091), Barre to Wheelwright Pond Dam (NATID: MA00616), New Braintree/Hardwick.	4.90	Miles	X	X	X	X	
Ware River	MA36-07	Thorndike Dam (NATID: MA00563), Palmer to mouth at confluence with Quaboag River (forming headwaters of Chicopee River), Palmer.	2.50	Miles	X	X	X	X	
West Branch Swift River	MA36-31	Headwaters, outlet of small unnamed impoundment east of Cooleyville Road (in Wendell State Forest), Wendell to mouth at inlet Quabbin Reservoir, Shutesbury/New Salem.	6.30	Miles	X				
Concord (SuAsCo)									
Cold Harbor Brook	MA82B-18	Headwaters, outlet Rocky Pond, Boylston to mouth at confluence with Howard Brook, Northborough.	6.10	Miles	X	X	X	X	
Danforth Brook	MA82B-19	Headwaters, confluence of Mill Brook and an unnamed tributary draining from Little Pond, Bolton to mouth at inlet of Bruces Pond, Hudson.	2.40	Miles		X			
Fort Meadow Brook	MA82B-11	Headwaters, outlet Fort Meadow Reservoir, Marlborough/Hudson to mouth at confluence with Assabet River, Hudson.	2.70	Miles		X			
Hop Brook	MA82B-20	Outlet Smith Pond, Northborough to mouth at confluence with the Assabet River, Northborough.	1.30	Miles		X			
Indian Brook	MA82A-24	Outlet of Hopkinton Reservoir, Ashland to mouth at confluence with the Sudbury River, Ashland (formerly part of segment MA82A-12).	1.70	Miles		X			
North Brook	MA82B-21	Headwaters, east of Ballville Road and north of Wataquadock Hill Road, Bolton to mouth at confluence with the Assabet River, Berlin (excluding the approximately 0.1 mile through Wataquatic Pond (locally 'Fyfeshire Pond'), Bolton).	7.60	Miles	X	X	X	X	
Pine Brook	MA82A-14	Headwaters, south of Route 20, just east of the Weston/Wayland border to mouth at confluence with the Sudbury River, Wayland.	2.50	Miles		X			
Stony Brook	MA82A-33	Headwaters, outlet Sudbury Reservoir, Southborough to mouth at inlet Framingham Reservoir #3, Framingham.	0.40	Miles	X		X	X	
Sudbury River	MA82A-01	Headwaters, outlet Cedar Swamp Pond, Westborough to the Fruit Street bridge, Hopkinton/Westborough.	1.90	Miles	X		X	X	
Unnamed Tributary	MA82B-16	Unnamed tributary to Assabet River (locally considered part of Spencer Brook), outlet Angiers Pond, Concord to mouth at confluence with the Assabet River, Concord.	0.50	Miles		X			
Willis Pond	MA82122	Sudbury.	67.00	Acres		X			

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Connecticut									
Amethyst Brook	MA34-35	Headwaters, confluence of Buffum and Harris brooks, Pelham to mouth at confluence with Adams River (forming headwaters Fort River), Amherst.	2.10	Miles	X	X	X	X	
Broad Brook	MA34-18	Headwaters, Holyoke to mouth at inlet Nashawannuck Pond, Easthampton.	9.30	Miles		X			
Cushman Brook	MA34-34	Headwaters, outlet Atkins Reservoir, Shutesbury to mouth at inlet Factory Hollow Pond, Amherst.	2.50	Miles		X			
Dry Brook	MA34-64	Headwaters, west of Huckle Hill Road, Bernardston to mouth at confluence with the Connecticut River, Gill.	8.30	Miles	X		X	X	
East Branch Mill River	MA34-37	Headwaters, confluence with Bradford Brook, Williamsburg to mouth at confluence with West Branch Mill River (forming headwaters Mill River), Williamsburg.	2.80	Miles		X			
Fall River	MA34-33	Vermont/Massachusetts border, Bernardston to mouth at confluence with Connecticut River, Greenfield/Gill.	10.20	Miles	X	X	X	X	
Fourmile Brook	MA34-56	Headwaters, south of the intersection of Four Mile Brook Road and South Mountain Road, Northfield, to mouth at confluence with Connecticut River, Northfield.	3.40	Miles	X		X	X	
Hop Brook	MA34-61	Headwaters, west of Oasis Drive, Belchertown to mouth at confluence with Fort River, Amherst.	8.60	Miles	X		X	X	
Long Plain Brook	MA34-09	Headwaters, Leveret/Sunderland town line (in Mt. Toby State Forest) to mouth at confluence with Russellville Brook at Route 116, Sunderland.	5.00	Miles	X				
Mill River	MA34-24	Headwaters east of Fisher Hill, Conway to mouth at confluence with the Connecticut River, Hatfield.	24.60	Miles	X	X	X	X	
Moose Brook	MA34-17	Headwaters, perennial portion, Southampton to mouth at confluence with Manhan River, Southampton.	2.60	Miles	X	X	X	X	
North Branch Manhan River	MA34-54	Headwaters, perennial portion, north of Northwest Road, Westhampton to mouth at confluence with Manhan River, Easthampton/Southampton.	9.20	Miles	X		X	X	
Roaring Brook	MA34-63	From the outlet of Whately Glen Reservoir (South Deerfield Water Supply Dam, NATID: MA00522), Whatley to mouth at confluence with Mill River, Whately.	1.40	Miles	X		X	X	
Russellville Brook	MA34-62	Headwaters, Route 116, Sunderland (river name changes at bridge from Long Plain Brook SARIS# 3420350) to mouth at confluence with the Connecticut River, Hadley.	4.40	Miles	X		X	X	

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Sawmill River	MA34-41	Dudleyville Road, Leverett to mouth at confluence with Connecticut River, Montague (formerly part of MA34-26).	11.00	Miles	X	X	X	X	
Temple Brook	MA34-08	Headwaters, outlet Bradley Pond, Monson to mouth at confluence with Scantic River, Hampden.	3.60	Miles		X			
Tripple Brook	MA34-16	Headwaters, perennial portion, Southampton to mouth at confluence with Manhan River, Southampton.	1.00	Miles		X			
Upper Highland Lake	MA34093	Goshen.	51.00	Acres			X	X	
West Branch Mill River	MA34-38	East Street, Goshen to the confluence of Meekin Brook, Williamsburg.	5.90	Miles		X			
West Branch Mill River	MA34-39	From the confluence of Meekin Brook, Williamsburg to mouth at confluence with East Branch Mill River (forming headwaters Mill River), Williamsburg.	0.60	Miles		X			
Deerfield									
Albee Brook	MA33-33	Headwaters, north of Dodge Corner Road, Hawley to confluence with Deerfield River, Charlemont.	1.00	Miles		X			
Allen Brook	MA33-34	Headwaters, east of the Shelburne Colrain Road and Route 2 intersection, Shelburne to confluence with Green River, Greenfield.	3.60	Miles		X			
Avery Brook	MA33-35	Headwaters, perennial portion south of Colrain Brook Road, Heath to confluence with Deerfield River, Charlemont.	3.70	Miles		X			
Basin Brook	MA33-36	Headwaters, Kenneth M. Dubuque Memorial State Forest, Hawley to confluence with King Brook, Hawley.	2.20	Miles		X			
Black Brook	MA33-37	Headwaters, west of Chapel Road, Savoy to confluence with Cold River, Savoy.	3.30	Miles		X			
Borden Brook	MA33-38	Vermont-Massachusetts stateline, Colrain to confluence with Green River, Colrain.	0.60	Miles		X			
Bozrah Brook	MA33-13	Headwaters, located west of East Hawley Road, Hawley (drains wetland) to confluence with Deerfield River, Charlemont.	3.00	Miles	X	X	X	X	
Brandy Brook	MA33-117	Headwaters east of North County Road, Leyden to confluence with Glen Brook, Leyden.	1.60	Miles		X			
Brown Brook	MA33-39	Headwaters, perennial portion east of Scott Road, Savoy to confluence with Chickley River, Savoy.	0.40	Miles		X			
Burrington Brook	MA33-40	Headwaters, east of Sadoga Road, Heath to confluence with West Branch Brook (forming headwaters West Branch North River), Heath.	2.00	Miles		X			
Burton Brook	MA33-41	Vermont-Massachusetts stateline, Rowe to confluence with West Branch Brook, Heath.	1.30	Miles		X			
Cary Brook	MA33-42	Perennial portion north of East Catamount Hill Road, Colrain to confluence with West Branch North River, Colrain.	0.50	Miles		X			

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Cascade Brook	MA33-43	Headwaters, perennial portion southeast of Moore Road, Florida to confluence with Deerfield River, Florida.	1.80	Miles		X			
Chapel Brook	MA33-44	Outlet of unnamed pond, Ashfield to confluence with Poland Brook, Conway.	3.40	Miles	X	X	X	X	
Chickley River	MA33-11	Headwaters Savoy Mountain State Forest, Savoy to confluence with Deerfield River, Charlemont.	11.10	Miles	X	X	X	X	
Clark Brook	MA33-16	Headwaters, near Moonshine Road (Howes Road)/East Buckland Road, Buckland to confluence with Clesson Brook, Buckland.	3.80	Miles	X	X	X	X	
Clesson Brook	MA33-15	Outlet of unnamed pond south of Forget Road, Hawley through Cox Pond to confluence with Deerfield River, Buckland.	10.30	Miles	X	X	X	X	
Cold River	MA33-05	Source in Florida to confluence with Deerfield River, Charlemont.	13.70	Miles	X	X	X	X	
Cooley Brook	MA33-45	Headwaters, north of La Belle Road, Hawley to confluence with Clesson Brook, Buckland.	1.50	Miles		X			
Creamery Brook	MA33-46	Headwaters, perennial portion west of Steady Lane Road, Ashfield to confluence with South River, Ashfield.	2.40	Miles	X	X	X	X	
Davenport Brook	MA33-111	Headwaters outlet Papoose Lake, Heath to confluence with Kinsman Brook forming headwaters Taylor Brook, Heath.	0.90	Miles		X			
Deerfield River	MA33-02	Confluence with Cold River, Charlemont to confluence with North River, Charlemont/Shelburne.	11.40	Miles	X	X	X	X	
Dickenson Brook	MA33-120	Headwaters west of Sumner Stetson Road, Heath to confluence with West Branch Brook, Heath.	0.70	Miles		X			
Drakes Brook	MA33-23	Headwaters, (perennial portion) west of North Warger Road, Ashfield to confluence with Bear River, Conway.	2.30	Miles		X			
Dunbar Brook	MA33-48	Vermont-Massachusetts stateline, Monroe to confluence with Deerfield River, Monroe.	5.60	Miles		X			
East Glen Brook	MA33-49	Headwaters, perennial portion north of East Glen Road, Leyden to inlet of Upper Greenfield Reservoir (Glen Brook Upper Reservoir), Leyden.	1.90	Miles		X			
East Oxbow Brook	MA33-72	Headwaters, perennial portion east of Deer Run Lane, Charlemont to confluence with Deerfield River, Charlemont.	1.40	Miles		X			
Fife Brook	MA33-50	Headwaters, perennial portion southwest of Spruce Mountain in the Monroe State Forest, Monroe to confluence with Deerfield River, Florida.	2.60	Miles		X			
Foundry Brook	MA33-25	Headwaters north of Calvin Coombs Road, Colrain to confluence with East Branch North River, Colrain.	2.80	Miles	X	X	X	X	
Fox Brook	MA33-51	From the outlet of Fox Brook Upper Reservoir, Colrain to confluence with North River, Colrain.	0.80	Miles		X			

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Fuller Brook	MA33-118	Perennial portion in Dubuque State Forest, Hawley to confluence with Chickley River, Hawley.	0.90	Miles		X			
Glen Brook	MA33-52	Headwaters, east of Brattleboro Road, Leyden to inlet of Upper Greenfield Reservoir (Glen Brook Upper Reservoir), Leyden.	3.50	Miles		X			
Glen Brook	MA33-96	Outlet of Upper Greenfield Reservoir, Leyden to confluence with Green River, Greenfield.	3.20	Miles		X			
Granger Brook	MA33-53	Headwaters, west of Bliss Road, Florida to confluence with Dunbar Brook, Monroe.	1.20	Miles		X			
Great Brook	MA33-54	Headwaters, perennial portion west at Zerah Fiske Road, Shelburne to confluence with Hawkes Brook, Shelburne.	1.20	Miles		X			
Green River	MA33-28	Vermont line, Colrain to water supply dam north of Eunice Williams Drive (Pumping Station Dam, National ID MA02291), Greenfield (formerly part of MA33-09).	8.40	Miles	X	X	X	X	
Green River	MA33-29	From water supply dam north of Eunice Williams Drive (Pumping Station Dam, National ID MA02291), Greenfield to the Swimming Pool #2 Dam (National Dam ID MA02321) northwest of Nashs Mill Road, Greenfield (formerly part of MA33-09).	4.60	Miles		X			
Green River	MA33-55	Headwaters, perennial portion in Florida State Forest west of Blackstone Road, Florida to confluence with Cold River, Florida.	1.30	Miles		X			
Gulf Brook	MA33-56	Outlet of Burnett Pond, Savoy to confluence with Cold River, Savoy.	3.50	Miles		X			
Haley Brook	MA33-57	Headwaters north of Main Street, Monroe to confluence with Dunbar Brook, Monroe.	1.50	Miles		X			
Hartwell Brook	MA33-58	Headwaters, south of South Heath Road, Charlemont to confluence with Deerfield River, Charlemont.	2.10	Miles		X			
Hawkes Brook	MA33-112	Headwaters east of Zerah Fiske Road, Shelburne to confluence with Dragon Brook, Shelburne.	1.20	Miles		X			
Heath Brook	MA33-59	Headwaters, south of West Main Street, Heath to confluence with Mill Brook, Heath.	1.00	Miles		X			
Hibbard Brook	MA33-60	Headwaters, north of West Leyden Road, Leyden to confluence with Green River, Leyden.	1.50	Miles		X			
Horsefords Brook	MA33-62	Headwaters, west of Bannis Road, Savoy to confluence with Chickley River, Savoy.	1.90	Miles		X			
Johnny Bean Brook	MA33-63	Headwaters, Poland Brook State Wildlife Management Area, Conway to confluence with South River, Conway.	1.70	Miles		X			
Katley Brook	MA33-99	Headwaters, east of Katley Hill, Leyden to confluence with Green River, Leyden.	1.30	Miles		X			

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King Brook	MA33-64	Outlet Hallockville Pond, Hawley to confluence with Chickley River, Hawley.	2.10	Miles		X			
Legate Hill Brook	MA33-65	Headwaters, perennial portion north of Blueberry Peak, Charlemont to confluence with Deerfield River, Charlemont.	3.40	Miles		X			
Manning Brook	MA33-66	Headwaters, north of South County Road, Florida to confluence with Cold River, Florida.	1.40	Miles		X			
Maxwell Brook	MA33-67	Headwaters, located north of Tatro Road, Rowe to confluence with Mill Brook, Charlemont.	3.20	Miles		X			
Mccard Brook	MA33-68	Headwaters, east of Oak Hill Road, Leyden to confluence with Mill Brook, Greenfield.	2.10	Miles		X			
Meadow Brook	MA33-130	Headwaters, outlet McLeod Pond, Colrain to mouth at confluence with North River, Colrain.	1.20	Miles		X			
Mill Brook	MA33-14	Headwaters, originating north of Rowe Road, Heath to confluence with the Deerfield River, Charlemont.	5.70	Miles	X	X	X	X	
Mill Brook	MA33-69	Headwaters, outlet Beaver Pond, Hawley to confluence with Chickley River, Hawley.	4.10	Miles		X			
North Pond	MA33014	Florida.	19.00	Acres			X	X	
North River	MA33-06	From confluence of East and West branches of the North River, Colrain to confluence with Deerfield River, Shelburne/Charlemont. (Segment changed 1997 - East Branch no longer included in length) (HQW applies upstream of Barnhardt discharge (NPDES# MA0003697)).	3.30	Miles	X	X	X	X	
Nye Brook	MA33-71	Headwaters, perennial portion north of Guinea Gulf (Conway State Forest), Conway to confluence with Poland Brook, Conway.	0.70	Miles		X			
Parsonage Brook	MA33-123	Headwaters north of Main Road, Monroe to confluence with Dunbar Brook, Monroe.	1.50	Miles		X			
Pelham Brook	MA33-12	Headwaters outlet Pelham Lake, Rowe to confluence with Deerfield River, Charlemont.	4.80	Miles	X	X	X	X	
Phelps Brook	MA33-73	Perennial portion, north of Main Road, Monroe to inlet of Phelps Brook Reservoir, Monroe.	1.20	Miles		X			
Poland Brook	MA33-74	Confluence with Chapel Brook, Conway to confluence with South River, Conway.	2.60	Miles	X	X	X	X	
Potash Brook	MA33-75	Headwaters, Cranberry Swamp, Hawley (drains wetland) to confluence with Mill Brook, Hawley.	1.40	Miles		X			
Pumpkin Hollow Brook	MA33-32	Headwaters north of Conway State Forest and south of Old Cricket Hill Road, Conway to confluence with South River, Conway.	2.30	Miles		X	X	X	

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Water Body	**Segment ID**	**Description**	**Size**	**Units**	**Aesthetic**	**Fish, other Aquatic Life and Wildlife**	**Primary Contact Recreation**	**Secondary Contact Recreation**	**Shellfish Harvesting**
Punch Brook	MA33-100	Headwaters, perennial portion east of Smead Road, Shelburne to confluence with Green River, Greenfield.	2.10	Miles		X			
Rice Brook	MA33-76	Headwaters, north of Hazelton Road, Rowe to confluence with Pelham Brook, Rowe.	1.20	Miles		X			
Roberts Brook	MA33-77	Headwaters, east of Hosmer Road, Heath to confluence with West Branch North River, Colrain.	1.00	Miles		X			
Ross Brook	MA33-78	Headwaters, south of Tannery Road, Savoy to confluence with Tannery Brook, Savoy.	2.00	Miles		X			
Ruddock Brook	MA33-79	Headwaters, west of Dodge Corner Road, Hawley to confluence with Clesson Brook, Buckland.	1.10	Miles		X			
Sanders Brook	MA33-80	Vermont/Massachusetts border, Heath to confluence with West Branch North River, Colrain.	2.80	Miles		X			
Schneck Brook	MA33-113	Headwaters, north of Wilder Hill Road, Conway to confluence with the Deerfield River, Conway.	2.00	Miles		X			
Sheldon Brook	MA33-81	Headwaters, south of Old Albany Road, Shelburne to confluence with Deerfield River, Deerfield/Greenfield.	1.40	Miles		X			
Shingle Brook	MA33-22	Headwaters north of Guy Manners Road, Shelburne to confluence with the Deerfield River, Deerfield.	2.80	Miles	X	X	X	X	
Sids Brook	MA33-82	Headwaters, perennial portion north of Baptist Corner Road, Ashfield to confluence with Drakes Brook, Conway.	1.70	Miles		X			
Sluice Brook	MA33-83	Headwaters, north of Tower Road, Shelburne to confluence with Deerfield River, Shelburne.	3.30	Miles		X			
Smead Brook	MA33-84	Headwaters, east of Old Albany Road, Greenfield to confluence with Wheeler Brook, Greenfield.	1.70	Miles		X			
Smith Brook	MA33-26	Headwaters, outlet Upper Reservoir, Ashfield to confluence with Clesson Brook, Buckland.	2.70	Miles	X	X	X	X	
South Pond	MA33019	Savoy.	29.00	Acres			X	X	
Spur Brook	MA33-106	Headwaters, outlet small pond just west at intersection of Christian Hill Road and Thompson Road, Colrain to confluence with East Branch North River, Colrain.	2.00	Miles		X			
Stafford Brook	MA33-98	Headwaters, perennial portion south of East Colrain Road, Colrain to confluence with Green River, Colrain.	1.40	Miles		X			
Staples Brook	MA33-121	Headwaters east of Spruce Hill, North Adams to confluence Tower Brook, Florida.	1.40	Miles		X			
Steele Brook	MA33-85	Headwaters, perennial portion north of Tunnel Road, Rowe to confluence with Pelham Brook, Rowe.	1.70	Miles		X			

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Stewart Brook	MA33-132	Perennial portion north of Wilson Graves Road, Shelburne to mouth at confluence with Hinsdale Brook, Shelburne.	1.00	Miles		X			
Tannery Brook	MA33-86	Outlet of Tannery Pond, Savoy to confluence with Gulf Brook, Savoy.	0.70	Miles		X			
Taylor Brook	MA33-31	From the confluence of Kinsman Brook and Davenport Brook, Heath to confluence with West Branch North River, Colrain.	2.60	Miles	X	X	X	X	
Tilton Brook	MA33-119	Headwaters in Savoy Mountain State Forest, west of Bannis Road, Savoy to confluence with Chickley River, Savoy.	2.00	Miles		X			
Tissdell Brook	MA33-24	Headwaters perennial portion east of Christian Hill Cemetary, Colrain to confluence with West Branch North River, Colrain.	1.70	Miles	X	X	X	X	
Tower Brook	MA33-87	Headwaters, west of Central Shaft Road, Florida (drains wetland) to confluence with Cold River, Florida.	1.90	Miles		X			
Trout Brook	MA33-88	Headwaters, perennial portion west of Hawks Mountain, Charlemont/Hawley to confluence with Cold River, Charlemont.	0.60	Miles		X			
Tuttle Brook	MA33-129	Headwaters east of Leshures Road, Rowe to mouth at confluence with Potter Brook, Rowe.	2.00	Miles		X			
Unnamed Tributary	MA33-103	Unnamed tributary to Hinsdale Brook, perennial portion east of Little Mohawk Road, Shelburne to confluence with Hinsdale Brook, Shelburne.	1.90	Miles		X			
Unnamed Tributary	MA33-104	Unnamed tributary to an unnamed tributary to Hinsdale Brook from Shearer Pond Dam (National Dam ID MA01531), Colrain to confluence with an unnamed tributary to Hinsdale Brook, Shelburne.	0.90	Miles		X			
Unnamed Tributary	MA33-105	Unnamed tributary to Glen Brook, headwaters north of Oak Hill Road, Leyden to confluence Glen Brook, Greenfield.	1.90	Miles		X			
Unnamed Tributary	MA33-107	Unnamed tributary to the East Branch North River, headwaters south of Fairbanks Road, Colrain to the confluence of the East Branch North River, Colrain.	1.70	Miles		X			
Unnamed Tributary	MA33-108	Unnamed tributary to East Branch North River, headwaters outlet Mt. Brook Reservoir, Colrain to confluence with East Branch North River, Colrain.	1.40	Miles		X			
Unnamed Tributary	MA33-109	Unnamed tributary to West Branch North River, headwaters west of Wilson Hill Road, Colrain to confluence with West Branch North River, Colrain.	1.40	Miles		X			
Unnamed Tributary	MA33-110	Unnamed tributary to Taylor Brook, headwaters, Catamount State Forest, Colrain to confluence Taylor Brook, Colrain.	1.50	Miles		X			
Unnamed Tributary	MA33-114	Headwaters east of Pine Hill Road, Conway to confluence with South River, Conway.	1.00	Miles		X			

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Unnamed Tributary	MA33-115	Unnamed tributary to Chapel Brook, headwaters west of Bird Hill Road, Ashfield to confluence with Chapel Brook, Ashfield.	1.50	Miles		X			
Unnamed Tributary	MA33-116	Unnamed tributary to Clesson Brook, headwaters north of Avery Road, Buckland to confluence with Clesson Brook, Buckland.	1.80	Miles		X			
Unnamed Tributary	MA33-133	Unnamed tributary to the Deerfield River from headwaters, outlet Goodnow Road Pond, Buckland to mouth at confluence with the Deerfield River, Buckland.	1.50	Miles		X			
Unnamed Tributary	MA33-134	Unnamed tributary to East Branch North River from headwaters east of Franklin Hill Road and southwest at Franklin Hill, Colrain to mouth at confluence with East Branch North River, Colrain.	0.70	Miles		X			
Unnamed Tributary	MA33-61	Unnamed tributary to Clark Brook locally known as "Hog Hollow Brook", headwaters north of Bray Road, Buckland to confluence with Clark Brook, Buckland.	1.10	Miles		X			
Vincent Brook	MA33-89	Headwaters, perennial portion east of Stetson Brothers Road, Colrain to confluence with West Branch North River, Colrain.	1.00	Miles		X			
West Branch Brook	MA33-90	Headwaters, Vermont-Massachusetts stateline, Heath to confluence with Burrington Brook (forming headwaters West Branch North River), Heath.	5.40	Miles		X			
West Branch North River	MA33-27	Headwaters, confluence of West Branch Brook and Burrington Brook, Heath to confluence with East Branch North River, forming headwaters North River, Colrain.	7.20	Miles	X	X	X	X	
Wheeler Brook	MA33-95	Headwaters, south of Old Greenfield Road, Shelburne to confluence with Green River, Greenfield.	2.50	Miles	X	X	X	X	
Whitcomb Brook	MA33-91	Headwaters, perennial portion east of Whitcomb Hill Road, Florida to confluence with Deerfield River, Florida.	0.60	Miles		X			
White Brook	MA33-122	Headwaters east of Olson Road, Florida to confluence with the Cold River, Florida.	1.60	Miles		X			
Wilder Brook	MA33-92	Headwaters, east of Flagg Hill Road, Heath to confluence with Deerfield River, Charlemont.	2.90	Miles		X			
Willis Brook	MA33-93	Headwaters, perennial portion south of South Road, Heath to confluence with Hartwell Brook, Charlemont.	1.60	Miles		X			
Workman Brook	MA33-94	Headwaters, perennial portion west of East Colrain Road, Colrain (drains wetland) to confluence with Green River, Colrain.	1.40	Miles		X			
Farmington									
Babcock Brook	MA31-32	Headwaters west of Amos Case Road, Tolland to mouth at confluence with Hall Pond Brook (forming headwaters Hubbard Brook), Tolland.	3.30	Miles		X			

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Buck River	MA31-39	Outlet Abbey Lake, Sandisfield to mouth at confluence with Clam River, Sandisfield (formerly part of segment MA31-12).	4.10	Miles	X	X	X	X	
Clam River	MA31-03	Headwaters, perennial portion, outlet small unnamed pond, Otis to mouth at confluence with West Branch Farmington River, Sandisfield (excluding the 0.8 miles thru the Clam Lake Dam (NATID: MA01052) impoundment).	7.90	Miles	X	X	X	X	
Cone Brook	MA31-08	Headwaters, drainage from Angerman Swamp in Beartown State Forest, Otis to mouth at inlet Hayden Pond, Otis.	2.10	Miles		X			
Dimmock Brook	MA31-10	Outlet of Dimmock Brook Pond, Otis to mouth at confluence with West Branch Farmington River, Otis.	1.00	Miles	X	X	X	X	
East Branch Salmon Brook	MA31-40	Headwaters, perennial portion, Granville to MA/CT border, Granville.	0.10	Miles		X			
Fall River	MA31-02	Headwaters, outlet Larkum Pond, Otis to mouth at confluence with West Branch Farmington River, Otis.	0.80	Miles	X	X	X	X	
Halfway Brook	MA31-31	Headwaters, outlet of wetland in Granville State Forest, Tolland to mouth at confluence with Hubbard Brook, Granville.	1.80	Miles		X			
Hubbard Brook	MA31-16	Headwaters, confluence Babcock Brook and Hall Pond Brook, Tolland to MA/CT border Granville.	4.00	Miles	X	X	X	X	
Miner Brook	MA31-28	Headwaters, outlet wetland east of North Beech Plain Road, Sandisfield to mouth at confluence with West Branch Farmington River, Sandisfield.	1.50	Miles		X			
Moody Brook	MA31-23	Headwaters, outlet Trout Pond, Tolland to mouth at confluence with West Branch Farmington River, Sandisfield.	1.80	Miles		X			
North Brook	MA31-41	Headwaters, outlet unnamed pond north of Roberts Road, Sandisfield to MA/CT border, Sandisfield.	0.90	Miles		X			
Pond Brook	MA31-30	Headwaters, outlet Parsons Pond, Granville to mouth at confluence with Hubbard Brook, Granville.	4.60	Miles		X			
Richardson Brook	MA31-24	Headwaters, north of New Boston Road (Route 57), Tolland to mouth at confluence with Moody Brook, Tolland.	1.30	Miles		X			
Riiska Brook	MA31-17	Headwaters, perennial portion, west of New Hartford Road, Sandisfield to mouth at confluence with Sandy Brook, Sandisfield.	2.10	Miles		X			
Sandy Brook	MA31-14	Headwaters, outlet York Lake, New Marlborough to MA/CT border Sandisfield.	4.90	Miles	X	X	X	X	
Shales Brook	MA31-04	Source north of Tyringham Road, Becket to mouth at inlet Shaw Pond, Becket.	1.20	Miles	X	X	X	X	
Silver Brook	MA31-13	Headwaters, confluence of North Branch and South Branch Silver Brook, Sandisfield to mouth at confluence with Clam River, Sandisfield.	1.00	Miles	X	X	X	X	

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Slocum Brook	MA31-19	Headwaters, outlet small unnamed wetland pond south of Hartland Road, Tolland to MA/CT border, Tolland.	3.30	Miles		X			
South Branch Silver Brook	MA31-26	Headwaters, perennial portion north of Fox Road, Sandisfield to mouth at confluence with North Branch Silver Brook (forming headwaters Silver Brook), Sandisfield.	1.30	Miles		X			
Taylor Brook	MA31-20	Headwaters, west of Clubhouse Road, Tolland to mouth at confluence with Slocum Brook, Tolland.	3.30	Miles		X			
Thorp Brook	MA31-22	Headwaters, east of Dodds Mountain, south of Sears Road, Sandisfield to mouth at confluence with West Branch Farmington River, Sandisfield.	2.70	Miles		X			
Unnamed Tributary	MA31-07	Source, outlet Shaw Pond, Becket/Otis to mouth at inlet Hayden Pond, Otis.	0.90	Miles	X		X	X	
Unnamed Tributary	MA31-09	Unnamed tributary to West Branch Farmington River, source north of Route 23 and east of Harrington Road, Otis to mouth at confluence with West Branch Farmington River, Otis.	2.00	Miles	X	X	X	X	
Valley Brook	MA31-15	Source, northwest of Holden Hill, Granville to MA/CT border, Granville.	5.90	Miles	X	X	X	X	
French									
Mill Brook	MA42-10	Headwaters, outlet Webster Lake, Webster to mouth at confluence with French River, Webster.	1.20	Miles		X			
Unnamed Tributary	MA42-01	Unnamed tributary to Town Meadow Brook, outlet Sargent Pond, Leicester to inlet Dutton Pond, Leicester.	0.50	Miles		X			
Housatonic									
Benedict Pond	MA21011	Great Barrington/Monterey.	37.00	Acres			X	X	
Cady Brook	MA21-12	Headwaters, northwest corner Peru, to mouth at inlet of Windsor Reservoir, Hinsdale.	3.50	Miles		X			
Cleveland Brook	MA21-08	Headwaters, outlet Cleveland Brook Reservoir, Hinsdale to mouth at confluence with East Branch Housatonic River, Dalton.	1.90	Miles		X			
Furnace Brook	MA21-21	Headwaters, perennial portion, south of Route 295 (Canaan Road), Richmond to mouth at inlet Mud Ponds, West Stockbridge.	3.70	Miles		X			
Goose Pond Brook	MA21-07	Headwaters, wetland north of George Cannan Road, Tyringham to mouth at confluence with the Housatonic River, Lee.	3.20	Miles	X	X	X	X	
Green River	MA21-23	MA/NY border, Alford, southwest of Route 71, to mouth at confluence with the Housatonic River, Great Barrington.	10.30	Miles	X	X	X	X	
Greenwater Brook	MA21-27	Headwaters, outlet Greenwater Pond, Becket to mouth at confluence with Goose Pond Brook, Lee.	4.40	Miles		X			

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Hop Brook	MA21-28	Headwaters, outlet Curtin Pond, Otis to mouth at confluence with the Housatonic River, Lee.	12.00	Miles	X	X	X	X	
Larrywaug Brook	MA21-29	Headwaters, outlet Stockbridge Bowl, Stockbridge to mouth at confluence with Housatonic River, Stockbridge.	2.90	Miles	X	X	X	X	
Rawson Brook	MA21-37	Headwaters, north of Cronk Road, Monterey to mouth at confluence with Konkapot River, Monterey.	5.90	Miles	X		X	X	
Town Brook	MA21-36	Headwaters, perennial portion, Lanesborough to mouth at inlet Pontoosuc Lake, Lanesborough.	7.90	Miles	X		X	X	
Wahconah Falls Brook	MA21-11	Headwaters, outlet Windsor Reservoir, Windsor to mouth at confluence with East Branch Housatonic River, Dalton.	3.40	Miles	X	X	X	X	
Williams River	MA21-06	Headwaters, outlet Shaker Mill Pond, West Stockbridge to mouth at confluence with Housatonic River, Great Barrington.	11.00	Miles	X	X	X	X	
Hudson: Bashbish									
Bashbish Brook	MA13-01	Headwaters at confluence with Ashley Hill Brook, west of West Street, Mount Washington to Massachusetts/New York border, Mount Washington.	2.10	Miles		X			
Hudson: Hoosic									
Bassett Brook	MA11-17	Headwaters, perennial portion, southeast slope of Saddle Ball Mountain, Adams to mouth at inlet Bassett Reservoir, Cheshire.	1.90	Miles		X			
Broad Brook	MA11-23	From Vermont state line, Williamstown to mouth at confluence with the Hoosic River, Williamstown.	2.20	Miles	X	X	X	X	
Buxton Brook	MA11-25	Headwaters, perennial portion, west of Petersburg Road, Williamstown to mouth at confluence with Hemlock Brook, Williamstown.	1.30	Miles	X	X	X	X	
Dry Brook	MA11-13	Headwaters, west of Jackson Road (in Savoy Wildlife Management Area), Savoy to mouth at confluence with Hoosic River, Adams.	6.70	Miles		X			
East Branch Green River	MA11-21	Headwaters, perennial portion, northeast of Sugarloaf Mountain, New Ashford to mouth at confluence with Green River, New Ashford.	2.20	Miles	X	X	X	X	
Green River	MA11-06	Headwaters, perennial portion, southwest of Sugarloaf Mountain (west of Ingraham Road), New Ashford to mouth at confluence with Hoosic River, Williamstown.	12.50	Miles	X	X	X	X	
Hopper Brook	MA11-28	Headwaters, perennial portion, east of Sperry Road, Williamstown to mouth at confluence with the Green River, Williamstown.	4.00	Miles	X	X	X	X	
Kitchen Brook	MA11-24	From the outlet of the unnamed reservoir (Kitchen Brook Reservoir), Cheshire to mouth at confluence with the Hoosic River, Cheshire.	1.40	Miles	X	X			
Mauserts Pond	MA11009	Clarksburg.	51.00	Acres			X	X	
Miller Brook	MA11-27	Headwaters, west and south of East Hoosac Street, Adams to mouth at confluence with Tophet Brook, Adams.	2.40	Miles	X	X	X	X	

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Pecks Brook	MA11-18	Headwaters, perennial portion, west of West Mountatin Road, Adams to mouth at confluence with the Hoosic River, Adams.	2.70	Miles		X			
South Brook	MA11-15	Headwaters, west of Weston Mountain, Dalton to mouth at confluence with the Hoosic River, Cheshire.	4.10	Miles	X	X	X	X	
Thunder Brook	MA11-10	Headwaters, perennial portion, Cheshire to mouth at confluence with Kitchen Brook, Cheshire.	1.50	Miles		X			
West Branch Green River	MA11-22	Headwaters, perennial portion, west of Route 43, Hancock (near New York border) to mouth at confluence with Green River, Williamstown.	7.90	Miles		X			
Hudson: Kinderhook									
Bently Brook	MA12-02	Headwaters, perennial portion, south of Brodie Mountain Road, Lanesborough to mouth at confluence with Kinderhook Creek, Hancock.	2.10	Miles	X	X	X	X	
Ipswich									
Bear Meadow Brook	MA92-07	Headwaters in Cedar Swamp, Reading to confluence with Ipswich River, Reading/North Reading.	2.80	Miles		X			
Berry Pond	MA92003	North Andover.	4.00	Acres			X	X	
Boston Brook	MA92-13	Outlet of Towne Street Pond, North Andover to confluence with the Ipswich River, Middleton (excluding approximately 0.3 miles through Salem Street Pond segment MA92076), (through former pond segments Upper Boston Brook Pond MA92070 and Lower Boston Brook Pond MA92031).	7.20	Miles	X	X	X	X	
Stearns Pond	MA92061	North Andover.	43.00	Acres		X			
Wills Brook	MA92-10	Headwaters, north of Lowell Street (excluding intermittent portion), Lynnfield to confluence with Ipswich River, Lynnfield (Lynnfield/North Reading townline).	1.50	Miles	X		X	X	
Islands									
Black Point Pond	MA97-33	Chilmark (includes channel connector to Tisbury Great Pond).	0.09	Square Miles		X			
Cape Poge Bay	MA97-08	From the outlet of The Lagoon at Toms Neck, Edgartown to the confluence with Edgartown Harbor at the Cape Poge Gut, (excluding Shear Pen Pond and Pease Pond) Edgartown, Martha's Vineyard.	2.30	Square Miles		X	X	X	X
Coskata Pond	MA97-03	Pond north of Nantucket Harbor, Nantucket to confluence with Nantucket Harbor, Nantucket.	0.08	Square Miles			X	X	X

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Madaket Harbor	MA97-27	Waters encompassed within imaginary lines from Eel Point to the northern tip of Esther Island, from the southern tip of Esther Island southeasterly to the opposite shore and from Jackson Point easterly to Little Neck, Nantucket.	1.44	Square Miles		X	X	X	X
Mattakeset Bay	MA97-14	Waters west of an imaginary line drawn southeasterly from Katama Point to Norton Point, Edgartown, Martha's Vineyard.	0.17	Square Miles			X	X	X
Menemsha Pond	MA97-06	Waters between Nashaquitsa Pond and Menemsha Creek, Chilmark/Aquinnah, Martha's Vineyard.	0.89	Square Miles		X	X	X	X
Mill Brook	MA97-22	Outlet of Bliss Pond, Chilmark to inlet Chilmark Pond, Chilmark, Martha's Vineyard.	2.40	Miles		X			
Mill Brook	MA97-24	Source in wetlands west of Roth Woodland Road, Chilmark to Old Millpond Dam, West Tisbury, Martha's Vineyard.	3.60	Miles		X			
Paint Mill Brook	MA97-23	Source east of Tea Lane, Chilmark to inlet of Paint Mill Brook Pond, Chilmark, Martha's Vineyard.	0.90	Miles		X			
Sunset Lake	MA97-31	Oak Bluffs.	0.01	Square Miles		X			
Tiasquam River	MA97-25	Source in wetlands west of Tea Lane, Chilmark to Warren Pond Dam, Chilmark/West Tisbury, Martha's Vineyard.	3.20	Miles		X			
Westend Pond	MA97-20	Cuttyhunk Island, Gosnold, Elizabeth Islands.	0.06	Square Miles			X	X	X
Witch Brook	MA97-36	Perennial portion south of South Gate Road, West Tisbury to mouth at Crocker Pond inlet, West Tisbury.	0.50	Miles		X			
Merrimack									
Bridge Meadow Brook	MA84A-34	Headwaters, north of Chestnut Road, Tyngsborough to inlet Flint Pond, Tyngsborough.	4.00	Miles		X			
Johnson Creek	MA84A-15	Headwaters, Groveland (excluding intermittent portion) to confluence with Merrimack River, Groveland/Haverhill.	1.10	Miles	X	X	X	X	
Lawrence Brook	MA84A-20	Headwaters, Tyngsborough (excluding intermittent portion) to confluence with Merrimack River, Tyngsborough.	2.00	Miles		X			
Martins Pond Brook	MA84A-19	Headwaters outlet Martins Pond, Groton to inlet Lost Lake, Groton.	2.30	Miles		X			
Reed Brook	MA84B-08	Headwaters, south of the West Street/Cowdry Hill Road intersection, Westford to the confluence with Stony Brook, Westford.	0.60	Miles		X			
Unnamed Tributary	MA84A-38	(Locally known as Argilla Brook) Unnamed tributary to Johnson Creek (excluding intermittent portion) from Center Street, Groveland to confluence with Johnson Creek, Groveland.	1.30	Miles		X			

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Category 2 waters listed alphabetically by major watershed
"Attaining some uses; other uses not assessed"

					Uses Attained				
Water Body	**Segment ID**	**Description**	**Size**	**Units**	**Aesthetic**	**Fish, other Aquatic Life and Wildlife**	**Primary Contact Recreation**	**Secondary Contact Recreation**	**Shellfish Harvesting**
Millers									
Dunn Pond	MA35021	Gardner.	18.00	Acres			X	X	
Otter River	MA35-07	Gardner WWTP, Gardner/Templeton to Seaman Paper Dam, Templeton.	4.40	Miles	X	X		X	
Priest Brook	MA35-10	Headwaters at the confluence of Towne and Scott Brooks, Royalston to the confluence with the Millers River, Winchendon. (According to SARIS includes lower portion of Scott Brook.).	6.80	Miles	X	X		X	
Ruggles Pond	MA35072	Wendell.	15.00	Acres			X	X	
Mount Hope Bay (Shore)									
Cole River	MA61-10	Headwaters, south of Wellington Street, Dighton to Wood Street, Swansea.	6.40	Miles	X	X	X	X	
Narragansett Bay (Shore)									
Bad Luck Brook	MA53-11	Headwaters, outlet Warren Upper Reservoir, Rehoboth to confluence with East Branch Palmer River, Rehoboth.	1.70	Miles	X	X	X	X	
East Branch Palmer River	MA53-08	Headwaters, near Stevens Corner Cemetery, Rehoboth to confluence with West Branch Palmer River (forming Palmer River), Rehoboth.	7.20	Miles	X	X	X	X	
West Branch Palmer River	MA53-07	Headwaters just north of Fairfield Street, Rehoboth to confluence with East Branch Palmer River (forming Palmer River), Rehoboth.	4.40	Miles	X	X	X	X	
Nashua									
Bowers Brook	MA81-73	From outlet Barre Hill Pond, Harvard to mouth at inlet unnamed pond, Ayer.	6.10	Miles	X		X	X	
Catacoonamug Brook	MA81-16	Outlet Lake Shirley, Lunenburg to mouth at confluence with Nashua River (backwater area), Shirley.	2.70	Miles	X	X	X	X	
Cobb Brook	MA81-71	Headwaters, outlet small unnamed pond west of Brooks Station Road, Princeton to mouth at confluence with South Wachusett Brook, Princeton.	2.70	Miles	X		X	X	
Fall Brook	MA81-38	From outlet Fall Brook Reservoir, Leominster to inlet Lake Samoset, Leominster (formerly part of segment MA81-14).	1.30	Miles	X		X	X	
Flag Brook	MA81-10	Headwaters, outlet Crocker Pond, Westminster to mouth at inlet of impoundment (Wachusett Station Pond) of North Nashua River, Fitchburg (excluding approximately 0.7 miles through Sawmill Pond segment MA81118).	2.20	Miles	X		X	X	
French Brook	MA81-48	Headwaters, west of Linden Street, Boylston to mouth at inlet Wachusett Reservoir (Andrews Harbor), Boylston.	1.40	Miles	X		X	X	
Governor Brook	MA81-70	Headwaters, east of Worcester Road (Route 31), and south of Flagg Hill, Princeton to mouth at confluence with Trout Brook, Holden.	4.40	Miles	X		X	X	

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Category 2 waters listed alphabetically by major watershed
"Attaining some uses; other uses not assessed"

					Uses Attained				
Water Body	**Segment ID**	**Description**	**Size**	**Units**	**Aesthetic**	**Fish, other Aquatic Life and Wildlife**	**Primary Contact Recreation**	**Secondary Contact Recreation**	**Shellfish Harvesting**
Gulf Brook	MA81-76	Headwaters, outlet Heald Pond, Pepperell to the New Hampshire border, Pepperell approximately 0.2 miles upstream of mouth at confluence with Nissitissit River.	2.60	Miles	X		X	X	
Locke Brook	MA81-78	From New Hampshire border, Ashby to mouth at confluence with Willard Brook, Townsend.	4.40	Miles	X		X	X	
Malden Brook	MA81-27	Headwaters northeast of Lee Street, West Boylston to mouth at inlet Wachusett Reservoir (Thomas Basin), West Boylston.	1.90	Miles	X	X	X	X	
Mulpus Brook	MA81-36	Headwaters, north of Howard Street, Lunenburg to the inlet of Hickory Hills Lake, Lunenburg (formerly part of segment MA81-22).	3.80	Miles	X		X	X	
Muschopauge Brook	MA81-69	Headwaters, east of Glenwood Road, Rutland to mouth at inlet Quinapoxet Reservoir, Holden.	3.50	Miles	X		X	X	
Nashua River	MA81-08	("South Branch" Nashua River) Headwaters, outlet Lancaster Millpond, Clinton to Clinton WWTP discharge (NPDES: MA0100404), Clinton.	2.80	Miles	X	X	X	X	
Phillips Brook	MA81-12	Headwaters, outlet Winnekeag Lake, Ashburnham to Westminster Street (Route 2A/31), Fitchburg (segment includes McTaggarts Pond and unnamed tributary to North Nashua River) (qualifiers apply to 0.0 to 1.0 mile of river per 2007 SWQS, NOTE: CSO eliminated in 2006).	8.40	Miles	X	X	X	X	
Squannacook River	MA81-19	Hollingsworth and Vose Dam (NATID: MA00443), Groton/Shirley to mouth at confluence with Nashua River, Shirley/Groton/Ayer.	3.70	Miles	X	X	X	X	
Still River	MA81-15	From Route 117, Bolton to mouth at confluence with Nashua River, Harvard/Lancaster.	2.70	Miles	X		X	X	
Sucker Brook	MA81-23	Headwaters outlet Coon Tree Pond, Pepperell to mouth at confluence with Nissitissit River, Pepperell.	4.00	Miles	X		X	X	
Trapfall Brook	MA81-77	Headwaters, north of Jones Hill Road, Ashby to mouth at confluence with Willard Brook, Ashby.	5.50	Miles	X		X	X	
Unkety Brook	MA81-81	Headwaters, east of Chicopee Row, Groton to mouth at confluence with Nashua River, Dunstable.	6.70	Miles	X		X	X	
Upper Crow Hill Pond	MA81169	Westminster.	5.00	Acres			X	X	
Whitman River	MA81-11	Headwaters, outlet Lake Wampanoag, Ashburnham to mouth at inlet Snows Millpond, Fitchburg/Westminster (excluding the approximately 1.2 miles through Whitmanville Reservoir segment MA81109 and the approximately 0.8 miles through Crocker Pond segment MA81025).	6.30	Miles	X	X	X	X	
Witch Brook	MA81-75	Headwaters, outlet small unnamed pond west of Pierce Road, Townsend to mouth at confluence with Squannacook River (backwater area), Townsend.	2.50	Miles	X		X	X	
North Coastal									
Alewife Brook	MA93-45	Headwaters, outlet Chebacco Lake, Essex to Landing Road, Essex.	1.40	Miles	X		X	X	

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Category 2 waters listed alphabetically by major watershed
"Attaining some uses; other uses not assessed"

					Uses Attained				
Water Body	**Segment ID**	**Description**	**Size**	**Units**	**Aesthetic**	**Fish, other Aquatic Life and Wildlife**	**Primary Contact Recreation**	**Secondary Contact Recreation**	**Shellfish Harvesting**
Beck Pond	MA93003	Hamilton.	35.00	Acres		X			
Lower Pond	MA93044	Saugus.	21.00	Acres			X	X	
Parker									
Penn Brook	MA91-16	Headwaters, outlet Baldpate Pond, Boxford to mouth at confluence with Parker River, Georgetown.	3.00	Miles	X	X	X	X	
Quinebaug									
Breakneck Brook	MA41-28	Headwaters outlet Breakneck Pond, Sturbridge to mouth at confluence with Quinebaug River, Sturbridge.	3.70	Miles	X		X	X	
Browns Brook	MA41-20	From the state line Holland, MA/Union, CT to mouth at inlet of Hamilton Reservoir, Holland.	0.80	Miles	X	X			
Hamant Brook	MA41-15	Headwaters, outlet unnamed pond, Sturbridge to mouth at confluence with the Quinebaug River, Sturbridge.	3.10	Miles		X			
Hatchet Brook	MA41-14	From the outlet of No. 3 Reservoir, Southbridge to mouth at confluence with the Quinebaug River, Southbridge.	1.30	Miles	X	X	X	X	
Hollow Brook	MA41-24	Headwaters, west of Hollow Road, Wales to mouth at confluence with Mill Brook, Brimfield.	2.70	Miles		X			
Leadmine Brook	MA41-21	Headwaters, outlet Leadmine Pond, Sturbridge to the state line, Sturbridge, MA/Union, CT.	2.50	Miles		X			
Lebanon Brook	MA41-11	From the state line, Southbridge, MA/Woodstock, CT, to mouth at confluence with the Quinebaug River, Southbridge.	4.70	Miles		X			
Mountain Brook	MA41-18	Headwaters, east of Steerage Rock Road (excluding intermittent portion), Brimfield to mouth at confluence with Mill Brook, Brimfield.	1.90	Miles		X			
Rocky Brook	MA41-22	Headwaters east of Chamberlain Pond (excluding intermittent portion), Douglas to the state line Douglas, MA/Thompson, CT.	1.90	Miles	X	X			
Stevens Brook	MA41-19	From the state line Wales, MA/Stafford, CT to mouth at inlet of Hamilton Reservoir, Holland.	4.70	Miles	X	X	X	X	
Tufts Branch	MA41-10	Headwaters, north of Dudley-Southbridge Road, Dudley to the state line, Dudley, MA/Thompson, CT.	2.80	Miles		X			
Unnamed Tributary	MA41-23	Unnamed tributary to the Quinebaug River from headwaters at the outlet of an unnamed pond on the Southbridge/Charlton border to mouth at confluence with the Quinebaug River, Southbridge.	1.90	Miles		X			
Unnamed Tributary	MA41-25	Unnamed tributary to Tufts Branch, headwaters, outlet Wielock Pond, Dudley to mouth at confluence with Tufts Branch, Dudley.	0.20	Miles		X			
Unnamed Tributary	MA41-26	Unnamed tributary locally known as 'Freeman's Brook' from headwaters west of Cronin Road, Warren to an unnamed tributary to Long Pond, Sturbridge.	2.60	Miles		X			

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Category 2 waters listed alphabetically by major watershed
"Attaining some uses; other uses not assessed"

					Uses Attained				
Water Body	**Segment ID**	**Description**	**Size**	**Units**	**Aesthetic**	**Fish, other Aquatic Life and Wildlife**	**Primary Contact Recreation**	**Secondary Contact Recreation**	**Shellfish Harvesting**
Unnamed Tributary	MA41-27	Unnamed tributary to Mill Brook, headwaters south of East Hill Road, Brimfield to mouth at confluence with Mill Brook, Brimfield.	1.70	Miles		X			
Shawsheen									
Elm Brook	MA83-23	Headwaters, south of Route 2A, Lincoln to beginning of channelized portion southwest of Kendall Court, Bedford (formerly part of segment MA83-05).	2.70	Miles		X			
Meadow Brook	MA83-12	Headwaters, outlet Ames Pond, Tewksbury, to confluence with Strong Water Brook, Tewksbury.	1.70	Miles		X			
Spring Brook	MA83-14	Headwaters, wetland northeast of Route 3 Billerica, to confluence with Shawsheen River, Bedford.	2.60	Miles	X	X	X	X	
South Coastal									
Bartlett Pond	MA94005	Plymouth.	33.00	Acres	X				
Ben Mann Brook	MA94-41	Headwaters, south of Abington Rockland Reservoir, Rockland to mouth at confluence with Cushing Brook, Hanover.	2.00	Miles	X		X	X	
First Herring Brook	MA94-36	Headwaters, in South Swamp, Norwell to inlet Tack Factory Pond, Scituate (formerly reported as portion of segment MA94-25).	2.60	Miles	X	X	X	X	
Iron Mine Brook	MA94-24	Headwaters north of Route 139, Hanover to mouth at confluence with Indian Head River, Hanover (area associated with North River Corridor designated as ORW).	1.40	Miles	X	X	X	X	
Plymouth Bay	MA94-17	The waters southeast of a line drawn from Saquish Head to the tip of Plymouth Beach, Plymouth and west of a line from Gurnet Point to Rocky Point, Plymouth.	10.30	Square Miles		X	X	X	X
Second Herring Brook	MA94-26	Headwaters, outlet Turner Pond, Norwell (excluding the approximately 0.3 mile throughTorrey Pond) to the Second Herring Brook Pond Dam (NATID: MA02171), Norwell (area associated with North River Corridor designated as ORW).	1.50	Miles		X			
South River	MA94-08	Headwaters, outlet unnamed pond north of Congress Street, Duxbury to dam near Main Street (Route 3A), Marshfield (through South River Pond, formerly segment MA94148).	4.90	Miles	X	X	X	X	
Tack Factory Pond	MA94152	Scituate.	8.00	Acres		X			
Third Herring Brook	MA94-27	Headwaters, outlet Jacobs Pond, Norwell/Hanover to mouth at confluence with North River, Norwell/Hanover (area associated with North River Corridor designated as ORW).	5.30	Miles	X	X	X	X	
Town Brook	MA94-42	Headwaters, outlet Billington Sea, Plymouth to just upstream of the Route 3A bridge, Plymouth (excluding the approximately 0.07 mile through Arms House Pond).	1.50	Miles	X		X	X	

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"Attaining some uses; other uses not assessed"

					Uses Attained				
Water Body	**Segment ID**	**Description**	**Size**	**Units**	**Aesthetic**	**Fish, other Aquatic Life and Wildlife**	**Primary Contact Recreation**	**Secondary Contact Recreation**	**Shellfish Harvesting**
Unnamed Tributary	MA94-35	Unnamed tributary to Eel River, from outlet cranberry bog south of Valley Road, Plymouth to mouth at confluence with Eel River, Plymouth (through Forge Pond, formerly segment MA94036).	2.40	Miles	X		X	X	
Taunton									
Assonet River	MA62-19	Outlet Forge Pond, Freetown toTisdale Pond Dam (NATID: MA03049) (north of Route 79/Elm Street intersection), Freetown.	0.90	Miles		X			
Canoe River	MA62-64	Headwaters in wetland east of Cow Hill, Sharon to inlet Beaumont Pond, Foxborough (formerly part of segment MA62-27).	3.10	Miles	X	X	X	X	
Canoe River	MA62-65	From outlet of Beaumont Pond, Foxborough to inlet of Hartwell School Pond, Mansfield (formerly part of segment MA62-27).	3.80	Miles		X			
Canoe River	MA62-66	From outlet of Hartwell School Pond, Mansfield to mouth at inlet Winnecunnet Pond, Norton (formerly part of segment MA62-27).	6.90	Miles		X			
Cedar Swamp River	MA62-44	Headwaters south of Freetown Street, Lakeville to inlet Forge Pond, Freetown (stream name changes to Assonet River at Lakeville/Freetown corporate boundary).	5.80	Miles		X			
Nemasket River	MA62-25	Headwaters, outlet Assawompset Pond, Lakeville/Middleborough to Middleborough WWTP (NPDES: MA0101591) discharge, Middleborough.	6.20	Miles		X			
Rattlesnake Brook	MA62-45	Headwaters east of Riggenbach Road, Fall River to mouth at confluence with Assonet River, Freetown.	3.20	Miles		X			
Rumford River	MA62-40	From outlet Norton Reservoir, Norton to mouth at confluence with Wading River forming headwaters Threemile River, Norton (formerly part of segment MA62-15).	4.50	Miles	X		X	X	
Satucket River	MA62-10	Headwaters, outlet Robbins Pond, East Bridgewater to mouth at confluence with the Matfield River, East Bridgewater.	5.60	Miles	X	X	X	X	
Three Mile River	MA62-56	Confluence of Wading and Rumford rivers, Norton to dam (NATID: MA03083) behind 66 South Street (Harodite Finishing Co.), Taunton (excluding the approximately 0.5 mile through Oakland Pond segment MA62136 and the appproximatley 1.0 mile through Mount Hope Mill Pond segment MA62122) (formerly part of segment MA62-16).	10.50	Miles	X		X	X	
Wading River	MA62-61	From outlet Barrowsville Pond, Norton to mouth at confluence with Rumford River, forming headwaters Threemile River, Norton (formely part of segment MA62-49 and MA62-17(2004)).	3.30	Miles	X	X	X	X	
Westfield									
Bartlett Brook	MA32-50	Headwaters (perennial portion), between Mountain and Prospect streets, Plainfield to mouth at confluence with Westfield River, Cummington.	2.00	Miles		X			

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Category 2 waters listed alphabetically by major watershed
"Attaining some uses; other uses not assessed"

					Uses Attained				
Water Body	**Segment ID**	**Description**	**Size**	**Units**	**Aesthetic**	**Fish, other Aquatic Life and Wildlife**	**Primary Contact Recreation**	**Secondary Contact Recreation**	**Shellfish Harvesting**
Bedlam Brook	MA32-33	Headwaters (perennial portion), north of Blandford Road, Blandford to mouth at confluence with Peebles Brook, Blandford.	2.80	Miles	X	X	X	X	
Bradley Brook	MA32-21	Headwaters, confluence Black and Stage brooks, Russell to mouth at confluence with Westfield River, Russell.	0.70	Miles	X		X	X	
Bronson Brook	MA32-45	Headwaters, north of Trouble Road, Cummington to mouth at confluence with West Falls Branch, Worthington. (formerly identified by the Massachusetts Stream Classification Program as West Branch).	4.20	Miles		X			
Depot Brook	MA32-17	Source, north of Beach Road, Washington to mouth at confluence with Yokum Brook (forming headwaters of West Branch Westfield River), Becket.	5.90	Miles	X	X	X	X	
Dickinson Brook	MA32-34	Source, confluence of Trumble Brook and Seymour Brook, Granville to mouth at confluence with Munn Brook, Granville.	3.40	Miles	X	X	X	X	
Factory Brook	MA32-42	Headwaters, east of Ridge Road, in Middlefield State Forest, Peru to mouth at confluence with West Branch Westfield River, Middlefield.	7.60	Miles		X			
Fuller Brook	MA32-64	Headwaters, outlet wetland west at Mongue Road, Peru to mouth at confluence with Middle Branch Westfield River, Worthington.	4.20	Miles		X			
Glendale Brook	MA32-10	Headwaters in a wetland in Peru State Forest, Peru to mouth at confluence with Middle Branch Westfield River, Middlefield.	6.00	Miles	X	X	X	X	
Great Brook	MA32-25	Source, outlet Congamond Lakes, Southwick to mouth at confluence with Westfield River, Westfield.	10.80	Miles	X		X	X	
Kearnery Brook	MA32-46	Headwaters, north of Powell Road and east of FAA Road, Cummington to mouth at confluence with Bronson Brook, Worthington.	3.20	Miles		X			
Kinne Brook	MA32-32	Headwaters (perennial portion), north of Adams Road, Worthington to mouth at confluence with Middle Branch Westfield River, Chester.	4.00	Miles	X	X	X	X	
Meadow Brook	MA32-11	Headwaters, outlet unnamed pond south of Route 116, Plainfield to mouth at confluence with Westfield River, Cummington.	4.60	Miles	X	X	X	X	
Middle Branch Westfield River	MA32-03	Outlet Littleville Dam, Chester/Huntington to mouth at confluence with Westfield River, Huntington.	1.10	Miles	X		X	X	
Middle Branch Westfield River	MA32-66	From Kinnebrook Road, Dayville (locality in Chester) to inlet of Littleville Lake, just upstream from boat ramp (off southern end of Kinnebrook Road), Chester.	0.60	Miles	X		X	X	
Mill Brook	MA32-49	Headwaters, south of Hawley Street, Plainfield to mouth at confluence with Westfield River, Cummington.	6.00	Miles		X			
Moose Meadow Brook	MA32-40	Headwaters, west of Bungay Mountain, east of New State Road, Montgomery to inlet Westfield Reservoir, Montgomery (formerly part of segment MA32-23).	2.90	Miles		X			

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					Uses Attained				
Water Body	**Segment ID**	**Description**	**Size**	**Units**	**Aesthetic**	**Fish, other Aquatic Life and Wildlife**	**Primary Contact Recreation**	**Secondary Contact Recreation**	**Shellfish Harvesting**
Munn Brook	MA32-59	Headwaters, outlet Winchell Reservoir, Granville to mouth at confluence with Little River, Westfield.	5.50	Miles		X			
North Branch Swift River	MA32-54	Headwaters, outlet small unnamed pond west of Grant Street, Plainfield to mouth at confluence with Swift River, Cummington.	6.90	Miles		X			
Paucatuck Brook	MA32-29	From outlet of Bearhole Reservoir, West Springfield to mouth at confluence with Westfield River, West Springfield.	1.50	Miles	X	X	X	X	
Pond Brook	MA32-24	Headwaters, outlet Chapin Pond, Westfield to mouth at confluence with Powdermill Brook, Westfield.	3.90	Miles	X	X	X	X	
Pond Brook	MA32-44	Headwaters, outlet Norwich Pond, Huntington to mouth at confluence with Westfield River, Huntington.	3.10	Miles	X	X			
Roaring Brook	MA32-30	Headwaters (perennial portion), north of Horse Hill in Huntington State Forest, east of County Road, Huntington to mouth at confluence with Westfield River, Montgomery.	4.30	Miles	X	X	X	X	
Roaring Brook	MA32-61	Headwaters, outlet small unnamed pond north of Lyman Road, Chester to mouth at confluence with West Branch Westfield River, Huntington.	4.50	Miles		X			
Sanderson Brook	MA32-31	Headwaters (perennial portion), in the Chester/Blandford State Forest, north of Chester Road, Blandford to mouth at confluence with West Branch Westfield River, Chester.	2.70	Miles	X	X	X	X	
Shaker Mill Brook	MA32-18	Headwaters, west of Watson Road, Washington to mouth at confluence with Depot Brook, Becket.	4.10	Miles	X	X	X	X	
Shaw Brook	MA32-52	Headwaters, north of Shaw Road, Windsor to mouth at confluence with Westfield Brook, Windsor.	2.20	Miles		X			
Stage Brook	MA32-60	Headwaters, confluence of Freeland Brook and Wigwam Brook, Russell to mouth at confluence with Black Brook (forming headwaters Bradley Brook), Russell.	1.00	Miles		X			
Stones Brook	MA32-48	Headwaters, outlet small unnamed pond north of Dyers Road, Ashfield to mouth at confluence with Swift River, Goshen.	4.70	Miles		X			
Swift River	MA32-12	Headwaters, west of Plainfield Road, Hawley to mouth at confluence with Westfield River at village of Swift River, Cummington.	11.30	Miles	X	X	X	X	
Tower Brook	MA32-47	Headwaters, north of Dodwells Road, Cummington to mouth at confluence with Westfield River, Chesterfield.	4.10	Miles		X			
Walker Brook	MA32-20	Headwaters, outlet Center Pond (north of YMCA Road), Becket to mouth at confluence with West Branch Westfield River, Chester.	7.10	Miles	X	X	X	X	
Wards Stream	MA32-15	Headwaters, south of Cold Street, Worthington to mouth at confluence with Watts Stream (forming headwaters Little River), Ringville (locality in Worthington).	5.10	Miles	X	X	X	X	

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Water Body	**Segment ID**	**Description**	**Size**	**Units**	**Aesthetic**	**Fish, other Aquatic Life and Wildlife**	**Primary Contact Recreation**	**Secondary Contact Recreation**	**Shellfish Harvesting**
Watts Stream	MA32-14	Headwaters, north of Buffington Hill Road, Worthington to mouth at confluence with Wards Stream (forming headwaters Little River), Ringville (locality in Worthington).	5.20	Miles	X	X	X	X	
West Branch Westfield River	MA32-01	Headwaters, confluence of Depot Brook and Yokum Brook, Becket to mouth at confluence with Westfield River, Huntington (HQW qualifier applies to portion of river upstream of Chester Center).	17.20	Miles	X	X	X	X	
Westfield Brook	MA32-51	Headwaters, outlet wetland north of Hill Cemetery Road, Windsor to mouth at confluence with Westfield River, Cummington.	8.60	Miles		X			
Westfield River	MA32-05	Confluence with Middle Branch Westfield River, Huntington to Route 20 bridge, Westfield.	17.70	Miles	X	X	X	X	
Westfield River	MA32-06	Route 20 bridge, Westfield to Westfield city boundary with West Springfield and Agawam.	1.90	Miles	X	X	X	X	
Westfield River	MA32-07	Westfield/West Springfield/Agawam city line to mouth at confluence with Connecticut River, Agawam.	8.50	Miles	X	X	X	X	
Yokum Brook	MA32-19	Headwaters, outlet Buckley-Dunton Lake, south of County Road, Becket to mouth at confluence with Depot Brook (forming headwaters of West Branch Westfield River), Becket.	4.00	Miles	X	X	X	X	

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Category 3 waters listed alphabetically by major watershed
"No uses assessed"

Water Body	Segment ID	Description	Size	Units
Blackstone				
Bell Pond	MA51009	Worcester.	10.00	Acres
Brooklawn Parkway Pond	MA51195	Shrewsbury.	2.00	Acres
Carpenter Reservoir	MA51015	Northbridge.	79.00	Acres
Chase Pond	MA51017	Douglas.	11.00	Acres
Chockalog Pond	MA51018	Uxbridge.	11.00	Acres
Clark Reservoir	MA51022	Sutton.	30.00	Acres
Crane Pond	MA51030	Blackstone.	1.00	Acres
Crystal Lake	MA51031	Douglas.	96.00	Acres
Dark Brook Pond	MA51034	Sutton.	18.00	Acres
Doctors Pond	MA51194	Uxbridge.	1.00	Acres
Dudley Pond	MA51041	Douglas.	8.00	Acres
Greene Brook	MA51-30	Headwaters, perennial portion, north of Linden Street, Douglas to mouth at confluence with Chockalog River, Douglas.	1.60	Miles
Hales Pond	MA51057	Wrentham.	4.00	Acres
Hathaway Pond	MA51059	Millbury/Sutton.	8.00	Acres
Holden Reservoir 1	MA51063	Holden.	129.00	Acres
Holden Reservoir 2	MA51064	Holden.	51.00	Acres
Houghton Pond	MA51067	Uxbridge.	2.00	Acres
Howe Pond	MA51069	Millbury.	4.00	Acres
Hunt Pond	MA51072	Douglas.	2.00	Acres
Joels Pond	MA51076	Uxbridge.	11.00	Acres
Joes Rock Pond	MA51077	Wrentham.	12.00	Acres
Kettle Brook Reservoir No. 1	MA51079	Leicester.	11.00	Acres
Kettle Brook Reservoir No. 2	MA51080	Leicester.	29.00	Acres
Kettle Brook Reservoir No. 3	MA51081	Paxton/Leicester.	36.00	Acres
Kettle Brook Reservoir No. 4	MA51082	Paxton.	114.00	Acres
Lake Hiawatha	MA51062	Bellingham/Blackstone.	58.00	Acres
Lynde Brook Reservoir	MA51090	Leicester.	130.00	Acres
Martin Street Pond	MA51095	Douglas.	3.00	Acres
Merrill Pond No. 3	MA51098	Sutton.	13.00	Acres
Merrill Pond No. 4	MA51099	Sutton.	20.00	Acres
Nipmuck Pond	MA51111	Mendon.	85.00	Acres
Number 2 Pond	MA51115	Sutton/Oxford.	9.00	Acres
Peabody Pond	MA51119	Uxbridge.	6.00	Acres
Pout Pond	MA51121	Uxbridge.	9.00	Acres
Pout Pond	MA51122	Boylston.	14.00	Acres
Pratts Pond	MA51124	Grafton.	4.00	Acres

Category 3 waters listed alphabetically by major watershed
"No uses assessed"

Water Body	Segment ID	Description	Size	Units
Ramshorn Pond	MA51126	Sutton/Millbury.	131.00	Acres
Reservoir No. 4	MA51128	Sutton.	10.00	Acres
Schoolhouse Pond	MA51144	Sutton.	7.00	Acres
Sewall Pond	MA51191	Boylston.	13.00	Acres
Silver Hill Pond	MA51149	Milford.	6.00	Acres
Slaughterhouse Pond	MA51153	Millbury/Sutton.	10.00	Acres
Stoneville Reservoir	MA51161	Auburn.	60.00	Acres
Stump Pond	MA51162	Oxford.	20.00	Acres
Tatnuck Brook	MA51-48	Headwaters, south of Brennan Way, Holden to inlet Holden Reservoir 1, Holden.	1.30	Miles
Town Farm Pond	MA51168	Sutton.	6.00	Acres
Whitin Reservoir	MA51179	Douglas.	342.00	Acres
Windle Pond	MA51184	Grafton/Shrewsbury.	4.00	Acres
Boston Harbor: Mystic				
Bellevue Pond	MA71004	Medford.	2.00	Acres
Pond Brook	MA71-16	Headwaters, outlet Horn Pond, Woburn to mouth at inlet Wedge Pond, Winchester.	1.00	Miles
Sales Creek	MA71-12	Headwaters near Route 145, Revere to Bennington Street tidegate/confluence with Belle Isle Inlet, Boston/Revere.	0.01	Square Miles
Spot Pond	MA71039	Stoneham/Medford.	290.00	Acres
Boston Harbor: Neponset				
Blue Hills Reservoir	MA73004	Quincy.	7.00	Acres
Buckmaster Pond	MA73006	Westwood.	34.00	Acres
Flynns Pond	MA73019	Medfield.	7.00	Acres
Hammer Shop Pond	MA73023	Sharon.	2.00	Acres
Lymans Pond	MA73021	Westwood.	25.00	Acres
Sprague Pond	MA73053	Boston/Dedham.	7.00	Acres
Unnamed Tributary	MA73-10	Headwaters, outlet Turner Pond, Walpole to confluence with Neponset River, Walpole.	0.40	Miles
Unnamed Tributary	MA73-14	Headwaters, outlet Willet Pond, Walpole/Norwood, to inlet Ellis Pond, Norwood.	0.40	Miles
Boston Harbor: Weymouth & Weir				
Accord Pond	MA74030	Hingham/Norwell/Rockland (formerly reported as MA94002).	103.00	Acres
Eel River	MA74-21	Headwaters, east of Route 228, near West Moreland Street, Hingham to mouth at confluence with Plymouth River, Hingham.	1.50	Miles
Old Quincy Reservoir	MA74017	Braintree.	27.00	Acres
Trout Brook	MA74-12	Headwaters southwest of South Street, Holbrook to inlet Lake Holbrook, Holbrook.	1.20	Miles
Unnamed Tributary	MA74-19	Unnamed Tributary to Plymouth River, headwaters, west of Route 53 (Whiting Street), Hingham to mouth at confluence with Plymouth River, Hingham.	1.10	Miles
Buzzards Bay				
Abner Pond	MA95001	Plymouth.	9.00	Acres
Agawam River	MA95-28	Outlet Mill Pond, Wareham to Wareham WWTP outfall, Wareham.	0.61	Miles
Bates Pond	MA95007	Carver.	19.00	Acres

Category 3 waters listed alphabetically by major watershed
"No uses assessed"

Water Body	Segment ID	Description	Size	Units
Big Rocky Pond	MA95119	(Rocky Pond) Plymouth.	18.00	Acres
Big Sandy Pond	MA95011	Plymouth.	133.00	Acres
Blackmore Reservoir	MA95015	Wareham.	43.00	Acres
Buttonwood Park Pond	MA95020	New Bedford.	12.00	Acres
Cedar Dell Lake	MA95021	Dartmouth.	23.00	Acres
Cedar Lake	MA95-96344	Falmouth (formerly reported as segment MA96344).	20.00	Acres
Deer Pond	MA95036	Plymouth.	9.00	Acres
Dicks Pond	MA95038	Wareham.	42.00	Acres
East Head Pond	MA95177	Carver/Plymouth.	92.00	Acres
Ezekiel Pond	MA95051	Plymouth.	36.00	Acres
Fawn Pond	MA95053	Plymouth.	44.00	Acres
Five Mile Pond	MA95056	Plymouth.	22.00	Acres
Flax Pond	MA95-96087	Bourne (formerly reported as segment MA96087).	20.00	Acres
Gallows Pond	MA95059	Plymouth.	49.00	Acres
Glen Charlie Pond	MA95061	Wareham.	157.00	Acres
Horseshoe Pond	MA95075	Wareham.	59.00	Acres
Kings Pond	MA95078	Plymouth.	22.00	Acres
Little Long Pond	MA95088	Plymouth.	47.00	Acres
Little Long Pond	MA95089	Wareham/Plymouth.	12.00	Acres
Little Rocky Pond	MA95091	Plymouth.	10.00	Acres
Little Sandy Pond	MA95092	Plymouth.	29.00	Acres
Little West Pond	MA95093	Plymouth.	25.00	Acres
Long Duck Pond	MA95095	Plymouth.	22.00	Acres
Long Pond	MA95096	Plymouth.	207.00	Acres
Mare Pond	MA95172	Plymouth.	13.00	Acres
Micajah Pond	MA95102	Plymouth.	20.00	Acres
New Long Pond	MA95112	Plymouth.	21.00	Acres
Rocky Meadow Brook Pond	MA95118	Carver.	11.00	Acres
Rocky Pond	MA95179	Plymouth.	20.00	Acres
Round Pond	MA95123	Plymouth.	20.00	Acres
Sand Pond	MA95127	Wareham.	14.00	Acres
Sandy Pond	MA95128	Wareham.	15.00	Acres
South Meadow Brook Pond	MA95139	Carver.	25.00	Acres
South Meadow Pond	MA95140	Carver.	22.00	Acres
Southwest Atwood Bog Pond	MA95141	Carver.	12.00	Acres
Spectacle Pond	MA95142	Wareham.	41.00	Acres
Three Cornered Pond	MA95145	Plymouth.	12.00	Acres
Tinkham Pond	MA95148	Mattapoisett/Acushnet.	17.00	Acres

Category 3 waters listed alphabetically by major watershed
"No uses assessed"

Water Body	Segment ID	Description	Size	Units
Union Pond	MA95152	Wareham.	17.00	Acres
Unnamed Tributary	MA95-57	Outlet Cornell Pond, Dartmouth to confluence with Shingle Island River, Dartmouth.	1.00	Miles
Vaughn Pond	MA95153	Carver.	20.00	Acres
Wankinco River	MA95-85	From the outlet of Tihonet Pond, Wareham to the inlet of Parker Mills Pond, Wareham (formerly part of segment MA95-30).	0.70	Miles
Wankinco River	MA95-86	Headwaters, outlet East Head Pond, Carver/Plymouth (follows border through cranberry bogs to inlet Tihonet Pond, Carver/Plymouth (formerly part of segment MA95-30).	3.60	Miles
Whites Pond	MA95168	Plymouth.	34.00	Acres
Cape Cod				
Clapps Pond	MA96035	Provincetown (area associated with Cape Cod National Seashore designated as ORW).	40.00	Acres
Depot Pond	MA96061	Eastham.	26.00	Acres
Elbow Pond	MA96077	Brewster.	32.00	Acres
Flax Pond	MA96090	Dennis.	15.00	Acres
Goose Pond	MA96106	Chatham.	35.00	Acres
Gull Pond	MA96123	Wellfleet.	104.00	Acres
Herring Pond	MA96133	Eastham.	42.00	Acres
Herring Pond	MA96134	Wellfleet.	18.00	Acres
Hoxie Pond	MA96146	Sandwich.	8.00	Acres
Kinnacum Pond	MA96163	Wellfleet.	2.00	Acres
Lake Elizabeth	MA96080	Barnstable.	6.00	Acres
Long Pond	MA96180	Yarmouth.	54.00	Acres
Miss Thachers Pond	MA96258	Yarmouth.	6.00	Acres
North Pond	MA96225	Barnstable.	4.00	Acres
Nye Pond	MA96228	Sandwich.	6.00	Acres
Pilgrim Lake	MA96246	Orleans.	38.00	Acres
Rushy Marsh Pond	MA96266	Barnstable.	14.00	Acres
Scargo Lake	MA96279	Dennis.	54.00	Acres
Schoolhouse Pond	MA96281	Chatham.	20.00	Acres
Shallow Pond	MA96285	Barnstable.	76.00	Acres
Shubael Pond	MA96293	Barnstable.	55.00	Acres
Smith Pond	MA96301	Brewster.	11.00	Acres
Village Pond	MA96329	Truro.	2.00	Acres
Charles				
Brookline Reservoir	MA72010	Brookline.	21.00	Acres
Chestnut Hill Reservoir	MA72023	Boston.	82.00	Acres
Farm Pond	MA72039	Sherborn.	125.00	Acres
Halls Pond	MA72043	Brookline.	0.60	Acres
Jennings Pond	MA72053	Natick.	7.00	Acres
Little Farm Pond	MA72064	Sherborn.	24.00	Acres

Category 3 waters listed alphabetically by major watershed
"No uses assessed"

Water Body	Segment ID	Description	Size	Units
Louisa Lake	MA72068	Milford.	8.00	Acres
Norumbega Reservoir	MA72086	[North Basin] Weston.	14.00	Acres
Norumbega Reservoir	MA72087	[South Basin] Weston.	38.00	Acres
Sandy Pond	MA72105	Lincoln.	157.00	Acres
South End Pond	MA72109	Millis.	30.00	Acres
Stony Brook	MA72-37	Headwaters, outlet Turtle Pond, Boston to culvert entrance, Boston (two culverted portions totaling approximately 740 feet (0.14mile)).	1.60	Miles
Stony Brook Reservoir	MA72114	Waltham/Weston.	64.00	Acres
Todd Pond	MA72117	Lincoln.	9.00	Acres
Walker Pond	MA72126	Millis.	9.00	Acres
Waseeka Sanctuary Pond	MA72155	Holliston.	17.00	Acres
Weston Reservoir	MA72134	Weston.	59.00	Acres
Weston Station Pond	MA72135	Weston.	38.00	Acres
Chicopee				
Adams Pond	MA36001	Oakham.	30.00	Acres
Bemis Road Pond	MA36012	Hubbardston.	16.00	Acres
Bennett Street Pond	MA36014	Palmer.	6.00	Acres
Bickford Pond	MA36015	Hubbardston/Princeton.	163.00	Acres
Brigham Pond	MA36020	Hubbardston.	45.00	Acres
Brooks Pond	MA36022	Petersham.	87.00	Acres
Canesto Brook	MA36-36	Headwaters, perennial portion, northwest of Hubbardston State Forest near Hubbardston/Templeton town line to mouth at confluence with Ware River, Barre.	7.30	Miles
Carter Pond	MA36029	Petersham.	44.00	Acres
Cloverdale Street Pond	MA36036	Rutland.	19.00	Acres
Comins Pond	MA36037	Warren.	26.00	Acres
Conant Brook Reservoir	MA36038	Monson.	4.00	Acres
Cranberry Meadow Pond	MA36040	Spencer/Charlton.	69.00	Acres
Crystal Lake	MA36043	Palmer.	16.00	Acres
Cunningham Pond	MA36044	Hubbardston.	27.00	Acres
Cusky Pond	MA36045	New Braintree.	28.00	Acres
Demond Pond	MA36051	Rutland.	120.00	Acres
Dimmock Pond	MA36053	Springfield.	9.00	Acres
East Branch Fever Brook	MA36-47	Headwaters, outlet Brooks Pond, Petersham to mouth at inlet Quabbin Reservoir, Petersham.	5.20	Miles
Edson Pond	MA36180	Rutland.	36.00	Acres
Fivemile Pond	MA36061	Springfield.	36.00	Acres
Fivemile Pond South	MA36182	Springfield.	4.00	Acres
Gaston Pond	MA36065	Barre.	15.00	Acres
Haviland Pond	MA36069	Ludlow.	25.00	Acres

Category 3 waters listed alphabetically by major watershed
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Water Body	Segment ID	Description	Size	Units
Hop Brook	MA36-32	Headwaters, perennial portion, upstream of West Street, New Salem to mouth at inlet Quabbin Reservoir, New Salem.	3.70	Miles
Horse Pond	MA36072	North Brookfield.	63.00	Acres
Knights Pond	MA36077	Belchertown.	36.00	Acres
Lovewell Pond	MA36085	Hubbardston.	82.00	Acres
Mare Meadow Reservoir	MA36090	Westminster/Hubbardston.	240.00	Acres
Mare Meadow Reservoir North	MA36178	Westminster.	38.00	Acres
Middle Branch Swift River	MA36-33	Headwaters just north of portions of Wendell and New Salem State Forests (south of the Swift River School), Wendell to mouth at inlet Quabbin Reservoir, New Salem.	6.90	Miles
Moose Hill Reservoir	MA36179	Spencer/Leicester.	52.00	Acres
Moulton Pond	MA36098	Rutland.	65.00	Acres
Muddy Pond	MA36102	Oakham/Rutland.	23.00	Acres
Murphy Pond	MA36103	Ludlow.	6.00	Acres
Palmer Reservoir	MA36115	Palmer.	8.00	Acres
Paradise Lake	MA36116	Monson.	17.00	Acres
Pattaquattic Pond	MA36117	Palmer.	18.00	Acres
Peppers Mill Pond	MA36121	Ware.	11.00	Acres
Perry Hill Pond	MA36122	Hubbardston.	23.00	Acres
Queen Lake	MA36132	Phillipston.	139.00	Acres
Shaw Pond	MA36138	Leicester.	64.00	Acres
Springfield Reservoir	MA36145	Ludlow.	393.00	Acres
Stone Bridge Pond	MA36148	Templeton.	32.00	Acres
Thayer Pond	MA36181	Rutland.	46.00	Acres
Thompson Lake	MA36154	Palmer.	34.00	Acres
Thompsons Pond	MA36155	Spencer.	116.00	Acres
Town Barn Beaver Pond	MA36156	Petersham.	20.00	Acres
Waite Pond	MA36161	Hubbardston.	35.00	Acres
West Branch Fever Brook	MA36-34	Headwaters, perennial portion, just north (upstream) of Route 122, Petersham to mouth at inlet Quabbin Reservoir, Petersham.	3.40	Miles
West Branch Ware River	MA36-02	Headwaters, outlet Brigham Pond, Hubbardston to mouth at confluence with East Branch Ware River (forming headwaters of Ware River), Barre.	4.50	Miles
Concord (SuAsCo)				
Assabet Brook	MA82B-17	Headwaters, outlet Fletchers Pond, Stow to mouth at confluence with the Assabet River, Stow.	2.00	Miles
Cedar Swamp Pond	MA82016	Westborough.	17.00	Acres
Clamshell Pond	MA82018	Clinton.	24.00	Acres
Denny Brook	MA82A-27	Headwaters, perennial portion, outlet unnamed pond west of South Street, Westborough to mouth at confluence with Jackstraw Brook, Westborough.	0.60	Miles
Elm Street Pond	MA82032	Chelmsford/Carlisle.	65.00	Acres
Farrar Pond	MA82036	Lincoln.	83.00	Acres
Fiske Street Pond	MA82037	Carlisle/Chelmsford.	38.00	Acres

Category 3 waters listed alphabetically by major watershed
"No uses assessed"

Water Body	Segment ID	Description	Size	Units
Fort Pond	MA82043	Littleton.	102.00	Acres
Fort Pond Brook	MA82B-13	From source in a wetland just west of Fort Pond, Littleton to mouth at inlet Warners Pond, Concord.	10.20	Miles
Gates Pond	MA82047	Berlin.	73.00	Acres
Gates Pond Brook	MA82B-10	Headwaters, outlet Gates Pond, Berlin to mouth at confluence with the Assabet River, Berlin.	1.00	Miles
Gleasons Pond	MA82048	Framingham.	11.00	Acres
Indian Brook	MA82A-23	Headwaters, outlet Icehouse Pond, Hopkinton to the inlet of Hopkinton Reservoir, Hopkinton (formerly part of segment MA82A-12).	2.30	Miles
Jackstraw Brook	MA82A-28	From the most downstream crossing of Upton Road (first crossing south of Hopkinton Road), Westborough to mouth at inlet of Cedar Swamp Pond, Westborough.	1.50	Miles
Jackstraw Brook	MA82A-32	Headwaters, perennial portion west of Upton Road, Westborough to the most downstream crossing of Upton Road (first crossing south of Hopkinton Road), Westborough.	0.40	Miles
Learned Pond	MA82069	Framingham.	34.00	Acres
Milham Reservoir	MA82077	Marlborough.	67.00	Acres
Nagog Pond	MA82082	Littleton/Acton.	278.00	Acres
Piccadilly Brook	MA82A-30	Headwaters, outlet Westboro Reservoir, Westborough to mouth at inlet to Cedar Swamp Pond, Westborough.	2.00	Miles
Rutters Brook	MA82A-29	From headwaters near Robin Road, Westborough to mouth at confluence with Jackstraw Brook, Westborough.	2.00	Miles
Second Division Brook	MA82B-09	Headwaters, outlet small unnamed pond north of Waltham Street, Maynard to mouth at confluence with the Assabet River, Concord.	2.90	Miles
Smith Pond	MA82099	Northborough.	16.00	Acres
Solomon Pond	MA82100	Northborough.	21.00	Acres
Spencer Brook	MA82B-15	From the outlet of an unnamed pond north of Bellows Hill, Carlisle to mouth at inlet Angiers Pond, Concord.	3.80	Miles
Taylor Brook	MA82B-08	Headwaters, outlet Puffer Pond, Maynard to mouth at confluence with the Assabet River, Maynard.	1.80	Miles
Tripp Pond	MA82107	Hudson.	4.00	Acres
Unnamed Tributary	MA82B-23	Unnamed tributary to the Assabet River; headwaters, outlet small pond south of Athens Street, Stow to mouth at confluence with Assabet River (backwater area), Stow.	1.10	Miles
West Pond	MA82115	Bolton.	19.00	Acres
Westborough Reservoir	MA82114	Westborough.	41.00	Acres
White Pond	MA82118	Concord.	36.00	Acres
White Pond	MA82119	Hudson/Stow.	49.00	Acres
Whitehall Brook	MA82A-11	Headwaters, outlet Whitehall Reservoir, Hopkinton to mouth at confluence with the Sudbury River, Westborough.	3.50	Miles
Williams Lake	MA82121	Marlborough.	69.00	Acres
Connecticut				
Atkins Reservoir	MA34006	Shutesbury/Amherst.	46.00	Acres
Brickyard Brook	MA34-13	Headwaters, perennial portion, Westfield to mouth at confluence with Manhan River, Westfield.	1.60	Miles
Buffum Brook	MA34-49	Headwaters, west of West Pelham Road, Shutesbury to mouth at confluence with Harris Brook, (forming headwaters Amethyst Brook), Pelham.	3.10	Miles
Cooley Brook	MA34-20	Headwaters, Longmeadow to mouth at confluence with Connecticut River, Longmeadow.	1.40	Miles
Danks Pond	MA34019	Northampton/Easthampton.	3.00	Acres

Category 3 waters listed alphabetically by major watershed
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Water Body	Segment ID	Description	Size	Units
Dean Brook	MA34-50	Headwaters, east of West Pelham Road (at mouth of Baker Brook), Shutesbury to mouth at confluence with Adams Brook (in small "diversion pool" for Atkins Reservoir), Shutesbury.	2.40	Miles
Factory Hollow Pond	MA34021	Amherst.	12.00	Acres
Green Pond	MA34028	Montague.	15.00	Acres
Harris Brook	MA34-48	Headwaters, northeast of Enfield Road, Pelham to Intake Reservoir Dam (NATID: MA01270) outlet, Pelham (excluding approximately 0.2 miles through Hawley Reservoir, Pelham).	1.20	Miles
Joe Wright Brook	MA34-52	Headwaters south of Hemenway Trail, Williamsburg to mouth at confluence with Mill River, Williamsburg.	3.30	Miles
Lake Pleasant	MA34070	Montague.	54.00	Acres
Loon Pond	MA34045	Springfield.	26.00	Acres
Lower Highland Lake	MA34047	Goshen.	91.00	Acres
Manhan River	MA34-10	Headwaters, northeast of Norwich Pond, Huntington to inlet Tighe Carmody Reservoir, Southampton (thru White Reservoir formely segment MA34100).	6.60	Miles
Mill Brook	MA34-55	Headwaters, outlet Stevens Swamp, Warwick to mouth at confluence with Connecticut River, Northfield.	7.70	Miles
Mill River Diversion	MA34-32	Headwaters, outlet Paradise Pond, Northampton to mouth at confluence with Oxbow (east of Old Springfield Road), Northampton (thru Hulberts Pond formely segment MA34036).	2.50	Miles
Mountain Street Reservoir	MA34056	Williamsburg/Hatfield/Whately.	67.00	Acres
Nine Mile Pond	MA34127	Wilbraham (PALIS/Segment changed from 36107 to 34127, TRD 6/21/02).	33.00	Acres
Northampton Reservoir	MA34059	Whately.	80.00	Acres
Northfield Mountain Reservoir	MA34061	Erving.	237.00	Acres
Nurse Brook	MA34-59	Headwaters, west of Pratt Corner Road, Shutesbury to mouth at confluence with Adams Brook (in small "diversion pool" for Atkins Reservoir), Shutesbury.	1.20	Miles
Pine Island Lake	MA34069	Westhampton.	55.00	Acres
Plympton Brook Pond	MA34071	Wendell.	5.00	Acres
Potash Brook	MA34-12	Headwaters, perennial portion, Southampton to confluence with Manhan River, Southampton.	1.00	Miles
Raspberry Brook	MA34-22	From Massachusetts/Connecticut border to mouth at confluence with Connecticut River, Longmeadow.	1.80	Miles
Rice Brook	MA34-47	Headwaters, perennial portion, south of Burt Road, Westhampton to mouth at confluence with Sodom Brook, Westhampton.	1.10	Miles
Roberts Meadow Reservoir	MA34076	Northampton.	22.00	Acres
Rogers Brook	MA34-51	Headwaters east of Oak Hill Road near the Goshen/Ashfield border to mouth at confluence with West Branch Mill River, Goshen.	2.60	Miles
Sacket Brook	MA34-45	Headwaters, perennial portion, north of Southampton Road, Montgomery to mouth at confluence with Manhan River, Southampton.	2.10	Miles
Sawmill River	MA34-40	Headwaters, outlet Lake Wyola, Shutesbury to Dudleyville Road, Leverett (formerly part of MA34-26).	2.00	Miles
Sawyer Ponds	MA34078	[North Basin] Northfield.	9.00	Acres
Sawyer Ponds	MA34079	[South Basin] Northfield.	12.00	Acres
Scarboro Brook	MA34-46	Headwaters, outlet Scarboro Pond, Belchertown to mouth at confluence with Hop Brook, Belchertown.	2.30	Miles
Schneelock Brook	MA34-44	Headwaters, west of Newhouse Street, Springfield to mouth at confluence with South Branch Mill River, Springfield.	1.30	Miles

Category 3 waters listed alphabetically by major watershed
"No uses assessed"

Water Body	Segment ID	Description	Size	Units
Schoolhouse Brook	MA34-43	Headwaters, southeast of Connor Reservoir, Holyoke to mouth at confluence with Goldine Brook, West Springfield.	3.10	Miles
Shattuck Brook	MA34-57	Headwaters, confluence Keets and Beaver Meadow brooks, Leyden to mouth at confluence with Fall River, Bernardston.	2.40	Miles
Silver Lake	MA34084	Agawam.	9.00	Acres
Sodom Brook	MA34-53	Headwaters, outlet small unnamed pond north of Crowley Road, Westhampton to mouth at confluence with North Branch Manhan River, Westhampton.	3.10	Miles
Tighe Carmody Reservoir	MA34089	Southampton.	353.00	Acres
Unnamed Tributary	MA34-31	Headwater, outlet Lake Warner, Hadley to mouth at confluence with Connecticut River, Hadley.	0.50	Miles
West Brook	MA34-58	Headwaters, outlet Northampton Reservoir (Old Northampton Reservoir), Whately to mouth at confluence with Mill River, Hatfield.	4.00	Miles
White Brook	MA34-14	Headwaters, perennial portion, Easthampton to mouth at inlet Nashawannuck Pond, Easthampton.	1.80	Miles
Deerfield				
Bog Pond	MA33003	Savoy.	35.00	Acres
Burnett Pond	MA33005	Savoy.	18.00	Acres
Fox Brook Upper Reservoir	MA33006	Colrain.	3.00	Acres
Goodnow Road Pond	MA33007	Buckland.	11.00	Acres
Hallockville Pond	MA33009	Plainfield/Hawley.	18.00	Acres
Highland Pond	MA33032	Greenfield.	2.00	Acres
Kinsman Brook	MA33-124	Headwaters north of Colrain Stage Road, Heath to confluence with Davenport Brook forming headwaters Taylor Brook, Heath.	1.80	Miles
Maynard Pond	MA33011	Greenfield.	3.00	Acres
Mcleod Pond	MA33012	Colrain.	41.00	Acres
Mt. Brook Reservoir	MA33024	Colrain.	1.00	Acres
Newell Pond	MA33013	Greenfield.	0.90	Acres
North Brook	MA33-126	Perennial portion north of Harwood Road, Hawley to confluence with Chickley River, Hawley.	1.20	Miles
Papoose Lake	MA33023	Heath.	14.00	Acres
Phelps Brook Reservoir	MA33030	Monroe.	0.05	Acres
Rice Brook	MA33-125	Perennial portion east of Legate Hill Road, Charlemont to confluence with Deerfield River, Charlemont.	3.10	Miles
Tannery Pond	MA33020	Savoy.	0.50	Acres
Todd Brook	MA33-127	Headwaters east of Coon Hill, Charlemont to confluence with Deerfield River, Charlemont.	1.20	Miles
Unnamed Tributary	MA33-128	Unnamed tributary to Deerfield River known as 'Bear Swamp Outflow', from headwaters north of Tunnel Road, Rowe to confluence with Deerfield River, Rowe.	1.30	Miles
Upper Greenfield Reservoir	MA33021	Leyden.	6.00	Acres
Upper Highland Springs Reservoir	MA33025	Ashfield.	2.00	Acres
Upper Reservoir Bear Swamp	MA33026	Rowe.	108.00	Acres
Farmington				
Bradley Brook	MA31-37	Headwaters, perennial portion, west of Ridgeview Terrace, Southwick to MA/CT border, Southwick.	1.40	Miles

Category 3 waters listed alphabetically by major watershed
"No uses assessed"

Water Body	Segment ID	Description	Size	Units
Buck River	MA31-38	Headwaters draining wetland just south of Morley Hillard Crank Road, Sandisfield to inlet Abbey Lake, Sandisfield (formerly part of segment MA31-12).	1.70	Miles
Cherry Brook	MA31-18	Headwaters, perennial portion, north of York Lake Road, Sandisfield to mouth at confluence with Sandy Brook, Sandisfield.	2.40	Miles
Cranberry Pond	MA31008	Tolland.	75.00	Acres
Creek Pond	MA31009	(Watson Pond) Otis.	52.00	Acres
Dimmock Brook Pond	MA31010	Otis.	15.00	Acres
Ellis Brook	MA31-35	Headwaters, outlet Shaughnessy Swamp, north of Route 57, Granville to mouth at confluence with Valley Brook, Granville.	0.80	Miles
Hall Pond Brook	MA31-34	Headwaters, outlet Hall Pond, Tolland to mouth at confluence with Babcock Brook (forming headwaters Hubbard Brook), Tolland.	2.30	Miles
Hayden Pond	MA31016	Otis.	28.00	Acres
Long Bow Lake	MA31019	Becket.	26.00	Acres
Lower Spectacle Pond	MA31020	Sandisfield.	70.00	Acres
North Branch Silver Brook	MA31-25	Headwaters, outlet Atwater Pond, Sandisfield to mouth at confluence with South Branch Silver Brook (forming headwaters Silver Brook), Sandisfield.	3.20	Miles
Potash Brook	MA31-36	Headwaters, outlet wetland east of North Lane, Granville to mouth at confluence with Valley Brook, Granville.	1.30	Miles
Royal Pond	MA31034	Otis/Monterey.	7.00	Acres
Silver Shield Pond	MA31054	Becket.	10.00	Acres
Unnamed Tributary	MA31-05	Unnamed tributary to Shaw Pond, source in wetlands southwest of Route 90 and east of Route 20, Becket to mouth at inlet Shaw Pond, Becket (excluding "gravel pit" pond).	1.30	Miles
Ward Pond	MA31047	Becket.	27.00	Acres
West Lake	MA31050	Sandisfield.	60.00	Acres
White Lily Pond	MA31051	Otis.	62.00	Acres
French				
Bartons Brook	MA42-08	Headwaters, outlet Stiles Reservoir, Leicester to mouth at inlet Greenville Pond West, Leicester.	1.10	Miles
Burncoat Pond	MA42007	Leicester/Spencer.	115.00	Acres
Easterbrook Pond	MA42017	Dudley.	5.00	Acres
Greenville Pond West	MA42022	Leicester.	6.00	Acres
Hayden Pond	MA42024	Dudley.	44.00	Acres
Henshaw Pond	MA42025	Leicester.	37.00	Acres
Hultered Pond	MA42072	Charlton.	4.00	Acres
Little Nugget Lake	MA42032	Charlton.	13.00	Acres
Little River	MA42-14	Outlet Buffum Pond, Oxford to mouth at confluence with French River, Oxford (formerly part of segment MA42-09).	1.30	Miles
Merino Pond	MA42036	Dudley.	75.00	Acres
Mine Brook	MA42-16	Headwaters (perennial portion), Webster to mouth at inlet Club Pond, Webster.	1.40	Miles
New Pond	MA42037	Dudley.	33.00	Acres
Nipmuck Pond	MA42039	Webster.	20.00	Acres
Peter Pond	MA42042	Dudley.	42.00	Acres

Category 3 waters listed alphabetically by major watershed
"No uses assessed"

Water Body	Segment ID	Description	Size	Units
Putnam Pond	MA42046	Charlton.	20.00	Acres
Robinson Pond	MA42047	Oxford.	99.00	Acres
Slaters Pond	MA42053	Oxford.	105.00	Acres
Snow Pond	MA42054	Charlton.	1.00	Acres
Stiles Reservoir	MA42055	Spencer/Leicester.	309.00	Acres
Town Meadow Brook	MA42-02	Headwaters, outlet Dutton Pond, Leicester to mouth at inlet Greenville Pond, Leicester.	1.90	Miles
Unnamed Tributary	MA42-12	Unnamed tributary to Wellington Brook, perennial portion from Depot Road, Oxford to confluence with Wellington Brook, Oxford.	0.20	Miles
Unnamed Tributary	MA42-19	Unnamed tributary to the French River on the 1982 USGS quad as 'Lowes Brook' , from the outlet of Lowes Pond, Oxford to mouth at confluence with French River, Oxford.	1.30	Miles
Unnamed Tributary	MA42-20	Unnamed tributary to South Fork locally known as 'Potters Brook', from outlet of Old Mill Pond Dam ((NAT ID: MA01833), Charlton to mouth at confluence with South Fork, Charlton.	0.90	Miles
Watson Millpond	MA42063	Spencer.	2.00	Acres
Wee Laddie Pond	MA42065	Charlton.	6.00	Acres
Housatonic				
Anthony Brook	MA21-10	Headwaters, outlet Anthony Pond, Dalton to mouth at confluence with Wahconah Falls Brook, Dalton.	2.60	Miles
Ashley Lake	MA21003	Washington.	94.00	Acres
Card Pond	MA21015	West Stockbridge.	11.00	Acres
Churchill Brook	MA21-34	Headwaters, perennial portion in the Pittsfield State Forest, Hancock (north of Honwee Mountain, Lanesborough) to mouth at inlet Onota Lake, Pittsfield.	2.80	Miles
Cleveland Brook Reservoir	MA21019	Hinsdale.	155.00	Acres
Cookson Pond	MA21021	New Marlborough.	67.00	Acres
Crane Lake	MA21025	West Stockbridge.	27.00	Acres
East Indies Pond	MA21029	New Marlborough.	72.00	Acres
Farnham Reservoir	MA21033	Washington.	41.00	Acres
Fenton Brook	MA21-35	Headwaters south of Jug End Road, Egremont (west of Mt. Bushnell, Sheffield), to mouth at confluence with Karner Brook, Egremont.	2.40	Miles
Hayes Pond	MA21051	Otis.	46.00	Acres
Mill Pond	MA21069	Egremont.	10.00	Acres
Seekonk Brook	MA21-22	Headwaters, outlet of small impoundment east of West Road, Alford to mouth at confluence with the Green River, Great Barrington.	4.80	Miles
Tyler Brook	MA21-32	Headwaters, northwest of Driscoll Road, Windsor to mouth at confluence with Windsor Brook, Windsor.	2.60	Miles
Unnamed Tributary	MA21-24	Headwaters, outlet Mill Pond, Egremont to mouth at confluence with Hubbard Brook, Egremont.	1.50	Miles
Upper Sackett Reservoir	MA21113	Hinsdale.	19.00	Acres
Welch Brook	MA21-33	Headwaters, northeast of Tully Mountain, Hinsdale to mouth at confluence with unnamed tributary to Plunkett Reservoir, Hinsdale.	1.70	Miles
Windsor Reservoir	MA21119	Hinsdale/Windsor.	74.00	Acres
Hudson: Hoosic				
Hemlock Brook	MA11-09	Headwaters, perennial portion, south of Route 2 in the Taconic Trail State Park, Williamstown to mouth at confluence with the Hoosic River, Wiliamstown.	7.10	Miles

Category 3 waters listed alphabetically by major watershed
"No uses assessed"

Water Body	Segment ID	Description	Size	Units
Mcdonald Brook	MA11-16	Source, southeast of Woodchuck Hill, Windsor to mouth at confluence with South Brook, Cheshire.	3.00	Miles
Mt. Williams Reservoir	MA11010	North Adams.	46.00	Acres
Notch Reservoir	MA11011	North Adams.	12.00	Acres
Tunnel Brook	MA11-26	Headwaters, outlet small unnamed pond east of West Shaft Road, North Adams to mouth at confluence with Phillips Creek, North Adams.	1.70	Miles
Windsor Lake	MA11016	North Adams.	24.00	Acres
Ipswich				
Beaver Pond	MA92002	Beverly.	19.00	Acres
Black Brook	MA92-19	Outlet Cutler Pond, Hamilton to confluence with Ipswich River, Hamilton.	3.60	Miles
Bradford Pond	MA92005	North Reading.	14.00	Acres
Creighton Pond	MA92011	Middleton.	19.00	Acres
Eisenhaures Pond	MA92016	North Reading.	12.00	Acres
Elginwood Pond	MA92017	Peabody.	9.00	Acres
Emerson Brook Reservoir (Forest Street Pond)	MA92021	Middleton/North Reading.	196.00	Acres
Farnum Street Pond	MA92018	North Andover.	9.00	Acres
Fourmile Pond	MA92022	Boxford.	29.00	Acres
Idlewild Brook	MA92-24	Outlet of Pleasant Pond, Hamilton to confluence with Ipswich River, Hamilton.	1.10	Miles
Kimballs Pond	MA92027	Boxford.	8.00	Acres
Long Causeway Brook	MA92-20	Headwaters (excluding intermittent portion) near Boston & Maine Railroad, south of Pigeon Hill, Hamilton to confluence with Miles River, Hamilton/Ipswich.	1.00	Miles
Longham Reservoir	MA92030	Wenham/Beverly.	34.00	Acres
Middleton Pond	MA92039	Middleton.	129.00	Acres
Mile Brook	MA92-16	Headwaters, east of North Street, Topsfield to confluence with Ipswich River, Topsfield (includes Mile Brook Pond).	2.50	Miles
Nichols Brook	MA92-25	Headwaters (near Rowley Hill Street and Route 95 and Newburyport Turnpike) in Danvers, to confluence with the Ipswich River, Middleton (Middleton/Boxford town line).	2.40	Miles
Pierces Pond	MA92048	Peabody.	3.00	Acres
Putnamville Reservoir	MA92052	Danvers.	283.00	Acres
Salem Street Pond	MA92076	North Andover.	11.00	Acres
Spofford Pond	MA92060	Boxford.	28.00	Acres
Stiles Pond	MA92063	Boxford.	59.00	Acres
Sudden Pond	MA92064	North Andover.	5.00	Acres
Suntaug Lake	MA92065	Lynnfield/Peabody.	151.00	Acres
Swan Pond	MA92066	North Reading.	42.00	Acres
Towne Pond	MA92068	Boxford/North Andover.	23.00	Acres
Winona Pond	MA92077	Peabody.	92.00	Acres
Islands				
Great Point Pond	MA97-04	On Great Point, Nantucket.	0.01	Square Miles

Category 3 waters listed alphabetically by major watershed
"No uses assessed"

Water Body	Segment ID	Description	Size	Units
Oyster Pond	MA97-13	Including Ripley Cove, Edgartown, Martha's Vineyard.	0.29	Square Miles
Roaring Brook	MA97-37	Headwaters, south of Tabor House Road, Chilmark to mouth at inlet Vineyard Sound, Chilmark.	1.50	Miles
Tiasquam River	MA97-35	From Warren Pond Dam to mouth at inlet of Town Cove of Tisbury Great Pond, Chilmark/West Tisbury, Martha's Vineyard.	0.01	Square Miles
Merrimack				
Bailey Pond	MA84003	Amesbury.	13.00	Acres
Beaver Brook	MA84B-05	Headwaters, outlet of "Wolf Swamp", Boxborough to inlet of Mill Pond, Littleton.	5.50	Miles
Joint Grass Brook	MA84A-32	Headwaters, between Hollis Street and Hauk Swamp, Dunstable to the confluence with Salmon Brook, Dunstable.	3.20	Miles
Mill Pond	MA84039	West Newbury.	18.00	Acres
Salmon Brook	MA84A-33	Headwaters, outlet Lower Massapoag Pond, Dunstable to New Hampshire state line, Dunstable.	2.90	Miles
Uptons Pond	MA84075	Tyngsborough.	6.00	Acres
Millers				
Bassett Pond	MA35002	New Salem.	26.00	Acres
Beaver Flowage Pond	MA35005	(Beaver Pond) Royalston.	38.00	Acres
Bents Pond	MA35006	Hubbardston.	28.00	Acres
Bowens Pond	MA35009	Wendell.	17.00	Acres
Cowee Pond	MA35013	Gardner.	18.00	Acres
Crystal Lake	MA35014	Gardner.	142.00	Acres
Davenport Pond	MA35015	Petersham/Athol.	30.00	Acres
East Templeton Pond	MA35022	Templeton.	9.00	Acres
Greenwood Pond	MA35025	Westminster.	27.00	Acres
Hastings Pond	MA35028	Warwick.	18.00	Acres
Kendall Pond	MA35034	Gardner.	22.00	Acres
Lake Mattawa	MA35112	(PALIS ID Changed on 10/6/97 from 36092 to 35112 - Concurently changed WBID to reflect this change - See PALIS for details) Orange.	112.00	Acres
Lake Watatic	MA35095	Ashburnham.	133.00	Acres
Little Pond	MA35037	Royalston.	10.00	Acres
Lower Naukeag Lake	MA35041	Ashburnham.	295.00	Acres
Minott Pond	MA35046	Westminster.	8.00	Acres
Minott Pond South	MA35045	Westminster.	27.00	Acres
North Spectacle Pond	MA35052	New Salem.	43.00	Acres
Packard Pond	MA35053	Orange.	43.00	Acres
Partridgeville Pond	MA35057	Templeton.	38.00	Acres
Perley Brook Reservoir	MA35059	Gardner.	55.00	Acres
Phillipston Reservoir	MA35060	Philipston/Athol.	20.00	Acres
Ramsdall Pond	MA35062	Gardner.	16.00	Acres
Reservoir No. 2	MA35064	Phillipston/Athol (Secret Lake).	48.00	Acres
Riceville Pond	MA35065	Athol/Petersham.	61.00	Acres

Category 3 waters listed alphabetically by major watershed
"No uses assessed"

Water Body	Segment ID	Description	Size	Units
Richards Reservoir	MA35067	Warwick.	21.00	Acres
Royalston Road Pond	MA35071	Orange.	5.00	Acres
Sheomet Lake	MA35074	Warwick.	30.00	Acres
South Spectacle Pond	MA35081	New Salem.	38.00	Acres
Sportsmans Pond	MA35082	Athol.	93.00	Acres
Sunset Lake	MA35086	Ashburnham/Winchendon.	274.00	Acres
Tully Pond	MA35089	Orange.	70.00	Acres
Wallace Pond	MA35092	Ashburnham.	46.00	Acres
Ward Pond	MA35093	Athol.	6.00	Acres
Wheelers Pond	MA35097	Warwick.	28.00	Acres
Wickett Pond	MA35102	Wendell.	30.00	Acres
Wrights Reservoir	MA35104	Gardner/Westminster.	131.00	Acres
Mount Hope Bay (Shore)				
Cook Pond	MA61001	Fall River, MA/Tiverton, RI.	157.00	Acres
South Watuppa Pond	MA61006	Fall River/Westport.	1473.00	Acres
Narragansett Bay (Shore)				
Beaverdam Brook	MA53-10	Headwaters, southeast of Chestnut Street, Rehoboth to confluence with Palmer River, Rehoboth.	2.90	Miles
Rumney Marsh Brook	MA53-09	Headwaters, east of Locust Avenue, Rehoboth to confluence with Beaverdam Brook, Rehoboth.	1.30	Miles
Nashua				
Ashby Reservoir	MA81001	Ashby.	36.00	Acres
Asnebumskit Pond	MA81002	Paxton.	44.00	Acres
Ball Brook	MA81-45	Headwaters, north of Sterling Road, Holden to mouth at confluence with Stillwater River, Sterling.	1.60	Miles
Barrett Pond	MA81162	Leominster.	7.00	Acres
Bartlett Pond	MA81009	Leominster.	23.00	Acres
Bayberry Hill Brook	MA81-68	Headwaters, outlet small unnamed pond north of Bailey Road, Townsend to mouth at confluence with Squannacook River, Townsend.	2.10	Miles
Bixby Reservoir	MA81010	Townsend.	21.00	Acres
Chaffins Brook	MA81-33	Headwaters, perennial portion, south of Malden Street/west of Wachusett Street, Holden to mouth at inlet of Unionville Pond, Holden.	0.90	Miles
Coachlace Pond	MA81019	Clinton.	31.00	Acres
Cold Spring Brook	MA81-82	Headwaters, west of Old Mill Road (on the western side of railroad tracks), Harvard to mouth at confluence with Bowers Brook, Harvard.	1.20	Miles
Connelly Brook	MA81-57	Headwaters, southwest of Rowley Hill Road, Sterling to mouth at inlet The Quag, Sterling.	2.90	Miles
Coon Tree Pond	MA81168	Pepperell.	29.00	Acres
Crocker Pond	MA81025	Westminster.	101.00	Acres
East Wachusett Brook	MA81-30	Headwaters northeast of Little Wachusett Mountain, Princeton to mouth at confluence with Stillwater River, Sterling.	4.60	Miles
East Waushacum Pond	MA81035	Sterling.	181.00	Acres
Fall Brook Reservoir	MA81038	Leominster.	88.00	Acres
Fitchburg Reservoir	MA81043	Ashby.	150.00	Acres

Category 3 waters listed alphabetically by major watershed
"No uses assessed"

Water Body	Segment ID	Description	Size	Units
Goodridge Brook	MA81-66	Headwaters, outlet impoundment at Old Ice Pond Dam (NATID: MA01560), Lancaster to mouth at confluence with Nashua River ("South Branch Nashua River"), Lancaster.	1.80	Miles
Haynes Reservoir	MA81055	Leominster.	56.00	Acres
Heald Pond	MA81056	Pepperell.	28.00	Acres
Houghton Brook	MA81-55	Headwaters, south of Merrill Road, Sterling to mouth at confluence with Stillwater River, Sterling.	1.50	Miles
Hy-Crest Pond	MA81060	Sterling.	104.00	Acres
Justice Brook	MA81-41	Headwaters, outlet Stuart Pond, Sterling to mouth at confluence with Keyes Brook forming headwaters Stillwater River, Princeton/Sterling.	1.00	Miles
Kendall Reservoir	MA81062	Holden.	179.00	Acres
Keyes Brook	MA81-40	Headwaters, outlet Paradise Pond, Princeton to mouth at confluence with Justice Brook forming headwaters Stillwater River, Princeton/Sterling.	3.20	Miles
Lancaster Millpond	MA81065	Clinton.	21.00	Acres
Lincoln Pond	MA81070	Ashburnham.	31.00	Acres
Long Pond	MA81073	Ayer/Groton.	46.00	Acres
Lovell Reservoir	MA81074	Fitchburg.	35.00	Acres
Lower Crow Hill Pond	MA81026	Princeton/Westminster.	14.00	Acres
Maple Spring Pond	MA81077	Holden.	38.00	Acres
Massapoag Pond	MA81080	Lunenburg.	64.00	Acres
Meetinghouse Pond	MA81083	Westminster.	151.00	Acres
Mirror Lake	MA81084	Fitchburg.	6.00	Acres
Morse Reservoir	MA81086	Leominster.	15.00	Acres
Muschopauge Pond	MA81089	Rutland.	61.00	Acres
Notown Reservoir	MA81092	Leominster.	241.00	Acres
Pine Hill Reservoir	MA81102	Paxton/Holden/Rutland.	336.00	Acres
Poor Farm Brook	MA81-52	Headwaters, perennial portion, east of Salisbury Street, Holden to mouth at inlet Chaffin Pond, Holden.	1.20	Miles
Quinapoxet Reservoir	MA81108	Holden/Princeton.	266.00	Acres
Reedy Meadow Brook	MA81-64	Headwaters, Reedy Meadow, Groton to mouth at confluence with Nashua River, Pepperell.	2.30	Miles
Rocky Brook	MA81-42	Headwaters, outlet Hy-Crest Pond, Sterling to mouth at confluence with Stillwater River, Sterling.	3.00	Miles
Round Meadow Pond	MA81114	Westminster.	54.00	Acres
Sandy Pond	MA81117	Ayer.	69.00	Acres
Scanlon Brook	MA81-44	Headwaters, west of Birch Drive, Sterling to mouth at confluence with Stillwater River, Sterling.	1.50	Miles
Scarletts Brook	MA81-25	Headwaters west of West Boylston Street (Route 12), West Boylston to mouth at confluence with Gates Brook, West Boylston (stream entirely intermittent; per SARIS and the 1983 Worcester North USGS topographic quadrangle).	0.50	Miles
Scott Reservoir	MA81119	Fitchburg.	33.00	Acres
Snows Millpond	MA81127	Fitchburg/Westminster.	38.00	Acres
South Meadow Brook	MA81-67	Headwaters, outlet Fitch Pond, Sterling to mouth at inlet South Meadow Pond, Clinton.	1.80	Miles
South Meadow Pond	MA81129	[East Basin] Clinton.	37.00	Acres
South Meadow Pond	MA81165	[West Basin] Clinton/Lancaster.	34.00	Acres

Category 3 waters listed alphabetically by major watershed
"No uses assessed"

Water Body	Segment ID	Description	Size	Units
Spectacle Pond	MA81132	Lancaster.	61.00	Acres
Streeter Pond	MA81136	Paxton/Holden.	18.00	Acres
The Quag	MA81170	Sterling.	32.00	Acres
Trout Brook	MA81-26	Headwaters, outlet Cournoyer Pond, Holden to mouth at confluence with Quinepoxet River, Holden.	1.90	Miles
Unnamed Tributary	MA81-46	Unnamed tributary to Rocky Brook, headwaters south of Upper North Row Road, Sterling to mouth at the confluence with Rocky Brook, Sterling.	0.70	Miles
Unnamed Tributary	MA81-49	Unnamed tributary to Wachusett Reservoir, headwaters, outlet Carrolls Pond, West Boylston to mouth at inlet Wachusett Reservoir, West Boylston.	0.80	Miles
Unnamed Tributary	MA81-50	Unnamed tributary to Wachusett Reservoir, headwaters, east of Linden Street, Boylston to mouth at inlet Wachusett Reservoir (Hastings Cove), Boylston.	1.30	Miles
Unnamed Tributary	MA81-51	Unnamed tributary to Quinapoxet River, headwaters, south of Malden Street, Holden to mouth at confluence with the Quinapoxet River, Holden.	1.50	Miles
Unnamed Tributary	MA81-54	Unnamed tributary to Wachusett Reservoir, headwaters, west of Route 140, West Boylston to mouth at inlet Wachusett Reservoir (Stillwater Basin), West Boylston.	0.80	Miles
Unnamed Tributary	MA81-58	Unnamed tributary to Quinapoxet Reservoir, headwaters, west of Route 68, Rutland to mouth at confluence with unnamed tributary to the Quinapoxet Reservoir (east of Bryant Road), Holden.	1.30	Miles
Unnamed Tributary	MA81-59	Unnamed tributary to Quinapoxet River, headwaters, southwest of Hog Hill, Sterling to mouth at confluence with the Quinapoxet River, West Boylston.	1.60	Miles
Unnamed Tributary (Boylston Brook)	MA81-34	Unnamed tributary locally known as "Boylston Brook." Headwaters north of French Drive, Boylston to mouth at confluence with Potash Brook, Boylston.	0.50	Miles
Unnamed Tributary (Burnt Mill Pond Brook)	MA81-65	Unnamed tributary to Snows Millpond locally known as "Burnt Mill Pond Brook", headwaters outlet Round Meadow Pond, Westminster to mouth at inlet Snows Millpond, Fitchburg/Westminster.	2.00	Miles
Vinton Pond	MA81145	Townsend.	16.00	Acres
Wachusett Lake	MA81146	Westminster/Princeton.	129.00	Acres
Warren Tannery Brook	MA81-53	Headwaters, perennial portion, north of Route 122A, Holden to mouth at confluence with Asnebumskit Brook, Holden.	1.40	Miles
Washacum Brook	MA81-47	Headwaters, outlet West Waushacum Pond, Sterling to mouth at inlet Wachusett Reservoir (Stillwater Basin), West Boylston.	1.80	Miles
West Waushacum Pond	MA81153	Sterling.	111.00	Acres
Whitmanville Reservoir	MA81109	Westminster/Ashburnham.	107.00	Acres
Wilder Brook	MA81-43	Headwaters west of Osgood Road, Sterling to mouth at confluence with Stillwater River, Sterling.	2.30	Miles
Winnekeag Lake	MA81157	Ashburnham.	113.00	Acres
Wright Pond	MA81159	[West Basin] Ashby.	21.00	Acres
North Coastal				
Alewife Brook	MA93-26	Headwaters, perennial portion just north of B&M Railroad, Rockport to mouth at inlet Babson Reservoir, Gloucester.	1.00	Miles
Babson Reservoir	MA93001	Gloucester.	40.00	Acres
Birch Pond	MA93004	Saugus/Lynn.	80.00	Acres
Breeds Pond	MA93006	Lynn.	195.00	Acres
Browns Pond	MA93008	Peabody.	25.00	Acres
Buswell Pond	MA93009	Gloucester.	4.00	Acres
Coy Pond	MA93016	Wenham.	23.00	Acres

Category 3 waters listed alphabetically by major watershed
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Water Body	Segment ID	Description	Size	Units
Crystal Lake	MA93018	Wakefield/Stoneham.	79.00	Acres
Fernwood Lake	MA93022	Gloucester.	25.00	Acres
Goose Cove Reservoir	MA93093	Gloucester.	58.00	Acres
Gravelly Pond	MA93028	Hamilton.	50.00	Acres
Haskell Pond	MA93031	Gloucester.	58.00	Acres
Mill Pond	MA93-60	East of Route 127, Gloucester (formerly Mill Pond MA93050).	0.03	Square Miles
Niles Pond	MA93052	Gloucester.	34.00	Acres
Quarry Reservoir	MA93053	Rockport.	7.00	Acres
Round Pond	MA93063	Hamilton.	37.00	Acres
Rum Rock Lake	MA93064	Rockport.	10.00	Acres
Spring Pond	MA93073	[South Basin] Peabody/Lynn/Salem.	67.00	Acres
Spring Pond	MA93074	[North Basin] Peabody.	17.00	Acres
Unnamed Tributary	MA93-27	Headwaters, outlet Babson Reservoir, Gloucester to culvert outlet into saltwater wetland northwest of Bertoni Road, Gloucester (portion culverted).	0.40	Miles
Upper Pond	MA93083	Saugus.	13.00	Acres
Walden Pond	MA93084	Lynn/Saugus/Lynnfield.	222.00	Acres
Wallace Pond	MA93085	Gloucester.	22.00	Acres
Parker				
Bull Brook	MA91-04	Headwaters south of Linebrook Road, Ipswich to mouth at inlet Bull Brook Reservoir, Ipswich.	1.40	Miles
Bull Brook Reservoir	MA91002	Ipswich.	7.00	Acres
Central Street Pond	MA91003	Rowley.	3.00	Acres
Crane Pond	MA91004	Groveland.	22.00	Acres
Dow Brook Reservoir	MA91005	Ipswich.	16.00	Acres
Egypt River	MA91-13	Outlet Bull Brook Reservoir, Ipswich to east of Jewett Hill (Latitude 42:42:23.40, Longitude 70:51:47.58 DMS), Ipswich.	1.10	Miles
Jackman Brook	MA91-07	Perennial portion northeast of intersection of Jewett and Tenney streets, Georgetown to mouth at confluence with Wheeler Brook, Georgetown.	0.80	Miles
Little Crane Pond	MA91007	West Newbury.	4.00	Acres
Ox Pasture Brook	MA91-10	Headwaters - Outlet of small unnamed impoundment east of Bradford Street, Rowley to the outlet of a small unnamed impoundment west of Ox Pasture Hill, Rowley.	2.50	Miles
Quills Pond	MA91011	Newbury.	2.00	Acres
Sperrys Pond	MA91013	Boxford.	26.00	Acres
Wilson Pond	MA91017	Rowley.	5.00	Acres
Quinebaug				
Lake George	MA41016	Wales.	93.00	Acres
Leadmine Pond	MA41027	Sturbridge.	52.00	Acres
Little Alum Pond	MA41029	Brimfield.	73.00	Acres
Mcintyre Pond	MA41031	Charlton.	11.00	Acres
Monson Road Pond	MA41059	Wales.	4.00	Acres

Category 3 waters listed alphabetically by major watershed
"No uses assessed"

Water Body	Segment ID	Description	Size	Units
New Boston Road Pond	MA41035	Sturbridge.	13.00	Acres
No. 3 Reservoir	MA41038	Southbridge.	23.00	Acres
No. 4 Reservoir	MA41039	Southbridge.	69.00	Acres
No. 5 Reservoir	MA41040	Southbridge.	30.00	Acres
Prindle Lake	MA41043	Charlton.	75.00	Acres
Wales Brook	MA41-08	Headwaters, outlet Lake George, Wales to mouth at confluence with Mill Brook, Brimfield.	5.20	Miles
Wielock Pond	MA41056	Dudley.	6.00	Acres
Shawsheen				
Bakers Meadow Pond	MA83002	Andover.	21.00	Acres
Fawn Lake	MA83004	Bedford.	12.00	Acres
Hussey Brook Pond	MA83008	Andover.	0.50	Acres
Pond Street Pond	MA83021	Billerica (unnamed pond west of Pond Street).	4.00	Acres
Richardson Pond North	MA83020	Billerica/Tewksbury.	46.00	Acres
Round Pond	MA83018	Tewksbury.	25.00	Acres
Unnamed Tributary	MA83-16	Unnamed tributary to Shawsheen River also known as "Fosters Brook" - outlet Fosters Pond, Andover through River Street Pond to confluence with Shawsheen River at Lowell Junction Pond, Andover.	1.00	Miles
South Coastal				
Arnold School Pond	MA94004	Pembroke.	12.00	Acres
Black Jimmy Pond	MA94008	Plymouth.	9.00	Acres
Bloody Pond	MA94015	Plymouth.	101.00	Acres
Boot Pond	MA94016	Plymouth.	69.00	Acres
Bound Brook Pond	MA94017	Norwell.	21.00	Acres
Elbow Pond	MA94035	Plymouth.	21.00	Acres
Fresh Pond	MA94040	Plymouth.	60.00	Acres
Governor Winslow House Pond	MA94047	Marshfield.	23.00	Acres
Great Sandy Bottom Pond	MA94053	Pembroke.	103.00	Acres
Gunners Exchange Pond	MA94055	Plymouth.	26.00	Acres
Harrobs Corner Bog Pond	MA94061	Plympton.	20.00	Acres
Hedges Pond	MA94065	Plymouth.	27.00	Acres
Hobomock Pond	MA94177	Pembroke.	13.00	Acres
Hoyts Pond	MA94070	Plymouth.	20.00	Acres
Indian Pond	MA94072	Kingston/Plympton.	64.00	Acres
Island Pond	MA94074	[west of the locality of Cedarville] Plymouth.	52.00	Acres
Island Pond	MA94076	[south of locality of South Pond] Plymouth.	12.00	Acres
Keene Pond	MA94079	Duxbury.	11.00	Acres
Little Herring Pond	MA94082	Plymouth.	81.00	Acres
Little Pond	MA94182	Plymouth.	40.00	Acres
Little Sandy Bottom Pond	MA94085	Pembroke.	56.00	Acres

Category 3 waters listed alphabetically by major watershed
"No uses assessed"

Water Body	Segment ID	Description	Size	Units
Little South Pond	MA94087	Plymouth.	63.00	Acres
Lout Pond	MA94090	Plymouth.	18.00	Acres
Maquan Pond	MA94096	Hanson.	45.00	Acres
Mill Pond	MA94101	Duxbury.	7.00	Acres
Morey Hole	MA94102	Plymouth.	22.00	Acres
North Hill Marsh Pond	MA94109	Duxbury.	43.00	Acres
North Triangle Pond	MA94110	Plymouth.	22.00	Acres
Pine Lake	MA94120	Duxbury.	22.00	Acres
Pine Street Pond	MA94121	Duxbury.	14.00	Acres
Round Pond	MA94131	Duxbury.	7.00	Acres
Russell Pond	MA94133	Kingston.	11.00	Acres
Shallow Pond	MA94140	Plymouth.	19.00	Acres
Ship Pond	MA94142	Plymouth.	11.00	Acres
South Triangle Pond	MA94149	Plymouth.	17.00	Acres
Triangle Pond	MA94160	Plymouth.	14.00	Acres
West Chandler Pond	MA94170	Pembroke.	10.00	Acres
Winslow Cemetary Pond	MA94172	Marshfield.	6.00	Acres
Wright Pond	MA94174	Duxbury.	30.00	Acres
Taunton				
Assawompset Pond	MA62003	Lakeville/Middleborough.	2034.00	Acres
Barrowsville Pond	MA62007	Norton.	31.00	Acres
Beaumont Pond	MA62009	Foxborough.	24.00	Acres
Beaver Brook	MA62-30	Headwaters, perennial portion, just west of Bay Road, Easton to mouth at inlet of Old Pond, Easton.	1.40	Miles
Briggs Pond	MA62021	Sharon.	19.00	Acres
Carpenter Pond	MA62032	Foxborough.	29.00	Acres
Chaffin Reservoir	MA62035	Pembroke.	13.00	Acres
Chartley Pond	MA62038	Norton/Attleboro.	57.00	Acres
Clear Pond	MA62041	Lakeville.	18.00	Acres
Cobb Brook	MA62-43	Headwaters south of Dunbar Street (in Crapo Bog), Taunton to mouth at confluence with the Taunton River, Taunton (approximately 0.1mile culverted at mouth).	3.50	Miles
Cocasset Lake	MA62043	Foxborough.	32.00	Acres
Cooper Pond	MA62046	Carver.	22.00	Acres
Cotley River	MA62-41	From outlet of cranberry bog south of Seekell Street, Taunton to mouth at confluence with the Taunton River, Taunton.	5.70	Miles
Coweeset Brook	MA62-22	Headwaters, perennial portion, southwest of Route24/Route 123 interchange (north of Mill Street), Brockton to mouth at confluence with Hockomock River, West Bridgewater.	3.90	Miles
Cross Pond	MA62052	Brockton.	2.00	Acres
Cross Street Pond	MA62053	Bridgewater.	27.00	Acres
Elm Street Pond	MA62066	Halifax/Hanson.	19.00	Acres

Category 3 waters listed alphabetically by major watershed
"No uses assessed"

Water Body	Segment ID	Description	Size	Units
Forge Pond	MA62072	Freetown.	56.00	Acres
Forge River	MA62-37	Headwaters, outlet Kings Pond, Raynham to mouth at confluence with the Taunton River, Raynham.	2.50	Miles
Furnace Lake	MA62076	Foxborough.	15.00	Acres
Great Quittacas Pond	MA62083	Lakeville/Middleborough/Rochester.	1125.00	Acres
Hartwell School Pond	MA62086	Mansfield (formerly a portion of MA62-27).	8.00	Acres
Hewitt Pond	MA62088	Raynham.	14.00	Acres
Hockomock River	MA62-35	Headwaters, perennial portion, west of Route 24, West Bridgewater to mouth at confluence with Town River, Bridgewater.	4.30	Miles
Johns Pond	MA62096	Carver.	21.00	Acres
Kings Pond	MA62101	Raynham.	13.00	Acres
Leach Pond	MA62103	Easton/Sharon.	111.00	Acres
Little Cedar Swamp	MA62106	Easton.	91.00	Acres
Little Quittacas Pond	MA62107	Lakeville/Rochester.	295.00	Acres
Lovett Brook	MA62-46	Headwaters, perennial portion, north of Oak Street, Brockton to mouth at inlet Elis Brett Pond, Brockton.	1.50	Miles
Meadow Brook Pond	MA62113	Norton.	13.00	Acres
Muddy Cove Brook	MA62-58	Headwaters, south of Hart Street, Dighton to inlet Muddy Cove Brook Pond, Dighton (formerly part of MA62-52 and MA62-23 (2004)).	1.40	Miles
Muddy Cove Brook	MA62-59	From outlet Muddy Cove Brook Pond, Dighton to outlet of small impoundment behind 333 Main Street (Zeneca Inc.), Dighton (formerly part of MA62-52 and MA62-23 (2004)).	0.20	Miles
Muddy Pond	MA62126	Halifax.	13.00	Acres
Muddy Pond	MA62233	Kingston (formerly reported as MA94104).	42.00	Acres
Mulberry Meadow Brook	MA62-31	Headwaters, outlet New Pond, Easton to mouth at inlet of Winnecunnet Pond, Norton (through former segments; Ward Pond MA62203 and Reservoir MA62158).	4.60	Miles
Mullein Hill Chapel Pond	MA62127	Lakeville.	23.00	Acres
Nemasket River	MA62-26	From the Middleborough WWTP (NPDES: MA0101591) discharge, Middleborough to mouth at confluence with the Taunton River, Middleborough.	5.10	Miles
North Center Street Pond	MA62132	Carver.	12.00	Acres
Oakland Pond	MA62136	Taunton.	38.00	Acres
Plymouth Street Pond	MA62141	Halifax/East Bridgewater.	165.00	Acres
Pocksha Pond	MA62145	Lakeville/Middleborough.	592.00	Acres
Poor Meadow Brook	MA62-34	Headwaters, from wetland near County Street, Hanson to mouth at confluence with Satucket River, East Bridgewater.	6.90	Miles
Poquoy Pond	MA62147	Lakeville.	10.00	Acres
Prospect Hill Pond	MA62149	Taunton.	42.00	Acres
Puds Pond	MA62151	Sharon/Easton.	23.00	Acres
Queset Brook	MA62-68	From outlet Longwater Pond, Easton to mouth at confluence with Coweeset Brook, West Bridgewater (formelry part of segment MA62-21).	3.30	Miles
Robbins Pond	MA62162	East Bridgewater.	124.00	Acres
Route One Pond, West	MA62165	Wrentham.	10.00	Acres

Category 3 waters listed alphabetically by major watershed
"No uses assessed"

Water Body	Segment ID	Description	Size	Units
Sawmill Brook	MA62-36	Headwaters, outlet Ice Pond, Bridgewater to mouth at confluence with the Taunton River, Bridgewater.	1.90	Miles
Snake River	MA62-28	Headwaters, outlet Winnecunnet Pond, Norton to mouth at inlet of Lake Sabbatia, Taunton.	3.30	Miles
Sunset Lake	MA62184	Foxborough.	13.00	Acres
The Reservoir	MA62189	Lakeville.	23.00	Acres
Thurston Street Pond	MA62192	Wrentham.	7.00	Acres
Tispaquin Pond	MA62195	Middleborough.	195.00	Acres
Town River	MA62-11	Headwaters, outlet Lake Nippenicket, Bridgewater to Route 28 bridge, West Bridgewater.	4.50	Miles
Town River	MA62-12	Route 28 bridge, West Bridgewater to Bridgewater WWTP (NPDES: MA0100641) discharge, Bridgewater.	3.90	Miles
Town River	MA62-13	From Bridgewater WWTP (NPDES: MA0100641) discharge, Bridgewater to mouth at confluence with the Matfield River forming headwaters Taunton River, Bridgewater.	2.30	Miles
Upper Leach Pond	MA62123	(Mountain Street Pond) Sharon.	28.00	Acres
Whiteville Pond	MA62211	Mansfield.	14.00	Acres
Winnetuxet River	MA62-24	Headwaters, confluence of Muddy Pond Brook and Doten Brook, Carver to mouth at confluence with the Taunton River, Halifax.	12.10	Miles
Wolomolopoag Pond	MA62216	Sharon.	13.00	Acres
Ten Mile				
Greenwood Lake	MA52017	Mansfield/North Attleborough.	96.00	Acres
Hoppin Hill Reservoir	MA52021	North Attleborough.	22.00	Acres
Manchester Pond Reservoir	MA52026	Attleboro.	238.00	Acres
Westfield				
Abbott Brook	MA32-62	Headwaters (perennial portion), north of Abbott Hill Road, Chester to mouth at confluence with West Branch Westfield River, Chester.	2.50	Miles
Arm Brook	MA32-58	Headwaters (perennial portion), south of Summit Lock Road, Westfield to inlet unnamed pond west of Barbara Street, Westfield.	1.70	Miles
Ashley Cutoff	MA32001	Holyoke.	31.00	Acres
Ashley Pond	MA32002	Holyoke.	133.00	Acres
Barry Brook	MA32-57	Headwaters, outlet Snake Pond, Holyoke to mouth at confluence with Trask Brook (forming headwaters Bush Brook), Westfield.	2.60	Miles
Borden Brook Reservoir	MA32011	Granville/Blandford.	211.00	Acres
Bush Brook	MA32-56	Headwaters, confluence of Barry and Trask brooks, east of Sherwood Avenue, Westfield to mouth at confluence with Pond Brook, Westfield.	0.70	Miles
Clear Pond	MA32077	Holyoke.	10.00	Acres
Cobble Mountain Reservoir	MA32018	Blandford/Granville/Russell.	1034.00	Acres
Connor Reservoir	MA32024	Holyoke.	17.00	Acres
Cook Brook	MA32-38	Headwaters, outlet small unnamed pond west of the intersection of Gorge and Granville roads, Westfield to mouth at confluence with Little River, Westfield.	2.00	Miles
Cooley Lake	MA32026	Granville.	66.00	Acres
Crooked Pond	MA32028	Plainfield.	34.00	Acres
Damon Pond	MA32029	Chesterfield/Goshen.	77.00	Acres

Category 3 waters listed alphabetically by major watershed
"No uses assessed"

Water Body	Segment ID	Description	Size	Units
Garnet Lake	MA32037	Peru.	17.00	Acres
Geer Brook	MA32-43	Headwaters, outlet Garnet Lake, Peru to mouth at confluence with Factory Brook, Middlefield.	1.80	Miles
Granville Reservoir	MA32038	Granville.	74.00	Acres
Hammond Pond	MA32040	Goshen.	38.00	Acres
Kellog Brook	MA32-55	Headwaters (perennial portion), east of College Highway (Route 202), Southwick to mouth at confluence with Great Brook, Westfield.	2.80	Miles
Little River	MA32-35	Source, outlet of Cobble Mountain Reservoir, Russell to Springfield Water Works Intake Dam (NATID: MA00708) northwest of Gorge Road, Russell (formerly part of segment MA32-26).	2.60	Miles
Littleville Lake	MA32046	Chester/Huntington.	252.00	Acres
Mclean Reservoir	MA32050	Holyoke.	55.00	Acres
North Railroad Pond	MA32053	Holyoke.	9.00	Acres
Norwich Pond	MA32054	Huntington.	116.00	Acres
Robin Hood Lake	MA32057	Becket.	63.00	Acres
Rudd Pond	MA32060	Becket.	72.00	Acres
Russell Pond	MA32061	Russell.	82.00	Acres
Scout Pond	MA32063	Chesterfield.	37.00	Acres
Steep Bank Brook	MA32-53	Headwaters (perennial portion), northeast of Bates Road, Windsor to mouth at confluence with Westfield River, Windsor.	1.00	Miles
Westfield Reservoir	MA32074	Montgomery.	40.00	Acres
Wright Pond	MA32078	Holyoke.	28.00	Acres
Yokum Pond	MA32079	Becket.	98.00	Acres

Category 4a waters listed alphabetically by major watershed
"TMDL is completed"

Water Body	Segment ID	Description	Size	Units	Pollutants Addressed By TMDL	EPA TMDL No.
Blackstone						
Dorothy Pond	MA51039	Millbury.	133.00	Acres	(Eurasian Water Milfoil, Myriophyllum spicatum*)	
					(Non-Native Aquatic Plants*)	
					Turbidity	379
Eddy Pond	MA51043	Auburn.	103.00	Acres	(Aquatic Plants (Macrophytes)*)	
					(Non-Native Aquatic Plants*)	
					Nutrient/Eutrophication Biological Indicators	2382
Flint Pond	MA51050	[North Basin] Shrewsbury.	93.00	Acres	(Aquatic Plants (Macrophytes)*)	
					(Eurasian Water Milfoil, Myriophyllum spicatum*)	
					(Non-Native Aquatic Plants*)	
					Nutrient/Eutrophication Biological Indicators	444
					Turbidity	444
Flint Pond	MA51188	[South Basin] Shrewsbury/Grafton/Worcester.	173.00	Acres	(Aquatic Plants (Macrophytes)*)	
					(Eurasian Water Milfoil, Myriophyllum spicatum*)	
					(Non-Native Aquatic Plants*)	
					Nutrient/Eutrophication Biological Indicators	444
Green Hill Pond	MA51056	Worcester.	29.00	Acres	Turbidity	498
Howe Reservoirs	MA51071	[West Basin] Millbury.	7.00	Acres	(Aquatic Plants (Macrophytes)*)	
					Nutrient/Eutrophication Biological Indicators	550
Indian Lake	MA51073	Worcester.	187.00	Acres	(Eurasian Water Milfoil, Myriophyllum spicatum*)	
					Dissolved Oxygen	2323
					Harmful Algal Blooms	2323
					Nutrient/Eutrophication Biological Indicators	2323
Jordan Pond	MA51078	Shrewsbury.	18.00	Acres	Harmful Algal Blooms	2385
					Turbidity	2385
Leesville Pond	MA51087	Auburn/Worcester.	34.00	Acres	(Non-Native Aquatic Plants*)	
					Dissolved Oxygen	671
					Phosphorus, Total	671
Pondville Pond	MA51120	Auburn/Millbury.	36.00	Acres	(Non-Native Aquatic Plants*)	
					Algae	938

* TMDL not required (Non-pollutant)

Category 4a waters listed alphabetically by major watershed
"TMDL is completed"

Water Body	Segment ID	Description	Size	Units	Pollutants Addressed By TMDL	EPA TMDL No.
Shirley Street Pond	MA51196	Shrewsbury.	19.00	Acres	(Aquatic Plants (Macrophytes)*)	
					Nutrient/Eutrophication Biological Indicators	2392
Southwick Pond	MA51157	Leicester/Paxton.	43.00	Acres	(Aquatic Plants (Macrophytes)*)	
					Nutrient/Eutrophication Biological Indicators	2390
Waite Pond	MA51170	Leicester.	49.00	Acres	Mercury in Fish Tissue	33880
Boston Harbor: Neponset						
Massapoag Lake	MA73030	Sharon.	389.00	Acres	(Non-Native Aquatic Plants*)	
					Mercury in Fish Tissue	33880
Pecunit Brook	MA73-25	Headwaters east of Carey Circle and west of Pecunit Street, Canton to mouth at confluence with Neponset River, Canton.	1.80	Miles	Escherichia Coli (E. Coli)	54842
Pettee Pond	MA73036	Walpole/Westwood.	10.00	Acres	Mercury in Fish Tissue	42408
Ponkapoag Pond	MA73043	Canton/Randolph.	214.00	Acres	(Eurasian Water Milfoil, Myriophyllum spicatum*)	
					(Non-Native Aquatic Plants*)	
					Mercury in Fish Tissue	42409
Ponkapog Brook	MA73-27	Headwaters, outlet of Ponkapoag Pond, Canton to confluence with Neponset River, Canton.	3.10	Miles	Escherichia Coli (E. Coli)	2592
					Fecal Coliform	2592
Purgatory Brook	MA73-24	Headwaters east of Farm Lane, Westwood to confluence with Neponset River, Norwood.	5.10	Miles	(Debris*)	
					(Trash*)	
					Escherichia Coli (E. Coli)	2592
					Fecal Coliform	2592
Reservoir Pond	MA73048	Canton.	251.00	Acres	(Non-Native Aquatic Plants*)	
					Mercury in Fish Tissue	42400
Unnamed Tributary	MA73-31	Headwaters, outlet of Massapoag Lake, Sharon to mouth at inlet of Hammer Shop Pond, Sharon (not depicted on 1987 Mansfield USGS quad).	0.30	Miles	Fecal Coliform	2592
Willet Pond	MA73062	Walpole/Westwood/Norwood (includes unnamed tributary at northern end formerly reported as segment MA73-13).	205.00	Acres	Mercury in Fish Tissue	33880
Buzzards Bay						
Back River	MA95-47	Estuarine portion, west of County Road, Bourne to confluence with Phinneys Harbor (excluding Eel Pond), Bourne.	0.09	Square Miles	Fecal Coliform	36172
Bread and Cheese Brook	MA95-58	Headwaters north of Old Bedford Road, Westport to confluence with East Branch Westport River, Westport.	4.90	Miles	Enterococcus	36170
					Fecal Coliform	36170
Broad Marsh River	MA95-49	Headwaters in salt marsh south of Marion Road and Bourne Terrace, Wareham to confluence with the Wareham River, Wareham.	0.17	Square Miles	Fecal Coliform	36172

* TMDL not required (Non-pollutant)

Category 4a waters listed alphabetically by major watershed
"TMDL is completed"

Water Body	Segment ID	Description	Size	Units	Pollutants Addressed By TMDL	EPA TMDL No.
Buttonwood Brook	MA95-13	Headwaters, Oakdale Street, New Bedford to mouth at Apponagansett Bay, Dartmouth (excluding the approximately 0.2 miles through Buttonwood Park Pond segment MA95020).	3.60	Miles	Enterococcus	36170
					Escherichia Coli (E. Coli)	36170
					Fecal Coliform	36170
Cape Cod Canal	MA95-14	Waterway between Buzzards Bay and Cape Cod Bay, Bourne/Sandwich.	1.14	Square Miles	Fecal Coliform	36171
Cedar Island Creek	MA95-52	Estuarine portion southwest of the intersection of Parker Drive and Camardo Drive, Wareham to the mouth at Marks Cove, Wareham.	0.01	Square Miles	Fecal Coliform	36172
Crooked River	MA95-51	Estuarine portion east of Indian Neck Road, Wareham to the confluence with the Wareham River, Wareham.	0.04	Square Miles	Enterococcus	36172
					Fecal Coliform	36172
East Branch Westport River	MA95-40	Headwaters, outlet Noquochoke Lake, Dartmouth to Old County Road bridge, Westport.	2.40	Miles	Enterococcus	36170
					Fecal Coliform	36170
Eel Pond	MA95-48	Salt water pond that discharges to the Back River, Bourne.	0.03	Square Miles	Fecal Coliform	36172
Great Sippewisset Creek	MA95-23	From the outlet of Beach Pond in Great Sippewisset Marsh, Falmouth to the mouth at Buzzards Bay, Falmouth (including Quahog Pond and the unnamed tributary from the outlet of Fresh Pond).	0.03	Square Miles	Fecal Coliform	36172
Harbor Head	MA95-46	The semi-enclosed body of water south of the confluence with West Falmouth Harbor, south of Chappaquoit Road, Falmouth.	0.02	Square Miles	Estuarine Bioassessments	34284
					Fecal Coliform	36172
Hiller Cove	MA95-10	The water landward of a line drawn between Joes Point, Mattapoisett and the second boat dock northeast of Hiller Cove Lane, Mattapoisett.	0.04	Square Miles	Fecal Coliform	36172
Little Bay	MA95-64	From the confluence with the Nasketucket River, Fairhaven south to the confluence with Nasketucket Bay at a line from the southernmost tip of Mirey Neck, Fairhaven (~latitude 41.625702, ~longitide 70.854045) to a point of land near Shore Drive (~latitude 41.621994, ~longitude 70.855415), Fairhaven.	0.33	Square Miles	Fecal Coliform	36172
Little Sippewisset Marsh	MA95-24	From headwaters north of Sippewisset Road and east of Maker Lane, Falmouth to the mouth at Buzzards Bay southwest of end of Saconesset Road, Falmouth.	0.02	Square Miles	Fecal Coliform	36172
Long Pond	MA95097	Rochester.	32.00	Acres	Mercury in Fish Tissue	33880
Mattapoisett River	MA95-60	From the Mattapoisett River Dam (#MA02447) at Fairhaven Road (Route 6), Mattapoisett to the mouth at Mattapoisett Harbor, Mattapoisett.	0.04	Square Miles	Fecal Coliform	36172
Nasketucket Bay	MA95-65	From the confluence with Little Bay, Fairhaven to Buzzards Bay along Causeway Road, Fairhaven (on the south) and along a line from the southern tip of Brant Island, Mattapoisett to the eastern tip of West Island, Fairhaven.	3.69	Square Miles	Fecal Coliform	36172
Oyster Pond	MA95927	west of Route 28A, Falmouth.	0.01	Square Miles	Dissolved Oxygen	34331
					Estuarine Bioassessments	34331

* TMDL not required (Non-pollutant)

Category 4a waters listed alphabetically by major watershed
"TMDL is completed"

Water Body	Segment ID	Description	Size	Units	Pollutants Addressed By TMDL	EPA TMDL No.
Phinneys Harbor	MA95-15	From the confluence with the Back River, to the mouth at Buzzards Bay (demarcated by a line from the southeastern point of Mashnee Island to the northwestern point of Tobys Island), Bourne (includes the "north facing embayment of Tobys Island").	0.72	Square Miles	Estuarine Bioassessments	35069
					Fecal Coliform	36172
					Nitrogen, Total	35069
Pocasset River	MA95-16	From the outlet of Mill Pond, Bourne to the mouth at Buzzards Bay, Bourne.	0.05	Square Miles	Fecal Coliform	36172
Sippican River	MA95-07	County Road, Marion/Wareham to confluence with Weweantic River, Marion/Wareham.	0.08	Square Miles	Fecal Coliform	36172
Snell Creek	MA95-44	Headwaters west of Main Street, Westport to Drift Road, Westport.	1.50	Miles	Enterococcus	36170
					Escherichia Coli (E. Coli)	36170
					Fecal Coliform	36170
Snell Creek	MA95-45	Drift Road, Westport to 'Marcus' Bridge', Westport.	0.40	Miles	Enterococcus	36170
					Escherichia Coli (E. Coli)	36170
					Fecal Coliform	36170
Snell Creek	MA95-59	'Marcus' Bridge', Westport to confluence with East Branch Westport River, Westport.	0.01	Square Miles	Fecal Coliform	36172
Snipatuit Pond	MA95137	Rochester.	711.00	Acres	Mercury in Fish Tissue	33880
Turner Pond	MA95151	New Bedford/Dartmouth.	86.00	Acres	Mercury in Fish Tissue	33880
Wankinco River	MA95-50	From outlet of Parker Mills Pond, south of Elm Street, Wareham to the confluence with the Agawam River (at a line between a point south of Mayflower Ridge Drive and a point north of the railroad tracks near Sandwich Road (forming headwaters of the Wareham River)) just north of Route 6 bridge, Wareham.	0.05	Square Miles	Fecal Coliform	36172
West Falmouth Harbor	MA95-22	From the confluence with Harbor Head at Chappaquoit Road, Falmouth to the mouth at Buzzards Bay at a line connecting the ends of the seawalls from Little Island and Chappaquoit Point, Falmouth (including Inner West Falmouth Harbor, Outer West Falmouth Harbor, Snug Harbor, and Mashapaquit Creek).	0.29	Square Miles	Estuarine Bioassessments	34328
					Estuarine Bioassessments	34332
					Fecal Coliform	36172
					Nitrogen, Total	34328
					Nitrogen, Total	34332
					Nitrogen, Total	34917
					Nitrogen, Total	34918
Westport River	MA95-54	From the confluences of the East Branch Westport River and the West Branch Westport River to Rhode Island Sound (at a line from the southwestern tip of Horseneck Point to the easternmost point near Westport Light), Westport (includes Westport Harbor and Hulda Cove).	0.74	Square Miles	Fecal Coliform	36172
Cape Cod						
Areys Pond	MA96-70	Orleans.	0.02	Square Miles	Estuarine Bioassessments	33786
					Nitrogen, Total	33786
Baker Pond	MA96008	Orleans/Brewster.	26.00	Acres	Mercury in Fish Tissue	33880

* TMDL not required (Non-pollutant)

Category 4a waters listed alphabetically by major watershed
"TMDL is completed"

Water Body	Segment ID	Description	Size	Units	Pollutants Addressed By TMDL	EPA TMDL No.
Bearse Pond	MA96012	Barnstable.	64.00	Acres	(Non-Native Aquatic Plants*)	
					Mercury in Fish Tissue	42393
Bournes Pond	MA96-57	west of Central Avenue, Falmouth outlet to Vineyard Sound, including Israels Cove, Falmouth.	0.24	Square Miles	Estuarine Bioassessments	32535
					Estuarine Bioassessments	32638
					Fecal Coliform	36772
					Nitrogen, Total	32535
					Nitrogen, Total	32638
Bucks Creek	MA96-44	Outlet Harding Beach Pond (locally known as Sulfur Springs), Chatham to mouth at inlet Cockle Cove, Nantucket Sound, Chatham.	0.02	Square Miles	Enterococcus	36772
					Fecal Coliform	36772
					Nitrogen, Total	36230
Bumps River	MA96-02	From pond outlet, Bumps River Road, Barnstable through Scudder Bay to mouth at Main Street/South Main Street bridge (confluence with Centerville River), Barnstable.	0.07	Square Miles	Fecal Coliform	36771
Centerville River	MA96-04	From approximately 300 feet west of Elliot Road, Barnstable to inlet Centerville Harbor, including East Bay, Barnstable.	0.24	Square Miles	Estuarine Bioassessments	33858
					Fecal Coliform	36771
					Nitrogen, Total	33858
Chase Garden Creek	MA96-35	New Boston Road, Dennis to mouth at inlet Cape Cod Bay, Dennis/Yarmouth.	0.13	Square Miles	Fecal Coliform	36771
Cockle Cove Creek	MA96-79	Northeast of the bend in Cockle Drive, Chatham to mouth at confluence with Bucks Creek, Chatham (2005 orthophotos used to delineate segment).	0.01	Square Miles	Enterococcus	42353
					Fecal Coliform	42353
Cotuit Bay	MA96-63	From North Bay at Point Isabella, Barnstable oceanward to a line extended along Oyster Harbors Beach, Barnstable.	0.85	Square Miles	Fecal Coliform	36582
					Nitrogen, Total	33988
Dock Creek	MA96-86	From railroad crossing northeast of Route 6A, Sandwich to confluence with Old Harbor Creek, Sandwich.	0.02	Square Miles	Fecal Coliform	42354
Duck Creek	MA96-32	Source west of Route 6, Wellfleet to mouth at inlet Wellfleet Harbor (at a line from Shirttail Point to Taylor Road), Wellfleet.	0.15	Square Miles	Fecal Coliform	36772
Duck Pond	MA96068	Wellfleet.	11.00	Acres	Mercury in Fish Tissue	33880
Dyer Pond	MA96070	Wellfleet.	10.00	Acres	Mercury in Fish Tissue	33880
East Harbor (Pilgrim Lake)	MA96-83	Truro/Provincetown.	0.50	Square Miles	Fecal Coliform	42355
Frost Fish Creek	MA96-49	Headwaters outlet cranberry bog northwest of Stony Hill Road, Chatham to mouth at inlet Ryder Cove, Chatham.	0.01	Square Miles	Fecal Coliform	22513
					Nitrogen, Total	33781
Great Harbor	MA96-18	The waters north of an imaginary line drawn east from Penzance Point, Falmouth to Devils Foot Island, Falmouth and southeast from Devils Foot Island to Juniper Point (excludes Eel Pond), Falmouth.	0.31	Square Miles	Fecal Coliform	36772
Great Pond	MA96114	Truro.	17.00	Acres	Mercury in Fish Tissue	33880
Great Pond	MA96117	Wellfleet.	41.00	Acres	Mercury in Fish Tissue	33880

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Category 4a waters listed alphabetically by major watershed
"TMDL is completed"

Water Body	Segment ID	Description	Size	Units	Pollutants Addressed By TMDL	EPA TMDL No.
Great Pond	MA96-54	From inlet of Coonamessett River, Falmouth to Vineyard Sound (excluding Perch Pond), Falmouth.	0.40	Square Miles	Enterococcus	36772
					Estuarine Bioassessments	32532
					Fecal Coliform	36772
					Nitrogen, Total	32532
Great River	MA96-60	From inlet of Abigails Brook, Mashpee to mouth at inlet Waquoit Bay (excluding Jehu Pond), Mashpee.	0.16	Square Miles	Estuarine Bioassessments	33815
					Nitrogen, Total	33815
Green Pond	MA96-55	east of Acapesket Road, Falmouth outlet to Vineyard Sound, Falmouth.	0.21	Square Miles	Estuarine Bioassessments	32534
					Fecal Coliform	36772
					Nitrogen, Total	32534
Halls Creek	MA96-93	Estuarine portion, from Marchant Mill Way, Barnstable to mouth at inlet Centerville Harbor, Barnstable.	0.07	Square Miles	Fecal Coliform	42356
Hamblin Pond	MA96-58	From inlet of Red Brook, Falmouth/Mashpee to outlet of Little River, Mashpee and inlet/outlet of Waquoit Bay west of Meadow Neck Road, Falmouth/Mashpee.	0.19	Square Miles	Estuarine Bioassessments	33812
					Fecal Coliform	36771
					Nitrogen, Total	33812
Harding Beach Pond	MA96-43	locally known as Sulfur Springs (northeast of Bucks Creek), Chatham.	0.07	Square Miles	Fecal Coliform	36772
					Nitrogen, Total	36229
Herring River	MA96-22	From outlet Herring River Reservoir (at North Harwich Reservoir Dam NATID: MA02423) west of Bells Neck Road, Harwich to mouth at inlet Nantucket Sound, Harwich.	0.07	Square Miles	Fecal Coliform	36772
Horseleach Pond	MA96144	Truro.	23.00	Acres	Mercury in Fish Tissue	42401
Hyannis Inner Harbor	MA96-82	Waters landward of an imaginary line drawn from Harbor Bluff, Barnstable to Hyannis Park, Yarmouth.	0.13	Square Miles	Fecal Coliform	42357
					Nitrogen, Total	64145
Jehu Pond	MA96-59	Mashpee.	0.09	Square Miles	Estuarine Bioassessments	33814
					Nitrogen, Total	33814
Johns Pond	MA96157	Mashpee.	316.00	Acres	Mercury in Fish Tissue	33880
Lawrence Pond	MA96165	Sandwich.	138.00	Acres	Mercury in Fish Tissue	42402
Lewis Bay	MA96-36	Includes portion of Pine Island Creek and Uncle Roberts Cove, Yarmouth to confluence with Nantucket Sound, Barnstable/Yarmouth (excluding Hyannis Inner Harbor, Barnstable/Yarmouth and Mill Creek, Yarmouth).	1.79	Square Miles	Estuarine Bioassessments	64146
					Estuarine Bioassessments	64147
					Fecal Coliform	36771
Little Harbor	MA96-19	The waters north of an imaginary line drawn from Juniper Point, Falmouth east to Nobska Beach, Falmouth.	0.07	Square Miles	Fecal Coliform	36772
Little Namskaket Creek	MA96-26	Source west of Route 6, Orleans to mouth at inlet Cape Cod Bay, Orleans.	0.01	Square Miles	Fecal Coliform	36772

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Category 4a waters listed alphabetically by major watershed
"TMDL is completed"

Water Body	Segment ID	Description	Size	Units	Pollutants Addressed By TMDL	EPA TMDL No.
Little Pleasant Bay	MA96-78	Waters north and east of imaginary lines drawn from the northeasterly edge of Orleans (near The Horseshoe), southeasterly around the northeastern tip of Sipson Island, and Sipson Meadow, Orleans then south to the northern tip of Strong Island, Chatham then east to a point on the inner Cape Cod National Seashore (CCNS)(including SARIS named Hog Island and Broad creeks) (excluding the delineated segments; The River, Pochet Neck, and Paw Wah Pond) (areas within CCNS designated as ORW).	3.27	Square Miles	Nitrogen, Total	33794
Little Pond	MA96-56	west of Vista Boulevard, Falmouth outlet to Vineyard Sound, Falmouth.	0.07	Square Miles	Estuarine Bioassessments	34009
					Fecal Coliform	42364
Little River	MA96-61	Headwaters outlet Hamblin Pond, Mashpee to mouth at confluence with Great River, Mashpee.	0.03	Square Miles	Estuarine Bioassessments	33813
					Nitrogen, Total	33813
Long Pond	MA96179	Wellfleet.	35.00	Acres	Mercury in Fish Tissue	33880
Maraspin Creek	MA96-06	From Commerce Road, Barnstable to mouth at inlet Barnstable Harbor at Blish Point, Barnstable.	0.03	Square Miles	Fecal Coliform	36771
Mashpee Pond	MA96194	Mashpee/Sandwich.	377.00	Acres	Mercury in Fish Tissue	33880
Mashpee River	MA96-24	Quinaquisset Avenue, Mashpee to mouth at inlet Shoestring Bay (formerly to mouth at Popponesset Bay), Mashpee.	0.08	Square Miles	Estuarine Bioassessments	33965
					Fecal Coliform	36771
Mill Creek	MA96-37	Headwaters outlet Hallets Millpond, Barnstable/Yarmouth to mouth at inlet Cape Cod Bay, Barnstable/Yarmouth.	0.03	Square Miles	Fecal Coliform	36771
Mill Creek	MA96-41	Headwaters outlet Taylors Pond, Chatham to mouth at inlet Cockle Cove, Chatham.	0.03	Square Miles	Fecal Coliform	36772
Mill Creek	MA96-80	Headwaters, outlet Mill Pond, Yarmouth to mouth at inlet Lewis Bay, Yarmouth.	0.07	Square Miles	Fecal Coliform	42365
					Nitrogen, Total	64148
					Nitrogen, Total	64149
Mill Creek	MA96-85	Headwaters, outlet Shawme Lake Lower, Sandwich to mouth at confluence with Old Harbor Creek, Sandwich.	0.02	Square Miles	Fecal Coliform	42366
Mill Pond	MA96-52	including Little Mill Pond (PALIS # 96174), Chatham.	0.06	Square Miles	Estuarine Bioassessments	36222
					Nitrogen, Total	36222
Muddy Creek	MA96-51	Source south of Countryside Drive and north-northeast of Old Queen Anne Road, Chatham to mouth at inlet Pleasant Bay, Harwich/Chatham, including Upper and Lower reaches.	0.05	Square Miles	Fecal Coliform	22512
					Nitrogen, Total	33797
					Nitrogen, Total	33798
Namequoit River	MA96-71	Headwaters, outlet Areys Pond, Orleans to mouth at confluence with The River, Orleans.	0.06	Square Miles	Estuarine Bioassessments	33791
					Nitrogen, Total	33791
Namskaket Creek	MA96-27	Source west of Route 6, Orleans/Brewster to mouth at inlet Cape Cod Bay, Brewster/Orleans.	0.03	Square Miles	Fecal Coliform	36772
North Bay	MA96-66	From Prince Cove outlet at Fox Island to just south of Bridge Street (including Dam Pond) and separated from Cotuit Bay at a line from Point Isabella, Barnstable southward to the opposite shore, Barnstable.	0.47	Square Miles	Estuarine Bioassessments	33990
					Fecal Coliform	36584
Old Harbor Creek	MA96-84	From Foster Road, Sandwich to mouth at inlet Sandwich Harbor, Sandwich.	0.06	Square Miles	Fecal Coliform	42367

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Category 4a waters listed alphabetically by major watershed
"TMDL is completed"

Water Body	Segment ID	Description	Size	Units	Pollutants Addressed By TMDL	EPA TMDL No.
Oyster Pond	MA96-45	Including Stetson Cove, Chatham.	0.21	Square Miles	Estuarine Bioassessments	36219
					Fecal Coliform	36772
					Nitrogen, Total	36219
Oyster Pond	MA96-62	east of Fells Road, Falmouth.	0.10	Square Miles	Dissolved Oxygen	34345
					Estuarine Bioassessments	34345
					Fecal Coliform	36772
Oyster Pond River	MA96-46	Headwaters outlet Oyster Pond, Chatham to mouth at inlet Stage Harbor, Chatham.	0.14	Square Miles	Estuarine Bioassessments	36220
					Fecal Coliform	36772
					Nitrogen, Total	36220
Pamet River	MA96-31	From tidegate at Route 6A, Truro to mouth at inlet Cape Cod Bay (including Pamet Harbor), Truro.	0.14	Square Miles	Fecal Coliform	36772
Parkers River	MA96-38	Headwaters outlet Seine Pond, Yarmouth to mouth at inlet Nantucket Sound, Yarmouth (excluding Lewis Pond, Yarmouth).	0.04	Square Miles	Fecal Coliform	36771
Paw Wah Pond	MA96-72	Orleans.	0.01	Square Miles	Estuarine Bioassessments	33792
					Fecal Coliform	42368
					Nitrogen, Total	33792
Perch Pond	MA96-53	Connects to northwest end of Great Pond, west of Keechipam Way, Falmouth.	0.03	Square Miles	Nitrogen, Total	32537
Peters Pond	MA96244	Sandwich/Mashpee.	123.00	Acres	Mercury in Fish Tissue	33880
Pleasant Bay	MA96-77	The waters between the mouth of Muddy Creek, Harwich and imaginary lines drawn from the northeastern edge of Orleans (near The Horseshoe and The Narrows), southeasterly around the northeastern tip of Sipson Island, and Sipson Meadow, Orleans then south to the northern tip of Strong Island, Chatham and from the southeastern tip of Strong Island to Allen Point, Chatham (excluding the delineated segments; Bassing Harbor, Round Cove and Quanset Pond).	2.88	Square Miles	Nitrogen, Total	33799
Pochet Neck	MA96-73	outlet to Little Pleasant Bay, Orleans (areas within Cape Cod National Seashore designated as ORW).	0.24	Square Miles	Estuarine Bioassessments	33793
					Fecal Coliform	42369
					Nitrogen, Total	33793
Popponesset Bay	MA96-40	The waters seaward of an imaginary line connecting Ryefield Point, Barnstable and Punkhorn Point, Mashpee to inlet of Nantucket Sound (including Ockway Bay, Mashpee and Pinquickset Cove, Barnstable) (excludes Popponesset Creek, Mashpee).	0.68	Square Miles	Estuarine Bioassessments	33967
					Estuarine Bioassessments	33968
					Estuarine Bioassessments	33969
Prince Cove	MA96-07	Includes areas east of Prince Cove (which are locally known as "Warren Cove" and "Prince Cove Channel") to confluence with North Bay, Barnstable.	0.14	Square Miles	Estuarine Bioassessments	33991
					Estuarine Bioassessments	33992
					Estuarine Bioassessments	33993
					Fecal Coliform	36585

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Category 4a waters listed alphabetically by major watershed
"TMDL is completed"

Water Body	Segment ID	Description	Size	Units	Pollutants Addressed By TMDL	EPA TMDL No.
Provincetown Harbor	MA96-29	The waters northwest of an imaginary line drawn northeasterly from the tip of Long Point, Provincetown to Pilgrim Beach (in vacinity of Sandbars Inn), Truro (area within Cape Cod National Seashore designated as ORW).	4.33	Square Miles	Fecal Coliform	36772
Quanset Pond	MA96-74	Orleans.	0.02	Square Miles	Nitrogen, Total	33791
					Nitrogen, Total	33795
Quashnet River	MA96-20	From just south of Route 28, Falmouth to mouth at inlet Waquoit Bay, Falmouth. Also known as Moonakis River.	0.07	Square Miles	Dissolved Oxygen	33811
					Fecal Coliform	36772
					Nitrogen, Total	33811
Quivett Creek	MA96-09	Outlet of unnamed pond just south of Route 6A, Brewster/Dennis to mouth at inlet Cape Cod Bay, Brewster/Dennis.	0.04	Square Miles	Fecal Coliform	36771
Rock Harbor Creek	MA96-16	Headwaters outlet Cedar Pond, Orleans to mouth at inlet Cape Cod Bay, Eastham/Orleans.	0.03	Square Miles	Fecal Coliform	36772
Round Pond (East)	MA96260	Truro.	6.00	Acres	Mercury in Fish Tissue	42403
Round Pond (West)	MA96261	Truro.	2.00	Acres	Mercury in Fish Tissue	42404
Ryder Cove	MA96-50	Chatham.	0.19	Square Miles	Estuarine Bioassessments	33780
					Fecal Coliform	36772
					Nitrogen, Total	33780
Santuit River	MA96-92	From confluence with fresh water portion south of Old Mill Road, Mashpee to mouth at inlet Shoestring Bay, Mashpee/Barnstable.	0.01	Square Miles	Fecal Coliform	42360
Saquatucket Harbor	MA96-23	South of Route 28, Harwich outlet to Nantucket Sound, Harwich.	0.02	Square Miles	Fecal Coliform	36772
Scorton Creek	MA96-30	Jones Lane, Sandwich to mouth at inlet Cape Cod Bay, Sandwich.	0.03	Square Miles	Fecal Coliform	36771
Seapuit River	MA96-64	south of Osterville Grand Island, Barnstable to Cotuit Bay and West Bay, Barnstable.	0.06	Square Miles	Fecal Coliform	36583
Sesuit Creek	MA96-13	Approximately 650 feet downstream from Route 6A, Dennis to mouth at inlet Sesuit Harbor, Cape Cod Bay, Dennis.	0.01	Square Miles	Fecal Coliform	36771
Sheep Pond	MA96289	Brewster.	139.00	Acres	Mercury in Fish Tissue	33880
Shoestring Bay	MA96-08	Quinaquisset Avenue, Mashpee/Barnstable to Popponesset Bay (line from Ryefield Point, Barnstable to Punkhorn Point, Mashpee, including Gooseberry Island), Barnstable/Mashpee.	0.31	Square Miles	Estuarine Bioassessments	33966
					Fecal Coliform	36771
Slough Pond	MA96298	Truro.	29.00	Acres	Mercury in Fish Tissue	33880
Snake Pond	MA96302	Sandwich.	81.00	Acres	Mercury in Fish Tissue	33880
Snow Pond	MA96303	Truro.	7.00	Acres	Mercury in Fish Tissue	33880
Snows Creek	MA96-81	East of Old Colony Road, Barnstable to mouth at inlet Lewis Bay, Barnstable.	0.02	Square Miles	Fecal Coliform	42361
Spectacle Pond	MA96306	Wellfleet.	2.00	Acres	Mercury in Fish Tissue	42405
Spectacle Pond	MA96307	Sandwich.	93.00	Acres	Mercury in Fish Tissue	42406

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Category 4a waters listed alphabetically by major watershed
"TMDL is completed"

Water Body	Segment ID	Description	Size	Units	Pollutants Addressed By TMDL	EPA TMDL No.
Springhill Creek	MA96-87	From railroad crossing northeast of Route 6A, Sandwich to mouth at confluence with Old Harbor Creek, Sandwich.	0.01	Square Miles	Fecal Coliform	42362
Stage Harbor	MA96-11	From outlet Mill Pond, Chatham (includes Mitchell River SARIS# 9661975) to inlet of Nantucket Sound at a line from the southernmost point of Harding Beach southeast to Harding Beach Point, Chatham.	0.56	Square Miles	Fecal Coliform	36772
Stewarts Creek	MA96-94	Estuarine portion west of Stetson Street, Barnstable to mouth at inlet Hyannis Harbor, Barnstable.	0.01	Square Miles	Fecal Coliform	42363
Taylors Pond	MA96-42	Chatham.	0.02	Square Miles	Fecal Coliform	36772
					Nitrogen, Total	36231
The River	MA96-76	The water landward of an imaginary line drawn between Old Field Point and Namequoit Point including Meetinghouse Pond, and Kescayo Gansett Pond (locally known as "Lonnies Pond"), Orleans (excluding the delineated segments; Namequoit River and Areys Pond).	0.41	Square Miles	Estuarine Bioassessments	33787
					Estuarine Bioassessments	33788
					Estuarine Bioassessments	33789
					Estuarine Bioassessments	33790
					Fecal Coliform	42359
					Nitrogen, Total	33787
					Nitrogen, Total	33788
					Nitrogen, Total	33789
					Nitrogen, Total	33790
Unnamed Tributary	MA96-97	Unnamed tributary to Hyannis Inner Harbor (referred to in TMDL as Inner Harbor Creek), from salt water portion north of Park Avenue, Yarmouth to mouth at inlet Hyannis Inner Harbor, Yarmouth.	0.001	Square Miles	Nitrogen, Total	64151
Wakeby Pond	MA96346	Mashpee/Sandwich.	353.00	Acres	Mercury in Fish Tissue	33880
Wequaquet Lake	MA96333	Barnstable.	576.00	Acres	(Non-Native Aquatic Plants*)	
					Mercury in Fish Tissue	33880
West Bay	MA96-65	From south of the Bridge Street bridge, Barnstable outlet to Nantucket Sound including Eel River, Barnstable (excludes Seapuit River).	0.52	Square Miles	Estuarine Bioassessments	33989
Charles						
Beaver Pond	MA72004	Bellingham/Milford.	87.00	Acres	Mercury in Fish Tissue	42394
Bogastow Brook	MA72-16	Headwaters, outlet Factory Pond, Holliston to mouth at inlet South End Pond, Millis.	9.40	Miles	Escherichia Coli (E. Coli)	32373
					Fecal Coliform	32373
Cedar Swamp Pond	MA72016	locally known as "Milford Pond", Milford.	99.00	Acres	(Non-Native Aquatic Plants*)	
					Dissolved Oxygen	40319
					Mercury in Fish Tissue	42395
Charles River	MA72-01	Headwaters, outlet Echo Lake, Hopkinton to Dilla Street (just upstream of Cedar Swamp Pond), Milford.	2.50	Miles	(Dewatering*)	
					(Flow Regime Modification*)	
					Dissolved Oxygen	40318

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Category 4a waters listed alphabetically by major watershed
"TMDL is completed"

Water Body	Segment ID	Description	Size	Units	Pollutants Addressed By TMDL	EPA TMDL No.
Charles River	MA72-33	From outlet Cedar Swamp Pond, Milford to the Milford WWTF discharge (NPDES: MA0100579), Hopedale (formerly part of segment MA72-02) (two culverted portions totaling approximately 1100 feet (0.21mile)).	2.00	Miles	(Physical substrate habitat alterations*)	
					Escherichia Coli (E. Coli)	32364
					Nutrient/Eutrophication Biological Indicators	40317
Cheese Cake Brook	MA72-29	Emerges south of Route 16, Newton to mouth at confluence with the Charles River, Newton.	1.40	Miles	(Alteration in stream-side or littoral vegetative covers*)	
					(Other anthropogenic substrate alterations*)	
					Algae	40317
					Dissolved Oxygen Supersaturation	40317
					Escherichia Coli (E. Coli)	32380
					Phosphorus, Total	40317
Echo Lake	MA72035	Milford/Hopkinton.	72.00	Acres	Mercury in Fish Tissue	33880
Factory Pond	MA72037	Holliston.	10.00	Acres	(Non-Native Aquatic Plants*)	
					Aquatic Plants (Macrophytes)	40319
Franklin Reservoir Northeast	MA72095	Franklin.	21.00	Acres	Aquatic Plants (Macrophytes)	40319
					Turbidity	40319
Franklin Reservoir Southwest	MA72032	Franklin.	13.00	Acres	Aquatic Plants (Macrophytes)	40319
					Turbidity	40319
Hardys Pond	MA72045	Waltham.	43.00	Acres	(Non-Native Aquatic Plants*)	
					Algae	40319
					Phosphorus, Total	40319
					Turbidity	40319
Houghton Pond	MA72050	Holliston.	17.00	Acres	(Non-Native Aquatic Plants*)	
					Algae	40319
					Turbidity	40319
Lake Pearl	MA72092	Wrentham.	237.00	Acres	(Eurasian Water Milfoil, Myriophyllum spicatum*)	
					(Non-Native Aquatic Plants*)	
					Dissolved Oxygen	40319
Linden Pond	MA72063	Holliston.	1.00	Acres	Aquatic Plants (Macrophytes)	40319
					Turbidity	40319
Lymans Pond	MA72070	Dover.	4.00	Acres	Aquatic Plants (Macrophytes)	40319
					Turbidity	40319
Mirror Lake	MA72078	Wrentham/Norfolk.	62.00	Acres	(Non-Native Aquatic Plants*)	
					Nutrient/Eutrophication Biological Indicators	40319
					Phosphorus, Total	40319
					Transparency / Clarity	40319

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Category 4a waters listed alphabetically by major watershed
"TMDL is completed"

Water Body	Segment ID	Description	Size	Units	Pollutants Addressed By TMDL	EPA TMDL No.
Rosemary Brook	MA72-25	Headwaters, outlet Rosemary Lake, Needham to mouth at confluence with the Charles River, Wellesley.	3.30	Miles	Dissolved Oxygen	40317
					Phosphorus, Total	40317
South Meadow Brook	MA72-24	From emergence west of Parker Street, Newton to mouth at confluence with the Charles River, Newton (three culverted portions totaling approximately 2870 feet (0.54mile)).	1.70	Miles	(Bottom Deposits*)	
					(Debris*)	
					(Physical substrate habitat alterations*)	
					(Trash*)	
					Dissolved Oxygen	40317
					Escherichia Coli (E. Coli)	32377
					Phosphorus, Total	40317
					Turbidity	40317
Uncas Pond	MA72122	Franklin.	17.00	Acres	(Non-Native Aquatic Plants*)	
					Dissolved Oxygen	40319
Unnamed Tributary	MA72-32	Locally known as "Sawins Brook" - emerges east of Elm Street, Watertown to mouth at confluence with the Charles River, Watertown (one culverted portion approximately 360 feet (0.07mile)).	0.50	Miles	Escherichia Coli (E. Coli)	32382
Chicopee						
Lake Lashaway	MA36079	North Brookfield/East Brookfield.	274.00	Acres	(Non-Native Aquatic Plants*)	
					Mercury in Fish Tissue	33880
Long Pond	MA36083	Springfield.	14.00	Acres	Nutrient/Eutrophication Biological Indicators	722
Minechoag Pond	MA36093	Ludlow.	21.00	Acres	Nutrient/Eutrophication Biological Indicators	3629
Mona Lake	MA36094	Springfield.	11.00	Acres	Nutrient/Eutrophication Biological Indicators	3630
Pottapaug Pond	MA36125	Petersham/Hardwick.	568.00	Acres	(Non-Native Aquatic Plants*)	
					Mercury in Fish Tissue	33880
Quabbin Reservoir	MA36129	Petersham/Pelham/Ware/Hardwick/Shutesbury/Belchertown /New Salem.	24012	Acres	(Non-Native Aquatic Plants*)	
					Mercury in Fish Tissue	33880
Quacumquasit Pond	MA36131	Brookfield/East Brookfield/Sturbridge.	223.00	Acres	(Eurasian Water Milfoil, Myriophyllum spicatum*)	
					(Non-Native Aquatic Plants*)	
					Mercury in Fish Tissue	33880
Spectacle Pond	MA36142	Wilbraham.	9.00	Acres	Nutrient/Eutrophication Biological Indicators	3631
Sugden Reservoir	MA36150	Spencer.	85.00	Acres	Nutrient/Eutrophication Biological Indicators	3633
Wickaboag Pond	MA36166	West Brookfield.	316.00	Acres	Turbidity	1332
Concord (SuAsCo)						
Ashland Reservoir	MA82003	Ashland.	168.00	Acres	(Non-Native Aquatic Plants*)	
					Mercury in Fish Tissue	42396

Category 4a waters listed alphabetically by major watershed
"TMDL is completed"

Water Body	Segment ID	Description	Size	Units	Pollutants Addressed By TMDL	EPA TMDL No.
Boons Pond	MA82011	Stow/Hudson.	174.00	Acres	(Non-Native Aquatic Plants*)	
					Algae	2353
					Mercury in Fish Tissue	33880
Nutting Lake	MA82124	[West Basin] Billerica.	51.00	Acres	Mercury in Fish Tissue	33880
Sudbury Reservoir	MA82106	Southborough/Marlborough.	1181.00	Acres	Mercury in Fish Tissue	33880
Walden Pond	MA82109	Concord.	63.00	Acres	Mercury in Fish Tissue	33880
Warners Pond	MA82110	Concord.	59.00	Acres	(Non-Native Aquatic Plants*)	
					Mercury in Fish Tissue	33880
Connecticut						
Lake Warner	MA34098	Hadley.	65.00	Acres	(Non-Native Aquatic Plants*)	
					Algae	651
					Dissolved Oxygen	651
					Phosphorus, Total	651
					Turbidity	651
Lake Wyola	MA34103	Shutesbury.	124.00	Acres	Nutrient/Eutrophication Biological Indicators	653
					Phosphorus, Total	653
Leverett Pond	MA34042	Leverett.	91.00	Acres	(Eurasian Water Milfoil, Myriophyllum spicatum*)	
					(Non-Native Aquatic Plants*)	
					Nutrient/Eutrophication Biological Indicators	675
Deerfield						
Ashfield Pond	MA33001	Ashfield.	38.00	Acres	Mercury in Fish Tissue	42397
Plainfield Pond	MA33017	Plainfield.	60.00	Acres	Mercury in Fish Tissue	33880
Farmington						
Otis Reservoir	MA31027	Otis/Tolland/Blandford.	989.00	Acres	Mercury in Fish Tissue	33880
French						
Buffumville Lake	MA42005	Charlton/Oxford.	199.00	Acres	(Non-Native Aquatic Plants*)	
					Mercury in Fish Tissue	33880
Dresser Hill Pond	MA42014	Charlton.	8.00	Acres	Turbidity	2360
Dutton Pond	MA42015	Leicester.	6.00	Acres	Nutrient/Eutrophication Biological Indicators	2354
					Phosphorus, Total	2354
Gore Pond	MA42018	Dudley/Charlton.	169.00	Acres	(Non-Native Aquatic Plants*)	
					Algae	2361
					Dissolved Oxygen	2361
					Turbidity	2361
Greenville Pond	MA42023	Leicester.	31.00	Acres	Turbidity	2355

* TMDL not required (Non-pollutant)

Category 4a waters listed alphabetically by major watershed
"TMDL is completed"

Water Body	Segment ID	Description	Size	Units	Pollutants Addressed By TMDL	EPA TMDL No.
Hudson Pond	MA42029	Oxford/Sutton.	15.00	Acres	(Aquatic Plants (Macrophytes)*)	
					Nutrient/Eutrophication Biological Indicators	2363
Jones Pond	MA42030	Charlton/Spencer.	30.00	Acres	(Aquatic Plants (Macrophytes)*)	
					Nutrient/Eutrophication Biological Indicators	2364
Lowes Pond	MA42034	Oxford.	33.00	Acres	Nutrient/Eutrophication Biological Indicators	2366
Mckinstry Pond	MA42035	Oxford.	16.00	Acres	Nutrient/Eutrophication Biological Indicators	2367
Pikes Pond	MA42044	Charlton.	28.00	Acres	Turbidity	2371
Rochdale Pond	MA42048	Leicester.	43.00	Acres	Nutrient/Eutrophication Biological Indicators	2356
Wallis Pond	MA42062	Dudley.	24.00	Acres	(Aquatic Plants (Macrophytes)*)	
					Dissolved Oxygen	2375
					Nutrient/Eutrophication Biological Indicators	2375
Housatonic						
Pontoosuc Lake	MA21083	Lanesborough/Pittsfield.	500.00	Acres	(Eurasian Water Milfoil, Myriophyllum spicatum*)	
					(Non-Native Aquatic Plants*)	
					Mercury in Fish Tissue	33880
Stockbridge Bowl	MA21105	Stockbridge.	384.00	Acres	(Eurasian Water Milfoil, Myriophyllum spicatum*)	
					Mercury in Fish Tissue	33880
Ipswich						
Hood Pond	MA92025	Ipswich/Topsfield.	68.00	Acres	Mercury in Fish Tissue	33880
Mill Pond	MA92041	Burlington.	59.00	Acres	Mercury in Fish Tissue	33880
Islands						
Edgartown Great Pond	MA97-17	excluding Jacobs Pond (PALIS# 97038) Edgartown, Martha's Vineyard.	1.35	Square Miles	Estuarine Bioassessments	64380
					Nitrogen, Total	64380
					Nutrient/Eutrophication Biological Indicators	64380
Farm Pond	MA97-30	Oak Bluffs.	0.05	Square Miles	Dissolved Oxygen	64662
					Estuarine Bioassessments	64662
					Nitrogen, Total	64662
					Nutrient/Eutrophication Biological Indicators	64662
Gibbs Pond	MA97028	Nantucket.	34.00	Acres	Mercury in Fish Tissue	33880

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Category 4a waters listed alphabetically by major watershed
"TMDL is completed"

Water Body	Segment ID	Description	Size	Units	Pollutants Addressed By TMDL	EPA TMDL No.
Hither Creek	MA97-28	From the outlet of Long Pond to Madaket Harbor at an imaginary line drawn easterly from Jackson Point to Little Neck, Nantucket (as of the 2016 reporting cycle this segment includes Madaket Ditch).	0.07	Square Miles	Dissolved Oxygen	64480
					Estuarine Bioassessments	64480
					Nitrogen, Total	64480
					Nutrient/Eutrophication Biological Indicators	64480
Lagoon Pond	MA97-11	From Head of the Pond Road to confluence with Vineyard Haven Harbor at Beach Road, Tisbury/Oak Bluffs, Martha's Vineyard.	0.82	Square Miles	Dissolved Oxygen	64583
					Dissolved Oxygen	64584
					Estuarine Bioassessments	64583
					Estuarine Bioassessments	64584
					Nitrogen, Total	64583
					Nitrogen, Total	64584
					Nutrient/Eutrophication Biological Indicators	64583
					Nutrient/Eutrophication Biological Indicators	64584
Miacomet Pond	MA97055	Nantucket.	34.00	Acres	Mercury in Fish Tissue	33880
North Head Long Pond	MA97-34	tidally restricted brackish water, Nantucket.	0.07	Square Miles	Nutrient/Eutrophication Biological Indicators	64481
Tom Nevers Pond	MA97097	Nantucket.	11.00	Acres	Mercury in Fish Tissue	33880
Trapps Pond	MA97-32	Edgartown.	0.07	Square Miles	Dissolved Oxygen	65321
					Estuarine Bioassessments	65321
					Nitrogen, Total	65321
					Nutrient/Eutrophication Biological Indicators	65321
Merrimack						
Forge Pond	MA84015	Westford/Littleton.	203.00	Acres	(Non-Native Aquatic Plants*)	
					Mercury in Fish Tissue	33880
Knops Pond/Lost Lake	MA84084	Groton.	187.00	Acres	(Eurasian Water Milfoil, Myriophyllum spicatum*)	
					(Non-Native Aquatic Plants*)	
					Mercury in Fish Tissue	33880
Locust Pond	MA84031	Tyngsborough.	16.00	Acres	Mercury in Fish Tissue	33880
Millers						
Bents Pond	MA35007	Gardner.	6.00	Acres	Algae	4115
					Turbidity	4115
Hilchey Pond	MA35029	Gardner.	8.00	Acres	Turbidity	4128
Lake Denison	MA35017	Winchendon.	83.00	Acres	Dissolved Oxygen	4123
					Mercury in Fish Tissue	33880
Lake Rohunta	MA35106	(North Basin) Athol/Orange.	34.00	Acres	(Non-Native Aquatic Plants*)	
					Mercury in Fish Tissue	33880

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Category 4a waters listed alphabetically by major watershed
"TMDL is completed"

Water Body	Segment ID	Description	Size	Units	Pollutants Addressed By TMDL	EPA TMDL No.
Moores Pond	MA35048	Warwick.	39.00	Acres	Mercury in Fish Tissue	42398
Parker Pond	MA35056	Gardner.	32.00	Acres	(Aquatic Plants (Macrophytes)*)	
					(Non-Native Aquatic Plants*)	
					Nutrient/Eutrophication Biological Indicators	4134
Reservoir No. 1	MA35063	Athol.	8.00	Acres	(Aquatic Plants (Macrophytes)*)	
					Nutrient/Eutrophication Biological Indicators	4137
Upper Naukeag Lake	MA35090	Ashburnham.	305.00	Acres	Mercury in Fish Tissue	33880
Upper Reservoir	MA35091	Westminster.	42.00	Acres	Mercury in Fish Tissue	33880
Whites Mill Pond	MA35099	Winchendon.	42.00	Acres	(Aquatic Plants (Macrophytes)*)	
					Nutrient/Eutrophication Biological Indicators	4144
Mount Hope Bay (Shore)						
Kickamuit River	MA61-08	Headwaters, outlet Warren Resevoir, Swansea, to state line, Swansea, MA/Warren, RI.	2.80	Miles	Escherichia Coli (E. Coli)	30702
					Fecal Coliform	30702
Lewin Brook Pond	MA61011	Swansea.	11.00	Acres	Mercury in Fish Tissue	33880
North Watuppa Pond	MA61004	Fall River/Westport.	1728.00	Acres	Mercury in Fish Tissue	33880
Sawdy Pond	MA61005	Westport/Fall River.	369.00	Acres	Mercury in Fish Tissue	42407
Narragansett Bay (Shore)						
Fullers Brook	MA53-12	Headwaters in wetland north of Jacobs Street, Seekonk to confluence with Palmer River, Rehoboth.	1.70	Miles	Escherichia Coli (E. Coli)	35089
Oak Swamp Brook	MA53-15	Headwaters in Oak Swamp east of School Street, Rehoboth to confluence with Rocky Run, Rehoboth.	3.00	Miles	Escherichia Coli (E. Coli)	35091
Palmer River	MA53-03	From Route 6 bridge, Rehoboth to state line, Swansea, MA/Barrington, RI.	0.11	Square Miles	Fecal Coliform	35085
Palmer River	MA53-05	From the Shad Factory Pond dam (NATID: MA00787), Rehoboth to the Route 6 bridge, Rehoboth.	0.09	Square Miles	Fecal Coliform	35087
Rocky Run	MA53-16	Headwaters in wetland east of Simmons Street, Rehoboth to approximately 0.1 mile east of Mason Street, Rehoboth.	8.60	Miles	Escherichia Coli (E. Coli)	35096
					Fecal Coliform	35096
Rocky Run	MA53-18	approximately 0.1 mile east of Mason Street, Rehoboth to confluence with Palmer River, Rehoboth.	0.003	Square Miles	Fecal Coliform	35096
Torrey Creek	MA53-14	Headwaters in wetland east of Benson Avenue, Seekonk to Barney Avenue, Rehoboth (includes culverted section [approximately 1200 feet] near Seekonk Speedway, Seekonk).	2.10	Miles	(Alteration in stream-side or littoral vegetative covers*)	
					(Habitat Assessment*)	
					Escherichia Coli (E. Coli)	35088
Torrey Creek	MA53-17	From Barney Avenue, Rehoboth to confluence with Palmer River, Rehoboth.	0.004	Square Miles	Fecal Coliform	35088
Warren River Pond	MA53-06	Salt pond in Swansea on MA/RI border (portion in MA only).	0.06	Square Miles	Fecal Coliform	38904

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Category 4a waters listed alphabetically by major watershed
"TMDL is completed"

Water Body	Segment ID	Description	Size	Units	Pollutants Addressed By TMDL	EPA TMDL No.
Nashua						
Bare Hill Pond	MA81007	Harvard.	310.00	Acres	(Non-Native Aquatic Plants*)	
					Mercury in Fish Tissue	33880
Hickory Hills Lake	MA81031	Lunenburg.	311.00	Acres	Mercury in Fish Tissue	33880
Lake Wampanoag	MA81151	Ashburnham/Gardner.	224.00	Acres	Mercury in Fish Tissue	33880
Wachusett Reservoir	MA81147	Boylston/West Boylston/Clinton/Sterling.	3962.00	Acres	(Eurasian Water Milfoil, Myriophyllum spicatum*)	
					(Non-Native Aquatic Plants*)	
					Mercury in Fish Tissue	33880
North Coastal						
Alewife Brook	MA93-46	From Landing Road, Essex to mouth at confluence with Essex River, Essex.	0.01	Square Miles	Fecal Coliform	50121
Annisquam River	MA93-12	The waters from the Gloucester Harbor side of the Route 127 bridge, Gloucester to Ipswich Bay at an imaginary line drawn from Bald Rocks to Wigwam Point, Gloucester.	0.82	Square Miles	Fecal Coliform	50121
Bass River	MA93-08	From outlet of "lower Shoe Pond" north of Route 62, Beverly to mouth at confluence with Danvers River and Beverly Harbor, Beverley.	0.12	Square Miles	Fecal Coliform	50121
Bennetts Pond Brook	MA93-48	Headwaters east of Lynn Fells Parkway (in Bellevue Golf Course), Melrose to mouth at confluence with Saugus River, Saugus.	2.40	Miles	Escherichia Coli (E. Coli)	50120
					Fecal Coliform	50120
Beverly Harbor	MA93-20	From the mouth of the Danvers River, Salem/Beverly to an imaginary line from Juniper Point, Salem to Hospital Point, Beverly.	1.02	Square Miles	Fecal Coliform	50122
Causeway Brook	MA93-47	Headwaters, outlet Dexter Pond, Manchester to mouth at confluence with Cat Brook, Manchester.	1.10	Miles	Escherichia Coli (E. Coli)	50120
					Fecal Coliform	50120
Chebacco Lake	MA93014	Hamilton/Essex.	204.00	Acres	(Non-Native Aquatic Plants*)	
					Mercury in Fish Tissue	33880
Crane Brook	MA93-02	Headwaters, perennial portion east of Route 95, Danvers to mouth at inlet Mill Pond, Danvers.	1.80	Miles	Escherichia Coli (E. Coli)	50120
					Fecal Coliform	50120
Crane River	MA93-41	From outlet pump house sluiceway, Purchase Street, Danvers to mouth at confluence with Danvers River, Danvers (formerly a portion of MA93-03, includes Crane River Pond formerly MA93017).	0.07	Square Miles	Fecal Coliform	50121
Danvers River	MA93-09	From confluence of Porter, Crane and Waters rivers, Danvers to mouth at confluence with Bass and North rivers and Beverly Harbor, Beverly/Salem.	0.53	Square Miles	Fecal Coliform	50121

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Category 4a waters listed alphabetically by major watershed
"TMDL is completed"

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Essex Bay	MA93-16	The waters landward of Ipswich Bay contained within an imagiany line drawn from the northwestern tip of Gloucester near Coffins Beach to the southern tip of Castle Neck, Ipswich to the eastern most point of Dilly Island, Essex (mouth of Castle Neck River) and then from Cross Island, Essex to Conomo Point, Essex (mouth of Essex River) excluding Walker, Lanes, and Farm creeks.	0.97	Square Miles	Fecal Coliform	50121
Essex River	MA93-11	Source east of Southern Avenue, Essex to mouth at Essex Bay, Essex.	0.51	Square Miles	Fecal Coliform	50121
Frost Fish Brook	MA93-36	From Cabot Road, Danvers to mouth at confluence with Porter River, Route 62, Danvers.	1.00	Miles	Escherichia Coli (E. Coli)	50120
					Fecal Coliform	50120
Hawkes Brook	MA93-32	Headwaters near the Lynn/Lynnfield border to the inlet of Hawkes Pond, Lynnfield.	2.60	Miles	Escherichia Coli (E. Coli)	50120
					Fecal Coliform	50120
Hawkes Brook	MA93-33	From outlet of Hawkes Pond, Saugus to mouth at confluence with Saugus River, Saugus.	1.10	Miles	(Debris*)	
					(Trash*)	
					Escherichia Coli (E. Coli)	50120
					Fecal Coliform	50120
Lynn Harbor	MA93-52	The "inner" portion of Lynn Harbor; the waters landward of an imaginary line drawn from Black Rock Point, Nahant to the eastern edge of Point of Pines, Revere excluding the Saugus River (formerly a portion of MA93-23).	1.62	Square Miles	Enterococcus	50122
					Fecal Coliform	50122
Lynn Harbor	MA93-53	The "outer" portion of Lynn Harbor; the waters landward of an imaginary line drawn from Baileys Hill, Nahant to the eastern point of Winthrop Highlands, Winthrop to the seaward edge of the "inner" portion of Lynn Harbor (at an imaginary line drawn from Black Rock Point, Nahant to the eastern edge of Point of Pines, Revere) (formerly a portion of MA93-23).	6.57	Square Miles	Fecal Coliform	50122
Manchester Harbor	MA93-19	The waters landward of an imaginary line drawn between Gales Point, Manchester and Chubb Point, Manchester excluding Cat Brook.	0.33	Square Miles	Enterococcus	50122
					Fecal Coliform	50122
Marblehead Harbor	MA93-22	The waters landward of an imaginary line drawn northwesterly from the northern tip of Marblehead Neck, Marblehead to Fort Sewall, Marblehead.	0.57	Square Miles	Fecal Coliform	50121
Mill River	MA93-28	Headwaters, outlet Mill Pond, Gloucester to mouth at confluence with Annisquam River, Gloucester.	0.10	Square Miles	Fecal Coliform	50121
Nahant Bay	MA93-24	The waters landward of an imaginary line drawn between Galloupes Point, Swampscott and East Point, Nahant.	5.12	Square Miles	Enterococcus	50121
					Fecal Coliform	50121
Pines River	MA93-15	Headwaters east of Route 1, Revere/Saugus to mouth at confluence with the Saugus River and Lynn Harbor, Saugus/Revere (through Seaplane Basin formerly MA93067).	0.58	Square Miles	Fecal Coliform	50122
Porter River	MA93-04	Headwaters, confluence with Frost Fish Brook, Route 62, Danvers to mouth at confluence with Danvers River, Danvers (includes Porters Pond formerly MA93058).	0.13	Square Miles	Enterococcus	50121
					Fecal Coliform	50121

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Category 4a waters listed alphabetically by major watershed
"TMDL is completed"

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Rockport Harbor	MA93-57	Waters landward of an imaginary line from Gully Point, Rockport to Granite Pier, Rockport (including Back Harbor and a portion of Sandy Bay) (includes area formerly reported as segment MA93-17).	0.35	Square Miles	Fecal Coliform	50122
Salem Sound	MA93-55	Northern portion of Salem Sound, waters landward of and within imaginary lines from Chubb Point, Manchester to Gales Point, Manchester to the northwest point of Bakers Island, Salem to Hospital Point, Beverly (formerly reported as a portion of segment MA93-25 Salem Sound [waterbody code 93907]).	3.46	Square Miles	Fecal Coliform	50121
Salem Sound	MA93-56	Southern portion of Salem Sound, waters landward of and within imaginary lines from Fort Sewall, Marblehead to the Marblehead Lighthouse on Marblehead Neck, Marblehead to the northwest point of Bakers Island, Salem to Naugus Head, Marblehead (formerly a portion of MA93-25 Salem Sound [waterbody code 93907]).	2.55	Square Miles	Fecal Coliform	50121
Saugus River	MA93-35	From the Lynn Water & Sewer Commission diversion canal, Wakefield/Lynnfield to Saugus Iron Works, Bridge Street, Saugus (formerly part of segment MA93-13).	5.40	Miles	(Alteration in stream-side or littoral vegetative covers*)	
					(Dewatering*)	
					Escherichia Coli (E. Coli)	50120
					Fecal Coliform	50120
Shute Brook	MA93-49	From saltwater wetland downstream of Central Street, Saugus to mouth at confluence with the Saugus River, Saugus.	0.01	Square Miles	Fecal Coliform	50121
Shute Brook	MA93-50	From the confluence of Fiske Brook, Saugus to approximately 350 feet downstream from Central Street, Saugus.	0.90	Miles	Escherichia Coli (E. Coli)	50120
					Fecal Coliform	50120
Waters River	MA93-01	From west of Route 128, Peabody/Danvers to mouth at confluence with Danvers River and Beverly Harbor, Danvers (includes Waters River Pond formerly MA93088).	0.09	Square Miles	Fecal Coliform	50121
Quinebaug						
East Brimfield Reservoir	MA41014	Brimfield/Sturbridge.	313.00	Acres	(Non-Native Aquatic Plants*)	
					Mercury in Fish Tissue	33880
Holland Pond	MA41022	Holland.	66.00	Acres	Mercury in Fish Tissue	33880
Shawsheen						
Kiln Brook	MA83-10	Outlet unnamed pond (in Pine Meadows Country Club), Lexington, to confluence with Shawsheen River, Bedford.	1.50	Miles	Fecal Coliform	2587
Long Meadow Brook	MA83-11	Wetland east of Lexington Street and north of Independence Drive, Burlington, to confluence with Vine Brook, Burlington.	1.30	Miles	Escherichia Coli (E. Coli)	2587
					Fecal Coliform	2587
Rogers Brook	MA83-04	From outlet of unnamed impoundment upstream of Morton Street, Andover (Prior to 1997 cycle listed as "Headwaters Billerica...") to confluence with Shawsheen River, Andover.	1.30	Miles	(Physical substrate habitat alterations*)	
					Escherichia Coli (E. Coli)	2587
					Fecal Coliform	2587

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Category 4a waters listed alphabetically by major watershed
"TMDL is completed"

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Sandy Brook	MA83-13	Headwaters north of Bedford Street and east of Fairfax Street, Burlington to confluence with Vine Brook, Burlington.	1.20	Miles	Escherichia Coli (E. Coli)	2587
					Fecal Coliform	2587
Shawsheen River	MA83-19	Outlet of Ballardvale Impoundment, Andover to the confluence with the Merrimack River, Lawrence. (Formerly part of segment MA83-02 and all of MA83-03, changed for 2004 cycle).	8.20	Miles	Escherichia Coli (E. Coli)	2587
					Fecal Coliform	2587
Strong Water Brook	MA83-07	Headwaters northeast of Long Pond, Tewksbury to confluence with Shawsheen River, Tewksbury.	4.90	Miles	Escherichia Coli (E. Coli)	2587
					Fecal Coliform	2587
Unnamed Tributary	MA83-21	Unnamed intermittent tributary to the Shawsheen River locally known as 'Sutton Brook', from headwaters north of Research Drive, Wilmington to confluence with the Shawsheen River, Tewksbury.	3.00	Miles	Escherichia Coli (E. Coli)	2587
South Coastal						
Aaron River Reservoir	MA94178	Cohasset/Hingham/Scituate.	136.00	Acres	(Fish Passage Barrier*)	
					Mercury in Fish Tissue	33880
Bluefish River	MA94-30	Saltmarsh north of Harrison Street, Duxbury to mouth at Duxbury Bay, Duxbury.	0.07	Square Miles	Fecal Coliform	61738
Cohasset Cove	MA94-32	The waters south of a line drawn from the Bassing Beach jetty, Scituate westerly to the opposite shore, Cohasset excluding Baileys Creek and The Gulf.	0.09	Square Miles	Fecal Coliform	61706
					Fecal Coliform	61739
Cohasset Harbor	MA94-01	The waters south of a line drawn from the northwestern point of Scituate Neck, Scituate to just north of Quarry Point, Cohasset not including Cohasset Cove, Cohasset/Scituate.	0.70	Square Miles	Fecal Coliform	61708
Duxbury Bay	MA94-15	The waters north and west of a line from Saquish Head to the tip of Plymouth Beach and from there to High Cliff (includes Kingston Bay), Plymouth excluding Back River and Bluefish River, Duxbury and Jones River, Kingston.	12.70	Square Miles	Fecal Coliform	61735
Ellisville Harbor	MA94-34	east of Ellisville Road, Plymouth.	0.01	Square Miles	Fecal Coliform	61716
Great Herring Pond	MA94050	Bourne/Plymouth.	415.00	Acres	Mercury in Fish Tissue	33880
Great South Pond	MA94054	Plymouth.	285.00	Acres	Mercury in Fish Tissue	33880
Green Harbor	MA94-11	From the tidegates at Route 139, Marshfield to the mouth of the harbor at Massachusetts Bay/Cape Cod Bay, Marshfield.	0.08	Square Miles	Fecal Coliform	61731
Herring River	MA94-07	Headwaters, outlet Old Oaken Bucket Pond, Scituate to mouth at confluence with North River, Scituate.	0.08	Square Miles	Enterococcus	61727
					Fecal Coliform	61727
Jones River	MA94-14	From dam (NATID: MA00395) at Elm Street, Kingston to mouth at Kingston Bay, Kingston.	0.09	Square Miles	Fecal Coliform	61734
Little Harbor	MA94-20	Cove south of Nichols Road, west of Atlantic Avenue, and north of Cohasset center, Cohasset.	0.24	Square Miles	Fecal Coliform	2586
North River	MA94-06	Route 3A, Marshfield/Scituate to confluence with South River/Massachusetts Bay, Marshfield/Scituate.	0.54	Square Miles	Fecal Coliform	61730

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Category 4a waters listed alphabetically by major watershed
"TMDL is completed"

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Scituate Harbor	MA94-02	The waters west of a line across the mouth of Scituate Harbor, from the elbow of the jetty southeast off Lighthouse Point to the jetty northeast of the U.S. Coast Guard Station, Scituate.	0.32	Square Miles	Fecal Coliform	61715
Second Herring Brook	MA94-31	From the Second Herring Brook Pond Dam (NATID: MA02171), Norwell to mouth at confluence with the North River, Norwell.	0.003	Square Miles	Fecal Coliform	61721
South River	MA94-09	From dam near Main Street (Route 3A), Marshfield to mouth at confluence with North River/Massachusetts Bay, Marshfield/Scituate.	0.63	Square Miles	Enterococcus	61728
					Fecal Coliform	61728
The Gulf	MA94-19	Headwaters, outlet Hunters Pond, Scituate to confluence with Cohasset Cove just north of Border Street, Cohasset.	0.13	Square Miles	Fecal Coliform	61710
Taunton						
Assonet River	MA62-20	From Tisdale Pond Dam (NATID: MA03049) (north of Route 79/Elm Street intersection), Freetown to mouth at confluence with the Taunton River, Freetown/Berkley.	0.82	Square Miles	Fecal Coliform	40309
Beaver Brook	MA62-09	Outlet Cleveland Pond, Abington to mouth at confluence with Salisbury Plain River forming headwaters Matfield River, East Bridgewater.	6.80	Miles	Escherichia Coli (E. Coli)	40308
					Fecal Coliform	40308
Broad Cove	MA62-50	Dighton/Somerset (formerly reported as lake segment MA62022).	0.13	Square Miles	Fecal Coliform	40309
Lake Nippenicket	MA62131	Bridgewater/Raynham.	375.00	Acres	(Non-Native Aquatic Plants*)	
					Mercury in Fish Tissue	33880
Meadow Brook	MA62-38	Headwaters north of Pine Street, Whitman (through Forge Pond, East Bridgewater) to the confluence with the Matfield River, East Bridgewater.	6.00	Miles	Escherichia Coli (E. Coli)	40308
					Fecal Coliform	40308
Muddy Cove Brook	MA62-51	From the outlet of the small impoundment behind 333 Main Street (Zeneca Inc.), Dighton to mouth at confluence with the Taunton River, Dighton (formerly part of MA62-23).	0.01	Square Miles	Fecal Coliform	40309
Segreganset River	MA62-55	From approximately 250 feet north of Brook Street, Dighton to mouth at confluence with the Taunton River, Dighton (formerly part of segment MA62-18).	0.02	Square Miles	Fecal Coliform	40309
Somerset Reservoir	MA62174	Somerset.	164.00	Acres	Mercury in Fish Tissue	33880
Taunton River	MA62-02	From Route 24 bridge, Taunton/Raynham to Berkley Bridge, Dighton/Berkley.	0.28	Square Miles	Enterococcus	40310
					Fecal Coliform	40310
Three Mile River	MA62-57	From dam (NATID: MA03083) behind 66 South Street (Harodite Finishing Co.), Taunton/Dighton to mouth at confluence with the Taunton River, Taunton/Dighton (formerly part of segment MA62-16).	0.02	Square Miles	Fecal Coliform	40310
Ten Mile						
Whiting Pond	MA52042	North Attleborough/Plainville.	24.00	Acres	Mercury in Fish Tissue	33880

* TMDL not required (Non-pollutant)

Category 4a waters listed alphabetically by major watershed
"TMDL is completed"

Water Body	Segment ID	Description	Size	Units	Pollutants Addressed By TMDL	EPA TMDL No.
Westfield						
Buckley-Dunton Lake	MA32013	Becket.	154.00	Acres	Mercury in Fish Tissue	42411

Category 4b waters
"Impairment controlled by alternative pollution control requirements"

According to the EPA guidance, Category 4b lists waters impaired by one or more pollutants; however, pollution control measures other than TMDLs are expected to attain all designated uses. Massachusetts is not including any waters in Category 4b for the 2016 listing cycle.

Category 4c waters listed alphabetically by major watershed "Impairment not caused by a pollutant – TMDL not required"

Water Body	Segment ID	Description	Size	Units	Impairment
Blackstone					
Brierly Pond	MA51010	Millbury.	18.00	Acres	(Aquatic Plants (Macrophytes)*)
					(Non-Native Aquatic Plants*)
Coes Reservoir	MA51024	Worcester.	87.00	Acres	(Eurasian Water Milfoil, Myriophyllum spicatum*)
Dark Brook Reservoir	MA51035	[South Basin] Auburn.	58.00	Acres	(Eurasian Water Milfoil, Myriophyllum spicatum*)
					(Non-Native Aquatic Plants*)
Dark Brook Reservoir	MA51036	[North Basin] Auburn.	171.00	Acres	(Eurasian Water Milfoil, Myriophyllum spicatum*)
Girard Pond	MA51053	Sutton.	2.00	Acres	(Non-Native Aquatic Plants*)
Howe Reservoirs	MA51070	[East Basin] Millbury.	2.00	Acres	(Dewatering*)
					(Non-Native Aquatic Plants*)
Ironstone Reservoir	MA51074	Uxbridge.	28.00	Acres	(Non-Native Aquatic Plants*)
Jenks Reservoir	MA51075	Bellingham.	26.00	Acres	(Non-Native Aquatic Plants*)
Mill Pond	MA51104	Upton.	10.00	Acres	(Non-Native Aquatic Plants*)
Miscoe Lake	MA51106	Wrentham (size indicates portion in Massachusetts) (entire portion in MA is from 1000 feet upstream of the state line, these interstate surface waters are public water supply in Rhode Island and designated in MA as Class A/PWS/ORW).	5.00	Acres	(Non-Native Aquatic Plants*)
Newton Pond	MA51110	Shrewsbury/Boylston.	54.00	Acres	(Non-Native Aquatic Plants*)
North Pond	MA51112	Hopkinton/Milford.	231.00	Acres	(Non-Native Aquatic Plants*)
Pratt Pond	MA51123	Upton.	40.00	Acres	(Non-Native Aquatic Plants*)
Quinsigamond River	MA51-09	Headwaters, outlet Flint Pond, Grafton to confluence with the Blackstone River in Fisherville Pond, Grafton (excluding approximately 0.5 mile through Lake Ripple segment MA51135) (segment includes all of Hovey Pond formerly segment MA51068 and a portion of Fisherville Pond formerly segment MA51048).	5.20	Miles	(Eurasian Water Milfoil, Myriophyllum spicatum*)
					(Non-Native Aquatic Plants*)
Riverlin Street Pond	MA51137	Millbury.	2.00	Acres	(Non-Native Aquatic Plants*)
Rivulet Pond	MA51138	Uxbridge.	4.00	Acres	(Non-Native Aquatic Plants*)
Sibley Reservoir	MA51148	Sutton.	25.00	Acres	(Dewatering*)
Silver Lake	MA51150	Bellingham.	42.00	Acres	(Non-Native Aquatic Plants*)
Silver Lake	MA51151	Grafton.	25.00	Acres	(Dewatering*)
Singletary Pond	MA51152	Sutton/Millbury.	341.00	Acres	(Eurasian Water Milfoil, Myriophyllum spicatum*)
					(Non-Native Aquatic Plants*)
Stevens Pond	MA51159	Sutton.	85.00	Acres	(Non-Native Aquatic Plants*)
Swans Pond	MA51164	Sutton/Northbridge.	32.00	Acres	(Non-Native Aquatic Plants*)
Taft Pond	MA51165	Upton.	11.00	Acres	(Non-Native Aquatic Plants*)

Category 4c waters listed alphabetically by major watershed "Impairment not caused by a pollutant – TMDL not required"

Water Body	Segment ID	Description	Size	Units	Impairment
Tinker Hill Pond	MA51167	Auburn.	37.00	Acres	(Non-Native Aquatic Plants*)
Tuckers Pond	MA51169	Sutton.	26.00	Acres	(Non-Native Aquatic Plants*)
Whitins Pond	MA51180	Northbridge/Sutton.	163.00	Acres	(Non-Native Aquatic Plants*)
Boston Harbor: Mystic					
Hills Pond	MA71018	Arlington.	2.00	Acres	(Eurasian Water Milfoil, Myriophyllum spicatum*)
Boston Harbor: Neponset					
Billings Street/East Street Pond	MA73065	Sharon.	2.00	Acres	(Non-Native Aquatic Plants*)
Clark Pond	MA73008	Walpole.	7.00	Acres	(Non-Native Aquatic Plants*)
Ellis Pond	MA73018	Norwood.	17.00	Acres	(Non-Native Aquatic Plants*)
Farrington Pond	MA73040	Stoughton.	3.00	Acres	(Non-Native Aquatic Plants*)
Glen Echo Pond	MA73022	Canton/Stoughton.	16.00	Acres	(Non-Native Aquatic Plants*)
Jewells Pond	MA73026	Medfield.	4.00	Acres	(Non-Native Aquatic Plants*)
Pinewood Pond	MA73039	Stoughton.	25.00	Acres	(Aquatic Plants (Macrophytes)*)
					(Non-Native Aquatic Plants*)
Town Pond	MA73056	Stoughton.	8.00	Acres	(Non-Native Aquatic Plants*)
Turner Pond	MA73058	Walpole.	18.00	Acres	(Non-Native Aquatic Plants*)
Unnamed Tributary	MA73-34	Headwaters, outlet Clark Pond, Walpole to confluence with Neponset River, Walpole (locally considered part of Spring Brook) (excluding the approximately 0.2 miles through Diamond Pond and the approximately 0.2 miles through Memorial Pond segment MA73012).	0.80	Miles	(Debris*)
					(Trash*)
Woods Pond	MA73055	Stoughton.	14.00	Acres	(Non-Native Aquatic Plants*)
Boston Harbor: Weymouth & Weir					
Accord Brook	MA74-17	From water supply intake (4131000-02S Accord Brook) south of South Pleasant Street, Hingham to mouth at inlet Triphammer Pond, Hingham.	1.80	Miles	(Dewatering*)
Sunset Lake	MA74020	Braintree.	58.00	Acres	(Eurasian Water Milfoil, Myriophyllum spicatum*)
Buzzards Bay					
Federal Pond	MA95055	Carver/Plymouth.	122.00	Acres	(Non-Native Aquatic Plants*)
Fresh Meadow Pond	MA95174	Carver/Plymouth.	59.00	Acres	(Non-Native Aquatic Plants*)
Mill Pond	MA95105	Wareham.	149.00	Acres	(Non-Native Aquatic Plants*)
White Island Pond, East Basin	MA95166	(East Basin) Plymouth/Wareham.	165.00	Acres	(Non-Native Aquatic Plants*)
White Island Pond, West Basin	MA95173	(West Basin) Plymouth/Wareham.	123.00	Acres	(Non-Native Aquatic Plants*)
Cape Cod					
Hawes Run	MA96-101	Headwaters outlet small unnamed pond west of Higgins Crowell Road, Yarmouth to mouth at inlet Mill Pond, Yarmouth.	1.70	Miles	(Debris*)
					(Trash*)
Long Pond	MA96184	Barnstable.	48.00	Acres	(Non-Native Aquatic Plants*)

Category 4c waters listed alphabetically by major watershed "Impairment not caused by a pollutant – TMDL not required"

Water Body	Segment ID	Description	Size	Units	Impairment
Charles					
Beaver Pond	MA72006	Franklin.	32.00	Acres	(Non-Native Aquatic Plants*)
Dug Pond	MA72034	Natick.	50.00	Acres	(Non-Native Aquatic Plants*)
Kingsbury Pond	MA72056	Norfolk.	15.00	Acres	(Dewatering*)
Lake Archer	MA72002	Wrentham.	77.00	Acres	(Non-Native Aquatic Plants*)
Lake Waban	MA72125	Wellesley.	109.00	Acres	(Eurasian Water Milfoil, Myriophyllum spicatum*)
					(Non-Native Aquatic Plants*)
Morses Pond	MA72079	Wellesley/Natick.	112.00	Acres	(Eurasian Water Milfoil, Myriophyllum spicatum*)
					(Non-Native Aquatic Plants*)
Noannet Pond	MA72084	Westwood/Dover.	50.00	Acres	(Non-Native Aquatic Plants*)
Nonesuch Pond	MA72085	Natick/Weston.	39.00	Acres	(Non-Native Aquatic Plants*)
Scarboro Golf Course Pond	MA72107	Boston.	6.00	Acres	(Non-Native Aquatic Plants*)
Unnamed Tributary	MA72-27	Headwaters, outlet Stony Brook Reservoir, Waltham/Weston to mouth at confluence with the Charles River, Waltham/Weston.	0.20	Miles	(Dewatering*)
					(Flow Regime Modification*)
Chicopee					
Beaver Lake	MA36010	Ware.	150.00	Acres	(Eurasian Water Milfoil, Myriophyllum spicatum*)
					(Non-Native Aquatic Plants*)
Brooks Pond	MA36023	North Brookfield/New Braintree/Spencer/Oakham.	179.00	Acres	(Non-Native Aquatic Plants*)
Dean Pond	MA36049	Brimfield/Monson.	10.00	Acres	(Non-Native Aquatic Plants*)
Forest Lake	MA36063	Palmer.	45.00	Acres	(Eurasian Water Milfoil, Myriophyllum spicatum*)
Hardwick Pond	MA36066	Hardwick.	67.00	Acres	(Non-Native Aquatic Plants*)
Long Pond	MA36082	Rutland.	167.00	Acres	(Non-Native Aquatic Plants*)
Moosehorn Pond	MA36097	Hubbardston.	67.00	Acres	(Non-Native Aquatic Plants*)
Old Reservoir	MA36114	Barre.	37.00	Acres	(Flow Regime Modification*)
Turkey Hill Pond	MA36157	Rutland/Paxton.	90.00	Acres	(Non-Native Aquatic Plants*)
Concord (SuAsCo)					
Bartlett Pond	MA82007	Northborough.	52.00	Acres	(Eurasian Water Milfoil, Myriophyllum spicatum*)
					(Non-Native Aquatic Plants*)
Batemans Pond	MA82008	Concord.	25.00	Acres	(Non-Native Aquatic Plants*)
Chauncy Lake	MA82017	Westborough.	173.00	Acres	(Eurasian Water Milfoil, Myriophyllum spicatum*)
Fisk Pond	MA82038	Natick.	62.00	Acres	(Non-Native Aquatic Plants*)
Framingham Reservoir #3	MA82046	Framingham.	222.00	Acres	(Eurasian Water Milfoil, Myriophyllum spicatum*)
Great Meadows Pond #3	MA82053	Concord.	53.00	Acres	(Non-Native Aquatic Plants*)

Category 4c waters listed alphabetically by major watershed "Impairment not caused by a pollutant – TMDL not required"

Water Body	Segment ID	Description	Size	Units	Impairment
Little Chauncy Pond	MA82070	Northborough.	43.00	Acres	(Non-Native Aquatic Plants*)
Meadow Pond	MA82129	Carlisle.	12.00	Acres	(Non-Native Aquatic Plants*)
Mill Brook	MA82A-20	Headwaters, outlet Crosby Pond, Concord to mouth at confluence with the Concord River, Concord.	2.70	Miles	(Habitat Assessment*)
North Great Meadows	MA82084	Concord.	73.00	Acres	(Non-Native Aquatic Plants*)
Rocky Pond	MA82095	Boylston.	62.00	Acres	(Non-Native Aquatic Plants*)
Unnamed Tributary	MA82A-31	Unnamed tributary to River Meadow Brook, outlet Elm Street Pond, Carlisle to mouth at confluence with River Meadow Brook, Chelmsford (through former pond segment MA82096 and excluding approximately 0.4 miles through Meadow Pond, segment MA82129) (formely reported as portion of segment MA82A-21).	3.70	Miles	(Flow Regime Modification*) (Non-Native Aquatic Plants*)
Winning Pond	MA82123	Billerica.	22.00	Acres	(Eurasian Water Milfoil, Myriophyllum spicatum*)
Connecticut					
Cranberry Pond	MA34018	Sunderland.	28.00	Acres	(Eurasian Water Milfoil, Myriophyllum spicatum*)
Ingraham Brook Pond	MA34037	Granby.	5.00	Acres	(Non-Native Aquatic Plants*)
Lake Bray	MA34013	Holyoke.	10.00	Acres	(Non-Native Aquatic Plants*)
Lake Holland	MA34035	Belchertown.	11.00	Acres	(Non-Native Aquatic Plants*)
Lower Mill Pond	MA34048	Easthampton.	30.00	Acres	(Non-Native Aquatic Plants*)
Lower Van Horn Park Pond	MA34129	Springfield.	11.00	Acres	(Non-Native Aquatic Plants*)
Oxbow Cutoff	MA34067	The waterbody north of Island Road and south of Oxbow Road (between Routes 91and 5), Northampton.	49.00	Acres	(Non-Native Aquatic Plants*)
Whiting Street Reservoir	MA34101	Holyoke.	102.00	Acres	(Eurasian Water Milfoil, Myriophyllum spicatum*)
Deerfield					
Deerfield River	MA33-01	Outlet Sherman Reservoir Monroe/Rowe, to confluence with Cold River, Charlemont (through former segment, Lower Reservoir MA33028).	13.10	Miles	(Flow Regime Modification*)
Johnson Brook	MA33-131	Headwaters, west of Route 112 (Main Road) and northeast at Houghton Hill, Colrain to the mouth at confluence with North River, Colrain.	1.40	Miles	(Dewatering*)
Farmington					
Benton Pond	MA31003	Otis.	61.00	Acres	(Eurasian Water Milfoil, Myriophyllum spicatum*)
Noyes Pond	MA31026	Tolland.	166.00	Acres	(Non-Native Aquatic Plants*)
French					
Bouchard Pond	MA42003	Leicester.	2.00	Acres	(Non-Native Aquatic Plants*)
Buffum Pond	MA42004	Charlton/Oxford.	23.00	Acres	(Non-Native Aquatic Plants*)
Cedar Meadow Pond	MA42009	Leicester.	140.00	Acres	(Non-Native Aquatic Plants*)
Granite Reservoir	MA42019	Charlton.	207.00	Acres	(Non-Native Aquatic Plants*)

Category 4c waters listed alphabetically by major watershed "Impairment not caused by a pollutant – TMDL not required"

Water Body	Segment ID	Description	Size	Units	Impairment
Larner Pond	MA42068	Dudley.	27.00	Acres	(Aquatic Plants (Macrophytes)*)
					(Non-Native Aquatic Plants*)
Low Pond	MA42033	Dudley.	4.00	Acres	(Non-Native Aquatic Plants*)
Mosquito Pond	MA42060	Dudley.	11.00	Acres	(Aquatic Plants (Macrophytes)*)
Packard Pond	MA42040	Dudley.	6.00	Acres	(Non-Native Aquatic Plants*)
Pierpoint Meadow Pond	MA42043	Dudley/Charlton.	95.00	Acres	(Non-Native Aquatic Plants*)
Sargent Pond	MA42049	Leicester.	65.00	Acres	(Non-Native Aquatic Plants*)
Shepherd Pond	MA42051	Dudley.	16.00	Acres	(Aquatic Plants (Macrophytes)*)
Housatonic					
Ashmere Lake	MA21005	Hinsdale/Peru.	294.00	Acres	(Eurasian Water Milfoil, Myriophyllum spicatum*)
Goose Pond	MA21043	Lee/Tyringham.	238.00	Acres	(Eurasian Water Milfoil, Myriophyllum spicatum*)
					(Non-Native Aquatic Plants*)
Greenwater Pond	MA21044	Becket.	89.00	Acres	(Eurasian Water Milfoil, Myriophyllum spicatum*)
Hubbard Brook	MA21-15	Headwaters, northwest of Townhouse Hill Road, Egremont to mouth at confluence with the Housatonic River, Sheffield (thru Mill Pond formerly reported as segment MA21068).	9.40	Miles	(Eurasian Water Milfoil, Myriophyllum spicatum*)
					(Non-Native Aquatic Plants*)
Karner Brook	MA21-38	Headwaters, perennial portion east of East Street, Mount Washington to the Karner Brook Reservoir intake, Egremont (formerly part of segment MA21-16).	2.30	Miles	(Dewatering*)
Karner Brook	MA21-39	From the Karner Brook Reservoir intake, Egremont to mouth at inlet Mill Pond, Egremont (formerly part of segment MA21-16).	2.30	Miles	(Dewatering*)
Lake Averic	MA21006	Stockbridge.	42.00	Acres	(Eurasian Water Milfoil, Myriophyllum spicatum*)
Long Pond	MA21062	Great Barrington.	114.00	Acres	(Eurasian Water Milfoil, Myriophyllum spicatum*)
Long Pond Brook	MA21-14	Headwaters, outlet Long Pond, Great Barrington to mouth at confluence with Seekonk Brook, Great Barrington.	2.00	Miles	(Dewatering*)
Mansfield Pond	MA21065	Great Barrington.	28.00	Acres	(Eurasian Water Milfoil, Myriophyllum spicatum*)
					(Non-Native Aquatic Plants*)
Onota Lake	MA21078	Pittsfield.	662.00	Acres	(Eurasian Water Milfoil, Myriophyllum spicatum*)
					(Non-Native Aquatic Plants*)
Plunkett Reservoir	MA21082	Hinsdale.	72.00	Acres	(Eurasian Water Milfoil, Myriophyllum spicatum*)
					(Non-Native Aquatic Plants*)
Prospect Lake	MA21084	Egremont.	59.00	Acres	(Non-Native Aquatic Plants*)

Category 4c waters listed alphabetically by major watershed "Impairment not caused by a pollutant – TMDL not required"

Water Body	Segment ID	Description	Size	Units	Impairment
Richmond Pond	MA21088	Richmond/Pittsfield.	228.00	Acres	(Eurasian Water Milfoil, Myriophyllum spicatum*)
					(Non-Native Aquatic Plants*)
Shaker Mill Pond	MA21094	West Stockbridge.	27.00	Acres	(Eurasian Water Milfoil, Myriophyllum spicatum*)
					(Non-Native Aquatic Plants*)
Stevens Pond	MA21104	Monterey.	39.00	Acres	(Eurasian Water Milfoil, Myriophyllum spicatum*)
					(Non-Native Aquatic Plants*)
Thousand Acre Pond	MA21106	New Marlborough.	145.00	Acres	(Eurasian Water Milfoil, Myriophyllum spicatum*)
Unnamed Tributary	MA21-31	Unnamed tributary to the Housatonic River, locally known as "Laurel Brook", headwaters, outlet Laurel Lake, Lee to mouth at confluence with the Housatonic River, Lee.	0.80	Miles	(Zebra mussel, Dreissena polymorph*)
Upper Goose Pond	MA21110	Lee/Tyringham.	55.00	Acres	(Eurasian Water Milfoil, Myriophyllum spicatum*)
Willard Brook	MA21-30	Headwaters north of Salisbury Road, Sheffield to mouth at confluence with Hubbard Brook, Sheffield.	4.00	Miles	(Eurasian Water Milfoil, Myriophyllum spicatum*)
Windsor Brook	MA21-09	Headwaters, southeast of Fobes Hill (west of Savoy Hollow Road), Windsor to mouth at inlet Windsor Reservoir, Hinsdale.	6.10	Miles	(Dewatering*)
Hudson: Hoosic					
Berkshire Pond	MA11001	Lanesborough.	21.00	Acres	(Eurasian Water Milfoil, Myriophyllum spicatum*)
Cheshire Reservoir, Middle Basin	MA11018	[Middle Basin] Cheshire/Lanesborough.	186.00	Acres	(Eurasian Water Milfoil, Myriophyllum spicatum*)
					(Non-Native Aquatic Plants*)
Hoosic River	MA11-04	Adams WWTP discharge (NPDES: MA0100315), Adams to confluence with North Branch Hoosic River, North Adams.	5.40	Miles	(Alteration in stream-side or littoral vegetative covers*)
					(Flow Regime Modification*)
Paull Brook	MA11-20	Headwaters, outlet of Mt. Williams Reservoir, North Adams to mouth at confluence with unnamed tributary, Williamstown.	2.10	Miles	(Dewatering*)
Tophet Brook	MA11-19	Source west of Burnett Road, Savoy (in the Savoy Mountain State Forest) to mouth at confluence with the Hoosic River, Adams.	6.20	Miles	(Alteration in stream-side or littoral vegetative covers*)
					(Flow Regime Modification*)
Ipswich					
Field Pond	MA92019	Andover.	57.00	Acres	(Non-Native Aquatic Plants*)
Lower Four Mile Pond	MA92032	Boxford.	18.00	Acres	(Non-Native Aquatic Plants*)
Stevens Pond	MA92062	Boxford.	11.00	Acres	(Non-Native Aquatic Plants*)
Merrimack					
Cobbler Brook	MA84A-22	Headwaters, Merrimac to confluence with Merrimack River, Merrimac.	4.40	Miles	(Debris*)
					(Trash*)

Category 4c waters listed alphabetically by major watershed "Impairment not caused by a pollutant – TMDL not required"

Water Body	Segment ID	Description	Size	Units	Impairment
Lake Mascuppic	MA84037	Tyngsborough/Dracut.	210.00	Acres	(Non-Native Aquatic Plants*)
Millers					
Bourn-Hadley Pond	MA35008	Templeton.	26.00	Acres	(Aquatic Plants (Macrophytes)*)
Brazell Pond	MA35010	Templeton.	15.00	Acres	(Aquatic Plants (Macrophytes)*)
Depot Pond	MA35018	(Railroad Pond) Templeton.	15.00	Acres	(Aquatic Plants (Macrophytes)*)
Ellis Pond	MA35023	Athol.	88.00	Acres	(Aquatic Plants (Macrophytes)*)
					(Eurasian Water Milfoil, Myriophyllum spicatum*)
					(Non-Native Aquatic Plants*)
Greenwood Pond	MA35026	Templeton.	12.00	Acres	(Aquatic Plants (Macrophytes)*)
South Athol Pond	MA35078	Athol.	83.00	Acres	(Aquatic Plants (Macrophytes)*)
					(Non-Native Aquatic Plants*)
Stoddard Pond	MA35083	Winchendon.	52.00	Acres	(Aquatic Plants (Macrophytes)*)
White Pond	MA35098	Athol.	63.00	Acres	(Non-Native Aquatic Plants*)
Mount Hope Bay (Shore)					
Cole River	MA61-03	Wood Street, Swansea to Route 6, Swansea.	1.60	Miles	(Fish Passage Barrier*)
Nashua					
Chaffin Pond	MA81017	Holden.	90.00	Acres	(Non-Native Aquatic Plants*)
Dawson Pond	MA81028	Holden.	22.00	Acres	(Non-Native Aquatic Plants*)
Eagle Lake	MA81034	Holden.	56.00	Acres	(Non-Native Aquatic Plants*)
Flannagan Pond	MA81044	Ayer.	80.00	Acres	(Non-Native Aquatic Plants*)
Lake Samoset	MA81116	Leominster.	35.00	Acres	(Non-Native Aquatic Plants*)
Lake Whalom	MA81154	Lunenburg/Leominster.	97.00	Acres	(Eurasian Water Milfoil, Myriophyllum spicatum*)
					(Non-Native Aquatic Plants*)
Paradise Pond	MA81097	Princeton.	61.00	Acres	(Non-Native Aquatic Plants*)
Quinapoxet River	MA81-32	Headwaters, outlet Quinapoxet Reservoir, Holden to mouth at inlet Wachusett Reservoir (Thomas Basin), West Boylston.	7.90	Miles	(Dewatering*)
Robbins Pond	MA81111	Harvard.	11.00	Acres	(Non-Native Aquatic Plants*)
Sawmill Pond	MA81118	Fitchburg/Westminster.	65.00	Acres	(Non-Native Aquatic Plants*)
Stuart Pond	MA81137	Sterling.	42.00	Acres	(Non-Native Aquatic Plants*)
Stump Pond	MA81171	Holden.	27.00	Acres	(Non-Native Aquatic Plants*)
Unionville Pond	MA81143	Holden.	19.00	Acres	(Eurasian Water Milfoil, Myriophyllum spicatum*)
White Pond	MA81155	Lancaster/Leominster.	47.00	Acres	(Non-Native Aquatic Plants*)
Wyman Pond	MA81161	Westminster.	198.00	Acres	(Non-Native Aquatic Plants*)
North Coastal					
Cedar Pond	MA93013	Peabody.	34.00	Acres	(Non-Native Aquatic Plants*)
Days Pond	MA93092	Gloucester.	0.50	Acres	(Non-Native Aquatic Plants*)

Category 4c waters listed alphabetically by major watershed "Impairment not caused by a pollutant – TMDL not required"

Water Body	Segment ID	Description	Size	Units	Impairment
Edgewater Office Park Pond	MA93094	Wakefield.	15.00	Acres	(Non-Native Aquatic Plants*)
First Pond	MA93081	Saugus (also known as Upper Griswold Pond).	4.00	Acres	(Non-Native Aquatic Plants*)
Griswold Pond	MA93029	Saugus.	13.00	Acres	(Non-Native Aquatic Plants*)
Sluice Pond	MA93071	Lynn.	42.00	Acres	(Eurasian Water Milfoil, Myriophyllum spicatum*)
Spring Pond	MA93072	Saugus.	8.00	Acres	(Non-Native Aquatic Plants*)
Swains Pond	MA93095	Melrose.	3.00	Acres	(Non-Native Aquatic Plants*)
Parker					
Parker River	MA91-01	Source north of Silver Mine Road, Boxford to Central Street, Newbury (excluding Sperry Pond segment MA91013, Rock Pond segment MA91012, Pentucket Pond segment MA91010, and Crane Pond segment MA91004).	12.30	Miles	(Dewatering*)
State Street Pond	MA91014	Newburyport.	4.00	Acres	(Non-Native Aquatic Plants*)
Quinebaug					
Cedar Pond	MA41008	Sturbridge.	149.00	Acres	(Non-Native Aquatic Plants*)
Hamilton Reservoir	MA41019	Holland (size indicates portion in Massachusetts).	386.00	Acres	(Non-Native Aquatic Plants*)
Mill Brook	MA41-07	From inlet of Mill Road Pond (formerly pond segment MA41032), Brimfield to mouth at confluence with Quinebaug River, Brimfield.	4.70	Miles	(Non-Native Aquatic Plants*)
Railroad Pond	MA41058	Charlton.	7.00	Acres	(Non-Native Aquatic Plants*)
Sherman Pond	MA41046	Brimfield.	76.00	Acres	(Non-Native Aquatic Plants*)
Sylvestri Pond	MA41049	Dudley.	30.00	Acres	(Non-Native Aquatic Plants*)
Walker Pond	MA41052	Sturbridge.	104.00	Acres	(Non-Native Aquatic Plants*)
Shawsheen					
Gravel Pit Pond	MA83007	Andover (Hussey Brook Pond East).	5.00	Acres	(Non-Native Aquatic Plants*)
South Coastal					
Beaver Dam Pond	MA94006	Plymouth.	29.00	Acres	(Non-Native Aquatic Plants*)
Black Mountain Pond	MA94009	Marshfield.	17.00	Acres	(Non-Native Aquatic Plants*)
Briggs Reservoir	MA94019	Plymouth.	24.00	Acres	(Non-Native Aquatic Plants*)
Briggs Reservoir	MA94020	Plymouth.	17.00	Acres	(Non-Native Aquatic Plants*)
Cooks Pond	MA94027	Plymouth.	21.00	Acres	(Non-Native Aquatic Plants*)
Eel River	MA94-37	Headwaters (restored), southeast of College Pond Road, Plymouth to inlet Russell Millpond, Plymouth (formerly reported as portion of segment MA94-23).	1.10	Miles	(Fish Passage Barrier*) (Non-Native Aquatic Plants*)
Eel River	MA94-38	From outlet Russell Millpond, Plymouth to mouth at Plymouth Harbor, Plymouth (formerly reported as portion of segment MA94-23).	2.70	Miles	(Fish Passage Barrier*) (Non-Native Aquatic Plants*)
Herring Brook	MA94-29	Headwaters, outlet Lily Pond, Cohasset to mouth at confluence with Aaron River, Cohasset.	0.30	Miles	(Fish Passage Barrier*) (Non-Native Aquatic Plants*)
Island Creek Pond	MA94073	Duxbury.	40.00	Acres	(Non-Native Aquatic Plants*)
Island Pond	MA94075	[locally known as Great Island Pond] Plymouth.	80.00	Acres	(Non-Native Aquatic Plants*)

Category 4c waters listed alphabetically by major watershed "Impairment not caused by a pollutant – TMDL not required"

Water Body	Segment ID	Description	Size	Units	Impairment
Jacobs Pond	MA94077	Norwell.	61.00	Acres	(Non-Native Aquatic Plants*)
Long Island Pond	MA94088	Plymouth.	33.00	Acres	(Non-Native Aquatic Plants*)
Lorings Bogs Pond	MA94089	Duxbury.	33.00	Acres	(Non-Native Aquatic Plants*)
Lower Chandler Pond	MA94091	Duxbury/Pembroke.	37.00	Acres	(Non-Native Aquatic Plants*)
Pembroke Street South Pond	MA94117	Kingston.	6.00	Acres	(Non-Native Aquatic Plants*)
Reeds Millpond	MA94126	Kingston.	6.00	Acres	(Non-Native Aquatic Plants*)
Reservoir	MA94127	Pembroke.	16.00	Acres	(Flow Regime Modification*)
Silver Lake	MA94143	Pembroke/Plympton/Kingston.	616.00	Acres	(Flow Regime Modification*)
Smelt Pond	MA94184	Kingston.	45.00	Acres	(Non-Native Aquatic Plants*)
Torrey Pond	MA94157	Norwell.	19.00	Acres	(Non-Native Aquatic Plants*)
Upper Chandler Pond	MA94165	Duxbury/Pembroke.	8.00	Acres	(Non-Native Aquatic Plants*)
Taunton					
Brockton Reservoir	MA62023	Avon.	89.00	Acres	(Non-Native Aquatic Plants*)
Carver Pond	MA62033	Bridgewater.	29.00	Acres	(Non-Native Aquatic Plants*)
Cleveland Pond	MA62042	Abington.	98.00	Acres	(Non-Native Aquatic Plants*)
Crocker Pond	MA62051	Wrentham.	17.00	Acres	(Non-Native Aquatic Plants*)
Cushing Pond	MA62056	Abington.	6.00	Acres	(Non-Native Aquatic Plants*)
East Freetown Pond	MA62063	Freetown.	11.00	Acres	(Non-Native Aquatic Plants*)
Fuller Street Pond	MA62234	Middleborough/Carver (formerly reported as MA95058).	20.00	Acres	(Non-Native Aquatic Plants*)
Gavins Pond	MA62077	Sharon/Foxborough.	18.00	Acres	(Non-Native Aquatic Plants*)
Gushee Pond	MA62084	Raynham.	27.00	Acres	(Non-Native Aquatic Plants*)
Johnson Pond	MA62097	Raynham.	14.00	Acres	(Non-Native Aquatic Plants*)
Lake Mirimichi	MA62118	Plainville/Foxborough.	175.00	Acres	(Non-Native Aquatic Plants*)
Lake Rico	MA62148	Taunton.	188.00	Acres	(Non-Native Aquatic Plants*)
Long Pond	MA62108	Lakeville/Freetown.	1728.00	Acres	(Non-Native Aquatic Plants*)
Longwater Pond	MA62109	Easton.	8.00	Acres	(Non-Native Aquatic Plants*)
Lower Porter Pond	MA62111	Brockton.	8.00	Acres	(Non-Native Aquatic Plants*)
Middle Pond	MA62115	Taunton.	26.00	Acres	(Non-Native Aquatic Plants*)
Mill River	MA62-29	Headwaters, outlet Lake Sabbatia, Taunton to mouth at confluence with the Taunton River, Taunton (through Whittenton Impoundment, formerly segment MA62228).	4.20	Miles	(Non-Native Aquatic Plants*)
Mount Hope Mill Pond	MA62122	Taunton/Dighton (includes Three Mile River Impoundment formerly reported as MA62231).	45.00	Acres	(Non-Native Aquatic Plants*)
Muddy Pond	MA62125	Carver.	61.00	Acres	(Non-Native Aquatic Plants*)
New Pond	MA62130	Easton.	18.00	Acres	(Non-Native Aquatic Plants*)
Queset Brook	MA62-67	Headwaters, outlet Ames Long Pond, Easton to inlet Longwater Pond, Easton (through Shovelshop Pond formerly segment MA62172) (formely part of segment MA62-21).	1.50	Miles	(Non-Native Aquatic Plants*)
Richmond Pond	MA62159	Taunton.	6.00	Acres	(Non-Native Aquatic Plants*)

Category 4c waters listed alphabetically by major watershed "Impairment not caused by a pollutant – TMDL not required"

Water Body	Segment ID	Description	Size	Units	Impairment
Savery Pond	MA62167	Middleborough.	24.00	Acres	(Non-Native Aquatic Plants*)
Segreganset River	MA62-53	Source in wetland north of Glebe Street, Taunton to the Montaup Pond Dam (NATID: MA02104), Dighton (formerly part of segment MA62-18) (through Segreganset River Ponds formerly segment MA62169) .	7.80	Miles	(Dewatering*)
Segreganset River	MA62-54	From Montaup Pond Dam (NATID: MA02104), Dighton to approximately 250 feet north of Brook Street, Dighton (formerly part of segment MA62-18).	0.30	Miles	(Dewatering*)
Thirtyacre Pond	MA62190	Brockton.	26.00	Acres	(Non-Native Aquatic Plants*)
Turnpike Lake	MA62198	Plainville.	99.00	Acres	(Non-Native Aquatic Plants*)
Upper Porter Pond	MA62200	Brockton.	11.00	Acres	(Non-Native Aquatic Plants*)
Wading River	MA62-60	From Balcolm Street, Mansfield to inlet Barrowswille Pond, Norton (through Sweets Pond formerly segment MA62185) (formerly part of segment MA62-49 and MA62-17 (2004)).	5.80	Miles	(Non-Native Aquatic Plants*)
Waldo Lake	MA62201	Avon/Brockton.	72.00	Acres	(Non-Native Aquatic Plants*)
West Meadow Pond	MA62208	West Bridgewater.	104.00	Acres	(Non-Native Aquatic Plants*)
Winnecunnet Pond	MA62213	Norton.	150.00	Acres	(Non-Native Aquatic Plants*)
Ten Mile					
Falls Pond, South Basin	MA52014	North Attleborough.	50.00	Acres	(Non-Native Aquatic Plants*)
Orrs Pond	MA52029	Attleboro.	58.00	Acres	(Eurasian Water Milfoil, Myriophyllum spicatum*)
Westfield					
Blair Pond	MA32009	Blandford.	69.00	Acres	(Non-Native Aquatic Plants*)
Center Pond	MA32015	Becket.	114.00	Acres	(Eurasian Water Milfoil, Myriophyllum spicatum*)

Category 5 waters listed alphabetically by major watershed
The 303(d) List – "Waters requiring a TMDL"

Water Body	Segment ID	Description	Size	Units	Impairment	EPA TMDL No.
Blackstone						
Aldrich Pond	MA51002	Sutton.	2.00	Acres	(Non-Native Aquatic Plants*)	
					Aquatic Plants (Macrophytes)	
Arcade Pond	MA51003	Northbridge.	20.00	Acres	(Non-Native Aquatic Plants*)	
					Algae	
Arnolds Brook	MA51-32	Headwaters, perennial portion, from outlet of unnamed pond at Whitehall Way, Bellingham to mouth at confluence with Peters River, Bellingham.	1.70	Miles	Escherichia Coli (E. Coli)	
Beaver Brook	MA51-07	Outlet of small unnamed impoundment north of Beth Israel School and Flag Street School, Worcester to mouth at confluence with Middle River, Worcester (includes underground portion).	2.90	Miles	(Fish Kill(s)*)	
					(Physical substrate habitat alterations*)	
					Bottom Deposits	
					Escherichia Coli (E. Coli)	
Blackstone River	MA51-03	Confluence of Middle River and Mill Brook (downstream of the railroad spur bridge west of Tobias Boland Way), Worcester to Fisherville Pond Dam (NATID: MA00577), Grafton (through a portion of Fisherville Pond formerly segment MA51048).	10.40	Miles	(Debris*)	
					(Flow Regime Modification*)	
					(Physical substrate habitat alterations*)	
					(Trash*)	
					Algae	
					Ambient Bioassays - Chronic Aquatic Toxicity	
					Benthic Macroinvertebrates	
					Dissolved Oxygen	
					Escherichia Coli (E. Coli)	
					Fish Bioassessments	
					Flocculant Masses	
					Lead	
					Nutrient/Eutrophication Biological Indicators	
					Odor	
					Oil And Grease	
					Other Organics	
					Phosphorus, Total	
					Scum/Foam	
					Sedimentation/Siltation	
					Turbidity	

* TMDL not required (Non-pollutant)

Category 5 waters listed alphabetically by major watershed
The 303(d) List – "Waters requiring a TMDL"

Water Body	Segment ID	Description	Size	Units	Impairment	EPA TMDL No.
Blackstone River	MA51-04	From Fisherville Pond Dam (NATID: MA00577), Grafton to Rice City Pond Dam (NATID: MA00935), Uxbridge (through Riverdale Impoundment formerly segment MA51136 and Rice City Pond formerly segment MA51131).	8.80	Miles	(Aquatic Plants (Macrophytes)*)	
					(Flow Regime Modification*)	
					(Non-Native Aquatic Plants*)	
					(Physical substrate habitat alterations*)	
					Algae	
					Benthic Macroinvertebrates	
					Cadmium	
					Copper	
					DDT in Fish Tissue	
					Escherichia Coli (E. Coli)	
					Fish Bioassessments	
					Lead	
					Nutrient/Eutrophication Biological Indicators	
					Odor	
					PCBs In Fish Tissue	
					Phosphorus, Total	
					Sedimentation/Siltation	
					Turbidity	
Blackstone River	MA51-05	From outlet Rice City Pond Dam (NATID: MA00935), Uxbridge to the most downstream railroad trestle crossing, Millville.	9.10	Miles	(Aquatic Plants (Macrophytes)*)	
					(Flow Regime Modification*)	
					(Non-Native Aquatic Plants*)	
					Algae	
					Benthic Macroinvertebrates	
					Cadmium	
					Copper	
					Escherichia Coli (E. Coli)	
					Lead	
					Nutrient/Eutrophication Biological Indicators	
					Odor	
					Phosphorus, Total	
					Polychlorinated Biphenyls (PCBs)	
					Total Suspended Solids (TSS)	
					Turbidity	

* TMDL not required (Non-pollutant)

Category 5 waters listed alphabetically by major watershed
The 303(d) List – "Waters requiring a TMDL"

Water Body	Segment ID	Description	Size	Units	Impairment	EPA TMDL No.
Blackstone River	MA51-06	From the most downstream railroad trestle crossing, Millville to the Rhode Island border west of Route 122, Blackstone.	3.80	Miles	(Flow Regime Modification*)	
					Cadmium	
					Copper	
					DDT in Fish Tissue	
					Escherichia Coli (E. Coli)	
					Lead	
					PCBs In Fish Tissue	
					Phosphorus, Total	
					Total Suspended Solids (TSS)	
Burncoat Park Pond	MA51012	Worcester.	6.00	Acres	Aquatic Plants (Macrophytes)	
					Turbidity	
Cedar Swamp Brook	MA51-33	Headwaters, outlet Cedar Swamp, Uxbridge to mouth at confluence with Chockalog River, Douglas.	0.80	Miles	Fish Bioassessments	
Coal Mine Brook	MA51-27	Headwaters, perennial portion, west of Plantation Street, Worcester to mouth at inlet Lake Quinsigamond, Worcester.	0.40	Miles	(Fish Kill(s)*)	
					Escherichia Coli (E. Coli)	
					Fish Bioassessments	
					Sedimentation/Siltation	
					Temperature	
Cook Allen Brook	MA51-28	Headwaters, outlet Reservoir No. 5, Sutton to mouth at inlet Whitins Pond, Northbridge (excluding approximately 0.2 mile through Reservoir No. 4, segment MA51128).	2.00	Miles	Fish Bioassessments	
Cronin Brook	MA51-45	Headwaters, perennial portion west of Potter Hill Road, Grafton to mouth at confluence with the Blackstone River, Grafton.	2.60	Miles	Escherichia Coli (E. Coli)	
Dark Brook	MA51-16	Headwaters, outlet Eddy Pond, Auburn to mouth at confluence with Kettle Brook, Auburn (through Auburn Pond formerly segment MA51004).	2.50	Miles	(Non-Native Aquatic Plants*)	
					Benthic Macroinvertebrates	
					Chloride	
					Escherichia Coli (E. Coli)	
Fish Pond	MA51047	Northbridge.	8.00	Acres	(Non-Native Aquatic Plants*)	
					Aquatic Plants (Macrophytes)	
Fox Brook	MA51-39	Headwaters, perennial portion, northeast of Thayer Street, Millville to mouth at confluence with the Blackstone River, Blackstone (excluding 0.1 mile through Crane Pond segment MA51030).	3.40	Miles	Escherichia Coli (E. Coli)	
Hayes Pond	MA51060	Grafton.	5.00	Acres	(Non-Native Aquatic Plants*)	
					Aquatic Plants (Macrophytes)	

* TMDL not required (Non-pollutant)

Category 5 waters listed alphabetically by major watershed
The 303(d) List – "Waters requiring a TMDL"

Water Body	Segment ID	Description	Size	Units	Impairment	EPA TMDL No.
Kettle Brook	MA51-01	Outlet Kettle Brook Reservoir #1, Leicester to inlet Leesville Pond, Auburn (excluding the approximately 0.4 miles through Waite Pond segment MA51170) (through former segments: City Pond MA51021, Smiths Pond MA51156, and Stoneville Pond MA51160).	7.00	Miles	(Dewatering*)	
					(Non-Native Aquatic Plants*)	
					Benthic Macroinvertebrates	
					Escherichia Coli (E. Coli)	
					Fecal Coliform	
					Nutrient/Eutrophication Biological Indicators	
Lake Quinsigamond	MA51125	Shrewsbury/Worcester.	474.00	Acres	(Eurasian Water Milfoil, Myriophyllum spicatum*)	
					(Non-Native Aquatic Plants*)	
					Algae	644
					Dissolved Oxygen	644
					Enterococcus	
Lake Ripple	MA51135	Grafton.	47.00	Acres	(Non-Native Aquatic Plants*)	
					Aquatic Plants (Macrophytes)	
Manchaug Pond	MA51091	Douglas/Sutton.	364.00	Acres	(Non-Native Aquatic Plants*)	
					Dissolved Oxygen	
					Mercury in Fish Tissue	42392
Marble Pond	MA51093	Sutton.	8.00	Acres	(Non-Native Aquatic Plants*)	
					Aquatic Plants (Macrophytes)	
Middle River	MA51-02	Headwaters, outlet Coes Pond, Worcester to confluence with the unnamed tributary locally known as "Mill Brook" (downstream of the railroad spur bridge west of Tobias Boland Way), Worcester (through Middle River Pond formerly segment MA51101).	3.40	Miles	(Debris*)	
					(Physical substrate habitat alterations*)	
					(Trash*)	
					Benthic Macroinvertebrates	
					Escherichia Coli (E. Coli)	
					Metals	
					Nutrient/Eutrophication Biological Indicators	
					Turbidity	
Mill River	MA51-35	Headwaters, outlet North Pond, Milford/Upton to Mendon/Blackstone corporate boundary (through former segments Fiske Millpond MA51049, Mill Pond MA51102, Hopedale Pond MA51065 and Spindleville Pond MA51158) (formerly part of segment MA51-10).	11.80	Miles	(Non-Native Aquatic Plants*)	
					Aquatic Plants (Macrophytes)	
					Metals	
					PCBs In Fish Tissue	

* TMDL not required (Non-pollutant)

Category 5 waters listed alphabetically by major watershed
The 303(d) List – "Waters requiring a TMDL"

Water Body	Segment ID	Description	Size	Units	Impairment	EPA TMDL No.
Mill River	MA51-36	From Mendon/Blackstone corporate boundary to 1000 feet upstream of the Rhode Island border, Blackstone (through former segment Harris Pond MA51058) (formerly part of segment MA51-10) (the lower 1000 feet represents "All Interstate surface waters that are public water supply in Rhode Island from 1000 feet upstream of the State Line" which are designated as Class A/PWS/ORW in 314CMR4.00, January 2007).	4.10	Miles	(Non-Native Aquatic Plants*)	
					Escherichia Coli (E. Coli)	
					Metals	
Muddy Brook	MA51-40	Headwaters, outlet small unnamed pond north of Nipmuc Regional High School, Mendon to mouth at confluence with Mill River, Mendon.	5.10	Miles	Escherichia Coli (E. Coli)	
Mumford River	MA51-14	From Douglas WWTP discharge (NPDES: MA0101095), Douglas to mouth at confluence with Blackstone River, Uxbridge (through former segments: Gilboa Pond MA51052, Lackey Pond MA51083, Meadow Pond MA51193, Linwood Pond MA51088, Whitin Pond MA51178, and Caprons Pond MA51014).	9.40	Miles	(Dewatering*)	
					(Non-Native Aquatic Plants*)	
					Aquatic Plants (Macrophytes)	
					Copper	
					Lead	
Number 1 Pond	MA51114	Sutton.	9.00	Acres	Aquatic Plants (Macrophytes)	
					Turbidity	
Peters River	MA51-18	Headwaters, outlet Silver Lake, Bellingham to Rhode Island border east of Route 126, Bellingham.	4.00	Miles	Copper	
					Escherichia Coli (E. Coli)	
					Lead	
Poor Farm Brook	MA51-17	Headwaters, West Boylston to the inlet of Shirley Street Pond, Shrewsbury (through City Farm Pond formerly segment MA51020).	3.60	Miles	(Dewatering*)	
					Aquatic Plants (Macrophytes)	
					Escherichia Coli (E. Coli)	
					Sedimentation/Siltation	
Riley Pond	MA51134	Northbridge.	7.00	Acres	Turbidity	
Singletary Brook	MA51-31	Headwaters, outlet Singletary Pond, Millbury to mouth at confluence with the Blackstone River, Millbury (excluding the approximately 0.4 miles through Brierly Pond segment MA51010).	1.50	Miles	(Non-Native Aquatic Plants*)	
					Escherichia Coli (E. Coli)	
Sutton Falls	MA51163	Sutton.	11.00	Acres	Harmful Algal Blooms	
					Turbidity	

* TMDL not required (Non-pollutant)

Category 5 waters listed alphabetically by major watershed
The 303(d) List – "Waters requiring a TMDL"

Water Body	Segment ID	Description	Size	Units	Impairment	EPA TMDL No.
Tatnuck Brook	MA51-15	From outlet Holden Reservoir #2, Holden to inlet Coes Reservoir, Worcester (through Cook Pond formerly segment MA51027 and Patch Reservoir formerly segment MA51118).	3.30	Miles	(Flow Regime Modification*)	
					(Non-Native Aquatic Plants*)	
					Benthic Macroinvertebrates	
					Escherichia Coli (E. Coli)	
					Sedimentation/Siltation	
Unnamed Tributary	MA51-08	(Also known as "Mill Brook") Headwaters, outlet Indian Lake, Worcester to mouth at confluence with Middle River (downstream of the railroad spur bridge west of Tobias Boland Way), Worcester (through Salisbury Pond formerly segment MA51142).	5.60	Miles	(Debris*)	
					(Physical substrate habitat alterations*)	
					(Trash*)	
					Ammonia, Un-ionized	
					Escherichia Coli (E. Coli)	
					Fecal Coliform	
					Flocculant Masses	
					Metals	
					Nutrient/Eutrophication Biological Indicators	
					Odor	
					Oil And Grease	
					Other Organics	
					Scum/Foam	
					Sedimentation/Siltation	
					Turbidity	2319
Unnamed Tributary	MA51-20	From the outlet of Leesville Pond, Worcester to the confluence with Middle River, Worcester (through Curtis ponds formerly reported as segments MA51033 and MA51032).	1.40	Miles	(Debris*)	
					(Dewatering*)	
					(Non-Native Aquatic Plants*)	
					(Trash*)	
					Nutrient/Eutrophication Biological Indicators	
					Sedimentation/Siltation	
Unnamed Tributary	MA51-38	Unnamed tributary to Dark Brook, from perennial portion near the Route 90, 290EB, 395SB, 12NB interchange, Auburn to mouth at confluence with the Dark Brook south of Water Street, Auburn (sections culverted).	0.80	Miles	Chloride	
Welsh Pond	MA51176	Sutton.	8.00	Acres	(Non-Native Aquatic Plants*)	
					Aquatic Plants (Macrophytes)	
West River	MA51-11	Headwaters, outlet Silver Lake, Grafton to Upton WWTP discharge (NPDES: MA0100196), Upton (through Lake Wildwood formerly segment MA51181).	3.70	Miles	(Non-Native Aquatic Plants*)	
					pH, Low	

Category 5 waters listed alphabetically by major watershed
The 303(d) List – "Waters requiring a TMDL"

Water Body	Segment ID	Description	Size	Units	Impairment	EPA TMDL No.
West River	MA51-12	From Upton WWTP discharge (NPDES: MA0100196), Upton to mouth at confluence with the Blackstone River, Uxbridge (through former segments Harrington Pool MA51197, and West River Pond MA51177).	9.40	Miles	(Non-Native Aquatic Plants*)	
					Cadmium	
					Chloride	
					Copper	
					Lead	
					Nutrient/Eutrophication Biological Indicators	
					pH, Low	
Woodbury Pond	MA51185	Sutton.	5.00	Acres	(Non-Native Aquatic Plants*)	
					Aquatic Plants (Macrophytes)	
Woolshop Pond	MA51186	Millbury.	5.00	Acres	(Non-Native Aquatic Plants*)	
					Aquatic Plants (Macrophytes)	
					Turbidity	
Boston Harbor (Proper)						
Boston Harbor	MA70-01	The area defined by a line from the southerly tip of Deer Island to Boston Lighthouse on Little Brewster Island, then south to Point Allerton; across Hull and West guts; across the mouths of Quincy and Dorchester bays, Boston Inner Harbor and Winthrop Bay (including President Roads and Nantasket Roads).	18.60	Square Miles	Cause Unknown (Contaminants in Fish and/or Shellfish)	
					Fecal Coliform	
					PCBs In Fish Tissue	
Boston Inner Harbor	MA70-02	From the Mystic and Chelsea rivers, Chelsea/Boston, to the line between Governors Island and Fort Independence, Boston (East Boston) (including Fort Point, Reserved and Little Mystic channels).	2.56	Square Miles	Cause Unknown (Contaminants in Fish and/or Shellfish)	
					Dissolved Oxygen	
					Enterococcus	
					Fecal Coliform	
					PCBs In Fish Tissue	
Dorchester Bay	MA70-03	From the mouth of the Neponset River, Boston/Quincy to the line between Head Island and the north side of Thompson Island and the line between the south point of Thompson Island, Boston and Chapel Rocks, Quincy.	3.46	Square Miles	Cause Unknown (Contaminants in Fish and/or Shellfish)	
					Enterococcus	
					Fecal Coliform	
					PCBs In Fish Tissue	
Hingham Bay	MA70-06	The area north of the mouth of the Weymouth Fore River extending on the west along the line between Nut Island and the south point of West Head, and on the east side along a line from Prince Head just east of Pig Rock to the mouth of the Weymouth Fore River (midway between Lower Neck and Manot Beach), Quincy.	0.96	Square Miles	Cause Unknown (Contaminants in Fish and/or Shellfish)	
					Fecal Coliform	
					PCBs In Fish Tissue	

* TMDL not required (Non-pollutant)

Category 5 waters listed alphabetically by major watershed
The 303(d) List – "Waters requiring a TMDL"

Water Body	Segment ID	Description	Size	Units	Impairment	EPA TMDL No.
Hingham Bay	MA70-07	The area defined between Peddocks Island and Windmill Point; from Windmill Point southeast to Bumkin Island; from Bumkin Island southeast to Sunset Point; from Sunset Point across the mouth of the Weir River to Worlds End; from Worlds End across the mouth of Hingham Harbor to Crow Point; from Beach Lane, Hingham across the mouth of the Weymouth Back River to Lower Neck; and from Lower Neck midway across the mouth of the Weymouth Fore River.	4.80	Square Miles	Cause Unknown (Contaminants in Fish and/or Shellfish)	
					Fecal Coliform	
					PCBs In Fish Tissue	
Hull Bay	MA70-09	The area defined east of a line from Windmill Point, Hull to Bumkin Island, Hingham and from Bumkin Island to Sunset Point, Hull.	2.48	Square Miles	Cause Unknown (Contaminants in Fish and/or Shellfish)	
					Fecal Coliform	
					PCBs In Fish Tissue	
Pleasure Bay	MA70-11	A semi-enclosed bay, the flow restricted through two channels between Castle and Head islands, Boston.	0.22	Square Miles	Cause Unknown (Contaminants in Fish and/or Shellfish)	
					Fecal Coliform	
					PCBs In Fish Tissue	
Quincy Bay	MA70-04	From Bromfield Street near the Wollaston Yacht Club, northeast to N42 17.3 W71 00.1, then southeast to Houghs Neck near Sea Street and Peterson Road (formerly referred to as the "Willows"), Quincy.	1.52	Square Miles	Cause Unknown (Contaminants in Fish and/or Shellfish)	
					Enterococcus	
					Fecal Coliform	
					PCBs In Fish Tissue	
Quincy Bay	MA70-05	Quincy Bay, north of the class SA waters (segment MA70-04), Quincy to the line between Moon Head and Nut Island, Quincy.	4.41	Square Miles	Cause Unknown (Contaminants in Fish and/or Shellfish)	
					Enterococcus	
					Fecal Coliform	
					PCBs In Fish Tissue	
Winthrop Bay	MA70-10	From the tidal flats at Coleridge Street, Boston (East Boston) to a line between Logan International Airport and Point Shirley, Boston/Winthrop.	1.65	Square Miles	Cause Unknown (Contaminants in Fish and/or Shellfish)	
					Enterococcus	
					Fecal Coliform	
					PCBs In Fish Tissue	

* TMDL not required (Non-pollutant)

Category 5 waters listed alphabetically by major watershed
The 303(d) List – "Waters requiring a TMDL"

Water Body	Segment ID	Description	Size	Units	Impairment	EPA TMDL No.
Boston Harbor: Mystic						
Aberjona River	MA71-01	Source just south of Birch Meadow Drive, Reading to inlet Upper Mystic Lake at Mystic Valley Parkway, Winchester (portion culverted underground). (through former pond segments Judkins Pond MA71021 and Mill Pond MA71031).	9.10	Miles	(Physical substrate habitat alterations*)	
					Ammonia, Un-ionized	
					Arsenic	
					Benthic Macroinvertebrates	
					Dissolved Oxygen	
					Escherichia Coli (E. Coli)	
					Phosphorus, Total	
					Sediment Bioassay (Chronic Toxicity Freshwater)	
Alewife Brook	MA71-04	Outlet of Little Pond, Belmont to confluence with Mystic River, Arlington/Somerville (portion in Belmont and Cambridge identified as Little River with name changing to Alewife Brook at Arlington corporate boundary).	2.30	Miles	(Debris*)	
					(Trash*)	
					Copper	
					Dissolved Oxygen	
					Escherichia Coli (E. Coli)	
					Flocculant Masses	
					Lead	
					Odor	
					Oil And Grease	
					PCBs In Fish Tissue	
					Phosphorus, Total	
					Scum/Foam	
					Sediment Bioassay (Chronic Toxicity Freshwater)	
					Transparency / Clarity	
Belle Isle Inlet	MA71-14	From tidegate at Bennington Street, Boston/Revere to confluence with Winthrop Bay, Boston/Winthrop.	0.12	Square Miles	Cause Unknown (Contaminants in Fish and/or Shellfish)	
					Fecal Coliform	
					PCBs In Fish Tissue	
Blacks Nook	MA71005	Cambridge.	2.00	Acres	(Non-Native Aquatic Plants*)	
					Nutrient/Eutrophication Biological Indicators	
					Transparency / Clarity	

* TMDL not required (Non-pollutant)

Category 5 waters listed alphabetically by major watershed
The 303(d) List – "Waters requiring a TMDL"

Water Body	Segment ID	Description	Size	Units	Impairment	EPA TMDL No.
Chelsea River	MA71-06	From confluence with Mill Creek, Chelsea/Revere to confluence with Boston Inner Harbor, Chelsea/East Boston.	0.37	Square Miles	(Debris*)	
					(Trash*)	
					Ammonia, Un-ionized	
					Cause Unknown (Contaminants in Fish and/or Shellfish; Sediment Screening Value (Exceedence))	
					Dissolved Oxygen	
					Fecal Coliform	
					Odor	
					PCBs In Fish Tissue	
					Petroleum Hydrocarbons	
					Turbidity	
Clay Pit Pond	MA71011	Belmont.	12.00	Acres	Chlordane in Fish Tissue	
Cummings Brook	MA71-10	Headwaters east of Wright Street, Woburn to confluence with Fowle Brook, Woburn.	2.10	Miles	Escherichia Coli (E. Coli)	
Ell Pond	MA71014	Melrose.	23.00	Acres	Chlorophyll-a	
					Fecal Coliform	
					Harmful Algal Blooms	
					Phosphorus, Total	
					Total Suspended Solids (TSS)	
					Transparency / Clarity	
Fellsmere Pond	MA71016	Malden.	5.00	Acres	Harmful Algal Blooms	
Horn Pond	MA71019	Woburn.	108.00	Acres	(Non-Native Aquatic Plants*)	
					DDT in Fish Tissue	
					Dissolved Oxygen	
					Harmful Algal Blooms	
					Phosphorus, Total	
Little Pond	MA71024	Belmont.	18.00	Acres	Harmful Algal Blooms	
Lower Mystic Lake	MA71027	Arlington/Medford.	93.00	Acres	DDT in Fish Tissue	
					Dissolved Oxygen	
					Hydrogen Sulfide	
					PCBs In Fish Tissue	
					Salinity	
					Sediment Bioassay (Chronic Toxicity Freshwater)	

* TMDL not required (Non-pollutant)

Category 5 waters listed alphabetically by major watershed
The 303(d) List – "Waters requiring a TMDL"

Water Body	Segment ID	Description	Size	Units	Impairment	EPA TMDL No.
Malden River	MA71-05	Headwaters south of Exchange Street, Malden to confluence with Mystic River, Everett/Medford.	2.30	Miles	(Debris*)	
					(Trash*)	
					Chlordane in Fish Tissue	
					DDT in Fish Tissue	
					Dissolved Oxygen	
					Dissolved Oxygen Supersaturation	
					Escherichia Coli (E. Coli)	
					Fecal Coliform	
					Flocculant Masses	
					Odor	
					Oil And Grease	
					PCBs In Fish Tissue	
					pH, High	
					Phosphorus, Total	
					Scum/Foam	
					Sediment Bioassay (Chronic Toxicity Freshwater)	
					Total Suspended Solids (TSS)	
					Transparency / Clarity	
Mill Brook	MA71-07	Headwaters south of Massachusetts Avenue, Lexington to inlet of Lower Mystic Lake, Arlington (portions culverted underground).	3.90	Miles	(Physical substrate habitat alterations*)	
					Escherichia Coli (E. Coli)	
Mill Creek	MA71-08	From Route 1, Chelsea/Revere to confluence with Chelsea River, Chelsea/Revere.	0.02	Square Miles	Cause Unknown (Contaminants in Fish and/or Shellfish)	
					Fecal Coliform	
					PCBs In Fish Tissue	
Munroe Brook	MA71-15	Headwaters, north of Solomon Pierce Road, Lexington to the mouth at inlet Arlington Reservoir, Lexington (includes culverted portion).	1.80	Miles	Escherichia Coli (E. Coli)	

* TMDL not required (Non-pollutant)

Category 5 waters listed alphabetically by major watershed
The 303(d) List – "Waters requiring a TMDL"

Water Body	Segment ID	Description	Size	Units	Impairment	EPA TMDL No.
Mystic River	MA71-02	Outlet Lower Mystic Lake, Arlington/Medford to Amelia Earhart Dam, Somerville/Everett.	5.00	Miles	(Fish Passage Barrier*)	
					(Non-Native Aquatic Plants*)	
					Arsenic	
					Chlordane in Fish Tissue	
					Chlorophyll-a	
					DDT in Fish Tissue	
					Dissolved Oxygen Supersaturation	
					Escherichia Coli (E. Coli)	
					PCBs In Fish Tissue	
					Phosphorus, Total	
					Sediment Bioassay (Chronic Toxicity Freshwater)	
					Transparency / Clarity	
Mystic River	MA71-03	Amelia Earhart Dam, Somerville/Everett to confluence with Boston Inner Harbor, Chelsea/Charlestown (Includes Island End River).	0.49	Square Miles	Ammonia, Un-ionized	
					Cause Unknown (Contaminants in Fish and/or Shellfish; Sediment Screening Value (Exceedence))	
					Dissolved Oxygen	
					Fecal Coliform	
					Flocculant Masses	
					Odor	
					Oil And Grease	
					PCBs In Fish Tissue	
					Petroleum Hydrocarbons	
					Scum/Foam	
Shaker Glen Brook	MA71-11	Headwaters, west of Dix Road Extention, Woburn to confluence with Fowle Brook, Woburn (portion culverted underground).	1.50	Miles	Escherichia Coli (E. Coli)	
Spy Pond	MA71040	Arlington.	98.00	Acres	(Eurasian Water Milfoil, Myriophyllum spicatum*)	
					Chlordane in Fish Tissue	
					DDT in Fish Tissue	
					Dissolved Oxygen	
					Harmful Algal Blooms	
					Phosphorus, Total	
Unnamed Tributary	MA71-13	Unnamed tributary locally known as 'Meetinghouse Brook', from emergence south of Route 16/east of Winthrop Street, Medford to confluence with the Mystic River, Medford. (brook not apparent on 1985 Boston North USGS quad - 2005 orthophotos used to delineate stream).	0.10	Miles	Escherichia Coli (E. Coli)	

Category 5 waters listed alphabetically by major watershed
The 303(d) List – "Waters requiring a TMDL"

Water Body	Segment ID	Description	Size	Units	Impairment	EPA TMDL No.
Upper Mystic Lake	MA71043	Winchester/Arlington/Medford.	176.00	Acres	(Non-Native Aquatic Plants*)	
					Dissolved Oxygen	
					Dissolved Oxygen Supersaturation	
					Enterococcus	
Wedge Pond	MA71045	Winchester.	23.00	Acres	Dissolved Oxygen	
					Harmful Algal Blooms	
					Phosphorus, Total	
Winn Brook	MA71-09	Headwaters near Juniper Road and the Belmont Hill School, Belmont to confluence with Little Pond, Belmont (portions culverted underground).	1.40	Miles	(Physical substrate habitat alterations*)	
					Escherichia Coli (E. Coli)	
Winter Pond	MA71047	Winchester.	19.00	Acres	(Non-Native Aquatic Plants*)	
					Nutrient/Eutrophication Biological Indicators	
Boston Harbor: Neponset						
Beaver Brook	MA73-19	Headwaters (perennial portion), near Moose Hill Street, Sharon through Sawmill Pond to mouth at confluence with Massapoag Brook, Sharon.	3.50	Miles	Benthic Macroinvertebrates	
					Dissolved Oxygen	
Beaver Meadow Brook	MA73-20	Headwaters, outlet of Glenn Echo Pond, Stoughton, to mouth at inlet of Bolivar Pond, Canton.	3.30	Miles	Dissolved Oxygen	
					Escherichia Coli (E. Coli)	2592
Bolivar Pond	MA73005	Canton.	20.00	Acres	(Non-Native Aquatic Plants*)	
					Turbidity	
Cobbs Pond	MA73009	Walpole.	14.00	Acres	(Non-Native Aquatic Plants*)	
					Dissolved Oxygen	
					Nutrient/Eutrophication Biological Indicators	
					Transparency / Clarity	
East Branch	MA73-05	East Branch Neponset River - Headwaters, outlet of Forge Pond, Canton through East Branch Pond to mouth at confluence with Neponset River, Canton (locally known as Canton River).	2.60	Miles	(Dewatering*)	
					Benthic Macroinvertebrates	
					DDT in Fish Tissue	
					Dissolved Oxygen	
					Escherichia Coli (E. Coli)	2592
					Fecal Coliform	2592
					Metals	
					PCBs In Fish Tissue	
					Temperature	
Forge Pond	MA73020	Canton.	19.00	Acres	Turbidity	
Ganawatte Farm Pond	MA73037	Walpole/Sharon/Foxborough.	29.00	Acres	Aquatic Plants (Macrophytes)	
					Dissolved Oxygen	
					Transparency / Clarity	

* TMDL not required (Non-pollutant)

Category 5 waters listed alphabetically by major watershed
The 303(d) List – "Waters requiring a TMDL"

Water Body	Segment ID	Description	Size	Units	Impairment	EPA TMDL No.
Germany Brook	MA73-15	Headwaters, east of Winter Street, Norwood to inlet of Ellis Pond, Norwood.	2.00	Miles	Escherichia Coli (E. Coli)	2592
					Fecal Coliform	2592
					pH, High	
					Phosphorus, Total	
Gulliver Creek	MA73-30	From confluence Unquity Brook, Milton to confluence Neponset River, Milton (Note: Unquity Brook culverted, confluence not visible on quad).	0.02	Square Miles	Cause Unknown (Contaminants in Fish and/or Shellfish)	
					Fecal Coliform	2592
					PCBs In Fish Tissue	
Hawes Brook	MA73-16	Headwaters, outlet of Ellis Pond, Norwood to mouth at confluence with Neponset River, Norwood.	1.10	Miles	Escherichia Coli (E. Coli)	2592
					Fecal Coliform	2592
					Odor	
Massapoag Brook	MA73-21	Headwaters, outlet Hammer Shop Pond, Sharon, through Manns Pond (formerly segment MA73028), Trowel Shop Pond, and Shephard Pond to mouth at inlet of Forge Pond, Canton.	4.20	Miles	(Non-Native Aquatic Plants*)	
					Benthic Macroinvertebrates	
					Phosphorus, Total	
Memorial Pond	MA73012	Walpole.	8.00	Acres	Aquatic Plants (Macrophytes)	
					Turbidity	
Mill Brook	MA73-08	From headwaters (perennial portion) north of Hartford Street, Medfield to mouth at inlet of Jewells Pond, Medfield.	2.30	Miles	(Dewatering*)	
					Benthic Macroinvertebrates	
					Dissolved Oxygen	
Mine Brook	MA73-09	Headwaters, outlet of Jewells Pond, Medfield, to the inlet of Turner Pond, Walpole.	3.00	Miles	Dissolved Oxygen	
Mother Brook	MA73-28	Headwaters at the Charles River Diversion control structure, Dedham to mouth at confluence with Neponset River, Boston [Reported as MA72-13 until May 3, 2000].	3.70	Miles	(Debris*)	
					(Dewatering*)	
					(Trash*)	
					Color	
					DDT in Fish Tissue	
					Dissolved Oxygen	
					Escherichia Coli (E. Coli)	2592
					Fecal Coliform	2592
					Mercury in Fish Tissue	
					Odor	
					PCBs In Fish Tissue	
					Phosphorus, Total	
Neponset Reservoir	MA73034	Foxborough.	312.00	Acres	(Non-Native Aquatic Plants*)	
					Algae	
					Turbidity	

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Category 5 waters listed alphabetically by major watershed
The 303(d) List – "Waters requiring a TMDL"

Water Body	Segment ID	Description	Size	Units	Impairment	EPA TMDL No.
Neponset River	MA73-01	Outlet of Neponset Reservoir, Foxborough to confluence with East Branch, Canton. (through former pond segments Crackrock Pond MA73010 and Bird Pond MA73002).	13.20	Miles	DDT in Fish Tissue	
					Dissolved Oxygen	
					Escherichia Coli (E. Coli)	54840
					Metals	
					Nutrient/Eutrophication Biological Indicators	
					PCBs In Fish Tissue	
					Phosphorus, Total	
Neponset River	MA73-02	Confluence with East Branch, Canton to confluence with Mother Brook, Boston.	7.70	Miles	(Debris*)	
					(Trash*)	
					DDT in Fish Tissue	
					Dissolved Oxygen	
					Escherichia Coli (E. Coli)	2592
					Fecal Coliform	2592
					Flocculant Masses	
					Metals	
					Oil And Grease	
					PCBs In Fish Tissue	
					Scum/Foam	
					Turbidity	
Neponset River	MA73-03	Confluence with Mother Brook, Boston to Milton Lower Falls Dam (Neponset River Baker Chocolate Dam, NAT ID: MA01093), Milton/Boston.	3.70	Miles	(Debris*)	
					(Trash*)	
					DDT in Fish Tissue	
					Dissolved Oxygen	
					Enterococcus	2592
					Escherichia Coli (E. Coli)	2592
					Fecal Coliform	2592
					Flocculant Masses	
					Metals	
					Oil And Grease	
					PCBs In Fish Tissue	
					Polychlorinated Biphenyls (PCBs)	
					Scum/Foam	

* TMDL not required (Non-pollutant)

Category 5 waters listed alphabetically by major watershed
The 303(d) List – "Waters requiring a TMDL"

Water Body	Segment ID	Description	Size	Units	Impairment	EPA TMDL No.
Neponset River	MA73-04	Milton Lower Falls Dam (Neponset River Baker Chocolate Dam, NAT ID: MA01093), Milton/Boston to mouth at Dorchester Bay, Boston/Quincy.	0.67	Square Miles	(Debris*)	
					(Trash*)	
					Cause Unknown (Contaminants in Fish and/or Shellfish)	
					Dissolved Oxygen	
					Enterococcus	2592
					Fecal Coliform	2592
					PCBs In Fish Tissue	
					Turbidity	
Pequid Brook	MA73-22	Headwaters east of York Street, Canton to mouth at inlet of Forge Pond, Canton (excluding the approximately 1.3 miles through Reservoir Pond, segment MA73048).	2.80	Miles	Dissolved Oxygen	
Pine Tree Brook	MA73-29	Headwaters, outlet of Hillside Pond, Milton through Pope's Pond (formerly segment MA73044) to confluence Neponset River, Milton.	4.60	Miles	(Physical substrate habitat alterations*)	
					Aquatic Plants (Macrophytes)	
					Dissolved Oxygen	
					Escherichia Coli (E. Coli)	2592
					Fecal Coliform	2592
					Turbidity	
Plantingfield Brook	MA73-23	Headwaters east of Thatcher Street, Westwood, to mouth at confluence with Purgatory Brook, Norwood (portion culverted).	1.90	Miles	(Dewatering*)	
					Escherichia Coli (E. Coli)	
Russell Pond	MA73003	Milton.	9.00	Acres	(Non-Native Aquatic Plants*)	
					Turbidity	
Steep Hill Brook	MA73-18	Headwaters, outlet of Pinewood Pond, Stoughton, to mouth at inlet of Bolivar Pond, Canton.	0.90	Miles	Escherichia Coli (E. Coli)	
Turners Pond	MA73059	Milton.	11.00	Acres	Dissolved Oxygen	
					Nutrient/Eutrophication Biological Indicators	
					Turbidity	
Unnamed Tributary	MA73-32	From the outlet of Town Pond, Stoughton to mouth at confluence with Steep Hill Brook, Stoughton.	1.00	Miles	Benthic Macroinvertebrates	
					Escherichia Coli (E. Coli)	54860
					pH, Low	
					Phosphorus, Total	
Unnamed Tributary	MA73-33	Locally known as "Meadow Brook" - From where the underground/culverted stream emerges east of Pleasant Street, Norwood to confluence with Neponset River, Norwood.	0.70	Miles	Escherichia Coli (E. Coli)	54861
					Phosphorus, Total	

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Category 5 waters listed alphabetically by major watershed
The 303(d) List – "Waters requiring a TMDL"

Water Body	Segment ID	Description	Size	Units	Impairment	EPA TMDL No.
Unquity Brook	MA73-26	Isolated (urban): Headwaters (perennial portion) near Randolph Avenue, Milton to mouth at confluence with Gulliver Creek, Milton (Note: Confluence not visible on quad, brook culverted underground east of Otis Street/west of Govenor Belcher Lane, Milton).	1.50	Miles	(Dewatering*)	
					(Physical substrate habitat alterations*)	
					Dissolved Oxygen	
					Escherichia Coli (E. Coli)	2592
					Fecal Coliform	2592
					pH, Low	
					Phosphorus, Total	
					Sedimentation/Siltation	
Boston Harbor: Weymouth & Weir						
Accord Brook	MA74-16	Headwaters, outlet Accord Pond, Hingham to water supply intake (4131000-02S Accord Brook) south of South Pleasant Street, Hingham.	3.20	Miles	Benthic Macroinvertebrates	
Cochato River	MA74-06	Outlet Lake Holbrook, Holbrook to confluence with Farm and Monatiquot rivers, Braintree (through former pond segment Ice House Pond MA74028). (SARIS note: the upper portion of this segment is comprised of three surface waters: unnamed tributary from the outlet of Lake Holbrook, portion of Mary Lee Brook, portion of Glovers Brook).	4.10	Miles	Chlordane in Fish Tissue	
					DDT in Fish Tissue	
					Dissolved Oxygen	
					Escherichia Coli (E. Coli)	
					Fecal Coliform	
Cranberry Brook	MA74-22	Headwaters, outlet Cranberry Pond, Braintree to mouth at confluence with Cochato River, Braintree (Cranberry Brook Watershed ACEC).	1.90	Miles	Escherichia Coli (E. Coli)	
Crooked Meadow River	MA74-01	Headwaters, outlet Cushing Pond, Hingham to confluence with Fulling Mill Brook (forming headwater of Weir River), Hingham.	1.00	Miles	Nutrient/Eutrophication Biological Indicators	
Farm River	MA74-07	From Randolph/Braintree border (where name changes from Blue Hill River), to confluence with Cochato River (forming headwaters of Monatiquot River), Braintree.	3.10	Miles	Escherichia Coli (E. Coli)	
Furnace Brook	MA74-10	From headwaters north of Blue Hills Reservoir, Quincy to confluence with Blacks Creek, Quincy (portions culverted underground).	4.20	Miles	Dissolved Oxygen	
					Escherichia Coli (E. Coli)	
Hingham Harbor	MA74-18	Hingham Harbor inside a line from Crows Point to Worlds End, Hingham (formerly reported as MA70-08).	1.12	Square Miles	Cause Unknown (Contaminants in Fish and/or Shellfish)	
					Escherichia Coli (E. Coli)	
					Fecal Coliform	
					PCBs In Fish Tissue	

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Category 5 waters listed alphabetically by major watershed
The 303(d) List – "Waters requiring a TMDL"

Water Body	Segment ID	Description	Size	Units	Impairment	EPA TMDL No.
Lake Holbrook	MA74013	Holbrook.	31.00	Acres	Nutrient/Eutrophication Biological Indicators	
Mary Lee Brook	MA74-23	Headwaters, north of West High Street, Avon to mouth at confluence with Cochato River, Randolph.	2.70	Miles	Escherichia Coli (E. Coli)	
Mill River	MA74-04	Headwaters, west of Route 18 and south of Randolph Street, Weymouth to inlet Whitmans Pond, Weymouth (portions culverted underground).	3.40	Miles	Escherichia Coli (E. Coli)	
					Fecal Coliform	
Monatiquot River	MA74-08	Headwaters at confluence of Cochato and Farm rivers, Braintree to confluence with Weymouth Fore River at Commercial Street, Braintree.	4.40	Miles	(Physical substrate habitat alterations*)	
					Benthic Macroinvertebrates	
					Dissolved Oxygen	
					Escherichia Coli (E. Coli)	
					Fecal Coliform	
Old Swamp River	MA74-03	Headwaters just west of Pleasant Street and north of Liberty Street, Rockland to inlet Whitmans Pond, Weymouth.	4.60	Miles	Escherichia Coli (E. Coli)	
					Fecal Coliform	
Plymouth River	MA74-20	Headwaters, perennial portion (including channelized, culverted section) north of Route 3 (Pilgrim Highway), Weymouth to the mouth at inlet of Cushing Pond, Hingham (entire river not depicted on Weymouth USGS quad).	3.60	Miles	Escherichia Coli (E. Coli)	
Sylvan Lake	MA74021	Holbrook.	6.00	Acres	Chlordane in Fish Tissue	
					DDT in Fish Tissue	
Town Brook	MA74-09	Headwaters, outlet Old Quincy Reservoir, Braintree to confluence with Town River Bay north of Route 3A, Quincy (SARIS note: includes "The Canal"/Town River) (portions culverted underground).	3.50	Miles	(Flow Regime Modification*)	
					(Physical substrate habitat alterations*)	
					Benthic Macroinvertebrates	
					Escherichia Coli (E. Coli)	
					Fecal Coliform	
Town River Bay	MA74-15	From the headwaters at the Route 3A bridge, Quincy to the mouth at Weymouth Fore River between Shipyard and Germantown Points, Quincy.	0.46	Square Miles	Cause Unknown (Contaminants in Fish and/or Shellfish)	
					Dissolved Oxygen	
					Enterococcus	
					Fecal Coliform	
					PCBs In Fish Tissue	
Weir River	MA74-02	Headwaters at confluence of Crooked Meadow River and Fulling Mill Brook, Hingham to Foundry Pond outlet, Hingham (through former pond segment Foundry Pond MA74011) (area associated with Weir River ACEC designated as ORW).	2.70	Miles	(Dewatering*)	
					Escherichia Coli (E. Coli)	
					Fecal Coliform	
					Nutrient/Eutrophication Biological Indicators	
					Sedimentation/Siltation	

* TMDL not required (Non-pollutant)

Category 5 waters listed alphabetically by major watershed
The 303(d) List – "Waters requiring a TMDL"

Water Body	Segment ID	Description	Size	Units	Impairment	EPA TMDL No.
Weir River	MA74-11	From Foundry Pond outlet, Hingham to mouth at Worlds End, Hingham and Nantasket Road near Beech Avenue, Hull (including unnamed tributary from outlet Straits Pond, Hingham/Hull) (area associated with Weir River ACEC designated as ORW).	0.83	Square Miles	Cause Unknown (Contaminants in Fish and/or Shellfish)	
					Fecal Coliform	
					PCBs In Fish Tissue	
Weymouth Back River	MA74-05	Headwaters, outlet Elias Pond, Weymouth to the base of the fish ladder north of Commercial Street,Weymouth (area associated with Weymouth Back River ACEC designated as ORW).	0.70	Miles	Dissolved Oxygen	
					Escherichia Coli (E. Coli)	
					Fecal Coliform	
Weymouth Back River	MA74-13	From the base of the fish ladder north of Commercial Street, Weymouth to mouth between Lower Neck, Weymouth (to the west) and Wompatuck Road, Hingham (area associated with Weymouth Back River ACEC designated as ORW).	0.85	Square Miles	Cause Unknown (Contaminants in Fish and/or Shellfish)	
					Fecal Coliform	
					PCBs In Fish Tissue	
Weymouth Fore River	MA74-14	Commercial Street, Braintree to mouth (eastern point at Lower Neck, Weymouth and western point at Wall Street on Houghs Neck, Quincy).	2.29	Square Miles	Cause Unknown (Contaminants in Fish and/or Shellfish)	
					Enterococcus	
					Fecal Coliform	
					PCBs In Fish Tissue	
Whitmans Pond	MA74025	Weymouth.	176.00	Acres	(Non-Native Aquatic Plants*)	
					DDT in Fish Tissue	
Buzzards Bay						
"Inner" Sippican Harbor	MA95-70	The waters landward of a line from Allen Point, Marion around the southeastern tip of Ram Island, then westerly from the southern tip of Ram Island to the point of land south of Nyes Wharf, Marion excluding Hammett Cove (formerly reported as a portion of segment MA95-08).	0.57	Square Miles	Estuarine Bioassessments	
					Fecal Coliform	36172
					Nitrogen, Total	
					Nutrient/Eutrophication Biological Indicators	
Acushnet River	MA95-31	Headwaters, outlet New Bedford Reservoir, Acushnet to Hamlin Street culvert, Acushnet.	2.90	Miles	Dissolved Oxygen	
					Enterococcus	36170
					Escherichia Coli (E. Coli)	36170
					Fecal Coliform	36170
					Nutrients	

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Category 5 waters listed alphabetically by major watershed
The 303(d) List – "Waters requiring a TMDL"

Water Body	Segment ID	Description	Size	Units	Impairment	EPA TMDL No.
Acushnet River	MA95-32	Hamlin Street culvert, Acushnet to culvert at Main Street, Acushnet.	1.10	Miles	Benthic Macroinvertebrates	
					Dissolved Oxygen	
					Enterococcus	36170
					Escherichia Coli (E. Coli)	36170
					Fecal Coliform	36170
					Nutrients	
Acushnet River	MA95-33	Outlet Main Street culvert, Acushnet to Coggeshall Street/Howland Road bridge, New Bedford/Fairhaven.	0.31	Square Miles	(Debris*)	
					(Trash*)	
					Color	
					Dissolved Oxygen	
					Enterococcus	36171
					Fecal Coliform	36171
					Metals	
					Nitrogen, Total	
					Nutrient/Eutrophication Biological Indicators	
					Odor	
					Oil and Grease	
					Polychlorinated Biphenyls (PCBs)	
Agawam River	MA95-29	Wareham WWTP outfall, Wareham to confluence with Wankinco River (forming headwaters of the Wareham River) just north of the Route 6 bridge, Wareham.	0.16	Square Miles	Algae	
					Fecal Coliform	36171
					Nitrogen, Total	
Angeline Brook	MA95-83	Perennial portion south of Charlotte White Road, Westport to mouth at West Branch Westport River (Angeline Cove), Westport.	4.40	Miles	Enterococcus	
Apponagansett Bay	MA95-39	From the mouth of Buttonwood Brook, Dartmouth to a line drawn from Ricketsons Point, Dartmouth to Samoset Street near North Avenue, Dartmouth.	1.06	Square Miles	Estuarine Bioassessments	
					Fecal Coliform	36172
					Nitrogen, Total	
					Nutrient/Eutrophication Biological Indicators	
					PCBs In Fish Tissue	
Aucoot Cove	MA95-71	From the confluence with Aucoot Creek, Marion to the boundary of Division of Marine Fisheries designated shellfishing growing area BB31.1, north and southwest from Haskell Island, Marion (formerly part of segment MA95-09).	0.03	Square Miles	Dissolved Oxygen	
					Fecal Coliform	36172
					Nitrogen, Total	
					Nutrient/Eutrophication Biological Indicators	
Aucoot Creek	MA95-72	Estuarine portion east of Holly Pond Road, Marion to confluence with Aucoot Cove, Marion.	0.02	Square Miles	Dissolved Oxygen	
					Fecal Coliform	36172
					Nitrogen, Total	
					Nutrient/Eutrophication Biological Indicators	

* TMDL not required (Non-pollutant)

Category 5 waters listed alphabetically by major watershed
The 303(d) List – "Waters requiring a TMDL"

Water Body	Segment ID	Description	Size	Units	Impairment	EPA TMDL No.
Beaverdam Creek	MA95-53	Estuarine portion just south of the outlet from cranberry bog southeast of Route 6, Wareham to confluence with Wewantic River, Wareham.	0.04	Square Miles	Estuarine Bioassessments	
					Fecal Coliform	36172
					Nitrogen, Total	
Butler Cove	MA95-77	just south of Buttermilk Bay, Wareham.	0.05	Square Miles	Estuarine Bioassessments	
Buttermilk Bay	MA95-01	Bourne/Wareham.	0.67	Square Miles	Estuarine Bioassessments	
					Fecal Coliform	36172
					Nutrient/Eutrophication Biological Indicators	
Buzzards Bay	MA95-62	Open water area encompassed within a line drawn from Wilber Point, Fairhaven to Clarks Point, New Bedford to Ricketson Point, Dartmouth to vacinity of Samoset Street, Dartmouth down to Round Hill Point, Dartmouth and back to Wilber Point, Fairhaven.	8.07	Square Miles	Fecal Coliform	36172
					PCBs In Fish Tissue	
Clarks Cove	MA95-38	The semi-enclosed waterbody landward of a line drawn between Clarks Point, New Bedford and Ricketsons Point, Dartmouth.	1.90	Square Miles	Enterococcus	36172
					Fecal Coliform	36172
					PCBs In Fish Tissue	
Copicut Reservoir	MA95175	Dartmouth/Fall River.	596.00	Acres	Mercury in Fish Tissue	
Copicut River	MA95-43	Headwaters, outlet of Copicut Reservoir, Fall River to the inlet of Cornell Pond, Dartmouth.	1.30	Miles	Mercury in Fish Tissue	
					PCBs In Fish Tissue	
Cornell Pond	MA95031	Dartmouth.	12.00	Acres	Mercury in Fish Tissue	33880
					PCBs In Fish Tissue	
Crane Brook Bog Pond	MA95033	Carver.	37.00	Acres	(Non-Native Aquatic Plants*)	
					Algae	
					Phosphorus, Total	
Dunham Pond	MA95044	Carver.	43.00	Acres	Chlorophyll-a	
					Transparency / Clarity	
East Branch Westport River	MA95-41	Old County Road bridge, Westport to the mouth at Westport Harbor/Westport River, Westport (excluding Horseneck Channel).	2.65	Square Miles	Estuarine Bioassessments	
					Fecal Coliform	36171
					Nitrogen, Total	
					Nutrient/Eutrophication Biological Indicators	
Eel Pond	MA95-61	Coastal pond at the head of Mattapoisett Harbor, Mattapoisett.	0.04	Square Miles	Fecal Coliform	36172
					Nutrient/Eutrophication Biological Indicators	

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Category 5 waters listed alphabetically by major watershed
The 303(d) List – "Waters requiring a TMDL"

Water Body	Segment ID	Description	Size	Units	Impairment	EPA TMDL No.
Fiddlers Cove	MA95-79	cove south off Megansett Harbor, Falmouth.	0.01	Square Miles	Dissolved Oxygen	
					Estuarine Bioassessments	
					Fecal Coliform	
					Nitrogen, Total	
					Nutrient/Eutrophication Biological Indicators	
Halfway Pond	MA95178	Plymouth (On 9 October 1997, PALIS ID was changed from 94057 to 95178; therefor, this pond historically reported in South Coastal "94").	215.00	Acres	Harmful Algal Blooms	
Hammett Cove	MA95-56	Borders Sippican Harbor (along a line from the southwestern most point of Little Neck to the end of the seawall on the opposite point), Marion.	0.07	Square Miles	Estuarine Bioassessments	
					Fecal Coliform	36172
					Nitrogen, Total	
Herring Brook	MA95-21	Estuarine portion northeast of Dale Drive and west of Route 28A, Falmouth to the mouth at Buzzards Bay, Falmouth.	0.01	Square Miles	Chlorophyll-a	
					Fecal Coliform	36172
					Nitrogen, Total	
Kirby Brook	MA95-82	Headwaters just south of Old County Road, Westport to the mouth at East Branch Westport River, Westport.	2.00	Miles	Enterococcus	
Leonards Pond	MA95080	Rochester.	49.00	Acres	(Aquatic Plants (Macrophytes)*)	
					(Non-Native Aquatic Plants*)	
					Chlorophyll-a	
					Transparency / Clarity	
Little Buttermilk Bay	MA95-76	off of Buttermilk Bay, Bourne.	0.16	Square Miles	Estuarine Bioassessments	
					Nutrient/Eutrophication Biological Indicators	
Mattapoisett Harbor	MA95-35	From the mouth of the Mattapoisett River, Mattapoissett to a line drawn from Ned Point to a point of land between Bayview Avenue and Grandview Avenue, Mattapoisett.	1.12	Square Miles	Estuarine Bioassessments	
					Fecal Coliform	36172
					Nutrient/Eutrophication Biological Indicators	
Mattapoisett River	MA95-36	Headwaters, outlet Snipatuit Pond, Rochester to Mattapoisett River Dam (#MA02447) at Fairhaven Road (Route 6), Mattapoisett.	10.40	Miles	Enterococcus	
					Escherichia Coli (E. Coli)	
Megansett Harbor	MA95-19	From the outlet of Squeteague Harbor, Falmouth to Buzzards Bay at a line from the western tip of Scraggy Neck, Bourne south to the tip of Nyes Neck, Falmouth.	1.44	Square Miles	Estuarine Bioassessments	
					Fecal Coliform	
					Nutrient/Eutrophication Biological Indicators	

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Category 5 waters listed alphabetically by major watershed
The 303(d) List – "Waters requiring a TMDL"

Water Body	Segment ID	Description	Size	Units	Impairment	EPA TMDL No.
Nasketucket River	MA95-67	Estuarine portion, from the boundary of the salt water wetland south of Route 6, Fairhaven to the mouth at Little Bay, Fairhaven (includes connector to Little Bay on the east side of the river).	0.03	Square Miles	Nitrogen, Total	
New Bedford Inner Harbor	MA95-42	Coggeshall Street/Howland Road bridge, New Bedford/Fairhaven to hurricane barrier, Fairhaven/New Bedford.	1.25	Square Miles	(Debris*)	
					(Trash*)	
					Dissolved Oxygen	
					Enterococcus	36171
					Fecal Coliform	36171
					Metals	
					Nitrogen, Total	
					Nutrient/Eutrophication Biological Indicators	
					Odor	
					Oil and Grease	
					PCBs In Fish Tissue	
					Polychlorinated Biphenyls (PCBs)	
New Bedford Reservoir	MA95110	Acushnet.	211.00	Acres	(Aquatic Plants (Macrophytes)*)	
					(Non-Native Aquatic Plants*)	
					DDT in Fish Tissue	
					Dissolved Oxygen	
					Mercury in Fish Tissue	
					Nutrient/Eutrophication Biological Indicators	
					Phosphorus, Total	
Noquochoke Lake	MA95113	(Main Basin) Dartmouth.	88.00	Acres	(Non-Native Aquatic Plants*)	
					Aquatic Plants (Macrophytes)	
					Enterococcus	
					Mercury in Fish Tissue	33880
					PCBs In Fish Tissue	
					Turbidity	
Noquochoke Lake	MA95170	(South Basin) Dartmouth.	13.00	Acres	(Non-Native Aquatic Plants*)	
					Aquatic Plants (Macrophytes)	
					Mercury in Fish Tissue	33880
					PCBs In Fish Tissue	
					Turbidity	

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Category 5 waters listed alphabetically by major watershed
The 303(d) List – "Waters requiring a TMDL"

Water Body	Segment ID	Description	Size	Units	Impairment	EPA TMDL No.
Noquochoke Lake	MA95171	(North Basin) Dartmouth.	17.00	Acres	(Non-Native Aquatic Plants*)	
					Aquatic Plants (Macrophytes)	
					Mercury in Fish Tissue	33880
					PCBs In Fish Tissue	
					Turbidity	
Onset Bay	MA95-02	Wareham.	0.78	Square Miles	Estuarine Bioassessments	
					Fecal Coliform	36172
Outer New Bedford Harbor	MA95-63	From the hurricane barrier, Fairhaven/New Bedford to a line drawn from Wilbur Point, Fairhaven to Clarks Point, New Bedford (segment changed 6/4/03, formerly reported as MA95-27).	5.78	Square Miles	Dissolved Oxygen	
					Enterococcus	36172
					Fecal Coliform	36172
					Metals	
					Nitrogen, Total	
					Other Organics	
					PCBs In Fish Tissue	
Parker Mills Pond	MA95115	Wareham.	73.00	Acres	(Non-Native Aquatic Plants*)	
					Phosphorus, Total	
Paskamanset River	MA95-11	Headwaters, outlet Turners Pond, Dartmouth/New Bedford to confluence with Slocums River (Rock O'Dundee Road), Dartmouth.	10.50	Miles	Combined Biota/Habitat Bioassessments	
					Enterococcus	
					Escherichia Coli (E. Coli)	
Pocasset Harbor	MA95-17	From the confluence with Red Brook Harbor near the northern portion of Bassetts Island and Patuisset, Bourne to the mouth at Buzzards Bay between the western portion of Bassetts Island and Wings Neck, Bourne.	0.33	Square Miles	Estuarine Bioassessments	
					Fecal Coliform	36172
Queen Sewell Pond	MA95180	Bourne (previously reported with PALIS # 96253).	18.00	Acres	Harmful Algal Blooms	
Quissett Harbor	MA95-25	The semi-enclosed body of water landward of a line drawn between The Knob and Gansett Point, Falmouth.	0.17	Square Miles	Estuarine Bioassessments	
					Fecal Coliform	36172
					Nitrogen, Total	
					Nutrient/Eutrophication Biological Indicators	
Rands Harbor	MA95-78	harbor south off Megansett Harbor, Falmouth.	0.02	Square Miles	Estuarine Bioassessments	
					Fecal Coliform	
					Nitrogen, Total	
					Nutrient/Eutrophication Biological Indicators	

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Category 5 waters listed alphabetically by major watershed
The 303(d) List – "Waters requiring a TMDL"

Water Body	Segment ID	Description	Size	Units	Impairment	EPA TMDL No.
Red Brook Harbor	MA95-18	From the confluence with Pocasset Harbor between the northern portion of Bassetts Island and Patuisset, Bourne to the mouth at Buzzards Bay between the southern portion of Bassetts Island and Scraggy Neck, Bourne (including Hen Cove).	0.92	Square Miles	Estuarine Bioassessments	
					Fecal Coliform	36172
					Nutrient/Eutrophication Biological Indicators	
Sampson Pond	MA95125	Carver.	295.00	Acres	(Non-Native Aquatic Plants*)	
					(Non-Native Fish/Shellfish/Zooplankton*)	
					DDT in Fish Tissue	
					Mercury in Fish Tissue	
Shingle Island River	MA95-12	Outlet of small unnamed pond northeast of Flag Swamp Road, Dartmouth to inlet Noquochoke Lake (north basin), Dartmouth.	5.00	Miles	Enterococcus	
Sippican River	MA95-06	Headwaters, outlet Leonards Pond, Rochester to County Road, Marion/Wareham.	3.00	Miles	Chlorophyll-a	
					Dissolved Oxygen	
					Enterococcus	
Slocums River	MA95-34	Rock O'Dundee Road (confluence with Paskemanset River), Dartmouth to mouth at Buzzards Bay, Dartmouth.	0.66	Square Miles	Estuarine Bioassessments	
					Fecal Coliform	36172
					Nitrogen, Total	
					Nutrient/Eutrophication Biological Indicators	
Squeteague Harbor	MA95-55	Waters landward of the confluence with Megansett Harbor, Bourne/Falmouth.	0.15	Square Miles	Nutrient/Eutrophication Biological Indicators	
Tihonet Pond	MA95146	Wareham.	87.00	Acres	Dissolved Oxygen	
Wareham River	MA95-03	From confluence of Wankinko and Agawam Rivers at Route 6 bridge, Wareham to Buzzards Bay (at an imaginary line from Cromeset Point to curved point east/southeast of Long Beach Point), Wareham. Including Marks Cove, Wareham.	1.18	Square Miles	Estuarine Bioassessments	
					Fecal Coliform	36172
					Nitrogen, Total	
West Branch Westport River	MA95-37	West of Quail Trail, Westport to mouth at Westport Harbor/Westport River, Westport.	1.29	Square Miles	Estuarine Bioassessments	
					Fecal Coliform	36172
					Nitrogen, Total	
					Nutrient/Eutrophication Biological Indicators	
Weweantic River	MA95-04	Headwaters confluence of Rocky Meadow and South Meadow brooks, Carver to the inlet of Horseshoe Pond, Wareham (through former pond segment MA95150).	11.50	Miles	(Non-Native Aquatic Plants*)	
					Enterococcus	

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Category 5 waters listed alphabetically by major watershed
The 303(d) List – "Waters requiring a TMDL"

Water Body	Segment ID	Description	Size	Units	Impairment	EPA TMDL No.
Weweantic River	MA95-05	Outlet Horseshoe Pond, Wareham to mouth at Buzzards Bay, Marion/Wareham.	0.62	Square Miles	Enterococcus	36172
					Estuarine Bioassessments	
					Fecal Coliform	36172
					Nitrogen, Total	
Wild Harbor	MA95-20	Waters landward of an imaginary line from Crow Point to Nyes Neck (excluding Wild Harbor River), Falmouth.	0.13	Square Miles	Estuarine Bioassessments	
					Fecal Coliform	36172
					Nitrogen, Total	
					Nutrient/Eutrophication Biological Indicators	
Wild Harbor River	MA95-68	Headwaters, Falmouth to mouth at Wild Harbor, Falmouth.	0.03	Square Miles	Fecal Coliform	36172
					Nutrient/Eutrophication Biological Indicators	
Cape Cod						
Allens Harbor	MA96-95	south of Lower County Road, Harwich to Doanes Creek, Harwich.	0.02	Square Miles	Fecal Coliform	
Ashumet Pond	MA96004	Mashpee/Falmouth.	203.00	Acres	Abnormal Fish Deformities, Erosions, Lesions, Tumors (DELTS)	
					Dissolved Oxygen	
					Mercury in Fish Tissue	33880
					Phosphorus, Total	
Barnstable Harbor	MA96-01	From the mouths of Scorton and Spring creeks, Barnstable east to an imaginary line drawn from Beach Point to the western edge of the Mill Creek estuary, Barnstable.	3.20	Square Miles	Estuarine Bioassessments	
					Fecal Coliform	36771
Bass River	MA96-12	Headwaters outlet Kelleys Bay, Route 6, Dennis/Yarmouth to mouth at inlet Nantucket Sound, Yarmouth (excluding Grand Cove, Dennis).	0.69	Square Miles	Estuarine Bioassessments	
					Fecal Coliform	36771
Boat Meadow River	MA96-15	Headwaters east of old railway grade, Eastham to mouth at inlet Cape Cod Bay, Eastham.	0.05	Square Miles	Estuarine Bioassessments	
					Fecal Coliform	36772
Cedar Pond	MA96-88	Orleans (in Inner Cape Cod Bay ACEC).	0.03	Square Miles	Chlorophyll-a	
					Dissolved Oxygen	
					Dissolved Oxygen Supersaturation	
Chase Garden Creek	MA96-103	Headwaters south of Roads End and west of Jericho Road, Dennis to New Boston Road, Dennis.	1.20	Miles	Escherichia Coli (E. Coli)	
Cliff Pond	MA96039	Brewster.	190.00	Acres	Harmful Algal Blooms	
Crystal Lake	MA96050	Orleans.	33.00	Acres	Dissolved Oxygen	
Great Pond	MA96115	Eastham.	109.00	Acres	Chlorophyll-a	
					Dissolved Oxygen	
					Phosphorus, Total	

Category 5 waters listed alphabetically by major watershed
The 303(d) List – "Waters requiring a TMDL"

Water Body	Segment ID	Description	Size	Units	Impairment	EPA TMDL No.
Hamblin Pond	MA96126	Barnstable.	114.00	Acres	Dissolved Oxygen	
					Harmful Algal Blooms	
					Mercury in Fish Tissue	33880
Herring River	MA96-33	South of High Toss Road, Wellfleet to mouth at inlet Wellfleet Harbor (at an imaginary line drawn due north from the eastern tip of Great Island to the opposite shore), Wellfleet.	0.40	Square Miles	(Fish Passage Barrier*)	
					(Flow Regime Modification*)	
					Aluminum	
					Estuarine Bioassessments	
					Fecal Coliform	36772
					pH, Low	
Herring River	MA96-67	Headwaters outlet Herring Pond, Wellfleet to south of High Toss Road, Wellfleet.	3.60	Miles	(Fish Kill(s)*)	
					(Fish Passage Barrier*)	
					(Flow Regime Modification*)	
					Aluminum	
					pH, Low	
Little River	MA96-99	Headwaters outlet Lovells Pond, Barnstable to confluence with tidal portion south of Old Post Road, Barnstable.	1.80	Miles	Escherichia Coli (E. Coli)	
Long Pond	MA96183	Brewster/Harwich.	715.00	Acres	Dissolved Oxygen	
Lovells Pond	MA96185	Barnstable.	54.00	Acres	Chlorophyll-a	
					Dissolved Oxygen	
					Harmful Algal Blooms	
					Phosphorus, Total	
					Transparency / Clarity	
					Turbidity	
Lovers Lake	MA96186	Chatham.	37.00	Acres	Transparency / Clarity	
Lower Mill Pond	MA96188	Brewster.	44.00	Acres	Algae	
					Chlorophyll-a	
					Phosphorus, Total	
					Turbidity	
Middle Pond	MA96198	Barnstable.	104.00	Acres	Dissolved Oxygen	
					Harmful Algal Blooms	
Moll Pond	MA96355	Eastham.	3.00	Acres	Harmful Algal Blooms	
Mystic Lake	MA96218	Barnstable.	146.00	Acres	(Non-Native Aquatic Plants*)	
					Dissolved Oxygen	

Category 5 waters listed alphabetically by major watershed
The 303(d) List – "Waters requiring a TMDL"

Water Body	Segment ID	Description	Size	Units	Impairment	EPA TMDL No.
Popponesset Creek	MA96-39	All waters west of Popponesset Island (from Popponesset Island Road bridge at the north to a line extended from the southeastern most point of the island southerly to Popponesset Beach), Mashpee.	0.05	Square Miles	Estuarine Bioassessments	
					Fecal Coliform	36772
Red Lily Pond	MA96257	Barnstable.	4.00	Acres	(Aquatic Plants (Macrophytes)*)	
					Fecal Coliform	
					Nutrient/Eutrophication Biological Indicators	
Red River	MA96-107	Headwaters west of Mayflower Drive, Chatham to south Chatham Road, Chatham.	0.90	Miles	Escherichia Coli (E. Coli)	
Round Cove	MA96-75	east of Route 28, Harwich outlet to Pleasant Bay, Harwich.	0.02	Square Miles	Fecal Coliform	
					Nitrogen, Total	33796
Ryder Pond	MA96268	Truro.	18.00	Acres	Dissolved Oxygen	
					Mercury in Fish Tissue	33880
					Phosphorus, Total	
Santuit Pond	MA96277	Mashpee.	164.00	Acres	Abnormal Fish Deformities, Erosions, Lesions, Tumors (DELTS)	
					Chlorophyll-a	
					Harmful Algal Blooms	
					Nutrient/Eutrophication Biological Indicators	
					pH, High	
					Phosphorus, Total	
					Transparency / Clarity	
Shawme Lake Lower	MA96288	Sandwich.	25.00	Acres	Nutrient/Eutrophication Biological Indicators	
Stillwater Pond	MA96309	Chatham.	18.00	Acres	Transparency / Clarity	
Swan Pond River	MA96-14	Headwaters, outlet Swan Pond, Dennis to mouth at inlet Nantucket Sound, Dennis.	0.04	Square Miles	Estuarine Bioassessments	
					Fecal Coliform	36771
Town Cove	MA96-68	Entire cove, Orleans/Eastham (including Rachael Cove and Woods Cove, Orleans) outlet to Nauset Harbor, Orleans (area within Cape Cod National Seashore designated as ORW).	0.79	Square Miles	Estuarine Bioassessments	
Uncle Harvey Pond	MA96319	Orleans.	6.00	Acres	Harmful Algal Blooms	
Unnamed Tributary	MA96-100	Unnamed tributary to Halls Creek, Barnstable from headwaters south of the intersection of Old Craigville and Old Town roads, Barnstable to confluene with tidal portion just south of Craigville Beach Road, Barnstable.	0.50	Miles	Escherichia Coli (E. Coli)	

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Category 5 waters listed alphabetically by major watershed
The 303(d) List – "Waters requiring a TMDL"

Water Body	Segment ID	Description	Size	Units	Impairment	EPA TMDL No.
Unnamed Tributary	MA96-104	Unnamed tributary to Freemans Pond, Brewster from outlet of channelized wetland south of Lower Road, Brewster to mouth at inlet Freemans Pond, Brewster.	0.60	Miles	Escherichia Coli (E. Coli)	
Unnamed Tributary	MA96-108	Unnamed tributary to Herring River, headwaters outlet Perch Pond, Wellfleet to mouth at confluence with Herring River, Wellfleet (area within Cape Cod National Seashore designated as ORW).	2.00	Miles	Escherichia Coli (E. Coli)	
Upper Shawme Lake	MA96326	Sandwich.	21.00	Acres	Nutrient/Eutrophication Biological Indicators	
Walkers Pond	MA96331	Brewster.	100.00	Acres	Algae	
					Chlorophyll-a	
					Harmful Algal Blooms	
					Phosphorus, Total	
					Transparency / Clarity	
					Turbidity	
Waquoit Bay	MA96-21	From mouths of Seapit River, Quashnet River (also known as Moonakis River), Falmouth and Great River, Mashpee to inlet of Vineyard Sound, Falmouth/Mashpee.	1.43	Square Miles	Dissolved Oxygen	
					Estuarine Bioassessments	
Whites Brook	MA96-102	Headwaters in channelized wetland south of Route 6A, Yarmouth to confluence with tidal portion north of Route 6A, Yarmouth.	0.30	Miles	Escherichia Coli (E. Coli)	
Wychmere Harbor	MA96-96	south of Route 28, Harwich outlet to Nantucket Sound, Harwich.	0.02	Square Miles	Fecal Coliform	
Charles						
Alder Brook	MA72-22	Headwaters, perennial portion northwest of the Route 135 and South Street intersection, Needham to mouth at confluence with the Charles River, Needham.	0.30	Miles	Benthic Macroinvertebrates	
					Nutrient/Eutrophication Biological Indicators	40317
Beaver Brook	MA72-12	Headwaters, outlet Beaver Pond, Bellingham to mouth at confluence with the Charles River, Bellingham.	1.40	Miles	Escherichia Coli (E. Coli)	

Category 5 waters listed alphabetically by major watershed
The 303(d) List – "Waters requiring a TMDL"

Water Body	Segment ID	Description	Size	Units	Impairment	EPA TMDL No.
Beaver Brook	MA72-28	Headwaters, perennial portion north of Route 2, Lexington to mouth at confluence with the Charles River, Waltham (one culverted portion approximately 2900 feet (0.55mile)).	5.50	Miles	(Flow Regime Modification*)	
					(Non-Native Aquatic Plants*)	
					(Other anthropogenic substrate alterations*)	
					Algae	40317
					Dissolved Oxygen	40317
					Escherichia Coli (E. Coli)	32379
					Organic Enrichment (Sewage) Biological Indicators	40317
					Phosphorus, Total	40317
					Sedimentation/Siltation	
Bulloughs Pond	MA72011	Newton.	7.00	Acres	Algae	
					Nutrient/Eutrophication Biological Indicators	
Cambridge Reservoir	MA72014	Waltham/Lincoln/Lexington.	531.00	Acres	Chloride	
Cambridge Reservoir, Upper Basin	MA72156	Lincoln/Lexington.	44.00	Acres	Aquatic Plants (Macrophytes)	
					Chloride	
					Turbidity	
Chandler Pond	MA72017	Boston.	11.00	Acres	Algae	
					Nutrient/Eutrophication Biological Indicators	
					Phosphorus, Total	
					Transparency / Clarity	
Charles River	MA72-03	From Milford WWTF discharge (NPDES: MA0100579), Hopedale to outlet Box Pond (formerly segment MA72008), Bellingham.	3.40	Miles	Algae	40317
					DDT in Fish Tissue	
					Dissolved Oxygen Supersaturation	40317
					Escherichia Coli (E. Coli)	32365
					Organic Enrichment (Sewage) Biological Indicators	40317
					Phosphorus, Total	40317
Charles River	MA72-04	From outlet Box Pond, Bellingham to inlet Populatic Pond, Norfolk/Medway (one culverted portion approximately 350 feet (0.07mile)).	11.50	Miles	(Flow Regime Modification*)	
					Chlordane in Fish Tissue	
					DDT in Fish Tissue	
					Escherichia Coli (E. Coli)	32366
					Fish Bioassessments	
					Mercury in Fish Tissue	

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Category 5 waters listed alphabetically by major watershed
The 303(d) List – "Waters requiring a TMDL"

Water Body	Segment ID	Description	Size	Units	Impairment	EPA TMDL No.
Charles River	MA72-05	From outlet Populatic Pond, Norfolk/Medway to South Natick Dam (NATID: MA00341), Natick.	18.10	Miles	(Non-Native Aquatic Plants*)	
					Algae	40317
					Benthic Macroinvertebrates	
					Chlordane in Fish Tissue	
					DDT in Fish Tissue	
					Dissolved Oxygen	40317
					Dissolved Oxygen Supersaturation	40317
					Mercury in Fish Tissue	
					Nutrient/Eutrophication Biological Indicators	40317
					Phosphorus, Total	40317
					Turbidity	40317
Charles River	MA72-06	From South Natick Dam (NATID: MA00341), Natick to Chestnut Street, Needham/Dover.	8.20	Miles	(Eurasian Water Milfoil, Myriophyllum spicatum*)	
					(Flow Regime Modification*)	
					(Non-Native Aquatic Plants*)	
					Algae	40317
					Cause Unknown (Fish Population Imbalance)	
					DDT in Fish Tissue	
					Fish Bioassessments	
					Nutrient/Eutrophication Biological Indicators	40317
					PCBs In Fish Tissue	
					Phosphorus, Total	40317
Charles River	MA72-07	From Chestnut Street, Needham/Dover to Watertown Dam (NATID: MA00456), Watertown.	24.00	Miles	(Eurasian Water Milfoil, Myriophyllum spicatum*)	
					(Fish Passage Barrier*)	
					(Flow Regime Modification*)	
					(Non-Native Aquatic Plants*)	
					DDT in Fish Tissue	
					Escherichia Coli (E. Coli)	32370
					Fish Bioassessments	
					Harmful Algal Blooms	40317
					Nutrient/Eutrophication Biological Indicators	40317
					PCBs In Fish Tissue	
					Phosphorus, Total	40317

* TMDL not required (Non-pollutant)

Category 5 waters listed alphabetically by major watershed
The 303(d) List – "Waters requiring a TMDL"

Water Body	Segment ID	Description	Size	Units	Impairment	EPA TMDL No.
Charles River	MA72-36	From Watertown Dam (NATID: MA00456), Watertown to the Boston University Bridge, Boston/Cambridge (formerly part of segment MA72-08).	6.10	Miles	(Fish Passage Barrier*)	
					(Flow Regime Modification*)	
					(Non-Native Aquatic Plants*)	
					Chlorophyll-a	33826
					DDT in Fish Tissue	
					Dissolved Oxygen	
					Escherichia Coli (E. Coli)	32371
					Fish Bioassessments	
					Harmful Algal Blooms	33826
					Nutrient/Eutrophication Biological Indicators	33826
					Oil and Grease	
					PCBs In Fish Tissue	
					pH, High	
					Phosphorus, Total	33826
					Sediment Bioassay (Acute Toxicity Freshwater)	
					Transparency / Clarity	33826
					Unspecified Metals in Sediment	
Charles River	MA72-38	From Boston University Bridge, Boston/Cambridge to mouth at the New Charles River Dam (NATID: MA01092), Boston (formerly part of segment MA72-08).	3.10	Miles	(Flow Regime Modification*)	
					Cause Unknown (Sediment Screening Value (Exceedence))	
					Chlorophyll-a	33826
					Combined Biota/Habitat Bioassessments	
					DDT in Fish Tissue	
					Dissolved Oxygen	
					Dissolved Oxygen Supersaturation	33826
					Escherichia Coli (E. Coli)	32371
					Harmful Algal Blooms	33826
					Nutrient/Eutrophication Biological Indicators	33826
					Odor	33826
					Oil and Grease	
					PCBs In Fish Tissue	
					Phosphorus, Total	33826
					Salinity	
					Temperature	
					Transparency / Clarity	33826
Chicken Brook	MA72-34	Source, outlet Waseeka Sanctuary Pond, Holliston to mouth at confluence with the Charles River, Medway.	7.40	Miles	Escherichia Coli (E. Coli)	
Crystal Lake	MA72030	Newton.	27.00	Acres	Harmful Algal Blooms	

* TMDL not required (Non-pollutant)

Category 5 waters listed alphabetically by major watershed
The 303(d) List – "Waters requiring a TMDL"

Water Body	Segment ID	Description	Size	Units	Impairment	EPA TMDL No.
Fuller Brook	MA72-18	Headwater south of Route 135, Needham to mouth at confluence with Waban Brook, Wellesley (one culverted portion approximately 360 feet (0.07mile)).	4.30	Miles	(Physical substrate habitat alterations*)	
					Escherichia Coli (E. Coli)	32374
					Nutrient/Eutrophication Biological Indicators	40317
					Sedimentation/Siltation	
Hobbs Brook	MA72-45	Headwaters west of Bedford Road, Lincoln to inlet Cambridge Reservoir, Upper Basin, Lincoln	2.40	Miles	Chloride	
Hobbs Brook	MA72-46	From outlet Cambridge Reservoir, Waltham to mouth at confluence with Stony Brook, Weston.	1.80	Miles	Chloride	
Hopping Brook	MA72-35	Source in Cedar Swamp, Holliston to mouth at confluence with the Charles River, Bellingham/Medway.	4.90	Miles	Escherichia Coli (E. Coli)	
Jamaica Pond	MA72052	Boston.	67.00	Acres	Dissolved Oxygen	
					Phosphorus, Total	
Kendrick Street Pond	MA72055	Needham.	39.00	Acres	Turbidity	
Lake Winthrop	MA72140	Holliston.	131.00	Acres	(Non-Native Aquatic Plants*)	
					2,3,7,8-Tetrachlorodibenzo-p-dioxin	
					Aquatic Plants (Macrophytes)	40319
Mill River	MA72-15	Headwaters, outlet Bush Pond, Norfolk to mouth at confluence with the Charles River, Norfolk.	3.50	Miles	Temperature	
Mine Brook	MA72-14	Headwaters in Franklin State Forest, Franklin to mouth at confluence with the Charles River, Franklin (through Mine Brook Pond, formerly MA72077) (HQW applies upstream of former Franklin WWTP discharge, approximately 4 miles upstream of mouth (note: Franklin WWTP tied into Medway (CRWPCD) on 15 January 1980)).	8.90	Miles	(Habitat Assessment*)	
					Escherichia Coli (E. Coli)	
					Temperature	

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Category 5 waters listed alphabetically by major watershed
The 303(d) List – "Waters requiring a TMDL"

Water Body	Segment ID	Description	Size	Units	Impairment	EPA TMDL No.
Muddy River	MA72-11	Headwaters, outlet Ward Pond in Olmstead Park, Boston through Leverett Pond, Boston/Brookline to confluence with Charles River, Boston (four culverted portions totaling approximately 2200 feet (0.42mile)).	3.60	Miles	(Bottom Deposits*)	
					(Flow Regime Modification*)	
					(Non-Native Aquatic Plants*)	
					(Physical substrate habitat alterations*)	
					DDT in Fish Tissue	
					Dissolved Oxygen	
					Escherichia Coli (E. Coli)	32383
					Odor	
					Oil and Grease	
					PCBs In Fish Tissue	
					Phosphorus, Total	
					Turbidity	
					Unspecified Metals in Sediment	
Populatic Pond	MA72096	Norfolk.	42.00	Acres	Algae	40319
					Chlordane in Fish Tissue	
					DDT in Fish Tissue	
					Dissolved Oxygen	40319
					Dissolved Oxygen Supersaturation	40319
					Mercury in Fish Tissue	33880
					Nutrient/Eutrophication Biological Indicators	40319
Powissett Brook	MA72-20	Headwaters, outlet Noannet Pond, Westwood to mouth at confluence with the Charles River, Dover.	1.90	Miles	Combined Biota/Habitat Bioassessments	
Rock Meadow Brook	MA72-21	Headwaters, Fisher Meadow, Westwood to mouth at confluence with the Charles River, Dedham.	3.80	Miles	Algae	40317
					Benthic Macroinvertebrates	
					Dissolved Oxygen	40317
					Nutrient/Eutrophication Biological Indicators	40317
					Phosphorus, Total	40317
Sawmill Brook	MA72-23	Headwaters, Newton to mouth at confluence with the Charles River, Boston.	2.40	Miles	Chloride	
					Dissolved Oxygen	40317
					Escherichia Coli (E. Coli)	32376
					Organic Enrichment (Sewage) Biological Indicators	40317
					Phosphorus, Total	40317
Seaverns Brook	MA72-44	Headwaters outlet Norumbega Reservoir, Weston to mouth at confluence with the Charles River, Weston.	1.60	Miles	Escherichia Coli (E. Coli)	

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Category 5 waters listed alphabetically by major watershed
The 303(d) List – "Waters requiring a TMDL"

Water Body	Segment ID	Description	Size	Units	Impairment	EPA TMDL No.
Stop River	MA72-09	Headwaters south of Route 1A, Wrentham to Norfolk-Walpole MCI discharge (NPDES: MA0102253), Norfolk (through Highland Lake formerly MA72047).	4.90	Miles	Ambient Bioassays - Chronic Aquatic Toxicity	
					Dissolved Oxygen	40317
					Phosphorus, Total	40317
Stop River	MA72-10	From Norfolk-Walpole MCI discharge, Norfolk to confluence with Charles River, Medfield.	4.20	Miles	Organic Enrichment (Sewage) Biological Indicators	40317
					Phosphorus, Total	40317
					Temperature	
Trout Brook	MA72-19	Headwaters, outlet Channings Pond, Dover to mouth at confluence with the Charles River, Dover.	2.80	Miles	Nutrient/Eutrophication Biological Indicators	40317
					Temperature	
Unnamed Tributary	MA72-30	Locally known as "Laundry Brook" - emerges north of California Street, Watertown to mouth at confluence with the Charles River, Watertown (stream not depicted on 1987 Newton USGS map).	0.02	Miles	(Physical substrate habitat alterations*)	
					Enterococcus	32381
					Escherichia Coli (E. Coli)	32381
					Odor	
					Phosphorus, Total	
					Total Suspended Solids (TSS)	
					Turbidity	
Unnamed Tributary	MA72-31	Locally known as "Millers River" - from emergence near Route 93, Cambridge/Boston to mouth at confluence with the Charles River, Cambridge.	0.20	Miles	(Bottom Deposits*)	
					(Debris*)	
					(Habitat Assessment*)	
					(Trash*)	
					Flocculant Masses	
					Metals	
					Odor	
					Oil And Grease	
					Petroleum Hydrocarbons	
					Polychlorinated Biphenyls (PCBs)	
					Polycyclic Aromatic Hydrocarbons (PAHs) (Aquatic Ecosystems)	
					Scum/Foam	
					Sedimentation/Siltation	
					Turbidity	
Unnamed Tributary	MA72-41	Unnamed tributary to the Charles River, outlet Lymans Pond, Dover to mouth at confluence with the Charles River, Dover.	0.50	Miles	Escherichia Coli (E. Coli)	
Unnamed Tributary	MA72-43	Unnamed tributary to Morses Pond, headwaters outlet Reeds Pond, Wellesley to mouth at confluence with Morses Pond, Wellesley.	0.20	Miles	Escherichia Coli (E. Coli)	

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Category 5 waters listed alphabetically by major watershed
The 303(d) List – "Waters requiring a TMDL"

Water Body	Segment ID	Description	Size	Units	Impairment	EPA TMDL No.
Unnamed Tributary	MA72-47	Headwaters west of Forbes Road, Lexington to mouth at confluence with Hobbs Brook, Lincoln.	0.80	Miles	Chloride	
Unnamed Tributary	MA72-48	Headwaters northeast of the Trapelo Road/Smith Street intersection, Waltham to mouth at inlet Cambridge Reservoir, Lexington.	0.90	Miles	Chloride	
Waban Brook	MA72-17	Headwaters, outlet Lake Waban, Wellesley to mouth at confluence with the Charles River, Wellesley.	0.70	Miles	Temperature	
Chicopee						
Abbey Brook	MA36-40	Headwaters west of Saint James Avenue, Springfield through Bemis Pond (formely reported as segment MA36011) to mouth at confluence with the Chicopee River, Chicopee.	1.50	Miles	Escherichia Coli (E. Coli)	
					Total Suspended Solids (TSS)	
Alden Pond	MA36003	Ludlow.	4.00	Acres	Nutrient/Eutrophication Biological Indicators	
Brookhaven Lake	MA36021	West Brookfield.	34.00	Acres	Turbidity	
Browning Pond	MA36025	Oakham/Spencer.	106.00	Acres	(Non-Native Aquatic Plants*)	
					Mercury in Fish Tissue	
					Nutrient/Eutrophication Biological Indicators	3626
Chicopee Brook	MA36-21	Headwaters, east of Peaked Mountain, Monson (through Chicopee Brook Pond, formerly segment MA36031) to mouth at confluence with Quaboag River, Monson.	9.90	Miles	Escherichia Coli (E. Coli)	
Chicopee River	MA36-22	Source, confluence of Ware River and Quaboag River, Palmer (through Red Bridge Impoundment formerly segment MA36171) to Red Bridge Impoundment Dam (NATID: MA00723), Wilbraham/Ludlow.	2.80	Miles	Escherichia Coli (E. Coli)	
					Mercury in Fish Tissue	
Chicopee River	MA36-24	Wilbraham Pumping Station (old WWTP), Wilbraham/Ludlow to Chicopee Falls Dam (NATID: MA00719), Chicopee.	8.80	Miles	Escherichia Coli (E. Coli)	
					Fecal Coliform	
Chicopee River	MA36-25	Chicopee Falls Dam (NATID: MA00719), Chicopee to mouth at confluence with Connecticut River, Chicopee.	3.00	Miles	Escherichia Coli (E. Coli)	
Danforth Brook	MA36-50	Headwaters, east of Charity Road, Hardwick to mouth at confluence with Ware River, Hardwick.	5.80	Miles	Escherichia Coli (E. Coli)	
Dean Pond	MA36050	Oakham.	64.00	Acres	Algae	
					Turbidity	
Doane Pond	MA36054	North Brookfield.	28.00	Acres	Aquatic Plants (Macrophytes)	
Eames Pond	MA36056	Paxton.	58.00	Acres	Dissolved Oxygen	

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Category 5 waters listed alphabetically by major watershed
The 303(d) List – "Waters requiring a TMDL"

Water Body	Segment ID	Description	Size	Units	Impairment	EPA TMDL No.
East Branch Ware River	MA36-01	Headwaters, outlet Bickford Pond, Hubbardston to mouth at confluence with West Branch Ware River (forming headwaters of Ware River), Barre.	12.40	Miles	Dissolved Oxygen	
East Brookfield River	MA36-13	Headwaters, outlet Lake Lashaway, East Brookfield to mouth at inlet Quaboag Pond, East Brookfield.	2.40	Miles	(Non-Native Aquatic Plants*)	
					Dissolved Oxygen	
Forget-Me-Not Brook	MA36-18	Headwaters, North Brookfield to North Brookfield WWTP discharge (NPDES: MA0101061), North Brookfield.	1.20	Miles	Escherichia Coli (E. Coli)	
Forget-Me-Not Brook	MA36-28	North Brookfield WWTP discharge (NPDES: MA0101061), North Brookfield to mouth at confluence with Dunn Brook, East Brookfield/Brookfield.	1.30	Miles	Benthic Macroinvertebrates	
					Whole Effluent Toxicity (WET)	
Fuller Brook	MA36-41	From the Ludlow/Chicopee corporate boundary where the stream name changes from Higher Brook, to mouth at confluence with the Chicopee River, Chicopee.	1.90	Miles	Escherichia Coli (E. Coli)	
Lake Lorraine	MA36084	Springfield.	28.00	Acres	(Non-Native Aquatic Plants*)	
					Enterococcus	
Lake Whittemore	MA36165	Spencer.	52.00	Acres	Turbidity	
Prince River	MA36-08	Headwaters, outlet Hemingway Pond, Barre to mouth at confluence with Ware River, Barre (excluding approximately 0.6 miles through Old Reservoir, segment MA36114).	7.10	Miles	Escherichia Coli (E. Coli)	
Quaboag Pond	MA36130	Brookfield/East Brookfield.	544.00	Acres	(Eurasian Water Milfoil, Myriophyllum spicatum*)	
					(Non-Native Aquatic Plants*)	
					Algae	33846
					Mercury in Fish Tissue	
					Phosphorus, Total	33846
Quaboag River	MA36-15	Route 67 bridge, West Brookfield to Warren WWTP discharge (NPDES: MA0101567), Warren.	6.20	Miles	Escherichia Coli (E. Coli)	
Quaboag River	MA36-16	Warren WWTP discharge (NPDES: MA0101567), Warren to Route 32 bridge, Palmer/Monson.	8.70	Miles	Escherichia Coli (E. Coli)	
					Fecal Coliform	
Quaboag River	MA36-17	Route 32 bridge, Palmer/Monson to mouth at confluence with Ware River (forming headwaters of Chicopee River), Palmer.	5.30	Miles	Escherichia Coli (E. Coli)	
Sevenmile River	MA36-11	Headwaters, outlet Browning Pond, Spencer to confluence with Cranberry River, Spencer.	7.30	Miles	Escherichia Coli (E. Coli)	

* TMDL not required (Non-pollutant)

Category 5 waters listed alphabetically by major watershed
The 303(d) List – "Waters requiring a TMDL"

Water Body	Segment ID	Description	Size	Units	Impairment	EPA TMDL No.
Sevenmile River	MA36-12	Confluence with Cranberry River, Spencer to mouth at confluence with East Brookfield River, East Brookfield.	2.50	Miles	Escherichia Coli (E. Coli)	
Unnamed Tributary	MA36-39	Unnamed tributary to the Chicopee River locally known as "Poor Brook" from headwaters near the Conrail tracks, Springfield to mouth at confluence with the Chicopee River, Chicopee.	2.20	Miles	(Bacterial Slimes*)	
					(Debris*)	
					(Trash*)	
					Escherichia Coli (E. Coli)	
Ware River	MA36-03	MDC intake, Barre to dam at South Barre Reservoir (NATID: MA00091), Barre (through former segments Powder Mill Pond MA36126 and South Barre Reservoir MA36141).	2.10	Miles	Mercury in Fish Tissue	
Ware River	MA36-05	Wheelwright Pond Dam (NATID: MA00616), New Braintree/Hardwick to Ware Impoundment dam (NATID: MA00594), Ware.	11.50	Miles	Escherichia Coli (E. Coli)	
Ware River	MA36-06	Ware Impoundment dam (NATID: MA00594), Ware to Thorndike Dam (NATID: MA00563), Palmer.	10.10	Miles	Escherichia Coli (E. Coli)	
					Fecal Coliform	
Ware River	MA36-27	Confluence of East Branch Ware and West Branch Ware rivers, Barre to MDC intake, Barre.	4.90	Miles	Dissolved Oxygen	
					Temperature	
Concord (SuAsCo)						
Assabet River	MA82B-01	Headwaters, outlet Assabet River Reservoir, Westborough to the Westborough WWTP discharge (NPDES: MA0100412), Westborough.	1.20	Miles	(Dewatering*)	
					Benthic Macroinvertebrates	
					Phosphorus, Total	35103
Assabet River	MA82B-02	From the Westborough WWTP discharge (NPDES: MA0100412), Westborough to the dam (NATID: MA02843) Route 20, Northborough.	3.80	Miles	(Aquatic Plants (Macrophytes)*)	
					Algae	35104
					Benthic Macroinvertebrates	
					Dissolved Oxygen	35104
					Escherichia Coli (E. Coli)	
					Fecal Coliform	
					Nutrient/Eutrophication Biological Indicators	35104
					Phosphorus, Total	35104

* TMDL not required (Non-pollutant)

Category 5 waters listed alphabetically by major watershed
The 303(d) List – "Waters requiring a TMDL"

Water Body	Segment ID	Description	Size	Units	Impairment	EPA TMDL No.
Assabet River	MA82B-03	From the dam (NATID: MA02843) Route 20, Northborough to the Marlborough West WWTP discharge (NPDES: MA0100480), Marlborough.	2.40	Miles	(Debris*)	
					(Non-Native Aquatic Plants*)	
					(Trash*)	
					Algae	35105
					Escherichia Coli (E. Coli)	
					Fecal Coliform	
					Nutrient/Eutrophication Biological Indicators	35105
					Odor	
					Phosphorus, Total	35105
Assabet River	MA82B-04	From the Marlborough West WWTP discharge (NPDES: MA0100480), Marlborough to the Hudson WWTP discharge (NPDES: MA0101788), Hudson.	8.00	Miles	Algae	35106
					Aquatic Plants (Macrophytes)	35106
					Benthic Macroinvertebrates	
					Dissolved Oxygen	35106
					Escherichia Coli (E. Coli)	
					Fecal Coliform	
					Fish Bioassessments	
					Phosphorus, Total	35106
Assabet River	MA82B-05	From the Hudson WWTP discharge (NPDES: MA0101788), Hudson to the USGS gage (#01097000) at Routes 27/62, Maynard.	8.20	Miles	(Debris*)	
					(Non-Native Aquatic Plants*)	
					(Trash*)	
					Algae	35107
					Aquatic Plants (Macrophytes)	35107
					Dissolved Oxygen	35107
					Escherichia Coli (E. Coli)	
					Fecal Coliform	
					Nutrient/Eutrophication Biological Indicators	35107
					Odor	
					Phosphorus, Total	35107
Assabet River	MA82B-06	From the USGS gage (#01097000) at Routes 27/62, Maynard to the Powdermill Dam (NATID: MA00128), Acton.	1.20	Miles	(Non-Native Aquatic Plants*)	
					Algae	35108
					Aquatic Plants (Macrophytes)	35108
					Dissolved Oxygen	35108
					Other Organics	
					Phosphorus, Total	35108
					Temperature	
					Unspecified Metals in Sediment	

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Category 5 waters listed alphabetically by major watershed
The 303(d) List – "Waters requiring a TMDL"

Water Body	Segment ID	Description	Size	Units	Impairment	EPA TMDL No.
Assabet River	MA82B-07	From the Powdermill Dam (NATID: MA00128), Acton to mouth at confluence with the Sudbury River (forming headwaters Concord River), Concord.	6.40	Miles	Escherichia Coli (E. Coli)	
					Fecal Coliform	
					Phosphorus, Total	35109
Assabet River Reservoir	MA82004	Westborough.	355.00	Acres	(Eurasian Water Milfoil, Myriophyllum spicatum*)	
					Algae	
					Dissolved Oxygen	
					Dissolved Oxygen Supersaturation	
					Mercury in Fish Tissue	33880
					Turbidity	
Beaver Brook	MA82A-34	Headwaters south at Rack Road, Chelmsford to mouth at confluence with River Meadow Brook, Chelmsford.	6.30	Miles	Escherichia Coli (E. Coli)	
Carding Mill Pond	MA82015	Sudbury.	40.00	Acres	(Non-Native Aquatic Plants*)	
					Algae	
					Aquatic Plants (Macrophytes)	
					Dissolved Oxygen Supersaturation	
					Phosphorus, Total	
Coles Brook	MA82B-22	Headwaters, east of Francine Road, Acton to mouth at confluence with Fort Pond Brook, Acton.	2.00	Miles	Escherichia Coli (E. Coli)	
Concord River	MA82A-07	Headwaters, confluence Assabet and Sudbury rivers, Concord to Billerica Water Supply intake, Billerica.	10.40	Miles	(Eurasian Water Milfoil, Myriophyllum spicatum*)	
					(Non-Native Aquatic Plants*)	
					Escherichia Coli (E. Coli)	
					Fecal Coliform	
					Mercury in Fish Tissue	
Concord River	MA82A-08	From Billerica Water Supply intake, Billerica to Rogers Street bridge, Lowell.	5.10	Miles	(Eurasian Water Milfoil, Myriophyllum spicatum*)	
					(Non-Native Aquatic Plants*)	
					Mercury in Fish Tissue	
Concord River	MA82A-09	From Rogers Street bridge, Lowell to mouth at confluence with the Merrimack River, Lowell.	0.90	Miles	(Debris*)	
					(Trash*)	
					Algae	
					Escherichia Coli (E. Coli)	
					Fecal Coliform	
					Mercury in Fish Tissue	
					Turbidity	
Dean Park Pond	MA82026	Shrewsbury.	7.00	Acres	Harmful Algal Blooms	

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Category 5 waters listed alphabetically by major watershed
The 303(d) List – "Waters requiring a TMDL"

Water Body	Segment ID	Description	Size	Units	Impairment	EPA TMDL No.
Dudley Pond	MA82029	Wayland.	83.00	Acres	(Eurasian Water Milfoil, Myriophyllum spicatum*)	
					(Non-Native Aquatic Plants*)	
					Dissolved Oxygen	
					Turbidity	
Eames Brook	MA82A-13	Headwaters, outlet Farm Pond, Framingham to mouth at confluence with the Sudbury River, Framingham.	0.60	Miles	(Debris*)	
					(Non-Native Aquatic Plants*)	
					(Trash*)	
					Algae	
					Benthic Macroinvertebrates	
					Odor	
Elizabeth Brook	MA82B-12	From the outlet of an unnamed pond (Delaney Project on Stow/Harvard border) west of Harvard Road, Stow to mouth at inlet of Fletchers Pond, Stow.	3.70	Miles	Benthic Macroinvertebrates	
					Escherichia Coli (E. Coli)	
Farm Pond	MA82035	Framingham.	139.00	Acres	(Eurasian Water Milfoil, Myriophyllum spicatum*)	
					(Non-Native Aquatic Plants*)	
					Algae	
					Turbidity	
Fort Meadow Reservoir	MA82042	Marlborough/Hudson.	254.00	Acres	(Eurasian Water Milfoil, Myriophyllum spicatum*)	
					Chlordane in Fish Tissue	
					Phosphorus, Total	
Framingham Reservoir #1	MA82044	Framingham.	117.00	Acres	(Eurasian Water Milfoil, Myriophyllum spicatum*)	
					(Non-Native Aquatic Plants*)	
					Mercury in Fish Tissue	
Framingham Reservoir #2	MA82045	Framingham/Ashland.	114.00	Acres	Mercury in Fish Tissue	
					Turbidity	
Grist Mill Pond	MA82055	Sudbury/Marlborough.	17.00	Acres	(Non-Native Aquatic Plants*)	
					Algae	
					Aquatic Plants (Macrophytes)	
					Dissolved Oxygen Supersaturation	
					Fecal Coliform	
					Phosphorus, Total	
Hager Pond	MA82056	Marlborough.	30.00	Acres	(Non-Native Aquatic Plants*)	
					Algae	
					Aquatic Plants (Macrophytes)	
					Dissolved Oxygen Supersaturation	
					Fecal Coliform	
					Phosphorus, Total	
					Turbidity	

* TMDL not required (Non-pollutant)

Category 5 waters listed alphabetically by major watershed
The 303(d) List – "Waters requiring a TMDL"

Water Body	Segment ID	Description	Size	Units	Impairment	EPA TMDL No.
Heard Pond	MA82058	Wayland.	76.00	Acres	(Non-Native Aquatic Plants*)	
					Algae	
					Mercury in Fish Tissue	
					Transparency / Clarity	
Heart Pond	MA82059	Chelmsford/Westford.	94.00	Acres	Escherichia Coli (E. Coli)	
Hocomonco Pond	MA82060	Westborough.	27.00	Acres	Polycyclic Aromatic Hydrocarbons (PAHs) (Aquatic Ecosystems)	
Hop Brook	MA82A-05	Headwaters, outlet Carding Mill Pond, Sudbury to mouth at confluence with Allowance Brook, Sudbury (through Stearns Mill Pond; formerly segment MA82104) (Allowance Brook was identified as Landham Brook on USGS quads prior to 1987).	6.70	Miles	(Non-Native Aquatic Plants*)	
					Algae	
					Aquatic Plants (Macrophytes)	
					Dissolved Oxygen	
					Dissolved Oxygen Supersaturation	
					Escherichia Coli (E. Coli)	
					Phosphorus, Total	
					Turbidity	
Hop Brook	MA82A-06	From the confluence of Allowance Brook, Sudbury to the confluence with the Sudbury River, Wayland (this segment was formerly identified as Wash Brook, Hop Brook appeared as Wash Brook and Allowance Brook was previously identified as Landham Brook on USGS quads prior to 1987).	3.00	Miles	Dissolved Oxygen	
					Nutrient/Eutrophication Biological Indicators	
					Phosphorus, Total	
Hopkinton Reservoir	MA82061	Hopkinton/Ashland.	161.00	Acres	(Non-Native Aquatic Plants*)	
					Dissolved Oxygen	
Lake Cochituate	MA82020	[North Basin] Natick/Framingham/Wayland.	196.00	Acres	(Eurasian Water Milfoil, Myriophyllum spicatum*)	
					Dissolved Oxygen	
					PCBs In Fish Tissue	
Lake Cochituate	MA82125	[Middle Basin] Natick/Wayland.	134.00	Acres	(Eurasian Water Milfoil, Myriophyllum spicatum*)	
					(Non-Native Aquatic Plants*)	
					Dissolved Oxygen	
					Enterococcus	
					PCBs In Fish Tissue	
Lake Cochituate	MA82126	[Carling Basin] Natick.	14.00	Acres	(Eurasian Water Milfoil, Myriophyllum spicatum*)	
					(Non-Native Aquatic Plants*)	
					PCBs In Fish Tissue	
Lake Cochituate	MA82127	[South Basin] Natick.	239.00	Acres	(Eurasian Water Milfoil, Myriophyllum spicatum*)	
					(Non-Native Aquatic Plants*)	
					Dissolved Oxygen	
					PCBs In Fish Tissue	

* TMDL not required (Non-pollutant)

Category 5 waters listed alphabetically by major watershed
The 303(d) List – "Waters requiring a TMDL"

Water Body	Segment ID	Description	Size	Units	Impairment	EPA TMDL No.
Long Pond	MA82072	Littleton.	102.00	Acres	Algae	
					Dissolved Oxygen	
					Phosphorus, Total	
Nashoba Brook	MA82B-14	From source just south of Route 110, Westford to mouth at confluence with Fort Pond Brook, Concord (through Ice House Pond; formerly segment MA82066).	9.40	Miles	(Dewatering*)	
					Escherichia Coli (E. Coli)	
					Fish Bioassessments	
Nutting Lake	MA82088	[East Basin] Billerica.	30.00	Acres	(Non-Native Aquatic Plants*)	
					Escherichia Coli (E. Coli)	
					Mercury in Fish Tissue	33880
Pantry Brook	MA82A-19	From source west of Haynes Road, Sudbury to mouth at confluence with the Sudbury River, Sudbury.	3.10	Miles	Fecal Coliform	
Puffers Pond	MA82092	Maynard/Sudbury.	28.00	Acres	Mercury in Fish Tissue	
River Meadow Brook	MA82A-10	Headwaters, outlet Russell Mill Pond, Chelmsford to mouth at confluence with the Concord River, Lowell.	6.40	Miles	(Debris*)	
					(Non-Native Aquatic Plants*)	
					(Trash*)	
					Escherichia Coli (E. Coli)	
					Fecal Coliform	
Saxonville Pond	MA82097	Framingham.	59.00	Acres	(Non-Native Aquatic Plants*)	
					Aquatic Plants (Macrophytes)	
					Mercury in Fish Tissue	
Sudbury River	MA82A-03	Outlet Saxonville Pond, Framingham to confluence with Hop Brook (the lower portion of Hop Brook was identified as Wash Brook on USGS quads prior to 1987), Wayland.	5.50	Miles	Escherichia Coli (E. Coli)	
					Mercury in Fish Tissue	
Sudbury River	MA82A-04	Confluence with Hop Brook (the lower portion of Hop Brook was identified as Wash Brook on USGS quads prior to 1987), Wayland to confluence with Assabet River (forming headwaters Concord River), Concord.	11.70	Miles	(Non-Native Aquatic Plants*)	
					Mercury in Fish Tissue	
Sudbury River	MA82A-25	From the Fruit Street bridge Hopkinton/Westborough to the inlet of Framingham Reservoir #2, Ashland (formerly part of segment MA82A-02).	6.30	Miles	Escherichia Coli (E. Coli)	
					Mercury in Fish Tissue	
Sudbury River	MA82A-26	Outlet Framingham Reservoir #1, Framingham to inlet of Saxonville Pond, Framingham (formerly part of segment MA82A-02).	2.80	Miles	Benthic Macroinvertebrates	
					Mercury in Fish Tissue	

Category 5 waters listed alphabetically by major watershed
The 303(d) List – "Waters requiring a TMDL"

Water Body	Segment ID	Description	Size	Units	Impairment	EPA TMDL No.
Unnamed Tributary	MA82A-15	Headwaters, northeast of Indian Head Hill (near Route 20), Marlborough to mouth at inlet of Hager Pond, Marlborough.	1.10	Miles	Algae	
					Dissolved Oxygen	
					Phosphorus, Total	
					Total Suspended Solids (TSS)	
Unnamed Tributary	MA82A-16	Headwaters, outlet Hager Pond, Marlborough to mouth at inlet of Grist Mill Pond, Marlborough.	0.20	Miles	Algae	
					Dissolved Oxygen	
					Dissolved Oxygen Supersaturation	
					pH, High	
					Phosphorus, Total	
					Total Suspended Solids (TSS)	
Unnamed Tributary	MA82A-17	Headwaters, outlet Grist Mill Pond, Sudbury to mouth at inlet of Carding Mill Pond, Sudbury.	0.50	Miles	Algae	
					Dissolved Oxygen	
					Dissolved Oxygen Supersaturation	
					Phosphorus, Total	
					Total Suspended Solids (TSS)	
Unnamed Tributary	MA82A-22	Unnamed tributary to the Sudbury River locally known as Cochituate Brook, headwaters, outlet north basin of Lake Cochituate, Framingham to mouth at confluence with Sudbury River, Framingham.	1.40	Miles	(Debris*)	
					(Trash*)	
					Benthic Macroinvertebrates	
					Escherichia Coli (E. Coli)	
					Nutrient/Eutrophication Biological Indicators	
Waushakum Pond	MA82112	Framingham/Ashland.	87.00	Acres	(Non-Native Aquatic Plants*)	
					Aquatic Plants (Macrophytes)	
					Dissolved Oxygen	
					Phosphorus, Total	
					Turbidity	
Whitehall Reservoir	MA82120	Hopkinton.	560.00	Acres	(Non-Native Aquatic Plants*)	
					Dissolved Oxygen	
					Mercury in Fish Tissue	33880
					Phosphorus, Total	
Connecticut						
Arcadia Lake	MA34005	Belchertown.	32.00	Acres	(Non-Native Aquatic Plants*)	
					Nutrient/Eutrophication Biological Indicators	
Bachelor Brook	MA34-07	Outlet Forge Pond, Granby to mouth at confluence with Connecticut River, South Hadley (through former segments Aldrich Lake [East Basin] MA34002 and Aldrich Lake [West Basin] MA34106).	11.50	Miles	Escherichia Coli (E. Coli)	

* TMDL not required (Non-pollutant)

Category 5 waters listed alphabetically by major watershed
The 303(d) List – "Waters requiring a TMDL"

Water Body	Segment ID	Description	Size	Units	Impairment	EPA TMDL No.
Barton Cove	MA34122	Gill (cove of Connecticut River upstream of Turners Falls dams (NATID: MA00848 and MA00849)).	160.00	Acres	(Eurasian Water Milfoil, Myriophyllum spicatum*)	
					(Non-Native Aquatic Plants*)	
					Escherichia Coli (E. Coli)	
					PCBs In Fish Tissue	
Bloody Brook	MA34-36	Headwaters, perennial portion, from the railroad tracks north of North Main Street, Deerfield to mouth at confluence with Mill River, Whately.	3.70	Miles	Dissolved Oxygen	
					Escherichia Coli (E. Coli)	
					Phosphorus, Total	
					Turbidity	
Buttery Brook	MA34-42	Headwaters (perennial portion), west of Haig Avenue, South Hadley to mouth at confluence with the Connecticut River, South Hadley (interrupted urban, approximately 1200 feet culverted).	1.60	Miles	Escherichia Coli (E. Coli)	
Connecticut River	MA34-01	New Hampshire/Massachusetts state line, Northfield to Route 10 bridge, Northfield.	3.50	Miles	(Alteration in stream-side or littoral vegetative covers*)	
					(Flow Regime Modification*)	
					PCBs In Fish Tissue	
Connecticut River	MA34-02	Route 10 bridge, Northfield to Turners Falls dams (NATID: MA00848 and MA00849), Gill/Montague (excluding the delineated segment; Barton Cove MA34019).	11.40	Miles	(Alteration in stream-side or littoral vegetative covers*)	
					(Flow Regime Modification*)	
					PCBs In Fish Tissue	
Connecticut River	MA34-03	Turners Falls dams (NATID: MA00848 and MA00849), Gil/Montague to confluence with Deerfield River, Greenfield/Deerfield.	3.70	Miles	(Dewatering*)	
					(Flow Regime Modification*)	
					Escherichia Coli (E. Coli)	
					PCBs In Fish Tissue	
					Total Suspended Solids (TSS)	
Connecticut River	MA34-04	Confluence with Deerfield River, Greenfield/Deerfield to Holyoke Dam (NATID: MA00973), Holyoke/South Hadley.	34.50	Miles	Escherichia Coli (E. Coli)	
					PCBs In Fish Tissue	
Connecticut River	MA34-05	Holyoke Dam (NATID: MA00973), Holyoke/South Hadley to Massachusetts/Connecticut border, Longmeadow.	15.90	Miles	Escherichia Coli (E. Coli)	
					PCBs In Fish Tissue	
Forge Pond	MA34024	Granby.	72.00	Acres	(Non-Native Aquatic Plants*)	
					Nutrient/Eutrophication Biological Indicators	
Fort River	MA34-27	Headwaters (confluence of Adams and Amethyst brooks, Amherst), to mouth at confluence Connecticut River, Hadley.	12.80	Miles	Escherichia Coli (E. Coli)	
Lake Lookout	MA34044	Springfield.	7.00	Acres	Nutrient/Eutrophication Biological Indicators	
Lampson Brook	MA34-06	Belchertown WWTP discharge, Belchertown to mouth at confluence with Weston Brook, Belchertown.	1.20	Miles	Dissolved Oxygen	
					Phosphorus, Total	

Category 5 waters listed alphabetically by major watershed
The 303(d) List – "Waters requiring a TMDL"

Water Body	Segment ID	Description	Size	Units	Impairment	EPA TMDL No.
Leaping Well Reservoir	MA34040	South Hadley.	9.00	Acres	Algae	
Log Pond Cove	MA34124	Holyoke (cove of Connecticut River upstream of Holyoke Dam (NATID: MA00973)).	19.00	Acres	(Non-Native Aquatic Plants*)	
					PCBs In Fish Tissue	
Longmeadow Brook	MA34-21	Headwaters, outlet Turner Park Pond, Longmeadow to mouth at confluence with Connecticut River, Longmeadow.	4.50	Miles	(Debris*)	
					(Trash*)	
					Escherichia Coli (E. Coli)	
					Phosphorus, Total	
					Turbidity	
Manhan River	MA34-11	Outlet Tighe Carmody Reservoir, Southampton to mouth at confluence with Connecticut River, Easthampton.	18.90	Miles	Escherichia Coli (E. Coli)	
Metacomet Lake	MA34051	Belchertown.	51.00	Acres	(Non-Native Aquatic Plants*)	
					Dissolved Oxygen	
Mill Pond	MA34052	Springfield.	13.00	Acres	Nutrient/Eutrophication Biological Indicators	
					Odor	
Mill River	MA34-25	Headwaters, outlet Factory Hollow Pond, Amherst to mouth at inlet Lake Warner, Hadley.	5.20	Miles	Escherichia Coli (E. Coli)	
Mill River	MA34-28	Headwaters (confluence of East and West Branch Mill River, Williamsburg), to outlet Paradise Pond, Northampton.	10.00	Miles	Escherichia Coli (E. Coli)	
Mill River	MA34-29	Headwaters, outlet Watershops Pond, Springfield to mouth at confluence with Connecticut River, Springfield. (Interrupted stream).	1.30	Miles	(Debris*)	
					(Trash*)	
					Escherichia Coli (E. Coli)	
					Odor	
Nashawannuck Pond	MA34057	Easthampton.	30.00	Acres	(Non-Native Aquatic Plants*)	
					Nutrient/Eutrophication Biological Indicators	
					Phosphorus, Total	
Noonan Cove	MA34058	Springfield.	3.00	Acres	Aquatic Plants (Macrophytes)	
					Turbidity	
Oxbow	MA34066	The waterbody west of Route 91 (bounded on the northeast by Route 91, the southeast by the Manhan River, and the west by Old Springfield Road), Northampton/Easthampton (excluding the delineated segment; Danks Pond MA34019).	149.00	Acres	(Non-Native Aquatic Plants*)	
					Turbidity	
Porter Lake	MA34073	Springfield.	28.00	Acres	(Non-Native Aquatic Plants*)	
					Algae	
					Aquatic Plants (Macrophytes)	

* TMDL not required (Non-pollutant)

Category 5 waters listed alphabetically by major watershed
The 303(d) List – "Waters requiring a TMDL"

Water Body	Segment ID	Description	Size	Units	Impairment	EPA TMDL No.
Porter Lake West	MA34072	Springfield.	5.00	Acres	(Non-Native Aquatic Plants*)	
					Algae	
					Aquatic Plants (Macrophytes)	
Scantic River	MA34-30	Massachusetts/Connecticut border, Monson downstream to the Massachusetts/Connecticut border, Hampden.	9.60	Miles	Escherichia Coli (E. Coli)	
Stony Brook	MA34-19	Headwaters, Granby to mouth at confluence with Connecticut River, South Hadley (thru Upper Pond formerly segment MA34095 and Lower Pond formerly segment MA34049).	13.30	Miles	(Non-Native Aquatic Plants*)	
					Escherichia Coli (E. Coli)	
					Turbidity	
Unnamed Tributary	MA34-60	Unnamed tributary to the Connecticut River, locally known as 'Willimansett Brook', headwaters, perennial portion, east of Memorial Drive (Route 33), Chicopee to mouth at confluence with Connecticut River, Chicopee (approximately 1200 feet culverted near mouth).	2.30	Miles	Escherichia Coli (E. Coli)	
Upper Van Horn Park Pond	MA34128	Springfield (Changed from MA36158 to 34128 on 6/21/02, TRD).	8.00	Acres	Nutrient/Eutrophication Biological Indicators	
					Phosphorus, Total	
Venture Pond	MA34096	Springfield.	7.00	Acres	Dissolved Oxygen	
					Nutrient/Eutrophication Biological Indicators	
					Phosphorus, Total	
Watershops Pond	MA34099	Springfield.	161.00	Acres	Nutrient/Eutrophication Biological Indicators	
Weston Brook	MA34-23	Headwaters, south of State Street (Route 202), Belchertown to mouth at inlet Forge Pond, Granby (WWF applies from the confluence of Lampson Brook in Belchertown to the mouth).	2.70	Miles	Phosphorus, Total	
Wilton Brook	MA34-15	Headwaters, perennial portion, Easthampton to outlet RubberThread Pond (formerly segment MA34105) , Easthampton.	1.10	Miles	(Non-Native Aquatic Plants*)	
					Aquatic Plants (Macrophytes)	
Deerfield						
Bear River	MA33-17	Headwaters west of Barnes Road, Ashfield to confluence with Deerfield River, Conway.	6.90	Miles	Temperature	
Cherry Rum Brook	MA33-97	Headwaters, northeast of Stoneleigh Burnham Drive, Greenfield to confluence with Green River, Greenfield.	2.10	Miles	Benthic Macroinvertebrates	
Davis Mine Brook	MA33-18	Headwaters, south of Dell Road, Rowe to confluence with Mill Brook, Charlemont.	3.30	Miles	Fish Bioassessments	
					pH, Low	

Category 5 waters listed alphabetically by major watershed
The 303(d) List – "Waters requiring a TMDL"

Water Body	Segment ID	Description	Size	Units	Impairment	EPA TMDL No.
Deerfield River	MA33-03	Confluence with North River, Charlemont/Shelburne to confluence with Green River, Greenfield.	16.80	Miles	Escherichia Coli (E. Coli)	
Deerfield River	MA33-04	Confluence with Green River, Greenfield to confluence with Connecticut River, Greenfield/Deerfield.	2.00	Miles	Escherichia Coli (E. Coli)	
Dragon Brook	MA33-20	Headwaters, perennial portion north of Patten Road, Shelburne to confluence with the Deerfield River, Shelburne.	4.40	Miles	Temperature	
East Branch North River	MA33-19	Vermont line, Colrain to confluence with West Branch North River, Colrain.	7.50	Miles	Escherichia Coli (E. Coli)	
Green River	MA33-30	From Swimming Pool #2 Dam (National Dam ID MA02321) northwest of Nashs Mill Road, Greenfield to confluence with the Deerfield River, Greenfield (formerly segment MA33-10 and part of segment MA33-09) (HQW applies upstream of former Greenfield WWTF discharge (NPDES# MA0101214), from approximately 0.5 mile upstream of mouth).	3.70	Miles	Escherichia Coli (E. Coli)	
					Fecal Coliform	
					Turbidity	
Hinsdale Brook	MA33-21	Headwaters east of Fiske Mill Road, Shelburne to confluence with Punch Brook, Greenfield.	2.80	Miles	Escherichia Coli (E. Coli)	
Mill Brook	MA33-70	Headwaters, north of West Mountain Road, Bernardston to confluence with Cherry Rum Brook, Greenfield.	8.40	Miles	Benthic Macroinvertebrates	
Pelham Lake	MA33016	Rowe.	80.00	Acres	Mercury in Fish Tissue	
Sherman Reservoir	MA33018	Massachusetts portion only. Rowe/Monroe.	72.00	Acres	Mercury in Fish Tissue	
South River	MA33-07	Headwaters, outlet Ashfield Pond, Ashfield to Emmets Road, Ashfield.	2.30	Miles	Temperature	
South River	MA33-101	Emmets Road, Ashfield to confluence with Johnny Bean Brook, Conway (formerly part of MA33-08).	6.10	Miles	Escherichia Coli (E. Coli)	
					Fecal Coliform	
South River	MA33-102	From confluence with Johnny Bean Brook, Conway to confluence with Deerfield River, Conway (formerly part of MA33-08), (through South River Impoundment formerly segment MA33022).	6.80	Miles	(Physical substrate habitat alterations*)	
					Escherichia Coli (E. Coli)	
					Fecal Coliform	
Farmington						
Benton Brook	MA31-11	Headwaters, drainage from Hayden Swamp, Otis to mouth at confluence with the West Branch Farmington River, Otis.	5.20	Miles	Benthic Macroinvertebrates	
Big Pond	MA31004	Otis.	325.00	Acres	Dissolved Oxygen	
					Mercury in Fish Tissue	33880

* TMDL not required (Non-pollutant)

Category 5 waters listed alphabetically by major watershed
The 303(d) List – "Waters requiring a TMDL"

Water Body	Segment ID	Description	Size	Units	Impairment	EPA TMDL No.
Cranberry Pond Brook	MA31-21	Headwaters, outlet Cranberry Pond, Tolland to mouth at confluence with Slocum Brook, Tolland.	1.60	Miles	Lack of a coldwater assemblage	
Palmer Brook	MA31-29	Headwaters, outlet Palmer Brook Dam (NATID: MA00205), Becket to mouth at inlet Ward Pond, Becket.	2.10	Miles	Lack of a coldwater assemblage	
Pond Brook	MA31-33	Headwaters, outlet Noyes Pond, Tolland to mouth at confluence with Babcock Brook, Tolland.	2.00	Miles	Lack of a coldwater assemblage	
Shaw Pond	MA31036	Becket/Otis.	80.00	Acres	(Eurasian Water Milfoil, Myriophyllum spicatum*)	
					Dissolved Oxygen	
Spectacle Pond Brook	MA31-27	Headwaters, south of West Center Road, Otis to mouth at inlet Upper Spectacle Pond, Otis.	1.50	Miles	Lack of a coldwater assemblage	
Thomas Brook	MA31-06	Headwaters, outlet Thomas Pond, Becket to mouth at confluence with unnamed tributary to Hayden Pond, Otis.	0.80	Miles	Lack of a coldwater assemblage	
Upper Spectacle Pond	MA31044	Sandisfield/Otis.	53.00	Acres	Dissolved Oxygen	
West Branch Farmington River	MA31-01	Headwaters, outlet Hayden Pond, Otis to the MA/CT border in the Colebrook Reservoir, Sandisfield/Tolland.	16.10	Miles	Lack of a coldwater assemblage	
					Temperature	
York Lake	MA31052	New Marlborough.	29.00	Acres	Dissolved Oxygen	
French						
Burncoat Brook	MA42-07	Headwaters, outlet Bouchard Pond, Leicester to mouth at confluence with Town Meadow Brook, Leicester (through former pond segment Ballard Hill Pond MA42069).	1.00	Miles	Benthic Macroinvertebrates	
					Escherichia Coli (E. Coli)	
Carbuncle Pond	MA42008	Oxford.	11.00	Acres	Harmful Algal Blooms	
French River	MA42-03	Headwaters, outlet Greenville Pond, Leicester to the outlet of Thayers Pond, Oxford (excluding approximately 0.6 miles through Rochdale Pond segment MA42048) (through former pond segments Texas Pond MA42058 and Thayers Pond MA42059).	3.80	Miles	Mercury in Fish Tissue	
French River	MA42-04	From dam (NAT ID: MA01946) just upstream of Clara Barton Road, Oxford, to dam (NAT ID: MA00108) at North Village, Webster/Dudley.	9.60	Miles	Mercury in Fish Tissue	
French River	MA42-05	Dam (NAT ID: MA00108) at North Village, Webster/Dudley to Webster WWTP outfall (NPDES: MA0100439) , Webster/Dudley.	2.40	Miles	(Flow Regime Modification*)	
					Benthic Macroinvertebrates	

* TMDL not required (Non-pollutant)

Category 5 waters listed alphabetically by major watershed
The 303(d) List – "Waters requiring a TMDL"

Water Body	Segment ID	Description	Size	Units	Impairment	EPA TMDL No.
French River	MA42-06	Webster WWTP outfall (NPDES: MA0100439) , Webster/Dudley to state line, Dudley, MA/Thompson,CT.	1.00	Miles	Benthic Macroinvertebrates	
					Cause Unknown (Sediment Screening Value (Exceedence))	
					Nutrients	
Grindstone Brook	MA42-18	Headwaters outlet Henshaw Pond, Leicester to mouth at inlet Rochdale Pond, Leicester.	2.30	Miles	Escherichia Coli (E. Coli)	
Little River	MA42-13	Headwaters, outlet Pikes Pond, Charlton to inlet Buffumville Lake, Charlton (formerly part of segment MA42-09).	3.50	Miles	Benthic Macroinvertebrates	
					Dissolved Oxygen	
Sucker Brook	MA42-15	Headwaters, outlet Nipmuck Pond, Webster to mouth at inlet Club Pond, Webster.	1.70	Miles	Benthic Macroinvertebrates	
					Escherichia Coli (E. Coli)	
Webster Lake	MA42064	Webster.	1275.00	Acres	(Eurasian Water Milfoil, Myriophyllum spicatum*)	
					(Non-Native Aquatic Plants*)	
					(Non-Native Fish/Shellfish/Zooplankton*)	
					Dissolved Oxygen	
Wellington Brook	MA42-11	Headwaters south of Cedar Street, Auburn to mouth at confluence with French River, Oxford.	3.40	Miles	Escherichia Coli (E. Coli)	
Housatonic						
East Branch Housatonic River	MA21-01	Headwaters, outlet Muddy Pond, Washington to the outlet of Center Pond, Dalton (Center Pond formerly segment MA21016).	11.20	Miles	PCBs In Fish Tissue	
East Branch Housatonic River	MA21-02	Outlet of Center Pond, Dalton to mouth at confluence with the Housatonic River, Pittsfield.	8.00	Miles	Escherichia Coli (E. Coli)	
					Fecal Coliform	
					PCBs In Fish Tissue	
Goodrich Pond	MA21042	Pittsfield.	15.00	Acres	PCBs In Fish Tissue	
Housatonic River	MA21-04	Headwaters, confluence of Southwest Branch Housatonic River and West Branch Housatonic River, Pittsfield to Woods Pond dam (NATID: MA00731), Lee/Lenox (pond was formerly segment MA21120).	12.30	Miles	(Non-Native Aquatic Plants*)	
					Escherichia Coli (E. Coli)	
					Fecal Coliform	
					PCBs In Fish Tissue	
					Polychlorinated Biphenyls (PCBs)	
Housatonic River	MA21-19	Outlet of Woods Pond dam (NATID: MA00731), Lee/Lenox to the Risingdale Impoundment dam (NATID: MA00250), Great Barrington (impoundment formerly segment MA21121).	19.90	Miles	(Zebra mussel, Dreissena polymorph*)	
					Algae	
					PCBs In Fish Tissue	
					Phosphorus, Total	
					Polychlorinated Biphenyls (PCBs)	

Category 5 waters listed alphabetically by major watershed
The 303(d) List – "Waters requiring a TMDL"

Water Body	Segment ID	Description	Size	Units	Impairment	EPA TMDL No.
Housatonic River	MA21-20	Outlet of Risingdale Impoundment dam (NATID: MA00250), Great Barrington to the MA/CT border, Sheffield.	23.10	Miles	PCBs In Fish Tissue	
Konkapot River	MA21-25	Headwaters, outlet Brewer Lake, Monterey to the MA/CT border, New Marlborough.	16.50	Miles	Mercury in Fish Tissue	
Konkapot River	MA21-26	From the MA/CT border, Sheffield, to mouth at confluence with the Housatonic River, Sheffield.	2.90	Miles	Mercury in Fish Tissue	
Lake Buel	MA21014	Monterey/New Marlborough.	191.00	Acres	(Eurasian Water Milfoil, Myriophyllum spicatum*)	
					(Non-Native Aquatic Plants*)	
					Dissolved Oxygen	
					Dissolved Oxygen Supersaturation	
					Phosphorus, Total	
Lake Garfield	MA21040	Monterey.	255.00	Acres	(Eurasian Water Milfoil, Myriophyllum spicatum*)	
					(Non-Native Aquatic Plants*)	
					Dissolved Oxygen	
					Mercury in Fish Tissue	
					Phosphorus, Total	
Laurel Lake	MA21057	Lee/Lenox.	174.00	Acres	(Eurasian Water Milfoil, Myriophyllum spicatum*)	
					(Non-Native Aquatic Plants*)	
					(Zebra mussel, Dreissena polymorph*)	
					Dissolved Oxygen	
					Dissolved Oxygen Supersaturation	
					Phosphorus, Total	
Morewood Lake	MA21071	Pittsfield.	20.00	Acres	PCBs In Fish Tissue	
Southwest Branch Housatonic River	MA21-17	Headwaters, outlet Richmond Pond, Pittsfield to mouth at confluence with West Branch Housatonic River (forming headwaters Housatonic River), Pittsfield.	5.80	Miles	Escherichia Coli (E. Coli)	
					Fecal Coliform	
					Sedimentation/Siltation	
West Branch Housatonic River	MA21-18	Headwaters, outlet Pontoosuc Lake, Pittsfield to mouth at confluence with Southwest Branch Housatonic River (forming headwaters Housatonic River), Pittsfield.	4.10	Miles	(Debris*)	
					(Trash*)	
					Combined Biota/Habitat Bioassessments	
					Escherichia Coli (E. Coli)	
					Fecal Coliform	
					Polychlorinated Biphenyls (PCBs)	
Hudson: Hoosic						
Cheshire Reservoir, North Basin	MA11002	[North Basin] Cheshire.	284.00	Acres	(Eurasian Water Milfoil, Myriophyllum spicatum*)	
					(Non-Native Aquatic Plants*)	
					Nutrient/Eutrophication Biological Indicators	

Category 5 waters listed alphabetically by major watershed
The 303(d) List – "Waters requiring a TMDL"

Water Body	Segment ID	Description	Size	Units	Impairment	EPA TMDL No.
Cheshire Reservoir, South Basin	MA11019	[South Basin] Cheshire/Lanesborough.	92.00	Acres	(Eurasian Water Milfoil, Myriophyllum spicatum*)	
					(Non-Native Aquatic Plants*)	
					Algae	
Hoosic River	MA11-03	Headwaters, outlet Cheshire Reservoir, Cheshire to Adams WWTP discharge (NPDES: MA0100315), Adams.	8.80	Miles	(Alteration in stream-side or littoral vegetative covers*)	
					(Flow Regime Modification*)	
					(Other anthropogenic substrate alterations*)	
					Ambient Bioassays - Chronic Aquatic Toxicity	
					Escherichia Coli (E. Coli)	
					Fecal Coliform	
					Temperature	
Hoosic River	MA11-05	Confluence with North Branch Hoosic River, North Adams to the Vermont State line, Williamstown.	8.20	Miles	(Alteration in stream-side or littoral vegetative covers*)	
					(Flow Regime Modification*)	
					Escherichia Coli (E. Coli)	
					Fecal Coliform	
					Nutrient/Eutrophication Biological Indicators	
					PCBs In Fish Tissue	
North Branch Hoosic River	MA11-01	Vermont State line, Clarksburg to USGS Gage (# 01332000), North Adams.	4.30	Miles	Temperature	
North Branch Hoosic River	MA11-02	From USGS Gage (# 01332000), North Adams to mouth at confluence with Hoosic River, North Adams.	1.50	Miles	(Alteration in stream-side or littoral vegetative covers*)	
					(Flow Regime Modification*)	
					Escherichia Coli (E. Coli)	
					Fecal Coliform	
					Polychlorinated Biphenyls (PCBs)	
Hudson: Kinderhook						
Kinderhook Creek	MA12-01	Headwaters, northwest of Sheeps Heaven Mountain and east of Route 43, Hancock to New York/Massachusetts border, Hancock.	5.50	Miles	Benthic Macroinvertebrates	
Ipswich						
Brackett Pond	MA92004	Andover.	16.00	Acres	Turbidity	
Collins Pond	MA92010	Andover.	2.00	Acres	Algae	
					Turbidity	
Crystal Pond	MA92013	Peabody.	9.00	Acres	Algae	
					Chlorophyll-a	
					Phosphorus, Total	
					Transparency / Clarity	

Category 5 waters listed alphabetically by major watershed
The 303(d) List – "Waters requiring a TMDL"

Water Body	Segment ID	Description	Size	Units	Impairment	EPA TMDL No.
Devils Dishfull Pond	MA92015	Peabody.	14.00	Acres	(Eurasian Water Milfoil, Myriophyllum spicatum*)	
					Chlorophyll-a	
					Dissolved Oxygen	
					Phosphorus, Total	
					Turbidity	
Fish Brook	MA92-14	Headwater, outlet Stiles Pond, Boxford to confluence with Ipswich River, Topsfield/Boxford (through Howes Pond formerly segment MA92026).	8.20	Miles	Escherichia Coli (E. Coli)	
Frye Pond	MA92023	Andover.	7.00	Acres	Algae	
Gravelly Brook	MA92-18	Headwaters, Willowdale State Forest, Ipswich to confluence with Ipswich River, Ipswich.	1.50	Miles	Benthic Macroinvertebrates	
Howlett Brook	MA92-17	Headwaters north of Great Hill, Topsfield to confluence with Ipswich River, Topsfield.	2.70	Miles	Escherichia Coli (E. Coli)	
					Fecal Coliform	
Ipswich River	MA92-02	Ipswich Mills Dam (formerly known as Sylvania Dam), Ipswich to mouth at Ipswich Bay, Ipswich.	0.39	Square Miles	Fecal Coliform	
Ipswich River	MA92-06	Source at confluence of Maple Meadow Brook and Lubbers Brook, Wilmington, to Salem Beverly Waterway Canal, Topsfield.	20.40	Miles	(Dewatering*)	
					Dissolved Oxygen	
					Mercury in Fish Tissue	
Ipswich River	MA92-15	Salem Beverly Waterway Canal, Topsfield to Ipswich Mills Dam (formerly known as Sylvania Dam), Ipswich.	11.00	Miles	(Dewatering*)	
					Dissolved Oxygen	
					Fish Bioassessments	
					Mercury in Fish Tissue	
Kimball Brook	MA92-21	Headwaters, west of Scott Hill, Ipswich to confluence with Ipswich River, Ipswich.	2.20	Miles	Dissolved Oxygen	
					Escherichia Coli (E. Coli)	
					Fecal Coliform	
Labor in Vain Creek	MA92-22	Headwaters (excluding intermittent portion) south of Argilla Road, Ipswich to confluence with estuarine portion of Ipswich River, Ipswich.	0.03	Square Miles	Dissolved Oxygen	
					Fecal Coliform	
Lowe Pond	MA92034	Boxford.	36.00	Acres	(Non-Native Aquatic Plants*)	
					Mercury in Fish Tissue	
Lubbers Brook	MA92-05	Headwaters (excluding intermittent portion) Billerica to confluence with Maple Meadow Brook forming headwaters of Ipswich River, Wilmington (through former pond segments Lubber Pond West MA92036 and Lubber Pond East MA92035).	5.60	Miles	(Dewatering*)	
					Dissolved Oxygen	
					Escherichia Coli (E. Coli)	

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Water Body	Segment ID	Description	Size	Units	Impairment	EPA TMDL No.
Maple Meadow Brook	MA92-04	Headwaters outlet of Mill Pond, Burlington to confluence with Lubbers Brook, Wilmington.	4.20	Miles	(Dewatering*)	
					Dissolved Oxygen	
Martins Brook	MA92-08	Outlet of Martins Pond, North Reading to the confluence with the Ipswich River, North Reading.	4.60	Miles	Benthic Macroinvertebrates	
					Dissolved Oxygen	
					Escherichia Coli (E. Coli)	
					Fecal Coliform	
Martins Pond	MA92038	North Reading.	89.00	Acres	(Non-Native Aquatic Plants*)	
					Algae	
					Mercury in Fish Tissue	33880
					Turbidity	
Miles River	MA92-03	Headwaters outlet Longham Reservoir, Beverly to confluence with Ipswich River, Ipswich.	8.90	Miles	Benthic Macroinvertebrates	
					Dissolved Oxygen	
Norris Brook	MA92-11	Headwaters outlet of Elginwood Pond, Peabody to confluence with Ipswich River, Danvers (Danvers/Middleton town line).	1.50	Miles	Dissolved Oxygen	
Pleasant Pond	MA92049	(Idlewood Lake) Wenham/Hamilton.	26.00	Acres	Mercury in Fish Tissue	
Salem Pond	MA92057	North Andover/Andover.	15.00	Acres	Turbidity	
Silver Lake	MA92059	Wilmington.	30.00	Acres	DDT in Fish Tissue	
					Mercury in Fish Tissue	33880
Unnamed Tributary	MA92-09	Unnamed tributary to Ipswich River, outlet of Eisenhaures Pond, North Reading to confluence with Ipswich River, North Reading.	1.40	Miles	Fish Bioassessments	
Unnamed Tributary	MA92-12	Unnamed tributary to Ipswich River, outlet of Middleton Pond, Middleton to confluence with Ipswich River, Middleton.	1.40	Miles	Escherichia Coli (E. Coli)	
					Fecal Coliform	
					Flocculant Masses	
					Oil And Grease	
					Scum/Foam	
Unnamed Tributary	MA92-23	Unnamed tributary to Ipswich River (locally known as Greenwood Creek), headwaters, east of Jeffreys Neck Road/north of Newmarch Street, Ipswich to confluence with estuarine portion of Ipswich River, Ipswich.	0.03	Square Miles	Fecal Coliform	
Unnamed Tributary	MA92-26	Unnamed intermittent tributary to Martins Brook, from source in wetland west of the Route 93/Route 125 intersection, Wilmington to confluence with Martins Brook, Wilmington.	1.30	Miles	Chloride	

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The 303(d) List – "Waters requiring a TMDL"

Water Body	Segment ID	Description	Size	Units	Impairment	EPA TMDL No.
Wenham Lake	MA92073	Beverly/Wenham.	243.00	Acres	DDT in Fish Tissue	
					Mercury in Fish Tissue	33880
Islands						
Chilmark Pond	MA97-05	South of South Road including Wades Cove and Gilberts Cove, Chilmark, Martha's Vineyard.	0.31	Square Miles	Enterococcus	
					Estuarine Bioassessments	
					Fecal Coliform	
					Nitrogen, Total	
					Nutrient/Eutrophication Biological Indicators	
Cuttyhunk Pond	MA97-21	Waters west of the channel connecting Cuttyhunk Pond to Cuttyhunk Harbor, Gosnold, Elizabeth Islands (changed from MA95-26 to MA97-21 on 10/7/97).	0.15	Square Miles	Fecal Coliform	
Edgartown Harbor	MA97-15	Waters west of Cape Poge Gut bounded by an imaginary line drawn from Chappaquiddick Point to Dock Street and northeasterly from the end of Plantingfield Way to Cape Poge Elbow (excluding Eel Pond), Edgartown, Martha's Vineyard.	3.09	Square Miles	Fecal Coliform	
Head of Hummock Pond	MA97035	Nantucket.	16.00	Acres	Harmful Algal Blooms	
Katama Bay	MA97-16	Waters south of an imaginary line from Chappaquiddick Point to Dock Street excluding Caleb Pond and Mattakeset Bay, Edgartown, Martha's Vineyard.	2.05	Square Miles	Fecal Coliform	
Lake Tashmoo	MA97-12	Waters including Drew Cove and Rhoda Pond to confluence with Vineyard Sound at channel south of Herring Creek Road, Tisbury, Martha's Vineyard.	0.41	Square Miles	Dissolved Oxygen	
					Estuarine Bioassessments	
					Nitrogen, Total	
					Nutrient/Eutrophication Biological Indicators	
Long Pond	MA97-29	tidally restricted brackish water, south of Madaket Road, including White Goose Cove, Nantucket.	0.12	Square Miles	Dissolved Oxygen	64482
					Dissolved Oxygen Supersaturation	64482
					Estuarine Bioassessments	64482
					Fecal Coliform	
					Nitrogen, Total	64482
					Nutrient/Eutrophication Biological Indicators	64482
					Transparency / Clarity	64482
Nantucket Harbor	MA97-01	Waters south and east of an imaginary line drawn from Jetties Beach to Coatue Point (excluding Polpis Harbor and Coskata Pond), Nantucket.	7.16	Square Miles	Estuarine Bioassessments	36011
					Fecal Coliform	
					Nitrogen, Total	36011
Oak Bluffs Harbor	MA97-07	North of Lake Avenue to confluence with Nantucket Sound, Oak Bluffs, Martha's Vineyard.	0.05	Square Miles	(Other anthropogenic substrate alterations*)	
					Fecal Coliform	

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The 303(d) List – "Waters requiring a TMDL"

Water Body	Segment ID	Description	Size	Units	Impairment	EPA TMDL No.
Polpis Harbor	MA97-26	Polpis Harbor and all adjacent coves, to an imaginary line drawn from Quaise Point to the opposite shore, Nantucket.	0.30	Square Miles	Estuarine Bioassessments	36012
					Fecal Coliform	
					Nitrogen, Total	36012
Sengekontacket Pond	MA97-10	Between Edgartown-Vineyard Haven Road and Oak Bluffs Road, including Majors Cove, Edgartown/Oak Bluffs, Martha's Vineyard.	1.10	Square Miles	Dissolved Oxygen	65320
					Estuarine Bioassessments	65320
					Fecal Coliform	
					Nitrogen, Total	65320
					Nutrient/Eutrophication Biological Indicators	65320
Sesachacha Pond	MA97-02	South of Quidnet Road and north of Polpis Road, Nantucket.	0.42	Square Miles	Fecal Coliform	
Seths Pond	MA97085	West Tisbury.	11.00	Acres	Algae	
					Transparency / Clarity	
Tisbury Great Pond	MA97-18	Including Town Cove, Muddy Cove, Pear Tree Cove, Short Cove, Tiah Cove, Tississa Pond, Deep Bottom Cove, and Thumb Cove, Chilmark/West Tisbury, Martha's Vineyard.	1.10	Square Miles	Dissolved Oxygen	
					Estuarine Bioassessments	
					Fecal Coliform	
					Nitrogen, Total	
					Nutrient/Eutrophication Biological Indicators	
Vineyard Haven Harbor	MA97-09	The waters south and west of an imaginary line drawn from the tip of West Chop, Tisbury and the tip of East Chop, Oak Bluffs to the confluence of Lagoon Pond at Beach Road, Tisbury/Oak Bluffs, Martha's Vineyard.	1.54	Square Miles	Estuarine Bioassessments	
					Fecal Coliform	
Merrimack						
Back River	MA84A-16	New Hampshire state line, Amesbury to inlet Clarks Pond, Amesbury.	2.70	Miles	Escherichia Coli (E. Coli)	
					Sedimentation/Siltation	
					Turbidity	
Bare Meadow Brook	MA84A-18	Headwaters, Methuen to confluence with Merrimack River, Methuen.	3.00	Miles	Escherichia Coli (E. Coli)	
					Sedimentation/Siltation	
					Turbidity	
Bartlett Brook	MA84A-36	New Hampshire state line, Dracut to inlet Mill Pond, Methuen.	3.70	Miles	Escherichia Coli (E. Coli)	
Beaver Brook	MA84A-11	New Hampshire state line, Dracut to confluence with Merrimack River, Lowell.	4.80	Miles	(Debris*)	
					(Physical substrate habitat alterations*)	
					(Trash*)	
					Benthic Macroinvertebrates	
					Escherichia Coli (E. Coli)	
					Odor	
					Turbidity	

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The 303(d) List – "Waters requiring a TMDL"

Water Body	Segment ID	Description	Size	Units	Impairment	EPA TMDL No.
Beaver Brook	MA84B-02	Outlet Mill Pond, Littleton to inlet Forge Pond, Westford.	4.90	Miles	Dissolved Oxygen	
					Fecal Coliform	
					pH, Low	
					Total Suspended Solids (TSS)	
Bennetts Brook	MA84B-06	Headwaters, north of Route 2, Harvard to the inlet of Spectacle Pond, Ayer/Littleton.	4.30	Miles	Escherichia Coli (E. Coli)	
Black Brook	MA84A-17	Headwaters, Chelmsford to confluence with Merrimack River, Lowell (approximately 500 feet culverted near mouth).	2.30	Miles	(Debris*)	
					(Physical substrate habitat alterations*)	
					(Trash*)	
					Benthic Macroinvertebrates	
					Escherichia Coli (E. Coli)	
					Fish Bioassessments	
					Sedimentation/Siltation	
					Turbidity	
Chadwicks Pond	MA84006	Haverhill/Boxford.	173.00	Acres	Mercury in Fish Tissue	
Creek Brook	MA84A-37	Headwaters, outlet Crystal Lake, Haverhill to confluence with Merrimack River, Haverhill.	2.30	Miles	Escherichia Coli (E. Coli)	
Crystal Lake	MA84010	Haverhill.	161.00	Acres	Mercury in Fish Tissue	
Deep Brook	MA84A-21	Headwaters east of Everett Turnpike, Tyngsborough to confluence with Merrimack River, Chelmsford.	2.90	Miles	(Habitat Assessment*)	
					Benthic Macroinvertebrates	
					Escherichia Coli (E. Coli)	
					Fish Bioassessments	
					Sedimentation/Siltation	
East Meadow River	MA84A-39	Headwaters, outlet Neal Pond, Haverhill to inlet Millvale Reservoir, Haverhill.	3.00	Miles	Escherichia Coli (E. Coli)	
Fish Brook	MA84A-40	Headwaters, east of Greenwood Road, Andover to confluence with Merrimack River at Fish Brook Dam (NAT ID: MA02265), Andover.	4.10	Miles	Chloride	
					Escherichia Coli (E. Coli)	
Flint Pond	MA84012	Tyngsborough.	72.00	Acres	(Non-Native Aquatic Plants*)	
					Aquatic Plants (Macrophytes)	
					Mercury in Fish Tissue	33880
Forest Lake	MA84014	Methuen.	48.00	Acres	Mercury in Fish Tissue	
Haggets Pond	MA84022	Andover.	211.00	Acres	Mercury in Fish Tissue	
Hoveys Pond	MA84025	Boxford.	36.00	Acres	Mercury in Fish Tissue	
Johnsons Pond	MA84027	Groveland/Boxford.	194.00	Acres	Dissolved Oxygen	
					Mercury in Fish Tissue	
Kenoza Lake	MA84028	Haverhill.	240.00	Acres	Mercury in Fish Tissue	

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The 303(d) List – "Waters requiring a TMDL"

Water Body	Segment ID	Description	Size	Units	Impairment	EPA TMDL No.
Lake Attitash	MA84002	Amesbury/Merrimac.	369.00	Acres	Harmful Algal Blooms	
					Mercury in Fish Tissue	
Lake Cochichewick	MA84008	North Andover.	575.00	Acres	Mercury in Fish Tissue	
Lake Pentucket	MA84051	Haverhill.	38.00	Acres	Mercury in Fish Tissue	
Lake Saltonstall	MA84059	Haverhill.	44.00	Acres	Mercury in Fish Tissue	
Little River	MA84A-09	New Hampshire state line, Haverhill to confluence with Merrimack River, Haverhill (approximately 200 feet culverted at mouth).	4.60	Miles	(Debris*)	
					(Habitat Assessment*)	
					(Trash*)	
					Escherichia Coli (E. Coli)	
Long Pond	MA84032	Dracut/Tyngsborough (size indicates portion in Massachusetts).	137.00	Acres	(Non-Native Aquatic Plants*)	
					Harmful Algal Blooms	
					Mercury in Fish Tissue	33880
Lowell Canals	MA84A-29	Canal system near Pawtucket Falls, Lowell.	4.90	Miles	DDT in Fish Tissue	
					Lead	
					Mercury in Fish Tissue	
					PCBs In Fish Tissue	
Massapoag Pond	MA84087	Dunstable/Groton/Tyngsborough.	111.00	Acres	(Non-Native Aquatic Plants*)	
					Aquatic Plants (Macrophytes)	
					Dissolved Oxygen	
					Mercury in Fish Tissue	33880
Merrimack River	MA84A-01	State line at Hudson, NH/Tyngsborough, MA to Pawtucket Dam (NAT ID: MA00837), Lowell.	9.00	Miles	Escherichia Coli (E. Coli)	
					Fecal Coliform	
					Mercury in Fish Tissue	
Merrimack River	MA84A-02	Pawtucket Dam (NAT ID: MA00837), Lowell to Lowell Regional Wastewater Utilities (NPDES# MA0100633) outfall at Duck Island, Lowell.	3.20	Miles	(Dewatering*)	
					Escherichia Coli (E. Coli)	
					Mercury in Fish Tissue	
					Phosphorus, Total	
Merrimack River	MA84A-03	Lowell Regional Wastewater Utilities (NPDES# MA0100633) outfall at Duck Island, Lowell to Essex Dam (NAT ID: MA00234), Lawrence.	8.80	Miles	Escherichia Coli (E. Coli)	
					Mercury in Fish Tissue	
					PCBs In Fish Tissue	
					Phosphorus, Total	
Merrimack River	MA84A-04	Essex Dam (NAT ID: MA00234), Lawrence to confluence with Little River, Haverhill.	10.00	Miles	Escherichia Coli (E. Coli)	
					PCBs In Fish Tissue	
					Phosphorus, Total	
Merrimack River	MA84A-05	Confluence Little River, Haverhill to confluence Indian River, West Newbury/Amesbury.	1.83	Square Miles	Enterococcus	
					PCBs In Fish Tissue	

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The 303(d) List – "Waters requiring a TMDL"

Water Body	Segment ID	Description	Size	Units	Impairment	EPA TMDL No.
Merrimack River	MA84A-06	Confluence Indian River, West Newbury/Amesbury to mouth at Atlantic Ocean, Newburyport/Salisbury (includes Back River, Salisbury).	4.46	Square Miles	Enterococcus	
					Fecal Coliform	
					PCBs In Fish Tissue	
Merrimack River	MA84A-26	The Basin in the Merrimack River Estuary, Newbury/Newburyport.	0.17	Square Miles	Fecal Coliform	
Mill Pond	MA84038	[North Basin] Littleton.	30.00	Acres	Aquatic Plants (Macrophytes)	
Mill Pond	MA84081	[South Basin] Littleton.	12.00	Acres	Aquatic Plants (Macrophytes)	
Millvale Reservoir	MA84041	Haverhill.	44.00	Acres	Mercury in Fish Tissue	
Nabnasset Pond	MA84044	Westford.	134.00	Acres	(Non-Native Aquatic Plants*)	
					Harmful Algal Blooms	
					Mercury in Fish Tissue	33880
Newfield Pond	MA84046	Chelmsford.	77.00	Acres	(Eurasian Water Milfoil, Myriophyllum spicatum*)	
					(Non-Native Aquatic Plants*)	
					Dissolved Oxygen	
					Mercury in Fish Tissue	33880
Peppermint Brook	MA84A-35	Headwaters, outlet of unnamed pond east of Route 38, Dracut to confluence with Beaver Brook, Dracut.	2.70	Miles	(Debris*)	
					(Trash*)	
					Escherichia Coli (E. Coli)	
Plum Island River	MA84A-27	From Chaces Island, Merimack River Estuary, to the "high sandy" sand bar just north of the confluence with Pine Island Creek, Newbury (formerly encompassed in MA84A-23).	0.13	Square Miles	Fecal Coliform	
Powwow River	MA84A-08	Tidal portion, just downstream of Main Street, Amesbury to confluence with Merrimack River, Amesbury.	0.06	Square Miles	Escherichia Coli (E. Coli)	
Powwow River	MA84A-25	Outlet of Lake Gardner, Amesbury to tidal portion, just downstream of Main Street, Amesbury.	0.60	Miles	Escherichia Coli (E. Coli)	
Powwow River	MA84A-28	outlet Tuxbury Pond, Amesbury to New Hampshire state line, Amesbury.	2.90	Miles	Fecal Coliform	
					Total Suspended Solids (TSS)	
					Turbidity	
Richardson Brook	MA84A-12	Headwaters, Dracut (excluding intermittent portion) to confluence with Merrimack River, Dracut.	1.90	Miles	Escherichia Coli (E. Coli)	
South Branch Souhegan River	MA84A-31	Headwaters, outlet Watatic Pond, Ashburnham to New Hampshire state line, Ashby.	3.00	Miles	Escherichia Coli (E. Coli)	
Spectacle Pond	MA84089	Littleton/Ayer.	79.00	Acres	(Non-Native Aquatic Plants*)	
					Dissolved Oxygen	

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The 303(d) List – "Waters requiring a TMDL"

Water Body	Segment ID	Description	Size	Units	Impairment	EPA TMDL No.
Spicket River	MA84A-10	New Hampshire state line, Methuen to confluence with Merrimack River, Lawrence.	5.80	Miles	(Debris*)	
					(Physical substrate habitat alterations*)	
					(Trash*)	
					Benthic Macroinvertebrates	
					Copper	
					Escherichia Coli (E. Coli)	
					Nutrients	
Stevens Pond	MA84064	North Andover.	23.00	Acres	Harmful Algal Blooms	
					Mercury in Fish Tissue	
Stony Brook	MA84B-03	Headwaters outlet Forge Pond, Westford to Brookside Road, Westford.	6.50	Miles	Benthic Macroinvertebrates	
					Fecal Coliform	
					Turbidity	
Stony Brook	MA84B-04	Brookside Road, Westford to confluence with Merrimack River, Chelmsford.	3.40	Miles	Benthic Macroinvertebrates	
					Escherichia Coli (E. Coli)	
Tadmuck Brook	MA84B-07	Headwaters south of Main Street, Westford to confluence with Stony Brook, Westford.	1.40	Miles	Escherichia Coli (E. Coli)	
Trout Brook	MA84A-13	Headwaters, Dracut to confluence with Richardson Brook, Dracut.	2.60	Miles	Escherichia Coli (E. Coli)	
Trull Brook	MA84A-14	Source, Tewksbury (excluding intermittent portion) to confluence with Merrimack River, Tewksbury.	2.10	Miles	Escherichia Coli (E. Coli)	
Unnamed Tributary	MA84A-30	Unnamed tributary to Powwow River locally considered portion of Back River from outlet of Clarks Pond, Amesbury to confluence with Powwow River, Amesbury (formerly portion of segment MA84A-16).	0.003	Square Miles	Escherichia Coli (E. Coli)	
Unnamed Tributary	MA84B-01	(Locally known as Reedy Meadow Brook) Headwaters, outlet of small unnamed impoundment upstream of Bruce Street, Littleton to inlet Mill Pond, Littleton.	1.50	Miles	Fecal Coliform	
Ward Pond	MA84096	PALIS id changed from 35094 to 84096 on October 10, 1997. (WBID from MA35094 to MA84096) Ashburnham.	54.00	Acres	Dissolved Oxygen	
Millers						
Beaver Brook	MA35-09	Fernald School discharge, Templeton to confluence with Millers River, Royalston.	3.40	Miles	PCBs In Fish Tissue	
Beaver Brook	MA35-28	Headwaters, confluence of Kendall and Chickering brooks, Phillipston to the Fernald School (MA0102156) discharge, Templeton.	2.30	Miles	PCBs In Fish Tissue	
Boyce Brook	MA35-17	NH State Line, Royalston to confluence with East Branch Tully River, Royalston.	3.20	Miles	PCBs In Fish Tissue	

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Category 5 waters listed alphabetically by major watershed
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Water Body	Segment ID	Description	Size	Units	Impairment	EPA TMDL No.
East Branch Tully River	MA35-29	From the outlet of Tully Lake, Royalston to confluence with the West Branch Tully River forming headwaters Tully River, Orange/Athol (formerly reported as a portion of MA35-12).	3.50	Miles	PCBs In Fish Tissue	
East Branch Tully River	MA35-30	Confluence of Tully Brook and Falls Brook in Royalston State Forest, Royalston through Long Pond to inlet Tully Lake, Royalston (formerly reported as a portion of MA35-12).	5.40	Miles	PCBs In Fish Tissue	
Ellinwood Brook	MA35-22	Headwaters, outlet unnamed pond east of Woodlawn Road, Athol to inlet of White Pond, Athol.	3.60	Miles	PCBs In Fish Tissue	
Gales Pond	MA35024	Warwick.	12.00	Acres	Mercury in Fish Tissue	33880
					Turbidity	
Jacks Brook	MA35-31	Headwaters south of Orange Road, Northfield to mouth at confluence with Keyup Brook, Erving.	2.70	Miles	PCBs In Fish Tissue	
Keyup Brook	MA35-16	Headwaters Great Swamp Northfield State Forest, Northfield, to confluence with Millers River, Erving.	5.00	Miles	Escherichia Coli (E. Coli)	
					PCBs In Fish Tissue	
Lake Monomonac	MA35047	Massachusetts portion only. Winchendon/Rindge,N.H.	186.00	Acres	(Non-Native Aquatic Plants*)	
					Mercury in Fish Tissue	
Lake Rohunta	MA35070	(Middle Basin) Athol/Orange/New Salem.	209.00	Acres	(Non-Native Aquatic Plants*)	
					Aquatic Plants (Macrophytes)	
					Mercury in Fish Tissue	33880
Lake Rohunta	MA35107	(South Basin) New Salem.	42.00	Acres	(Non-Native Aquatic Plants*)	
					Aquatic Plants (Macrophytes)	
					Mercury in Fish Tissue	33880
Laurel Lake	MA35035	Erving/Warwick.	44.00	Acres	Dissolved Oxygen	
Lawrence Brook	MA35-13	New Hampshire state line, Royalston through Doane Falls to confluence with East Branch Tully River at inlet Tully Lake, Royalston.	7.10	Miles	PCBs In Fish Tissue	
Lyons Brook	MA35-19	Outlet of Ruggles Pond, Wendell to confluence with Millers River, Montague/Wendell.	2.10	Miles	PCBs In Fish Tissue	
Mahoney Brook	MA35-27	Headwaters, east of Willis Road and Ray Hill, Gardner to Mahoney Pond Dam (MA02319), Gardner.	3.00	Miles	PCBs In Fish Tissue	
Millers River	MA35-01	Outlet of Whitney Pond, Winchendon to Winchendon WWTP, Winchendon.	3.30	Miles	Ambient Bioassays - Chronic Aquatic Toxicity	
					Lack of a coldwater assemblage	
					Temperature	

* TMDL not required (Non-pollutant)

Category 5 waters listed alphabetically by major watershed
The 303(d) List – "Waters requiring a TMDL"

Water Body	Segment ID	Description	Size	Units	Impairment	EPA TMDL No.
Millers River	MA35-02	Winchendon WWTP, Winchendon to confluence with Otter River, Winchendon.	5.60	Miles	PCBs In Fish Tissue	
Millers River	MA35-03	Confluence with Otter River, Winchendon to South Royalston USGS Gage, Royalston.	3.50	Miles	PCBs In Fish Tissue	
Millers River	MA35-04	South Royalston USGS Gage, Royalston to Erving Center WWTP (formerly known as Erving Paper Company), Erving.	18.50	Miles	PCBs In Fish Tissue	
Millers River	MA35-05	Erving Center WWTP (formerly known as Erving Paper Company), Erving to confluence with Connecticut River, Erving/Montague.	9.20	Miles	PCBs In Fish Tissue	
Millers River	MA35-20	Outlet of Sunset Lake, Ashburnham to inlet of Whitney Pond, Winchendon.	6.40	Miles	Lack of a coldwater assemblage	
					Temperature	
Mormon Hollow Brook	MA35-15	Headwaters just north of Montague Road, Wendell to confluence with Millers River, Wendell.	3.80	Miles	PCBs In Fish Tissue	
North Branch Millers River	MA35-21	Outlet of Lake Mononomac, Winchendon to inlet of Whitney Pond, Winchendon.	2.00	Miles	Mercury in Fish Tissue	
North Pond Brook	MA35-23	Headwaters, from northern outlet of Lake Mattawa, Orange to confluence with Millers River, Orange.	2.10	Miles	PCBs In Fish Tissue	
Otter River	MA35-06	Source, Hubbardston (north of Pitcherville Road) to Gardner WWTP, Gardner/Templeton.	4.30	Miles	Ambient Bioassays - Chronic Aquatic Toxicity	
					Dissolved Oxygen	
Otter River	MA35-08	Seaman Paper Dam, Templeton to confluence with Millers River, Winchendon.	5.50	Miles	PCBs In Fish Tissue	
Stockwell Brook	MA35-25	Headwaters east of Norcross Road, Royalston to mouth at Beaver Pond inlet, Royalston.	1.30	Miles	PCBs In Fish Tissue	
Tully Lake	MA35111	Royalston/Athol.	214.00	Acres	Harmful Algal Blooms	
Tully River	MA35-14	Confluence East and West Branches Tully River, Orange/Athol to confluence with Millers River, Athol.	1.60	Miles	PCBs In Fish Tissue	
Unnamed Tributary	MA35-26	Unnamed tributary to Millers River from the outlet of Lake Wallace to the mouth at confluence with Millers River, Ashburnham (excluding Lake Watatic segment MA35095 and Lower Naukeag Lake segment MA35041).	2.10	Miles	Copper	
West Branch Tully River	MA35-11	Outlet Sheomet Lake, Warwick to confluence with East Branch Tully River forming headwaters Tully River, Orange/Athol.	6.60	Miles	PCBs In Fish Tissue	
					Temperature	

Category 5 waters listed alphabetically by major watershed
The 303(d) List – "Waters requiring a TMDL"

Water Body	Segment ID	Description	Size	Units	Impairment	EPA TMDL No.
West Gulf Brook	MA35-24	From headwaters west of Paine Swamp Road, Athol to confluence with Millers River, Athol.	0.80	Miles	PCBs In Fish Tissue	
Whetstone Brook	MA35-18	Headwaters northeast of Orcutt Hill near New Salem Rd, Wendell to confluence with Millers River, Wendell.	4.90	Miles	PCBs In Fish Tissue	
Whitney Pond	MA35101	Winchendon.	97.00	Acres	(Aquatic Plants (Macrophytes)*)	
					Mercury in Fish Tissue	
					Turbidity	4145
Mount Hope Bay (Shore)						
Cole River	MA61-04	Route 6, Swansea to the mouth at Mount Hope Bay at old railway grade, Swansea.	0.35	Square Miles	Chlorophyll-a	
					Dissolved Oxygen	
					Fecal Coliform	38907
					Nitrogen, Total	
Lee River	MA61-01	From confluence with Lewin Brook, Swansea to Route 6, Swansea/Somerset.	0.02	Square Miles	Fecal Coliform	38905
					Nutrient/Eutrophication Biological Indicators	
Lee River	MA61-02	Route 6, Swansea/Somerset to mouth at Mount Hope Bay, Swansea/Somerset.	0.51	Square Miles	Chlorophyll-a	
					Dissolved Oxygen	
					Fecal Coliform	38906
					Nitrogen, Total	
Lewin Brook	MA61-09	Headwaters, west of Sharps Lot Road, Swansea to the inlet of the unnamed impoundment north of Lewin Lane, Swansea (impoundment upstream of dam, NAT ID# MA03247).	1.90	Miles	Escherichia Coli (E. Coli)	
Mount Hope Bay	MA61-06	The Massachusetts portion just upstream of the Braga Bridge, Fall River/Somerset to the state border Fall River, MA/Tiverton, RI to the line from Braton Point Somerset to MA/RI border approximately 3/4 of a mile due east of Spar Island, RI.	2.32	Square Miles	Chlorophyll-a	
					Enterococcus	38908
					Fecal Coliform	38908
					Fish Bioassessments	
					Nitrogen, Total	
					Temperature	

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Category 5 waters listed alphabetically by major watershed
The 303(d) List – "Waters requiring a TMDL"

Water Body	Segment ID	Description	Size	Units	Impairment	EPA TMDL No.
Mount Hope Bay	MA61-07	the Massachusetts portion from mouth of Cole River (at old railway grade), Swansea to state border Swansea, MA/Warren, RI to the line from Brayton Point, Somerset to MA/RI border approximately 3/4 of a mile due east of Spar Island, RI to the line between Bay Point, Swansea and Brayton Point, Somerset (the mouth of the Lee River).	1.84	Square Miles	Chlorophyll-a	
					Dissolved Oxygen	
					Enterococcus	38909
					Fecal Coliform	38909
					Fish Bioassessments	
					Nitrogen, Total	
					Temperature	
Quequechan River	MA61-05	Outlet South Watuppa Pond, Fall River to confluence with Mt. Hope Bay at mouth of Taunton River (just upstream of the Braga Bridge), Fall River.	2.40	Miles	(Debris*)	
					(Habitat Assessment*)	
					(Trash*)	
					Algae	
					Dissolved Oxygen	
					Escherichia Coli (E. Coli)	
					Nutrient/Eutrophication Biological Indicators	
Narragansett Bay (Shore)						
Bliss Brook	MA53-19	Headwaters north of Tremont Street, Rehoboth to mouth at confluence with West Branch Palmer River, Rehoboth.	2.40	Miles	Escherichia Coli (E. Coli)	
Clear Run Brook	MA53-13	Headwaters, outlet unnamed pond northwest of Miller Street, Seekonk to confluence with Palmer River, Rehoboth.	1.60	Miles	Dissolved Oxygen	
					Escherichia Coli (E. Coli)	35097
					Fecal Coliform	35097
Palmer River	MA53-22	Headwaters, confluence of the East and West branches of the Palmer River, Rehoboth to the inlet of Shad Factory Pond, Rehoboth (formerly part of segment MA53-04).	4.80	Miles	Escherichia Coli (E. Coli)	35086
					Fecal Coliform	35086
					Temperature	
Runnins River	MA53-01	Route 44, Seekonk to Mobile Dam, Seekonk, MA/East Providence, RI (through Burrs Pond formerly segment MA53001).	3.70	Miles	Benthic Macroinvertebrates	
					Dissolved Oxygen	
					Escherichia Coli (E. Coli)	38903
					Fecal Coliform	38903
					Mercury in Fish Tissue	33880
					Nutrient/Eutrophication Biological Indicators	
Runnins River	MA53-20	Headwaters just north of Walmut Street, Rehoboth to Route 44, Seekonk.	3.50	Miles	Escherichia Coli (E. Coli)	
Shad Factory Pond	MA53005	Rehoboth (formerly part of segment MA53-04).	31.00	Acres	(Dewatering*)	
					Fecal Coliform	35086
					Nutrient/Eutrophication Biological Indicators	
Unnamed Tributary	MA53-21	Headwaters east of Agawam Court, Seekonk to inlet of unnamed pond south of Sagamore Road, Seekonk.	0.60	Miles	Escherichia Coli (E. Coli)	

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Category 5 waters listed alphabetically by major watershed
The 303(d) List – "Waters requiring a TMDL"

Water Body	Segment ID	Description	Size	Units	Impairment	EPA TMDL No.
Nashua						
Asnebumskit Brook	MA81-56	From outlet Eagle Lake, Holden to mouth at confluence with the Quinapoxet River, Holden.	2.90	Miles	Ambient Bioassays - Chronic Aquatic Toxicity	
Baker Brook	MA81-62	Headwaters, confluence of Pearl Hill and Falulah brooks, Fitchburg to mouth at confluence with North Nashua River, Fitchburg.	2.50	Miles	Escherichia Coli (E. Coli)	
Catacoonamug Brook	MA81-74	Headwaters, northwest of Chestnut Street, Lunenberg to inlet Lake Shirley, Harvard.	4.50	Miles	Escherichia Coli (E. Coli)	
Fall Brook	MA81-39	From outlet Lake Samoset, Leominster to mouth at confluence with the North Nashua River, Leominster (formerly part of segment MA81-14).	3.00	Miles	Escherichia Coli (E. Coli)	
Falulah Brook	MA81-63	Headwaters near Ringe Road, Ashby to mouth at confluence with Pearl Hill Brook, forming headwaters Baker Brook, Fitchburg (excluding approximately 0.6 miles through Lovell Reservoir segment MA81074).	6.00	Miles	Escherichia Coli (E. Coli)	
Fort Pond	MA81046	Lancaster.	76.00	Acres	Dissolved Oxygen	
Gates Brook	MA81-24	Headwaters west of Prospect Street, West Boylston to mouth at inlet Wachusett Reservoir (Gates Cove), West Boylston.	3.40	Miles	Escherichia Coli (E. Coli)	
					Fecal Coliform	
Grove Pond	MA81053	Ayer.	68.00	Acres	(Non-Native Aquatic Plants*)	
					Aquatic Plants (Macrophytes)	
					Arsenic	
					DEHP (Di-sec-octyl phthalate)	
					Mercury in Fish Tissue	
					Polycyclic Aromatic Hydrocarbons (PAHs) (Aquatic Ecosystems)	
					Sediment Bioassay (Chronic Toxicity Freshwater)	
James Brook	MA81-20	Headwaters, Groton to mouth at mouth at confluence with Nashua River, Ayer/Groton.	3.90	Miles	Escherichia Coli (E. Coli)	
Lake Shirley	MA81122	Lunenburg/Shirley.	360.00	Acres	(Eurasian Water Milfoil, Myriophyllum spicatum*)	
					(Non-Native Aquatic Plants*)	
					Dissolved Oxygen	
					Harmful Algal Blooms	
					Mercury in Fish Tissue	42399
					Turbidity	

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Category 5 waters listed alphabetically by major watershed
The 303(d) List – "Waters requiring a TMDL"

Water Body	Segment ID	Description	Size	Units	Impairment	EPA TMDL No.
Malagasco Brook	MA81-29	Headwaters southwest of Apron Hill, Boylston through Pine Swamp to mouth at inlet Wachusett Reservoir (South Bay), Boylston.	2.40	Miles	Benthic Macroinvertebrates	
					Nutrient/Eutrophication Biological Indicators	
Mirror Lake	MA81085	Harvard.	28.00	Acres	Mercury in Fish Tissue	
Monoosnuc Brook	MA81-13	Headwaters, outlet Simonds Pond, Leominster to mouth at confluence with North Nashua River, Leominster (through former pond segments Pierce Pond MA81101 and Rockwell Pond MA81112).	6.10	Miles	Escherichia Coli (E. Coli)	
Muddy Brook	MA81-28	Headwaters west of Shrewsbury Street, West Boylston to mouth at inlet Wachusett Reservoir (South Bay), West Boylston.	0.80	Miles	Benthic Macroinvertebrates	
Mulpus Brook	MA81-37	From outlet Hickory Hills Lake, Lunenburg to mouth at confluence with the Nashua River, Shirley (formerly part of segment MA81-22).	6.30	Miles	Lack of a coldwater assemblage	
Nashua River	MA81-05	From confluence of North Nashua River, Lancaster to confluence of Squannacook River, Shirley/Groton/Ayer.	14.20	Miles	Benthic Macroinvertebrates	
					Escherichia Coli (E. Coli)	
					Phosphorus, Total	
					Sediment Bioassay (Acute Toxicity Freshwater)	
Nashua River	MA81-06	From confluence of Squannacook River, Shirley/Groton/Ayer to Pepperell Dam (NATID: MA00373), Pepperell (through Pepperell Pond formerly segment MA81167).	9.10	Miles	(Non-Native Aquatic Plants*)	
					Benthic Macroinvertebrates	
					Mercury in Fish Tissue	
					Nutrient/Eutrophication Biological Indicators	
Nashua River	MA81-07	From Pepperell Dam (NATID: MA00373), Pepperell to New Hampshire state line, Pepperell/Dunstable.	3.70	Miles	Benthic Macroinvertebrates	
					Phosphorus, Total	
Nashua River	MA81-09	("South Branch" Nashua River) From Clinton WWTP discharge (NPDES: MA0100404), Clinton to confluence with North Nashua River, Lancaster.	1.80	Miles	Escherichia Coli (E. Coli)	
					Phosphorus, Total	
Nissitissit River	MA81-21	New Hampshire state line, Pepperell to mouth at confluence with Nashua River, Pepperell.	4.60	Miles	Lack of a coldwater assemblage	
Nonacoicus Brook	MA81-17	Outlet Plow Shop Pond, Ayer to mouth at confluence with Nashua River, Ayer/Shirley.	1.40	Miles	Dissolved Oxygen	
North Nashua River	MA81-01	Headwaters, outlet Snows Millpond, Fitchburg to Fitchburg Paper Company Dam #1 (NATID: MA00877), Fitchburg.	1.70	Miles	Escherichia Coli (E. Coli)	

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Category 5 waters listed alphabetically by major watershed
The 303(d) List – "Waters requiring a TMDL"

Water Body	Segment ID	Description	Size	Units	Impairment	EPA TMDL No.
North Nashua River	MA81-02	From Fitchburg Paper Company Dam #1 (NATID: MA00877), Fitchburg to Fitchburg East WWTP outfall (NPDES: MA0100986), Leominster.	6.90	Miles	Ambient Bioassays - Chronic Aquatic Toxicity	
					Benthic Macroinvertebrates	
					Escherichia Coli (E. Coli)	
North Nashua River	MA81-03	From Fitchburg East WWTP outfall (NPDES: MA0100986), Leominster to Leominster WWTP outfall (NPDES: MA0100617), Leominster.	1.60	Miles	Escherichia Coli (E. Coli)	
North Nashua River	MA81-04	From Leominster WWTP outfall (NPDES: MA0100617), Leominster to mouth at confluence with Nashua River ("South Branch" Nashua River), Lancaster.	10.30	Miles	Escherichia Coli (E. Coli)	
					Odor	
Partridge Pond	MA81098	Westminster.	25.00	Acres	(Non-Native Aquatic Plants*)	
					Aquatic Plants (Macrophytes)	
					Turbidity	
Pearl Hill Brook	MA81-80	Headwaters, outlet Wright Ponds, Ashby to mouth at confluence with Squannacook River, Townsend.	6.70	Miles	Enterococcus	
Plow Shop Pond	MA81103	Ayer.	29.00	Acres	(Non-Native Aquatic Plants*)	
					Aquatic Plants (Macrophytes)	
					Arsenic	
					Chromium, Total	
					Mercury in Fish Tissue	
					Polycyclic Aromatic Hydrocarbons (PAHs) (Aquatic Ecosystems)	
					Sediment Bioassay (Chronic Toxicity Freshwater)	
Squannacook River	MA81-18	Headwaters, confluence Mason and Willard brooks, Townsend to Hollingsworth and Vose Dam (NATID: MA00443), Groton/Shirley (through Harbor Pond formerly segment MA81054).	12.60	Miles	Lack of a coldwater assemblage	
					pH, Low	
					Temperature	
Still River	MA81-60	Headwaters, Lancaster to Route 117, Bolton (formerly the upper portion of MA81-15).	0.60	Miles	Escherichia Coli (E. Coli)	
Stillwater River	MA81-31	Headwaters, confluence of Justice and Keyes brooks, Princeton/Sterling to mouth at inlet of Wachusett Reservoir (Stillwater Basin), Sterling.	6.70	Miles	Escherichia Coli (E. Coli)	
Unnamed Tributary	MA81-35	Unnamed tributary to Quinepoxet River locally considered "Lower Chaffin Brook", headwaters outlet Unionville Pond, Holden to mouth at confluence with Quinepoxet River, Holden.	0.50	Miles	Benthic Macroinvertebrates	
					Dissolved Oxygen	

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The 303(d) List – "Waters requiring a TMDL"

Water Body	Segment ID	Description	Size	Units	Impairment	EPA TMDL No.
Wekepeke Brook	MA81-72	Headwaters, outlet Heywood Reservoir, Sterling to mouth at confluence with North Nashua River, Lancaster (includes former segments Bartlett Pond MA81008 and Unnamed Tributary MA81-61).	5.80	Miles	Escherichia Coli (E. Coli)	
Willard Brook	MA81-79	Headwaters, outlet Fitchburg Reservoir, Ashby to mouth at confluence with Mason Brook forming headwaters Squannacook River, Townsend (excluding the approximate 0.3 mile through Ashby Reservoir, segment MA81001).	6.20	Miles	Enterococcus	
North Coastal						
Bass River	MA93-07	Headwaters, perennial portion west of Wenham Lake, Beverly to the outlet of "lower Shoe Pond" north of Route 62, Beverly (through Shoe Pond formerly MA93068) (portions culverted).	2.10	Miles	(Fish Passage Barrier*)	
					Turbidity	
Beaver Brook	MA93-37	Headwaters, perennial portion west of Route 95, Danvers to mouth at inlet Mill Pond, Danvers.	2.70	Miles	Dissolved Oxygen	
					Escherichia Coli (E. Coli)	
Beaverdam Brook	MA93-30	Headwaters west of Main Street, Lynnfield to confluence with Saugus River (Reedy Meadow), Lynnfield.	1.50	Miles	Dissolved Oxygen	
					Escherichia Coli (E. Coli)	50120
					Fecal Coliform	50120
Cape Pond	MA93011	Rockport.	42.00	Acres	Turbidity	
Cat Brook	MA93-29	Headwaters, perennial portion east of Route 128, Manchester to the edge of the designated shellfishing beds east of Powder House Lane, Manchester.	1.50	Miles	pH, Low	
Crane River	MA93-38	Headwaters, outlet Mill Pond, Danvers to outlet of the pump house sluiceway, Purchase Street, Danvers (formerly a portion of MA93-03).	0.30	Miles	Escherichia Coli (E. Coli)	
Flax Pond	MA93023	Lynn.	55.00	Acres	(Non-Native Aquatic Plants*)	
					Algae	
					Chlordane in Fish Tissue	
					DDT in Fish Tissue	
					Turbidity	
Floating Bridge Pond	MA93024	Lynn.	12.00	Acres	Algae	
					Phosphorus, Total	
					Turbidity	
Forest River	MA93-10	From saltwater wetlands upstream of Loring Avenue, Salem to mouth at confluence with Salem Harbor, Salem.	0.03	Square Miles	Dissolved Oxygen Supersaturation	

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Category 5 waters listed alphabetically by major watershed
The 303(d) List – "Waters requiring a TMDL"

Water Body	Segment ID	Description	Size	Units	Impairment	EPA TMDL No.
Foster Pond	MA93026	Swampscott.	5.00	Acres	DDT in Fish Tissue	
Gloucester Harbor	MA93-18	The waters landward of an imaginary line drawn between Mussel Point, Gloucester and the tip of the Dog Bar Breakwater, Gloucester excluding the Annisquam River.	2.32	Square Miles	Combined Biota/Habitat Bioassessments	
					Dissolved Oxygen	
					Enterococcus	50122
					Fecal Coliform	50122
Goldthwait Brook	MA93-05	Headwaters, outlet Cedar Pond, Peabody to mouth at confluence with Proctor Brook, Peabody (portions culverted).	3.30	Miles	(Alteration in stream-side or littoral vegetative covers*)	
					(Dewatering*)	
					Dissolved Oxygen	
					Escherichia Coli (E. Coli)	50120
					Fecal Coliform	50120
					Phosphorus, Total	
Hawkes Pond	MA93032	Lynnfield/Saugus.	65.00	Acres	Turbidity	
Lake Quannapowitt	MA93060	Wakefield.	246.00	Acres	(Non-Native Aquatic Plants*)	
					DDT in Fish Tissue	
					Harmful Algal Blooms	
					Turbidity	
Lily Pond	MA93039	Gloucester.	24.00	Acres	Algae	
					Nutrient/Eutrophication Biological Indicators	
					Turbidity	
Mill River	MA93-31	Headwaters in wetlands north of Salem Street, Wakefield to mouth at confluence with Saugus River, Wakefield.	2.00	Miles	Dissolved Oxygen	
					Escherichia Coli (E. Coli)	50120
					Fecal Coliform	50120
					Total Suspended Solids (TSS)	
					Turbidity	
North River	MA93-42	Downstream of Route 114 bridge (Proctor Brook becomes North River at this bridge), Salem to mouth at confluence with Danvers River and Beverly Harbor, Salem (formerly part of MA93-06).	0.15	Square Miles	Ammonia, Un-ionized	
					Dissolved Oxygen Supersaturation	
					Fecal Coliform	50121
Pillings Pond	MA93056	Lynnfield.	90.00	Acres	Algae	
					Chlorophyll-a	
					Dissolved Oxygen	
					Dissolved Oxygen Supersaturation	
					Phosphorus, Total	
					Transparency / Clarity	

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Category 5 waters listed alphabetically by major watershed
The 303(d) List – "Waters requiring a TMDL"

Water Body	Segment ID	Description	Size	Units	Impairment	EPA TMDL No.
Proctor Brook	MA93-39	Headwaters, outlet small pond in wetland north of Downing Road, Peabody to Grove/Goodhue Street bridge, Salem (formerly part of MA93-06) (interrupted urban).	2.90	Miles	(Debris*)	
					(Trash*)	
					Benthic Macroinvertebrates	
					Escherichia Coli (E. Coli)	50120
					Fecal Coliform	50120
					Nitrogen, Total	
					Phosphorus, Total	
					Sedimentation/Siltation	
Proctor Brook	MA93-40	From Grove/Goodhue Street bridge, Salem to mouth at Route 114 culvert, Salem (formerly part of MA93-06).	0.01	Square Miles	(Debris*)	
					(Trash*)	
					Fecal Coliform	50123
					Flocculant Masses	
					Odor	
					Oil And Grease	
					Scum/Foam	
Salem Harbor	MA93-54	Waters landward of an imaginary line from Naugus Head, Marblehead to the northwest point of Bakers Island, Salem to Hospital Point, Beverly to Juniper Point, Salem (excluding Forest River) (formerly segment MA93-21 Salem Harbor and a portion of segment MA93-25 Salem Sound [waterbody code 93907]).	4.91	Square Miles	Enterococcus	50122
					Estuarine Bioassessments	
					Fecal Coliform	50122
Saugus River	MA93-34	Headwaters, outlet Lake Quannapowitt, Wakefield (thru Reedy Meadow) to Lynn Water & Sewer Commission diversion canal, Wakefield/Lynnfield (canal diverts to Hawks Pond) (formerly part of segment MA93-13).	3.10	Miles	(Fish Passage Barrier*)	
					(Physical substrate habitat alterations*)	
					Algae	
					Escherichia Coli (E. Coli)	50120
					Fecal Coliform	50120
					Nitrogen, Total	
					Phosphorus, Total	
					Turbidity	
Saugus River	MA93-43	From Saugus Iron Works, Bridge Street, Saugus to Lincoln Avenue/Boston Street, Saugus/Lynn (formerly a portion of MA93-14).	0.04	Square Miles	(Flow Regime Modification*)	
					Fecal Coliform	50122
					Oil and Grease	
					Temperature	

Category 5 waters listed alphabetically by major watershed
The 303(d) List – "Waters requiring a TMDL"

Water Body	Segment ID	Description	Size	Units	Impairment	EPA TMDL No.
Saugus River	MA93-44	From Lincoln Avenue/Boston Street, Saugus/Lynn to mouth (east of Route 1A) at Lynn Harbor, Lynn/Revere (formerly a portion of MA93-14).	0.36	Square Miles	(Flow Regime Modification*)	
					Enterococcus	50122
					Fecal Coliform	50122
					Oil and Grease	
					Temperature	
Strangman Pond	MA93076	Gloucester.	3.00	Acres	Algae	
					Aquatic Plants (Macrophytes)	
					Turbidity	
Unnamed Tributary	MA93-51	Unnamed tributary locally known as "Town Line Brook", from Route 99, Malden to mouth at confluence with Pines River, Revere.	0.02	Square Miles	(Alteration in stream-side or littoral vegetative covers*)	
					(Debris*)	
					(Flow Regime Modification*)	
					(Physical substrate habitat alterations*)	
					(Trash*)	
					Fecal Coliform	50123
					Odor	
Unnamed Tributary	MA93-58	Unnamed tributary to Beverly Cove, perennial portion, Route 22, Beverly to saltwater wetlands south of Route 127, Beverly.	2.10	Miles	Escherichia Coli (E. Coli)	
Unnamed Tributary	MA93-59	Unnamed tributary to Chubb Creek, headwaters west of Hale Street, Beverly to mouth at confluence with Chubb Creek east of Route 127, Beverly.	0.80	Miles	Escherichia Coli (E. Coli)	
Upper Banjo Pond	MA93080	Gloucester.	11.00	Acres	Aquatic Plants (Macrophytes)	
					Turbidity	
West Pond	MA93089	Gloucester.	7.00	Acres	Algae	
					Chlorophyll-a	
					Phosphorus, Total	
					Transparency / Clarity	
Parker						
Baldpate Pond	MA91001	Boxford.	60.00	Acres	(Non-Native Aquatic Plants*)	
					Dissolved Oxygen	
					Mercury in Fish Tissue	
Eagle Hill River	MA91-06	Headwaters north of Town Hill, east of Town Farm Road, Ipswich to the mouth at Plum Island Sound, Ipswich.	0.35	Square Miles	Fecal Coliform	
Egypt River	MA91-14	East of Jewett Hill (Latitude 42:42:23.40, Longitude 70:51:47.58 DMS), Ipswich to mouth at confluence with Rowley River, Rowley/Ipswich.	0.03	Square Miles	Fecal Coliform	

* TMDL not required (Non-pollutant)

Category 5 waters listed alphabetically by major watershed
The 303(d) List – "Waters requiring a TMDL"

Water Body	Segment ID	Description	Size	Units	Impairment	EPA TMDL No.
Little River	MA91-11	Scotland Road/Parker Street, Newbury/Newburyport to mouth at confluence with Parker River, Newbury.	0.09	Square Miles	Fecal Coliform	
Mill River	MA91-08	Headwaters - Outlet of small unnamed pond between Route 95 and Rowley Road, Boxford to Route 1, Rowley/Newbury (through Upper Mill Pond formerly segment MA91015 and Lower Mill Pond formerly segment MA91008).	6.90	Miles	(Non-Native Aquatic Plants*)	
					Algae	
					Aquatic Plants (Macrophytes)	
					Benthic Macroinvertebrates	
Mill River	MA91-09	Route 1, Rowley/Newbury to mouth at confluence with Parker River, Newbury.	0.09	Square Miles	Fecal Coliform	
Paine Creek	MA91-03	Headwaters east of Town Farm Road, Ipswich to confluence with Eagle Hill River, Ipswich.	0.06	Square Miles	Fecal Coliform	
Parker River	MA91-02	Central Street, Newbury to mouth at Plum Island Sound, Newbury.	0.60	Square Miles	Fecal Coliform	
Pentucket Pond	MA91010	Georgetown.	92.00	Acres	(Non-Native Aquatic Plants*)	
					Mercury in Fish Tissue	
Plum Island River	MA91-15	From "high sandy" sandbar just north of the confluence with Pine Island Creek, Newbury to confluence with Plum Island Sound, Newbury.	0.39	Square Miles	Fecal Coliform	
Plum Island Sound	MA91-12	From the mouth of both the Parker River and Plum Island River, Newbury to the Atlantic Ocean, Ipswich (Includes Ipswich Bay).	4.47	Square Miles	Fecal Coliform	
Rock Pond	MA91012	Georgetown.	49.00	Acres	Mercury in Fish Tissue	
Rowley River	MA91-05	Headwaters, confluence with Egypt River, Rowley/Ipswich to mouth at Plum Island Sound, Rowley/Ipswich.	0.25	Square Miles	Fecal Coliform	
Quinebaug						
Alum Pond	MA41001	Sturbridge.	198.00	Acres	Dissolved Oxygen	
Cady Brook	MA41-05	Headwaters, outlet of Glen Echo Lake, Charlton to Charlton WWTP outfall (NPDES: MA0101141), Charlton.	1.50	Miles	(Dewatering*)	
					Ambient Bioassays - Chronic Aquatic Toxicity	
Cady Brook	MA41-06	Charlton WWTP outfall (NPDES: MA0101141), Charlton to mouth at confluence with the Quinebaug River, Southbridge.	5.10	Miles	(Dewatering*)	
					Escherichia Coli (E. Coli)	
					Nutrient/Eutrophication Biological Indicators	
Cohasse Brook	MA41-12	From the outlet of Cohasse Brook Reservoir, Southbridge through Wells Pond (formerly pond segment MA41053) to mouth at confluence with the Quinebaug River, Southbridge.	2.70	Miles	Benthic Macroinvertebrates	
					Escherichia Coli (E. Coli)	
					Sedimentation/Siltation	
Glen Echo Lake	MA41017	Charlton.	115.00	Acres	Dissolved Oxygen	

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Category 5 waters listed alphabetically by major watershed
The 303(d) List – "Waters requiring a TMDL"

Water Body	Segment ID	Description	Size	Units	Impairment	EPA TMDL No.
Mckinstry Brook	MA41-13	Headwaters, east of Brookfield Road, Charlton (excluding intermittent portion) to mouth at confluence with the Quinebaug River, Southbridge.	7.30	Miles	(Debris*)	
					(Trash*)	
					Escherichia Coli (E. Coli)	
Morse Pond	MA41033	Southbridge.	41.00	Acres	Aquatic Plants (Macrophytes)	
					Dissolved Oxygen	
Pistol Pond	MA41057	Sturbridge.	5.00	Acres	Aquatic Plants (Macrophytes)	
					Dissolved Oxygen	
					Transparency / Clarity	
Quinebaug River	MA41-01	Outlet Hamilton Reservoir, Holland, to Sturbridge WWTP outfall (NPDES: MA0100421), Sturbridge (excluding Holland Pond segment MA41022 and East Brimfield Reservoir segment MA41014).	8.20	Miles	Ambient Bioassays - Chronic Aquatic Toxicity	
					Fish Bioassessments	
					Lack of a coldwater assemblage	
					Mercury in Fish Tissue	
Quinebaug River	MA41-02	Sturbridge WWTP outfall (NPDES: MA0100421), Sturbridge to confluence with Cady Brook, Southbridge.	6.50	Miles	(Debris*)	
					(Trash*)	
					Algae	
					Turbidity	
Quinebaug River	MA41-03	Southbridge WWTP outfall (NPDES: MA0100901), Southbridge to dam (NAT ID: MA00114) just upstream of West Dudley Road, Dudley.	2.20	Miles	(Physical substrate habitat alterations*)	
					Dissolved Oxygen	
					Escherichia Coli (E. Coli)	
					Fecal Coliform	
					Nutrients	
Quinebaug River	MA41-04	From dam (NAT ID: MA00114) just upstream of West Dudley Road, Dudley to Connecticut state line, Dudley.	2.20	Miles	Fecal Coliform	
Quinebaug River	MA41-09	From confluence with Cady Brook, Southbridge to Southbridge WWTP outfall (NPDES: MA0100901), Southbridge.	1.30	Miles	(Debris*)	
					(Trash*)	
					Ambient Bioassays - Chronic Aquatic Toxicity	
					Benthic Macroinvertebrates	
					Turbidity	
Sibley Pond	MA41047	North Basin, Charlton.	22.00	Acres	Aquatic Plants (Macrophytes)	
					Dissolved Oxygen	
					Turbidity	
Sibley Pond	MA41048	South Basin, Charlton.	19.00	Acres	Aquatic Plants (Macrophytes)	
					Dissolved Oxygen	
					Turbidity	

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Category 5 waters listed alphabetically by major watershed
The 303(d) List – "Waters requiring a TMDL"

Water Body	Segment ID	Description	Size	Units	Impairment	EPA TMDL No.
Unnamed Tributary	MA41-16	Unnamed tributary to Mill Brook, headwaters, outlet Sherman Pond, Brimfield to mouth at confluence with Mill Brook, Brimfield.	1.20	Miles	Benthic Macroinvertebrates	
					Dissolved Oxygen	
					Escherichia Coli (E. Coli)	
					Sedimentation/Siltation	
West Brook	MA41-17	Headwaters, west of the Dix Hill Road/Route 19 intersection (excluding intermittent portion), Brimfield to mouth at confluence with Mill Brook, Brimfield.	1.80	Miles	Escherichia Coli (E. Coli)	
Shawsheen						
Ames Pond	MA83001	Tewksbury.	76.00	Acres	Mercury in Fish Tissue	
Ballardvale Impoundment	MA83011	Andover (Lowell Junction Pond).	35.00	Acres	(Non-Native Aquatic Plants*)	
					Aquatic Plants (Macrophytes)	
					Mercury in Fish Tissue	
Content Brook	MA83-09	Headwaters, outlet Richardson Pond, Billerica, to confluence with Shawsheen River, Tewksbury.	2.40	Miles	Benthic Macroinvertebrates	
					Escherichia Coli (E. Coli)	2587
Elm Brook	MA83-24	From beginning of channelized portion soutwest of Kendall Court, Bedford to confluence with Shawsheen River, Bedford (formerly part of segment MA83-05).	2.40	Miles	(Physical substrate habitat alterations*)	
					Escherichia Coli (E. Coli)	2587
					Fecal Coliform	2587
					Sedimentation/Siltation	
Fosters Pond	MA83005	Andover/Wilmington.	109.00	Acres	(Non-Native Aquatic Plants*)	
					Dissolved Oxygen	
					Mercury in Fish Tissue	
Hussey Pond	MA83009	Andover.	1.00	Acres	Algae	
Long Pond	MA83010	Tewksbury.	44.00	Acres	Algae	
					Chlorophyll-a	
					Dissolved Oxygen	
					Phosphorus, Total	
					Transparency / Clarity	
Pomps Pond	MA83014	Andover.	25.00	Acres	(Non-Native Aquatic Plants*)	
					Mercury in Fish Tissue	
Rabbit Pond	MA83015	Andover.	2.00	Acres	Turbidity	
Shawsheen River	MA83-01	Summer Street (historcally listed as Maguire Road), Bedford to confluence with Spring Brook, Bedford.	1.60	Miles	(Physical substrate habitat alterations*)	
					Dissolved Oxygen	
					Escherichia Coli (E. Coli)	2587
					Fecal Coliform	2587
					Sedimentation/Siltation	

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Category 5 waters listed alphabetically by major watershed
The 303(d) List – "Waters requiring a TMDL"

Water Body	Segment ID	Description	Size	Units	Impairment	EPA TMDL No.
Shawsheen River	MA83-08	Headwater, north of Folly Pond and North Great Road, Lincoln to Summer Street, Bedford.	2.10	Miles	Dissolved Oxygen	
					Escherichia Coli (E. Coli)	2587
					Fecal Coliform	2587
					Physical substrate habitat alterations	
Shawsheen River	MA83-17	Confluence with Spring Brook, Bedford to the Burlington Water Department's surface water intake, Billerica. (Formerly part of segment MA83-02, changed for 2004 cycle).	5.70	Miles	Dissolved Oxygen	
					Escherichia Coli (E. Coli)	2587
					Fecal Coliform	2587
Shawsheen River	MA83-18	Burlington Water Department's surface water intake, Billerica to the inlet of Ballardvale Impoundment, Andover (formerly part of segment MA83-02, changed for 2004 cycle) (since 2016 cycle: excludes Ballardvale Impoundment, pond segment MA83011).	9.50	Miles	Escherichia Coli (E. Coli)	2587
					Fecal Coliform	2587
					Dissolved Oxygen	
Unnamed Tributary	MA83-15	Unnamed tributary to Meadow Brook, also known as "Pinnacle Brook" - from small wetland east of Route 93, Andover, to confluence with Meadow Brook, Tewksbury (includes intermittent portion).	2.10	Miles	(Dewatering*)	
					Chloride	
					Escherichia Coli (E. Coli)	2587
					Fecal Coliform	2587
Unnamed Tributary	MA83-20	Unnamed intermittent tributary to the Shawsheen River, from Dascomb Road, Andover to confluence with Shawsheen River, Tewksbury.	0.90	Miles	Chloride	
Vine Brook	MA83-06	Headwaters (southeast of Granny Hill) near Grant Street, Lexington to confluence with Shawsheen River, Bedford (through Butterfield Pond formerly segment MA83003).	6.80	Miles	Dissolved Oxygen	
					Turbidity	
Webb Brook	MA83-22	Headwaters north of Webb Brook Road, Billerica to confluence with Shawsheen River, Billerica.	1.60	Miles	Escherichia Coli (E. Coli)	
South Coastal						
Aaron River	MA94-28	Outlet Aaron River Reservoir, Cohasset to flow control structure near Beechwood Street (confluence with Bound Brook), Cohasset.	1.00	Miles	(Fish Passage Barrier*)	
					(Non-Native Aquatic Plants*)	
					Algae	
Billington Sea	MA94007	Plymouth.	263.00	Acres	Algae	
					Turbidity	
Bound Brook	MA94-18	Headwaters, flow control structure near Beechwood Street, Cohasset to mouth at outlet Hunters Pond (confluence with The Gulf), Scituate.	2.10	Miles	(Fish Passage Barrier*)	
					Turbidity	

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Category 5 waters listed alphabetically by major watershed
The 303(d) List – "Waters requiring a TMDL"

Water Body	Segment ID	Description	Size	Units	Impairment	EPA TMDL No.
Crossman Pond	MA94032	Kingston.	13.00	Acres	Aquatic Plants (Macrophytes)	
Cushing Brook	MA94-40	Headwaters (perennial portion), east of Pleasant Street, Rockland to mouth at confluence with Drinkwater River, Hanover.	3.10	Miles	Escherichia Coli (E. Coli)	
Drinkwater River	MA94-21	From Whiting Street, Hanover to mouth at inlet Factory Pond, Hanover (through Forge Pond, formerly segment MA94037).	3.50	Miles	(Debris*)	
					(Non-Native Aquatic Plants*)	
					(Trash*)	
					Algae	
					Chlorophyll-a	
					Dissolved Oxygen	
					Dissolved Oxygen Supersaturation	
					Escherichia Coli (E. Coli)	61724
					Fecal Coliform	61724
					Mercury in Fish Tissue	
					Phosphorus, Total	
					Transparency / Clarity	
Factory Pond	MA94175	Hanson/Hanover.	51.00	Acres	Mercury in Fish Tissue	
Foundry Pond	MA94038	Kingston.	7.00	Acres	Turbidity	
French Stream	MA94-03	Headwaters on the southeast side of the South Weymouth Naval Air Station, Rockland to mouth at confluence with Drinkwater River, Hanover (excluding the approximately 0.3 mile through Studleys Pond).	5.80	Miles	Dissolved Oxygen	
					Escherichia Coli (E. Coli)	61718
					Fecal Coliform	61718
					Fish Bioassessments	
					Phosphorus, Total	
					Whole Effluent Toxicity (WET)	
Furnace Pond	MA94043	Pembroke.	103.00	Acres	Dissolved Oxygen	
Green Harbor River	MA94-10	Headwaters, outlet Black Mountain Pond, Marshfield to the tidegate at Route 139, Marshfield.	5.70	Miles	(Fish Passage Barrier*)	
					(Flow Regime Modification*)	
					Algae	
					Turbidity	
Indian Head Pond	MA94071	Hanson.	120.00	Acres	Harmful Algal Blooms	
Indian Head River	MA94-04	Headwaters, outlet Factory Pond, Hanover/Hanson to Curtis Crossing Dam (also called Ludhams Ford Dam (NATID: MA00428)) west of Elm Street, Hanover/Pembroke.	2.80	Miles	Dissolved Oxygen	
					Escherichia Coli (E. Coli)	
					Mercury in Fish Tissue	
					Phosphorus, Total	

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Category 5 waters listed alphabetically by major watershed
The 303(d) List – "Waters requiring a TMDL"

Water Body	Segment ID	Description	Size	Units	Impairment	EPA TMDL No.
Indian Head River	MA94-22	From Curtis Crossing Dam (also called Ludhams Ford Dam (NATID: MA00428)) west of Elm Street, Hanover/Pembroke to mouth at confluence with Herring Brook, (forming headwaters of North River) Hanover/Pembroke.	0.90	Miles	Mercury in Fish Tissue	
Jones River	MA94-12	Headwaters, outlet Silver Lake, Kingston to former dam (NATID: MA00396) near Wapping Road, Kingston.	4.10	Miles	(Dewatering*)	
					(Fish Passage Barrier*)	
					Algae	
					Aquatic Plants (Macrophytes)	
					Dissolved Oxygen	
					Turbidity	
Jones River	MA94-13	From former dam (NATID: MA00396) near Wapping Road, Kingston to dam (NATID: MA00395) at Elm Street, Kingston.	0.90	Miles	(Dewatering*)	
					Algae	
					Aquatic Plants (Macrophytes)	
					Dissolved Oxygen	
					Turbidity	
Lily Pond	MA94179	Cohasset.	50.00	Acres	(Fish Passage Barrier*)	
					(Non-Native Aquatic Plants*)	
					Transparency / Clarity	
Longwater Brook	MA94-39	Headwaters, south of Route 3, Norwell to mouth at confluence with Drinkwater River, Hanover.	2.80	Miles	Escherichia Coli (E. Coli)	
Musquashcut Pond	MA94-33	Scituate (formerly reported as MA94105).	0.11	Square Miles	(Flow Regime Modification*)	
					Algae	
					Chlorophyll-a	
					Dissolved Oxygen Supersaturation	
					Fecal Coliform	61713
					Phosphorus, Total	
North River	MA94-05	Headwaters, confluence of Indian Head River and Herring Brook, Hanover/Pembroke to Route 3A, Marshfield/Scituate.	0.30	Square Miles	Fecal Coliform	61725
					Mercury in Fish Tissue	
Old Oaken Bucket Pond	MA94113	Scituate.	9.00	Acres	(Non-Native Aquatic Plants*)	
					Phosphorus, Total	
Oldham Pond	MA94114	Pembroke/Hanson.	232.00	Acres	(Non-Native Aquatic Plants*)	
					Harmful Algal Blooms	
Plymouth Harbor	MA94-16	The waters south of a line drawn from the tip of Plymouth Beach to High Cliff, Plymouth.	2.53	Square Miles	Fecal Coliform	61737
					Nutrient/Eutrophication Biological Indicators	

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Category 5 waters listed alphabetically by major watershed
The 303(d) List – "Waters requiring a TMDL"

Water Body	Segment ID	Description	Size	Units	Impairment	EPA TMDL No.
Russell Millpond	MA94132	Plymouth.	42.00	Acres	(Fish Passage Barrier*)	
					Algae	
Savery Pond	MA94136	Plymouth.	29.00	Acres	Harmful Algal Blooms	
Studleys Pond	MA94151	Rockland.	25.00	Acres	Fecal Coliform	
Wampatuck Pond	MA94168	Hanson.	63.00	Acres	(Non-Native Aquatic Plants*)	
					Chlorophyll-a	
					Dissolved Oxygen Supersaturation	
					Harmful Algal Blooms	
					Phosphorus, Total	
					Transparency / Clarity	
Taunton						
Ames Long Pond	MA62001	Stoughton/Easton.	88.00	Acres	(Non-Native Aquatic Plants*)	
					Aquatic Plants (Macrophytes)	
					Turbidity	
Big Bearhole Pond	MA62011	Taunton.	38.00	Acres	(Non-Native Aquatic Plants*)	
					Dissolved Oxygen	
Cain Pond	MA62030	Taunton.	3.00	Acres	Dissolved Oxygen	
					Turbidity	
Glue Factory Pond	MA62078	Foxborough (formerly a portion of MA62-39).	7.00	Acres	(Physical substrate habitat alterations*)	
					Benthic Macroinvertebrates	
					Fish Bioassessments	
					Sedimentation/Siltation	
Island Grove Pond	MA62094	Abington.	31.00	Acres	(Non-Native Aquatic Plants*)	
					Algae	
					Turbidity	
Lake Sabbatia	MA62166	Taunton.	265.00	Acres	(Non-Native Aquatic Plants*)	
					Dissolved Oxygen	
Matfield River	MA62-32	Headwaters, confluence Beaver Brook and Salisbury Plain River, East Bridgewater to mouth at confluence with Town River forming headwaters Taunton River, Bridgewater.	6.30	Miles	Algae	
					Benthic Macroinvertebrates	
					Dissolved Oxygen	
					Escherichia Coli (E. Coli)	40308
					Fecal Coliform	40308
					Odor	
					Phosphorus, Total	

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The 303(d) List – "Waters requiring a TMDL"

Water Body	Segment ID	Description	Size	Units	Impairment	EPA TMDL No.
Monponsett Pond, East Basin	MA62218	[East Basin] Halifax.	247.00	Acres	(Non-Native Aquatic Plants*)	
					Chlorophyll-a	
					Harmful Algal Blooms	
					Mercury in Fish Tissue	33880
Monponsett Pond, West Basin	MA62119	[West Basin] Halifax/Hanson.	283.00	Acres	(Non-Native Aquatic Plants*)	
					Chlorophyll-a	
					Harmful Algal Blooms	
					Phosphorus, Total	
					Transparency / Clarity	
Muddy Cove Brook Pond	MA62124	Dighton.	23.00	Acres	Algae	
					Turbidity	
Norton Reservoir	MA62134	Norton/Mansfield.	557.00	Acres	(Non-Native Aquatic Plants*)	
					Algae	
					Dioxin (including 2,3,7,8-TCDD)	
					Pentachlorophenol (PCP)	
					Phosphorus, Total	
					Turbidity	
Reservoir (White Oak Reservoir)	MA62157	Hanson.	13.00	Acres	Nutrient/Eutrophication Biological Indicators	
Robinson Brook	MA62-14	Headwaters, outlet Hersey Pond, Foxborough to mouth at confluence with Rumford River, Mansfield.	1.90	Miles	(Physical substrate habitat alterations*)	
					Benthic Macroinvertebrates	
Rumford River	MA62-62	Headwaters, outlet Gavins Pond, Sharon to inlet Glue Factory Pond, Foxborough (through former segment Vandys Pond MA62112) (formerly part of MA62-39 and MA62-15 (2004)).	2.80	Miles	(Non-Native Aquatic Plants*)	
					(Physical substrate habitat alterations*)	
					Benthic Macroinvertebrates	
					Fish Bioassessments	
					Sedimentation/Siltation	
Rumford River	MA62-63	From outlet Glue Factory Pond, Foxborough to inlet Norton Reservoir, Norton (through former pond segments; Fulton Pond MA62075, Hodges Pond MA62091 and Cabot Pond MA62029) (formerly part of segment MA62-39 and MA62-15 (2004)).	5.10	Miles	(Physical substrate habitat alterations*)	
					Benthic Macroinvertebrates	
					Dioxin (including 2,3,7,8-TCDD)	
					Fish Bioassessments	
					Pentachlorophenol (PCP)	
					Sedimentation/Siltation	

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The 303(d) List – "Waters requiring a TMDL"

Water Body	Segment ID	Description	Size	Units	Impairment	EPA TMDL No.
Salisbury Brook	MA62-08	Headwaters, outlet Cross Pond, Brockton to mouth at confluence with Trout Brook forming headwaters Salibury Plain River, Brockton.	2.50	Miles	(Debris*)	
					(Physical substrate habitat alterations*)	
					(Trash*)	
					Algae	
					Escherichia Coli (E. Coli)	40308
					Fecal Coliform	40308
					Sedimentation/Siltation	
Salisbury Plain River	MA62-05	Headwaters, confluence of Trout and Salisbury brooks, Brockton to the Brockton Advanced Water Reclamation Facility (AWRF) discharge (NPDES: MA0101010), Brockton.	2.40	Miles	(Debris*)	
					(Physical substrate habitat alterations*)	
					(Trash*)	
					Dissolved Oxygen	
					Escherichia Coli (E. Coli)	40308
					Fecal Coliform	40308
					Sedimentation/Siltation	
Salisbury Plain River	MA62-06	From the Brockton Advanced Water Reclamation Facility (AWRF) discharge (NPDES: MA0101010), Brockton to mouth at confluence with Beaver Brook forming headwaters Matfield River, East Bridgewater.	2.30	Miles	Algae	
					Benthic Macroinvertebrates	
					Dissolved Oxygen	
					Escherichia Coli (E. Coli)	40308
					Fecal Coliform	40308
					Odor	
					Phosphorus, Total	
					Turbidity	
Sassaquin Pond	MA62232	New Bedford (formerly reported as MA95129).	36.00	Acres	Algae	
					Fecal Coliform	
					Harmful Algal Blooms	
					Odor	
Shumatuscacant River	MA62-33	Headwaters, from wetland northwest of Vineyard Road, Abington to mouth at confluence with Poor Meadow Brook, Hanson (through Hobart Pond formerly segment MA62090) (excluding 0.5 mile through Island Grove Pond MA62094).	8.00	Miles	(Non-Native Aquatic Plants*)	
					(Physical substrate habitat alterations*)	
					Dissolved Oxygen	
					Fecal Coliform	40308
					Sedimentation/Siltation	
Stetson Pond	MA62182	Pembroke.	88.00	Acres	(Non-Native Aquatic Plants*)	
					Dissolved Oxygen	
					Harmful Algal Blooms	
					Phosphorus, Total	
Taunton River	MA62-01	Headwaters, confluence of Town and Matfield rivers, Bridgewater to Route 24 bridge, Taunton/Raynham.	19.50	Miles	Escherichia Coli (E. Coli)	

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The 303(d) List – "Waters requiring a TMDL"

Water Body	Segment ID	Description	Size	Units	Impairment	EPA TMDL No.
Taunton River	MA62-03	From Berkley Bridge, Dighton/Berkley to confluence with Assonet River at a line from Sandy Point, Somerset northeasterly to the southwestern tip of Assonet Neck, Berkley.	0.92	Square Miles	Dissolved Oxygen	
					Fecal Coliform	40310
Taunton River	MA62-04	From confluence with Assonet River at a line from Sandy Point, Somerset northeasterly to the southwestern tip of Assonet Neck, Berkley to mouth just upstream of the Braga Bridge, Somerset/Fall River.	2.60	Square Miles	Dissolved Oxygen	
					Enterococcus	40310
					Fecal Coliform	40310
					Fish Bioassessments	
Trout Brook	MA62-07	Headwaters, perennial portion, northeast of Argyle Avenue and west of Conrail Line, Avon to mouth at confluence with Salisbury Brook forming headwaters Salisbury Plain River, Brockton.	3.40	Miles	Dissolved Oxygen	
					Escherichia Coli (E. Coli)	40308
					Fecal Coliform	40308
Unnamed Tributary	MA62-42	Headwaters, south of Slab Bridge Road (in Cedar Swamp portion of Freetown-Fall River State Forest), Freetown to mouth at confluence with Cedar Swamp River, Lakeville.	4.00	Miles	Benthic Macroinvertebrates	
					Fish Bioassessments	
Unnamed Tributary	MA62-48	Channel from Taunton Municipal Lighting Plant, Taunton to mouth at confluence with the Taunton River, Taunton.	0.002	Square Miles	(Flow Regime Modification*)	
					(Physical substrate habitat alterations*)	
					Benthic Macroinvertebrates	
					Fish Bioassessments	
					Temperature	
Wading River	MA62-47	Headwaters, outlet Furnace Lake, Foxborough to Balcolm Street, Mansfield (through former pond segments; Robinson Pond MA62163 and Blakes Pond MA62221) (formerly part of segment MA62-17) (1987 Wrentham quad depicts river incorrectly) .	5.00	Miles	Algae	
					Dissolved Oxygen	
Watson Pond	MA62205	Taunton.	78.00	Acres	(Non-Native Aquatic Plants*)	
					Algae	
					Dissolved Oxygen	
					Enterococcus	
					Phosphorus, Total	
					Transparency / Clarity	
Woods Pond	MA62220	Middleborough.	51.00	Acres	(Non-Native Aquatic Plants*)	
					Turbidity	

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The 303(d) List – "Waters requiring a TMDL"

Water Body	Segment ID	Description	Size	Units	Impairment	EPA TMDL No.
Ten Mile						
Bungay River	MA52-06	Headwaters, outlet Greenwood Lake, North Attleborough to confluence with Ten Mile River, Attleboro.	5.10	Miles	Benthic Macroinvertebrates	
					Dissolved Oxygen	
Cargill Pond	MA52004	Plainville.	2.00	Acres	Turbidity	
Central Pond	MA52006	Seekonk,MA/Pawtucket,RI/Providence,RI (size indicates portion in Massachusetts).	6.00	Acres	Algae	
					Aquatic Plants (Macrophytes)	
					Dissolved Oxygen	
					Dissolved Oxygen Supersaturation	
					Organic Enrichment (Sewage) Biological Indicators	
					Phosphorus, Total	
Coles Brook	MA52-11	Headwaters, Grassie Swamp west of Allens Lane, Rehoboth to inlet Central Pond, Seekonk.	4.20	Miles	(Dewatering*)	
					Dissolved Oxygen	
					Escherichia Coli (E. Coli)	
Falls Pond, North Basin	MA52013	North Attleborough.	54.00	Acres	Algae	
					Dissolved Oxygen	
					Nutrient/Eutrophication Biological Indicators	
					Phosphorus, Total	
Fourmile Brook	MA52-10	Headwaters, outlet Manchester Pond Reservoir, Attleboro to inlet Orrs Pond, Attleboro.	1.00	Miles	Sedimentation/Siltation	
James V. Turner Reservoir	MA52022	Seekonk,MA/E. Providence,RI (size indicates portion in Massachusetts).	28.00	Acres	Algae	
					Aquatic Plants (Macrophytes)	
					Dissolved Oxygen Supersaturation	
					Harmful Algal Blooms	
					Organic Enrichment (Sewage) Biological Indicators	
					Phosphorus, Total	
Lake Como	MA52010	Attleboro.	5.00	Acres	(Non-Native Aquatic Plants*)	
					Algae	
					Turbidity	
Plain Street Pond	MA52032	Mansfield.	12.00	Acres	(Non-Native Aquatic Plants*)	
					Algae	
Scotts Brook	MA52-09	Headwaters, north of High Street, North Attleborough to confluence with Ten Mile River, North Attleborough.	2.10	Miles	(Dewatering*)	
					Escherichia Coli (E. Coli)	
Sevenmile River	MA52-07	Headwaters, outlet Hoppin Hill Reservoir, North Attleborough to inlet Orrs Pond, Attleboro (thru Luther Reservoir formerly segment MA52025).	3.20	Miles	Escherichia Coli (E. Coli)	

* TMDL not required (Non-pollutant)

Category 5 waters listed alphabetically by major watershed
The 303(d) List – "Waters requiring a TMDL"

Water Body	Segment ID	Description	Size	Units	Impairment	EPA TMDL No.
Sevenmile River	MA52-08	Outlet Orrs Pond, Attleboro to confluence with Ten Mile River, Pawtucket, Rhode Island.	3.40	Miles	Escherichia Coli (E. Coli)	
					Fecal Coliform	
Speedway Brook	MA52-05	(locally known as Thacher Brook) Headwaters, Attleboro to inlet of Dodgeville Pond (a Ten Mile River impoundment), Attleboro.	0.90	Miles	(Alteration in stream-side or littoral vegetative covers*)	
					(Habitat Assessment*)	
					Benthic Macroinvertebrates	
					Dissolved Oxygen	
					Escherichia Coli (E. Coli)	
					Fecal Coliform	
					Metals	
					Sedimentation/Siltation	
Ten Mile River	MA52-01	Headwaters, outlet Cargill Pond, Plainville to West Bacon Street, Plainville (through Fuller Pond formerly segment MA52016).	1.50	Miles	Metals	
Ten Mile River	MA52-02	West Bacon Street, Plainville to North Attleborough WWTP discharge (NPDES: MA0101036), Attleboro (excluding 0.9 miles thru Falls Pond segment MA52013, but including thru Wetherells Pond formerly segment MA52041) (HQW qualifier applies to portion of river upstream of Whiting Pond Dam (NATID: MA00859)).	4.10	Miles	Escherichia Coli (E. Coli)	
					Fecal Coliform	
					Metals	
Ten Mile River	MA52-03	North Attleborough WWTP discharge (NPDES: MA0101036), Attleboro to the MA/RI border near Central Avenue, Seekonk, MA/Pawtucket, RI (thru former segments; Farmers Pond MA52015, Mechanics Pond MA52027, Dodgeville Pond MA52011, and Hebronville Pond MA52020).	9.10	Miles	(Aquatic Plants (Macrophytes)*)	
					Algae	
					Benthic Macroinvertebrates	
					Chlordane in Fish Tissue	
					Dissolved Oxygen	
					Escherichia Coli (E. Coli)	
					Fecal Coliform	
					Nutrient/Eutrophication Biological Indicators	
					Organic Enrichment (Sewage) Biological Indicators	
					Phosphorus, Total	
					Unspecified Metals in Sediment	
Westfield						
Ashley Brook	MA32-37	Headwaters (perennial portion), south of Hillside Road, Westfield to mouth at confluence with Jacks Brook, Westfield.	0.50	Miles	Escherichia Coli (E. Coli)	

Category 5 waters listed alphabetically by major watershed
The 303(d) List – "Waters requiring a TMDL"

Water Body	Segment ID	Description	Size	Units	Impairment	EPA TMDL No.
Buck Pond	MA32012	Westfield.	23.00	Acres	(Non-Native Aquatic Plants*)	
					Chlorophyll-a	
					Dissolved Oxygen	
Congamond Lakes	MA32021	[Middle Basin] Southwick.	279.00	Acres	(Eurasian Water Milfoil, Myriophyllum spicatum*)	
					(Non-Native Fish/Shellfish/Zooplankton*)	
					Dissolved Oxygen	
					Harmful Algal Blooms	
Congamond Lakes	MA32022	[North Basin] Southwick.	46.00	Acres	(Eurasian Water Milfoil, Myriophyllum spicatum*)	
					Dissolved Oxygen	
Congamond Lakes	MA32023	[South Basin] Southwick.	144.00	Acres	(Eurasian Water Milfoil, Myriophyllum spicatum*)	
					Dissolved Oxygen	
					Nutrient/Eutrophication Biological Indicators	
Dead Branch (Brook)	MA32-63	Headwaters, outlet Damon Pond, Chesterfield to mouth at confluence with Westfield River (Knightville Reservoir), Huntington.	8.50	Miles	Lack of a coldwater assemblage	
Horse Pond	MA32043	Westfield.	24.00	Acres	(Eurasian Water Milfoil, Myriophyllum spicatum*)	
					(Non-Native Aquatic Plants*)	
					Chlorophyll-a	
					Dissolved Oxygen	
Jacks Brook	MA32-39	Headwaters (perennial portion), east of Fowler Road, Westfield to inlet of Crane Pond/Little River, Westfield.	2.40	Miles	Escherichia Coli (E. Coli)	
Little River	MA32-08	Horton's Bridge, Westfield to confluence with Westfield River, Westfield.	4.90	Miles	Escherichia Coli (E. Coli)	
					Fecal Coliform	
Little River	MA32-16	Headwaters, confluence of Watts and Wards streams, Ringville (locality in Worthington), to mouth at confluence with Westfield River, Huntington.	5.70	Miles	Temperature	
Little River	MA32-36	From Springfield Water Works Intake Dam (NATID: MA00708) northwest of Gorge Road, Russell to Horton's Bridge, Westfield (formerly part of segment MA32-26).	5.80	Miles	Combined Biota/Habitat Bioassessments	
					Escherichia Coli (E. Coli)	
Middle Branch Westfield River	MA32-65	Source in Peru State Wildlife Management Area, north of Pierce Road, Peru to Kinnebrook Road, Dayville (locality in Chester).	13.70	Miles	Temperature	
Miller Brook	MA32-27	Source, outlet small unnamed pond in Robinson State Park, north of North Street, Agawam to mouth at confluence with Westfield River, Agawam.	0.60	Miles	Escherichia Coli (E. Coli)	

* TMDL not required (Non-pollutant)

Category 5 waters listed alphabetically by major watershed
The 303(d) List – "Waters requiring a TMDL"

Water Body	Segment ID	Description	Size	Units	Impairment	EPA TMDL No.
Moose Meadow Brook	MA32-41	Outlet Westfield Reservoir to mouth at confluence with Westfield River, Westfield (formerly part of segment MA32-23).	4.80	Miles	Escherichia Coli (E. Coli)	
					Fecal Coliform	
Pequot Pond	MA32055	Westfield/Southampton.	155.00	Acres	(Eurasian Water Milfoil, Myriophyllum spicatum*)	
					(Non-Native Aquatic Plants*)	
					Chlorophyll-a	
					Dissolved Oxygen	
					Enterococcus	
					Phosphorus, Total	
Potash Brook	MA32-22	Source, outlet Dunlap Pond, Blandford to mouth at confluence with Westfield River, Village of Woronoco, Russell.	5.20	Miles	Escherichia Coli (E. Coli)	
Powdermill Brook	MA32-09	Headwaters, perennial portion northeast of Montgomery Road (west of Grindstone Mountain), Westfield to mouth at confluence with Westfield River, Westfield.	8.40	Miles	Algae	
					Escherichia Coli (E. Coli)	
					Sedimentation/Siltation	
					Turbidity	
West Falls Branch	MA32-13	Headwaters (perennial portion), at confluence with Bronson Brook, northeast at the intersection of Dingle Road and Route 143, Worthington to mouth at confluence with Westfield River near the village of West Chesterfield, Chesterfield. (formerly identified by the Massachusetts Stream Classification Program as West Branch).	2.90	Miles	Temperature	
Westfield River	MA32-04	Headwaters, confluence of Drowned Land Brook and Center Brook, Savoy to confluence with Middle Branch Westfield River, Huntington.	33.10	Miles	Enterococcus	
					Temperature	
White Brook	MA32-28	Source just north of Route 147, Agawam to mouth at confluence with Westfield River, Agawam.	0.90	Miles	Escherichia Coli (E. Coli)	
Windsor Pond	MA32076	Windsor.	46.00	Acres	(Eurasian Water Milfoil, Myriophyllum spicatum*)	
					Dissolved Oxygen	
					Mercury in Fish Tissue	42410

* TMDL not required (Non-pollutant)

Appendix 1
Assessment units and integrated list categories presented alphabetically by major watershed

Water Body	Segment ID	Description	Size	Units	Category
Blackstone					
Aldrich Pond	MA51002	Sutton.	2.00	Acres	5
Arcade Pond	MA51003	Northbridge.	20.00	Acres	5
Arnolds Brook	MA51-32	Headwaters, perennial portion, from outlet of unnamed pond at Whitehall Way, Bellingham to mouth at confluence with Peters River, Bellingham.	1.70	Miles	5
Bacon Brook	MA51-41	Outlet Ironstone Reservoir, Uxbridge to mouth at confluence with the Blackstone River, Uxbridge.	0.60	Miles	2
Beaver Brook	MA51-07	Outlet of small unnamed impoundment north of Beth Israel School and Flag Street School, Worcester to mouth at confluence with Middle River, Worcester (includes underground portion).	2.90	Miles	5
Bell Pond	MA51009	Worcester.	10.00	Acres	3
Blackstone River	MA51-03	Confluence of Middle River and Mill Brook (downstream of the railroad spur bridge west of Tobias Boland Way), Worcester to Fisherville Pond Dam (NATID: MA00577), Grafton (through a portion of Fisherville Pond formerly segment MA51048).	10.40	Miles	5
Blackstone River	MA51-04	From Fisherville Pond Dam (NATID: MA00577), Grafton to Rice City Pond Dam (NATID: MA00935), Uxbridge (through Riverdale Impoundment formerly segment MA51136 and Rice City Pond formerly segment MA51131).	8.80	Miles	5
Blackstone River	MA51-05	From outlet Rice City Pond Dam (NATID: MA00935), Uxbridge to the most downstream railroad trestle crossing, Millville.	9.10	Miles	5
Blackstone River	MA51-06	From the most downstream railroad trestle crossing, Millville to the Rhode Island border west of Route 122, Blackstone.	3.80	Miles	5
Brierly Pond	MA51010	Millbury.	18.00	Acres	4c
Brooklawn Parkway Pond	MA51195	Shrewsbury.	2.00	Acres	3
Burncoat Park Pond	MA51012	Worcester.	6.00	Acres	5
Carpenter Reservoir	MA51015	Northbridge.	79.00	Acres	3
Cedar Swamp Brook	MA51-33	Headwaters, outlet Cedar Swamp, Uxbridge to mouth at confluence with Chockalog River, Douglas.	0.80	Miles	5
Center Brook	MA51-34	From outlet Mill Pond, Upton to mouth at confluence with West River, Upton.	2.80	Miles	2
Chase Pond	MA51017	Douglas.	11.00	Acres	3
Chockalog Pond	MA51018	Uxbridge.	11.00	Acres	3
Clark Reservoir	MA51022	Sutton.	30.00	Acres	3
Coal Mine Brook	MA51-27	Headwaters, perennial portion, west of Plantation Street, Worcester to mouth at inlet Lake Quinsigamond, Worcester.	0.40	Miles	5
Coes Reservoir	MA51024	Worcester.	87.00	Acres	4c
Cold Spring Brook	MA51-42	Headwaters, perennial portion north of Route 16, Uxbridge to mouth at inlet Rivulet Pond, Uxbridge.	1.10	Miles	2
Cook Allen Brook	MA51-28	Headwaters, outlet Reservoir No. 5, Sutton to mouth at inlet Whitins Pond, Northbridge (excluding approximately 0.2 mile through Reservoir No. 4, segment MA51128).	2.00	Miles	5
Crane Pond	MA51030	Blackstone.	1.00	Acres	3

Appendix 1
Assessment units and integrated list categories presented alphabetically by major watershed

Water Body	Segment ID	Description	Size	Units	Category
Cronin Brook	MA51-45	Headwaters, perennial portion west of Potter Hill Road, Grafton to mouth at confluence with the Blackstone River, Grafton.	2.60	Miles	5
Crystal Lake	MA51031	Douglas.	96.00	Acres	3
Dark Brook	MA51-16	Headwaters, outlet Eddy Pond, Auburn to mouth at confluence with Kettle Brook, Auburn (through Auburn Pond formerly segment MA51004).	2.50	Miles	5
Dark Brook	MA51-49	Headwaters, outlet Dark Brook Reservoir, Auburn to mouth at inlet Stoneville Pond (east of Wallace Avenue), Auburn.	1.30	Miles	2
Dark Brook Pond	MA51034	Sutton.	18.00	Acres	3
Dark Brook Reservoir	MA51035	[South Basin] Auburn.	58.00	Acres	4c
Dark Brook Reservoir	MA51036	[North Basin] Auburn.	171.00	Acres	4c
Doctors Pond	MA51194	Uxbridge.	1.00	Acres	3
Dorothy Pond	MA51039	Millbury.	133.00	Acres	4a
Dudley Pond	MA51041	Douglas.	8.00	Acres	3
Eddy Pond	MA51043	Auburn.	103.00	Acres	4a
Emerson Brook	MA51-29	Headwaters, outlet Lee Pond, Uxbridge to mouth at confluence with the Blackstone River, Uxbridge.	1.90	Miles	2
Fish Pond	MA51047	Northbridge.	8.00	Acres	5
Flint Pond	MA51050	[North Basin] Shrewsbury.	93.00	Acres	4a
Flint Pond	MA51188	[South Basin] Shrewsbury/Grafton/Worcester.	173.00	Acres	4a
Fox Brook	MA51-39	Headwaters, perennial portion, northeast of Thayer Street, Millville to mouth at confluence with the Blackstone River, Blackstone (excluding 0.1 mile through Crane Pond segment MA51030).	3.40	Miles	5
Girard Pond	MA51053	Sutton.	2.00	Acres	4c
Green Hill Pond	MA51056	Worcester.	29.00	Acres	4a
Greene Brook	MA51-30	Headwaters, perennial portion, north of Linden Street, Douglas to mouth at confluence with Chockalog River, Douglas.	1.60	Miles	3
Hales Pond	MA51057	Wrentham.	4.00	Acres	3
Hathaway Pond	MA51059	Millbury/Sutton.	8.00	Acres	3
Hayes Pond	MA51060	Grafton.	5.00	Acres	5
Holden Reservoir 1	MA51063	Holden.	129.00	Acres	3
Holden Reservoir 2	MA51064	Holden.	51.00	Acres	3
Houghton Pond	MA51067	Uxbridge.	2.00	Acres	3
Howe Pond	MA51069	Millbury.	4.00	Acres	3
Howe Reservoirs	MA51070	[East Basin] Millbury.	2.00	Acres	4c
Howe Reservoirs	MA51071	[West Basin] Millbury.	7.00	Acres	4a
Hunt Pond	MA51072	Douglas.	2.00	Acres	3
Indian Lake	MA51073	Worcester.	187.00	Acres	4a
Ironstone Reservoir	MA51074	Uxbridge.	28.00	Acres	4c
Jenks Reservoir	MA51075	Bellingham.	26.00	Acres	4c
Joels Pond	MA51076	Uxbridge.	11.00	Acres	3
Joes Rock Pond	MA51077	Wrentham.	12.00	Acres	3

Appendix 1
Assessment units and integrated list categories presented alphabetically by major watershed

Water Body	Segment ID	Description	Size	Units	Category
Jordan Pond	MA51078	Shrewsbury.	18.00	Acres	4a
Kettle Brook	MA51-01	Outlet Kettle Brook Reservoir #1, Leicester to inlet Leesville Pond, Auburn (excluding the approximately 0.4 miles through Waite Pond segment MA51170) (through former segments: City Pond MA51021, Smiths Pond MA51156, and Stoneville Pond MA51160).	7.00	Miles	5
Kettle Brook	MA51-19	Outlet Kettle Brook Reservoir #4, Paxton, to inlet Kettle Brook Reservoir #1, Leicester (excluding approximately 0.8 mile through Kettle Brook Reservoir #3 segment MA51081 and approximately 0.5 mile through Kettle Brook Reservoir #2 segment MA51080).	1.90	Miles	2
Kettle Brook Reservoir No. 1	MA51079	Leicester.	11.00	Acres	3
Kettle Brook Reservoir No. 2	MA51080	Leicester.	29.00	Acres	3
Kettle Brook Reservoir No. 3	MA51081	Paxton/Leicester.	36.00	Acres	3
Kettle Brook Reservoir No. 4	MA51082	Paxton.	114.00	Acres	3
Lake Hiawatha	MA51062	Bellingham/Blackstone.	58.00	Acres	3
Lake Quinsigamond	MA51125	Shrewsbury/Worcester.	474.00	Acres	5
Lake Ripple	MA51135	Grafton.	47.00	Acres	5
Laurel Brook	MA51-23	Headwaters, perennial portion, north of Yew Street, Douglas to mouth at confluence with Scadden Brook near the outlet of Sawmill Pond, Uxbridge (through Bazely Pond formerly segment MA51008).	3.30	Miles	2
Leesville Pond	MA51087	Auburn/Worcester.	34.00	Acres	4a
Lynde Brook Reservoir	MA51090	Leicester.	130.00	Acres	3
Manchaug Pond	MA51091	Douglas/Sutton.	364.00	Acres	5
Marble Pond	MA51093	Sutton.	8.00	Acres	5
Martin Street Pond	MA51095	Douglas.	3.00	Acres	3
Merrill Pond No. 3	MA51098	Sutton.	13.00	Acres	3
Merrill Pond No. 4	MA51099	Sutton.	20.00	Acres	3
Middle River	MA51-02	Headwaters, outlet Coes Pond, Worcester to confluence with the unnamed tributary locally known as "Mill Brook" (downstream of the railroad spur bridge west of Tobias Boland Way), Worcester (through Middle River Pond formerly segment MA51101).	3.40	Miles	5
Mill Pond	MA51104	Upton.	10.00	Acres	4c
Mill River	MA51-35	Headwaters, outlet North Pond, Milford/Upton to Mendon/Blackstone corporate boundary (through former segments Fiske Millpond MA51049, Mill Pond MA51102, Hopedale Pond MA51065 and Spindleville Pond MA51158) (formerly part of segment MA51-10).	11.80	Miles	5
Mill River	MA51-36	From Mendon/Blackstone corporate boundary to 1000 feet upstream of the Rhode Island border, Blackstone (through former segment Harris Pond MA51058) (formerly part of segment MA51-10) (the lower 1000 feet represents "All Interstate surface waters that are public water supply in Rhode Island from 1000 feet upstream of the State Line" which are designated as Class A/PWS/ORW in 314CMR4.00, January 2007).	4.10	Miles	5
Miscoe Brook	MA51-21	Headwaters, perennial portion, east of Adams Road, Grafton to mouth at inlet Silver Lake, Grafton (through Cider Millpond formerly segment MA51019).	1.90	Miles	2

Appendix 1
Assessment units and integrated list categories presented alphabetically by major watershed

Water Body	Segment ID	Description	Size	Units	Category
Miscoe Brook	MA51-37	Headwaters, perennial portion, from the Mendon/Upton/Northbridge corporate boundaries to mouth at confluence with Taft Pond Brook, Northbridge/Upton.	0.70	Miles	2
Miscoe Lake	MA51106	Wrentham (size indicates portion in Massachusetts) (entire portion in MA is from 1000 feet upstream of the state line, these interstate surface waters are public water supply in Rhode Island and designated in MA as Class A/PWS/ORW).	5.00	Acres	4c
Muddy Brook	MA51-40	Headwaters, outlet small unnamed pond north of Nipmuc Regional High School, Mendon to mouth at confluence with Mill River, Mendon.	5.10	Miles	5
Mumford River	MA51-13	Headwaters, outlet Tuckers Pond, Sutton to Douglas WWTP discharge (NPDES: MA0101095), Douglas.	4.20	Miles	2
Mumford River	MA51-14	From Douglas WWTP discharge (NPDES: MA0101095), Douglas to mouth at confluence with Blackstone River, Uxbridge (through former segments: Gilboa Pond MA51052, Lackey Pond MA51083, Meadow Pond MA51193, Linwood Pond MA51088, Whitin Pond MA51178, and Caprons Pond MA51014).	9.40	Miles	5
Newton Pond	MA51110	Shrewsbury/Boylston.	54.00	Acres	4c
Nipmuck Pond	MA51111	Mendon.	85.00	Acres	3
North Pond	MA51112	Hopkinton/Milford.	231.00	Acres	4c
Number 1 Pond	MA51114	Sutton.	9.00	Acres	5
Number 2 Pond	MA51115	Sutton/Oxford.	9.00	Acres	3
Peabody Pond	MA51119	Uxbridge.	6.00	Acres	3
Peters River	MA51-18	Headwaters, outlet Silver Lake, Bellingham to Rhode Island border east of Route 126, Bellingham.	4.00	Miles	5
Pondville Pond	MA51120	Auburn/Millbury.	36.00	Acres	4a
Poor Farm Brook	MA51-17	Headwaters, West Boylston to the inlet of Shirley Street Pond, Shrewsbury (through City Farm Pond formerly segment MA51020).	3.60	Miles	5
Pout Pond	MA51121	Uxbridge.	9.00	Acres	3
Pout Pond	MA51122	Boylston.	14.00	Acres	3
Pratt Pond	MA51123	Upton.	40.00	Acres	4c
Pratts Pond	MA51124	Grafton.	4.00	Acres	3
Quinsigamond River	MA51-09	Headwaters, outlet Flint Pond, Grafton to confluence with the Blackstone River in Fisherville Pond, Grafton (excluding approximately 0.5 mile through Lake Ripple segment MA51135) (segment includes all of Hovey Pond formerly segment MA51068 and a portion of Fisherville Pond formerly segment MA51048).	5.20	Miles	4c
Ramshorn Pond	MA51126	Sutton/Millbury.	131.00	Acres	3
Reservoir No. 4	MA51128	Sutton.	10.00	Acres	3
Riley Pond	MA51134	Northbridge.	7.00	Acres	5
Riverlin Street Pond	MA51137	Millbury.	2.00	Acres	4c
Rivulet Pond	MA51138	Uxbridge.	4.00	Acres	4c
Scadden Brook	MA51-24	Headwaters, perennial portion, north of Davis Street, Douglas to mouth at inlet Lee Pond, Uxbridge (through Lee Reservoir formerly segment MA51086).	2.40	Miles	2
Schoolhouse Pond	MA51144	Sutton.	7.00	Acres	3
Sewall Brook	MA51-44	Headwaters, west of Baypath Drive, Boylston to inlet Sewall Pond, Boylston.	2.80	Miles	2
Sewall Pond	MA51191	Boylston.	13.00	Acres	3

Appendix 1
Assessment units and integrated list categories presented alphabetically by major watershed

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Shirley Street Pond	MA51196	Shrewsbury.	19.00	Acres	4a
Sibley Reservoir	MA51148	Sutton.	25.00	Acres	4c
Silver Hill Pond	MA51149	Milford.	6.00	Acres	3
Silver Lake	MA51150	Bellingham.	42.00	Acres	4c
Silver Lake	MA51151	Grafton.	25.00	Acres	4c
Singletary Brook	MA51-31	Headwaters, outlet Singletary Pond, Millbury to mouth at confluence with the Blackstone River, Millbury (excluding the approximately 0.4 miles through Brierly Pond segment MA51010).	1.50	Miles	5
Singletary Pond	MA51152	Sutton/Millbury.	341.00	Acres	4c
Slaughterhouse Pond	MA51153	Millbury/Sutton.	10.00	Acres	3
Southwick Pond	MA51157	Leicester/Paxton.	43.00	Acres	4a
Spring Brook	MA51-25	Headwaters, perennial portion, north of Lovell Street, Mendon to mouth at confluence with Muddy Brook, Mendon.	1.90	Miles	2
Stevens Pond	MA51159	Sutton.	85.00	Acres	4c
Stoneville Reservoir	MA51161	Auburn.	60.00	Acres	3
Stump Pond	MA51162	Oxford.	20.00	Acres	3
Sutton Falls	MA51163	Sutton.	11.00	Acres	5
Swans Pond	MA51164	Sutton/Northbridge.	32.00	Acres	4c
Taft Pond	MA51165	Upton.	11.00	Acres	4c
Taft Pond Brook	MA51-26	Headwaters, outlet Taft Pond, Upton to mouth at confluence with West River, Northbridge.	1.20	Miles	2
Tatnuck Brook	MA51-15	From outlet Holden Reservoir #2, Holden to inlet Coes Reservoir, Worcester (through Cook Pond formerly segment MA51027 and Patch Reservoir formerly segment MA51118).	3.30	Miles	5
Tatnuck Brook	MA51-48	Headwaters, south of Brennan Way, Holden to inlet Holden Reservoir 1, Holden.	1.30	Miles	3
Tinker Hill Pond	MA51167	Auburn.	37.00	Acres	4c
Tinkerville Brook	MA51-22	Headwaters, perennial portion, north of Walnut Street, Douglas to Rhode Island border, Douglas.	2.40	Miles	2
Town Farm Pond	MA51168	Sutton.	6.00	Acres	3
Tuckers Pond	MA51169	Sutton.	26.00	Acres	4c
Unnamed Tributary	MA51-08	(Also known as "Mill Brook") Headwaters, outlet Indian Lake, Worcester to mouth at confluence with Middle River (downstream of the railroad spur bridge west of Tobias Boland Way), Worcester (through Salisbury Pond formerly segment MA51142).	5.60	Miles	5
Unnamed Tributary	MA51-20	From the outlet of Leesville Pond, Worcester to the confluence with Middle River, Worcester (through Curtis ponds formerly reported as segments MA51033 and MA51032).	1.40	Miles	5
Unnamed Tributary	MA51-38	Unnamed tributary to Dark Brook, from perennial portion near the Route 90, 290EB, 395SB, 12NB interchange, Auburn to mouth at confluence with the Dark Brook south of Water Street, Auburn (sections culverted).	0.80	Miles	5
Unnamed Tributary	MA51-46	Unnamed Tributary eventually to Tatnuck Brook, headwaters, perennial portion, east of Bailey Road, Holden to mouth at confluence with unnamed tributary to Tatnuck Brook, Holden.	0.30	Miles	2

Appendix 1
Assessment units and integrated list categories presented alphabetically by major watershed

Water Body	Segment ID	Description	Size	Units	Category
Waite Pond	MA51170	Leicester.	49.00	Acres	4a
Wallum Lake	MA51172	Douglas (size indicates portion in Massachusetts excluding approximately 30 acres; these 30 acres represent "All Interstate surface waters that are public water supply in Rhode Island from 1000 feet upstream of the State Line" which are designated as Class A/PWS/ORW in 314CMR4.00, January 2007).	109.00	Acres	2
Warren Brook	MA51-47	Headwaters, west of North Street, Upton to mouth at confluence with West River, Upton.	3.60	Miles	2
Welsh Pond	MA51176	Sutton.	8.00	Acres	5
West Brook	MA51-43	Headwaters, perennial portion west of Route 290 and north of Gulf Street, Shrewsbury to culvert entrance between Baker and Elmo avenues, Shrewsbury (isolated Quinsigamond River tributary) (through Mill Pond formerly segment MA51105).	3.20	Miles	2
West River	MA51-11	Headwaters, outlet Silver Lake, Grafton to Upton WWTP discharge (NPDES: MA0100196), Upton (through Lake Wildwood formerly segment MA51181).	3.70	Miles	5
West River	MA51-12	From Upton WWTP discharge (NPDES: MA0100196), Upton to mouth at confluence with the Blackstone River, Uxbridge (through former segments Harrington Pool MA51197, and West River Pond MA51177).	9.40	Miles	5
Whitin Reservoir	MA51179	Douglas.	342.00	Acres	3
Whitins Pond	MA51180	Northbridge/Sutton.	163.00	Acres	4c
Windle Pond	MA51184	Grafton/Shrewsbury.	4.00	Acres	3
Woodbury Pond	MA51185	Sutton.	5.00	Acres	5
Woolshop Pond	MA51186	Millbury.	5.00	Acres	5
Boston Harbor (Proper)					
Boston Harbor	MA70-01	The area defined by a line from the southerly tip of Deer Island to Boston Lighthouse on Little Brewster Island, then south to Point Allerton; across Hull and West guts; across the mouths of Quincy and Dorchester bays, Boston Inner Harbor and Winthrop Bay (including President Roads and Nantasket Roads).	18.60	Square Miles	5
Boston Inner Harbor	MA70-02	From the Mystic and Chelsea rivers, Chelsea/Boston, to the line between Governors Island and Fort Independence, Boston (East Boston) (including Fort Point, Reserved and Little Mystic channels).	2.56	Square Miles	5
Dorchester Bay	MA70-03	From the mouth of the Neponset River, Boston/Quincy to the line between Head Island and the north side of Thompson Island and the line between the south point of Thompson Island, Boston and Chapel Rocks, Quincy.	3.46	Square Miles	5
Hingham Bay	MA70-06	The area north of the mouth of the Weymouth Fore River extending on the west along the line between Nut Island and the south point of West Head, and on the east side along a line from Prince Head just east of Pig Rock to the mouth of the Weymouth Fore River (midway between Lower Neck and Manot Beach), Quincy.	0.96	Square Miles	5
Hingham Bay	MA70-07	The area defined between Peddocks Island and Windmill Point; from Windmill Point southeast to Bumkin Island; from Bumkin Island southeast to Sunset Point; from Sunset Point across the mouth of the Weir River to Worlds End; from Worlds End across the mouth of Hingham Harbor to Crow Point; from Beach Lane, Hingham across the mouth of the Weymouth Back River to Lower Neck; and from Lower Neck midway across the mouth of the Weymouth Fore River.	4.80	Square Miles	5
Hull Bay	MA70-09	The area defined east of a line from Windmill Point, Hull to Bumkin Island, Hingham and from Bumkin Island to Sunset Point, Hull.	2.48	Square Miles	5

Appendix 1
Assessment units and integrated list categories presented alphabetically by major watershed

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Pleasure Bay	MA70-11	A semi-enclosed bay, the flow restricted through two channels between Castle and Head islands, Boston.	0.22	Square Miles	5
Quincy Bay	MA70-04	From Bromfield Street near the Wollaston Yacht Club, northeast to N42 17.3 W71 00.1, then southeast to Houghs Neck near Sea Street and Peterson Road (formerly referred to as the "Willows"), Quincy.	1.52	Square Miles	5
Quincy Bay	MA70-05	Quincy Bay, north of the class SA waters (segment MA70-04), Quincy to the line between Moon Head and Nut Island, Quincy.	4.41	Square Miles	5
Winthrop Bay	MA70-10	From the tidal flats at Coleridge Street, Boston (East Boston) to a line between Logan International Airport and Point Shirley, Boston/Winthrop.	1.65	Square Miles	5
Boston Harbor: Mystic					
Aberjona River	MA71-01	Source just south of Birch Meadow Drive, Reading to inlet Upper Mystic Lake at Mystic Valley Parkway, Winchester (portion culverted underground). (through former pond segments Judkins Pond MA71021 and Mill Pond MA71031).	9.10	Miles	5
Alewife Brook	MA71-04	Outlet of Little Pond, Belmont to confluence with Mystic River, Arlington/Somerville (portion in Belmont and Cambridge identified as Little River with name changing to Alewife Brook at Arlington corporate boundary).	2.30	Miles	5
Belle Isle Inlet	MA71-14	From tidegate at Bennington Street, Boston/Revere to confluence with Winthrop Bay, Boston/Winthrop.	0.12	Square Miles	5
Bellevue Pond	MA71004	Medford.	2.00	Acres	3
Blacks Nook	MA71005	Cambridge.	2.00	Acres	5
Chelsea River	MA71-06	From confluence with Mill Creek, Chelsea/Revere to confluence with Boston Inner Harbor, Chelsea/East Boston.	0.37	Square Miles	5
Clay Pit Pond	MA71011	Belmont.	12.00	Acres	5
Cummings Brook	MA71-10	Headwaters east of Wright Street, Woburn to confluence with Fowle Brook, Woburn.	2.10	Miles	5
Ell Pond	MA71014	Melrose.	23.00	Acres	5
Fellsmere Pond	MA71016	Malden.	5.00	Acres	5
Hills Pond	MA71018	Arlington.	2.00	Acres	4c
Horn Pond	MA71019	Woburn.	108.00	Acres	5
Little Pond	MA71024	Belmont.	18.00	Acres	5
Lower Mystic Lake	MA71027	Arlington/Medford.	93.00	Acres	5
Malden River	MA71-05	Headwaters south of Exchange Street, Malden to confluence with Mystic River, Everett/Medford.	2.30	Miles	5
Mill Brook	MA71-07	Headwaters south of Massachusetts Avenue, Lexington to inlet of Lower Mystic Lake, Arlington (portions culverted underground).	3.90	Miles	5
Mill Creek	MA71-08	From Route 1, Chelsea/Revere to confluence with Chelsea River, Chelsea/Revere.	0.02	Square Miles	5
Munroe Brook	MA71-15	Headwaters, north of Solomon Pierce Road, Lexington to the mouth at inlet Arlington Reservoir, Lexington (includes culverted portion).	1.80	Miles	5
Mystic River	MA71-02	Outlet Lower Mystic Lake, Arlington/Medford to Amelia Earhart Dam, Somerville/Everett.	5.00	Miles	5
Mystic River	MA71-03	Amelia Earhart Dam, Somerville/Everett to confluence with Boston Inner Harbor, Chelsea/Charlestown (Includes Island End River).	0.49	Square Miles	5

Appendix 1
Assessment units and integrated list categories presented alphabetically by major watershed

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Pond Brook	MA71-16	Headwaters, outlet Horn Pond, Woburn to mouth at inlet Wedge Pond, Winchester.	1.00	Miles	3
Sales Creek	MA71-12	Headwaters near Route 145, Revere to Bennington Street tidegate/confluence with Belle Isle Inlet, Boston/Revere.	0.01	Square Miles	3
Shaker Glen Brook	MA71-11	Headwaters, west of Dix Road Extention, Woburn to confluence with Fowle Brook, Woburn (portion culverted underground).	1.50	Miles	5
Spot Pond	MA71039	Stoneham/Medford.	290.00	Acres	3
Spy Pond	MA71040	Arlington.	98.00	Acres	5
Unnamed Tributary	MA71-13	Unnamed tributary locally known as 'Meetinghouse Brook', from emergence south of Route 16/east of Winthrop Street, Medford to confluence with the Mystic River, Medford. (brook not apparent on 1985 Boston North USGS quad - 2005 orthophotos used to delineate stream).	0.10	Miles	5
Upper Mystic Lake	MA71043	Winchester/Arlington/Medford.	176.00	Acres	5
Wedge Pond	MA71045	Winchester.	23.00	Acres	5
Winn Brook	MA71-09	Headwaters near Juniper Road and the Belmont Hill School, Belmont to confluence with Little Pond, Belmont (portions culverted underground).	1.40	Miles	5
Winter Pond	MA71047	Winchester.	19.00	Acres	5
Boston Harbor: Neponset					
Beaver Brook	MA73-19	Headwaters (perennial portion), near Moose Hill Street, Sharon through Sawmill Pond to mouth at confluence with Massapoag Brook, Sharon.	3.50	Miles	5
Beaver Meadow Brook	MA73-20	Headwaters, outlet of Glenn Echo Pond, Stoughton, to mouth at inlet of Bolivar Pond, Canton.	3.30	Miles	5
Billings Street/East Street Pond	MA73065	Sharon.	2.00	Acres	4c
Blue Hills Reservoir	MA73004	Quincy.	7.00	Acres	3
Bolivar Pond	MA73005	Canton.	20.00	Acres	5
Bubbling Brook	MA73-11	Headwaters (perennial portion), near North Street, Walpole to mouth at inlet Pettee Pond, Walpole/Westwood border.	0.90	Miles	2
Buckmaster Pond	MA73006	Westwood.	34.00	Acres	3
Clark Pond	MA73008	Walpole.	7.00	Acres	4c
Cobbs Pond	MA73009	Walpole.	14.00	Acres	5
East Branch	MA73-05	East Branch Neponset River - Headwaters, outlet of Forge Pond, Canton through East Branch Pond to mouth at confluence with Neponset River, Canton (locally known as Canton River).	2.60	Miles	5
Ellis Pond	MA73018	Norwood.	17.00	Acres	4c
Farrington Pond	MA73040	Stoughton.	3.00	Acres	4c
Flynns Pond	MA73019	Medfield.	7.00	Acres	3
Forge Pond	MA73020	Canton.	19.00	Acres	5
Ganawatte Farm Pond	MA73037	Walpole/Sharon/Foxborough.	29.00	Acres	5
Germany Brook	MA73-15	Headwaters, east of Winter Street, Norwood to inlet of Ellis Pond, Norwood.	2.00	Miles	5
Glen Echo Pond	MA73022	Canton/Stoughton.	16.00	Acres	4c
Gulliver Creek	MA73-30	From confluence Unquity Brook, Milton to confluence Neponset River, Milton (Note: Unquity Brook culverted, confluence not visible on quad).	0.02	Square Miles	5

Appendix 1
Assessment units and integrated list categories presented alphabetically by major watershed

Water Body	Segment ID	Description	Size	Units	Category
Hammer Shop Pond	MA73023	Sharon.	2.00	Acres	3
Hawes Brook	MA73-16	Headwaters, outlet of Ellis Pond, Norwood to mouth at confluence with Neponset River, Norwood.	1.10	Miles	5
Jewells Pond	MA73026	Medfield.	4.00	Acres	4c
Lymans Pond	MA73021	Westwood.	25.00	Acres	3
Massapoag Brook	MA73-21	Headwaters, outlet Hammer Shop Pond, Sharon, through Manns Pond (formerly segment MA73028), Trowel Shop Pond, and Shephard Pond to mouth at inlet of Forge Pond, Canton.	4.20	Miles	5
Massapoag Lake	MA73030	Sharon.	389.00	Acres	4a
Memorial Pond	MA73012	Walpole.	8.00	Acres	5
Mill Brook	MA73-08	From headwaters (perennial portion) north of Hartford Street, Medfield to mouth at inlet of Jewells Pond, Medfield.	2.30	Miles	5
Mill Brook	MA73-12	Source northeast of Ledgewood Drive, Dover to inlet of Pettee Pond, Westwood.	2.90	Miles	2
Mine Brook	MA73-09	Headwaters, outlet of Jewells Pond, Medfield, to the inlet of Turner Pond, Walpole.	3.00	Miles	5
Mother Brook	MA73-28	Headwaters at the Charles River Diversion control structure, Dedham to mouth at confluence with Neponset River, Boston [Reported as MA72-13 until May 3, 2000].	3.70	Miles	5
Neponset Reservoir	MA73034	Foxborough.	312.00	Acres	5
Neponset River	MA73-01	Outlet of Neponset Reservoir, Foxborough to confluence with East Branch, Canton. (through former pond segments Crackrock Pond MA73010 and Bird Pond MA73002).	13.20	Miles	5
Neponset River	MA73-02	Confluence with East Branch, Canton to confluence with Mother Brook, Boston.	7.70	Miles	5
Neponset River	MA73-03	Confluence with Mother Brook, Boston to Milton Lower Falls Dam (Neponset River Baker Chocolate Dam, NAT ID: MA01093), Milton/Boston.	3.70	Miles	5
Neponset River	MA73-04	Milton Lower Falls Dam (Neponset River Baker Chocolate Dam, NAT ID: MA01093), Milton/Boston to mouth at Dorchester Bay, Boston/Quincy.	0.67	Square Miles	5
Pecunit Brook	MA73-25	Headwaters east of Carey Circle and west of Pecunit Street, Canton to mouth at confluence with Neponset River, Canton.	1.80	Miles	4a
Pequid Brook	MA73-22	Headwaters east of York Street, Canton to mouth at inlet of Forge Pond, Canton (excluding the approximately 1.3 miles through Reservoir Pond, segment MA73048).	2.80	Miles	5
Pettee Pond	MA73036	Walpole/Westwood.	10.00	Acres	4a
Pine Tree Brook	MA73-29	Headwaters, outlet of Hillside Pond, Milton through Pope's Pond (formerly segment MA73044) to confluence Neponset River, Milton.	4.60	Miles	5
Pinewood Pond	MA73039	Stoughton.	25.00	Acres	4c
Plantingfield Brook	MA73-23	Headwaters east of Thatcher Street, Westwood, to mouth at confluence with Purgatory Brook, Norwood (portion culverted).	1.90	Miles	5
Ponkapoag Pond	MA73043	Canton/Randolph.	214.00	Acres	4a
Ponkapog Brook	MA73-27	Headwaters, outlet of Ponkapoag Pond, Canton to confluence with Neponset River, Canton.	3.10	Miles	4a
Purgatory Brook	MA73-24	Headwaters east of Farm Lane, Westwood to confluence with Neponset River, Norwood.	5.10	Miles	4a
Reservoir Pond	MA73048	Canton.	251.00	Acres	4a

Appendix 1
Assessment units and integrated list categories presented alphabetically by major watershed

Water Body	Segment ID	Description	Size	Units	Category
Russell Pond	MA73003	Milton.	9.00	Acres	5
School Meadow Brook	MA73-06	Headwaters, outlet of Ganawatte Farm Pond, Walpole to confluence with Neponset River, Walpole.	1.90	Miles	2
Sprague Pond	MA73053	Boston/Dedham.	7.00	Acres	3
Steep Hill Brook	MA73-18	Headwaters, outlet of Pinewood Pond, Stoughton, to mouth at inlet of Bolivar Pond, Canton.	0.90	Miles	5
Town Pond	MA73056	Stoughton.	8.00	Acres	4c
Traphole Brook	MA73-17	Headwaters west of Everett Street, Sharon, to confluence with Neponset River, Sharon.	3.90	Miles	2
Tubwreck Brook	MA73-07	Headwaters - small unnamed pond southeast of Powissett Street, Dover to confluence with Mill Brook just southwest of Dover/Medfield border.	1.60	Miles	2
Turner Pond	MA73058	Walpole.	18.00	Acres	4c
Turners Pond	MA73059	Milton.	11.00	Acres	5
Unnamed Tributary	MA73-10	Headwaters, outlet Turner Pond, Walpole to confluence with Neponset River, Walpole.	0.40	Miles	3
Unnamed Tributary	MA73-14	Headwaters, outlet Willet Pond, Walpole/Norwood, to inlet Ellis Pond, Norwood.	0.40	Miles	3
Unnamed Tributary	MA73-31	Headwaters, outlet of Massapoag Lake, Sharon to mouth at inlet of Hammer Shop Pond, Sharon (not depicted on 1987 Mansfield USGS quad).	0.30	Miles	4a
Unnamed Tributary	MA73-32	From the outlet of Town Pond, Stoughton to mouth at confluence with Steep Hill Brook, Stoughton.	1.00	Miles	5
Unnamed Tributary	MA73-33	Locally known as "Meadow Brook" - From where the underground/culverted stream emerges east of Pleasant Street, Norwood to confluence with Neponset River, Norwood.	0.70	Miles	5
Unnamed Tributary	MA73-34	Headwaters, outlet Clark Pond, Walpole to confluence with Neponset River, Walpole (locally considered part of Spring Brook) (excluding the approximately 0.2 miles through Diamond Pond and the approximately 0.2 miles through Memorial Pond segment MA73012).	0.80	Miles	4c
Unquity Brook	MA73-26	Isolated (urban): Headwaters (perennial portion) near Randolph Avenue, Milton to mouth at confluence with Gulliver Creek, Milton (Note: Confluence not visible on quad, brook culverted underground east of Otis Street/west of Govenor Belcher Lane, Milton).	1.50	Miles	5
Willet Pond	MA73062	Walpole/Westwood/Norwood (includes unnamed tributary at northern end formerly reported as segment MA73-13).	205.00	Acres	4a
Woods Pond	MA73055	Stoughton.	14.00	Acres	4c
Boston Harbor: Weymouth & Weir					
Accord Brook	MA74-16	Headwaters, outlet Accord Pond, Hingham to water supply intake (4131000-02S Accord Brook) south of South Pleasant Street, Hingham.	3.20	Miles	5
Accord Brook	MA74-17	From water supply intake (4131000-02S Accord Brook) south of South Pleasant Street, Hingham to mouth at inlet Triphammer Pond, Hingham.	1.80	Miles	4c
Accord Pond	MA74030	Hingham/Norwell/Rockland (formerly reported as MA94002).	103.00	Acres	3
Cochato River	MA74-06	Outlet Lake Holbrook, Holbrook to confluence with Farm and Monatiquot rivers, Braintree (through former pond segment Ice House Pond MA74028). (SARIS note: the upper portion of this segment is comprised of three surface waters: unnamed tributary from the outlet of Lake Holbrook, portion of Mary Lee Brook, portion of Glovers Brook).	4.10	Miles	5

Appendix 1
Assessment units and integrated list categories presented alphabetically by major watershed

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Cranberry Brook	MA74-22	Headwaters, outlet Cranberry Pond, Braintree to mouth at confluence with Cochato River, Braintree (Cranberry Brook Watershed ACEC).	1.90	Miles	5
Crooked Meadow River	MA74-01	Headwaters, outlet Cushing Pond, Hingham to confluence with Fulling Mill Brook (forming headwater of Weir River), Hingham.	1.00	Miles	5
Eel River	MA74-21	Headwaters, east of Route 228, near West Moreland Street, Hingham to mouth at confluence with Plymouth River, Hingham.	1.50	Miles	3
Farm River	MA74-07	From Randolph/Braintree border (where name changes from Blue Hill River), to confluence with Cochato River (forming headwaters of Monatiquot River), Braintree.	3.10	Miles	5
Furnace Brook	MA74-10	From headwaters north of Blue Hills Reservoir, Quincy to confluence with Blacks Creek, Quincy (portions culverted underground).	4.20	Miles	5
Hingham Harbor	MA74-18	Hingham Harbor inside a line from Crows Point to Worlds End, Hingham (formerly reported as MA70-08).	1.12	Square Miles	5
Hoosicwhisick Pond	MA74015	Milton.	23.00	Acres	2
Lake Holbrook	MA74013	Holbrook.	31.00	Acres	5
Mary Lee Brook	MA74-23	Headwaters, north of West High Street, Avon to mouth at confluence with Cochato River, Randolph.	2.70	Miles	5
Mill River	MA74-04	Headwaters, west of Route 18 and south of Randolph Street, Weymouth to inlet Whitmans Pond, Weymouth (portions culverted underground).	3.40	Miles	5
Monatiquot River	MA74-08	Headwaters at confluence of Cochato and Farm rivers, Braintree to confluence with Weymouth Fore River at Commercial Street, Braintree.	4.40	Miles	5
Old Quincy Reservoir	MA74017	Braintree.	27.00	Acres	3
Old Swamp River	MA74-03	Headwaters just west of Pleasant Street and north of Liberty Street, Rockland to inlet Whitmans Pond, Weymouth.	4.60	Miles	5
Plymouth River	MA74-20	Headwaters, perennial portion (including channelized, culverted section) north of Route 3 (Pilgrim Highway), Weymouth to the mouth at inlet of Cushing Pond, Hingham (entire river not depicted on Weymouth USGS quad).	3.60	Miles	5
Sunset Lake	MA74020	Braintree.	58.00	Acres	4c
Sylvan Lake	MA74021	Holbrook.	6.00	Acres	5
Town Brook	MA74-09	Headwaters, outlet Old Quincy Reservoir, Braintree to confluence with Town River Bay north of Route 3A, Quincy (SARIS note: includes "The Canal"/Town River) (portions culverted underground).	3.50	Miles	5
Town River Bay	MA74-15	From the headwaters at the Route 3A bridge, Quincy to the mouth at Weymouth Fore River between Shipyard and Germantown Points, Quincy.	0.46	Square Miles	5
Trout Brook	MA74-12	Headwaters southwest of South Street, Holbrook to inlet Lake Holbrook, Holbrook.	1.20	Miles	3
Unnamed Tributary	MA74-19	Unnamed Tributary to Plymouth River, headwaters, west of Route 53 (Whiting Street), Hingham to mouth at confluence with Plymouth River, Hingham.	1.10	Miles	3
Weir River	MA74-02	Headwaters at confluence of Crooked Meadow River and Fulling Mill Brook, Hingham to Foundry Pond outlet, Hingham (through former pond segment Foundry Pond MA74011) (area associated with Weir River ACEC designated as ORW).	2.70	Miles	5

Appendix 1
Assessment units and integrated list categories presented alphabetically by major watershed

Water Body	Segment ID	Description	Size	Units	Category
Weir River	MA74-11	From Foundry Pond outlet, Hingham to mouth at Worlds End, Hingham and Nantasket Road near Beech Avenue, Hull (including unnamed tributary from outlet Straits Pond, Hingham/Hull) (area associated with Weir River ACEC designated as ORW).	0.83	Square Miles	5
Weymouth Back River	MA74-05	Headwaters, outlet Elias Pond, Weymouth to the base of the fish ladder north of Commercial Street,Weymouth (area associated with Weymouth Back River ACEC designated as ORW).	0.70	Miles	5
Weymouth Back River	MA74-13	From the base of the fish ladder north of Commercial Street, Weymouth to mouth between Lower Neck, Weymouth (to the west) and Wompatuck Road, Hingham (area associated with Weymouth Back River ACEC designated as ORW).	0.85	Square Miles	5
Weymouth Fore River	MA74-14	Commercial Street, Braintree to mouth (eastern point at Lower Neck, Weymouth and western point at Wall Street on Houghs Neck, Quincy).	2.29	Square Miles	5
Whitmans Pond	MA74025	Weymouth.	176.00	Acres	5
Buzzards Bay					
"Inner" Sippican Harbor	MA95-70	The waters landward of a line from Allen Point, Marion around the southeastern tip of Ram Island, then westerly from the southern tip of Ram Island to the point of land south of Nyes Wharf, Marion excluding Hammett Cove (formerly reported as a portion of segment MA95-08).	0.57	Square Miles	5
Abner Pond	MA95001	Plymouth.	9.00	Acres	3
Acushnet River	MA95-31	Headwaters, outlet New Bedford Reservoir, Acushnet to Hamlin Street culvert, Acushnet.	2.90	Miles	5
Acushnet River	MA95-32	Hamlin Street culvert, Acushnet to culvert at Main Street, Acushnet.	1.10	Miles	5
Acushnet River	MA95-33	Outlet Main Street culvert, Acushnet to Coggeshall Street/Howland Road bridge, New Bedford/Fairhaven.	0.31	Square Miles	5
Agawam River	MA95-28	Outlet Mill Pond, Wareham to Wareham WWTP outfall, Wareham.	0.61	Miles	3
Agawam River	MA95-29	Wareham WWTP outfall, Wareham to confluence with Wankinco River (forming headwaters of the Wareham River) just north of the Route 6 bridge, Wareham.	0.16	Square Miles	5
Angeline Brook	MA95-83	Perennial portion south of Charlotte White Road, Westport to mouth at West Branch Westport River (Angeline Cove), Westport.	4.40	Miles	5
Apponagansett Bay	MA95-39	From the mouth of Buttonwood Brook, Dartmouth to a line drawn from Ricketsons Point, Dartmouth to Samoset Street near North Avenue, Dartmouth.	1.06	Square Miles	5
Aucoot Cove	MA95-09	From the boundary of Division of Marine Fisheries designated shellfishing growing area BB31.1, north and southwest from Haskell Island, Marion to the mouth at Buzzards Bay demarcated by a line drawn between Converse Point, Marion and Joes Point, Mattapoisett.	0.46	Square Miles	2
Aucoot Cove	MA95-71	From the confluence with Aucoot Creek, Marion to the boundary of Division of Marine Fisheries designated shellfishing growing area BB31.1, north and southwest from Haskell Island, Marion (formerly part of segment MA95-09).	0.03	Square Miles	5
Aucoot Creek	MA95-72	Estuarine portion east of Holly Pond Road, Marion to confluence with Aucoot Cove, Marion.	0.02	Square Miles	5
Back River	MA95-47	Estuarine portion, west of County Road, Bourne to confluence with Phinneys Harbor (excluding Eel Pond), Bourne.	0.09	Square Miles	4a
Barrett Pond	MA95004	Carver.	11.00	Acres	2
Bates Pond	MA95007	Carver.	19.00	Acres	3

Appendix 1
Assessment units and integrated list categories presented alphabetically by major watershed

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Beaverdam Creek	MA95-53	Estuarine portion just south of the outlet from cranberry bog southeast of Route 6, Wareham to confluence with Wewantic River, Wareham.	0.04	Square Miles	5
Big Rocky Pond	MA95119	(Rocky Pond) Plymouth.	18.00	Acres	3
Big Sandy Pond	MA95011	Plymouth.	133.00	Acres	3
Blackmore Reservoir	MA95015	Wareham.	43.00	Acres	3
Bread and Cheese Brook	MA95-58	Headwaters north of Old Bedford Road, Westport to confluence with East Branch Westport River, Westport.	4.90	Miles	4a
Broad Marsh River	MA95-49	Headwaters in salt marsh south of Marion Road and Bourne Terrace, Wareham to confluence with the Wareham River, Wareham.	0.17	Square Miles	4a
Butler Cove	MA95-77	just south of Buttermilk Bay, Wareham.	0.05	Square Miles	5
Buttermilk Bay	MA95-01	Bourne/Wareham.	0.67	Square Miles	5
Buttonwood Brook	MA95-13	Headwaters, Oakdale Street, New Bedford to mouth at Apponagansett Bay, Dartmouth (excluding the approximately 0.2 miles through Buttonwood Park Pond segment MA95020).	3.60	Miles	4a
Buttonwood Park Pond	MA95020	New Bedford.	12.00	Acres	3
Buzzards Bay	MA95-62	Open water area encompassed within a line drawn from Wilber Point, Fairhaven to Clarks Point, New Bedford to Ricketson Point, Dartmouth to vacinity of Samoset Street, Dartmouth down to Round Hill Point, Dartmouth and back to Wilber Point, Fairhaven.	8.07	Square Miles	5
Cape Cod Canal	MA95-14	Waterway between Buzzards Bay and Cape Cod Bay, Bourne/Sandwich.	1.14	Square Miles	4a
Cedar Dell Lake	MA95021	Dartmouth.	23.00	Acres	3
Cedar Island Creek	MA95-52	Estuarine portion southwest of the intersection of Parker Drive and Camardo Drive, Wareham to the mouth at Marks Cove, Wareham.	0.01	Square Miles	4a
Cedar Lake	MA95-96344	Falmouth (formerly reported as segment MA96344).	20.00	Acres	3
Charge Pond	MA95025	Plymouth.	16.00	Acres	2
Clarks Cove	MA95-38	The semi-enclosed waterbody landward of a line drawn between Clarks Point, New Bedford and Ricketsons Point, Dartmouth.	1.90	Square Miles	5
College Pond	MA95030	Plymouth.	47.00	Acres	2
Copicut Reservoir	MA95175	Dartmouth/Fall River.	596.00	Acres	5
Copicut River	MA95-43	Headwaters, outlet of Copicut Reservoir, Fall River to the inlet of Cornell Pond, Dartmouth.	1.30	Miles	5
Cornell Pond	MA95031	Dartmouth.	12.00	Acres	5
Crane Brook Bog Pond	MA95033	Carver.	37.00	Acres	5
Crooked River	MA95-51	Estuarine portion east of Indian Neck Road, Wareham to the confluence with the Wareham River, Wareham.	0.04	Square Miles	4a
Curlew Pond	MA95034	Plymouth.	43.00	Acres	2
Deer Pond	MA95036	Plymouth.	9.00	Acres	3
Dicks Pond	MA95038	Wareham.	42.00	Acres	3
Dunham Pond	MA95044	Carver.	43.00	Acres	5
Dunhams Brook	MA95-73	Headwaters east of the intersection of Cornell and Main roads, Westport to the confluence with the West Branch Westport River at Hicks Cove, Westport.	1.40	Miles	2
East Branch Westport River	MA95-40	Headwaters, outlet Noquochoke Lake, Dartmouth to Old County Road bridge, Westport.	2.40	Miles	4a

Appendix 1
Assessment units and integrated list categories presented alphabetically by major watershed

Water Body	Segment ID	Description	Size	Units	Category
East Branch Westport River	MA95-41	Old County Road bridge, Westport to the mouth at Westport Harbor/Westport River, Westport (excluding Horseneck Channel).	2.65	Square Miles	5
East Head Pond	MA95177	Carver/Plymouth.	92.00	Acres	3
Eel Pond	MA95-48	Salt water pond that discharges to the Back River, Bourne.	0.03	Square Miles	4a
Eel Pond	MA95-61	Coastal pond at the head of Mattapoisett Harbor, Mattapoisett.	0.04	Square Miles	5
Ezekiel Pond	MA95051	Plymouth.	36.00	Acres	3
Fawn Pond	MA95053	Plymouth.	44.00	Acres	3
Fearing Pond	MA95054	Plymouth.	23.00	Acres	2
Federal Pond	MA95055	Carver/Plymouth.	122.00	Acres	4c
Fiddlers Cove	MA95-79	cove south off Megansett Harbor, Falmouth.	0.01	Square Miles	5
Five Mile Pond	MA95056	Plymouth.	22.00	Acres	3
Flax Pond	MA95-96087	Bourne (formerly reported as segment MA96087).	20.00	Acres	3
Fresh Meadow Pond	MA95174	Carver/Plymouth.	59.00	Acres	4c
Gallows Pond	MA95059	Plymouth.	49.00	Acres	3
Giles Creek	MA95-89	From Demarest Lloyd Memorial State Park, Dartmouth to mouth at Slocums River, Dartmouth.	0.06	Square Miles	2
Glen Charlie Pond	MA95061	Wareham.	157.00	Acres	3
Great Sippewisset Creek	MA95-23	From the outlet of Beach Pond in Great Sippewisset Marsh, Falmouth to the mouth at Buzzards Bay, Falmouth (including Quahog Pond and the unnamed tributary from the outlet of Fresh Pond).	0.03	Square Miles	4a
Halfway Pond	MA95178	Plymouth (On 9 October 1997, PALIS ID was changed from 94057 to 95178; therefor, this pond historically reported in South Coastal "94").	215.00	Acres	5
Hammett Cove	MA95-56	Borders Sippican Harbor (along a line from the southwestern most point of Little Neck to the end of the seawall on the opposite point), Marion.	0.07	Square Miles	5
Harbor Head	MA95-46	The semi-enclosed body of water south of the confluence with West Falmouth Harbor, south of Chappaquoit Road, Falmouth.	0.02	Square Miles	4a
Herring Brook	MA95-21	Estuarine portion northeast of Dale Drive and west of Route 28A, Falmouth to the mouth at Buzzards Bay, Falmouth.	0.01	Square Miles	5
Hiller Cove	MA95-10	The water landward of a line drawn between Joes Point, Mattapoisett and the second boat dock northeast of Hiller Cove Lane, Mattapoisett.	0.04	Square Miles	4a
Horseneck Channel	MA95-87	From the outlet of The Let to the confluence with the East Branch Westport River (east of Route 88), Westport.	0.24	Square Miles	2
Horseshoe Pond	MA95075	Wareham.	59.00	Acres	3
Kings Pond	MA95078	Plymouth.	22.00	Acres	3
Kirby Brook	MA95-82	Headwaters just south of Old County Road, Westport to the mouth at East Branch Westport River, Westport.	2.00	Miles	5
Leonards Pond	MA95080	Rochester.	49.00	Acres	5
Little Bay	MA95-64	From the confluence with the Nasketucket River, Fairhaven south to the confluence with Nasketucket Bay at a line from the southernmost tip of Mirey Neck, Fairhaven (~latitude 41.625702, ~longitide 70.854045) to a point of land near Shore Drive (~latitude 41.621994, ~longitude 70.855415), Fairhaven.	0.33	Square Miles	4a
Little Buttermilk Bay	MA95-76	off of Buttermilk Bay, Bourne.	0.16	Square Miles	5
Little Long Pond	MA95088	Plymouth.	47.00	Acres	3

Appendix 1
Assessment units and integrated list categories presented alphabetically by major watershed

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Little Long Pond	MA95089	Wareham/Plymouth.	12.00	Acres	3
Little River	MA95-66	Dartmouth.	0.18	Square Miles	2
Little Rocky Pond	MA95091	Plymouth.	10.00	Acres	3
Little Sandy Pond	MA95092	Plymouth.	29.00	Acres	3
Little Sippewisset Marsh	MA95-24	From headwaters north of Sippewisset Road and east of Maker Lane, Falmouth to the mouth at Buzzards Bay southwest of end of Saconesset Road, Falmouth.	0.02	Square Miles	4a
Little West Pond	MA95093	Plymouth.	25.00	Acres	3
Long Duck Pond	MA95095	Plymouth.	22.00	Acres	3
Long Pond	MA95096	Plymouth.	207.00	Acres	3
Long Pond	MA95097	Rochester.	32.00	Acres	4a
Mare Pond	MA95172	Plymouth.	13.00	Acres	3
Marys Pond	MA95100	Rochester.	81.00	Acres	2
Mattapoisett Harbor	MA95-35	From the mouth of the Mattapoisett River, Mattapoissett to a line drawn from Ned Point to a point of land between Bayview Avenue and Grandview Avenue, Mattapoisett.	1.12	Square Miles	5
Mattapoisett River	MA95-36	Headwaters, outlet Snipatuit Pond, Rochester to Mattapoisett River Dam (#MA02447) at Fairhaven Road (Route 6), Mattapoisett.	10.40	Miles	5
Mattapoisett River	MA95-60	From the Mattapoisett River Dam (#MA02447) at Fairhaven Road (Route 6), Mattapoisett to the mouth at Mattapoisett Harbor, Mattapoisett.	0.04	Square Miles	4a
Megansett Harbor	MA95-19	From the outlet of Squeteague Harbor, Falmouth to Buzzards Bay at a line from the western tip of Scraggy Neck, Bourne south to the tip of Nyes Neck, Falmouth.	1.44	Square Miles	5
Micajah Pond	MA95102	Plymouth.	20.00	Acres	3
Mill Pond	MA95105	Wareham.	149.00	Acres	4c
Nasketucket Bay	MA95-65	From the confluence with Little Bay, Fairhaven to Buzzards Bay along Causeway Road, Fairhaven (on the south) and along a line from the southern tip of Brant Island, Mattapoisett to the eastern tip of West Island, Fairhaven.	3.69	Square Miles	4a
Nasketucket River	MA95-67	Estuarine portion, from the boundary of the salt water wetland south of Route 6, Fairhaven to the mouth at Little Bay, Fairhaven (includes connector to Little Bay on the east side of the river).	0.03	Square Miles	5
New Bedford Inner Harbor	MA95-42	Coggeshall Street/Howland Road bridge, New Bedford/Fairhaven to hurricane barrier, Fairhaven/New Bedford.	1.25	Square Miles	5
New Bedford Reservoir	MA95110	Acushnet.	211.00	Acres	5
New Long Pond	MA95112	Plymouth.	21.00	Acres	3
Noquochoke Lake	MA95113	(Main Basin) Dartmouth.	88.00	Acres	5
Noquochoke Lake	MA95170	(South Basin) Dartmouth.	13.00	Acres	5
Noquochoke Lake	MA95171	(North Basin) Dartmouth.	17.00	Acres	5
Onset Bay	MA95-02	Wareham.	0.78	Square Miles	5
Outer New Bedford Harbor	MA95-63	From the hurricane barrier, Fairhaven/New Bedford to a line drawn from Wilbur Point, Fairhaven to Clarks Point, New Bedford (segment changed 6/4/03, formerly reported as MA95-27).	5.78	Square Miles	5
Oyster Pond	MA95927	west of Route 28A, Falmouth.	0.01	Square Miles	4a

Appendix 1
Assessment units and integrated list categories presented alphabetically by major watershed

Water Body	Segment ID	Description	Size	Units	Category
Parker Mills Pond	MA95115	Wareham.	73.00	Acres	5
Paskamanset River	MA95-11	Headwaters, outlet Turners Pond, Dartmouth/New Bedford to confluence with Slocums River (Rock O'Dundee Road), Dartmouth.	10.50	Miles	5
Phinneys Harbor	MA95-15	From the confluence with the Back River, to the mouth at Buzzards Bay (demarcated by a line from the southeastern point of Mashnee Island to the northwestern point of Tobys Island), Bourne (includes the "north facing embayment of Tobys Island").	0.72	Square Miles	4a
Pocasset Harbor	MA95-17	From the confluence with Red Brook Harbor near the northern portion of Bassetts Island and Patuisset, Bourne to the mouth at Buzzards Bay between the western portion of Bassetts Island and Wings Neck, Bourne.	0.33	Square Miles	5
Pocasset River	MA95-16	From the outlet of Mill Pond, Bourne to the mouth at Buzzards Bay, Bourne.	0.05	Square Miles	4a
Queen Sewell Pond	MA95180	Bourne (previously reported with PALIS # 96253).	18.00	Acres	5
Quissett Harbor	MA95-25	The semi-enclosed body of water landward of a line drawn between The Knob and Gansett Point, Falmouth.	0.17	Square Miles	5
Rands Harbor	MA95-78	harbor south off Megansett Harbor, Falmouth.	0.02	Square Miles	5
Red Brook	MA95-74	Headwaters, outlet cranberry bogs east of Bartlett Pond, Wareham to Red Brook Road, Wareham/Plymouth.	2.80	Miles	2
Red Brook Harbor	MA95-18	From the confluence with Pocasset Harbor between the northern portion of Bassetts Island and Patuisset, Bourne to the mouth at Buzzards Bay between the southern portion of Bassetts Island and Scraggy Neck, Bourne (including Hen Cove).	0.92	Square Miles	5
Rocky Meadow Brook Pond	MA95118	Carver.	11.00	Acres	3
Rocky Pond	MA95179	Plymouth.	20.00	Acres	3
Round Pond	MA95123	Plymouth.	20.00	Acres	3
Sampson Pond	MA95125	Carver.	295.00	Acres	5
Sand Pond	MA95127	Wareham.	14.00	Acres	3
Sandy Pond	MA95128	Wareham.	15.00	Acres	3
Shingle Island River	MA95-12	Outlet of small unnamed pond northeast of Flag Swamp Road, Dartmouth to inlet Noquochoke Lake (north basin), Dartmouth.	5.00	Miles	5
Sippican Harbor	MA95-69	The waters between a line demarcating the mouth of the harbor (from Converse Point to Butler Point, Marion) and a line from Allens Point, Marion around the southeastern tip of Ram Island, then westerly from the southern tip of Ram Island, to the point of land south of Nyes Wharf, Marion excluding Blanketship Cove and Planting Island Cove (formerly reported as a portion of segment MA95-08).	1.94	Square Miles	2
Sippican River	MA95-06	Headwaters, outlet Leonards Pond, Rochester to County Road, Marion/Wareham.	3.00	Miles	5
Sippican River	MA95-07	County Road, Marion/Wareham to confluence with Weweantic River, Marion/Wareham.	0.08	Square Miles	4a
Slocums River	MA95-34	Rock O'Dundee Road (confluence with Paskemanset River), Dartmouth to mouth at Buzzards Bay, Dartmouth.	0.66	Square Miles	5
Snell Creek	MA95-44	Headwaters west of Main Street, Westport to Drift Road, Westport.	1.50	Miles	4a
Snell Creek	MA95-45	Drift Road, Westport to 'Marcus' Bridge', Westport.	0.40	Miles	4a

Appendix 1
Assessment units and integrated list categories presented alphabetically by major watershed

Water Body	Segment ID	Description	Size	Units	Category
Snell Creek	MA95-59	'Marcus' Bridge', Westport to confluence with East Branch Westport River, Westport.	0.01	Square Miles	4a
Snipatuit Pond	MA95137	Rochester.	711.00	Acres	4a
South Meadow Brook Pond	MA95139	Carver.	25.00	Acres	3
South Meadow Pond	MA95140	Carver.	22.00	Acres	3
Southwest Atwood Bog Pond	MA95141	Carver.	12.00	Acres	3
Spectacle Pond	MA95142	Wareham.	41.00	Acres	3
Squeteague Harbor	MA95-55	Waters landward of the confluence with Megansett Harbor, Bourne/Falmouth.	0.15	Square Miles	5
The Let	MA95-88	From north of East Beach Road, Westport to the confluence with Horseneck Channel, Westport.	0.22	Square Miles	2
Three Cornered Pond	MA95145	Plymouth.	12.00	Acres	3
Tihonet Pond	MA95146	Wareham.	87.00	Acres	5
Tinkham Pond	MA95148	Mattapoisett/Acushnet.	17.00	Acres	3
Turner Pond	MA95151	New Bedford/Dartmouth.	86.00	Acres	4a
Union Pond	MA95152	Wareham.	17.00	Acres	3
Unnamed Tributary	MA95-57	Outlet Cornell Pond, Dartmouth to confluence with Shingle Island River, Dartmouth.	1.00	Miles	3
Unnamed Tributary	MA95-75	Unnamed tributary to Bread and Cheese Brook, headwaters north of Briggs Road, Westport to confluence with Bread and Cheese Brook, Westport.	1.90	Miles	2
Unnamed Tributary	MA95-80	Unnamed tributary to Aucoot Creek, headwaters west of Mill Street (Route 6), Marion to the Marion WWTF (MA0100030) discharge, Marion.	0.30	Miles	2
Unnamed Tributary	MA95-81	Unnamed tributary to Aucoot Creek from the Marion WWTF (MA0100030) discharge, Marion to the boundary of the saltwater wetland, Marion.	0.70	Miles	2
Unnamed Tributary	MA95-84	Unnamed tributary to Snell Creek, perennial portion north of Brookwood Drive, Westport to mouth at Snell Creek, Westport.	0.80	Miles	2
Vaughn Pond	MA95153	Carver.	20.00	Acres	3
Wankinco River	MA95-50	From outlet of Parker Mills Pond, south of Elm Street, Wareham to the confluence with the Agawam River (at a line between a point south of Mayflower Ridge Drive and a point north of the railroad tracks near Sandwich Road (forming headwaters of the Wareham River)) just north of Route 6 bridge, Wareham.	0.05	Square Miles	4a
Wankinco River	MA95-85	From the outlet of Tihonet Pond, Wareham to the inlet of Parker Mills Pond, Wareham (formerly part of segment MA95-30).	0.70	Miles	3
Wankinco River	MA95-86	Headwaters, outlet East Head Pond, Carver/Plymouth (follows border through cranberry bogs to inlet Tihonet Pond, Carver/Plymouth (formerly part of segment MA95-30).	3.60	Miles	3
Wareham River	MA95-03	From confluence of Wankinko and Agawam Rivers at Route 6 bridge, Wareham to Buzzards Bay (at an imaginary line from Cromeset Point to curved point east/southeast of Long Beach Point), Wareham. Including Marks Cove, Wareham.	1.18	Square Miles	5
Wenham Pond	MA95158	Carver.	46.00	Acres	2
West Branch Westport River	MA95-37	West of Quail Trail, Westport to mouth at Westport Harbor/Westport River, Westport.	1.29	Square Miles	5

Appendix 1
Assessment units and integrated list categories presented alphabetically by major watershed

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West Falmouth Harbor	MA95-22	From the confluence with Harbor Head at Chappaquoit Road, Falmouth to the mouth at Buzzards Bay at a line connecting the ends of the seawalls from Little Island and Chappaquoit Point, Falmouth (including Inner West Falmouth Harbor, Outer West Falmouth Harbor, Snug Harbor, and Mashapaquit Creek).	0.29	Square Miles	4a
Westport River	MA95-54	From the confluences of the East Branch Westport River and the West Branch Westport River to Rhode Island Sound (at a line from the southwestern tip of Horseneck Point to the easternmost point near Westport Light), Westport (includes Westport Harbor and Hulda Cove).	0.74	Square Miles	4a
Weweantic River	MA95-04	Headwaters confluence of Rocky Meadow and South Meadow brooks, Carver to the inlet of Horseshoe Pond, Wareham (through former pond segment MA95150).	11.50	Miles	5
Weweantic River	MA95-05	Outlet Horseshoe Pond, Wareham to mouth at Buzzards Bay, Marion/Wareham.	0.62	Square Miles	5
White Island Pond, East Basin	MA95166	(East Basin) Plymouth/Wareham.	165.00	Acres	4c
White Island Pond, West Basin	MA95173	(West Basin) Plymouth/Wareham.	123.00	Acres	4c
Whites Pond	MA95168	Plymouth.	34.00	Acres	3
Wild Harbor	MA95-20	Waters landward of an imaginary line from Crow Point to Nyes Neck (excluding Wild Harbor River), Falmouth.	0.13	Square Miles	5
Wild Harbor River	MA95-68	Headwaters, Falmouth to mouth at Wild Harbor, Falmouth.	0.03	Square Miles	5
Cape Cod					
Allens Harbor	MA96-95	south of Lower County Road, Harwich to Doanes Creek, Harwich.	0.02	Square Miles	5
Areys Pond	MA96-70	Orleans.	0.02	Square Miles	4a
Ashumet Pond	MA96004	Mashpee/Falmouth.	203.00	Acres	5
Baker Pond	MA96008	Orleans/Brewster.	26.00	Acres	4a
Barnstable Harbor	MA96-01	From the mouths of Scorton and Spring creeks, Barnstable east to an imaginary line drawn from Beach Point to the western edge of the Mill Creek estuary, Barnstable.	3.20	Square Miles	5
Bass River	MA96-12	Headwaters outlet Kelleys Bay, Route 6, Dennis/Yarmouth to mouth at inlet Nantucket Sound, Yarmouth (excluding Grand Cove, Dennis).	0.69	Square Miles	5
Bassing Harbor	MA96-48	Excluding Crows Pond and Ryder Cove, Chatham.	0.13	Square Miles	2
Bearse Pond	MA96012	Barnstable.	64.00	Acres	4a
Boat Meadow River	MA96-15	Headwaters east of old railway grade, Eastham to mouth at inlet Cape Cod Bay, Eastham.	0.05	Square Miles	5
Bournes Pond	MA96-57	west of Central Avenue, Falmouth outlet to Vineyard Sound, including Israels Cove, Falmouth.	0.24	Square Miles	4a
Bucks Creek	MA96-44	Outlet Harding Beach Pond (locally known as Sulfur Springs), Chatham to mouth at inlet Cockle Cove, Nantucket Sound, Chatham.	0.02	Square Miles	4a
Bumps River	MA96-02	From pond outlet, Bumps River Road, Barnstable through Scudder Bay to mouth at Main Street/South Main Street bridge (confluence with Centerville River), Barnstable.	0.07	Square Miles	4a
Cedar Pond	MA96-88	Orleans (in Inner Cape Cod Bay ACEC).	0.03	Square Miles	5
Centerville Harbor	MA96-03	From an imaginary line that extends from Dowses Beach, Barnstable to Hyannis Point, Barnstable including all waters north to the shore, Barnstable.	1.46	Square Miles	2
Centerville River	MA96-04	From approximately 300 feet west of Elliot Road, Barnstable to inlet Centerville Harbor, including East Bay, Barnstable.	0.24	Square Miles	4a

Appendix 1
Assessment units and integrated list categories presented alphabetically by major watershed

Water Body	Segment ID	Description	Size	Units	Category
Chase Garden Creek	MA96-103	Headwaters south of Roads End and west of Jericho Road, Dennis to New Boston Road, Dennis.	1.20	Miles	5
Chase Garden Creek	MA96-35	New Boston Road, Dennis to mouth at inlet Cape Cod Bay, Dennis/Yarmouth.	0.13	Square Miles	4a
Chatham Harbor	MA96-10	Harbor, bounded on east by Cape Cod National Seashore (CCNS), with northern extent as an imaginary line drawn northeast from northern tip of Strong Island to a point on inner CCNS and western extent as an imaginary line drawn from southern tip of Strong Island south to Allen Point including waters south to an imaginary line along northern edge of South Beach Bar extending from Chatham Lighthouse to inlet created by 1987 storm, Chatham (area within CCNS designated as ORW).	2.85	Square Miles	2
Childs River	MA96-98	Headwaters outlet Johns Pond, Mashpee to confluence with tidal portion south of Barrows Road, Falmouth (area within Waquoit Bay ACEC desiagnated as ORW).	2.40	Miles	2
Clapps Pond	MA96035	Provincetown (area associated with Cape Cod National Seashore designated as ORW).	40.00	Acres	3
Cliff Pond	MA96039	Brewster.	190.00	Acres	5
Cockle Cove Creek	MA96-79	Northeast of the bend in Cockle Drive, Chatham to mouth at confluence with Bucks Creek, Chatham (2005 orthophotos used to delineate segment).	0.01	Square Miles	4a
Coonamessett River	MA96-69	Headwaters, outlet Coonamessett Pond, Falmouth to mouth at inlet Great Pond, Falmouth.	3.40	Miles	2
Cotuit Bay	MA96-63	From North Bay at Point Isabella, Barnstable oceanward to a line extended along Oyster Harbors Beach, Barnstable.	0.85	Square Miles	4a
Crows Pond	MA96-47	To Bassing Harbor, Chatham.	0.19	Square Miles	2
Crystal Lake	MA96050	Orleans.	33.00	Acres	5
Depot Pond	MA96061	Eastham.	26.00	Acres	3
Dock Creek	MA96-86	From railroad crossing northeast of Route 6A, Sandwich to confluence with Old Harbor Creek, Sandwich.	0.02	Square Miles	4a
Duck Creek	MA96-32	Source west of Route 6, Wellfleet to mouth at inlet Wellfleet Harbor (at a line from Shirttail Point to Taylor Road), Wellfleet.	0.15	Square Miles	4a
Duck Pond	MA96068	Wellfleet.	11.00	Acres	4a
Dyer Pond	MA96070	Wellfleet.	10.00	Acres	4a
East Harbor (Pilgrim Lake)	MA96-83	Truro/Provincetown.	0.50	Square Miles	4a
Elbow Pond	MA96077	Brewster.	32.00	Acres	3
Falmouth Inner Harbor	MA96-17	Waters included north of Falmouth Inner Harbor Light, Falmouth.	0.05	Square Miles	2
Flax Pond	MA96090	Dennis.	15.00	Acres	3
Frost Fish Creek	MA96-49	Headwaters outlet cranberry bog northwest of Stony Hill Road, Chatham to mouth at inlet Ryder Cove, Chatham.	0.01	Square Miles	4a
Goose Pond	MA96106	Chatham.	35.00	Acres	3
Great Harbor	MA96-18	The waters north of an imaginary line drawn east from Penzance Point, Falmouth to Devils Foot Island, Falmouth and southeast from Devils Foot Island to Juniper Point (excludes Eel Pond), Falmouth.	0.31	Square Miles	4a
Great Pond	MA96114	Truro.	17.00	Acres	4a
Great Pond	MA96115	Eastham.	109.00	Acres	5

Appendix 1
Assessment units and integrated list categories presented alphabetically by major watershed

Water Body	Segment ID	Description	Size	Units	Category
Great Pond	MA96117	Wellfleet.	41.00	Acres	4a
Great Pond	MA96-54	From inlet of Coonamessett River, Falmouth to Vineyard Sound (excluding Perch Pond), Falmouth.	0.40	Square Miles	4a
Great River	MA96-60	From inlet of Abigails Brook, Mashpee to mouth at inlet Waquoit Bay (excluding Jehu Pond), Mashpee.	0.16	Square Miles	4a
Green Pond	MA96-55	east of Acapesket Road, Falmouth outlet to Vineyard Sound, Falmouth.	0.21	Square Miles	4a
Gull Pond	MA96123	Wellfleet.	104.00	Acres	3
Halls Creek	MA96-93	Estuarine portion, from Marchant Mill Way, Barnstable to mouth at inlet Centerville Harbor, Barnstable.	0.07	Square Miles	4a
Hamblin Pond	MA96126	Barnstable.	114.00	Acres	5
Hamblin Pond	MA96-58	From inlet of Red Brook, Falmouth/Mashpee to outlet of Little River, Mashpee and inlet/outlet of Waquoit Bay west of Meadow Neck Road, Falmouth/Mashpee.	0.19	Square Miles	4a
Harding Beach Pond	MA96-43	locally known as Sulfur Springs (northeast of Bucks Creek), Chatham.	0.07	Square Miles	4a
Hawes Run	MA96-101	Headwaters outlet small unnamed pond west of Higgins Crowell Road, Yarmouth to mouth at inlet Mill Pond, Yarmouth.	1.70	Miles	4c
Herring Pond	MA96133	Eastham.	42.00	Acres	3
Herring Pond	MA96134	Wellfleet.	18.00	Acres	3
Herring River	MA96-106	Headwaters, outlet Hinckleys Pond, Harwich to mouth at inlet Herring River Reservoir, Harwich.	2.50	Miles	2
Herring River	MA96-22	From outlet Herring River Reservoir (at North Harwich Reservoir Dam NATID: MA02423) west of Bells Neck Road, Harwich to mouth at inlet Nantucket Sound, Harwich.	0.07	Square Miles	4a
Herring River	MA96-33	South of High Toss Road, Wellfleet to mouth at inlet Wellfleet Harbor (at an imaginary line drawn due north from the eastern tip of Great Island to the opposite shore), Wellfleet.	0.40	Square Miles	5
Herring River	MA96-67	Headwaters outlet Herring Pond, Wellfleet to south of High Toss Road, Wellfleet.	3.60	Miles	5
Hinckleys Pond	MA96140	Harwich.	164.00	Acres	2
Horseleach Pond	MA96144	Truro.	23.00	Acres	4a
Hoxie Pond	MA96146	Sandwich.	8.00	Acres	3
Hyannis Harbor	MA96-05	The waters from the shoreline to an imaginary line drawn from the light at the end of Hyannis breakwater, Barnstable to the point west of Dunbar Point, Barnstable.	0.68	Square Miles	2
Hyannis Inner Harbor	MA96-82	Waters landward of an imaginary line drawn from Harbor Bluff, Barnstable to Hyannis Park, Yarmouth.	0.13	Square Miles	4a
Jehu Pond	MA96-59	Mashpee.	0.09	Square Miles	4a
Johns Pond	MA96157	Mashpee.	316.00	Acres	4a
Kinnacum Pond	MA96163	Wellfleet.	2.00	Acres	3
Lake Elizabeth	MA96080	Barnstable.	6.00	Acres	3
Lawrence Pond	MA96165	Sandwich.	138.00	Acres	4a
Lewis Bay	MA96-36	Includes portion of Pine Island Creek and Uncle Roberts Cove, Yarmouth to confluence with Nantucket Sound, Barnstable/Yarmouth (excluding Hyannis Inner Harbor, Barnstable/Yarmouth and Mill Creek, Yarmouth).	1.79	Square Miles	4a

Appendix 1
Assessment units and integrated list categories presented alphabetically by major watershed

Water Body	Segment ID	Description	Size	Units	Category
Little Harbor	MA96-19	The waters north of an imaginary line drawn from Juniper Point, Falmouth east to Nobska Beach, Falmouth.	0.07	Square Miles	4a
Little Namskaket Creek	MA96-26	Source west of Route 6, Orleans to mouth at inlet Cape Cod Bay, Orleans.	0.01	Square Miles	4a
Little Pleasant Bay	MA96-78	Waters north and east of imaginary lines drawn from the northeasterly edge of Orleans (near The Horseshoe), southeasterly around the northeastern tip of Sipson Island, and Sipson Meadow, Orleans then south to the northern tip of Strong Island, Chatham then east to a point on the inner Cape Cod National Seashore (CCNS)(including SARIS named Hog Island and Broad creeks) (excluding the delineated segments; The River, Pochet Neck, and Paw Wah Pond) (areas within CCNS designated as ORW).	3.27	Square Miles	4a
Little Pond	MA96-56	west of Vista Boulevard, Falmouth outlet to Vineyard Sound, Falmouth.	0.07	Square Miles	4a
Little River	MA96-61	Headwaters outlet Hamblin Pond, Mashpee to mouth at confluence with Great River, Mashpee.	0.03	Square Miles	4a
Little River	MA96-99	Headwaters outlet Lovells Pond, Barnstable to confluence with tidal portion south of Old Post Road, Barnstable.	1.80	Miles	5
Long Pond	MA96179	Wellfleet.	35.00	Acres	4a
Long Pond	MA96180	Yarmouth.	54.00	Acres	3
Long Pond	MA96183	Brewster/Harwich.	715.00	Acres	5
Long Pond	MA96184	Barnstable.	48.00	Acres	4c
Lovells Pond	MA96185	Barnstable.	54.00	Acres	5
Lovers Lake	MA96186	Chatham.	37.00	Acres	5
Lower Mill Pond	MA96188	Brewster.	44.00	Acres	5
Maraspin Creek	MA96-06	From Commerce Road, Barnstable to mouth at inlet Barnstable Harbor at Blish Point, Barnstable.	0.03	Square Miles	4a
Mashpee Pond	MA96194	Mashpee/Sandwich.	377.00	Acres	4a
Mashpee River	MA96-24	Quinaquisset Avenue, Mashpee to mouth at inlet Shoestring Bay (formerly to mouth at Popponesset Bay), Mashpee.	0.08	Square Miles	4a
Mashpee River	MA96-89	Headwaters, outlet Mashpee Pond, Mashpee to Quinaquisset Avenue, Mashpee.	2.70	Miles	2
Middle Pond	MA96198	Barnstable.	104.00	Acres	5
Mill Creek	MA96-37	Headwaters outlet Hallets Millpond, Barnstable/Yarmouth to mouth at inlet Cape Cod Bay, Barnstable/Yarmouth.	0.03	Square Miles	4a
Mill Creek	MA96-41	Headwaters outlet Taylors Pond, Chatham to mouth at inlet Cockle Cove, Chatham.	0.03	Square Miles	4a
Mill Creek	MA96-80	Headwaters, outlet Mill Pond, Yarmouth to mouth at inlet Lewis Bay, Yarmouth.	0.07	Square Miles	4a
Mill Creek	MA96-85	Headwaters, outlet Shawme Lake Lower, Sandwich to mouth at confluence with Old Harbor Creek, Sandwich.	0.02	Square Miles	4a
Mill Pond	MA96-52	including Little Mill Pond (PALIS # 96174), Chatham.	0.06	Square Miles	4a
Miss Thachers Pond	MA96258	Yarmouth.	6.00	Acres	3
Moll Pond	MA96355	Eastham.	3.00	Acres	5
Muddy Creek	MA96-51	Source south of Countryside Drive and north-northeast of Old Queen Anne Road, Chatham to mouth at inlet Pleasant Bay, Harwich/Chatham, including Upper and Lower reaches.	0.05	Square Miles	4a

Appendix 1
Assessment units and integrated list categories presented alphabetically by major watershed

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Mystic Lake	MA96218	Barnstable.	146.00	Acres	5
Namequoit River	MA96-71	Headwaters, outlet Areys Pond, Orleans to mouth at confluence with The River, Orleans.	0.06	Square Miles	4a
Namskaket Creek	MA96-27	Source west of Route 6, Orleans/Brewster to mouth at inlet Cape Cod Bay, Brewster/Orleans.	0.03	Square Miles	4a
Nauset Harbor	MA96-28	The waters south of an imaginary line drawn east from Woods Cove, Orleans around the southern point of Stony Island, around the southern end of the unnamed island in the harbor, to Cape Cod National Seashore (CCNS), excluding Mill Pond, Orleans (area within CCNS designated as ORW).	0.41	Square Miles	2
North Bay	MA96-66	From Prince Cove outlet at Fox Island to just south of Bridge Street (including Dam Pond) and separated from Cotuit Bay at a line from Point Isabella, Barnstable southward to the opposite shore, Barnstable.	0.47	Square Miles	4a
North Pond	MA96225	Barnstable.	4.00	Acres	3
Nye Pond	MA96228	Sandwich.	6.00	Acres	3
Old Harbor Creek	MA96-84	From Foster Road, Sandwich to mouth at inlet Sandwich Harbor, Sandwich.	0.06	Square Miles	4a
Oyster Pond	MA96-45	Including Stetson Cove, Chatham.	0.21	Square Miles	4a
Oyster Pond	MA96-62	east of Fells Road, Falmouth.	0.10	Square Miles	4a
Oyster Pond River	MA96-46	Headwaters outlet Oyster Pond, Chatham to mouth at inlet Stage Harbor, Chatham.	0.14	Square Miles	4a
Pamet River	MA96-31	From tidegate at Route 6A, Truro to mouth at inlet Cape Cod Bay (including Pamet Harbor), Truro.	0.14	Square Miles	4a
Parkers River	MA96-38	Headwaters outlet Seine Pond, Yarmouth to mouth at inlet Nantucket Sound, Yarmouth (excluding Lewis Pond, Yarmouth).	0.04	Square Miles	4a
Paw Wah Pond	MA96-72	Orleans.	0.01	Square Miles	4a
Perch Pond	MA96-53	Connects to northwest end of Great Pond, west of Keechipam Way, Falmouth.	0.03	Square Miles	4a
Peters Pond	MA96244	Sandwich/Mashpee.	123.00	Acres	4a
Pilgrim Lake	MA96246	Orleans.	38.00	Acres	3
Pleasant Bay	MA96-77	The waters between the mouth of Muddy Creek, Harwich and imaginary lines drawn from the northeastern edge of Orleans (near The Horseshoe and The Narrows), southeasterly around the northeastern tip of Sipson Island, and Sipson Meadow, Orleans then south to the northern tip of Strong Island, Chatham and from the southeastern tip of Strong Island to Allen Point, Chatham (excluding the delineated segments; Bassing Harbor, Round Cove and Quanset Pond).	2.88	Square Miles	4a
Pochet Neck	MA96-73	outlet to Little Pleasant Bay, Orleans (areas within Cape Cod National Seashore designated as ORW).	0.24	Square Miles	4a
Popponesset Bay	MA96-40	The waters seaward of an imaginary line connecting Ryefield Point, Barnstable and Punkhorn Point, Mashpee to inlet of Nantucket Sound (including Ockway Bay, Mashpee and Pinquickset Cove, Barnstable) (excludes Popponesset Creek, Mashpee).	0.68	Square Miles	4a
Popponesset Creek	MA96-39	All waters west of Popponesset Island (from Popponesset Island Road bridge at the north to a line extended from the southeastern most point of the island southerly to Popponesset Beach), Mashpee.	0.05	Square Miles	5

Appendix 1
Assessment units and integrated list categories presented alphabetically by major watershed

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Prince Cove	MA96-07	Includes areas east of Prince Cove (which are locally known as "Warren Cove" and "Prince Cove Channel") to confluence with North Bay, Barnstable.	0.14	Square Miles	4a
Provincetown Harbor	MA96-29	The waters northwest of an imaginary line drawn northeasterly from the tip of Long Point, Provincetown to Pilgrim Beach (in vacinity of Sandbars Inn), Truro (area within Cape Cod National Seashore designated as ORW).	4.33	Square Miles	4a
Quanset Pond	MA96-74	Orleans.	0.02	Square Miles	4a
Quashnet River	MA96-20	From just south of Route 28, Falmouth to mouth at inlet Waquoit Bay, Falmouth. Also known as Moonakis River.	0.07	Square Miles	4a
Quashnet River	MA96-90	Headwaters, outlet Johns Pond, Mashpee to just south of Route 28, Falmouth (area within Waquoit Bay ACEC designated as ORW).	4.10	Miles	2
Quivett Creek	MA96-09	Outlet of unnamed pond just south of Route 6A, Brewster/Dennis to mouth at inlet Cape Cod Bay, Brewster/Dennis.	0.04	Square Miles	4a
Red Brook	MA96-25	From dam (NATID: MA01037) at Red Brook Road, Falmouth/Mashpee to mouth at inlet Hamblin Pond, Falmouth/Mashpee.	0.01	Square Miles	2
Red Lily Pond	MA96257	Barnstable.	4.00	Acres	5
Red River	MA96-107	Headwaters west of Mayflower Drive, Chatham to south Chatham Road, Chatham.	0.90	Miles	5
Rock Harbor Creek	MA96-16	Headwaters outlet Cedar Pond, Orleans to mouth at inlet Cape Cod Bay, Eastham/Orleans.	0.03	Square Miles	4a
Round Cove	MA96-75	east of Route 28, Harwich outlet to Pleasant Bay, Harwich.	0.02	Square Miles	5
Round Pond (East)	MA96260	Truro.	6.00	Acres	4a
Round Pond (West)	MA96261	Truro.	2.00	Acres	4a
Rushy Marsh Pond	MA96266	Barnstable.	14.00	Acres	3
Ryder Cove	MA96-50	Chatham.	0.19	Square Miles	4a
Ryder Pond	MA96268	Truro.	18.00	Acres	5
Santuit Pond	MA96277	Mashpee.	164.00	Acres	5
Santuit River	MA96-91	Headwaters, outlet Santuit Pond, Mashpee to confluence with tidal portion south of Old Mill Road/Old Kings Road, Mashpee/Barnstable.	1.60	Miles	2
Santuit River	MA96-92	From confluence with fresh water portion south of Old Mill Road, Mashpee to mouth at inlet Shoestring Bay, Mashpee/Barnstable.	0.01	Square Miles	4a
Saquatucket Harbor	MA96-23	South of Route 28, Harwich outlet to Nantucket Sound, Harwich.	0.02	Square Miles	4a
Scargo Lake	MA96279	Dennis.	54.00	Acres	3
Schoolhouse Pond	MA96281	Chatham.	20.00	Acres	3
Scorton Creek	MA96-30	Jones Lane, Sandwich to mouth at inlet Cape Cod Bay, Sandwich.	0.03	Square Miles	4a
Seapuit River	MA96-64	south of Osterville Grand Island, Barnstable to Cotuit Bay and West Bay, Barnstable.	0.06	Square Miles	4a
Sesuit Creek	MA96-13	Approximately 650 feet downstream from Route 6A, Dennis to mouth at inlet Sesuit Harbor, Cape Cod Bay, Dennis.	0.01	Square Miles	4a
Shallow Pond	MA96285	Barnstable.	76.00	Acres	3
Shawme Lake Lower	MA96288	Sandwich.	25.00	Acres	5
Sheep Pond	MA96289	Brewster.	139.00	Acres	4a

Appendix 1
Assessment units and integrated list categories presented alphabetically by major watershed

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Shoestring Bay	MA96-08	Quinaquisset Avenue, Mashpee/Barnstable to Popponesset Bay (line from Ryefield Point, Barnstable to Punkhorn Point, Mashpee, including Gooseberry Island), Barnstable/Mashpee.	0.31	Square Miles	4a
Shubael Pond	MA96293	Barnstable.	55.00	Acres	3
Slough Pond	MA96298	Truro.	29.00	Acres	4a
Smith Pond	MA96301	Brewster.	11.00	Acres	3
Snake Pond	MA96302	Sandwich.	81.00	Acres	4a
Snow Pond	MA96303	Truro.	7.00	Acres	4a
Snows Creek	MA96-81	East of Old Colony Road, Barnstable to mouth at inlet Lewis Bay, Barnstable.	0.02	Square Miles	4a
Spectacle Pond	MA96306	Wellfleet.	2.00	Acres	4a
Spectacle Pond	MA96307	Sandwich.	93.00	Acres	4a
Springhill Creek	MA96-87	From railroad crossing northeast of Route 6A, Sandwich to mouth at confluence with Old Harbor Creek, Sandwich.	0.01	Square Miles	4a
Stage Harbor	MA96-11	From outlet Mill Pond, Chatham (includes Mitchell River SARIS# 9661975) to inlet of Nantucket Sound at a line from the southernmost point of Harding Beach southeast to Harding Beach Point, Chatham.	0.56	Square Miles	4a
Stewarts Creek	MA96-94	Estuarine portion west of Stetson Street, Barnstable to mouth at inlet Hyannis Harbor, Barnstable.	0.01	Square Miles	4a
Stillwater Pond	MA96309	Chatham.	18.00	Acres	5
Swan Pond River	MA96-14	Headwaters, outlet Swan Pond, Dennis to mouth at inlet Nantucket Sound, Dennis.	0.04	Square Miles	5
Taylors Pond	MA96-42	Chatham.	0.02	Square Miles	4a
The River	MA96-76	The water landward of an imaginary line drawn between Old Field Point and Namequoit Point including Meetinghouse Pond, and Kescayo Gansett Pond (locally known as "Lonnies Pond"), Orleans (excluding the delineated segments; Namequoit River and Areys Pond).	0.41	Square Miles	4a
Town Cove	MA96-68	Entire cove, Orleans/Eastham (including Rachael Cove and Woods Cove, Orleans) outlet to Nauset Harbor, Orleans (area within Cape Cod National Seashore designated as ORW).	0.79	Square Miles	5
Uncle Harvey Pond	MA96319	Orleans.	6.00	Acres	5
Unnamed Tributary	MA96-100	Unnamed tributary to Halls Creek, Barnstable from headwaters south of the intersection of Old Craigville and Old Town roads, Barnstable to confluene with tidal portion just south of Craigville Beach Road, Barnstable.	0.50	Miles	5
Unnamed Tributary	MA96-104	Unnamed tributary to Freemans Pond, Brewster from outlet of channelized wetland south of Lower Road, Brewster to mouth at inlet Freemans Pond, Brewster.	0.60	Miles	5
Unnamed Tributary	MA96-105	Unnamed tributary to Herring River, headwaters outlet Walkers Pond, Harwich to outlet channelized wetland south of Great Western Road, Harwich.	3.30	Miles	2
Unnamed Tributary	MA96-108	Unnamed tributary to Herring River, headwaters outlet Perch Pond, Wellfleet to mouth at confluence with Herring River, Wellfleet (area within Cape Cod National Seashore designated as ORW).	2.00	Miles	5
Unnamed Tributary	MA96-97	Unnamed tributary to Hyannis Inner Harbor (referred to in TMDL as Inner Harbor Creek), from salt water portion north of Park Avenue, Yarmouth to mouth at inlet Hyannis Inner Harbor, Yarmouth.	0.001	Square Miles	4a

Appendix 1
Assessment units and integrated list categories presented alphabetically by major watershed

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Upper Mill Pond	MA96324	Brewster.	249.00	Acres	2
Upper Shawme Lake	MA96326	Sandwich.	21.00	Acres	5
Village Pond	MA96329	Truro.	2.00	Acres	3
Wakeby Pond	MA96346	Mashpee/Sandwich.	353.00	Acres	4a
Walkers Pond	MA96331	Brewster.	100.00	Acres	5
Waquoit Bay	MA96-21	From mouths of Seapit River, Quashnet River (also known as Moonakis River), Falmouth and Great River, Mashpee to inlet of Vineyard Sound, Falmouth/Mashpee.	1.43	Square Miles	5
Wellfleet Harbor	MA96-34	The waters north of an imaginary line drawn east from the southern tip of Jeremy Point, Wellfleet to Sunken Meadow, Eastham excluding the estuaries of Herring River, Duck Creek, Blackfish Creek, and Fresh Brook, Wellfleet (area within Cape Cod National Seashore designated as ORW).	8.40	Square Miles	2
Wequaquet Lake	MA96333	Barnstable.	576.00	Acres	4a
West Bay	MA96-65	From south of the Bridge Street bridge, Barnstable outlet to Nantucket Sound including Eel River, Barnstable (excludes Seapuit River).	0.52	Square Miles	4a
Whites Brook	MA96-102	Headwaters in channelized wetland south of Route 6A, Yarmouth to confluence with tidal portion north of Route 6A, Yarmouth.	0.30	Miles	5
Wychmere Harbor	MA96-96	south of Route 28, Harwich outlet to Nantucket Sound, Harwich.	0.02	Square Miles	5
Charles					
Alder Brook	MA72-22	Headwaters, perennial portion northwest of the Route 135 and South Street intersection, Needham to mouth at confluence with the Charles River, Needham.	0.30	Miles	5
Beaver Brook	MA72-12	Headwaters, outlet Beaver Pond, Bellingham to mouth at confluence with the Charles River, Bellingham.	1.40	Miles	5
Beaver Brook	MA72-28	Headwaters, perennial portion north of Route 2, Lexington to mouth at confluence with the Charles River, Waltham (one culverted portion approximately 2900 feet (0.55mile)).	5.50	Miles	5
Beaver Pond	MA72004	Bellingham/Milford.	87.00	Acres	4a
Beaver Pond	MA72006	Franklin.	32.00	Acres	4c
Bogastow Brook	MA72-16	Headwaters, outlet Factory Pond, Holliston to mouth at inlet South End Pond, Millis.	9.40	Miles	4a
Brookline Reservoir	MA72010	Brookline.	21.00	Acres	3
Bulloughs Pond	MA72011	Newton.	7.00	Acres	5
Cambridge Reservoir	MA72014	Waltham/Lincoln/Lexington.	531.00	Acres	5
Cambridge Reservoir, Upper Basin	MA72156	Lincoln/Lexington.	44.00	Acres	5
Cedar Swamp Pond	MA72016	locally known as "Milford Pond", Milford.	99.00	Acres	4a
Chandler Pond	MA72017	Boston.	11.00	Acres	5
Charles River	MA72-01	Headwaters, outlet Echo Lake, Hopkinton to Dilla Street (just upstream of Cedar Swamp Pond), Milford.	2.50	Miles	4a
Charles River	MA72-03	From Milford WWTF discharge (NPDES: MA0100579), Hopedale to outlet Box Pond (formerly segment MA72008), Bellingham.	3.40	Miles	5
Charles River	MA72-04	From outlet Box Pond, Bellingham to inlet Populatic Pond, Norfolk/Medway (one culverted portion approximately 350 feet (0.07mile)).	11.50	Miles	5

Appendix 1
Assessment units and integrated list categories presented alphabetically by major watershed

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Charles River	MA72-05	From outlet Populatic Pond, Norfolk/Medway to South Natick Dam (NATID: MA00341), Natick.	18.10	Miles	5
Charles River	MA72-06	From South Natick Dam (NATID: MA00341), Natick to Chestnut Street, Needham/Dover.	8.20	Miles	5
Charles River	MA72-07	From Chestnut Street, Needham/Dover to Watertown Dam (NATID: MA00456), Watertown.	24.00	Miles	5
Charles River	MA72-33	From outlet Cedar Swamp Pond, Milford to the Milford WWTF discharge (NPDES: MA0100579), Hopedale (formerly part of segment MA72-02) (two culverted portions totaling approximately 1100 feet (0.21mile)).	2.00	Miles	4a
Charles River	MA72-36	From Watertown Dam (NATID: MA00456), Watertown to the Boston University Bridge, Boston/Cambridge (formerly part of segment MA72-08).	6.10	Miles	5
Charles River	MA72-38	From Boston University Bridge, Boston/Cambridge to mouth at the New Charles River Dam (NATID: MA01092), Boston (formerly part of segment MA72-08).	3.10	Miles	5
Cheese Cake Brook	MA72-29	Emerges south of Route 16, Newton to mouth at confluence with the Charles River, Newton.	1.40	Miles	4a
Chestnut Hill Reservoir	MA72023	Boston.	82.00	Acres	3
Chicken Brook	MA72-34	Source, outlet Waseeka Sanctuary Pond, Holliston to mouth at confluence with the Charles River, Medway.	7.40	Miles	5
Crystal Lake	MA72030	Newton.	27.00	Acres	5
Dopping Brook	MA72-40	Headwater oulet small unnamed pond on Holliston/Sherborn border to mouth at confluence with Bogastow Brook, Holliston/Sherborn.	2.60	Miles	2
Dug Pond	MA72034	Natick.	50.00	Acres	4c
Echo Lake	MA72035	Milford/Hopkinton.	72.00	Acres	4a
Factory Pond	MA72037	Holliston.	10.00	Acres	4a
Farm Pond	MA72039	Sherborn.	125.00	Acres	3
Franklin Reservoir Northeast	MA72095	Franklin.	21.00	Acres	4a
Franklin Reservoir Southwest	MA72032	Franklin.	13.00	Acres	4a
Fuller Brook	MA72-18	Headwater south of Route 135, Needham to mouth at confluence with Waban Brook, Wellesley (one culverted portion approximately 360 feet (0.07mile)).	4.30	Miles	5
Halls Pond	MA72043	Brookline.	0.60	Acres	3
Hammond Pond	MA72044	Newton.	22.00	Acres	2
Hardys Pond	MA72045	Waltham.	43.00	Acres	4a
Hobbs Brook	MA72-45	Headwaters west of Bedford Road, Lincoln to inlet Cambridge Reservoir, Upper Basin, Lincoln	2.40	Miles	5
Hobbs Brook	MA72-46	From outlet Cambridge Reservoir, Waltham to mouth at confluence with Stony Brook, Weston.	1.80	Miles	5
Hopping Brook	MA72-35	Source in Cedar Swamp, Holliston to mouth at confluence with the Charles River, Bellingham/Medway.	4.90	Miles	5
Houghton Pond	MA72050	Holliston.	17.00	Acres	4a
Jamaica Pond	MA72052	Boston.	67.00	Acres	5
Jennings Pond	MA72053	Natick.	7.00	Acres	3
Kendrick Street Pond	MA72055	Needham.	39.00	Acres	5
Kingsbury Pond	MA72056	Norfolk.	15.00	Acres	4c

Appendix 1
Assessment units and integrated list categories presented alphabetically by major watershed

Water Body	Segment ID	Description	Size	Units	Category
Lake Archer	MA72002	Wrentham.	77.00	Acres	4c
Lake Pearl	MA72092	Wrentham.	237.00	Acres	4a
Lake Waban	MA72125	Wellesley.	109.00	Acres	4c
Lake Winthrop	MA72140	Holliston.	131.00	Acres	5
Linden Pond	MA72063	Holliston.	1.00	Acres	4a
Little Farm Pond	MA72064	Sherborn.	24.00	Acres	3
Louisa Lake	MA72068	Milford.	8.00	Acres	3
Lymans Pond	MA72070	Dover.	4.00	Acres	4a
Mill Brook	MA72-39	Source wetlands, Pine Street, Medfield to mouth at confluence with the Charles River, Medfield.	3.70	Miles	2
Mill River	MA72-15	Headwaters, outlet Bush Pond, Norfolk to mouth at confluence with the Charles River, Norfolk.	3.50	Miles	5
Mine Brook	MA72-14	Headwaters in Franklin State Forest, Franklin to mouth at confluence with the Charles River, Franklin (through Mine Brook Pond, formerly MA72077) (HQW applies upstream of former Franklin WWTP discharge, approximately 4 miles upstream of mouth (note: Franklin WWTP tied into Medway (CRWPCD) on 15 January 1980)).	8.90	Miles	5
Mirror Lake	MA72078	Wrentham/Norfolk.	62.00	Acres	4a
Morses Pond	MA72079	Wellesley/Natick.	112.00	Acres	4c
Muddy River	MA72-11	Headwaters, outlet Ward Pond in Olmstead Park, Boston through Leverett Pond, Boston/Brookline to confluence with Charles River, Boston (four culverted portions totaling approximately 2200 feet (0.42mile)).	3.60	Miles	5
Noannet Pond	MA72084	Westwood/Dover.	50.00	Acres	4c
Nonesuch Pond	MA72085	Natick/Weston.	39.00	Acres	4c
Norumbega Reservoir	MA72086	[North Basin] Weston.	14.00	Acres	3
Norumbega Reservoir	MA72087	[South Basin] Weston.	38.00	Acres	3
Populatic Pond	MA72096	Norfolk.	42.00	Acres	5
Powissett Brook	MA72-20	Headwaters, outlet Noannet Pond, Westwood to mouth at confluence with the Charles River, Dover.	1.90	Miles	5
Rock Meadow Brook	MA72-21	Headwaters, Fisher Meadow, Westwood to mouth at confluence with the Charles River, Dedham.	3.80	Miles	5
Rosemary Brook	MA72-25	Headwaters, outlet Rosemary Lake, Needham to mouth at confluence with the Charles River, Wellesley.	3.30	Miles	4a
Sandy Pond	MA72105	Lincoln.	157.00	Acres	3
Sawmill Brook	MA72-23	Headwaters, Newton to mouth at confluence with the Charles River, Boston.	2.40	Miles	5
Scarboro Golf Course Pond	MA72107	Boston.	6.00	Acres	4c
Seaverns Brook	MA72-44	Headwaters outlet Norumbega Reservoir, Weston to mouth at confluence with the Charles River, Weston.	1.60	Miles	5
South End Pond	MA72109	Millis.	30.00	Acres	3
South Meadow Brook	MA72-24	From emergence west of Parker Street, Newton to mouth at confluence with the Charles River, Newton (three culverted portions totaling approximately 2870 feet (0.54mile)).	1.70	Miles	4a

Appendix 1
Assessment units and integrated list categories presented alphabetically by major watershed

Water Body	Segment ID	Description	Size	Units	Category
Stony Brook	MA72-26	Headwaters, outlet Beaver Pond, Lincoln to mouth at inlet Stony Brook Reservoir, Waltham/Weston.	5.10	Miles	2
Stony Brook	MA72-37	Headwaters, outlet Turtle Pond, Boston to culvert entrance, Boston (two culverted portions totaling approximately 740 feet (0.14mile)).	1.60	Miles	3
Stony Brook Reservoir	MA72114	Waltham/Weston.	64.00	Acres	3
Stop River	MA72-09	Headwaters south of Route 1A, Wrentham to Norfolk-Walpole MCI discharge (NPDES: MA0102253), Norfolk (through Highland Lake formerly MA72047).	4.90	Miles	5
Stop River	MA72-10	From Norfolk-Walpole MCI discharge, Norfolk to confluence with Charles River, Medfield.	4.20	Miles	5
Todd Pond	MA72117	Lincoln.	9.00	Acres	3
Trout Brook	MA72-19	Headwaters, outlet Channings Pond, Dover to mouth at confluence with the Charles River, Dover.	2.80	Miles	5
Uncas Pond	MA72122	Franklin.	17.00	Acres	4a
Unnamed Tributary	MA72-27	Headwaters, outlet Stony Brook Reservoir, Waltham/Weston to mouth at confluence with the Charles River, Waltham/Weston.	0.20	Miles	4c
Unnamed Tributary	MA72-30	Locally known as "Laundry Brook" - emerges north of California Street, Watertown to mouth at confluence with the Charles River, Watertown (stream not depicted on 1987 Newton USGS map).	0.02	Miles	5
Unnamed Tributary	MA72-31	Locally known as "Millers River" - from emergence near Route 93, Cambridge/Boston to mouth at confluence with the Charles River, Cambridge.	0.20	Miles	5
Unnamed Tributary	MA72-32	Locally known as "Sawins Brook" - emerges east of Elm Street, Watertown to mouth at confluence with the Charles River, Watertown (one culverted portion approximately 360 feet (0.07mile)).	0.50	Miles	4a
Unnamed Tributary	MA72-41	Unnamed tributary to the Charles River, outlet Lymans Pond, Dover to mouth at confluence with the Charles River, Dover.	0.50	Miles	5
Unnamed Tributary	MA72-42	Unnamed tributary to the Charles River, from outlet unnamed pond north of South Street, Natick to mouth at confluence with the Charles River, Natick.	0.30	Miles	2
Unnamed Tributary	MA72-43	Unnamed tributary to Morses Pond, headwaters outlet Reeds Pond, Wellesley to mouth at confluence with Morses Pond, Wellesley.	0.20	Miles	5
Unnamed Tributary	MA72-47	Headwaters west of Forbes Road, Lexington to mouth at confluence with Hobbs Brook, Lincoln.	0.80	Miles	5
Unnamed Tributary	MA72-48	Headwaters northeast of the Trapelo Road/Smith Street intersection, Waltham to mouth at inlet Cambridge Reservoir, Lexington.	0.90	Miles	5
Waban Brook	MA72-17	Headwaters, outlet Lake Waban, Wellesley to mouth at confluence with the Charles River, Wellesley.	0.70	Miles	5
Walker Pond	MA72126	Millis.	9.00	Acres	3
Waseeka Sanctuary Pond	MA72155	Holliston.	17.00	Acres	3
Weld Pond	MA72131	Dedham.	27.00	Acres	2
Weston Reservoir	MA72134	Weston.	59.00	Acres	3
Weston Station Pond	MA72135	Weston.	38.00	Acres	3
Chicopee					
Abbey Brook	MA36-40	Headwaters west of Saint James Avenue, Springfield through Bemis Pond (formely reported as segment MA36011) to mouth at confluence with the Chicopee River, Chicopee.	1.50	Miles	5

Appendix 1
Assessment units and integrated list categories presented alphabetically by major watershed

Water Body	Segment ID	Description	Size	Units	Category
Adams Pond	MA36001	Oakham.	30.00	Acres	3
Alden Pond	MA36003	Ludlow.	4.00	Acres	5
Asnacomet Pond	MA36005	Hubbardston.	126.00	Acres	2
Atherton Brook	MA36-30	Headwaters, confluence Town Farm and Osgood brooks, Shutesbury to mouth at inlet Quabbin Reservoir, Pelham.	1.90	Miles	2
Beaver Lake	MA36010	Ware.	150.00	Acres	4c
Bemis Road Pond	MA36012	Hubbardston.	16.00	Acres	3
Bennett Street Pond	MA36014	Palmer.	6.00	Acres	3
Bickford Pond	MA36015	Hubbardston/Princeton.	163.00	Acres	3
Bottle Brook	MA36-46	Headwaters, perennial portion, east of Dunhamtown Brimfield Road, Brimfield to mouth at confluence with Quaboag River, Brimfield.	2.00	Miles	2
Brigham Pond	MA36020	Hubbardston.	45.00	Acres	3
Brookhaven Lake	MA36021	West Brookfield.	34.00	Acres	5
Brooks Pond	MA36022	Petersham.	87.00	Acres	3
Brooks Pond	MA36023	North Brookfield/New Braintree/Spencer/Oakham.	179.00	Acres	4c
Browning Pond	MA36025	Oakham/Spencer.	106.00	Acres	5
Burnshirt River	MA36-37	Headwaters, outlet Stone Bridge Pond, Templeton/Phillipston to mouth at confluence with Canesto Brook, Barre (through Williamsville Pond formerly segment MA36167).	8.60	Miles	2
Cadwell Creek	MA36-29	Headwaters east of Route 202 and northwest of Dodge Hill, Pelham to mouth at inlet Quabbin Reservoir, Belchertown.	3.20	Miles	2
Calkins Brook	MA36-26	Headwaters, perennial portion, southeast of Baptist Hill, Palmer to mouth at confluence with Twelvemile Brook, Wilbraham.	2.70	Miles	2
Canesto Brook	MA36-36	Headwaters, perennial portion, northwest of Hubbardston State Forest near Hubbardston/Templeton town line to mouth at confluence with Ware River, Barre.	7.30	Miles	3
Carter Pond	MA36029	Petersham.	44.00	Acres	3
Chicopee Brook	MA36-21	Headwaters, east of Peaked Mountain, Monson (through Chicopee Brook Pond, formerly segment MA36031) to mouth at confluence with Quaboag River, Monson.	9.90	Miles	5
Chicopee Reservoir	MA36033	Chicopee.	22.00	Acres	2
Chicopee River	MA36-22	Source, confluence of Ware River and Quaboag River, Palmer (through Red Bridge Impoundment formerly segment MA36171) to Red Bridge Impoundment Dam (NATID: MA00723), Wilbraham/Ludlow.	2.80	Miles	5
Chicopee River	MA36-23	Red Bridge Impoundment Dam (NATID: MA00723), Wilbraham/Ludlow to Wilbraham Pumping Station (old WWTP), Wilbraham/Ludlow.	3.80	Miles	2
Chicopee River	MA36-24	Wilbraham Pumping Station (old WWTP), Wilbraham/Ludlow to Chicopee Falls Dam (NATID: MA00719), Chicopee.	8.80	Miles	5
Chicopee River	MA36-25	Chicopee Falls Dam (NATID: MA00719), Chicopee to mouth at confluence with Connecticut River, Chicopee.	3.00	Miles	5
Cloverdale Street Pond	MA36036	Rutland.	19.00	Acres	3
Comins Pond	MA36037	Warren.	26.00	Acres	3

Appendix 1
Assessment units and integrated list categories presented alphabetically by major watershed

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Conant Brook	MA36-45	Headwaters, outlet Conant Brook Reservoir dam (NATID: MA00965), Monson to mouth at confluence with Chicopee Brook, Monson.	1.90	Miles	2
Conant Brook Reservoir	MA36038	Monson.	4.00	Acres	3
Cooley Brook	MA36-38	From the outlet of Chicopee Reservoir, Chicopee to mouth at confluence with the Chicopee River, Chicopee (segment includes "braid" that confluences with the Chicopee River upstream of the mouth of Cooley Brook).	1.20	Miles	2
Cranberry Meadow Pond	MA36040	Spencer/Charlton.	69.00	Acres	3
Cranberry River	MA36-20	Headwaters, outlet Cranberry Meadow Pond, Spencer to mouth at confluence with Sevenmile River, Spencer (through Howe Pond formerly segment MA36073).	3.60	Miles	2
Crystal Lake	MA36043	Palmer.	16.00	Acres	3
Cunningham Pond	MA36044	Hubbardston.	27.00	Acres	3
Cusky Pond	MA36045	New Braintree.	28.00	Acres	3
Danforth Brook	MA36-50	Headwaters, east of Charity Road, Hardwick to mouth at confluence with Ware River, Hardwick.	5.80	Miles	5
Dean Pond	MA36049	Brimfield/Monson.	10.00	Acres	4c
Dean Pond	MA36050	Oakham.	64.00	Acres	5
Demond Pond	MA36051	Rutland.	120.00	Acres	3
Dimmock Pond	MA36053	Springfield.	9.00	Acres	3
Doane Pond	MA36054	North Brookfield.	28.00	Acres	5
Dunn Brook	MA36-19	From confluence with Forget-Me-Not Brook, East Brookfield/Brookfield to mouth at confluence with Quaboag River, Brookfield.	2.40	Miles	2
Eames Pond	MA36056	Paxton.	58.00	Acres	5
East Branch Fever Brook	MA36-47	Headwaters, outlet Brooks Pond, Petersham to mouth at inlet Quabbin Reservoir, Petersham.	5.20	Miles	3
East Branch Swift River	MA36-35	Headwaters, confluence of Shattuck and Popple Camp brooks, Phillipston to mouth at inlet Pottapaug Pond, Petersham (through Connor Pond formerly segment MA36039).	9.80	Miles	2
East Branch Ware River	MA36-01	Headwaters, outlet Bickford Pond, Hubbardston to mouth at confluence with West Branch Ware River (forming headwaters of Ware River), Barre.	12.40	Miles	5
East Brookfield River	MA36-13	Headwaters, outlet Lake Lashaway, East Brookfield to mouth at inlet Quaboag Pond, East Brookfield.	2.40	Miles	5
Edson Pond	MA36180	Rutland.	36.00	Acres	3
Fivemile Pond	MA36061	Springfield.	36.00	Acres	3
Fivemile Pond South	MA36182	Springfield.	4.00	Acres	3
Forest Lake	MA36063	Palmer.	45.00	Acres	4c
Forget-Me-Not Brook	MA36-18	Headwaters, North Brookfield to North Brookfield WWTP discharge (NPDES: MA0101061), North Brookfield.	1.20	Miles	5
Forget-Me-Not Brook	MA36-28	North Brookfield WWTP discharge (NPDES: MA0101061), North Brookfield to mouth at confluence with Dunn Brook, East Brookfield/Brookfield.	1.30	Miles	5
Fuller Brook	MA36-41	From the Ludlow/Chicopee corporate boundary where the stream name changes from Higher Brook, to mouth at confluence with the Chicopee River, Chicopee.	1.90	Miles	5
Gaston Pond	MA36065	Barre.	15.00	Acres	3

Appendix 1
Assessment units and integrated list categories presented alphabetically by major watershed

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Hardwick Pond	MA36066	Hardwick.	67.00	Acres	4c
Haviland Pond	MA36069	Ludlow.	25.00	Acres	3
Higher Brook	MA36-42	Headwaters, perennial portion, south of Route 21, Ludlow through Harris Pond (formely reported as segment MA36067) to mouth at Ludlow/Chicopee corporate boundary where the stream name changes to Fuller Brook.	6.30	Miles	2
Hop Brook	MA36-32	Headwaters, perennial portion, upstream of West Street, New Salem to mouth at inlet Quabbin Reservoir, New Salem.	3.70	Miles	3
Horse Pond	MA36072	North Brookfield.	63.00	Acres	3
Jabish Brook	MA36-43	Headwaters, outlet Knights Pond, Belchertown to mouth at confluence with Swift River, Belchertown.	14.00	Miles	2
Joslin Brook	MA36-44	Headwaters, outlet Lovewell Pond, Hubbardston to mouth at confluence with Mason Brook, Hubbardston.	3.30	Miles	2
Kings Brook	MA36-48	Headwaters, west of Saint John Street, Palmer to mouth at confluence with Quaboag River, Palmer.	3.30	Miles	2
Knights Pond	MA36077	Belchertown.	36.00	Acres	3
Lake Lashaway	MA36079	North Brookfield/East Brookfield.	274.00	Acres	4a
Lake Lorraine	MA36084	Springfield.	28.00	Acres	5
Lake Whittemore	MA36165	Spencer.	52.00	Acres	5
Long Pond	MA36082	Rutland.	167.00	Acres	4c
Long Pond	MA36083	Springfield.	14.00	Acres	4a
Lovewell Pond	MA36085	Hubbardston.	82.00	Acres	3
Mare Meadow Reservoir	MA36090	Westminster/Hubbardston.	240.00	Acres	3
Mare Meadow Reservoir North	MA36178	Westminster.	38.00	Acres	3
Middle Branch Swift River	MA36-33	Headwaters just north of portions of Wendell and New Salem State Forests (south of the Swift River School), Wendell to mouth at inlet Quabbin Reservoir, New Salem.	6.90	Miles	3
Minechoag Pond	MA36093	Ludlow.	21.00	Acres	4a
Mona Lake	MA36094	Springfield.	11.00	Acres	4a
Moose Brook	MA36-51	Headwaters, outlet small unnamed pond north of Route 32, Barre to mouth at confluence with Ware River, Hardwick.	8.00	Miles	2
Moose Hill Reservoir	MA36179	Spencer/Leicester.	52.00	Acres	3
Moosehorn Pond	MA36097	Hubbardston.	67.00	Acres	4c
Moulton Pond	MA36098	Rutland.	65.00	Acres	3
Muddy Pond	MA36102	Oakham/Rutland.	23.00	Acres	3
Murphy Pond	MA36103	Ludlow.	6.00	Acres	3
Old Reservoir	MA36114	Barre.	37.00	Acres	4c
Palmer Reservoir	MA36115	Palmer.	8.00	Acres	3
Paradise Lake	MA36116	Monson.	17.00	Acres	3
Pattaquattic Pond	MA36117	Palmer.	18.00	Acres	3
Peppers Mill Pond	MA36121	Ware.	11.00	Acres	3
Perry Hill Pond	MA36122	Hubbardston.	23.00	Acres	3

Appendix 1
Assessment units and integrated list categories presented alphabetically by major watershed

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Pottapaug Pond	MA36125	Petersham/Hardwick.	568.00	Acres	4a
Prince River	MA36-08	Headwaters, outlet Hemingway Pond, Barre to mouth at confluence with Ware River, Barre (excluding approximately 0.6 miles through Old Reservoir, segment MA36114).	7.10	Miles	5
Quabbin Reservoir	MA36129	Petersham/Pelham/Ware/Hardwick/Shutesbury/Belchertown/New Salem.	24012	Acres	4a
Quaboag Pond	MA36130	Brookfield/East Brookfield.	544.00	Acres	5
Quaboag River	MA36-14	Headwaters, outlet Quaboag Pond, Brookfield to Route 67 bridge, West Brookfield.	6.10	Miles	2
Quaboag River	MA36-15	Route 67 bridge, West Brookfield to Warren WWTP discharge (NPDES: MA0101567), Warren.	6.20	Miles	5
Quaboag River	MA36-16	Warren WWTP discharge (NPDES: MA0101567), Warren to Route 32 bridge, Palmer/Monson.	8.70	Miles	5
Quaboag River	MA36-17	Route 32 bridge, Palmer/Monson to mouth at confluence with Ware River (forming headwaters of Chicopee River), Palmer.	5.30	Miles	5
Quacumquasit Pond	MA36131	Brookfield/East Brookfield/Sturbridge.	223.00	Acres	4a
Queen Lake	MA36132	Phillipston.	139.00	Acres	3
Sevenmile River	MA36-11	Headwaters, outlet Browning Pond, Spencer to confluence with Cranberry River, Spencer.	7.30	Miles	5
Sevenmile River	MA36-12	Confluence with Cranberry River, Spencer to mouth at confluence with East Brookfield River, East Brookfield.	2.50	Miles	5
Shaw Pond	MA36138	Leicester.	64.00	Acres	3
Spectacle Pond	MA36142	Wilbraham.	9.00	Acres	4a
Springfield Reservoir	MA36145	Ludlow.	393.00	Acres	3
Stone Bridge Pond	MA36148	Templeton.	32.00	Acres	3
Sugden Reservoir	MA36150	Spencer.	85.00	Acres	4a
Swift River	MA36-09	Outlet Winsor Dam (NATID: MA00588), Belchertown to Upper Bondsville Mill Dam (NATID: MA00560), Belchertown/Palmer.	5.60	Miles	2
Swift River	MA36-10	Upper Bondsville Mill Dam (NATID: MA00560), Belchertown/Palmer to mouth at confluence with Ware River, Palmer.	3.90	Miles	2
Thayer Pond	MA36181	Rutland.	46.00	Acres	3
Thompson Lake	MA36154	Palmer.	34.00	Acres	3
Thompsons Pond	MA36155	Spencer.	116.00	Acres	3
Town Barn Beaver Pond	MA36156	Petersham.	20.00	Acres	3
Turkey Hill Brook	MA36-49	Outlet Thompsons Pond, Spencer to mouth at confluence with Sevenmile River, Spencer.	3.90	Miles	2
Turkey Hill Pond	MA36157	Rutland/Paxton.	90.00	Acres	4c
Unnamed Tributary	MA36-39	Unnamed tributary to the Chicopee River locally known as "Poor Brook" from headwaters near the Conrail tracks, Springfield to mouth at confluence with the Chicopee River, Chicopee.	2.20	Miles	5
Waite Pond	MA36161	Hubbardston.	35.00	Acres	3
Ware River	MA36-03	MDC intake, Barre to dam at South Barre Reservoir (NATID: MA00091), Barre (through former segments Powder Mill Pond MA36126 and South Barre Reservoir MA36141).	2.10	Miles	5

Appendix 1
Assessment units and integrated list categories presented alphabetically by major watershed

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Ware River	MA36-04	Dam at South Barre Reservoir (NATID: MA00091), Barre to Wheelwright Pond Dam (NATID: MA00616), New Braintree/Hardwick.	4.90	Miles	2
Ware River	MA36-05	Wheelwright Pond Dam (NATID: MA00616), New Braintree/Hardwick to Ware Impoundment dam (NATID: MA00594), Ware.	11.50	Miles	5
Ware River	MA36-06	Ware Impoundment dam (NATID: MA00594), Ware to Thorndike Dam (NATID: MA00563), Palmer.	10.10	Miles	5
Ware River	MA36-07	Thorndike Dam (NATID: MA00563), Palmer to mouth at confluence with Quaboag River (forming headwaters of Chicopee River), Palmer.	2.50	Miles	2
Ware River	MA36-27	Confluence of East Branch Ware and West Branch Ware rivers, Barre to MDC intake, Barre.	4.90	Miles	5
West Branch Fever Brook	MA36-34	Headwaters, perennial portion, just north (upstream) of Route 122, Petersham to mouth at inlet Quabbin Reservoir, Petersham.	3.40	Miles	3
West Branch Swift River	MA36-31	Headwaters, outlet of small unnamed impoundment east of Cooleyville Road (in Wendell State Forest), Wendell to mouth at inlet Quabbin Reservoir, Shutesbury/New Salem.	6.30	Miles	2
West Branch Ware River	MA36-02	Headwaters, outlet Brigham Pond, Hubbardston to mouth at confluence with East Branch Ware River (forming headwaters of Ware River), Barre.	4.50	Miles	3
Wickaboag Pond	MA36166	West Brookfield.	316.00	Acres	4a
Concord (SuAsCo)					
Ashland Reservoir	MA82003	Ashland.	168.00	Acres	4a
Assabet Brook	MA82B-17	Headwaters, outlet Fletchers Pond, Stow to mouth at confluence with the Assabet River, Stow.	2.00	Miles	3
Assabet River	MA82B-01	Headwaters, outlet Assabet River Reservoir, Westborough to the Westborough WWTP discharge (NPDES: MA0100412), Westborough.	1.20	Miles	5
Assabet River	MA82B-02	From the Westborough WWTP discharge (NPDES: MA0100412), Westborough to the dam (NATID: MA02843) Route 20, Northborough.	3.80	Miles	5
Assabet River	MA82B-03	From the dam (NATID: MA02843) Route 20, Northborough to the Marlborough West WWTP discharge (NPDES: MA0100480), Marlborough.	2.40	Miles	5
Assabet River	MA82B-04	From the Marlborough West WWTP discharge (NPDES: MA0100480), Marlborough to the Hudson WWTP discharge (NPDES: MA0101788), Hudson.	8.00	Miles	5
Assabet River	MA82B-05	From the Hudson WWTP discharge (NPDES: MA0101788), Hudson to the USGS gage (#01097000) at Routes 27/62, Maynard.	8.20	Miles	5
Assabet River	MA82B-06	From the USGS gage (#01097000) at Routes 27/62, Maynard to the Powdermill Dam (NATID: MA00128), Acton.	1.20	Miles	5
Assabet River	MA82B-07	From the Powdermill Dam (NATID: MA00128), Acton to mouth at confluence with the Sudbury River (forming headwaters Concord River), Concord.	6.40	Miles	5
Assabet River Reservoir	MA82004	Westborough.	355.00	Acres	5
Bartlett Pond	MA82007	Northborough.	52.00	Acres	4c
Batemans Pond	MA82008	Concord.	25.00	Acres	4c
Beaver Brook	MA82A-34	Headwaters south at Rack Road, Chelmsford to mouth at confluence with River Meadow Brook, Chelmsford.	6.30	Miles	5
Boons Pond	MA82011	Stow/Hudson.	174.00	Acres	4a
Carding Mill Pond	MA82015	Sudbury.	40.00	Acres	5
Cedar Swamp Pond	MA82016	Westborough.	17.00	Acres	3

Appendix 1
Assessment units and integrated list categories presented alphabetically by major watershed

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Chauncy Lake	MA82017	Westborough.	173.00	Acres	4c
Clamshell Pond	MA82018	Clinton.	24.00	Acres	3
Cold Harbor Brook	MA82B-18	Headwaters, outlet Rocky Pond, Boylston to mouth at confluence with Howard Brook, Northborough.	6.10	Miles	2
Coles Brook	MA82B-22	Headwaters, east of Francine Road, Acton to mouth at confluence with Fort Pond Brook, Acton.	2.00	Miles	5
Concord River	MA82A-07	Headwaters, confluence Assabet and Sudbury rivers, Concord to Billerica Water Supply intake, Billerica.	10.40	Miles	5
Concord River	MA82A-08	From Billerica Water Supply intake, Billerica to Rogers Street bridge, Lowell.	5.10	Miles	5
Concord River	MA82A-09	From Rogers Street bridge, Lowell to mouth at confluence with the Merrimack River, Lowell.	0.90	Miles	5
Danforth Brook	MA82B-19	Headwaters, confluence of Mill Brook and an unnamed tributary draining from Little Pond, Bolton to mouth at inlet of Bruces Pond, Hudson.	2.40	Miles	2
Dean Park Pond	MA82026	Shrewsbury.	7.00	Acres	5
Denny Brook	MA82A-27	Headwaters, perennial portion, outlet unnamed pond west of South Street, Westborough to mouth at confluence with Jackstraw Brook, Westborough.	0.60	Miles	3
Dudley Pond	MA82029	Wayland.	83.00	Acres	5
Eames Brook	MA82A-13	Headwaters, outlet Farm Pond, Framingham to mouth at confluence with the Sudbury River, Framingham.	0.60	Miles	5
Elizabeth Brook	MA82B-12	From the outlet of an unnamed pond (Delaney Project on Stow/Harvard border) west of Harvard Road, Stow to mouth at inlet of Fletchers Pond, Stow.	3.70	Miles	5
Elm Street Pond	MA82032	Chelmsford/Carlisle.	65.00	Acres	3
Farm Pond	MA82035	Framingham.	139.00	Acres	5
Farrar Pond	MA82036	Lincoln.	83.00	Acres	3
Fisk Pond	MA82038	Natick.	62.00	Acres	4c
Fiske Street Pond	MA82037	Carlisle/Chelmsford.	38.00	Acres	3
Fort Meadow Brook	MA82B-11	Headwaters, outlet Fort Meadow Reservoir, Marlborough/Hudson to mouth at confluence with Assabet River, Hudson.	2.70	Miles	2
Fort Meadow Reservoir	MA82042	Marlborough/Hudson.	254.00	Acres	5
Fort Pond	MA82043	Littleton.	102.00	Acres	3
Fort Pond Brook	MA82B-13	From source in a wetland just west of Fort Pond, Littleton to mouth at inlet Warners Pond, Concord.	10.20	Miles	3
Framingham Reservoir #1	MA82044	Framingham.	117.00	Acres	5
Framingham Reservoir #2	MA82045	Framingham/Ashland.	114.00	Acres	5
Framingham Reservoir #3	MA82046	Framingham.	222.00	Acres	4c
Gates Pond	MA82047	Berlin.	73.00	Acres	3
Gates Pond Brook	MA82B-10	Headwaters, outlet Gates Pond, Berlin to mouth at confluence with the Assabet River, Berlin.	1.00	Miles	3
Gleasons Pond	MA82048	Framingham.	11.00	Acres	3
Great Meadows Pond #3	MA82053	Concord.	53.00	Acres	4c
Grist Mill Pond	MA82055	Sudbury/Marlborough.	17.00	Acres	5
Hager Pond	MA82056	Marlborough.	30.00	Acres	5

Appendix 1
Assessment units and integrated list categories presented alphabetically by major watershed

Water Body	Segment ID	Description	Size	Units	Category
Heard Pond	MA82058	Wayland.	76.00	Acres	5
Heart Pond	MA82059	Chelmsford/Westford.	94.00	Acres	5
Hocomonco Pond	MA82060	Westborough.	27.00	Acres	5
Hop Brook	MA82A-05	Headwaters, outlet Carding Mill Pond, Sudbury to mouth at confluence with Allowance Brook, Sudbury (through Stearns Mill Pond; formerly segment MA82104) (Allowance Brook was identified as Landham Brook on USGS quads prior to 1987).	6.70	Miles	5
Hop Brook	MA82A-06	From the confluence of Allowance Brook, Sudbury to the confluence with the Sudbury River, Wayland (this segment was formerly identified as Wash Brook, Hop Brook appeared as Wash Brook and Allowance Brook was previously identified as Landham Brook on USGS quads prior to 1987).	3.00	Miles	5
Hop Brook	MA82B-20	Outlet Smith Pond, Northborough to mouth at confluence with the Assabet River, Northborough.	1.30	Miles	2
Hopkinton Reservoir	MA82061	Hopkinton/Ashland.	161.00	Acres	5
Indian Brook	MA82A-23	Headwaters, outlet Icehouse Pond, Hopkinton to the inlet of Hopkinton Reservoir, Hopkinton (formerly part of segment MA82A-12).	2.30	Miles	3
Indian Brook	MA82A-24	Outlet of Hopkinton Reservoir, Ashland to mouth at confluence with the Sudbury River, Ashland (formerly part of segment MA82A-12).	1.70	Miles	2
Jackstraw Brook	MA82A-28	From the most downstream crossing of Upton Road (first crossing south of Hopkinton Road), Westborough to mouth at inlet of Cedar Swamp Pond, Westborough.	1.50	Miles	3
Jackstraw Brook	MA82A-32	Headwaters, perennial portion west of Upton Road, Westborough to the most downstream crossing of Upton Road (first crossing south of Hopkinton Road), Westborough.	0.40	Miles	3
Lake Cochituate	MA82020	[North Basin] Natick/Framingham/Wayland.	196.00	Acres	5
Lake Cochituate	MA82125	[Middle Basin] Natick/Wayland.	134.00	Acres	5
Lake Cochituate	MA82126	[Carling Basin] Natick.	14.00	Acres	5
Lake Cochituate	MA82127	[South Basin] Natick.	239.00	Acres	5
Learned Pond	MA82069	Framingham.	34.00	Acres	3
Little Chauncy Pond	MA82070	Northborough.	43.00	Acres	4c
Long Pond	MA82072	Littleton.	102.00	Acres	5
Meadow Pond	MA82129	Carlisle.	12.00	Acres	4c
Milham Reservoir	MA82077	Marlborough.	67.00	Acres	3
Mill Brook	MA82A-20	Headwaters, outlet Crosby Pond, Concord to mouth at confluence with the Concord River, Concord.	2.70	Miles	4c
Nagog Pond	MA82082	Littleton/Acton.	278.00	Acres	3
Nashoba Brook	MA82B-14	From source just south of Route 110, Westford to mouth at confluence with Fort Pond Brook, Concord (through Ice House Pond; formerly segment MA82066).	9.40	Miles	5
North Brook	MA82B-21	Headwaters, east of Ballville Road and north of Wataquadock Hill Road, Bolton to mouth at confluence with the Assabet River, Berlin (excluding the approximately 0.1 mile through Wataquatic Pond (locally 'Fyfeshire Pond'), Bolton).	7.60	Miles	2
North Great Meadows	MA82084	Concord.	73.00	Acres	4c

Appendix 1
Assessment units and integrated list categories presented alphabetically by major watershed

Water Body	Segment ID	Description	Size	Units	Category
Nutting Lake	MA82088	[East Basin] Billerica.	30.00	Acres	5
Nutting Lake	MA82124	[West Basin] Billerica.	51.00	Acres	4a
Pantry Brook	MA82A-19	From source west of Haynes Road, Sudbury to mouth at confluence with the Sudbury River, Sudbury.	3.10	Miles	5
Piccadilly Brook	MA82A-30	Headwaters, outlet Westboro Reservoir, Westborough to mouth at inlet to Cedar Swamp Pond, Westborough.	2.00	Miles	3
Pine Brook	MA82A-14	Headwaters, south of Route 20, just east of the Weston/Wayland border to mouth at confluence with the Sudbury River, Wayland.	2.50	Miles	2
Puffers Pond	MA82092	Maynard/Sudbury.	28.00	Acres	5
River Meadow Brook	MA82A-10	Headwaters, outlet Russell Mill Pond, Chelmsford to mouth at confluence with the Concord River, Lowell.	6.40	Miles	5
Rocky Pond	MA82095	Boylston.	62.00	Acres	4c
Rutters Brook	MA82A-29	From headwaters near Robin Road, Westborough to mouth at confluence with Jackstraw Brook, Westborough.	2.00	Miles	3
Saxonville Pond	MA82097	Framingham.	59.00	Acres	5
Second Division Brook	MA82B-09	Headwaters, outlet small unnamed pond north of Waltham Street, Maynard to mouth at confluence with the Assabet River, Concord.	2.90	Miles	3
Smith Pond	MA82099	Northborough.	16.00	Acres	3
Solomon Pond	MA82100	Northborough.	21.00	Acres	3
Spencer Brook	MA82B-15	From the outlet of an unnamed pond north of Bellows Hill, Carlisle to mouth at inlet Angiers Pond, Concord.	3.80	Miles	3
Stony Brook	MA82A-33	Headwaters, outlet Sudbury Reservoir, Southborough to mouth at inlet Framingham Reservoir #3, Framingham.	0.40	Miles	2
Sudbury Reservoir	MA82106	Southborough/Marlborough.	1181.00	Acres	4a
Sudbury River	MA82A-01	Headwaters, outlet Cedar Swamp Pond, Westborough to the Fruit Street bridge, Hopkinton/Westborough.	1.90	Miles	2
Sudbury River	MA82A-03	Outlet Saxonville Pond, Framingham to confluence with Hop Brook (the lower portion of Hop Brook was identified as Wash Brook on USGS quads prior to 1987), Wayland.	5.50	Miles	5
Sudbury River	MA82A-04	Confluence with Hop Brook (the lower portion of Hop Brook was identified as Wash Brook on USGS quads prior to 1987), Wayland to confluence with Assabet River (forming headwaters Concord River), Concord.	11.70	Miles	5
Sudbury River	MA82A-25	From the Fruit Street bridge Hopkinton/Westborough to the inlet of Framingham Reservoir #2, Ashland (formerly part of segment MA82A-02).	6.30	Miles	5
Sudbury River	MA82A-26	Outlet Framingham Reservoir #1, Framingham to inlet of Saxonville Pond, Framingham (formerly part of segment MA82A-02).	2.80	Miles	5
Taylor Brook	MA82B-08	Headwaters, outlet Puffer Pond, Maynard to mouth at confluence with the Assabet River, Maynard.	1.80	Miles	3
Tripp Pond	MA82107	Hudson.	4.00	Acres	3
Unnamed Tributary	MA82A-15	Headwaters, northeast of Indian Head Hill (near Route 20), Marlborough to mouth at inlet of Hager Pond, Marlborough.	1.10	Miles	5
Unnamed Tributary	MA82A-16	Headwaters, outlet Hager Pond, Marlborough to mouth at inlet of Grist Mill Pond, Marlborough.	0.20	Miles	5

Appendix 1
Assessment units and integrated list categories presented alphabetically by major watershed

Water Body	Segment ID	Description	Size	Units	Category
Unnamed Tributary	MA82A-17	Headwaters, outlet Grist Mill Pond, Sudbury to mouth at inlet of Carding Mill Pond, Sudbury.	0.50	Miles	5
Unnamed Tributary	MA82A-22	Unnamed tributary to the Sudbury River locally known as Cochituate Brook, headwaters, outlet north basin of Lake Cochituate, Framingham to mouth at confluence with Sudbury River, Framingham.	1.40	Miles	5
Unnamed Tributary	MA82A-31	Unnamed tributary to River Meadow Brook, outlet Elm Street Pond, Carlisle to mouth at confluence with River Meadow Brook, Chelmsford (through former pond segment MA82096 and excluding approximately 0.4 miles through Meadow Pond, segment MA82129) (formely reported as portion of segment MA82A-21).	3.70	Miles	4c
Unnamed Tributary	MA82B-16	Unnamed tributary to Assabet River (locally considered part of Spencer Brook), outlet Angiers Pond, Concord to mouth at confluence with the Assabet River, Concord.	0.50	Miles	2
Unnamed Tributary	MA82B-23	Unnamed tributary to the Assabet River; headwaters, outlet small pond south of Athens Street, Stow to mouth at confluence with Assabet River (backwater area), Stow.	1.10	Miles	3
Walden Pond	MA82109	Concord.	63.00	Acres	4a
Warners Pond	MA82110	Concord.	59.00	Acres	4a
Waushakum Pond	MA82112	Framingham/Ashland.	87.00	Acres	5
West Pond	MA82115	Bolton.	19.00	Acres	3
Westborough Reservoir	MA82114	Westborough.	41.00	Acres	3
White Pond	MA82118	Concord.	36.00	Acres	3
White Pond	MA82119	Hudson/Stow.	49.00	Acres	3
Whitehall Brook	MA82A-11	Headwaters, outlet Whitehall Reservoir, Hopkinton to mouth at confluence with the Sudbury River, Westborough.	3.50	Miles	3
Whitehall Reservoir	MA82120	Hopkinton.	560.00	Acres	5
Williams Lake	MA82121	Marlborough.	69.00	Acres	3
Willis Pond	MA82122	Sudbury.	67.00	Acres	2
Winning Pond	MA82123	Billerica.	22.00	Acres	4c
Connecticut					
Amethyst Brook	MA34-35	Headwaters, confluence of Buffum and Harris brooks, Pelham to mouth at confluence with Adams River (forming headwaters Fort River), Amherst.	2.10	Miles	2
Arcadia Lake	MA34005	Belchertown.	32.00	Acres	5
Atkins Reservoir	MA34006	Shutesbury/Amherst.	46.00	Acres	3
Bachelor Brook	MA34-07	Outlet Forge Pond, Granby to mouth at confluence with Connecticut River, South Hadley (through former segments Aldrich Lake [East Basin] MA34002 and Aldrich Lake [West Basin] MA34106).	11.50	Miles	5
Barton Cove	MA34122	Gill (cove of Connecticut River upstream of Turners Falls dams (NATID: MA00848 and MA00849)).	160.00	Acres	5
Bloody Brook	MA34-36	Headwaters, perennial portion, from the railroad tracks north of North Main Street, Deerfield to mouth at confluence with Mill River, Whately.	3.70	Miles	5
Brickyard Brook	MA34-13	Headwaters, perennial portion, Westfield to mouth at confluence with Manhan River, Westfield.	1.60	Miles	3

Appendix 1
Assessment units and integrated list categories presented alphabetically by major watershed

Water Body	Segment ID	Description	Size	Units	Category
Broad Brook	MA34-18	Headwaters, Holyoke to mouth at inlet Nashawannuck Pond, Easthampton.	9.30	Miles	2
Buffum Brook	MA34-49	Headwaters, west of West Pelham Road, Shutesbury to mouth at confluence with Harris Brook, (forming headwaters Amethyst Brook), Pelham.	3.10	Miles	3
Buttery Brook	MA34-42	Headwaters (perennial portion), west of Haig Avenue, South Hadley to mouth at confluence with the Connecticut River, South Hadley (interrupted urban, approximately 1200 feet culverted).	1.60	Miles	5
Connecticut River	MA34-01	New Hampshire/Massachusetts state line, Northfield to Route 10 bridge, Northfield.	3.50	Miles	5
Connecticut River	MA34-02	Route 10 bridge, Northfield to Turners Falls dams (NATID: MA00848 and MA00849), Gill/Montague (excluding the delineated segment; Barton Cove MA34019).	11.40	Miles	5
Connecticut River	MA34-03	Turners Falls dams (NATID: MA00848 and MA00849), Gil/Montague to confluence with Deerfield River, Greenfield/Deerfield.	3.70	Miles	5
Connecticut River	MA34-04	Confluence with Deerfield River, Greenfield/Deerfield to Holyoke Dam (NATID: MA00973), Holyoke/South Hadley.	34.50	Miles	5
Connecticut River	MA34-05	Holyoke Dam (NATID: MA00973), Holyoke/South Hadley to Massachusetts/Connecticut border, Longmeadow.	15.90	Miles	5
Cooley Brook	MA34-20	Headwaters, Longmeadow to mouth at confluence with Connecticut River, Longmeadow.	1.40	Miles	3
Cranberry Pond	MA34018	Sunderland.	28.00	Acres	4c
Cushman Brook	MA34-34	Headwaters, outlet Atkins Reservoir, Shutesbury to mouth at inlet Factory Hollow Pond, Amherst.	2.50	Miles	2
Danks Pond	MA34019	Northampton/Easthampton.	3.00	Acres	3
Dean Brook	MA34-50	Headwaters, east of West Pelham Road (at mouth of Baker Brook), Shutesbury to mouth at confluence with Adams Brook (in small "diversion pool" for Atkins Reservoir), Shutesbury.	2.40	Miles	3
Dry Brook	MA34-64	Headwaters, west of Huckle Hill Road, Bernardston to mouth at confluence with the Connecticut River, Gill.	8.30	Miles	2
East Branch Mill River	MA34-37	Headwaters, confluence with Bradford Brook, Williamsburg to mouth at confluence with West Branch Mill River (forming headwaters Mill River), Williamsburg.	2.80	Miles	2
Factory Hollow Pond	MA34021	Amherst.	12.00	Acres	3
Fall River	MA34-33	Vermont/Massachusetts border, Bernardston to mouth at confluence with Connecticut River, Greenfield/Gill.	10.20	Miles	2
Forge Pond	MA34024	Granby.	72.00	Acres	5
Fort River	MA34-27	Headwaters (confluence of Adams and Amethyst brooks, Amherst), to mouth at confluence Connecticut River, Hadley.	12.80	Miles	5
Fourmile Brook	MA34-56	Headwaters, south of the intersection of Four Mile Brook Road and South Mountain Road, Northfield, to mouth at confluence with Connecticut River, Northfield.	3.40	Miles	2
Green Pond	MA34028	Montague.	15.00	Acres	3
Harris Brook	MA34-48	Headwaters, northeast of Enfield Road, Pelham to Intake Reservoir Dam (NATID: MA01270) outlet, Pelham (excluding approximately 0.2 miles through Hawley Reservoir, Pelham).	1.20	Miles	3

Appendix 1
Assessment units and integrated list categories presented alphabetically by major watershed

Water Body	Segment ID	Description	Size	Units	Category
Hop Brook	MA34-61	Headwaters, west of Oasis Drive, Belchertown to mouth at confluence with Fort River, Amherst.	8.60	Miles	2
Ingraham Brook Pond	MA34037	Granby.	5.00	Acres	4c
Joe Wright Brook	MA34-52	Headwaters south of Hemenway Trail, Williamsburg to mouth at confluence with Mill River, Williamsburg.	3.30	Miles	3
Lake Bray	MA34013	Holyoke.	10.00	Acres	4c
Lake Holland	MA34035	Belchertown.	11.00	Acres	4c
Lake Lookout	MA34044	Springfield.	7.00	Acres	5
Lake Pleasant	MA34070	Montague.	54.00	Acres	3
Lake Warner	MA34098	Hadley.	65.00	Acres	4a
Lake Wyola	MA34103	Shutesbury.	124.00	Acres	4a
Lampson Brook	MA34-06	Belchertown WWTP discharge, Belchertown to mouth at confluence with Weston Brook, Belchertown.	1.20	Miles	5
Leaping Well Reservoir	MA34040	South Hadley.	9.00	Acres	5
Leverett Pond	MA34042	Leverett.	91.00	Acres	4a
Log Pond Cove	MA34124	Holyoke (cove of Connecticut River upstream of Holyoke Dam (NATID: MA00973)).	19.00	Acres	5
Long Plain Brook	MA34-09	Headwaters, Leveret/Sunderland town line (in Mt. Toby State Forest) to mouth at confluence with Russellville Brook at Route 116, Sunderland.	5.00	Miles	2
Longmeadow Brook	MA34-21	Headwaters, outlet Turner Park Pond, Longmeadow to mouth at confluence with Connecticut River, Longmeadow.	4.50	Miles	5
Loon Pond	MA34045	Springfield.	26.00	Acres	3
Lower Highland Lake	MA34047	Goshen.	91.00	Acres	3
Lower Mill Pond	MA34048	Easthampton.	30.00	Acres	4c
Lower Van Horn Park Pond	MA34129	Springfield.	11.00	Acres	4c
Manhan River	MA34-10	Headwaters, northeast of Norwich Pond, Huntington to inlet Tighe Carmody Reservoir, Southampton (thru White Reservoir formely segment MA34100).	6.60	Miles	3
Manhan River	MA34-11	Outlet Tighe Carmody Reservoir, Southampton to mouth at confluence with Connecticut River, Easthampton.	18.90	Miles	5
Metacomet Lake	MA34051	Belchertown.	51.00	Acres	5
Mill Brook	MA34-55	Headwaters, outlet Stevens Swamp, Warwick to mouth at confluence with Connecticut River, Northfield.	7.70	Miles	3
Mill Pond	MA34052	Springfield.	13.00	Acres	5
Mill River	MA34-24	Headwaters east of Fisher Hill, Conway to mouth at confluence with the Connecticut River, Hatfield.	24.60	Miles	2
Mill River	MA34-25	Headwaters, outlet Factory Hollow Pond, Amherst to mouth at inlet Lake Warner, Hadley.	5.20	Miles	5
Mill River	MA34-28	Headwaters (confluence of East and West Branch Mill River, Williamsburg), to outlet Paradise Pond, Northampton.	10.00	Miles	5
Mill River	MA34-29	Headwaters, outlet Watershops Pond, Springfield to mouth at confluence with Connecticut River, Springfield. (Interrupted stream).	1.30	Miles	5

Appendix 1
Assessment units and integrated list categories presented alphabetically by major watershed

Water Body	Segment ID	Description	Size	Units	Category
Mill River Diversion	MA34-32	Headwaters, outlet Paradise Pond, Northampton to mouth at confluence with Oxbow (east of Old Springfield Road), Northampton (thru Hulberts Pond formely segment MA34036).	2.50	Miles	3
Moose Brook	MA34-17	Headwaters, perennial portion, Southampton to mouth at confluence with Manhan River, Southampton.	2.60	Miles	2
Mountain Street Reservoir	MA34056	Williamsburg/Hatfield/Whately.	67.00	Acres	3
Nashawannuck Pond	MA34057	Easthampton.	30.00	Acres	5
Nine Mile Pond	MA34127	Wilbraham (PALIS/Segment changed from 36107 to 34127, TRD 6/21/02).	33.00	Acres	3
Noonan Cove	MA34058	Springfield.	3.00	Acres	5
North Branch Manhan River	MA34-54	Headwaters, perennial portion, north of Northwest Road, Westhampton to mouth at confluence with Manhan River, Easthampton/Southampton.	9.20	Miles	2
Northampton Reservoir	MA34059	Whately.	80.00	Acres	3
Northfield Mountain Reservoir	MA34061	Erving.	237.00	Acres	3
Nurse Brook	MA34-59	Headwaters, west of Pratt Corner Road, Shutesbury to mouth at confluence with Adams Brook (in small "diversion pool" for Atkins Reservoir), Shutesbury.	1.20	Miles	3
Oxbow	MA34066	The waterbody west of Route 91 (bounded on the northeast by Route 91, the southeast by the Manhan River, and the west by Old Springfield Road), Northampton/Easthampton (excluding the delineated segment; Danks Pond MA34019).	149.00	Acres	5
Oxbow Cutoff	MA34067	The waterbody north of Island Road and south of Oxbow Road (between Routes 91and 5), Northampton.	49.00	Acres	4c
Pine Island Lake	MA34069	Westhampton.	55.00	Acres	3
Plympton Brook Pond	MA34071	Wendell.	5.00	Acres	3
Porter Lake	MA34073	Springfield.	28.00	Acres	5
Porter Lake West	MA34072	Springfield.	5.00	Acres	5
Potash Brook	MA34-12	Headwaters, perennial portion, Southampton to confluence with Manhan River, Southampton.	1.00	Miles	3
Raspberry Brook	MA34-22	From Massachusetts/Connecticut border to mouth at confluence with Connecticut River, Longmeadow.	1.80	Miles	3
Rice Brook	MA34-47	Headwaters, perennial portion, south of Burt Road, Westhampton to mouth at confluence with Sodom Brook, Westhampton.	1.10	Miles	3
Roaring Brook	MA34-63	From the outlet of Whately Glen Reservoir (South Deerfield Water Supply Dam, NATID: MA00522), Whatley to mouth at confluence with Mill River, Whately.	1.40	Miles	2
Roberts Meadow Reservoir	MA34076	Northampton.	22.00	Acres	3
Rogers Brook	MA34-51	Headwaters east of Oak Hill Road near the Goshen/Ashfield border to mouth at confluence with West Branch Mill River, Goshen.	2.60	Miles	3
Russellville Brook	MA34-62	Headwaters, Route 116, Sunderland (river name changes at bridge from Long Plain Brook SARIS# 3420350) to mouth at confluence with the Connecticut River, Hadley.	4.40	Miles	2
Sacket Brook	MA34-45	Headwaters, perennial portion, north of Southampton Road, Montgomery to mouth at confluence with Manhan River, Southampton.	2.10	Miles	3
Sawmill River	MA34-40	Headwaters, outlet Lake Wyola, Shutesbury to Dudleyville Road, Leverett (formerly part of MA34-26).	2.00	Miles	3

Appendix 1
Assessment units and integrated list categories presented alphabetically by major watershed

Water Body	Segment ID	Description	Size	Units	Category
Sawmill River	MA34-41	Dudleyville Road, Leverett to mouth at confluence with Connecticut River, Montague (formerly part of MA34-26).	11.00	Miles	2
Sawyer Ponds	MA34078	[North Basin] Northfield.	9.00	Acres	3
Sawyer Ponds	MA34079	[South Basin] Northfield.	12.00	Acres	3
Scantic River	MA34-30	Massachusetts/Connecticut border, Monson downstream to the Massachusetts/Connecticut border, Hampden.	9.60	Miles	5
Scarboro Brook	MA34-46	Headwaters, outlet Scarboro Pond, Belchertown to mouth at confluence with Hop Brook, Belchertown.	2.30	Miles	3
Schneelock Brook	MA34-44	Headwaters, west of Newhouse Street, Springfield to mouth at confluence with South Branch Mill River, Springfield.	1.30	Miles	3
Schoolhouse Brook	MA34-43	Headwaters, southeast of Connor Reservoir, Holyoke to mouth at confluence with Goldine Brook, West Springfield.	3.10	Miles	3
Shattuck Brook	MA34-57	Headwaters, confluence Keets and Beaver Meadow brooks, Leyden to mouth at confluence with Fall River, Bernardston.	2.40	Miles	3
Silver Lake	MA34084	Agawam.	9.00	Acres	3
Sodom Brook	MA34-53	Headwaters, outlet small unnamed pond north of Crowley Road, Westhampton to mouth at confluence with North Branch Manhan River, Westhampton.	3.10	Miles	3
Stony Brook	MA34-19	Headwaters, Granby to mouth at confluence with Connecticut River, South Hadley (thru Upper Pond formerly segment MA34095 and Lower Pond formerly segment MA34049).	13.30	Miles	5
Temple Brook	MA34-08	Headwaters, outlet Bradley Pond, Monson to mouth at confluence with Scantic River, Hampden.	3.60	Miles	2
Tighe Carmody Reservoir	MA34089	Southampton.	353.00	Acres	3
Tripple Brook	MA34-16	Headwaters, perennial portion, Southampton to mouth at confluence with Manhan River, Southampton.	1.00	Miles	2
Unnamed Tributary	MA34-31	Headwater, outlet Lake Warner, Hadley to mouth at confluence with Connecticut River, Hadley.	0.50	Miles	3
Unnamed Tributary	MA34-60	Unnamed tributary to the Connecticut River, locally known as 'Willimansett Brook', headwaters, perennial portion, east of Memorial Drive (Route 33), Chicopee to mouth at confluence with Connecticut River, Chicopee (approximately 1200 feet culverted near mouth).	2.30	Miles	5
Upper Highland Lake	MA34093	Goshen.	51.00	Acres	2
Upper Van Horn Park Pond	MA34128	Springfield (Changed from MA36158 to 34128 on 6/21/02, TRD).	8.00	Acres	5
Venture Pond	MA34096	Springfield.	7.00	Acres	5
Watershops Pond	MA34099	Springfield.	161.00	Acres	5
West Branch Mill River	MA34-38	East Street, Goshen to the confluence of Meekin Brook, Williamsburg.	5.90	Miles	2
West Branch Mill River	MA34-39	From the confluence of Meekin Brook, Williamsburg to mouth at confluence with East Branch Mill River (forming headwaters Mill River), Williamsburg.	0.60	Miles	2
West Brook	MA34-58	Headwaters, outlet Northampton Reservoir (Old Northampton Reservoir), Whately to mouth at confluence with Mill River, Hatfield.	4.00	Miles	3
Weston Brook	MA34-23	Headwaters, south of State Street (Route 202), Belchertown to mouth at inlet Forge Pond, Granby (WWF applies from the confluence of Lampson Brook in Belchertown to the mouth).	2.70	Miles	5

Appendix 1
Assessment units and integrated list categories presented alphabetically by major watershed

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White Brook	MA34-14	Headwaters, perennial portion, Easthampton to mouth at inlet Nashawannuck Pond, Easthampton.	1.80	Miles	3
Whiting Street Reservoir	MA34101	Holyoke.	102.00	Acres	4c
Wilton Brook	MA34-15	Headwaters, perennial portion, Easthampton to outlet RubberThread Pond (formerly segment MA34105) , Easthampton.	1.10	Miles	5
Deerfield					
Albee Brook	MA33-33	Headwaters, north of Dodge Corner Road, Hawley to confluence with Deerfield River, Charlemont.	1.00	Miles	2
Allen Brook	MA33-34	Headwaters, east of the Shelburne Colrain Road and Route 2 intersection, Shelburne to confluence with Green River, Greenfield.	3.60	Miles	2
Ashfield Pond	MA33001	Ashfield.	38.00	Acres	4a
Avery Brook	MA33-35	Headwaters, perennial portion south of Colrain Brook Road, Heath to confluence with Deerfield River, Charlemont.	3.70	Miles	2
Basin Brook	MA33-36	Headwaters, Kenneth M. Dubuque Memorial State Forest, Hawley to confluence with King Brook, Hawley.	2.20	Miles	2
Bear River	MA33-17	Headwaters west of Barnes Road, Ashfield to confluence with Deerfield River, Conway.	6.90	Miles	5
Black Brook	MA33-37	Headwaters, west of Chapel Road, Savoy to confluence with Cold River, Savoy.	3.30	Miles	2
Bog Pond	MA33003	Savoy.	35.00	Acres	3
Borden Brook	MA33-38	Vermont-Massachusetts stateline, Colrain to confluence with Green River, Colrain.	0.60	Miles	2
Bozrah Brook	MA33-13	Headwaters, located west of East Hawley Road, Hawley (drains wetland) to confluence with Deerfield River, Charlemont.	3.00	Miles	2
Brandy Brook	MA33-117	Headwaters east of North County Road, Leyden to confluence with Glen Brook, Leyden.	1.60	Miles	2
Brown Brook	MA33-39	Headwaters, perennial portion east of Scott Road, Savoy to confluence with Chickley River, Savoy.	0.40	Miles	2
Burnett Pond	MA33005	Savoy.	18.00	Acres	3
Burrington Brook	MA33-40	Headwaters, east of Sadoga Road, Heath to confluence with West Branch Brook (forming headwaters West Branch North River), Heath.	2.00	Miles	2
Burton Brook	MA33-41	Vermont-Massachusetts stateline, Rowe to confluence with West Branch Brook, Heath.	1.30	Miles	2
Cary Brook	MA33-42	Perennial portion north of East Catamount Hill Road, Colrain to confluence with West Branch North River, Colrain.	0.50	Miles	2
Cascade Brook	MA33-43	Headwaters, perennial portion southeast of Moore Road, Florida to confluence with Deerfield River, Florida.	1.80	Miles	2
Chapel Brook	MA33-44	Outlet of unnamed pond, Ashfield to confluence with Poland Brook, Conway.	3.40	Miles	2
Cherry Rum Brook	MA33-97	Headwaters, northeast of Stoneleigh Burnham Drive, Greenfield to confluence with Green River, Greenfield.	2.10	Miles	5
Chickley River	MA33-11	Headwaters Savoy Mountain State Forest, Savoy to confluence with Deerfield River, Charlemont.	11.10	Miles	2
Clark Brook	MA33-16	Headwaters, near Moonshine Road (Howes Road)/East Buckland Road, Buckland to confluence with Clesson Brook, Buckland.	3.80	Miles	2
Clesson Brook	MA33-15	Outlet of unnamed pond south of Forget Road, Hawley through Cox Pond to confluence with Deerfield River, Buckland.	10.30	Miles	2

Appendix 1
Assessment units and integrated list categories presented alphabetically by major watershed

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Cold River	MA33-05	Source in Florida to confluence with Deerfield River, Charlemont.	13.70	Miles	2
Cooley Brook	MA33-45	Headwaters, north of La Belle Road, Hawley to confluence with Clesson Brook, Buckland.	1.50	Miles	2
Creamery Brook	MA33-46	Headwaters, perennial portion west of Steady Lane Road, Ashfield to confluence with South River, Ashfield.	2.40	Miles	2
Davenport Brook	MA33-111	Headwaters outlet Papoose Lake, Heath to confluence with Kinsman Brook forming headwaters Taylor Brook, Heath.	0.90	Miles	2
Davis Mine Brook	MA33-18	Headwaters, south of Dell Road, Rowe to confluence with Mill Brook, Charlemont.	3.30	Miles	5
Deerfield River	MA33-01	Outlet Sherman Reservoir Monroe/Rowe, to confluence with Cold River, Charlemont (through former segment, Lower Reservoir MA33028).	13.10	Miles	4c
Deerfield River	MA33-02	Confluence with Cold River, Charlemont to confluence with North River, Charlemont/Shelburne.	11.40	Miles	2
Deerfield River	MA33-03	Confluence with North River, Charlemont/Shelburne to confluence with Green River, Greenfield.	16.80	Miles	5
Deerfield River	MA33-04	Confluence with Green River, Greenfield to confluence with Connecticut River, Greenfield/Deerfield.	2.00	Miles	5
Dickenson Brook	MA33-120	Headwaters west of Sumner Stetson Road, Heath to confluence with West Branch Brook, Heath.	0.70	Miles	2
Dragon Brook	MA33-20	Headwaters, perennial portion north of Patten Road, Shelburne to confluence with the Deerfield River, Shelburne.	4.40	Miles	5
Drakes Brook	MA33-23	Headwaters, (perennial portion) west of North Warger Road, Ashfield to confluence with Bear River, Conway.	2.30	Miles	2
Dunbar Brook	MA33-48	Vermont-Massachusetts stateline, Monroe to confluence with Deerfield River, Monroe.	5.60	Miles	2
East Branch North River	MA33-19	Vermont line, Colrain to confluence with West Branch North River, Colrain.	7.50	Miles	5
East Glen Brook	MA33-49	Headwaters, perennial portion north of East Glen Road, Leyden to inlet of Upper Greenfield Reservoir (Glen Brook Upper Reservoir), Leyden.	1.90	Miles	2
East Oxbow Brook	MA33-72	Headwaters, perennial portion east of Deer Run Lane, Charlemont to confluence with Deerfield River, Charlemont.	1.40	Miles	2
Fife Brook	MA33-50	Headwaters, perennial portion southwest of Spruce Mountain in the Monroe State Forest, Monroe to confluence with Deerfield River, Florida.	2.60	Miles	2
Foundry Brook	MA33-25	Headwaters north of Calvin Coombs Road, Colrain to confluence with East Branch North River, Colrain.	2.80	Miles	2
Fox Brook	MA33-51	From the outlet of Fox Brook Upper Reservoir, Colrain to confluence with North River, Colrain.	0.80	Miles	2
Fox Brook Upper Reservoir	MA33006	Colrain.	3.00	Acres	3
Fuller Brook	MA33-118	Perennial portion in Dubuque State Forest, Hawley to confluence with Chickley River, Hawley.	0.90	Miles	2
Glen Brook	MA33-52	Headwaters, east of Brattleboro Road, Leyden to inlet of Upper Greenfield Reservoir (Glen Brook Upper Reservoir), Leyden.	3.50	Miles	2
Glen Brook	MA33-96	Outlet of Upper Greenfield Reservoir, Leyden to confluence with Green River, Greenfield.	3.20	Miles	2
Goodnow Road Pond	MA33007	Buckland.	11.00	Acres	3

Appendix 1
Assessment units and integrated list categories presented alphabetically by major watershed

Water Body	Segment ID	Description	Size	Units	Category
Granger Brook	MA33-53	Headwaters, west of Bliss Road, Florida to confluence with Dunbar Brook, Monroe.	1.20	Miles	2
Great Brook	MA33-54	Headwaters, perennial portion west at Zerah Fiske Road, Shelburne to confluence with Hawkes Brook, Shelburne.	1.20	Miles	2
Green River	MA33-28	Vermont line, Colrain to water supply dam north of Eunice Williams Drive (Pumping Station Dam, National ID MA02291), Greenfield (formerly part of MA33-09).	8.40	Miles	2
Green River	MA33-29	From water supply dam north of Eunice Williams Drive (Pumping Station Dam, National ID MA02291), Greenfield to the Swimming Pool #2 Dam (National Dam ID MA02321) northwest of Nashs Mill Road, Greenfield (formerly part of MA33-09).	4.60	Miles	2
Green River	MA33-30	From Swimming Pool #2 Dam (National Dam ID MA02321) northwest of Nashs Mill Road, Greenfield to confluence with the Deerfield River, Greenfield (formerly segment MA33-10 and part of segment MA33-09) (HQW applies upstream of former Greenfield WWTF discharge (NPDES# MA0101214), from approximately 0.5 mile upstream of mouth).	3.70	Miles	5
Green River	MA33-55	Headwaters, perennial portion in Florida State Forest west of Blackstone Road, Florida to confluence with Cold River, Florida.	1.30	Miles	2
Gulf Brook	MA33-56	Outlet of Burnett Pond, Savoy to confluence with Cold River, Savoy.	3.50	Miles	2
Haley Brook	MA33-57	Headwaters north of Main Street, Monroe to confluence with Dunbar Brook, Monroe.	1.50	Miles	2
Hallockville Pond	MA33009	Plainfield/Hawley.	18.00	Acres	3
Hartwell Brook	MA33-58	Headwaters, south of South Heath Road, Charlemont to confluence with Deerfield River, Charlemont.	2.10	Miles	2
Hawkes Brook	MA33-112	Headwaters east of Zerah Fiske Road, Shelburne to confluence with Dragon Brook, Shelburne.	1.20	Miles	2
Heath Brook	MA33-59	Headwaters, south of West Main Street, Heath to confluence with Mill Brook, Heath.	1.00	Miles	2
Hibbard Brook	MA33-60	Headwaters, north of West Leyden Road, Leyden to confluence with Green River, Leyden.	1.50	Miles	2
Highland Pond	MA33032	Greenfield.	2.00	Acres	3
Hinsdale Brook	MA33-21	Headwaters east of Fiske Mill Road, Shelburne to confluence with Punch Brook, Greenfield.	2.80	Miles	5
Horsefords Brook	MA33-62	Headwaters, west of Bannis Road, Savoy to confluence with Chickley River, Savoy.	1.90	Miles	2
Johnny Bean Brook	MA33-63	Headwaters, Poland Brook State Wildlife Management Area, Conway to confluence with South River, Conway.	1.70	Miles	2
Johnson Brook	MA33-131	Headwaters, west of Route 112 (Main Road) and northeast at Houghton Hill, Colrain to the mouth at confluence with North River, Colrain.	1.40	Miles	4c
Katley Brook	MA33-99	Headwaters, east of Katley Hill, Leyden to confluence with Green River, Leyden.	1.30	Miles	2
King Brook	MA33-64	Outlet Hallockville Pond, Hawley to confluence with Chickley River, Hawley.	2.10	Miles	2
Kinsman Brook	MA33-124	Headwaters north of Colrain Stage Road, Heath to confluence with Davenport Brook forming headwaters Taylor Brook, Heath.	1.80	Miles	3
Legate Hill Brook	MA33-65	Headwaters, perennial portion north of Blueberry Peak, Charlemont to confluence with Deerfield River, Charlemont.	3.40	Miles	2

Appendix 1
Assessment units and integrated list categories presented alphabetically by major watershed

Water Body	Segment ID	Description	Size	Units	Category
Manning Brook	MA33-66	Headwaters, north of South County Road, Florida to confluence with Cold River, Florida.	1.40	Miles	2
Maxwell Brook	MA33-67	Headwaters, located north of Tatro Road, Rowe to confluence with Mill Brook, Charlemont.	3.20	Miles	2
Maynard Pond	MA33011	Greenfield.	3.00	Acres	3
Mccard Brook	MA33-68	Headwaters, east of Oak Hill Road, Leyden to confluence with Mill Brook, Greenfield.	2.10	Miles	2
Mcleod Pond	MA33012	Colrain.	41.00	Acres	3
Meadow Brook	MA33-130	Headwaters, outlet McLeod Pond, Colrain to mouth at confluence with North River, Colrain.	1.20	Miles	2
Mill Brook	MA33-14	Headwaters, originating north of Rowe Road, Heath to confluence with the Deerfield River, Charlemont.	5.70	Miles	2
Mill Brook	MA33-69	Headwaters, outlet Beaver Pond, Hawley to confluence with Chickley River, Hawley.	4.10	Miles	2
Mill Brook	MA33-70	Headwaters, north of West Mountain Road, Bernardston to confluence with Cherry Rum Brook, Greenfield.	8.40	Miles	5
Mt. Brook Reservoir	MA33024	Colrain.	1.00	Acres	3
Newell Pond	MA33013	Greenfield.	0.90	Acres	3
North Brook	MA33-126	Perennial portion north of Harwood Road, Hawley to confluence with Chickley River, Hawley.	1.20	Miles	3
North Pond	MA33014	Florida.	19.00	Acres	2
North River	MA33-06	From confluence of East and West branches of the North River, Colrain to confluence with Deerfield River, Shelburne/Charlemont. (Segment changed 1997 - East Branch no longer included in length) (HQW applies upstream of Barnhardt discharge (NPDES# MA0003697)).	3.30	Miles	2
Nye Brook	MA33-71	Headwaters, perennial portion north of Guinea Gulf (Conway State Forest), Conway to confluence with Poland Brook, Conway.	0.70	Miles	2
Papoose Lake	MA33023	Heath.	14.00	Acres	3
Parsonage Brook	MA33-123	Headwaters north of Main Road, Monroe to confluence with Dunbar Brook, Monroe.	1.50	Miles	2
Pelham Brook	MA33-12	Headwaters outlet Pelham Lake, Rowe to confluence with Deerfield River, Charlemont.	4.80	Miles	2
Pelham Lake	MA33016	Rowe.	80.00	Acres	5
Phelps Brook	MA33-73	Perennial portion, north of Main Road, Monroe to inlet of Phelps Brook Reservoir, Monroe.	1.20	Miles	2
Phelps Brook Reservoir	MA33030	Monroe.	0.05	Acres	3
Plainfield Pond	MA33017	Plainfield.	60.00	Acres	4a
Poland Brook	MA33-74	Confluence with Chapel Brook, Conway to confluence with South River, Conway.	2.60	Miles	2
Potash Brook	MA33-75	Headwaters, Cranberry Swamp, Hawley (drains wetland) to confluence with Mill Brook, Hawley.	1.40	Miles	2
Pumpkin Hollow Brook	MA33-32	Headwaters north of Conway State Forest and south of Old Cricket Hill Road, Conway to confluence with South River, Conway.	2.30	Miles	2

Appendix 1
Assessment units and integrated list categories presented alphabetically by major watershed

Water Body	Segment ID	Description	Size	Units	Category
Punch Brook	MA33-100	Headwaters, perennial portion east of Smead Road, Shelburne to confluence with Green River, Greenfield.	2.10	Miles	2
Rice Brook	MA33-125	Perennial portion east of Legate Hill Road, Charlemont to confluence with Deerfield River, Charlemont.	3.10	Miles	3
Rice Brook	MA33-76	Headwaters, north of Hazelton Road, Rowe to confluence with Pelham Brook, Rowe.	1.20	Miles	2
Roberts Brook	MA33-77	Headwaters, east of Hosmer Road, Heath to confluence with West Branch North River, Colrain.	1.00	Miles	2
Ross Brook	MA33-78	Headwaters, south of Tannery Road, Savoy to confluence with Tannery Brook, Savoy.	2.00	Miles	2
Ruddock Brook	MA33-79	Headwaters, west of Dodge Corner Road, Hawley to confluence with Clesson Brook, Buckland.	1.10	Miles	2
Sanders Brook	MA33-80	Vermont/Massachusetts border, Heath to confluence with West Branch North River, Colrain.	2.80	Miles	2
Schneck Brook	MA33-113	Headwaters, north of Wilder Hill Road, Conway to confluence with the Deerfield River, Conway.	2.00	Miles	2
Sheldon Brook	MA33-81	Headwaters, south of Old Albany Road, Shelburne to confluence with Deerfield River, Deerfield/Greenfield.	1.40	Miles	2
Sherman Reservoir	MA33018	Massachusetts portion only. Rowe/Monroe.	72.00	Acres	5
Shingle Brook	MA33-22	Headwaters north of Guy Manners Road, Shelburne to confluence with the Deerfield River, Deerfield.	2.80	Miles	2
Sids Brook	MA33-82	Headwaters, perennial portion north of Baptist Corner Road, Ashfield to confluence with Drakes Brook, Conway.	1.70	Miles	2
Sluice Brook	MA33-83	Headwaters, north of Tower Road, Shelburne to confluence with Deerfield River, Shelburne.	3.30	Miles	2
Smead Brook	MA33-84	Headwaters, east of Old Albany Road, Greenfield to confluence with Wheeler Brook, Greenfield.	1.70	Miles	2
Smith Brook	MA33-26	Headwaters, outlet Upper Reservoir, Ashfield to confluence with Clesson Brook, Buckland.	2.70	Miles	2
South Pond	MA33019	Savoy.	29.00	Acres	2
South River	MA33-07	Headwaters, outlet Ashfield Pond, Ashfield to Emmets Road, Ashfield.	2.30	Miles	5
South River	MA33-101	Emmets Road, Ashfield to confluence with Johnny Bean Brook, Conway (formerly part of MA33-08).	6.10	Miles	5
South River	MA33-102	From confluence with Johnny Bean Brook, Conway to confluence with Deerfield River, Conway (formerly part of MA33-08), (through South River Impoundment formerly segment MA33022).	6.80	Miles	5
Spur Brook	MA33-106	Headwaters, outlet small pond just west at intersection of Christian Hill Road and Thompson Road, Colrain to confluence with East Branch North River, Colrain.	2.00	Miles	2
Stafford Brook	MA33-98	Headwaters, perennial portion south of East Colrain Road, Colrain to confluence with Green River, Colrain.	1.40	Miles	2
Staples Brook	MA33-121	Headwaters east of Spruce Hill, North Adams to confluence Tower Brook, Florida.	1.40	Miles	2
Steele Brook	MA33-85	Headwaters, perennial portion north of Tunnel Road, Rowe to confluence with Pelham Brook, Rowe.	1.70	Miles	2
Stewart Brook	MA33-132	Perennial portion north of Wilson Graves Road, Shelburne to mouth at confluence with Hinsdale Brook, Shelburne.	1.00	Miles	2

Appendix 1
Assessment units and integrated list categories presented alphabetically by major watershed

Water Body	Segment ID	Description	Size	Units	Category
Tannery Brook	MA33-86	Outlet of Tannery Pond, Savoy to confluence with Gulf Brook, Savoy.	0.70	Miles	2
Tannery Pond	MA33020	Savoy.	0.50	Acres	3
Taylor Brook	MA33-31	From the confluence of Kinsman Brook and Davenport Brook, Heath to confluence with West Branch North River, Colrain.	2.60	Miles	2
Tilton Brook	MA33-119	Headwaters in Savoy Mountain State Forest, west of Bannis Road, Savoy to confluence with Chickley River, Savoy.	2.00	Miles	2
Tissdell Brook	MA33-24	Headwaters perennial portion east of Christian Hill Cemetary, Colrain to confluence with West Branch North River, Colrain.	1.70	Miles	2
Todd Brook	MA33-127	Headwaters east of Coon Hill, Charlemont to confluence with Deerfield River, Charlemont.	1.20	Miles	3
Tower Brook	MA33-87	Headwaters, west of Central Shaft Road, Florida (drains wetland) to confluence with Cold River, Florida.	1.90	Miles	2
Trout Brook	MA33-88	Headwaters, perennial portion west of Hawks Mountain, Charlemont/Hawley to confluence with Cold River, Charlemont.	0.60	Miles	2
Tuttle Brook	MA33-129	Headwaters east of Leshures Road, Rowe to mouth at confluence with Potter Brook, Rowe.	2.00	Miles	2
Unnamed Tributary	MA33-103	Unnamed tributary to Hinsdale Brook, perennial portion east of Little Mohawk Road, Shelburne to confluence with Hinsdale Brook, Shelburne.	1.90	Miles	2
Unnamed Tributary	MA33-104	Unnamed tributary to an unnamed tributary to Hinsdale Brook from Shearer Pond Dam (National Dam ID MA01531), Colrain to confluence with an unnamed tributary to Hinsdale Brook, Shelburne.	0.90	Miles	2
Unnamed Tributary	MA33-105	Unnamed tributary to Glen Brook, headwaters north of Oak Hill Road, Leyden to confluence Glen Brook, Greenfield.	1.90	Miles	2
Unnamed Tributary	MA33-107	Unnamed tributary to the East Branch North River, headwaters south of Fairbanks Road, Colrain to the confluence of the East Branch North River, Colrain.	1.70	Miles	2
Unnamed Tributary	MA33-108	Unnamed tributary to East Branch North River, headwaters outlet Mt. Brook Reservoir, Colrain to confluence with East Branch North River, Colrain.	1.40	Miles	2
Unnamed Tributary	MA33-109	Unnamed tributary to West Branch North River, headwaters west of Wilson Hill Road, Colrain to confluence with West Branch North River, Colrain.	1.40	Miles	2
Unnamed Tributary	MA33-110	Unnamed tributary to Taylor Brook, headwaters, Catamount State Forest, Colrain to confluence Taylor Brook, Colrain.	1.50	Miles	2
Unnamed Tributary	MA33-114	Headwaters east of Pine Hill Road, Conway to confluence with South River, Conway.	1.00	Miles	2
Unnamed Tributary	MA33-115	Unnamed tributary to Chapel Brook, headwaters west of Bird Hill Road, Ashfield to confluence with Chapel Brook, Ashfield.	1.50	Miles	2
Unnamed Tributary	MA33-116	Unnamed tributary to Clesson Brook, headwaters north of Avery Road, Buckland to confluence with Clesson Brook, Buckland.	1.80	Miles	2
Unnamed Tributary	MA33-128	Unnamed tributary to Deerfield River known as 'Bear Swamp Outflow', from headwaters north of Tunnel Road, Rowe to confluence with Deerfield River, Rowe.	1.30	Miles	3
Unnamed Tributary	MA33-133	Unnamed tributary to the Deerfield River from headwaters, outlet Goodnow Road Pond, Buckland to mouth at confluence with the Deerfield River, Buckland.	1.50	Miles	2
Unnamed Tributary	MA33-134	Unnamed tributary to East Branch North River from headwaters east of Franklin Hill Road and southwest at Franklin Hill, Colrain to mouth at confluence with East Branch North River, Colrain.	0.70	Miles	2

Appendix 1
Assessment units and integrated list categories presented alphabetically by major watershed

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Unnamed Tributary	MA33-61	Unnamed tributary to Clark Brook locally known as "Hog Hollow Brook", headwaters north of Bray Road, Buckland to confluence with Clark Brook, Buckland.	1.10	Miles	2
Upper Greenfield Reservoir	MA33021	Leyden.	6.00	Acres	3
Upper Highland Springs Reservoir	MA33025	Ashfield.	2.00	Acres	3
Upper Reservoir Bear Swamp	MA33026	Rowe.	108.00	Acres	3
Vincent Brook	MA33-89	Headwaters, perennial portion east of Stetson Brothers Road, Colrain to confluence with West Branch North River, Colrain.	1.00	Miles	2
West Branch Brook	MA33-90	Headwaters, Vermont-Massachusetts stateline, Heath to confluence with Burrington Brook (forming headwaters West Branch North River), Heath.	5.40	Miles	2
West Branch North River	MA33-27	Headwaters, confluence of West Branch Brook and Burrington Brook, Heath to confluence with East Branch North River, forming headwaters North River, Colrain.	7.20	Miles	2
Wheeler Brook	MA33-95	Headwaters, south of Old Greenfield Road, Shelburne to confluence with Green River, Greenfield.	2.50	Miles	2
Whitcomb Brook	MA33-91	Headwaters, perennial portion east of Whitcomb Hill Road, Florida to confluence with Deerfield River, Florida.	0.60	Miles	2
White Brook	MA33-122	Headwaters east of Olson Road, Florida to confluence with the Cold River, Florida.	1.60	Miles	2
Wilder Brook	MA33-92	Headwaters, east of Flagg Hill Road, Heath to confluence with Deerfield River, Charlemont.	2.90	Miles	2
Willis Brook	MA33-93	Headwaters, perennial portion south of South Road, Heath to confluence with Hartwell Brook, Charlemont.	1.60	Miles	2
Workman Brook	MA33-94	Headwaters, perennial portion west of East Colrain Road, Colrain (drains wetland) to confluence with Green River, Colrain.	1.40	Miles	2
Farmington					
Babcock Brook	MA31-32	Headwaters west of Amos Case Road, Tolland to mouth at confluence with Hall Pond Brook (forming headwaters Hubbard Brook), Tolland.	3.30	Miles	2
Benton Brook	MA31-11	Headwaters, drainage from Hayden Swamp, Otis to mouth at confluence with the West Branch Farmington River, Otis.	5.20	Miles	5
Benton Pond	MA31003	Otis.	61.00	Acres	4c
Big Pond	MA31004	Otis.	325.00	Acres	5
Bradley Brook	MA31-37	Headwaters, perennial portion, west of Ridgeview Terrace, Southwick to MA/CT border, Southwick.	1.40	Miles	3
Buck River	MA31-38	Headwaters draining wetland just south of Morley Hillard Crank Road, Sandisfield to inlet Abbey Lake, Sandisfield (formerly part of segment MA31-12).	1.70	Miles	3
Buck River	MA31-39	Outlet Abbey Lake, Sandisfield to mouth at confluence with Clam River, Sandisfield (formerly part of segment MA31-12).	4.10	Miles	2
Cherry Brook	MA31-18	Headwaters, perennial portion, north of York Lake Road, Sandisfield to mouth at confluence with Sandy Brook, Sandisfield.	2.40	Miles	3
Clam River	MA31-03	Headwaters, perennial portion, outlet small unnamed pond, Otis to mouth at confluence with West Branch Farmington River, Sandisfield (excluding the 0.8 miles thru the Clam Lake Dam (NATID: MA01052) impoundment).	7.90	Miles	2
Cone Brook	MA31-08	Headwaters, drainage from Angerman Swamp in Beartown State Forest, Otis to mouth at inlet Hayden Pond, Otis.	2.10	Miles	2

Appendix 1
Assessment units and integrated list categories presented alphabetically by major watershed

Water Body	Segment ID	Description	Size	Units	Category
Cranberry Pond	MA31008	Tolland.	75.00	Acres	3
Cranberry Pond Brook	MA31-21	Headwaters, outlet Cranberry Pond, Tolland to mouth at confluence with Slocum Brook, Tolland.	1.60	Miles	5
Creek Pond	MA31009	(Watson Pond) Otis.	52.00	Acres	3
Dimmock Brook	MA31-10	Outlet of Dimmock Brook Pond, Otis to mouth at confluence with West Branch Farmington River, Otis.	1.00	Miles	2
Dimmock Brook Pond	MA31010	Otis.	15.00	Acres	3
East Branch Salmon Brook	MA31-40	Headwaters, perennial portion, Granville to MA/CT border, Granville.	0.10	Miles	2
Ellis Brook	MA31-35	Headwaters, outlet Shaughnessy Swamp, north of Route 57, Granville to mouth at confluence with Valley Brook, Granville.	0.80	Miles	3
Fall River	MA31-02	Headwaters, outlet Larkum Pond, Otis to mouth at confluence with West Branch Farmington River, Otis.	0.80	Miles	2
Halfway Brook	MA31-31	Headwaters, outlet of wetland in Granville State Forest, Tolland to mouth at confluence with Hubbard Brook, Granville.	1.80	Miles	2
Hall Pond Brook	MA31-34	Headwaters, outlet Hall Pond, Tolland to mouth at confluence with Babcock Brook (forming headwaters Hubbard Brook), Tolland.	2.30	Miles	3
Hayden Pond	MA31016	Otis.	28.00	Acres	3
Hubbard Brook	MA31-16	Headwaters, confluence Babcock Brook and Hall Pond Brook, Tolland to MA/CT border Granville.	4.00	Miles	2
Long Bow Lake	MA31019	Becket.	26.00	Acres	3
Lower Spectacle Pond	MA31020	Sandisfield.	70.00	Acres	3
Miner Brook	MA31-28	Headwaters, outlet wetland east of North Beech Plain Road, Sandisfield to mouth at confluence with West Branch Farmington River, Sandisfield.	1.50	Miles	2
Moody Brook	MA31-23	Headwaters, outlet Trout Pond, Tolland to mouth at confluence with West Branch Farmington River, Sandisfield.	1.80	Miles	2
North Branch Silver Brook	MA31-25	Headwaters, outlet Atwater Pond, Sandisfield to mouth at confluence with South Branch Silver Brook (forming headwaters Silver Brook), Sandisfield.	3.20	Miles	3
North Brook	MA31-41	Headwaters, outlet unnamed pond north of Roberts Road, Sandisfield to MA/CT border, Sandisfield.	0.90	Miles	2
Noyes Pond	MA31026	Tolland.	166.00	Acres	4c
Otis Reservoir	MA31027	Otis/Tolland/Blandford.	989.00	Acres	4a
Palmer Brook	MA31-29	Headwaters, outlet Palmer Brook Dam (NATID: MA00205), Becket to mouth at inlet Ward Pond, Becket.	2.10	Miles	5
Pond Brook	MA31-30	Headwaters, outlet Parsons Pond, Granville to mouth at confluence with Hubbard Brook, Granville.	4.60	Miles	2
Pond Brook	MA31-33	Headwaters, outlet Noyes Pond, Tolland to mouth at confluence with Babcock Brook, Tolland.	2.00	Miles	5
Potash Brook	MA31-36	Headwaters, outlet wetland east of North Lane, Granville to mouth at confluence with Valley Brook, Granville.	1.30	Miles	3
Richardson Brook	MA31-24	Headwaters, north of New Boston Road (Route 57), Tolland to mouth at confluence with Moody Brook, Tolland.	1.30	Miles	2
Riiska Brook	MA31-17	Headwaters, perennial portion, west of New Hartford Road, Sandisfield to mouth at confluence with Sandy Brook, Sandisfield.	2.10	Miles	2
Royal Pond	MA31034	Otis/Monterey.	7.00	Acres	3

Appendix 1
Assessment units and integrated list categories presented alphabetically by major watershed

Water Body	Segment ID	Description	Size	Units	Category
Sandy Brook	MA31-14	Headwaters, outlet York Lake, New Marlborough to MA/CT border Sandisfield.	4.90	Miles	2
Shales Brook	MA31-04	Source north of Tyringham Road, Becket to mouth at inlet Shaw Pond, Becket.	1.20	Miles	2
Shaw Pond	MA31036	Becket/Otis.	80.00	Acres	5
Silver Brook	MA31-13	Headwaters, confluence of North Branch and South Branch Silver Brook, Sandisfield to mouth at confluence with Clam River, Sandisfield.	1.00	Miles	2
Silver Shield Pond	MA31054	Becket.	10.00	Acres	3
Slocum Brook	MA31-19	Headwaters, outlet small unnamed wetland pond south of Hartland Road, Tolland to MA/CT border, Tolland.	3.30	Miles	2
South Branch Silver Brook	MA31-26	Headwaters, perennial portion north of Fox Road, Sandisfield to mouth at confluence with North Branch Silver Brook (forming headwaters Silver Brook), Sandisfield.	1.30	Miles	2
Spectacle Pond Brook	MA31-27	Headwaters, south of West Center Road, Otis to mouth at inlet Upper Spectacle Pond, Otis.	1.50	Miles	5
Taylor Brook	MA31-20	Headwaters, west of Clubhouse Road, Tolland to mouth at confluence with Slocum Brook, Tolland.	3.30	Miles	2
Thomas Brook	MA31-06	Headwaters, outlet Thomas Pond, Becket to mouth at confluence with unnamed tributary to Hayden Pond, Otis.	0.80	Miles	5
Thorp Brook	MA31-22	Headwaters, east of Dodds Mountain, south of Sears Road, Sandisfield to mouth at confluence with West Branch Farmington River, Sandisfield.	2.70	Miles	2
Unnamed Tributary	MA31-05	Unnamed tributary to Shaw Pond, source in wetlands southwest of Route 90 and east of Route 20, Becket to mouth at inlet Shaw Pond, Becket (excluding "gravel pit" pond).	1.30	Miles	3
Unnamed Tributary	MA31-07	Source, outlet Shaw Pond, Becket/Otis to mouth at inlet Hayden Pond, Otis.	0.90	Miles	2
Unnamed Tributary	MA31-09	Unnamed tributary to West Branch Farmington River, source north of Route 23 and east of Harrington Road, Otis to mouth at confluence with West Branch Farmington River, Otis.	2.00	Miles	2
Upper Spectacle Pond	MA31044	Sandisfield/Otis.	53.00	Acres	5
Valley Brook	MA31-15	Source, northwest of Holden Hill, Granville to MA/CT border, Granville.	5.90	Miles	2
Ward Pond	MA31047	Becket.	27.00	Acres	3
West Branch Farmington River	MA31-01	Headwaters, outlet Hayden Pond, Otis to the MA/CT border in the Colebrook Reservoir, Sandisfield/Tolland.	16.10	Miles	5
West Lake	MA31050	Sandisfield.	60.00	Acres	3
White Lily Pond	MA31051	Otis.	62.00	Acres	3
York Lake	MA31052	New Marlborough.	29.00	Acres	5
French					
Bartons Brook	MA42-08	Headwaters, outlet Stiles Reservoir, Leicester to mouth at inlet Greenville Pond West, Leicester.	1.10	Miles	3
Bouchard Pond	MA42003	Leicester.	2.00	Acres	4c
Buffum Pond	MA42004	Charlton/Oxford.	23.00	Acres	4c
Buffumville Lake	MA42005	Charlton/Oxford.	199.00	Acres	4a
Burncoat Brook	MA42-07	Headwaters, outlet Bouchard Pond, Leicester to mouth at confluence with Town Meadow Brook, Leicester (through former pond segment Ballard Hill Pond MA42069).	1.00	Miles	5

Appendix 1
Assessment units and integrated list categories presented alphabetically by major watershed

Water Body	Segment ID	Description	Size	Units	Category
Burncoat Pond	MA42007	Leicester/Spencer.	115.00	Acres	3
Carbuncle Pond	MA42008	Oxford.	11.00	Acres	5
Cedar Meadow Pond	MA42009	Leicester.	140.00	Acres	4c
Dresser Hill Pond	MA42014	Charlton.	8.00	Acres	4a
Dutton Pond	MA42015	Leicester.	6.00	Acres	4a
Easterbrook Pond	MA42017	Dudley.	5.00	Acres	3
French River	MA42-03	Headwaters, outlet Greenville Pond, Leicester to the outlet of Thayers Pond, Oxford (excluding approximately 0.6 miles through Rochdale Pond segment MA42048) (through former pond segments Texas Pond MA42058 and Thayers Pond MA42059).	3.80	Miles	5
French River	MA42-04	From dam (NAT ID: MA01946) just upstream of Clara Barton Road, Oxford, to dam (NAT ID: MA00108) at North Village, Webster/Dudley.	9.60	Miles	5
French River	MA42-05	Dam (NAT ID: MA00108) at North Village, Webster/Dudley to Webster WWTP outfall (NPDES: MA0100439) , Webster/Dudley.	2.40	Miles	5
French River	MA42-06	Webster WWTP outfall (NPDES: MA0100439) , Webster/Dudley to state line, Dudley, MA/Thompson,CT.	1.00	Miles	5
Gore Pond	MA42018	Dudley/Charlton.	169.00	Acres	4a
Granite Reservoir	MA42019	Charlton.	207.00	Acres	4c
Greenville Pond	MA42023	Leicester.	31.00	Acres	4a
Greenville Pond West	MA42022	Leicester.	6.00	Acres	3
Grindstone Brook	MA42-18	Headwaters outlet Henshaw Pond, Leicester to mouth at inlet Rochdale Pond, Leicester.	2.30	Miles	5
Hayden Pond	MA42024	Dudley.	44.00	Acres	3
Henshaw Pond	MA42025	Leicester.	37.00	Acres	3
Hudson Pond	MA42029	Oxford/Sutton.	15.00	Acres	4a
Hultered Pond	MA42072	Charlton.	4.00	Acres	3
Jones Pond	MA42030	Charlton/Spencer.	30.00	Acres	4a
Larner Pond	MA42068	Dudley.	27.00	Acres	4c
Little Nugget Lake	MA42032	Charlton.	13.00	Acres	3
Little River	MA42-13	Headwaters, outlet Pikes Pond, Charlton to inlet Buffumville Lake, Charlton (formerly part of segment MA42-09).	3.50	Miles	5
Little River	MA42-14	Outlet Buffum Pond, Oxford to mouth at confluence with French River, Oxford (formerly part of segment MA42-09).	1.30	Miles	3
Low Pond	MA42033	Dudley.	4.00	Acres	4c
Lowes Pond	MA42034	Oxford.	33.00	Acres	4a
Mckinstry Pond	MA42035	Oxford.	16.00	Acres	4a
Merino Pond	MA42036	Dudley.	75.00	Acres	3
Mill Brook	MA42-10	Headwaters, outlet Webster Lake, Webster to mouth at confluence with French River, Webster.	1.20	Miles	2
Mine Brook	MA42-16	Headwaters (perennial portion), Webster to mouth at inlet Club Pond, Webster.	1.40	Miles	3
Mosquito Pond	MA42060	Dudley.	11.00	Acres	4c
New Pond	MA42037	Dudley.	33.00	Acres	3

Appendix 1
Assessment units and integrated list categories presented alphabetically by major watershed

Water Body	Segment ID	Description	Size	Units	Category
Nipmuck Pond	MA42039	Webster.	20.00	Acres	3
Packard Pond	MA42040	Dudley.	6.00	Acres	4c
Peter Pond	MA42042	Dudley.	42.00	Acres	3
Pierpoint Meadow Pond	MA42043	Dudley/Charlton.	95.00	Acres	4c
Pikes Pond	MA42044	Charlton.	28.00	Acres	4a
Putnam Pond	MA42046	Charlton.	20.00	Acres	3
Robinson Pond	MA42047	Oxford.	99.00	Acres	3
Rochdale Pond	MA42048	Leicester.	43.00	Acres	4a
Sargent Pond	MA42049	Leicester.	65.00	Acres	4c
Shepherd Pond	MA42051	Dudley.	16.00	Acres	4c
Slaters Pond	MA42053	Oxford.	105.00	Acres	3
Snow Pond	MA42054	Charlton.	1.00	Acres	3
Stiles Reservoir	MA42055	Spencer/Leicester.	309.00	Acres	3
Sucker Brook	MA42-15	Headwaters, outlet Nipmuck Pond, Webster to mouth at inlet Club Pond, Webster.	1.70	Miles	5
Town Meadow Brook	MA42-02	Headwaters, outlet Dutton Pond, Leicester to mouth at inlet Greenville Pond, Leicester.	1.90	Miles	3
Unnamed Tributary	MA42-01	Unnamed tributary to Town Meadow Brook, outlet Sargent Pond, Leicester to inlet Dutton Pond, Leicester.	0.50	Miles	2
Unnamed Tributary	MA42-12	Unnamed tributary to Wellington Brook, perennial portion from Depot Road, Oxford to confluence with Wellington Brook, Oxford.	0.20	Miles	3
Unnamed Tributary	MA42-19	Unnamed tributary to the French River on the 1982 USGS quad as 'Lowes Brook' , from the outlet of Lowes Pond, Oxford to mouth at confluence with French River, Oxford.	1.30	Miles	3
Unnamed Tributary	MA42-20	Unnamed tributary to South Fork locally known as 'Potters Brook', from outlet of Old Mill Pond Dam ((NAT ID: MA01833), Charlton to mouth at confluence with South Fork, Charlton.	0.90	Miles	3
Wallis Pond	MA42062	Dudley.	24.00	Acres	4a
Watson Millpond	MA42063	Spencer.	2.00	Acres	3
Webster Lake	MA42064	Webster.	1275.00	Acres	5
Wee Laddie Pond	MA42065	Charlton.	6.00	Acres	3
Wellington Brook	MA42-11	Headwaters south of Cedar Street, Auburn to mouth at confluence with French River, Oxford.	3.40	Miles	5
Housatonic					
Anthony Brook	MA21-10	Headwaters, outlet Anthony Pond, Dalton to mouth at confluence with Wahconah Falls Brook, Dalton.	2.60	Miles	3
Ashley Lake	MA21003	Washington.	94.00	Acres	3
Ashmere Lake	MA21005	Hinsdale/Peru.	294.00	Acres	4c
Benedict Pond	MA21011	Great Barrington/Monterey.	37.00	Acres	2
Cady Brook	MA21-12	Headwaters, northwest corner Peru, to mouth at inlet of Windsor Reservoir, Hinsdale.	3.50	Miles	2
Card Pond	MA21015	West Stockbridge.	11.00	Acres	3

Appendix 1
Assessment units and integrated list categories presented alphabetically by major watershed

Water Body	Segment ID	Description	Size	Units	Category
Churchill Brook	MA21-34	Headwaters, perennial portion in the Pittsfield State Forest, Hancock (north of Honwee Mountain, Lanesborough) to mouth at inlet Onota Lake, Pittsfield.	2.80	Miles	3
Cleveland Brook	MA21-08	Headwaters, outlet Cleveland Brook Reservoir, Hinsdale to mouth at confluence with East Branch Housatonic River, Dalton.	1.90	Miles	2
Cleveland Brook Reservoir	MA21019	Hinsdale.	155.00	Acres	3
Cookson Pond	MA21021	New Marlborough.	67.00	Acres	3
Crane Lake	MA21025	West Stockbridge.	27.00	Acres	3
East Branch Housatonic River	MA21-01	Headwaters, outlet Muddy Pond, Washington to the outlet of Center Pond, Dalton (Center Pond formerly segment MA21016).	11.20	Miles	5
East Branch Housatonic River	MA21-02	Outlet of Center Pond, Dalton to mouth at confluence with the Housatonic River, Pittsfield.	8.00	Miles	5
East Indies Pond	MA21029	New Marlborough.	72.00	Acres	3
Farnham Reservoir	MA21033	Washington.	41.00	Acres	3
Fenton Brook	MA21-35	Headwaters south of Jug End Road, Egremont (west of Mt. Bushnell, Sheffield), to mouth at confluence with Karner Brook, Egremont.	2.40	Miles	3
Furnace Brook	MA21-21	Headwaters, perennial portion, south of Route 295 (Canaan Road), Richmond to mouth at inlet Mud Ponds, West Stockbridge.	3.70	Miles	2
Goodrich Pond	MA21042	Pittsfield.	15.00	Acres	5
Goose Pond	MA21043	Lee/Tyringham.	238.00	Acres	4c
Goose Pond Brook	MA21-07	Headwaters, wetland north of George Cannan Road, Tyringham to mouth at confluence with the Housatonic River, Lee.	3.20	Miles	2
Green River	MA21-23	MA/NY border, Alford, southwest of Route 71, to mouth at confluence with the Housatonic River, Great Barrington.	10.30	Miles	2
Greenwater Brook	MA21-27	Headwaters, outlet Greenwater Pond, Becket to mouth at confluence with Goose Pond Brook, Lee.	4.40	Miles	2
Greenwater Pond	MA21044	Becket.	89.00	Acres	4c
Hayes Pond	MA21051	Otis.	46.00	Acres	3
Hop Brook	MA21-28	Headwaters, outlet Curtin Pond, Otis to mouth at confluence with the Housatonic River, Lee.	12.00	Miles	2
Housatonic River	MA21-04	Headwaters, confluence of Southwest Branch Housatonic River and West Branch Housatonic River, Pittsfield to Woods Pond dam (NATID: MA00731), Lee/Lenox (pond was formerly segment MA21120).	12.30	Miles	5
Housatonic River	MA21-19	Outlet of Woods Pond dam (NATID: MA00731), Lee/Lenox to the Risingdale Impoundment dam (NATID: MA00250), Great Barrington (impoundment formerly segment MA21121).	19.90	Miles	5
Housatonic River	MA21-20	Outlet of Risingdale Impoundment dam (NATID: MA00250), Great Barrington to the MA/CT border, Sheffield.	23.10	Miles	5
Hubbard Brook	MA21-15	Headwaters, northwest of Townhouse Hill Road, Egremont to mouth at confluence with the Housatonic River, Sheffield (thru Mill Pond formerly reported as segment MA21068).	9.40	Miles	4c
Karner Brook	MA21-38	Headwaters, perennial portion east of East Street, Mount Washington to the Karner Brook Reservoir intake, Egremont (formerly part of segment MA21-16).	2.30	Miles	4c
Karner Brook	MA21-39	From the Karner Brook Reservoir intake, Egremont to mouth at inlet Mill Pond, Egremont (formerly part of segment MA21-16).	2.30	Miles	4c

Appendix 1
Assessment units and integrated list categories presented alphabetically by major watershed

Water Body	Segment ID	Description	Size	Units	Category
Konkapot River	MA21-25	Headwaters, outlet Brewer Lake, Monterey to the MA/CT border, New Marlborough.	16.50	Miles	5
Konkapot River	MA21-26	From the MA/CT border, Sheffield, to mouth at confluence with the Housatonic River, Sheffield.	2.90	Miles	5
Lake Averic	MA21006	Stockbridge.	42.00	Acres	4c
Lake Buel	MA21014	Monterey/New Marlborough.	191.00	Acres	5
Lake Garfield	MA21040	Monterey.	255.00	Acres	5
Larrywaug Brook	MA21-29	Headwaters, outlet Stockbridge Bowl, Stockbridge to mouth at confluence with Housatonic River, Stockbridge.	2.90	Miles	2
Laurel Lake	MA21057	Lee/Lenox.	174.00	Acres	5
Long Pond	MA21062	Great Barrington.	114.00	Acres	4c
Long Pond Brook	MA21-14	Headwaters, outlet Long Pond, Great Barrington to mouth at confluence with Seekonk Brook, Great Barrington.	2.00	Miles	4c
Mansfield Pond	MA21065	Great Barrington.	28.00	Acres	4c
Mill Pond	MA21069	Egremont.	10.00	Acres	3
Morewood Lake	MA21071	Pittsfield.	20.00	Acres	5
Onota Lake	MA21078	Pittsfield.	662.00	Acres	4c
Plunkett Reservoir	MA21082	Hinsdale.	72.00	Acres	4c
Pontoosuc Lake	MA21083	Lanesborough/Pittsfield.	500.00	Acres	4a
Prospect Lake	MA21084	Egremont.	59.00	Acres	4c
Rawson Brook	MA21-37	Headwaters, north of Cronk Road, Monterey to mouth at confluence with Konkapot River, Monterey.	5.90	Miles	2
Richmond Pond	MA21088	Richmond/Pittsfield.	228.00	Acres	4c
Seekonk Brook	MA21-22	Headwaters, outlet of small impoundment east of West Road, Alford to mouth at confluence with the Green River, Great Barrington.	4.80	Miles	3
Shaker Mill Pond	MA21094	West Stockbridge.	27.00	Acres	4c
Southwest Branch Housatonic River	MA21-17	Headwaters, outlet Richmond Pond, Pittsfield to mouth at confluence with West Branch Housatonic River (forming headwaters Housatonic River), Pittsfield.	5.80	Miles	5
Stevens Pond	MA21104	Monterey.	39.00	Acres	4c
Stockbridge Bowl	MA21105	Stockbridge.	384.00	Acres	4a
Thousand Acre Pond	MA21106	New Marlborough.	145.00	Acres	4c
Town Brook	MA21-36	Headwaters, perennial portion, Lanesborough to mouth at inlet Pontoosuc Lake, Lanesborough.	7.90	Miles	2
Tyler Brook	MA21-32	Headwaters, northwest of Driscoll Road, Windsor to mouth at confluence with Windsor Brook, Windsor.	2.60	Miles	3
Unnamed Tributary	MA21-24	Headwaters, outlet Mill Pond, Egremont to mouth at confluence with Hubbard Brook, Egremont.	1.50	Miles	3
Unnamed Tributary	MA21-31	Unnamed tributary to the Housatonic River, locally known as "Laurel Brook", headwaters, outlet Laurel Lake, Lee to mouth at confluence with the Housatonic River, Lee.	0.80	Miles	4c
Upper Goose Pond	MA21110	Lee/Tyringham.	55.00	Acres	4c
Upper Sackett Reservoir	MA21113	Hinsdale.	19.00	Acres	3

Appendix 1
Assessment units and integrated list categories presented alphabetically by major watershed

Water Body	Segment ID	Description	Size	Units	Category
Wahconah Falls Brook	MA21-11	Headwaters, outlet Windsor Reservoir, Windsor to mouth at confluence with East Branch Housatonic River, Dalton.	3.40	Miles	2
Welch Brook	MA21-33	Headwaters, northeast of Tully Mountain, Hinsdale to mouth at confluence with unnamed tributary to Plunkett Reservoir, Hinsdale.	1.70	Miles	3
West Branch Housatonic River	MA21-18	Headwaters, outlet Pontoosuc Lake, Pittsfield to mouth at confluence with Southwest Branch Housatonic River (forming headwaters Housatonic River), Pittsfield.	4.10	Miles	5
Willard Brook	MA21-30	Headwaters north of Salisbury Road, Sheffield to mouth at confluence with Hubbard Brook, Sheffield.	4.00	Miles	4c
Williams River	MA21-06	Headwaters, outlet Shaker Mill Pond, West Stockbridge to mouth at confluence with Housatonic River, Great Barrington.	11.00	Miles	2
Windsor Brook	MA21-09	Headwaters, southeast of Fobes Hill (west of Savoy Hollow Road), Windsor to mouth at inlet Windsor Reservoir, Hinsdale.	6.10	Miles	4c
Windsor Reservoir	MA21119	Hinsdale/Windsor.	74.00	Acres	3
Hudson: Bashbish					
Bashbish Brook	MA13-01	Headwaters at confluence with Ashley Hill Brook, west of West Street, Mount Washington to Massachusetts/New York border, Mount Washington.	2.10	Miles	2
Hudson: Hoosic					
Bassett Brook	MA11-17	Headwaters, perennial portion, southeast slope of Saddle Ball Mountain, Adams to mouth at inlet Bassett Reservoir, Cheshire.	1.90	Miles	2
Berkshire Pond	MA11001	Lanesborough.	21.00	Acres	4c
Broad Brook	MA11-23	From Vermont state line, Williamstown to mouth at confluence with the Hoosic River, Williamstown.	2.20	Miles	2
Buxton Brook	MA11-25	Headwaters, perennial portion, west of Petersburg Road, Williamstown to mouth at confluence with Hemlock Brook, Williamstown.	1.30	Miles	2
Cheshire Reservoir, Middle Basin	MA11018	[Middle Basin] Cheshire/Lanesborough.	186.00	Acres	4c
Cheshire Reservoir, North Basin	MA11002	[North Basin] Cheshire.	284.00	Acres	5
Cheshire Reservoir, South Basin	MA11019	[South Basin] Cheshire/Lanesborough.	92.00	Acres	5
Dry Brook	MA11-13	Headwaters, west of Jackson Road (in Savoy Wildlife Management Area), Savoy to mouth at confluence with Hoosic River, Adams.	6.70	Miles	2
East Branch Green River	MA11-21	Headwaters, perennial portion, northeast of Sugarloaf Mountain, New Ashford to mouth at confluence with Green River, New Ashford.	2.20	Miles	2
Green River	MA11-06	Headwaters, perennial portion, southwest of Sugarloaf Mountain (west of Ingraham Road), New Ashford to mouth at confluence with Hoosic River, Williamstown.	12.50	Miles	2
Hemlock Brook	MA11-09	Headwaters, perennial portion, south of Route 2 in the Taconic Trail State Park, Williamstown to mouth at confluence with the Hoosic River, Wiliamstown.	7.10	Miles	3
Hoosic River	MA11-03	Headwaters, outlet Cheshire Reservoir, Cheshire to Adams WWTP discharge (NPDES: MA0100315), Adams.	8.80	Miles	5
Hoosic River	MA11-04	Adams WWTP discharge (NPDES: MA0100315), Adams to confluence with North Branch Hoosic River, North Adams.	5.40	Miles	4c
Hoosic River	MA11-05	Confluence with North Branch Hoosic River, North Adams to the Vermont State line, Williamstown.	8.20	Miles	5
Hopper Brook	MA11-28	Headwaters, perennial portion, east of Sperry Road, Williamstown to mouth at confluence with the Green River, Williamstown.	4.00	Miles	2

Appendix 1
Assessment units and integrated list categories presented alphabetically by major watershed

Water Body	Segment ID	Description	Size	Units	Category
Kitchen Brook	MA11-24	From the outlet of the unnamed reservoir (Kitchen Brook Reservoir), Cheshire to mouth at confluence with the Hoosic River, Cheshire.	1.40	Miles	2
Mauserts Pond	MA11009	Clarksburg.	51.00	Acres	2
Mcdonald Brook	MA11-16	Source, southeast of Woodchuck Hill, Windsor to mouth at confluence with South Brook, Cheshire.	3.00	Miles	3
Miller Brook	MA11-27	Headwaters, west and south of East Hoosac Street, Adams to mouth at confluence with Tophet Brook, Adams.	2.40	Miles	2
Mt. Williams Reservoir	MA11010	North Adams.	46.00	Acres	3
North Branch Hoosic River	MA11-01	Vermont State line, Clarksburg to USGS Gage (# 01332000), North Adams.	4.30	Miles	5
North Branch Hoosic River	MA11-02	From USGS Gage (# 01332000), North Adams to mouth at confluence with Hoosic River, North Adams.	1.50	Miles	5
Notch Reservoir	MA11011	North Adams.	12.00	Acres	3
Paull Brook	MA11-20	Headwaters, outlet of Mt. Williams Reservoir, North Adams to mouth at confluence with unnamed tributary, Williamstown.	2.10	Miles	4c
Pecks Brook	MA11-18	Headwaters, perennial portion, west of West Mountatin Road, Adams to mouth at confluence with the Hoosic River, Adams.	2.70	Miles	2
South Brook	MA11-15	Headwaters, west of Weston Mountain, Dalton to mouth at confluence with the Hoosic River, Cheshire.	4.10	Miles	2
Thunder Brook	MA11-10	Headwaters, perennial portion, Cheshire to mouth at confluence with Kitchen Brook, Cheshire.	1.50	Miles	2
Tophet Brook	MA11-19	Source west of Burnett Road, Savoy (in the Savoy Mountain State Forest) to mouth at confluence with the Hoosic River, Adams.	6.20	Miles	4c
Tunnel Brook	MA11-26	Headwaters, outlet small unnamed pond east of West Shaft Road, North Adams to mouth at confluence with Phillips Creek, North Adams.	1.70	Miles	3
West Branch Green River	MA11-22	Headwaters, perennial portion, west of Route 43, Hancock (near New York border) to mouth at confluence with Green River, Williamstown.	7.90	Miles	2
Windsor Lake	MA11016	North Adams.	24.00	Acres	3
Hudson: Kinderhook					
Bently Brook	MA12-02	Headwaters, perennial portion, south of Brodie Mountain Road, Lanesborough to mouth at confluence with Kinderhook Creek, Hancock.	2.10	Miles	2
Kinderhook Creek	MA12-01	Headwaters, northwest of Sheeps Heaven Mountain and east of Route 43, Hancock to New York/Massachusetts border, Hancock.	5.50	Miles	5
Ipswich					
Bear Meadow Brook	MA92-07	Headwaters in Cedar Swamp, Reading to confluence with Ipswich River, Reading/North Reading.	2.80	Miles	2
Beaver Pond	MA92002	Beverly.	19.00	Acres	3
Berry Pond	MA92003	North Andover.	4.00	Acres	2
Black Brook	MA92-19	Outlet Cutler Pond, Hamilton to confluence with Ipswich River, Hamilton.	3.60	Miles	3
Boston Brook	MA92-13	Outlet of Towne Street Pond, North Andover to confluence with the Ipswich River, Middleton (excluding approximately 0.3 miles through Salem Street Pond segment MA92076), (through former pond segments Upper Boston Brook Pond MA92070 and Lower Boston Brook Pond MA92031).	7.20	Miles	2
Brackett Pond	MA92004	Andover.	16.00	Acres	5
Bradford Pond	MA92005	North Reading.	14.00	Acres	3

Appendix 1
Assessment units and integrated list categories presented alphabetically by major watershed

Water Body	Segment ID	Description	Size	Units	Category
Collins Pond	MA92010	Andover.	2.00	Acres	5
Creighton Pond	MA92011	Middleton.	19.00	Acres	3
Crystal Pond	MA92013	Peabody.	9.00	Acres	5
Devils Dishfull Pond	MA92015	Peabody.	14.00	Acres	5
Eisenhaures Pond	MA92016	North Reading.	12.00	Acres	3
Elginwood Pond	MA92017	Peabody.	9.00	Acres	3
Emerson Brook Reservoir (Forest Street Pond)	MA92021	Middleton/North Reading.	196.00	Acres	3
Farnum Street Pond	MA92018	North Andover.	9.00	Acres	3
Field Pond	MA92019	Andover.	57.00	Acres	4c
Fish Brook	MA92-14	Headwater, outlet Stiles Pond, Boxford to confluence with Ipswich River, Topsfield/Boxford (through Howes Pond formerly segment MA92026).	8.20	Miles	5
Fourmile Pond	MA92022	Boxford.	29.00	Acres	3
Frye Pond	MA92023	Andover.	7.00	Acres	5
Gravelly Brook	MA92-18	Headwaters, Willowdale State Forest, Ipswich to confluence with Ipswich River, Ipswich.	1.50	Miles	5
Hood Pond	MA92025	Ipswich/Topsfield.	68.00	Acres	4a
Howlett Brook	MA92-17	Headwaters north of Great Hill, Topsfield to confluence with Ipswich River, Topsfield.	2.70	Miles	5
Idlewild Brook	MA92-24	Outlet of Pleasant Pond, Hamilton to confluence with Ipswich River, Hamilton.	1.10	Miles	3
Ipswich River	MA92-02	Ipswich Mills Dam (formerly known as Sylvania Dam), Ipswich to mouth at Ipswich Bay, Ipswich.	0.39	Square Miles	5
Ipswich River	MA92-06	Source at confluence of Maple Meadow Brook and Lubbers Brook, Wilmington, to Salem Beverly Waterway Canal, Topsfield.	20.40	Miles	5
Ipswich River	MA92-15	Salem Beverly Waterway Canal, Topsfield to Ipswich Mills Dam (formerly known as Sylvania Dam), Ipswich.	11.00	Miles	5
Kimball Brook	MA92-21	Headwaters, west of Scott Hill, Ipswich to confluence with Ipswich River, Ipswich.	2.20	Miles	5
Kimballs Pond	MA92027	Boxford.	8.00	Acres	3
Labor in Vain Creek	MA92-22	Headwaters (excluding intermittent portion) south of Argilla Road, Ipswich to confluence with estuarine portion of Ipswich River, Ipswich.	0.03	Square Miles	5
Long Causeway Brook	MA92-20	Headwaters (excluding intermittent portion) near Boston & Maine Railroad, south of Pigeon Hill, Hamilton to confluence with Miles River, Hamilton/Ipswich.	1.00	Miles	3
Longham Reservoir	MA92030	Wenham/Beverly.	34.00	Acres	3
Lowe Pond	MA92034	Boxford.	36.00	Acres	5
Lower Four Mile Pond	MA92032	Boxford.	18.00	Acres	4c
Lubbers Brook	MA92-05	Headwaters (excluding intermittent portion) Billerica to confluence with Maple Meadow Brook forming headwaters of Ipswich River, Wilmington (through former pond segments Lubber Pond West MA92036 and Lubber Pond East MA92035).	5.60	Miles	5
Maple Meadow Brook	MA92-04	Headwaters outlet of Mill Pond, Burlington to confluence with Lubbers Brook, Wilmington.	4.20	Miles	5
Martins Brook	MA92-08	Outlet of Martins Pond, North Reading to the confluence with the Ipswich River, North Reading.	4.60	Miles	5

Appendix 1
Assessment units and integrated list categories presented alphabetically by major watershed

Water Body	Segment ID	Description	Size	Units	Category
Martins Pond	MA92038	North Reading.	89.00	Acres	5
Middleton Pond	MA92039	Middleton.	129.00	Acres	3
Mile Brook	MA92-16	Headwaters, east of North Street, Topsfield to confluence with Ipswich River, Topsfield (includes Mile Brook Pond).	2.50	Miles	3
Miles River	MA92-03	Headwaters outlet Longham Reservoir, Beverly to confluence with Ipswich River, Ipswich.	8.90	Miles	5
Mill Pond	MA92041	Burlington.	59.00	Acres	4a
Nichols Brook	MA92-25	Headwaters (near Rowley Hill Street and Route 95 and Newburyport Turnpike) in Danvers, to confluence with the Ipswich River, Middleton (Middleton/Boxford town line).	2.40	Miles	3
Norris Brook	MA92-11	Headwaters outlet of Elginwood Pond, Peabody to confluence with Ipswich River, Danvers (Danvers/Middleton town line).	1.50	Miles	5
Pierces Pond	MA92048	Peabody.	3.00	Acres	3
Pleasant Pond	MA92049	(Idlewood Lake) Wenham/Hamilton.	26.00	Acres	5
Putnamville Reservoir	MA92052	Danvers.	283.00	Acres	3
Salem Pond	MA92057	North Andover/Andover.	15.00	Acres	5
Salem Street Pond	MA92076	North Andover.	11.00	Acres	3
Silver Lake	MA92059	Wilmington.	30.00	Acres	5
Spofford Pond	MA92060	Boxford.	28.00	Acres	3
Stearns Pond	MA92061	North Andover.	43.00	Acres	2
Stevens Pond	MA92062	Boxford.	11.00	Acres	4c
Stiles Pond	MA92063	Boxford.	59.00	Acres	3
Sudden Pond	MA92064	North Andover.	5.00	Acres	3
Suntaug Lake	MA92065	Lynnfield/Peabody.	151.00	Acres	3
Swan Pond	MA92066	North Reading.	42.00	Acres	3
Towne Pond	MA92068	Boxford/North Andover.	23.00	Acres	3
Unnamed Tributary	MA92-09	Unnamed tributary to Ipswich River, outlet of Eisenhaures Pond, North Reading to confluence with Ipswich River, North Reading.	1.40	Miles	5
Unnamed Tributary	MA92-12	Unnamed tributary to Ipswich River, outlet of Middleton Pond, Middleton to confluence with Ipswich River, Middleton.	1.40	Miles	5
Unnamed Tributary	MA92-23	Unnamed tributary to Ipswich River (locally known as Greenwood Creek), headwaters, east of Jeffreys Neck Road/north of Newmarch Street, Ipswich to confluence with estuarine portion of Ipswich River, Ipswich.	0.03	Square Miles	5
Unnamed Tributary	MA92-26	Unnamed intermittent tributary to Martins Brook, from source in wetland west of the Route 93/Route 125 intersection, Wilmington to confluence with Martins Brook, Wilmington.	1.30	Miles	5
Wenham Lake	MA92073	Beverly/Wenham.	243.00	Acres	5
Wills Brook	MA92-10	Headwaters, north of Lowell Street (excluding intermittent portion), Lynnfield to confluence with Ipswich River, Lynnfield (Lynnfield/North Reading townline).	1.50	Miles	2
Winona Pond	MA92077	Peabody.	92.00	Acres	3
Islands					
Black Point Pond	MA97-33	Chilmark (includes channel connector to Tisbury Great Pond).	0.09	Square Miles	2

Appendix 1
Assessment units and integrated list categories presented alphabetically by major watershed

Water Body	Segment ID	Description	Size	Units	Category
Cape Poge Bay	MA97-08	From the outlet of The Lagoon at Toms Neck, Edgartown to the confluence with Edgartown Harbor at the Cape Poge Gut, (excluding Shear Pen Pond and Pease Pond) Edgartown, Martha's Vineyard.	2.30	Square Miles	2
Chilmark Pond	MA97-05	South of South Road including Wades Cove and Gilberts Cove, Chilmark, Martha's Vineyard.	0.31	Square Miles	5
Coskata Pond	MA97-03	Pond north of Nantucket Harbor, Nantucket to confluence with Nantucket Harbor, Nantucket.	0.08	Square Miles	2
Cuttyhunk Pond	MA97-21	Waters west of the channel connecting Cuttyhunk Pond to Cuttyhunk Harbor, Gosnold, Elizabeth Islands (changed from MA95-26 to MA97-21 on 10/7/97).	0.15	Square Miles	5
Edgartown Great Pond	MA97-17	excluding Jacobs Pond (PALIS# 97038) Edgartown, Martha's Vineyard.	1.35	Square Miles	4a
Edgartown Harbor	MA97-15	Waters west of Cape Poge Gut bounded by an imaginary line drawn from Chappaquiddick Point to Dock Street and northeasterly from the end of Plantingfield Way to Cape Poge Elbow (excluding Eel Pond), Edgartown, Martha's Vineyard.	3.09	Square Miles	5
Farm Pond	MA97-30	Oak Bluffs.	0.05	Square Miles	4a
Gibbs Pond	MA97028	Nantucket.	34.00	Acres	4a
Great Point Pond	MA97-04	On Great Point, Nantucket.	0.01	Square Miles	3
Head of Hummock Pond	MA97035	Nantucket.	16.00	Acres	5
Hither Creek	MA97-28	From the outlet of Long Pond to Madaket Harbor at an imaginary line drawn easterly from Jackson Point to Little Neck, Nantucket (as of the 2016 reporting cycle this segment includes Madaket Ditch).	0.07	Square Miles	4a
Katama Bay	MA97-16	Waters south of an imaginary line from Chappaquiddick Point to Dock Street excluding Caleb Pond and Mattakeset Bay, Edgartown, Martha's Vineyard.	2.05	Square Miles	5
Lagoon Pond	MA97-11	From Head of the Pond Road to confluence with Vineyard Haven Harbor at Beach Road, Tisbury/Oak Bluffs, Martha's Vineyard.	0.82	Square Miles	4a
Lake Tashmoo	MA97-12	Waters including Drew Cove and Rhoda Pond to confluence with Vineyard Sound at channel south of Herring Creek Road, Tisbury, Martha's Vineyard.	0.41	Square Miles	5
Long Pond	MA97-29	tidally restricted brackish water, south of Madaket Road, including White Goose Cove, Nantucket.	0.12	Square Miles	5
Madaket Harbor	MA97-27	Waters encompassed within imaginary lines from Eel Point to the northern tip of Esther Island, from the southern tip of Esther Island southeasterly to the opposite shore and from Jackson Point easterly to Little Neck, Nantucket.	1.44	Square Miles	2
Mattakeset Bay	MA97-14	Waters west of an imaginary line drawn southeasterly from Katama Point to Norton Point, Edgartown, Martha's Vineyard.	0.17	Square Miles	2
Menemsha Pond	MA97-06	Waters between Nashaquitsa Pond and Menemsha Creek, Chilmark/Aquinnah, Martha's Vineyard.	0.89	Square Miles	2
Miacomet Pond	MA97055	Nantucket.	34.00	Acres	4a
Mill Brook	MA97-22	Outlet of Bliss Pond, Chilmark to inlet Chilmark Pond, Chilmark, Martha's Vineyard.	2.40	Miles	2
Mill Brook	MA97-24	Source in wetlands west of Roth Woodland Road, Chilmark to Old Millpond Dam, West Tisbury, Martha's Vineyard.	3.60	Miles	2
Nantucket Harbor	MA97-01	Waters south and east of an imaginary line drawn from Jetties Beach to Coatue Point (excluding Polpis Harbor and Coskata Pond), Nantucket.	7.16	Square Miles	5
North Head Long Pond	MA97-34	tidally restricted brackish water, Nantucket.	0.07	Square Miles	4a

Appendix 1
Assessment units and integrated list categories presented alphabetically by major watershed

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Oak Bluffs Harbor	MA97-07	North of Lake Avenue to confluence with Nantucket Sound, Oak Bluffs, Martha's Vineyard.	0.05	Square Miles	5
Oyster Pond	MA97-13	Including Ripley Cove, Edgartown, Martha's Vineyard.	0.29	Square Miles	3
Paint Mill Brook	MA97-23	Source east of Tea Lane, Chilmark to inlet of Paint Mill Brook Pond, Chilmark, Martha's Vineyard.	0.90	Miles	2
Polpis Harbor	MA97-26	Polpis Harbor and all adjacent coves, to an imaginary line drawn from Quaise Point to the opposite shore, Nantucket.	0.30	Square Miles	5
Roaring Brook	MA97-37	Headwaters, south of Tabor House Road, Chilmark to mouth at inlet Vineyard Sound, Chilmark.	1.50	Miles	3
Sengekontacket Pond	MA97-10	Between Edgartown-Vineyard Haven Road and Oak Bluffs Road, including Majors Cove, Edgartown/Oak Bluffs, Martha's Vineyard.	1.10	Square Miles	5
Sesachacha Pond	MA97-02	South of Quidnet Road and north of Polpis Road, Nantucket.	0.42	Square Miles	5
Seths Pond	MA97085	West Tisbury.	11.00	Acres	5
Sunset Lake	MA97-31	Oak Bluffs.	0.01	Square Miles	2
Tiasquam River	MA97-25	Source in wetlands west of Tea Lane, Chilmark to Warren Pond Dam, Chilmark/West Tisbury, Martha's Vineyard.	3.20	Miles	2
Tiasquam River	MA97-35	From Warren Pond Dam to mouth at inlet of Town Cove of Tisbury Great Pond, Chilmark/West Tisbury, Martha's Vineyard.	0.01	Square Miles	3
Tisbury Great Pond	MA97-18	Including Town Cove, Muddy Cove, Pear Tree Cove, Short Cove, Tiah Cove, Tississa Pond, Deep Bottom Cove, and Thumb Cove, Chilmark/West Tisbury, Martha's Vineyard.	1.10	Square Miles	5
Tom Nevers Pond	MA97097	Nantucket.	11.00	Acres	4a
Trapps Pond	MA97-32	Edgartown.	0.07	Square Miles	4a
Vineyard Haven Harbor	MA97-09	The waters south and west of an imaginary line drawn from the tip of West Chop, Tisbury and the tip of East Chop, Oak Bluffs to the confluence of Lagoon Pond at Beach Road, Tisbury/Oak Bluffs, Martha's Vineyard.	1.54	Square Miles	5
Westend Pond	MA97-20	Cuttyhunk Island, Gosnold, Elizabeth Islands.	0.06	Square Miles	2
Witch Brook	MA97-36	Perennial portion south of South Gate Road, West Tisbury to mouth at Crocker Pond inlet, West Tisbury.	0.50	Miles	2
Merrimack					
Back River	MA84A-16	New Hampshire state line, Amesbury to inlet Clarks Pond, Amesbury.	2.70	Miles	5
Bailey Pond	MA84003	Amesbury.	13.00	Acres	3
Bare Meadow Brook	MA84A-18	Headwaters, Methuen to confluence with Merrimack River, Methuen.	3.00	Miles	5
Bartlett Brook	MA84A-36	New Hampshire state line, Dracut to inlet Mill Pond, Methuen.	3.70	Miles	5
Beaver Brook	MA84A-11	New Hampshire state line, Dracut to confluence with Merrimack River, Lowell.	4.80	Miles	5
Beaver Brook	MA84B-02	Outlet Mill Pond, Littleton to inlet Forge Pond, Westford.	4.90	Miles	5
Beaver Brook	MA84B-05	Headwaters, outlet of "Wolf Swamp", Boxborough to inlet of Mill Pond, Littleton.	5.50	Miles	3
Bennetts Brook	MA84B-06	Headwaters, north of Route 2, Harvard to the inlet of Spectacle Pond, Ayer/Littleton.	4.30	Miles	5
Black Brook	MA84A-17	Headwaters, Chelmsford to confluence with Merrimack River, Lowell (approximately 500 feet culverted near mouth).	2.30	Miles	5
Bridge Meadow Brook	MA84A-34	Headwaters, north of Chestnut Road, Tyngsborough to inlet Flint Pond, Tyngsborough.	4.00	Miles	2

Appendix 1
Assessment units and integrated list categories presented alphabetically by major watershed

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Chadwicks Pond	MA84006	Haverhill/Boxford.	173.00	Acres	5
Cobbler Brook	MA84A-22	Headwaters, Merrimac to confluence with Merrimack River, Merrimac.	4.40	Miles	4c
Creek Brook	MA84A-37	Headwaters, outlet Crystal Lake, Haverhill to confluence with Merrimack River, Haverhill.	2.30	Miles	5
Crystal Lake	MA84010	Haverhill.	161.00	Acres	5
Deep Brook	MA84A-21	Headwaters east of Everett Turnpike, Tyngsborough to confluence with Merrimack River, Chelmsford.	2.90	Miles	5
East Meadow River	MA84A-39	Headwaters, outlet Neal Pond, Haverhill to inlet Millvale Reservoir, Haverhill.	3.00	Miles	5
Fish Brook	MA84A-40	Headwaters, east of Greenwood Road, Andover to confluence with Merrimack River at Fish Brook Dam (NAT ID: MA02265), Andover.	4.10	Miles	5
Flint Pond	MA84012	Tyngsborough.	72.00	Acres	5
Forest Lake	MA84014	Methuen.	48.00	Acres	5
Forge Pond	MA84015	Westford/Littleton.	203.00	Acres	4a
Haggets Pond	MA84022	Andover.	211.00	Acres	5
Hoveys Pond	MA84025	Boxford.	36.00	Acres	5
Johnson Creek	MA84A-15	Headwaters, Groveland (excluding intermittent portion) to confluence with Merrimack River, Groveland/Haverhill.	1.10	Miles	2
Johnsons Pond	MA84027	Groveland/Boxford.	194.00	Acres	5
Joint Grass Brook	MA84A-32	Headwaters, between Hollis Street and Hauk Swamp, Dunstable to the confluence with Salmon Brook, Dunstable.	3.20	Miles	3
Kenoza Lake	MA84028	Haverhill.	240.00	Acres	5
Knops Pond/Lost Lake	MA84084	Groton.	187.00	Acres	4a
Lake Attitash	MA84002	Amesbury/Merrimac.	369.00	Acres	5
Lake Cochichewick	MA84008	North Andover.	575.00	Acres	5
Lake Mascuppic	MA84037	Tyngsborough/Dracut.	210.00	Acres	4c
Lake Pentucket	MA84051	Haverhill.	38.00	Acres	5
Lake Saltonstall	MA84059	Haverhill.	44.00	Acres	5
Lawrence Brook	MA84A-20	Headwaters, Tyngsborough (excluding intermittent portion) to confluence with Merrimack River, Tyngsborough.	2.00	Miles	2
Little River	MA84A-09	New Hampshire state line, Haverhill to confluence with Merrimack River, Haverhill (approximately 200 feet culverted at mouth).	4.60	Miles	5
Locust Pond	MA84031	Tyngsborough.	16.00	Acres	4a
Long Pond	MA84032	Dracut/Tyngsborough (size indicates portion in Massachusetts).	137.00	Acres	5
Lowell Canals	MA84A-29	Canal system near Pawtucket Falls, Lowell.	4.90	Miles	5
Martins Pond Brook	MA84A-19	Headwaters outlet Martins Pond, Groton to inlet Lost Lake, Groton.	2.30	Miles	2
Massapoag Pond	MA84087	Dunstable/Groton/Tyngsborough.	111.00	Acres	5
Merrimack River	MA84A-01	State line at Hudson, NH/Tyngsborough, MA to Pawtucket Dam (NAT ID: MA00837), Lowell.	9.00	Miles	5
Merrimack River	MA84A-02	Pawtucket Dam (NAT ID: MA00837), Lowell to Lowell Regional Wastewater Utilities (NPDES# MA0100633) outfall at Duck Island, Lowell.	3.20	Miles	5
Merrimack River	MA84A-03	Lowell Regional Wastewater Utilities (NPDES# MA0100633) outfall at Duck Island, Lowell to Essex Dam (NAT ID: MA00234), Lawrence.	8.80	Miles	5

Appendix 1
Assessment units and integrated list categories presented alphabetically by major watershed

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Merrimack River	MA84A-04	Essex Dam (NAT ID: MA00234), Lawrence to confluence with Little River, Haverhill.	10.00	Miles	5
Merrimack River	MA84A-05	Confluence Little River, Haverhill to confluence Indian River, West Newbury/Amesbury.	1.83	Square Miles	5
Merrimack River	MA84A-06	Confluence Indian River, West Newbury/Amesbury to mouth at Atlantic Ocean, Newburyport/Salisbury (includes Back River, Salisbury).	4.46	Square Miles	5
Merrimack River	MA84A-26	The Basin in the Merrimack River Estuary, Newbury/Newburyport.	0.17	Square Miles	5
Mill Pond	MA84038	[North Basin] Littleton.	30.00	Acres	5
Mill Pond	MA84039	West Newbury.	18.00	Acres	3
Mill Pond	MA84081	[South Basin] Littleton.	12.00	Acres	5
Millvale Reservoir	MA84041	Haverhill.	44.00	Acres	5
Nabnasset Pond	MA84044	Westford.	134.00	Acres	5
Newfield Pond	MA84046	Chelmsford.	77.00	Acres	5
Peppermint Brook	MA84A-35	Headwaters, outlet of unnamed pond east of Route 38, Dracut to confluence with Beaver Brook, Dracut.	2.70	Miles	5
Plum Island River	MA84A-27	From Chaces Island, Merimack River Estuary, to the "high sandy" sand bar just north of the confluence with Pine Island Creek, Newbury (formerly encompassed in MA84A-23).	0.13	Square Miles	5
Powwow River	MA84A-08	Tidal portion, just downstream of Main Street, Amesbury to confluence with Merrimack River, Amesbury.	0.06	Square Miles	5
Powwow River	MA84A-25	Outlet of Lake Gardner, Amesbury to tidal portion, just downstream of Main Street, Amesbury.	0.60	Miles	5
Powwow River	MA84A-28	outlet Tuxbury Pond, Amesbury to New Hampshire state line, Amesbury.	2.90	Miles	5
Reed Brook	MA84B-08	Headwaters, south of the West Street/Cowdry Hill Road intersection, Westford to the confluence with Stony Brook, Westford.	0.60	Miles	2
Richardson Brook	MA84A-12	Headwaters, Dracut (excluding intermittent portion) to confluence with Merrimack River, Dracut.	1.90	Miles	5
Salmon Brook	MA84A-33	Headwaters, outlet Lower Massapoag Pond, Dunstable to New Hampshire state line, Dunstable.	2.90	Miles	3
South Branch Souhegan River	MA84A-31	Headwaters, outlet Watatic Pond, Ashburnham to New Hampshire state line, Ashby.	3.00	Miles	5
Spectacle Pond	MA84089	Littleton/Ayer.	79.00	Acres	5
Spicket River	MA84A-10	New Hampshire state line, Methuen to confluence with Merrimack River, Lawrence.	5.80	Miles	5
Stevens Pond	MA84064	North Andover.	23.00	Acres	5
Stony Brook	MA84B-03	Headwaters outlet Forge Pond, Westford to Brookside Road, Westford.	6.50	Miles	5
Stony Brook	MA84B-04	Brookside Road, Westford to confluence with Merrimack River, Chelmsford.	3.40	Miles	5
Tadmuck Brook	MA84B-07	Headwaters south of Main Street, Westford to confluence with Stony Brook, Westford.	1.40	Miles	5
Trout Brook	MA84A-13	Headwaters, Dracut to confluence with Richardson Brook, Dracut.	2.60	Miles	5
Trull Brook	MA84A-14	Source, Tewksbury (excluding intermittent portion) to confluence with Merrimack River, Tewksbury.	2.10	Miles	5

Appendix 1
Assessment units and integrated list categories presented alphabetically by major watershed

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Unnamed Tributary	MA84A-30	Unnamed tributary to Powwow River locally considered portion of Back River from outlet of Clarks Pond, Amesbury to confluence with Powwow River, Amesbury (formerly portion of segment MA84A-16).	0.003	Square Miles	5
Unnamed Tributary	MA84A-38	(Locally known as Argilla Brook) Unnamed tributary to Johnson Creek (excluding intermittent portion) from Center Street, Groveland to confluence with Johnson Creek, Groveland.	1.30	Miles	2
Unnamed Tributary	MA84B-01	(Locally known as Reedy Meadow Brook) Headwaters, outlet of small unnamed impoundment upstream of Bruce Street, Littleton to inlet Mill Pond, Littleton.	1.50	Miles	5
Uptons Pond	MA84075	Tyngsborough.	6.00	Acres	3
Ward Pond	MA84096	PALIS id changed from 35094 to 84096 on October 10, 1997. (WBID from MA35094 to MA84096) Ashburnham.	54.00	Acres	5
Millers					
Bassett Pond	MA35002	New Salem.	26.00	Acres	3
Beaver Brook	MA35-09	Fernald School discharge, Templeton to confluence with Millers River, Royalston.	3.40	Miles	5
Beaver Brook	MA35-28	Headwaters, confluence of Kendall and Chickering brooks, Phillipston to the Fernald School (MA0102156) discharge, Templeton.	2.30	Miles	5
Beaver Flowage Pond	MA35005	(Beaver Pond) Royalston.	38.00	Acres	3
Bents Pond	MA35006	Hubbardston.	28.00	Acres	3
Bents Pond	MA35007	Gardner.	6.00	Acres	4a
Bourn-Hadley Pond	MA35008	Templeton.	26.00	Acres	4c
Bowens Pond	MA35009	Wendell.	17.00	Acres	3
Boyce Brook	MA35-17	NH State Line, Royalston to confluence with East Branch Tully River, Royalston.	3.20	Miles	5
Brazell Pond	MA35010	Templeton.	15.00	Acres	4c
Cowee Pond	MA35013	Gardner.	18.00	Acres	3
Crystal Lake	MA35014	Gardner.	142.00	Acres	3
Davenport Pond	MA35015	Petersham/Athol.	30.00	Acres	3
Depot Pond	MA35018	(Railroad Pond) Templeton.	15.00	Acres	4c
Dunn Pond	MA35021	Gardner.	18.00	Acres	2
East Branch Tully River	MA35-29	From the outlet of Tully Lake, Royalston to confluence with the West Branch Tully River forming headwaters Tully River, Orange/Athol (formerly reported as a portion of MA35-12).	3.50	Miles	5
East Branch Tully River	MA35-30	Confluence of Tully Brook and Falls Brook in Royalston State Forest, Royalston through Long Pond to inlet Tully Lake, Royalston (formerly reported as a portion of MA35-12).	5.40	Miles	5
East Templeton Pond	MA35022	Templeton.	9.00	Acres	3
Ellinwood Brook	MA35-22	Headwaters, outlet unnamed pond east of Woodlawn Road, Athol to inlet of White Pond, Athol.	3.60	Miles	5
Ellis Pond	MA35023	Athol.	88.00	Acres	4c
Gales Pond	MA35024	Warwick.	12.00	Acres	5
Greenwood Pond	MA35025	Westminster.	27.00	Acres	3
Greenwood Pond	MA35026	Templeton.	12.00	Acres	4c

Appendix 1
Assessment units and integrated list categories presented alphabetically by major watershed

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Hastings Pond	MA35028	Warwick.	18.00	Acres	3
Hilchey Pond	MA35029	Gardner.	8.00	Acres	4a
Jacks Brook	MA35-31	Headwaters south of Orange Road, Northfield to mouth at confluence with Keyup Brook, Erving.	2.70	Miles	5
Kendall Pond	MA35034	Gardner.	22.00	Acres	3
Keyup Brook	MA35-16	Headwaters Great Swamp Northfield State Forest, Northfield, to confluence with Millers River, Erving.	5.00	Miles	5
Lake Denison	MA35017	Winchendon.	83.00	Acres	4a
Lake Mattawa	MA35112	(PALIS ID Changed on 10/6/97 from 36092 to 35112 - Concurently changed WBID to reflect this change - See PALIS for details) Orange.	112.00	Acres	3
Lake Monomonac	MA35047	Massachusetts portion only. Winchendon/Rindge,N.H.	186.00	Acres	5
Lake Rohunta	MA35070	(Middle Basin) Athol/Orange/New Salem.	209.00	Acres	5
Lake Rohunta	MA35106	(North Basin) Athol/Orange.	34.00	Acres	4a
Lake Rohunta	MA35107	(South Basin) New Salem.	42.00	Acres	5
Lake Watatic	MA35095	Ashburnham.	133.00	Acres	3
Laurel Lake	MA35035	Erving/Warwick.	44.00	Acres	5
Lawrence Brook	MA35-13	New Hampshire state line, Royalston through Doane Falls to confluence with East Branch Tully River at inlet Tully Lake, Royalston.	7.10	Miles	5
Little Pond	MA35037	Royalston.	10.00	Acres	3
Lower Naukeag Lake	MA35041	Ashburnham.	295.00	Acres	3
Lyons Brook	MA35-19	Outlet of Ruggles Pond, Wendell to confluence with Millers River, Montague/Wendell.	2.10	Miles	5
Mahoney Brook	MA35-27	Headwaters, east of Willis Road and Ray Hill, Gardner to Mahoney Pond Dam (MA02319), Gardner.	3.00	Miles	5
Millers River	MA35-01	Outlet of Whitney Pond, Winchendon to Winchendon WWTP, Winchendon.	3.30	Miles	5
Millers River	MA35-02	Winchendon WWTP, Winchendon to confluence with Otter River, Winchendon.	5.60	Miles	5
Millers River	MA35-03	Confluence with Otter River, Winchendon to South Royalston USGS Gage, Royalston.	3.50	Miles	5
Millers River	MA35-04	South Royalston USGS Gage, Royalston to Erving Center WWTP (formerly known as Erving Paper Company), Erving.	18.50	Miles	5
Millers River	MA35-05	Erving Center WWTP (formerly known as Erving Paper Company), Erving to confluence with Connecticut River, Erving/Montague.	9.20	Miles	5
Millers River	MA35-20	Outlet of Sunset Lake, Ashburnham to inlet of Whitney Pond, Winchendon.	6.40	Miles	5
Minott Pond	MA35046	Westminster.	8.00	Acres	3
Minott Pond South	MA35045	Westminster.	27.00	Acres	3
Moores Pond	MA35048	Warwick.	39.00	Acres	4a
Mormon Hollow Brook	MA35-15	Headwaters just north of Montague Road, Wendell to confluence with Millers River, Wendell.	3.80	Miles	5
North Branch Millers River	MA35-21	Outlet of Lake Mononomac, Winchendon to inlet of Whitney Pond, Winchendon.	2.00	Miles	5
North Pond Brook	MA35-23	Headwaters, from northern outlet of Lake Mattawa, Orange to confluence with Millers River, Orange.	2.10	Miles	5
North Spectacle Pond	MA35052	New Salem.	43.00	Acres	3

Appendix 1
Assessment units and integrated list categories presented alphabetically by major watershed

Water Body	Segment ID	Description	Size	Units	Category
Otter River	MA35-06	Source, Hubbardston (north of Pitcherville Road) to Gardner WWTP, Gardner/Templeton.	4.30	Miles	5
Otter River	MA35-07	Gardner WWTP, Gardner/Templeton to Seaman Paper Dam, Templeton.	4.40	Miles	2
Otter River	MA35-08	Seaman Paper Dam, Templeton to confluence with Millers River, Winchendon.	5.50	Miles	5
Packard Pond	MA35053	Orange.	43.00	Acres	3
Parker Pond	MA35056	Gardner.	32.00	Acres	4a
Partridgeville Pond	MA35057	Templeton.	38.00	Acres	3
Perley Brook Reservoir	MA35059	Gardner.	55.00	Acres	3
Phillipston Reservoir	MA35060	Philipston/Athol.	20.00	Acres	3
Priest Brook	MA35-10	Headwaters at the confluence of Towne and Scott Brooks, Royalston to the confluence with the Millers River, Winchendon. (According to SARIS includes lower portion of Scott Brook.).	6.80	Miles	2
Ramsdall Pond	MA35062	Gardner.	16.00	Acres	3
Reservoir No. 1	MA35063	Athol.	8.00	Acres	4a
Reservoir No. 2	MA35064	Phillipston/Athol (Secret Lake).	48.00	Acres	3
Riceville Pond	MA35065	Athol/Petersham.	61.00	Acres	3
Richards Reservoir	MA35067	Warwick.	21.00	Acres	3
Royalston Road Pond	MA35071	Orange.	5.00	Acres	3
Ruggles Pond	MA35072	Wendell.	15.00	Acres	2
Sheomet Lake	MA35074	Warwick.	30.00	Acres	3
South Athol Pond	MA35078	Athol.	83.00	Acres	4c
South Spectacle Pond	MA35081	New Salem.	38.00	Acres	3
Sportsmans Pond	MA35082	Athol.	93.00	Acres	3
Stockwell Brook	MA35-25	Headwaters east of Norcross Road, Royalston to mouth at Beaver Pond inlet, Royalston.	1.30	Miles	5
Stoddard Pond	MA35083	Winchendon.	52.00	Acres	4c
Sunset Lake	MA35086	Ashburnham/Winchendon.	274.00	Acres	3
Tully Lake	MA35111	Royalston/Athol.	214.00	Acres	5
Tully Pond	MA35089	Orange.	70.00	Acres	3
Tully River	MA35-14	Confluence East and West Branches Tully River, Orange/Athol to confluence with Millers River, Athol.	1.60	Miles	5
Unnamed Tributary	MA35-26	Unnamed tributary to Millers River from the outlet of Lake Wallace to the mouth at confluence with Millers River, Ashburnham (excluding Lake Watatic segment MA35095 and Lower Naukeag Lake segment MA35041).	2.10	Miles	5
Upper Naukeag Lake	MA35090	Ashburnham.	305.00	Acres	4a
Upper Reservoir	MA35091	Westminster.	42.00	Acres	4a
Wallace Pond	MA35092	Ashburnham.	46.00	Acres	3
Ward Pond	MA35093	Athol.	6.00	Acres	3
West Branch Tully River	MA35-11	Outlet Sheomet Lake, Warwick to confluence with East Branch Tully River forming headwaters Tully River, Orange/Athol.	6.60	Miles	5

Appendix 1
Assessment units and integrated list categories presented alphabetically by major watershed

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West Gulf Brook	MA35-24	From headwaters west of Paine Swamp Road, Athol to confluence with Millers River, Athol.	0.80	Miles	5
Wheelers Pond	MA35097	Warwick.	28.00	Acres	3
Whetstone Brook	MA35-18	Headwaters northeast of Orcutt Hill near New Salem Rd, Wendell to confluence with Millers River, Wendell.	4.90	Miles	5
White Pond	MA35098	Athol.	63.00	Acres	4c
Whites Mill Pond	MA35099	Winchendon.	42.00	Acres	4a
Whitney Pond	MA35101	Winchendon.	97.00	Acres	5
Wickett Pond	MA35102	Wendell.	30.00	Acres	3
Wrights Reservoir	MA35104	Gardner/Westminster.	131.00	Acres	3
Mount Hope Bay (Shore)					
Cole River	MA61-03	Wood Street, Swansea to Route 6, Swansea.	1.60	Miles	4c
Cole River	MA61-04	Route 6, Swansea to the mouth at Mount Hope Bay at old railway grade, Swansea.	0.35	Square Miles	5
Cole River	MA61-10	Headwaters, south of Wellington Street, Dighton to Wood Street, Swansea.	6.40	Miles	2
Cook Pond	MA61001	Fall River, MA/Tiverton, RI.	157.00	Acres	3
Kickamuit River	MA61-08	Headwaters, outlet Warren Resevoir, Swansea, to state line, Swansea, MA/Warren, RI.	2.80	Miles	4a
Lee River	MA61-01	From confluence with Lewin Brook, Swansea to Route 6, Swansea/Somerset.	0.02	Square Miles	5
Lee River	MA61-02	Route 6, Swansea/Somerset to mouth at Mount Hope Bay, Swansea/Somerset.	0.51	Square Miles	5
Lewin Brook	MA61-09	Headwaters, west of Sharps Lot Road, Swansea to the inlet of the unnamed impoundment north of Lewin Lane, Swansea (impoundment upstream of dam, NAT ID# MA03247).	1.90	Miles	5
Lewin Brook Pond	MA61011	Swansea.	11.00	Acres	4a
Mount Hope Bay	MA61-06	The Massachusetts portion just upstream of the Braga Bridge, Fall River/Somerset to the state border Fall River, MA/Tiverton, RI to the line from Braton Point Somerset to MA/RI border approximately 3/4 of a mile due east of Spar Island, RI.	2.32	Square Miles	5
Mount Hope Bay	MA61-07	the Massachusetts portion from mouth of Cole River (at old railway grade), Swansea to state border Swansea, MA/Warren, RI to the line from Brayton Point, Somerset to MA/RI border approximately 3/4 of a mile due east of Spar Island, RI to the line between Bay Point, Swansea and Brayton Point, Somerset (the mouth of the Lee River).	1.84	Square Miles	5
North Watuppa Pond	MA61004	Fall River/Westport.	1728.00	Acres	4a
Quequechan River	MA61-05	Outlet South Watuppa Pond, Fall River to confluence with Mt. Hope Bay at mouth of Taunton River (just upstream of the Braga Bridge), Fall River.	2.40	Miles	5
Sawdy Pond	MA61005	Westport/Fall River.	369.00	Acres	4a
South Watuppa Pond	MA61006	Fall River/Westport.	1473.00	Acres	3
Narragansett Bay (Shore)					
Bad Luck Brook	MA53-11	Headwaters, outlet Warren Upper Reservoir, Rehoboth to confluence with East Branch Palmer River, Rehoboth.	1.70	Miles	2
Beaverdam Brook	MA53-10	Headwaters, southeast of Chestnut Street, Rehoboth to confluence with Palmer River, Rehoboth.	2.90	Miles	3

Appendix 1
Assessment units and integrated list categories presented alphabetically by major watershed

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Bliss Brook	MA53-19	Headwaters north of Tremont Street, Rehoboth to mouth at confluence with West Branch Palmer River, Rehoboth.	2.40	Miles	5
Clear Run Brook	MA53-13	Headwaters, outlet unnamed pond northwest of Miller Street, Seekonk to confluence with Palmer River, Rehoboth.	1.60	Miles	5
East Branch Palmer River	MA53-08	Headwaters, near Stevens Corner Cemetery, Rehoboth to confluence with West Branch Palmer River (forming Palmer River), Rehoboth.	7.20	Miles	2
Fullers Brook	MA53-12	Headwaters in wetland north of Jacobs Street, Seekonk to confluence with Palmer River, Rehoboth.	1.70	Miles	4a
Oak Swamp Brook	MA53-15	Headwaters in Oak Swamp east of School Street, Rehoboth to confluence with Rocky Run, Rehoboth.	3.00	Miles	4a
Palmer River	MA53-03	From Route 6 bridge, Rehoboth to state line, Swansea, MA/Barrington, RI.	0.11	Square Miles	4a
Palmer River	MA53-05	From the Shad Factory Pond dam (NATID: MA00787), Rehoboth to the Route 6 bridge, Rehoboth.	0.09	Square Miles	4a
Palmer River	MA53-22	Headwaters, confluence of the East and West branches of the Palmer River, Rehoboth to the inlet of Shad Factory Pond, Rehoboth (formerly part of segment MA53-04).	4.80	Miles	5
Rocky Run	MA53-16	Headwaters in wetland east of Simmons Street, Rehoboth to approximately 0.1 mile east of Mason Street, Rehoboth.	8.60	Miles	4a
Rocky Run	MA53-18	approximately 0.1 mile east of Mason Street, Rehoboth to confluence with Palmer River, Rehoboth.	0.003	Square Miles	4a
Rumney Marsh Brook	MA53-09	Headwaters, east of Locust Avenue, Rehoboth to confluence with Beaverdam Brook, Rehoboth.	1.30	Miles	3
Runnins River	MA53-01	Route 44, Seekonk to Mobile Dam, Seekonk, MA/East Providence, RI (through Burrs Pond formerly segment MA53001).	3.70	Miles	5
Runnins River	MA53-20	Headwaters just north of Walmut Street, Rehoboth to Route 44, Seekonk.	3.50	Miles	5
Shad Factory Pond	MA53005	Rehoboth (formerly part of segment MA53-04).	31.00	Acres	5
Torrey Creek	MA53-14	Headwaters in wetland east of Benson Avenue, Seekonk to Barney Avenue, Rehoboth (includes culverted section [approximately 1200 feet] near Seekonk Speedway, Seekonk).	2.10	Miles	4a
Torrey Creek	MA53-17	From Barney Avenue, Rehoboth to confluence with Palmer River, Rehoboth.	0.004	Square Miles	4a
Unnamed Tributary	MA53-21	Headwaters east of Agawam Court, Seekonk to inlet of unnamed pond south of Sagamore Road, Seekonk.	0.60	Miles	5
Warren River Pond	MA53-06	Salt pond in Swansea on MA/RI border (portion in MA only).	0.06	Square Miles	4a
West Branch Palmer River	MA53-07	Headwaters just north of Fairfield Street, Rehoboth to confluence with East Branch Palmer River (forming Palmer River), Rehoboth.	4.40	Miles	2
Nashua					
Ashby Reservoir	MA81001	Ashby.	36.00	Acres	3
Asnebumskit Brook	MA81-56	From outlet Eagle Lake, Holden to mouth at confluence with the Quinapoxet River, Holden.	2.90	Miles	5
Asnebumskit Pond	MA81002	Paxton.	44.00	Acres	3
Baker Brook	MA81-62	Headwaters, confluence of Pearl Hill and Falulah brooks, Fitchburg to mouth at confluence with North Nashua River, Fitchburg.	2.50	Miles	5
Ball Brook	MA81-45	Headwaters, north of Sterling Road, Holden to mouth at confluence with Stillwater River, Sterling.	1.60	Miles	3

Appendix 1
Assessment units and integrated list categories presented alphabetically by major watershed

Water Body	Segment ID	Description	Size	Units	Category
Bare Hill Pond	MA81007	Harvard.	310.00	Acres	4a
Barrett Pond	MA81162	Leominster.	7.00	Acres	3
Bartlett Pond	MA81009	Leominster.	23.00	Acres	3
Bayberry Hill Brook	MA81-68	Headwaters, outlet small unnamed pond north of Bailey Road, Townsend to mouth at confluence with Squannacook River, Townsend.	2.10	Miles	3
Bixby Reservoir	MA81010	Townsend.	21.00	Acres	3
Bowers Brook	MA81-73	From outlet Barre Hill Pond, Harvard to mouth at inlet unnamed pond, Ayer.	6.10	Miles	2
Catacoonamug Brook	MA81-16	Outlet Lake Shirley, Lunenburg to mouth at confluence with Nashua River (backwater area), Shirley.	2.70	Miles	2
Catacoonamug Brook	MA81-74	Headwaters, northwest of Chestnut Street, Lunenberg to inlet Lake Shirley, Harvard.	4.50	Miles	5
Chaffin Pond	MA81017	Holden.	90.00	Acres	4c
Chaffins Brook	MA81-33	Headwaters, perennial portion, south of Malden Street/west of Wachusett Street, Holden to mouth at inlet of Unionville Pond, Holden.	0.90	Miles	3
Coachlace Pond	MA81019	Clinton.	31.00	Acres	3
Cobb Brook	MA81-71	Headwaters, outlet small unnamed pond west of Brooks Station Road, Princeton to mouth at confluence with South Wachusett Brook, Princeton.	2.70	Miles	2
Cold Spring Brook	MA81-82	Headwaters, west of Old Mill Road (on the western side of railroad tracks), Harvard to mouth at confluence with Bowers Brook, Harvard.	1.20	Miles	3
Connelly Brook	MA81-57	Headwaters, southwest of Rowley Hill Road, Sterling to mouth at inlet The Quag, Sterling.	2.90	Miles	3
Coon Tree Pond	MA81168	Pepperell.	29.00	Acres	3
Crocker Pond	MA81025	Westminster.	101.00	Acres	3
Dawson Pond	MA81028	Holden.	22.00	Acres	4c
Eagle Lake	MA81034	Holden.	56.00	Acres	4c
East Wachusett Brook	MA81-30	Headwaters northeast of Little Wachusett Mountain, Princeton to mouth at confluence with Stillwater River, Sterling.	4.60	Miles	3
East Waushacum Pond	MA81035	Sterling.	181.00	Acres	3
Fall Brook	MA81-38	From outlet Fall Brook Reservoir, Leominster to inlet Lake Samoset, Leominster (formerly part of segment MA81-14).	1.30	Miles	2
Fall Brook	MA81-39	From outlet Lake Samoset, Leominster to mouth at confluence with the North Nashua River, Leominster (formerly part of segment MA81-14).	3.00	Miles	5
Fall Brook Reservoir	MA81038	Leominster.	88.00	Acres	3
Falulah Brook	MA81-63	Headwaters near Ringe Road, Ashby to mouth at confluence with Pearl Hill Brook, forming headwaters Baker Brook, Fitchburg (excluding approximately 0.6 miles through Lovell Reservoir segment MA81074).	6.00	Miles	5
Fitchburg Reservoir	MA81043	Ashby.	150.00	Acres	3
Flag Brook	MA81-10	Headwaters, outlet Crocker Pond, Westminster to mouth at inlet of impoundment (Wachusett Station Pond) of North Nashua River, Fitchburg (excluding approximately 0.7 miles through Sawmill Pond segment MA81118).	2.20	Miles	2
Flannagan Pond	MA81044	Ayer.	80.00	Acres	4c
Fort Pond	MA81046	Lancaster.	76.00	Acres	5

Appendix 1
Assessment units and integrated list categories presented alphabetically by major watershed

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French Brook	MA81-48	Headwaters, west of Linden Street, Boylston to mouth at inlet Wachusett Reservoir (Andrews Harbor), Boylston.	1.40	Miles	2
Gates Brook	MA81-24	Headwaters west of Prospect Street, West Boylston to mouth at inlet Wachusett Reservoir (Gates Cove), West Boylston.	3.40	Miles	5
Goodridge Brook	MA81-66	Headwaters, outlet impoundment at Old Ice Pond Dam (NATID: MA01560), Lancaster to mouth at confluence with Nashua River ("South Branch Nashua River"), Lancaster.	1.80	Miles	3
Governor Brook	MA81-70	Headwaters, east of Worcester Road (Route 31), and south of Flagg Hill, Princeton to mouth at confluence with Trout Brook, Holden.	4.40	Miles	2
Grove Pond	MA81053	Ayer.	68.00	Acres	5
Gulf Brook	MA81-76	Headwaters, outlet Heald Pond, Pepperell to the New Hampshire border, Pepperell approximately 0.2 miles upstream of mouth at confluence with Nissitissit River.	2.60	Miles	2
Haynes Reservoir	MA81055	Leominster.	56.00	Acres	3
Heald Pond	MA81056	Pepperell.	28.00	Acres	3
Hickory Hills Lake	MA81031	Lunenburg.	311.00	Acres	4a
Houghton Brook	MA81-55	Headwaters, south of Merrill Road, Sterling to mouth at confluence with Stillwater River, Sterling.	1.50	Miles	3
Hy-Crest Pond	MA81060	Sterling.	104.00	Acres	3
James Brook	MA81-20	Headwaters, Groton to mouth at mouth at confluence with Nashua River, Ayer/Groton.	3.90	Miles	5
Justice Brook	MA81-41	Headwaters, outlet Stuart Pond, Sterling to mouth at confluence with Keyes Brook forming headwaters Stillwater River, Princeton/Sterling.	1.00	Miles	3
Kendall Reservoir	MA81062	Holden.	179.00	Acres	3
Keyes Brook	MA81-40	Headwaters, outlet Paradise Pond, Princeton to mouth at confluence with Justice Brook forming headwaters Stillwater River, Princeton/Sterling.	3.20	Miles	3
Lake Samoset	MA81116	Leominster.	35.00	Acres	4c
Lake Shirley	MA81122	Lunenburg/Shirley.	360.00	Acres	5
Lake Wampanoag	MA81151	Ashburnham/Gardner.	224.00	Acres	4a
Lake Whalom	MA81154	Lunenburg/Leominster.	97.00	Acres	4c
Lancaster Millpond	MA81065	Clinton.	21.00	Acres	3
Lincoln Pond	MA81070	Ashburnham.	31.00	Acres	3
Locke Brook	MA81-78	From New Hampshire border, Ashby to mouth at confluence with Willard Brook, Townsend.	4.40	Miles	2
Long Pond	MA81073	Ayer/Groton.	46.00	Acres	3
Lovell Reservoir	MA81074	Fitchburg.	35.00	Acres	3
Lower Crow Hill Pond	MA81026	Princeton/Westminster.	14.00	Acres	3
Malagasco Brook	MA81-29	Headwaters southwest of Apron Hill, Boylston through Pine Swamp to mouth at inlet Wachusett Reservoir (South Bay), Boylston.	2.40	Miles	5
Malden Brook	MA81-27	Headwaters northeast of Lee Street, West Boylston to mouth at inlet Wachusett Reservoir (Thomas Basin), West Boylston.	1.90	Miles	2
Maple Spring Pond	MA81077	Holden.	38.00	Acres	3
Massapoag Pond	MA81080	Lunenburg.	64.00	Acres	3

Appendix 1
Assessment units and integrated list categories presented alphabetically by major watershed

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Meetinghouse Pond	MA81083	Westminster.	151.00	Acres	3
Mirror Lake	MA81084	Fitchburg.	6.00	Acres	3
Mirror Lake	MA81085	Harvard.	28.00	Acres	5
Monoosnuc Brook	MA81-13	Headwaters, outlet Simonds Pond, Leominster to mouth at confluence with North Nashua River, Leominster (through former pond segments Pierce Pond MA81101 and Rockwell Pond MA81112).	6.10	Miles	5
Morse Reservoir	MA81086	Leominster.	15.00	Acres	3
Muddy Brook	MA81-28	Headwaters west of Shrewsbury Street, West Boylston to mouth at inlet Wachusett Reservoir (South Bay), West Boylston.	0.80	Miles	5
Mulpus Brook	MA81-36	Headwaters, north of Howard Street, Lunenburg to the inlet of Hickory Hills Lake, Lunenburg (formerly part of segment MA81-22).	3.80	Miles	2
Mulpus Brook	MA81-37	From outlet Hickory Hills Lake, Lunenburg to mouth at confluence with the Nashua River, Shirley (formerly part of segment MA81-22).	6.30	Miles	5
Muschopauge Brook	MA81-69	Headwaters, east of Glenwood Road, Rutland to mouth at inlet Quinapoxet Reservoir, Holden.	3.50	Miles	2
Muschopauge Pond	MA81089	Rutland.	61.00	Acres	3
Nashua River	MA81-05	From confluence of North Nashua River, Lancaster to confluence of Squannacook River, Shirley/Groton/Ayer.	14.20	Miles	5
Nashua River	MA81-06	From confluence of Squannacook River, Shirley/Groton/Ayer to Pepperell Dam (NATID: MA00373), Pepperell (through Pepperell Pond formerly segment MA81167).	9.10	Miles	5
Nashua River	MA81-07	From Pepperell Dam (NATID: MA00373), Pepperell to New Hampshire state line, Pepperell/Dunstable.	3.70	Miles	5
Nashua River	MA81-08	("South Branch" Nashua River) Headwaters, outlet Lancaster Millpond, Clinton to Clinton WWTP discharge (NPDES: MA0100404), Clinton.	2.80	Miles	2
Nashua River	MA81-09	("South Branch" Nashua River) From Clinton WWTP discharge (NPDES: MA0100404), Clinton to confluence with North Nashua River, Lancaster.	1.80	Miles	5
Nissitissit River	MA81-21	New Hampshire state line, Pepperell to mouth at confluence with Nashua River, Pepperell.	4.60	Miles	5
Nonacoicus Brook	MA81-17	Outlet Plow Shop Pond, Ayer to mouth at confluence with Nashua River, Ayer/Shirley.	1.40	Miles	5
North Nashua River	MA81-01	Headwaters, outlet Snows Millpond, Fitchburg to Fitchburg Paper Company Dam #1 (NATID: MA00877), Fitchburg.	1.70	Miles	5
North Nashua River	MA81-02	From Fitchburg Paper Company Dam #1 (NATID: MA00877), Fitchburg to Fitchburg East WWTP outfall (NPDES: MA0100986), Leominster.	6.90	Miles	5
North Nashua River	MA81-03	From Fitchburg East WWTP outfall (NPDES: MA0100986), Leominster to Leominster WWTP outfall (NPDES: MA0100617), Leominster.	1.60	Miles	5
North Nashua River	MA81-04	From Leominster WWTP outfall (NPDES: MA0100617), Leominster to mouth at confluence with Nashua River ("South Branch" Nashua River), Lancaster.	10.30	Miles	5
Notown Reservoir	MA81092	Leominster.	241.00	Acres	3
Paradise Pond	MA81097	Princeton.	61.00	Acres	4c
Partridge Pond	MA81098	Westminster.	25.00	Acres	5
Pearl Hill Brook	MA81-80	Headwaters, outlet Wright Ponds, Ashby to mouth at confluence with Squannacook River, Townsend.	6.70	Miles	5

Appendix 1
Assessment units and integrated list categories presented alphabetically by major watershed

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Phillips Brook	MA81-12	Headwaters, outlet Winnekeag Lake, Ashburnham to Westminster Street (Route 2A/31), Fitchburg (segment includes McTaggarts Pond and unnamed tributary to North Nashua River) (qualifiers apply to 0.0 to 1.0 mile of river per 2007 SWQS, NOTE: CSO eliminated in 2006).	8.40	Miles	2
Pine Hill Reservoir	MA81102	Paxton/Holden/Rutland.	336.00	Acres	3
Plow Shop Pond	MA81103	Ayer.	29.00	Acres	5
Poor Farm Brook	MA81-52	Headwaters, perennial portion, east of Salisbury Street, Holden to mouth at inlet Chaffin Pond, Holden.	1.20	Miles	3
Quinapoxet Reservoir	MA81108	Holden/Princeton.	266.00	Acres	3
Quinapoxet River	MA81-32	Headwaters, outlet Quinapoxet Reservoir, Holden to mouth at inlet Wachusett Reservoir (Thomas Basin), West Boylston.	7.90	Miles	4c
Reedy Meadow Brook	MA81-64	Headwaters, Reedy Meadow, Groton to mouth at confluence with Nashua River, Pepperell.	2.30	Miles	3
Robbins Pond	MA81111	Harvard.	11.00	Acres	4c
Rocky Brook	MA81-42	Headwaters, outlet Hy-Crest Pond, Sterling to mouth at confluence with Stillwater River, Sterling.	3.00	Miles	3
Round Meadow Pond	MA81114	Westminster.	54.00	Acres	3
Sandy Pond	MA81117	Ayer.	69.00	Acres	3
Sawmill Pond	MA81118	Fitchburg/Westminster.	65.00	Acres	4c
Scanlon Brook	MA81-44	Headwaters, west of Birch Drive, Sterling to mouth at confluence with Stillwater River, Sterling.	1.50	Miles	3
Scarletts Brook	MA81-25	Headwaters west of West Boylston Street (Route 12), West Boylston to mouth at confluence with Gates Brook, West Boylston (stream entirely intermittent; per SARIS and the 1983 Worcester North USGS topographic quadrangle).	0.50	Miles	3
Scott Reservoir	MA81119	Fitchburg.	33.00	Acres	3
Snows Millpond	MA81127	Fitchburg/Westminster.	38.00	Acres	3
South Meadow Brook	MA81-67	Headwaters, outlet Fitch Pond, Sterling to mouth at inlet South Meadow Pond, Clinton.	1.80	Miles	3
South Meadow Pond	MA81129	[East Basin] Clinton.	37.00	Acres	3
South Meadow Pond	MA81165	[West Basin] Clinton/Lancaster.	34.00	Acres	3
Spectacle Pond	MA81132	Lancaster.	61.00	Acres	3
Squannacook River	MA81-18	Headwaters, confluence Mason and Willard brooks, Townsend to Hollingsworth and Vose Dam (NATID: MA00443), Groton/Shirley (through Harbor Pond formerly segment MA81054).	12.60	Miles	5
Squannacook River	MA81-19	Hollingsworth and Vose Dam (NATID: MA00443), Groton/Shirley to mouth at confluence with Nashua River, Shirley/Groton/Ayer.	3.70	Miles	2
Still River	MA81-15	From Route 117, Bolton to mouth at confluence with Nashua River, Harvard/Lancaster.	2.70	Miles	2
Still River	MA81-60	Headwaters, Lancaster to Route 117, Bolton (formerly the upper portion of MA81-15).	0.60	Miles	5
Stillwater River	MA81-31	Headwaters, confluence of Justice and Keyes brooks, Princeton/Sterling to mouth at inlet of Wachusett Reservoir (Stillwater Basin), Sterling.	6.70	Miles	5
Streeter Pond	MA81136	Paxton/Holden.	18.00	Acres	3
Stuart Pond	MA81137	Sterling.	42.00	Acres	4c

Appendix 1
Assessment units and integrated list categories presented alphabetically by major watershed

Water Body	Segment ID	Description	Size	Units	Category
Stump Pond	MA81171	Holden.	27.00	Acres	4c
Sucker Brook	MA81-23	Headwaters outlet Coon Tree Pond, Pepperell to mouth at confluence with Nissitissit River, Pepperell.	4.00	Miles	2
The Quag	MA81170	Sterling.	32.00	Acres	3
Trapfall Brook	MA81-77	Headwaters, north of Jones Hill Road, Ashby to mouth at confluence with Willard Brook, Ashby.	5.50	Miles	2
Trout Brook	MA81-26	Headwaters, outlet Cournoyer Pond, Holden to mouth at confluence with Quinepoxet River, Holden.	1.90	Miles	3
Unionville Pond	MA81143	Holden.	19.00	Acres	4c
Unkety Brook	MA81-81	Headwaters, east of Chicopee Row, Groton to mouth at confluence with Nashua River, Dunstable.	6.70	Miles	2
Unnamed Tributary	MA81-35	Unnamed tributary to Quinepoxet River locally considered "Lower Chaffin Brook", headwaters outlet Unionville Pond, Holden to mouth at confluence with Quinepoxet River, Holden.	0.50	Miles	5
Unnamed Tributary	MA81-46	Unnamed tributary to Rocky Brook, headwaters south of Upper North Row Road, Sterling to mouth at the confluence with Rocky Brook, Sterling.	0.70	Miles	3
Unnamed Tributary	MA81-49	Unnamed tributary to Wachusett Reservoir, headwaters, outlet Carrolls Pond, West Boylston to mouth at inlet Wachusett Reservoir, West Boylston.	0.80	Miles	3
Unnamed Tributary	MA81-50	Unnamed tributary to Wachusett Reservoir, headwaters, east of Linden Street, Boylston to mouth at inlet Wachusett Reservoir (Hastings Cove), Boylston.	1.30	Miles	3
Unnamed Tributary	MA81-51	Unnamed tributary to Quinapoxet River, headwaters, south of Malden Street, Holden to mouth at confluence with the Quinapoxet River, Holden.	1.50	Miles	3
Unnamed Tributary	MA81-54	Unnamed tributary to Wachusett Reservoir, headwaters, west of Route 140, West Boylston to mouth at inlet Wachusett Reservoir (Stillwater Basin), West Boylston.	0.80	Miles	3
Unnamed Tributary	MA81-58	Unnamed tributary to Quinapoxet Reservoir, headwaters, west of Route 68, Rutland to mouth at confluence with unnamed tributary to the Quinapoxet Reservoir (east of Bryant Road), Holden.	1.30	Miles	3
Unnamed Tributary	MA81-59	Unnamed tributary to Quinapoxet River, headwaters, southwest of Hog Hill, Sterling to mouth at confluence with the Quinapoxet River, West Boylston.	1.60	Miles	3
Unnamed Tributary (Boylston Brook)	MA81-34	Unnamed tributary locally known as "Boylston Brook." Headwaters north of French Drive, Boylston to mouth at confluence with Potash Brook, Boylston.	0.50	Miles	3
Unnamed Tributary (Burnt Mill Pond Brook)	MA81-65	Unnamed tributary to Snows Millpond locally known as "Burnt Mill Pond Brook", headwaters outlet Round Meadow Pond, Westminster to mouth at inlet Snows Millpond, Fitchburg/Westminster.	2.00	Miles	3
Upper Crow Hill Pond	MA81169	Westminster.	5.00	Acres	2
Vinton Pond	MA81145	Townsend.	16.00	Acres	3
Wachusett Lake	MA81146	Westminster/Princeton.	129.00	Acres	3
Wachusett Reservoir	MA81147	Boylston/West Boylston/Clinton/Sterling.	3962.00	Acres	4a
Warren Tannery Brook	MA81-53	Headwaters, perennial portion, north of Route 122A, Holden to mouth at confluence with Asnebumskit Brook, Holden.	1.40	Miles	3
Washacum Brook	MA81-47	Headwaters, outlet West Waushacum Pond, Sterling to mouth at inlet Wachusett Reservoir (Stillwater Basin), West Boylston.	1.80	Miles	3

Appendix 1
Assessment units and integrated list categories presented alphabetically by major watershed

Water Body	Segment ID	Description	Size	Units	Category
Wekepeke Brook	MA81-72	Headwaters, outlet Heywood Reservoir, Sterling to mouth at confluence with North Nashua River, Lancaster (includes former segments Bartlett Pond MA81008 and Unnamed Tributary MA81-61).	5.80	Miles	5
West Waushacum Pond	MA81153	Sterling.	111.00	Acres	3
White Pond	MA81155	Lancaster/Leominster.	47.00	Acres	4c
Whitman River	MA81-11	Headwaters, outlet Lake Wampanoag, Ashburnham to mouth at inlet Snows Millpond, Fitchburg/Westminster (excluding the approximately 1.2 miles through Whitmanville Reservoir segment MA81109 and the approximately 0.8 miles through Crocker Pond segment MA81025).	6.30	Miles	2
Whitmanville Reservoir	MA81109	Westminster/Ashburnham.	107.00	Acres	3
Wilder Brook	MA81-43	Headwaters west of Osgood Road, Sterling to mouth at confluence with Stillwater River, Sterling.	2.30	Miles	3
Willard Brook	MA81-79	Headwaters, outlet Fitchburg Reservoir, Ashby to mouth at confluence with Mason Brook forming headwaters Squannacook River, Townsend (excluding the approximate 0.3 mile through Ashby Reservoir, segment MA81001).	6.20	Miles	5
Winnekeag Lake	MA81157	Ashburnham.	113.00	Acres	3
Witch Brook	MA81-75	Headwaters, outlet small unnamed pond west of Pierce Road, Townsend to mouth at confluence with Squannacook River (backwater area), Townsend.	2.50	Miles	2
Wright Pond	MA81159	[West Basin] Ashby.	21.00	Acres	3
Wyman Pond	MA81161	Westminster.	198.00	Acres	4c
North Coastal					
Alewife Brook	MA93-26	Headwaters, perennial portion just north of B&M Railroad, Rockport to mouth at inlet Babson Reservoir, Gloucester.	1.00	Miles	3
Alewife Brook	MA93-45	Headwaters, outlet Chebacco Lake, Essex to Landing Road, Essex.	1.40	Miles	2
Alewife Brook	MA93-46	From Landing Road, Essex to mouth at confluence with Essex River, Essex.	0.01	Square Miles	4a
Annisquam River	MA93-12	The waters from the Gloucester Harbor side of the Route 127 bridge, Gloucester to Ipswich Bay at an imaginary line drawn from Bald Rocks to Wigwam Point, Gloucester.	0.82	Square Miles	4a
Babson Reservoir	MA93001	Gloucester.	40.00	Acres	3
Bass River	MA93-07	Headwaters, perennial portion west of Wenham Lake, Beverly to the outlet of "lower Shoe Pond" north of Route 62, Beverly (through Shoe Pond formerly MA93068) (portions culverted).	2.10	Miles	5
Bass River	MA93-08	From outlet of "lower Shoe Pond" north of Route 62, Beverly to mouth at confluence with Danvers River and Beverly Harbor, Beverley.	0.12	Square Miles	4a
Beaver Brook	MA93-37	Headwaters, perennial portion west of Route 95, Danvers to mouth at inlet Mill Pond, Danvers.	2.70	Miles	5
Beaverdam Brook	MA93-30	Headwaters west of Main Street, Lynnfield to confluence with Saugus River (Reedy Meadow), Lynnfield.	1.50	Miles	5
Beck Pond	MA93003	Hamilton.	35.00	Acres	2
Bennetts Pond Brook	MA93-48	Headwaters east of Lynn Fells Parkway (in Bellevue Golf Course), Melrose to mouth at confluence with Saugus River, Saugus.	2.40	Miles	4a
Beverly Harbor	MA93-20	From the mouth of the Danvers River, Salem/Beverly to an imaginary line from Juniper Point, Salem to Hospital Point, Beverly.	1.02	Square Miles	4a
Birch Pond	MA93004	Saugus/Lynn.	80.00	Acres	3

Appendix 1
Assessment units and integrated list categories presented alphabetically by major watershed

Water Body	Segment ID	Description	Size	Units	Category
Breeds Pond	MA93006	Lynn.	195.00	Acres	3
Browns Pond	MA93008	Peabody.	25.00	Acres	3
Buswell Pond	MA93009	Gloucester.	4.00	Acres	3
Cape Pond	MA93011	Rockport.	42.00	Acres	5
Cat Brook	MA93-29	Headwaters, perennial portion east of Route 128, Manchester to the edge of the designated shellfishing beds east of Powder House Lane, Manchester.	1.50	Miles	5
Causeway Brook	MA93-47	Headwaters, outlet Dexter Pond, Manchester to mouth at confluence with Cat Brook, Manchester.	1.10	Miles	4a
Cedar Pond	MA93013	Peabody.	34.00	Acres	4c
Chebacco Lake	MA93014	Hamilton/Essex.	204.00	Acres	4a
Coy Pond	MA93016	Wenham.	23.00	Acres	3
Crane Brook	MA93-02	Headwaters, perennial portion east of Route 95, Danvers to mouth at inlet Mill Pond, Danvers.	1.80	Miles	4a
Crane River	MA93-38	Headwaters, outlet Mill Pond, Danvers to outlet of the pump house sluiceway, Purchase Street, Danvers (formerly a portion of MA93-03).	0.30	Miles	5
Crane River	MA93-41	From outlet pump house sluiceway, Purchase Street, Danvers to mouth at confluence with Danvers River, Danvers (formerly a portion of MA93-03, includes Crane River Pond formerly MA93017).	0.07	Square Miles	4a
Crystal Lake	MA93018	Wakefield/Stoneham.	79.00	Acres	3
Danvers River	MA93-09	From confluence of Porter, Crane and Waters rivers, Danvers to mouth at confluence with Bass and North rivers and Beverly Harbor, Beverly/Salem.	0.53	Square Miles	4a
Days Pond	MA93092	Gloucester.	0.50	Acres	4c
Edgewater Office Park Pond	MA93094	Wakefield.	15.00	Acres	4c
Essex Bay	MA93-16	The waters landward of Ipswich Bay contained within an imagiany line drawn from the northwestern tip of Gloucester near Coffins Beach to the southern tip of Castle Neck, Ipswich to the eastern most point of Dilly Island, Essex (mouth of Castle Neck River) and then from Cross Island, Essex to Conomo Point, Essex (mouth of Essex River) excluding Walker, Lanes, and Farm creeks.	0.97	Square Miles	4a
Essex River	MA93-11	Source east of Southern Avenue, Essex to mouth at Essex Bay, Essex.	0.51	Square Miles	4a
Fernwood Lake	MA93022	Gloucester.	25.00	Acres	3
First Pond	MA93081	Saugus (also known as Upper Griswold Pond).	4.00	Acres	4c
Flax Pond	MA93023	Lynn.	55.00	Acres	5
Floating Bridge Pond	MA93024	Lynn.	12.00	Acres	5
Forest River	MA93-10	From saltwater wetlands upstream of Loring Avenue, Salem to mouth at confluence with Salem Harbor, Salem.	0.03	Square Miles	5
Foster Pond	MA93026	Swampscott.	5.00	Acres	5
Frost Fish Brook	MA93-36	From Cabot Road, Danvers to mouth at confluence with Porter River, Route 62, Danvers.	1.00	Miles	4a
Gloucester Harbor	MA93-18	The waters landward of an imaginary line drawn between Mussel Point, Gloucester and the tip of the Dog Bar Breakwater, Gloucester excluding the Annisquam River.	2.32	Square Miles	5
Goldthwait Brook	MA93-05	Headwaters, outlet Cedar Pond, Peabody to mouth at confluence with Proctor Brook, Peabody (portions culverted).	3.30	Miles	5

Appendix 1
Assessment units and integrated list categories presented alphabetically by major watershed

Water Body	Segment ID	Description	Size	Units	Category
Goose Cove Reservoir	MA93093	Gloucester.	58.00	Acres	3
Gravelly Pond	MA93028	Hamilton.	50.00	Acres	3
Griswold Pond	MA93029	Saugus.	13.00	Acres	4c
Haskell Pond	MA93031	Gloucester.	58.00	Acres	3
Hawkes Brook	MA93-32	Headwaters near the Lynn/Lynnfield border to the inlet of Hawkes Pond, Lynnfield.	2.60	Miles	4a
Hawkes Brook	MA93-33	From outlet of Hawkes Pond, Saugus to mouth at confluence with Saugus River, Saugus.	1.10	Miles	4a
Hawkes Pond	MA93032	Lynnfield/Saugus.	65.00	Acres	5
Lake Quannapowitt	MA93060	Wakefield.	246.00	Acres	5
Lily Pond	MA93039	Gloucester.	24.00	Acres	5
Lower Pond	MA93044	Saugus.	21.00	Acres	2
Lynn Harbor	MA93-52	The "inner" portion of Lynn Harbor; the waters landward of an imaginary line drawn from Black Rock Point, Nahant to the eastern edge of Point of Pines, Revere excluding the Saugus River (formerly a portion of MA93-23).	1.62	Square Miles	4a
Lynn Harbor	MA93-53	The "outer" portion of Lynn Harbor; the waters landward of an imaginary line drawn from Baileys Hill, Nahant to the eastern point of Winthrop Highlands, Winthrop to the seaward edge of the "inner" portion of Lynn Harbor (at an imaginary line drawn from Black Rock Point, Nahant to the eastern edge of Point of Pines, Revere) (formerly a portion of MA93-23).	6.57	Square Miles	4a
Manchester Harbor	MA93-19	The waters landward of an imaginary line drawn between Gales Point, Manchester and Chubb Point, Manchester excluding Cat Brook.	0.33	Square Miles	4a
Marblehead Harbor	MA93-22	The waters landward of an imaginary line drawn northwesterly from the northern tip of Marblehead Neck, Marblehead to Fort Sewall, Marblehead.	0.57	Square Miles	4a
Mill Pond	MA93-60	East of Route 127, Gloucester (formerly Mill Pond MA93050).	0.03	Square Miles	3
Mill River	MA93-28	Headwaters, outlet Mill Pond, Gloucester to mouth at confluence with Annisquam River, Gloucester.	0.10	Square Miles	4a
Mill River	MA93-31	Headwaters in wetlands north of Salem Street, Wakefield to mouth at confluence with Saugus River, Wakefield.	2.00	Miles	5
Nahant Bay	MA93-24	The waters landward of an imaginary line drawn between Galloupes Point, Swampscott and East Point, Nahant.	5.12	Square Miles	4a
Niles Pond	MA93052	Gloucester.	34.00	Acres	3
North River	MA93-42	Downstream of Route 114 bridge (Proctor Brook becomes North River at this bridge), Salem to mouth at confluence with Danvers River and Beverly Harbor, Salem (formerly part of MA93-06).	0.15	Square Miles	5
Pillings Pond	MA93056	Lynnfield.	90.00	Acres	5
Pines River	MA93-15	Headwaters east of Route 1, Revere/Saugus to mouth at confluence with the Saugus River and Lynn Harbor, Saugus/Revere (through Seaplane Basin formerly MA93067).	0.58	Square Miles	4a
Porter River	MA93-04	Headwaters, confluence with Frost Fish Brook, Route 62, Danvers to mouth at confluence with Danvers River, Danvers (includes Porters Pond formerly MA93058).	0.13	Square Miles	4a

Appendix 1
Assessment units and integrated list categories presented alphabetically by major watershed

Water Body	Segment ID	Description	Size	Units	Category
Proctor Brook	MA93-39	Headwaters, outlet small pond in wetland north of Downing Road, Peabody to Grove/Goodhue Street bridge, Salem (formerly part of MA93-06) (interrupted urban).	2.90	Miles	5
Proctor Brook	MA93-40	From Grove/Goodhue Street bridge, Salem to mouth at Route 114 culvert, Salem (formerly part of MA93-06).	0.01	Square Miles	5
Quarry Reservoir	MA93053	Rockport.	7.00	Acres	3
Rockport Harbor	MA93-57	Waters landward of an imaginary line from Gully Point, Rockport to Granite Pier, Rockport (including Back Harbor and a portion of Sandy Bay) (includes area formerly reported as segment MA93-17).	0.35	Square Miles	4a
Round Pond	MA93063	Hamilton.	37.00	Acres	3
Rum Rock Lake	MA93064	Rockport.	10.00	Acres	3
Salem Harbor	MA93-54	Waters landward of an imaginary line from Naugus Head, Marblehead to the northwest point of Bakers Island, Salem to Hospital Point, Beverly to Juniper Point, Salem (excluding Forest River) (formerly segment MA93-21 Salem Harbor and a portion of segment MA93-25 Salem Sound [waterbody code 93907]).	4.91	Square Miles	5
Salem Sound	MA93-55	Northern portion of Salem Sound, waters landward of and within imaginary lines from Chubb Point, Manchester to Gales Point, Manchester to the northwest point of Bakers Island, Salem to Hospital Point, Beverly (formerly reported as a portion of segment MA93-25 Salem Sound [waterbody code 93907]).	3.46	Square Miles	4a
Salem Sound	MA93-56	Southern portion of Salem Sound, waters landward of and within imaginary lines from Fort Sewall, Marblehead to the Marblehead Lighthouse on Marblehead Neck, Marblehead to the northwest point of Bakers Island, Salem to Naugus Head, Marblehead (formerly a portion of MA93-25 Salem Sound [waterbody code 93907]).	2.55	Square Miles	4a
Saugus River	MA93-34	Headwaters, outlet Lake Quannapowitt, Wakefield (thru Reedy Meadow) to Lynn Water & Sewer Commission diversion canal, Wakefield/Lynnfield (canal diverts to Hawks Pond) (formerly part of segment MA93-13).	3.10	Miles	5
Saugus River	MA93-35	From the Lynn Water & Sewer Commission diversion canal, Wakefield/Lynnfield to Saugus Iron Works, Bridge Street, Saugus (formerly part of segment MA93-13).	5.40	Miles	4a
Saugus River	MA93-43	From Saugus Iron Works, Bridge Street, Saugus to Lincoln Avenue/Boston Street, Saugus/Lynn (formerly a portion of MA93-14).	0.04	Square Miles	5
Saugus River	MA93-44	From Lincoln Avenue/Boston Street, Saugus/Lynn to mouth (east of Route 1A) at Lynn Harbor, Lynn/Revere (formerly a portion of MA93-14).	0.36	Square Miles	5
Shute Brook	MA93-49	From saltwater wetland downstream of Central Street, Saugus to mouth at confluence with the Saugus River, Saugus.	0.01	Square Miles	4a
Shute Brook	MA93-50	From the confluence of Fiske Brook, Saugus to approximately 350 feet downstream from Central Street, Saugus.	0.90	Miles	4a
Sluice Pond	MA93071	Lynn.	42.00	Acres	4c
Spring Pond	MA93072	Saugus.	8.00	Acres	4c
Spring Pond	MA93073	[South Basin] Peabody/Lynn/Salem.	67.00	Acres	3
Spring Pond	MA93074	[North Basin] Peabody.	17.00	Acres	3
Strangman Pond	MA93076	Gloucester.	3.00	Acres	5
Swains Pond	MA93095	Melrose.	3.00	Acres	4c

Appendix 1
Assessment units and integrated list categories presented alphabetically by major watershed

Water Body	Segment ID	Description	Size	Units	Category
Unnamed Tributary	MA93-27	Headwaters, outlet Babson Reservoir, Gloucester to culvert outlet into saltwater wetland northwest of Bertoni Road, Gloucester (portion culverted).	0.40	Miles	3
Unnamed Tributary	MA93-51	Unnamed tributary locally known as "Town Line Brook", from Route 99, Malden to mouth at confluence with Pines River, Revere.	0.02	Square Miles	5
Unnamed Tributary	MA93-58	Unnamed tributary to Beverly Cove, perennial portion, Route 22, Beverly to saltwater wetlands south of Route 127, Beverly.	2.10	Miles	5
Unnamed Tributary	MA93-59	Unnamed tributary to Chubb Creek, headwaters west of Hale Street, Beverly to mouth at confluence with Chubb Creek east of Route 127, Beverly.	0.80	Miles	5
Upper Banjo Pond	MA93080	Gloucester.	11.00	Acres	5
Upper Pond	MA93083	Saugus.	13.00	Acres	3
Walden Pond	MA93084	Lynn/Saugus/Lynnfield.	222.00	Acres	3
Wallace Pond	MA93085	Gloucester.	22.00	Acres	3
Waters River	MA93-01	From west of Route 128, Peabody/Danvers to mouth at confluence with Danvers River and Beverly Harbor, Danvers (includes Waters River Pond formerly MA93088).	0.09	Square Miles	4a
West Pond	MA93089	Gloucester.	7.00	Acres	5
Parker					
Baldpate Pond	MA91001	Boxford.	60.00	Acres	5
Bull Brook	MA91-04	Headwaters south of Linebrook Road, Ipswich to mouth at inlet Bull Brook Reservoir, Ipswich.	1.40	Miles	3
Bull Brook Reservoir	MA91002	Ipswich.	7.00	Acres	3
Central Street Pond	MA91003	Rowley.	3.00	Acres	3
Crane Pond	MA91004	Groveland.	22.00	Acres	3
Dow Brook Reservoir	MA91005	Ipswich.	16.00	Acres	3
Eagle Hill River	MA91-06	Headwaters north of Town Hill, east of Town Farm Road, Ipswich to the mouth at Plum Island Sound, Ipswich.	0.35	Square Miles	5
Egypt River	MA91-13	Outlet Bull Brook Reservoir, Ipswich to east of Jewett Hill (Latitude 42:42:23.40, Longitude 70:51:47.58 DMS), Ipswich.	1.10	Miles	3
Egypt River	MA91-14	East of Jewett Hill (Latitude 42:42:23.40, Longitude 70:51:47.58 DMS), Ipswich to mouth at confluence with Rowley River, Rowley/Ipswich.	0.03	Square Miles	5
Jackman Brook	MA91-07	Perennial portion northeast of intersection of Jewett and Tenney streets, Georgetown to mouth at confluence with Wheeler Brook, Georgetown.	0.80	Miles	3
Little Crane Pond	MA91007	West Newbury.	4.00	Acres	3
Little River	MA91-11	Scotland Road/Parker Street, Newbury/Newburyport to mouth at confluence with Parker River, Newbury.	0.09	Square Miles	5
Mill River	MA91-08	Headwaters - Outlet of small unnamed pond between Route 95 and Rowley Road, Boxford to Route 1, Rowley/Newbury (through Upper Mill Pond formerly segment MA91015 and Lower Mill Pond formerly segment MA91008).	6.90	Miles	5
Mill River	MA91-09	Route 1, Rowley/Newbury to mouth at confluence with Parker River, Newbury.	0.09	Square Miles	5
Ox Pasture Brook	MA91-10	Headwaters - Outlet of small unnamed impoundment east of Bradford Street, Rowley to the outlet of a small unnamed impoundment west of Ox Pasture Hill, Rowley.	2.50	Miles	3
Paine Creek	MA91-03	Headwaters east of Town Farm Road, Ipswich to confluence with Eagle Hill River, Ipswich.	0.06	Square Miles	5

Appendix 1
Assessment units and integrated list categories presented alphabetically by major watershed

Water Body	Segment ID	Description	Size	Units	Category
Parker River	MA91-01	Source north of Silver Mine Road, Boxford to Central Street, Newbury (excluding Sperry Pond segment MA91013, Rock Pond segment MA91012, Pentucket Pond segment MA91010, and Crane Pond segment MA91004).	12.30	Miles	4c
Parker River	MA91-02	Central Street, Newbury to mouth at Plum Island Sound, Newbury.	0.60	Square Miles	5
Penn Brook	MA91-16	Headwaters, outlet Baldpate Pond, Boxford to mouth at confluence with Parker River, Georgetown.	3.00	Miles	2
Pentucket Pond	MA91010	Georgetown.	92.00	Acres	5
Plum Island River	MA91-15	From "high sandy" sandbar just north of the confluence with Pine Island Creek, Newbury to confluence with Plum Island Sound, Newbury.	0.39	Square Miles	5
Plum Island Sound	MA91-12	From the mouth of both the Parker River and Plum Island River, Newbury to the Atlantic Ocean, Ipswich (Includes Ipswich Bay).	4.47	Square Miles	5
Quills Pond	MA91011	Newbury.	2.00	Acres	3
Rock Pond	MA91012	Georgetown.	49.00	Acres	5
Rowley River	MA91-05	Headwaters, confluence with Egypt River, Rowley/Ipswich to mouth at Plum Island Sound, Rowley/Ipswich.	0.25	Square Miles	5
Sperrys Pond	MA91013	Boxford.	26.00	Acres	3
State Street Pond	MA91014	Newburyport.	4.00	Acres	4c
Wilson Pond	MA91017	Rowley.	5.00	Acres	3
Quinebaug					
Alum Pond	MA41001	Sturbridge.	198.00	Acres	5
Breakneck Brook	MA41-28	Headwaters outlet Breakneck Pond, Sturbridge to mouth at confluence with Quinebaug River, Sturbridge.	3.70	Miles	2
Browns Brook	MA41-20	From the state line Holland, MA/Union, CT to mouth at inlet of Hamilton Reservoir, Holland.	0.80	Miles	2
Cady Brook	MA41-05	Headwaters, outlet of Glen Echo Lake, Charlton to Charlton WWTP outfall (NPDES: MA0101141), Charlton.	1.50	Miles	5
Cady Brook	MA41-06	Charlton WWTP outfall (NPDES: MA0101141), Charlton to mouth at confluence with the Quinebaug River, Southbridge.	5.10	Miles	5
Cedar Pond	MA41008	Sturbridge.	149.00	Acres	4c
Cohasse Brook	MA41-12	From the outlet of Cohasse Brook Reservoir, Southbridge through Wells Pond (formerly pond segment MA41053) to mouth at confluence with the Quinebaug River, Southbridge.	2.70	Miles	5
East Brimfield Reservoir	MA41014	Brimfield/Sturbridge.	313.00	Acres	4a
Glen Echo Lake	MA41017	Charlton.	115.00	Acres	5
Hamant Brook	MA41-15	Headwaters, outlet unnamed pond, Sturbridge to mouth at confluence with the Quinebaug River, Sturbridge.	3.10	Miles	2
Hamilton Reservoir	MA41019	Holland (size indicates portion in Massachusetts).	386.00	Acres	4c
Hatchet Brook	MA41-14	From the outlet of No. 3 Reservoir, Southbridge to mouth at confluence with the Quinebaug River, Southbridge.	1.30	Miles	2
Holland Pond	MA41022	Holland.	66.00	Acres	4a
Hollow Brook	MA41-24	Headwaters, west of Hollow Road, Wales to mouth at confluence with Mill Brook, Brimfield.	2.70	Miles	2
Lake George	MA41016	Wales.	93.00	Acres	3

Appendix 1
Assessment units and integrated list categories presented alphabetically by major watershed

Water Body	Segment ID	Description	Size	Units	Category
Leadmine Brook	MA41-21	Headwaters, outlet Leadmine Pond, Sturbridge to the state line, Sturbridge, MA/Union, CT.	2.50	Miles	2
Leadmine Pond	MA41027	Sturbridge.	52.00	Acres	3
Lebanon Brook	MA41-11	From the state line, Southbridge, MA/Woodstock, CT, to mouth at confluence with the Quinebaug River, Southbridge.	4.70	Miles	2
Little Alum Pond	MA41029	Brimfield.	73.00	Acres	3
Mcintyre Pond	MA41031	Charlton.	11.00	Acres	3
Mckinstry Brook	MA41-13	Headwaters, east of Brookfield Road, Charlton (excluding intermittent portion) to mouth at confluence with the Quinebaug River, Southbridge.	7.30	Miles	5
Mill Brook	MA41-07	From inlet of Mill Road Pond (formerly pond segment MA41032), Brimfield to mouth at confluence with Quinebaug River, Brimfield.	4.70	Miles	4c
Monson Road Pond	MA41059	Wales.	4.00	Acres	3
Morse Pond	MA41033	Southbridge.	41.00	Acres	5
Mountain Brook	MA41-18	Headwaters, east of Steerage Rock Road (excluding intermittent portion), Brimfield to mouth at confluence with Mill Brook, Brimfield.	1.90	Miles	2
New Boston Road Pond	MA41035	Sturbridge.	13.00	Acres	3
No. 3 Reservoir	MA41038	Southbridge.	23.00	Acres	3
No. 4 Reservoir	MA41039	Southbridge.	69.00	Acres	3
No. 5 Reservoir	MA41040	Southbridge.	30.00	Acres	3
Pistol Pond	MA41057	Sturbridge.	5.00	Acres	5
Prindle Lake	MA41043	Charlton.	75.00	Acres	3
Quinebaug River	MA41-01	Outlet Hamilton Reservoir, Holland, to Sturbridge WWTP outfall (NPDES: MA0100421), Sturbridge (excluding Holland Pond segment MA41022 and East Brimfield Reservoir segment MA41014).	8.20	Miles	5
Quinebaug River	MA41-02	Sturbridge WWTP outfall (NPDES: MA0100421), Sturbridge to confluence with Cady Brook, Southbridge.	6.50	Miles	5
Quinebaug River	MA41-03	Southbridge WWTP outfall (NPDES: MA0100901), Southbridge to dam (NAT ID: MA00114) just upstream of West Dudley Road, Dudley.	2.20	Miles	5
Quinebaug River	MA41-04	From dam (NAT ID: MA00114) just upstream of West Dudley Road, Dudley to Connecticut state line, Dudley.	2.20	Miles	5
Quinebaug River	MA41-09	From confluence with Cady Brook, Southbridge to Southbridge WWTP outfall (NPDES: MA0100901), Southbridge.	1.30	Miles	5
Railroad Pond	MA41058	Charlton.	7.00	Acres	4c
Rocky Brook	MA41-22	Headwaters east of Chamberlain Pond (excluding intermittent portion), Douglas to the state line Douglas, MA/Thompson, CT.	1.90	Miles	2
Sherman Pond	MA41046	Brimfield.	76.00	Acres	4c
Sibley Pond	MA41047	North Basin, Charlton.	22.00	Acres	5
Sibley Pond	MA41048	South Basin, Charlton.	19.00	Acres	5
Stevens Brook	MA41-19	From the state line Wales, MA/Stafford, CT to mouth at inlet of Hamilton Reservoir, Holland.	4.70	Miles	2
Sylvestri Pond	MA41049	Dudley.	30.00	Acres	4c
Tufts Branch	MA41-10	Headwaters, north of Dudley-Southbridge Road, Dudley to the state line, Dudley, MA/Thompson, CT.	2.80	Miles	2

Appendix 1
Assessment units and integrated list categories presented alphabetically by major watershed

Water Body	Segment ID	Description	Size	Units	Category
Unnamed Tributary	MA41-16	Unnamed tributary to Mill Brook, headwaters, outlet Sherman Pond, Brimfield to mouth at confluence with Mill Brook, Brimfield.	1.20	Miles	5
Unnamed Tributary	MA41-23	Unnamed tributary to the Quinebaug River from headwaters at the outlet of an unnamed pond on the Southbridge/Charlton border to mouth at confluence with the Quinebaug River, Southbridge.	1.90	Miles	2
Unnamed Tributary	MA41-25	Unnamed tributary to Tufts Branch, headwaters, outlet Wielock Pond, Dudley to mouth at confluence with Tufts Branch, Dudley.	0.20	Miles	2
Unnamed Tributary	MA41-26	Unnamed tributary locally known as 'Freeman's Brook' from headwaters west of Cronin Road, Warren to an unnamed tributary to Long Pond, Sturbridge.	2.60	Miles	2
Unnamed Tributary	MA41-27	Unnamed tributary to Mill Brook, headwaters south of East Hill Road, Brimfield to mouth at confluence with Mill Brook, Brimfield.	1.70	Miles	2
Wales Brook	MA41-08	Headwaters, outlet Lake George, Wales to mouth at confluence with Mill Brook, Brimfield.	5.20	Miles	3
Walker Pond	MA41052	Sturbridge.	104.00	Acres	4c
West Brook	MA41-17	Headwaters, west of the Dix Hill Road/Route 19 intersection (excluding intermittent portion), Brimfield to mouth at confluence with Mill Brook, Brimfield.	1.80	Miles	5
Wielock Pond	MA41056	Dudley.	6.00	Acres	3
Shawsheen					
Ames Pond	MA83001	Tewksbury.	76.00	Acres	5
Bakers Meadow Pond	MA83002	Andover.	21.00	Acres	3
Ballardvale Impoundment	MA83011	Andover (Lowell Junction Pond).	35.00	Acres	5
Content Brook	MA83-09	Headwaters, outlet Richardson Pond, Billerica, to confluence with Shawsheen River, Tewksbury.	2.40	Miles	5
Elm Brook	MA83-23	Headwaters, south of Route 2A, Lincoln to beginning of channelized portion southwest of Kendall Court, Bedford (formerly part of segment MA83-05).	2.70	Miles	2
Elm Brook	MA83-24	From beginning of channelized portion soutwest of Kendall Court, Bedford to confluence with Shawsheen River, Bedford (formerly part of segment MA83-05).	2.40	Miles	5
Fawn Lake	MA83004	Bedford.	12.00	Acres	3
Fosters Pond	MA83005	Andover/Wilmington.	109.00	Acres	5
Gravel Pit Pond	MA83007	Andover (Hussey Brook Pond East).	5.00	Acres	4c
Hussey Brook Pond	MA83008	Andover.	0.50	Acres	3
Hussey Pond	MA83009	Andover.	1.00	Acres	5
Kiln Brook	MA83-10	Outlet unnamed pond (in Pine Meadows Country Club), Lexington, to confluence with Shawsheen River, Bedford.	1.50	Miles	4a
Long Meadow Brook	MA83-11	Wetland east of Lexington Street and north of Independence Drive, Burlington, to confluence with Vine Brook, Burlington.	1.30	Miles	4a
Long Pond	MA83010	Tewksbury.	44.00	Acres	5
Meadow Brook	MA83-12	Headwaters, outlet Ames Pond, Tewksbury, to confluence with Strong Water Brook, Tewksbury.	1.70	Miles	2
Pomps Pond	MA83014	Andover.	25.00	Acres	5
Pond Street Pond	MA83021	Billerica (unnamed pond west of Pond Street).	4.00	Acres	3
Rabbit Pond	MA83015	Andover.	2.00	Acres	5
Richardson Pond North	MA83020	Billerica/Tewksbury.	46.00	Acres	3

Appendix 1
Assessment units and integrated list categories presented alphabetically by major watershed

Water Body	Segment ID	Description	Size	Units	Category
Rogers Brook	MA83-04	From outlet of unnamed impoundment upstream of Morton Street, Andover (Prior to 1997 cycle listed as "Headwaters Billerica...") to confluence with Shawsheen River, Andover.	1.30	Miles	4a
Round Pond	MA83018	Tewksbury.	25.00	Acres	3
Sandy Brook	MA83-13	Headwaters north of Bedford Street and east of Fairfax Street, Burlington to confluence with Vine Brook, Burlington.	1.20	Miles	4a
Shawsheen River	MA83-01	Summer Street (historcally listed as Maguire Road), Bedford to confluence with Spring Brook, Bedford.	1.60	Miles	5
Shawsheen River	MA83-08	Headwater, north of Folly Pond and North Great Road, Lincoln to Summer Street, Bedford.	2.10	Miles	5
Shawsheen River	MA83-17	Confluence with Spring Brook, Bedford to the Burlington Water Department's surface water intake, Billerica. (Formerly part of segment MA83-02, changed for 2004 cycle).	5.70	Miles	5
Shawsheen River	MA83-18	Burlington Water Department's surface water intake, Billerica to the inlet of Ballardvale Impoundment, Andover (formerly part of segment MA83-02, changed for 2004 cycle) (since 2016 cycle: excludes Ballardvale Impoundment, pond segment MA83011).	9.50	Miles	5
Shawsheen River	MA83-19	Outlet of Ballardvale Impoundment, Andover to the confluence with the Merrimack River, Lawrence. (Formerly part of segment MA83-02 and all of MA83-03, changed for 2004 cycle).	8.20	Miles	4a
Spring Brook	MA83-14	Headwaters, wetland northeast of Route 3 Billerica, to confluence with Shawsheen River, Bedford.	2.60	Miles	2
Strong Water Brook	MA83-07	Headwaters northeast of Long Pond, Tewksbury to confluence with Shawsheen River, Tewksbury.	4.90	Miles	4a
Unnamed Tributary	MA83-15	Unnamed tributary to Meadow Brook, also known as "Pinnacle Brook" - from small wetland east of Route 93, Andover, to confluence with Meadow Brook, Tewksbury (includes intermittent portion).	2.10	Miles	5
Unnamed Tributary	MA83-16	Unnamed tributary to Shawsheen River also known as "Fosters Brook" - outlet Fosters Pond, Andover through River Street Pond to confluence with Shawsheen River at Lowell Junction Pond, Andover.	1.00	Miles	3
Unnamed Tributary	MA83-20	Unnamed intermittent tributary to the Shawsheen River, from Dascomb Road, Andover to confluence with Shawsheen River, Tewksbury.	0.90	Miles	5
Unnamed Tributary	MA83-21	Unnamed intermittent tributary to the Shawsheen River locally known as 'Sutton Brook', from headwaters north of Research Drive, Wilmington to confluence with the Shawsheen River, Tewksbury.	3.00	Miles	4a
Vine Brook	MA83-06	Headwaters (southeast of Granny Hill) near Grant Street, Lexington to confluence with Shawsheen River, Bedford (through Butterfield Pond formerly segment MA83003).	6.80	Miles	5
Webb Brook	MA83-22	Headwaters north of Webb Brook Road, Billerica to confluence with Shawsheen River, Billerica.	1.60	Miles	5
South Coastal					
Aaron River	MA94-28	Outlet Aaron River Reservoir, Cohasset to flow control structure near Beechwood Street (confluence with Bound Brook), Cohasset.	1.00	Miles	5
Aaron River Reservoir	MA94178	Cohasset/Hingham/Scituate.	136.00	Acres	4a
Arnold School Pond	MA94004	Pembroke.	12.00	Acres	3

Appendix 1
Assessment units and integrated list categories presented alphabetically by major watershed

Water Body	Segment ID	Description	Size	Units	Category
Bartlett Pond	MA94005	Plymouth.	33.00	Acres	2
Beaver Dam Pond	MA94006	Plymouth.	29.00	Acres	4c
Ben Mann Brook	MA94-41	Headwaters, south of Abington Rockland Reservoir, Rockland to mouth at confluence with Cushing Brook, Hanover.	2.00	Miles	2
Billington Sea	MA94007	Plymouth.	263.00	Acres	5
Black Jimmy Pond	MA94008	Plymouth.	9.00	Acres	3
Black Mountain Pond	MA94009	Marshfield.	17.00	Acres	4c
Bloody Pond	MA94015	Plymouth.	101.00	Acres	3
Bluefish River	MA94-30	Saltmarsh north of Harrison Street, Duxbury to mouth at Duxbury Bay, Duxbury.	0.07	Square Miles	4a
Boot Pond	MA94016	Plymouth.	69.00	Acres	3
Bound Brook	MA94-18	Headwaters, flow control structure near Beechwood Street, Cohasset to mouth at outlet Hunters Pond (confluence with The Gulf), Scituate.	2.10	Miles	5
Bound Brook Pond	MA94017	Norwell.	21.00	Acres	3
Briggs Reservoir	MA94019	Plymouth.	24.00	Acres	4c
Briggs Reservoir	MA94020	Plymouth.	17.00	Acres	4c
Cohasset Cove	MA94-32	The waters south of a line drawn from the Bassing Beach jetty, Scituate westerly to the opposite shore, Cohasset excluding Baileys Creek and The Gulf.	0.09	Square Miles	4a
Cohasset Harbor	MA94-01	The waters south of a line drawn from the northwestern point of Scituate Neck, Scituate to just north of Quarry Point, Cohasset not including Cohasset Cove, Cohasset/Scituate.	0.70	Square Miles	4a
Cooks Pond	MA94027	Plymouth.	21.00	Acres	4c
Crossman Pond	MA94032	Kingston.	13.00	Acres	5
Cushing Brook	MA94-40	Headwaters (perennial portion), east of Pleasant Street, Rockland to mouth at confluence with Drinkwater River, Hanover.	3.10	Miles	5
Drinkwater River	MA94-21	From Whiting Street, Hanover to mouth at inlet Factory Pond, Hanover (through Forge Pond, formerly segment MA94037).	3.50	Miles	5
Duxbury Bay	MA94-15	The waters north and west of a line from Saquish Head to the tip of Plymouth Beach and from there to High Cliff (includes Kingston Bay), Plymouth excluding Back River and Bluefish River, Duxbury and Jones River, Kingston.	12.70	Square Miles	4a
Eel River	MA94-37	Headwaters (restored), southeast of College Pond Road, Plymouth to inlet Russell Millpond, Plymouth (formerly reported as portion of segment MA94-23).	1.10	Miles	4c
Eel River	MA94-38	From outlet Russell Millpond, Plymouth to mouth at Plymouth Harbor, Plymouth (formerly reported as portion of segment MA94-23).	2.70	Miles	4c
Elbow Pond	MA94035	Plymouth.	21.00	Acres	3
Ellisville Harbor	MA94-34	east of Ellisville Road, Plymouth.	0.01	Square Miles	4a
Factory Pond	MA94175	Hanson/Hanover.	51.00	Acres	5
First Herring Brook	MA94-36	Headwaters, in South Swamp, Norwell to inlet Tack Factory Pond, Scituate (formerly reported as portion of segment MA94-25).	2.60	Miles	2
Foundry Pond	MA94038	Kingston.	7.00	Acres	5
French Stream	MA94-03	Headwaters on the southeast side of the South Weymouth Naval Air Station, Rockland to mouth at confluence with Drinkwater River, Hanover (excluding the approximately 0.3 mile through Studleys Pond).	5.80	Miles	5
Fresh Pond	MA94040	Plymouth.	60.00	Acres	3

Appendix 1
Assessment units and integrated list categories presented alphabetically by major watershed

Water Body	Segment ID	Description	Size	Units	Category
Furnace Pond	MA94043	Pembroke.	103.00	Acres	5
Governor Winslow House Pond	MA94047	Marshfield.	23.00	Acres	3
Great Herring Pond	MA94050	Bourne/Plymouth.	415.00	Acres	4a
Great Sandy Bottom Pond	MA94053	Pembroke.	103.00	Acres	3
Great South Pond	MA94054	Plymouth.	285.00	Acres	4a
Green Harbor	MA94-11	From the tidegates at Route 139, Marshfield to the mouth of the harbor at Massachusetts Bay/Cape Cod Bay, Marshfield.	0.08	Square Miles	4a
Green Harbor River	MA94-10	Headwaters, outlet Black Mountain Pond, Marshfield to the tidegate at Route 139, Marshfield.	5.70	Miles	5
Gunners Exchange Pond	MA94055	Plymouth.	26.00	Acres	3
Harrobs Corner Bog Pond	MA94061	Plympton.	20.00	Acres	3
Hedges Pond	MA94065	Plymouth.	27.00	Acres	3
Herring Brook	MA94-29	Headwaters, outlet Lily Pond, Cohasset to mouth at confluence with Aaron River, Cohasset.	0.30	Miles	4c
Herring River	MA94-07	Headwaters, outlet Old Oaken Bucket Pond, Scituate to mouth at confluence with North River, Scituate.	0.08	Square Miles	4a
Hobomock Pond	MA94177	Pembroke.	13.00	Acres	3
Hoyts Pond	MA94070	Plymouth.	20.00	Acres	3
Indian Head Pond	MA94071	Hanson.	120.00	Acres	5
Indian Head River	MA94-04	Headwaters, outlet Factory Pond, Hanover/Hanson to Curtis Crossing Dam (also called Ludhams Ford Dam (NATID: MA00428)) west of Elm Street, Hanover/Pembroke.	2.80	Miles	5
Indian Head River	MA94-22	From Curtis Crossing Dam (also called Ludhams Ford Dam (NATID: MA00428)) west of Elm Street, Hanover/Pembroke to mouth at confluence with Herring Brook, (forming headwaters of North River) Hanover/Pembroke.	0.90	Miles	5
Indian Pond	MA94072	Kingston/Plympton.	64.00	Acres	3
Iron Mine Brook	MA94-24	Headwaters north of Route 139, Hanover to mouth at confluence with Indian Head River, Hanover (area associated with North River Corridor designated as ORW).	1.40	Miles	2
Island Creek Pond	MA94073	Duxbury.	40.00	Acres	4c
Island Pond	MA94074	[west of the locality of Cedarville] Plymouth.	52.00	Acres	3
Island Pond	MA94075	[locally known as Great Island Pond] Plymouth.	80.00	Acres	4c
Island Pond	MA94076	[south of locality of South Pond] Plymouth.	12.00	Acres	3
Jacobs Pond	MA94077	Norwell.	61.00	Acres	4c
Jones River	MA94-12	Headwaters, outlet Silver Lake, Kingston to former dam (NATID: MA00396) near Wapping Road, Kingston.	4.10	Miles	5
Jones River	MA94-13	From former dam (NATID: MA00396) near Wapping Road, Kingston to dam (NATID: MA00395) at Elm Street, Kingston.	0.90	Miles	5
Jones River	MA94-14	From dam (NATID: MA00395) at Elm Street, Kingston to mouth at Kingston Bay, Kingston.	0.09	Square Miles	4a
Keene Pond	MA94079	Duxbury.	11.00	Acres	3
Lily Pond	MA94179	Cohasset.	50.00	Acres	5

Appendix 1
Assessment units and integrated list categories presented alphabetically by major watershed

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Little Harbor	MA94-20	Cove south of Nichols Road, west of Atlantic Avenue, and north of Cohasset center, Cohasset.	0.24	Square Miles	4a
Little Herring Pond	MA94082	Plymouth.	81.00	Acres	3
Little Pond	MA94182	Plymouth.	40.00	Acres	3
Little Sandy Bottom Pond	MA94085	Pembroke.	56.00	Acres	3
Little South Pond	MA94087	Plymouth.	63.00	Acres	3
Long Island Pond	MA94088	Plymouth.	33.00	Acres	4c
Longwater Brook	MA94-39	Headwaters, south of Route 3, Norwell to mouth at confluence with Drinkwater River, Hanover.	2.80	Miles	5
Lorings Bogs Pond	MA94089	Duxbury.	33.00	Acres	4c
Lout Pond	MA94090	Plymouth.	18.00	Acres	3
Lower Chandler Pond	MA94091	Duxbury/Pembroke.	37.00	Acres	4c
Maquan Pond	MA94096	Hanson.	45.00	Acres	3
Mill Pond	MA94101	Duxbury.	7.00	Acres	3
Morey Hole	MA94102	Plymouth.	22.00	Acres	3
Musquashcut Pond	MA94-33	Scituate (formerly reported as MA94105).	0.11	Square Miles	5
North Hill Marsh Pond	MA94109	Duxbury.	43.00	Acres	3
North River	MA94-05	Headwaters, confluence of Indian Head River and Herring Brook, Hanover/Pembroke to Route 3A, Marshfield/Scituate.	0.30	Square Miles	5
North River	MA94-06	Route 3A, Marshfield/Scituate to confluence with South River/Massachusetts Bay, Marshfield/Scituate.	0.54	Square Miles	4a
North Triangle Pond	MA94110	Plymouth.	22.00	Acres	3
Old Oaken Bucket Pond	MA94113	Scituate.	9.00	Acres	5
Oldham Pond	MA94114	Pembroke/Hanson.	232.00	Acres	5
Pembroke Street South Pond	MA94117	Kingston.	6.00	Acres	4c
Pine Lake	MA94120	Duxbury.	22.00	Acres	3
Pine Street Pond	MA94121	Duxbury.	14.00	Acres	3
Plymouth Bay	MA94-17	The waters southeast of a line drawn from Saquish Head to the tip of Plymouth Beach, Plymouth and west of a line from Gurnet Point to Rocky Point, Plymouth.	10.30	Square Miles	2
Plymouth Harbor	MA94-16	The waters south of a line drawn from the tip of Plymouth Beach to High Cliff, Plymouth.	2.53	Square Miles	5
Reeds Millpond	MA94126	Kingston.	6.00	Acres	4c
Reservoir	MA94127	Pembroke.	16.00	Acres	4c
Round Pond	MA94131	Duxbury.	7.00	Acres	3
Russell Millpond	MA94132	Plymouth.	42.00	Acres	5
Russell Pond	MA94133	Kingston.	11.00	Acres	3
Savery Pond	MA94136	Plymouth.	29.00	Acres	5
Scituate Harbor	MA94-02	The waters west of a line across the mouth of Scituate Harbor, from the elbow of the jetty southeast off Lighthouse Point to the jetty northeast of the U.S. Coast Guard Station, Scituate.	0.32	Square Miles	4a

Appendix 1
Assessment units and integrated list categories presented alphabetically by major watershed

Water Body	Segment ID	Description	Size	Units	Category
Second Herring Brook	MA94-26	Headwaters, outlet Turner Pond, Norwell (excluding the approximately 0.3 mile throughTorrey Pond) to the Second Herring Brook Pond Dam (NATID: MA02171), Norwell (area associated with North River Corridor designated as ORW).	1.50	Miles	2
Second Herring Brook	MA94-31	From the Second Herring Brook Pond Dam (NATID: MA02171), Norwell to mouth at confluence with the North River, Norwell.	0.003	Square Miles	4a
Shallow Pond	MA94140	Plymouth.	19.00	Acres	3
Ship Pond	MA94142	Plymouth.	11.00	Acres	3
Silver Lake	MA94143	Pembroke/Plympton/Kingston.	616.00	Acres	4c
Smelt Pond	MA94184	Kingston.	45.00	Acres	4c
South River	MA94-08	Headwaters, outlet unnamed pond north of Congress Street, Duxbury to dam near Main Street (Route 3A), Marshfield (through South River Pond, formerly segment MA94148).	4.90	Miles	2
South River	MA94-09	From dam near Main Street (Route 3A), Marshfield to mouth at confluence with North River/Massachusetts Bay, Marshfield/Scituate.	0.63	Square Miles	4a
South Triangle Pond	MA94149	Plymouth.	17.00	Acres	3
Studleys Pond	MA94151	Rockland.	25.00	Acres	5
Tack Factory Pond	MA94152	Scituate.	8.00	Acres	2
The Gulf	MA94-19	Headwaters, outlet Hunters Pond, Scituate to confluence with Cohasset Cove just north of Border Street, Cohasset.	0.13	Square Miles	4a
Third Herring Brook	MA94-27	Headwaters, outlet Jacobs Pond, Norwell/Hanover to mouth at confluence with North River, Norwell/Hanover (area associated with North River Corridor designated as ORW).	5.30	Miles	2
Torrey Pond	MA94157	Norwell.	19.00	Acres	4c
Town Brook	MA94-42	Headwaters, outlet Billington Sea, Plymouth to just upstream of the Route 3A bridge, Plymouth (excluding the approximately 0.07 mile through Arms House Pond).	1.50	Miles	2
Triangle Pond	MA94160	Plymouth.	14.00	Acres	3
Unnamed Tributary	MA94-35	Unnamed tributary to Eel River, from outlet cranberry bog south of Valley Road, Plymouth to mouth at confluence with Eel River, Plymouth (through Forge Pond, formerly segment MA94036).	2.40	Miles	2
Upper Chandler Pond	MA94165	Duxbury/Pembroke.	8.00	Acres	4c
Wampatuck Pond	MA94168	Hanson.	63.00	Acres	5
West Chandler Pond	MA94170	Pembroke.	10.00	Acres	3
Winslow Cemetary Pond	MA94172	Marshfield.	6.00	Acres	3
Wright Pond	MA94174	Duxbury.	30.00	Acres	3
Taunton					
Ames Long Pond	MA62001	Stoughton/Easton.	88.00	Acres	5
Assawompset Pond	MA62003	Lakeville/Middleborough.	2034.00	Acres	3
Assonet River	MA62-19	Outlet Forge Pond, Freetown toTisdale Pond Dam (NATID: MA03049) (north of Route 79/Elm Street intersection), Freetown.	0.90	Miles	2

Appendix 1
Assessment units and integrated list categories presented alphabetically by major watershed

Water Body	Segment ID	Description	Size	Units	Category
Assonet River	MA62-20	From Tisdale Pond Dam (NATID: MA03049) (north of Route 79/Elm Street intersection), Freetown to mouth at confluence with the Taunton River, Freetown/Berkley.	0.82	Square Miles	4a
Barrowsville Pond	MA62007	Norton.	31.00	Acres	3
Beaumont Pond	MA62009	Foxborough.	24.00	Acres	3
Beaver Brook	MA62-09	Outlet Cleveland Pond, Abington to mouth at confluence with Salisbury Plain River forming headwaters Matfield River, East Bridgewater.	6.80	Miles	4a
Beaver Brook	MA62-30	Headwaters, perennial portion, just west of Bay Road, Easton to mouth at inlet of Old Pond, Easton.	1.40	Miles	3
Big Bearhole Pond	MA62011	Taunton.	38.00	Acres	5
Briggs Pond	MA62021	Sharon.	19.00	Acres	3
Broad Cove	MA62-50	Dighton/Somerset (formerly reported as lake segment MA62022).	0.13	Square Miles	4a
Brockton Reservoir	MA62023	Avon.	89.00	Acres	4c
Cain Pond	MA62030	Taunton.	3.00	Acres	5
Canoe River	MA62-64	Headwaters in wetland east of Cow Hill, Sharon to inlet Beaumont Pond, Foxborough (formerly part of segment MA62-27).	3.10	Miles	2
Canoe River	MA62-65	From outlet of Beaumont Pond, Foxborough to inlet of Hartwell School Pond, Mansfield (formerly part of segment MA62-27).	3.80	Miles	2
Canoe River	MA62-66	From outlet of Hartwell School Pond, Mansfield to mouth at inlet Winnecunnet Pond, Norton (formerly part of segment MA62-27).	6.90	Miles	2
Carpenter Pond	MA62032	Foxborough.	29.00	Acres	3
Carver Pond	MA62033	Bridgewater.	29.00	Acres	4c
Cedar Swamp River	MA62-44	Headwaters south of Freetown Street, Lakeville to inlet Forge Pond, Freetown (stream name changes to Assonet River at Lakeville/Freetown corporate boundary).	5.80	Miles	2
Chaffin Reservoir	MA62035	Pembroke.	13.00	Acres	3
Chartley Pond	MA62038	Norton/Attleboro.	57.00	Acres	3
Clear Pond	MA62041	Lakeville.	18.00	Acres	3
Cleveland Pond	MA62042	Abington.	98.00	Acres	4c
Cobb Brook	MA62-43	Headwaters south of Dunbar Street (in Crapo Bog), Taunton to mouth at confluence with the Taunton River, Taunton (approximately 0.1mile culverted at mouth).	3.50	Miles	3
Cocasset Lake	MA62043	Foxborough.	32.00	Acres	3
Cooper Pond	MA62046	Carver.	22.00	Acres	3
Cotley River	MA62-41	From outlet of cranberry bog south of Seekell Street, Taunton to mouth at confluence with the Taunton River, Taunton.	5.70	Miles	3
Coweeset Brook	MA62-22	Headwaters, perennial portion, southwest of Route24/Route 123 interchange (north of Mill Street), Brockton to mouth at confluence with Hockomock River, West Bridgewater.	3.90	Miles	3
Crocker Pond	MA62051	Wrentham.	17.00	Acres	4c
Cross Pond	MA62052	Brockton.	2.00	Acres	3
Cross Street Pond	MA62053	Bridgewater.	27.00	Acres	3
Cushing Pond	MA62056	Abington.	6.00	Acres	4c

Appendix 1
Assessment units and integrated list categories presented alphabetically by major watershed

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East Freetown Pond	MA62063	Freetown.	11.00	Acres	4c
Elm Street Pond	MA62066	Halifax/Hanson.	19.00	Acres	3
Forge Pond	MA62072	Freetown.	56.00	Acres	3
Forge River	MA62-37	Headwaters, outlet Kings Pond, Raynham to mouth at confluence with the Taunton River, Raynham.	2.50	Miles	3
Fuller Street Pond	MA62234	Middleborough/Carver (formerly reported as MA95058).	20.00	Acres	4c
Furnace Lake	MA62076	Foxborough.	15.00	Acres	3
Gavins Pond	MA62077	Sharon/Foxborough.	18.00	Acres	4c
Glue Factory Pond	MA62078	Foxborough (formerly a portion of MA62-39).	7.00	Acres	5
Great Quittacas Pond	MA62083	Lakeville/Middleborough/Rochester.	1125.00	Acres	3
Gushee Pond	MA62084	Raynham.	27.00	Acres	4c
Hartwell School Pond	MA62086	Mansfield (formerly a portion of MA62-27).	8.00	Acres	3
Hewitt Pond	MA62088	Raynham.	14.00	Acres	3
Hockomock River	MA62-35	Headwaters, perennial portion, west of Route 24, West Bridgewater to mouth at confluence with Town River, Bridgewater.	4.30	Miles	3
Island Grove Pond	MA62094	Abington.	31.00	Acres	5
Johns Pond	MA62096	Carver.	21.00	Acres	3
Johnson Pond	MA62097	Raynham.	14.00	Acres	4c
Kings Pond	MA62101	Raynham.	13.00	Acres	3
Lake Mirimichi	MA62118	Plainville/Foxborough.	175.00	Acres	4c
Lake Nippenicket	MA62131	Bridgewater/Raynham.	375.00	Acres	4a
Lake Rico	MA62148	Taunton.	188.00	Acres	4c
Lake Sabbatia	MA62166	Taunton.	265.00	Acres	5
Leach Pond	MA62103	Easton/Sharon.	111.00	Acres	3
Little Cedar Swamp	MA62106	Easton.	91.00	Acres	3
Little Quittacas Pond	MA62107	Lakeville/Rochester.	295.00	Acres	3
Long Pond	MA62108	Lakeville/Freetown.	1728.00	Acres	4c
Longwater Pond	MA62109	Easton.	8.00	Acres	4c
Lovett Brook	MA62-46	Headwaters, perennial portion, north of Oak Street, Brockton to mouth at inlet Elis Brett Pond, Brockton.	1.50	Miles	3
Lower Porter Pond	MA62111	Brockton.	8.00	Acres	4c
Matfield River	MA62-32	Headwaters, confluence Beaver Brook and Salisbury Plain River, East Bridgewater to mouth at confluence with Town River forming headwaters Taunton River, Bridgewater.	6.30	Miles	5
Meadow Brook	MA62-38	Headwaters north of Pine Street, Whitman (through Forge Pond, East Bridgewater) to the confluence with the Matfield River, East Bridgewater.	6.00	Miles	4a
Meadow Brook Pond	MA62113	Norton.	13.00	Acres	3
Middle Pond	MA62115	Taunton.	26.00	Acres	4c
Mill River	MA62-29	Headwaters, outlet Lake Sabbatia, Taunton to mouth at confluence with the Taunton River, Taunton (through Whittenton Impoundment, formerly segment MA62228).	4.20	Miles	4c

Appendix 1
Assessment units and integrated list categories presented alphabetically by major watershed

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Monponsett Pond, East Basin	MA62218	[East Basin] Halifax.	247.00	Acres	5
Monponsett Pond, West Basin	MA62119	[West Basin] Halifax/Hanson.	283.00	Acres	5
Mount Hope Mill Pond	MA62122	Taunton/Dighton (includes Three Mile River Impoundment formerly reported as MA62231).	45.00	Acres	4c
Muddy Cove Brook	MA62-51	From the outlet of the small impoundment behind 333 Main Street (Zeneca Inc.), Dighton to mouth at confluence with the Taunton River, Dighton (formerly part of MA62-23).	0.01	Square Miles	4a
Muddy Cove Brook	MA62-58	Headwaters, south of Hart Street, Dighton to inlet Muddy Cove Brook Pond, Dighton (formerly part of MA62-52 and MA62-23 (2004)).	1.40	Miles	3
Muddy Cove Brook	MA62-59	From outlet Muddy Cove Brook Pond, Dighton to outlet of small impoundment behind 333 Main Street (Zeneca Inc.), Dighton (formerly part of MA62-52 and MA62-23 (2004)).	0.20	Miles	3
Muddy Cove Brook Pond	MA62124	Dighton.	23.00	Acres	5
Muddy Pond	MA62125	Carver.	61.00	Acres	4c
Muddy Pond	MA62126	Halifax.	13.00	Acres	3
Muddy Pond	MA62233	Kingston (formerly reported as MA94104).	42.00	Acres	3
Mulberry Meadow Brook	MA62-31	Headwaters, outlet New Pond, Easton to mouth at inlet of Winnecunnet Pond, Norton (through former segments; Ward Pond MA62203 and Reservoir MA62158).	4.60	Miles	3
Mullein Hill Chapel Pond	MA62127	Lakeville.	23.00	Acres	3
Nemasket River	MA62-25	Headwaters, outlet Assawompset Pond, Lakeville/Middleborough to Middleborough WWTP (NPDES: MA0101591) discharge, Middleborough.	6.20	Miles	2
Nemasket River	MA62-26	From the Middleborough WWTP (NPDES: MA0101591) discharge, Middleborough to mouth at confluence with the Taunton River, Middleborough.	5.10	Miles	3
New Pond	MA62130	Easton.	18.00	Acres	4c
North Center Street Pond	MA62132	Carver.	12.00	Acres	3
Norton Reservoir	MA62134	Norton/Mansfield.	557.00	Acres	5
Oakland Pond	MA62136	Taunton.	38.00	Acres	3
Plymouth Street Pond	MA62141	Halifax/East Bridgewater.	165.00	Acres	3
Pocksha Pond	MA62145	Lakeville/Middleborough.	592.00	Acres	3
Poor Meadow Brook	MA62-34	Headwaters, from wetland near County Street, Hanson to mouth at confluence with Satucket River, East Bridgewater.	6.90	Miles	3
Poquoy Pond	MA62147	Lakeville.	10.00	Acres	3
Prospect Hill Pond	MA62149	Taunton.	42.00	Acres	3
Puds Pond	MA62151	Sharon/Easton.	23.00	Acres	3
Queset Brook	MA62-67	Headwaters, outlet Ames Long Pond, Easton to inlet Longwater Pond, Easton (through Shovelshop Pond formerly segment MA62172) (formely part of segment MA62-21).	1.50	Miles	4c
Queset Brook	MA62-68	From outlet Longwater Pond, Easton to mouth at confluence with Coweeset Brook, West Bridgewater (formelry part of segment MA62-21).	3.30	Miles	3
Rattlesnake Brook	MA62-45	Headwaters east of Riggenbach Road, Fall River to mouth at confluence with Assonet River, Freetown.	3.20	Miles	2
Reservoir (White Oak Reservoir)	MA62157	Hanson.	13.00	Acres	5

Appendix 1
Assessment units and integrated list categories presented alphabetically by major watershed

Water Body	Segment ID	Description	Size	Units	Category
Richmond Pond	MA62159	Taunton.	6.00	Acres	4c
Robbins Pond	MA62162	East Bridgewater.	124.00	Acres	3
Robinson Brook	MA62-14	Headwaters, outlet Hersey Pond, Foxborough to mouth at confluence with Rumford River, Mansfield.	1.90	Miles	5
Route One Pond, West	MA62165	Wrentham.	10.00	Acres	3
Rumford River	MA62-40	From outlet Norton Reservoir, Norton to mouth at confluence with Wading River forming headwaters Threemile River, Norton (formerly part of segment MA62-15).	4.50	Miles	2
Rumford River	MA62-62	Headwaters, outlet Gavins Pond, Sharon to inlet Glue Factory Pond, Foxborough (through former segment Vandys Pond MA62112) (formerly part of MA62-39 and MA62-15 (2004)).	2.80	Miles	5
Rumford River	MA62-63	From outlet Glue Factory Pond, Foxborough to inlet Norton Reservoir, Norton (through former pond segments; Fulton Pond MA62075, Hodges Pond MA62091 and Cabot Pond MA62029) (formerly part of segment MA62-39 and MA62-15 (2004)).	5.10	Miles	5
Salisbury Brook	MA62-08	Headwaters, outlet Cross Pond, Brockton to mouth at confluence with Trout Brook forming headwaters Salibury Plain River, Brockton.	2.50	Miles	5
Salisbury Plain River	MA62-05	Headwaters, confluence of Trout and Salisbury brooks, Brockton to the Brockton Advanced Water Reclamation Facility (AWRF) discharge (NPDES: MA0101010), Brockton.	2.40	Miles	5
Salisbury Plain River	MA62-06	From the Brockton Advanced Water Reclamation Facility (AWRF) discharge (NPDES: MA0101010), Brockton to mouth at confluence with Beaver Brook forming headwaters Matfield River, East Bridgewater.	2.30	Miles	5
Sassaquin Pond	MA62232	New Bedford (formerly reported as MA95129).	36.00	Acres	5
Satucket River	MA62-10	Headwaters, outlet Robbins Pond, East Bridgewater to mouth at confluence with the Matfield River, East Bridgewater.	5.60	Miles	2
Savery Pond	MA62167	Middleborough.	24.00	Acres	4c
Sawmill Brook	MA62-36	Headwaters, outlet Ice Pond, Bridgewater to mouth at confluence with the Taunton River, Bridgewater.	1.90	Miles	3
Segreganset River	MA62-53	Source in wetland north of Glebe Street, Taunton to the Montaup Pond Dam (NATID: MA02104), Dighton (formerly part of segment MA62-18) (through Segreganset River Ponds formerly segment MA62169) .	7.80	Miles	4c
Segreganset River	MA62-54	From Montaup Pond Dam (NATID: MA02104), Dighton to approximately 250 feet north of Brook Street, Dighton (formerly part of segment MA62-18).	0.30	Miles	4c
Segreganset River	MA62-55	From approximately 250 feet north of Brook Street, Dighton to mouth at confluence with the Taunton River, Dighton (formerly part of segment MA62-18).	0.02	Square Miles	4a
Shumatuscacant River	MA62-33	Headwaters, from wetland northwest of Vineyard Road, Abington to mouth at confluence with Poor Meadow Brook, Hanson (through Hobart Pond formerly segment MA62090) (excluding 0.5 mile through Island Grove Pond MA62094).	8.00	Miles	5
Snake River	MA62-28	Headwaters, outlet Winnecunnet Pond, Norton to mouth at inlet of Lake Sabbatia, Taunton.	3.30	Miles	3
Somerset Reservoir	MA62174	Somerset.	164.00	Acres	4a
Stetson Pond	MA62182	Pembroke.	88.00	Acres	5
Sunset Lake	MA62184	Foxborough.	13.00	Acres	3

Appendix 1
Assessment units and integrated list categories presented alphabetically by major watershed

Water Body	Segment ID	Description	Size	Units	Category
Taunton River	MA62-01	Headwaters, confluence of Town and Matfield rivers, Bridgewater to Route 24 bridge, Taunton/Raynham.	19.50	Miles	5
Taunton River	MA62-02	From Route 24 bridge, Taunton/Raynham to Berkley Bridge, Dighton/Berkley.	0.28	Square Miles	4a
Taunton River	MA62-03	From Berkley Bridge, Dighton/Berkley to confluence with Assonet River at a line from Sandy Point, Somerset northeasterly to the southwestern tip of Assonet Neck, Berkley.	0.92	Square Miles	5
Taunton River	MA62-04	From confluence with Assonet River at a line from Sandy Point, Somerset northeasterly to the southwestern tip of Assonet Neck, Berkley to mouth just upstream of the Braga Bridge, Somerset/Fall River.	2.60	Square Miles	5
The Reservoir	MA62189	Lakeville.	23.00	Acres	3
Thirtyacre Pond	MA62190	Brockton.	26.00	Acres	4c
Three Mile River	MA62-56	Confluence of Wading and Rumford rivers, Norton to dam (NATID: MA03083) behind 66 South Street (Harodite Finishing Co.), Taunton (excluding the approximately 0.5 mile through Oakland Pond segment MA62136 and the appproximatley 1.0 mile through Mount Hope Mill Pond segment MA62122) (formerly part of segment MA62-16).	10.50	Miles	2
Three Mile River	MA62-57	From dam (NATID: MA03083) behind 66 South Street (Harodite Finishing Co.), Taunton/Dighton to mouth at confluence with the Taunton River, Taunton/Dighton (formerly part of segment MA62-16).	0.02	Square Miles	4a
Thurston Street Pond	MA62192	Wrentham.	7.00	Acres	3
Tispaquin Pond	MA62195	Middleborough.	195.00	Acres	3
Town River	MA62-11	Headwaters, outlet Lake Nippenicket, Bridgewater to Route 28 bridge, West Bridgewater.	4.50	Miles	3
Town River	MA62-12	Route 28 bridge, West Bridgewater to Bridgewater WWTP (NPDES: MA0100641) discharge, Bridgewater.	3.90	Miles	3
Town River	MA62-13	From Bridgewater WWTP (NPDES: MA0100641) discharge, Bridgewater to mouth at confluence with the Matfield River forming headwaters Taunton River, Bridgewater.	2.30	Miles	3
Trout Brook	MA62-07	Headwaters, perennial portion, northeast of Argyle Avenue and west of Conrail Line, Avon to mouth at confluence with Salisbury Brook forming headwaters Salisbury Plain River, Brockton.	3.40	Miles	5
Turnpike Lake	MA62198	Plainville.	99.00	Acres	4c
Unnamed Tributary	MA62-42	Headwaters, south of Slab Bridge Road (in Cedar Swamp portion of Freetown-Fall River State Forest), Freetown to mouth at confluence with Cedar Swamp River, Lakeville.	4.00	Miles	5
Unnamed Tributary	MA62-48	Channel from Taunton Municipal Lighting Plant, Taunton to mouth at confluence with the Taunton River, Taunton.	0.002	Square Miles	5
Upper Leach Pond	MA62123	(Mountain Street Pond) Sharon.	28.00	Acres	3
Upper Porter Pond	MA62200	Brockton.	11.00	Acres	4c
Wading River	MA62-47	Headwaters, outlet Furnace Lake, Foxborough to Balcolm Street, Mansfield (through former pond segments; Robinson Pond MA62163 and Blakes Pond MA62221) (formerly part of segment MA62-17) (1987 Wrentham quad depicts river incorrectly) .	5.00	Miles	5

Appendix 1
Assessment units and integrated list categories presented alphabetically by major watershed

Water Body	Segment ID	Description	Size	Units	Category
Wading River	MA62-60	From Balcolm Street, Mansfield to inlet Barrowswille Pond, Norton (through Sweets Pond formerly segment MA62185) (formerly part of segment MA62-49 and MA62-17 (2004)).	5.80	Miles	4c
Wading River	MA62-61	From outlet Barrowsville Pond, Norton to mouth at confluence with Rumford River, forming headwaters Threemile River, Norton (formely part of segment MA62-49 and MA62-17(2004)).	3.30	Miles	2
Waldo Lake	MA62201	Avon/Brockton.	72.00	Acres	4c
Watson Pond	MA62205	Taunton.	78.00	Acres	5
West Meadow Pond	MA62208	West Bridgewater.	104.00	Acres	4c
Whiteville Pond	MA62211	Mansfield.	14.00	Acres	3
Winnecunnet Pond	MA62213	Norton.	150.00	Acres	4c
Winnetuxet River	MA62-24	Headwaters, confluence of Muddy Pond Brook and Doten Brook, Carver to mouth at confluence with the Taunton River, Halifax.	12.10	Miles	3
Wolomolopoag Pond	MA62216	Sharon.	13.00	Acres	3
Woods Pond	MA62220	Middleborough.	51.00	Acres	5
Ten Mile					
Bungay River	MA52-06	Headwaters, outlet Greenwood Lake, North Attleborough to confluence with Ten Mile River, Attleboro.	5.10	Miles	5
Cargill Pond	MA52004	Plainville.	2.00	Acres	5
Central Pond	MA52006	Seekonk,MA/Pawtucket,RI/Providence,RI (size indicates portion in Massachusetts).	6.00	Acres	5
Coles Brook	MA52-11	Headwaters, Grassie Swamp west of Allens Lane, Rehoboth to inlet Central Pond, Seekonk.	4.20	Miles	5
Falls Pond, North Basin	MA52013	North Attleborough.	54.00	Acres	5
Falls Pond, South Basin	MA52014	North Attleborough.	50.00	Acres	4c
Fourmile Brook	MA52-10	Headwaters, outlet Manchester Pond Reservoir, Attleboro to inlet Orrs Pond, Attleboro.	1.00	Miles	5
Greenwood Lake	MA52017	Mansfield/North Attleborough.	96.00	Acres	3
Hoppin Hill Reservoir	MA52021	North Attleborough.	22.00	Acres	3
James V. Turner Reservoir	MA52022	Seekonk,MA/E. Providence,RI (size indicates portion in Massachusetts).	28.00	Acres	5
Lake Como	MA52010	Attleboro.	5.00	Acres	5
Manchester Pond Reservoir	MA52026	Attleboro.	238.00	Acres	3
Orrs Pond	MA52029	Attleboro.	58.00	Acres	4c
Plain Street Pond	MA52032	Mansfield.	12.00	Acres	5
Scotts Brook	MA52-09	Headwaters, north of High Street, North Attleborough to confluence with Ten Mile River, North Attleborough.	2.10	Miles	5
Sevenmile River	MA52-07	Headwaters, outlet Hoppin Hill Reservoir, North Attleborough to inlet Orrs Pond, Attleboro (thru Luther Reservoir formerly segment MA52025).	3.20	Miles	5
Sevenmile River	MA52-08	Outlet Orrs Pond, Attleboro to confluence with Ten Mile River, Pawtucket, Rhode Island.	3.40	Miles	5
Speedway Brook	MA52-05	(locally known as Thacher Brook) Headwaters, Attleboro to inlet of Dodgeville Pond (a Ten Mile River impoundment), Attleboro.	0.90	Miles	5

Appendix 1
Assessment units and integrated list categories presented alphabetically by major watershed

Water Body	Segment ID	Description	Size	Units	Category
Ten Mile River	MA52-01	Headwaters, outlet Cargill Pond, Plainville to West Bacon Street, Plainville (through Fuller Pond formerly segment MA52016).	1.50	Miles	5
Ten Mile River	MA52-02	West Bacon Street, Plainville to North Attleborough WWTP discharge (NPDES: MA0101036), Attleboro (excluding 0.9 miles thru Falls Pond segment MA52013, but including thru Wetherells Pond formerly segment MA52041) (HQW qualifier applies to portion of river upstream of Whiting Pond Dam (NATID: MA00859)).	4.10	Miles	5
Ten Mile River	MA52-03	North Attleborough WWTP discharge (NPDES: MA0101036), Attleboro to the MA/RI border near Central Avenue, Seekonk, MA/Pawtucket, RI (thru former segments; Farmers Pond MA52015, Mechanics Pond MA52027, Dodgeville Pond MA52011, and Hebronville Pond MA52020).	9.10	Miles	5
Whiting Pond	MA52042	North Attleborough/Plainville.	24.00	Acres	4a
Westfield					
Abbott Brook	MA32-62	Headwaters (perennial portion), north of Abbott Hill Road, Chester to mouth at confluence with West Branch Westfield River, Chester.	2.50	Miles	3
Arm Brook	MA32-58	Headwaters (perennial portion), south of Summit Lock Road, Westfield to inlet unnamed pond west of Barbara Street, Westfield.	1.70	Miles	3
Ashley Brook	MA32-37	Headwaters (perennial portion), south of Hillside Road, Westfield to mouth at confluence with Jacks Brook, Westfield.	0.50	Miles	5
Ashley Cutoff	MA32001	Holyoke.	31.00	Acres	3
Ashley Pond	MA32002	Holyoke.	133.00	Acres	3
Barry Brook	MA32-57	Headwaters, outlet Snake Pond, Holyoke to mouth at confluence with Trask Brook (forming headwaters Bush Brook), Westfield.	2.60	Miles	3
Bartlett Brook	MA32-50	Headwaters (perennial portion), between Mountain and Prospect streets, Plainfield to mouth at confluence with Westfield River, Cummington.	2.00	Miles	2
Bedlam Brook	MA32-33	Headwaters (perennial portion), north of Blandford Road, Blandford to mouth at confluence with Peebles Brook, Blandford.	2.80	Miles	2
Blair Pond	MA32009	Blandford.	69.00	Acres	4c
Borden Brook Reservoir	MA32011	Granville/Blandford.	211.00	Acres	3
Bradley Brook	MA32-21	Headwaters, confluence Black and Stage brooks, Russell to mouth at confluence with Westfield River, Russell.	0.70	Miles	2
Bronson Brook	MA32-45	Headwaters, north of Trouble Road, Cummington to mouth at confluence with West Falls Branch, Worthington. (formerly identified by the Massachusetts Stream Classification Program as West Branch).	4.20	Miles	2
Buck Pond	MA32012	Westfield.	23.00	Acres	5
Buckley-Dunton Lake	MA32013	Becket.	154.00	Acres	4a
Bush Brook	MA32-56	Headwaters, confluence of Barry and Trask brooks, east of Sherwood Avenue, Westfield to mouth at confluence with Pond Brook, Westfield.	0.70	Miles	3
Center Pond	MA32015	Becket.	114.00	Acres	4c
Clear Pond	MA32077	Holyoke.	10.00	Acres	3
Cobble Mountain Reservoir	MA32018	Blandford/Granville/Russell.	1034.00	Acres	3
Congamond Lakes	MA32021	[Middle Basin] Southwick.	279.00	Acres	5
Congamond Lakes	MA32022	[North Basin] Southwick.	46.00	Acres	5
Congamond Lakes	MA32023	[South Basin] Southwick.	144.00	Acres	5

Appendix 1
Assessment units and integrated list categories presented alphabetically by major watershed

Water Body	Segment ID	Description	Size	Units	Category
Connor Reservoir	MA32024	Holyoke.	17.00	Acres	3
Cook Brook	MA32-38	Headwaters, outlet small unnamed pond west of the intersection of Gorge and Granville roads, Westfield to mouth at confluence with Little River, Westfield.	2.00	Miles	3
Cooley Lake	MA32026	Granville.	66.00	Acres	3
Crooked Pond	MA32028	Plainfield.	34.00	Acres	3
Damon Pond	MA32029	Chesterfield/Goshen.	77.00	Acres	3
Dead Branch (Brook)	MA32-63	Headwaters, outlet Damon Pond, Chesterfield to mouth at confluence with Westfield River (Knightville Reservoir), Huntington.	8.50	Miles	5
Depot Brook	MA32-17	Source, north of Beach Road, Washington to mouth at confluence with Yokum Brook (forming headwaters of West Branch Westfield River), Becket.	5.90	Miles	2
Dickinson Brook	MA32-34	Source, confluence of Trumble Brook and Seymour Brook, Granville to mouth at confluence with Munn Brook, Granville.	3.40	Miles	2
Factory Brook	MA32-42	Headwaters, east of Ridge Road, in Middlefield State Forest, Peru to mouth at confluence with West Branch Westfield River, Middlefield.	7.60	Miles	2
Fuller Brook	MA32-64	Headwaters, outlet wetland west at Mongue Road, Peru to mouth at confluence with Middle Branch Westfield River, Worthington.	4.20	Miles	2
Garnet Lake	MA32037	Peru.	17.00	Acres	3
Geer Brook	MA32-43	Headwaters, outlet Garnet Lake, Peru to mouth at confluence with Factory Brook, Middlefield.	1.80	Miles	3
Glendale Brook	MA32-10	Headwaters in a wetland in Peru State Forest, Peru to mouth at confluence with Middle Branch Westfield River, Middlefield.	6.00	Miles	2
Granville Reservoir	MA32038	Granville.	74.00	Acres	3
Great Brook	MA32-25	Source, outlet Congamond Lakes, Southwick to mouth at confluence with Westfield River, Westfield.	10.80	Miles	2
Hammond Pond	MA32040	Goshen.	38.00	Acres	3
Horse Pond	MA32043	Westfield.	24.00	Acres	5
Jacks Brook	MA32-39	Headwaters (perennial portion), east of Fowler Road, Westfield to inlet of Crane Pond/Little River, Westfield.	2.40	Miles	5
Kearnery Brook	MA32-46	Headwaters, north of Powell Road and east of FAA Road, Cummington to mouth at confluence with Bronson Brook, Worthington.	3.20	Miles	2
Kellog Brook	MA32-55	Headwaters (perennial portion), east of College Highway (Route 202), Southwick to mouth at confluence with Great Brook, Westfield.	2.80	Miles	3
Kinne Brook	MA32-32	Headwaters (perennial portion), north of Adams Road, Worthington to mouth at confluence with Middle Branch Westfield River, Chester.	4.00	Miles	2
Little River	MA32-08	Horton's Bridge, Westfield to confluence with Westfield River, Westfield.	4.90	Miles	5
Little River	MA32-16	Headwaters, confluence of Watts and Wards streams, Ringville (locality in Worthington), to mouth at confluence with Westfield River, Huntington.	5.70	Miles	5
Little River	MA32-35	Source, outlet of Cobble Mountain Reservoir, Russell to Springfield Water Works Intake Dam (NATID: MA00708) northwest of Gorge Road, Russell (formerly part of segment MA32-26).	2.60	Miles	3
Little River	MA32-36	From Springfield Water Works Intake Dam (NATID: MA00708) northwest of Gorge Road, Russell to Horton's Bridge, Westfield (formerly part of segment MA32-26).	5.80	Miles	5
Littleville Lake	MA32046	Chester/Huntington.	252.00	Acres	3

Appendix 1
Assessment units and integrated list categories presented alphabetically by major watershed

Water Body	Segment ID	Description	Size	Units	Category
Mclean Reservoir	MA32050	Holyoke.	55.00	Acres	3
Meadow Brook	MA32-11	Headwaters, outlet unnamed pond south of Route 116, Plainfield to mouth at confluence with Westfield River, Cummington.	4.60	Miles	2
Middle Branch Westfield River	MA32-03	Outlet Littleville Dam, Chester/Huntington to mouth at confluence with Westfield River, Huntington.	1.10	Miles	2
Middle Branch Westfield River	MA32-65	Source in Peru State Wildlife Management Area, north of Pierce Road, Peru to Kinnebrook Road, Dayville (locality in Chester).	13.70	Miles	5
Middle Branch Westfield River	MA32-66	From Kinnebrook Road, Dayville (locality in Chester) to inlet of Littleville Lake, just upstream from boat ramp (off southern end of Kinnebrook Road), Chester.	0.60	Miles	2
Mill Brook	MA32-49	Headwaters, south of Hawley Street, Plainfield to mouth at confluence with Westfield River, Cummington.	6.00	Miles	2
Miller Brook	MA32-27	Source, outlet small unnamed pond in Robinson State Park, north of North Street, Agawam to mouth at confluence with Westfield River, Agawam.	0.60	Miles	5
Moose Meadow Brook	MA32-40	Headwaters, west of Bungay Mountain, east of New State Road, Montgomery to inlet Westfield Reservoir, Montgomery (formerly part of segment MA32-23).	2.90	Miles	2
Moose Meadow Brook	MA32-41	Outlet Westfield Reservoir to mouth at confluence with Westfield River, Westfield (formerly part of segment MA32-23).	4.80	Miles	5
Munn Brook	MA32-59	Headwaters, outlet Winchell Reservoir, Granville to mouth at confluence with Little River, Westfield.	5.50	Miles	2
North Branch Swift River	MA32-54	Headwaters, outlet small unnamed pond west of Grant Street, Plainfield to mouth at confluence with Swift River, Cummington.	6.90	Miles	2
North Railroad Pond	MA32053	Holyoke.	9.00	Acres	3
Norwich Pond	MA32054	Huntington.	116.00	Acres	3
Paucatuck Brook	MA32-29	From outlet of Bearhole Reservoir, West Springfield to mouth at confluence with Westfield River, West Springfield.	1.50	Miles	2
Pequot Pond	MA32055	Westfield/Southampton.	155.00	Acres	5
Pond Brook	MA32-24	Headwaters, outlet Chapin Pond, Westfield to mouth at confluence with Powdermill Brook, Westfield.	3.90	Miles	2
Pond Brook	MA32-44	Headwaters, outlet Norwich Pond, Huntington to mouth at confluence with Westfield River, Huntington.	3.10	Miles	2
Potash Brook	MA32-22	Source, outlet Dunlap Pond, Blandford to mouth at confluence with Westfield River, Village of Woronoco, Russell.	5.20	Miles	5
Powdermill Brook	MA32-09	Headwaters, perennial portion northeast of Montgomery Road (west of Grindstone Mountain), Westfield to mouth at confluence with Westfield River, Westfield.	8.40	Miles	5
Roaring Brook	MA32-30	Headwaters (perennial portion), north of Horse Hill in Huntington State Forest, east of County Road, Huntington to mouth at confluence with Westfield River, Montgomery.	4.30	Miles	2
Roaring Brook	MA32-61	Headwaters, outlet small unnamed pond north of Lyman Road, Chester to mouth at confluence with West Branch Westfield River, Huntington.	4.50	Miles	2
Robin Hood Lake	MA32057	Becket.	63.00	Acres	3
Rudd Pond	MA32060	Becket.	72.00	Acres	3
Russell Pond	MA32061	Russell.	82.00	Acres	3

Appendix 1
Assessment units and integrated list categories presented alphabetically by major watershed

Water Body	Segment ID	Description	Size	Units	Category
Sanderson Brook	MA32-31	Headwaters (perennial portion), in the Chester/Blandford State Forest, north of Chester Road, Blandford to mouth at confluence with West Branch Westfield River, Chester.	2.70	Miles	2
Scout Pond	MA32063	Chesterfield.	37.00	Acres	3
Shaker Mill Brook	MA32-18	Headwaters, west of Watson Road, Washington to mouth at confluence with Depot Brook, Becket.	4.10	Miles	2
Shaw Brook	MA32-52	Headwaters, north of Shaw Road, Windsor to mouth at confluence with Westfield Brook, Windsor.	2.20	Miles	2
Stage Brook	MA32-60	Headwaters, confluence of Freeland Brook and Wigwam Brook, Russell to mouth at confluence with Black Brook (forming headwaters Bradley Brook), Russell.	1.00	Miles	2
Steep Bank Brook	MA32-53	Headwaters (perennial portion), northeast of Bates Road, Windsor to mouth at confluence with Westfield River, Windsor.	1.00	Miles	3
Stones Brook	MA32-48	Headwaters, outlet small unnamed pond north of Dyers Road, Ashfield to mouth at confluence with Swift River, Goshen.	4.70	Miles	2
Swift River	MA32-12	Headwaters, west of Plainfield Road, Hawley to mouth at confluence with Westfield River at village of Swift River, Cummington.	11.30	Miles	2
Tower Brook	MA32-47	Headwaters, north of Dodwells Road, Cummington to mouth at confluence with Westfield River, Chesterfield.	4.10	Miles	2
Walker Brook	MA32-20	Headwaters, outlet Center Pond (north of YMCA Road), Becket to mouth at confluence with West Branch Westfield River, Chester.	7.10	Miles	2
Wards Stream	MA32-15	Headwaters, south of Cold Street, Worthington to mouth at confluence with Watts Stream (forming headwaters Little River), Ringville (locality in Worthington).	5.10	Miles	2
Watts Stream	MA32-14	Headwaters, north of Buffington Hill Road, Worthington to mouth at confluence with Wards Stream (forming headwaters Little River), Ringville (locality in Worthington).	5.20	Miles	2
West Branch Westfield River	MA32-01	Headwaters, confluence of Depot Brook and Yokum Brook, Becket to mouth at confluence with Westfield River, Huntington (HQW qualifier applies to portion of river upstream of Chester Center).	17.20	Miles	2
West Falls Branch	MA32-13	Headwaters (perennial portion), at confluence with Bronson Brook, northeast at the intersection of Dingle Road and Route 143, Worthington to mouth at confluence with Westfield River near the village of West Chesterfield, Chesterfield. (formerly identified by the Massachusetts Stream Classification Program as West Branch).	2.90	Miles	5
Westfield Brook	MA32-51	Headwaters, outlet wetland north of Hill Cemetery Road, Windsor to mouth at confluence with Westfield River, Cummington.	8.60	Miles	2
Westfield Reservoir	MA32074	Montgomery.	40.00	Acres	3
Westfield River	MA32-04	Headwaters, confluence of Drowned Land Brook and Center Brook, Savoy to confluence with Middle Branch Westfield River, Huntington.	33.10	Miles	5
Westfield River	MA32-05	Confluence with Middle Branch Westfield River, Huntington to Route 20 bridge, Westfield.	17.70	Miles	2
Westfield River	MA32-06	Route 20 bridge, Westfield to Westfield city boundary with West Springfield and Agawam.	1.90	Miles	2
Westfield River	MA32-07	Westfield/West Springfield/Agawam city line to mouth at confluence with Connecticut River, Agawam.	8.50	Miles	2

Appendix 1
Assessment units and integrated list categories presented alphabetically by major watershed

Water Body	Segment ID	Description	Size	Units	Category
White Brook	MA32-28	Source just north of Route 147, Agawam to mouth at confluence with Westfield River, Agawam.	0.90	Miles	5
Windsor Pond	MA32076	Windsor.	46.00	Acres	5
Wright Pond	MA32078	Holyoke.	28.00	Acres	3
Yokum Brook	MA32-19	Headwaters, outlet Buckley-Dunton Lake, south of County Road, Becket to mouth at confluence with Depot Brook (forming headwaters of West Branch Westfield River), Becket.	4.00	Miles	2
Yokum Pond	MA32079	Becket.	98.00	Acres	3

Appendix 2
Impairments *added* to categories 4 or 5 of the integrated list in 2016
(waters listed alphabetically by major watershed)

Water Body	Segment ID	Category 2014	Category 2016	Impairment Cause	Explanation
Blackstone					
Blackstone River	MA51-04	5	5	(Aquatic Plants (Macrophytes)*)	Impairment added based on new data/assessment.
				(Non-Native Aquatic Plants*)	Impairment added based on new data/assessment.
				DDT in Fish Tissue	Impairment changed from "DDT" to "DDT in Fish Tissue".
Blackstone River	MA51-05	5	5	(Aquatic Plants (Macrophytes)*)	Impairment added based on new data/assessment.
				(Non-Native Aquatic Plants*)	Impairment added based on new data/assessment.
Blackstone River	MA51-06	5	5	DDT in Fish Tissue	Impairment changed from "DDT" to "DDT in Fish Tissue".
				Escherichia Coli (E. Coli)	Impairment added based on new data/assessment.
Coal Mine Brook	MA51-27	5	5	Escherichia Coli (E. Coli)	Impairment added based on new data/assessment.
Cronin Brook	MA51-45	--	5	Escherichia Coli (E. Coli)	New segment - Impairment added based on new data/assessment.
Fox Brook	MA51-39	--	5	Escherichia Coli (E. Coli)	New segment - Impairment added based on new data/assessment.
Kettle Brook	MA51-01	5	5	Escherichia Coli (E. Coli)	Impairment added based on new data/assessment.
Lake Quinsigamond	MA51125	4A	5	Enterococcus	Impairment added based on new data/assessment.
Muddy Brook	MA51-40	--	5	Escherichia Coli (E. Coli)	New segment - Impairment added based on new data/assessment.
Poor Farm Brook	MA51-17	5	5	Escherichia Coli (E. Coli)	Impairment added based on new data/assessment.
Singletary Brook	MA51-31	5	5	Escherichia Coli (E. Coli)	Impairment added based on new data/assessment.
Sutton Falls	MA51163	5	5	Harmful Algal Blooms	Impairment added based on new data/assessment.
Tatnuck Brook	MA51-15	5	5	Escherichia Coli (E. Coli)	Impairment added based on new data/assessment.
Unnamed Tributary	MA51-08	5	5	Escherichia Coli (E. Coli)	Impairment added based on new data/assessment.
Boston Harbor: Mystic					
Clay Pit Pond	MA71011	5	5	Chlordane in Fish Tissue	Impairment changed from "Chlordane" to "Chlordane in Fish Tissue".
Cummings Brook	MA71-10	3	5	Escherichia Coli (E. Coli)	Impairment added based on new data/assessment.
Ell Pond	MA71014	5	5	Harmful Algal Blooms	Impairment added based on new data/assessment.
Fellsmere Pond	MA71016	--	5	Harmful Algal Blooms	New segment - Impairment added based on new data/assessment.
Horn Pond	MA71019	5	5	Harmful Algal Blooms	Impairment changed from "Excess Algal Growth" to "Harmful Algal Blooms".
Little Pond	MA71024	--	5	Harmful Algal Blooms	New segment - Impairment added based on new data/assessment.
Lower Mystic Lake	MA71027	5	5	DDT in Fish Tissue	Impairment changed from "DDT" to "DDT in Fish Tissue".
Malden River	MA71-05	5	5	Chlordane in Fish Tissue	Impairment changed from "Chlordane" to "Chlordane in Fish Tissue".
				DDT in Fish Tissue	Impairment changed from "DDT" to "DDT in Fish Tissue".
Munroe Brook	MA71-15	--	5	Escherichia Coli (E. Coli)	New segment - Impairment added based on new data/assessment.

Appendix 2
Impairments *added* to categories 4 or 5 of the integrated list in 2016
(waters listed alphabetically by major watershed)

Water Body	Segment ID	Category 2014	Category 2016	Impairment Cause	Explanation
Mystic River	MA71-02	5	5	(Non-Native Aquatic Plants*)	Impairment added based on new data/assessment.
				Chlordane in Fish Tissue	Impairment changed from "Chlordane" to "Chlordane in Fish Tissue".
				DDT in Fish Tissue	Impairment changed from "DDT" to "DDT in Fish Tissue".
Shaker Glen Brook	MA71-11	3	5	Escherichia Coli (E. Coli)	Impairment added based on new data/assessment.
Spy Pond	MA71040	5	5	Chlordane in Fish Tissue	Impairment changed from "Chlordane" to "Chlordane in Fish Tissue".
				DDT in Fish Tissue	Impairment changed from "DDT" to "DDT in Fish Tissue".
				Harmful Algal Blooms	Impairment changed from "Excess Algal Growth" to "Harmful Algal Blooms".
Upper Mystic Lake	MA71043	5	5	Enterococcus	Impairment added based on new data/assessment.
Wedge Pond	MA71045	5	5	Harmful Algal Blooms	Impairment added based on new data/assessment.
Boston Harbor: Neponset					
East Branch	MA73-05	5	5	DDT in Fish Tissue	Impairment changed from "DDT" to "DDT in Fish Tissue".
Mother Brook	MA73-28	5	5	(Debris*)	Impairment added based on new data/assessment.
				(Trash*)	Impairment added based on new data/assessment.
				DDT in Fish Tissue	Impairment changed from "DDT" to "DDT in Fish Tissue".
Neponset River	MA73-01	5	5	DDT in Fish Tissue	Impairment changed from "DDT" to "DDT in Fish Tissue".
				Nutrient/Eutrophication Biological Indicators	Impairment added based on new data/assessment. Public comments by Neponset River Watershed Association.
Neponset River	MA73-02	5	5	DDT in Fish Tissue	Impairment changed from "DDT" to "DDT in Fish Tissue".
Neponset River	MA73-03	5	5	DDT in Fish Tissue	Impairment changed from "DDT" to "DDT in Fish Tissue".
Pinewood Pond	MA73039	4C	4C	(Aquatic Plants (Macrophytes)*)	Impairment added based on new data/assessment.
Plantingfield Brook	MA73-23	4C	5	Escherichia Coli (E. Coli)	Impairment added based on new data/assessment.
Purgatory Brook	MA73-24	4A	4A	(Debris*)	Impairment added based on new data/assessment.
				(Trash*)	Impairment added based on new data/assessment.
Steep Hill Brook	MA73-18	3	5	Escherichia Coli (E. Coli)	Impairment added based on new data/assessment.
Unnamed Tributary	MA73-34	2	4C	(Debris*)	Impairment added based on new data/assessment.
				(Trash*)	Impairment added based on new data/assessment.
Boston Harbor: Weymouth & Weir					
Cochato River	MA74-06	5	5	Chlordane in Fish Tissue	Impairment changed from "Chlordane" to "Chlordane in Fish Tissue".
				DDT in Fish Tissue	Impairment changed from "DDT" to "DDT in Fish Tissue".
				Escherichia Coli (E. Coli)	Impairment added based on new data/assessment.
Cranberry Brook	MA74-22	--	5	Escherichia Coli (E. Coli)	New segment - Impairment added based on new data/assessment.
Farm River	MA74-07	3	5	Escherichia Coli (E. Coli)	Impairment added based on new data/assessment.
Furnace Brook	MA74-10	5	5	Escherichia Coli (E. Coli)	Impairment added based on new data/assessment.

Appendix 2
Impairments *added* to categories 4 or 5 of the integrated list in 2016
(waters listed alphabetically by major watershed)

Water Body	Segment ID	Category 2014	Category 2016	Impairment Cause	Explanation
Hingham Harbor	MA74-18	5	5	Escherichia Coli (E. Coli)	Impairment added based on new data/assessment.
Mary Lee Brook	MA74-23	--	5	Escherichia Coli (E. Coli)	New segment - Impairment added based on new data/assessment.
Mill River	MA74-04	5	5	Escherichia Coli (E. Coli)	Impairment added based on new data/assessment.
Monatiquot River	MA74-08	5	5	Escherichia Coli (E. Coli)	Impairment added based on new data/assessment.
Old Swamp River	MA74-03	5	5	Escherichia Coli (E. Coli)	Impairment added based on new data/assessment.
Plymouth River	MA74-20	--	5	Escherichia Coli (E. Coli)	New segment - Impairment added based on new data/assessment.
Sylvan Lake	MA74021	5	5	Chlordane in Fish Tissue	Impairment changed from "Chlordane" to "Chlordane in Fish Tissue".
				DDT in Fish Tissue	Impairment changed from "DDT" to "DDT in Fish Tissue".
Town Brook	MA74-09	5	5	Escherichia Coli (E. Coli)	Impairment added based on new data/assessment.
Town River Bay	MA74-15	5	5	Enterococcus	Impairment added based on new data/assessment.
Weir River	MA74-02	5	5	Escherichia Coli (E. Coli)	Impairment added based on new data/assessment. Review comments by EPA.
Weymouth Back River	MA74-05	5	5	Escherichia Coli (E. Coli)	Impairment added based on new data/assessment.
Weymouth Fore River	MA74-14	5	5	Enterococcus	Impairment added based on new data/assessment.
Whitmans Pond	MA74025	5	5	DDT in Fish Tissue	Impairment changed from "DDT" to "DDT in Fish Tissue".
Buzzards Bay					
Acushnet River	MA95-32	5	5	Benthic Macroinvertebrates	Impairment added based on new data/assessment.
Acushnet River	MA95-33	5	5	Nutrient/Eutrophication Biological Indicators	Impairment added based on new data/assessment.
Angeline Brook	MA95-83	--	5	Enterococcus	New segment - Impairment added based on new data/assessment.
Apponagansett Bay	MA95-39	5	5	Estuarine Bioassessments	Impairment added based on new data/assessment.
				Nutrient/Eutrophication Biological Indicators	Impairment added based on new data/assessment.
Dunham Pond	MA95044	3	5	Chlorophyll-a	Impairment added based on new data/assessment.
				Transparency / Clarity	Impairment added based on new data/assessment.
East Branch Westport River	MA95-41	5	5	Nutrient/Eutrophication Biological Indicators	Impairment added based on new data/assessment.
Fiddlers Cove	MA95-79	5	5	Dissolved Oxygen	Impairment added based on new data/assessment.
				Estuarine Bioassessments	Impairment added based on new data/assessment.
				Fecal Coliform	Impairment added based on new data/assessment.
				Nitrogen, Total	Impairment added based on new data/assessment. Public comments by Buzzards Bay Coalition.
Halfway Pond	MA95178	3	5	Harmful Algal Blooms	Impairment added based on new data/assessment.
inner Sippican Harbor	MA95-70	5	5	Estuarine Bioassessments	Impairment added based on new data/assessment.
Kirby Brook	MA95-82	--	5	Enterococcus	New segment - Impairment added based on new data/assessment.

Appendix 2
Impairments *added* to categories 4 or 5 of the integrated list in 2016
(waters listed alphabetically by major watershed)

Water Body	Segment ID	Category 2014	Category 2016	Impairment Cause	Explanation
Leonards Pond	MA95080	3	5	(Aquatic Plants (Macrophytes)*)	Impairment added based on new data/assessment.
				(Non-Native Aquatic Plants*)	Impairment added based on new data/assessment.
				Chlorophyll-a	Impairment added based on new data/assessment.
				Transparency / Clarity	Impairment added based on new data/assessment.
Mattapoisett River	MA95-36	3	5	Enterococcus	Impairment added based on new data/assessment.
				Escherichia Coli (E. Coli)	Impairment added based on new data/assessment.
Megansett Harbor	MA95-19	5	5	Fecal Coliform	Impairment added based on new data/assessment.
New Bedford Inner Harbor	MA95-42	5	5	Nutrient/Eutrophication Biological Indicators	Impairment added based on new data/assessment.
New Bedford Reservoir	MA95110	5	5	(Aquatic Plants (Macrophytes)*)	Impairment added based on new data/assessment.
				DDT in Fish Tissue	Impairment changed from "DDT" to "DDT in Fish Tissue".
				Nutrient/Eutrophication Biological Indicators	Impairment added based on new data/assessment.
Paskamanset River	MA95-11	3	5	Combined Biota/Habitat Bioassessments	Impairment added based on new data/assessment.
				Enterococcus	Impairment added based on new data/assessment.
				Escherichia Coli (E. Coli)	Impairment added based on new data/assessment.
Queen Sewell Pond	MA95180	2	5	Harmful Algal Blooms	Impairment added based on new data/assessment.
Quissett Harbor	MA95-25	4A	5	Estuarine Bioassessments	Impairment added based on new data/assessment.
				Nitrogen, Total	Impairment added based on new data/assessment.
				Nutrient/Eutrophication Biological Indicators	Impairment added based on new data/assessment.
Rands Harbor	MA95-78	5	5	Estuarine Bioassessments	Impairment added based on new data/assessment.
				Fecal Coliform	Impairment added based on new data/assessment.
				Nitrogen, Total	Impairment added based on new data/assessment. Public comments by Buzzards Bay Coalition.
Sampson Pond	MA95125	5	5	(Non-Native Fish/Shellfish/Zooplankton*)	Impairment added based on new data/assessment.
				DDT in Fish Tissue	Impairment changed from "DDT" to "DDT in Fish Tissue".
Shingle Island River	MA95-12	3	5	Enterococcus	Impairment added based on new data/assessment.
Sippican River	MA95-06	5	5	Enterococcus	Impairment added based on new data/assessment.
Slocums River	MA95-34	5	5	Nutrient/Eutrophication Biological Indicators	Impairment added based on new data/assessment.
West Branch Westport River	MA95-37	5	5	Nutrient/Eutrophication Biological Indicators	Impairment added based on new data/assessment.
Weweantic River	MA95-04	2	5	(Non-Native Aquatic Plants*)	Historic impairment from former segment (MA95150) transferred to this segment.
				Enterococcus	Impairment added based on new data/assessment.
Wild Harbor	MA95-20	4A	5	Estuarine Bioassessments	Impairment added based on new data/assessment.
				Nitrogen, Total	Impairment added based on new data/assessment. Public comments by Buzzards Bay Coalition.
				Nutrient/Eutrophication Biological Indicators	Impairment added based on new data/assessment.

Appendix 2
Impairments *added* to categories 4 or 5 of the integrated list in 2016
(waters listed alphabetically by major watershed)

Water Body	Segment ID	Category 2014	Category 2016	Impairment Cause	Explanation
Cape Cod					
Allens Harbor	MA96-95	--	5	Fecal Coliform	New segment - Impairment added based on new data/assessment.
Chase Garden Creek	MA96-103	--	5	Escherichia Coli (E. Coli)	New segment - Impairment added based on new data/assessment.
Cliff Pond	MA96039	3	5	Harmful Algal Blooms	Impairment added based on new data/assessment.
Hamblin Pond	MA96126	5	5	Harmful Algal Blooms	Impairment added based on new data/assessment.
Hawes Run	MA96-101	--	4C	(Debris*)	New segment - Impairment added based on new data/assessment.
				(Trash*)	New segment - Impairment added based on new data/assessment.
Little River	MA96-99	--	5	Escherichia Coli (E. Coli)	New segment - Impairment added based on new data/assessment.
Lovells Pond	MA96185	5	5	Harmful Algal Blooms	Impairment changed from "Excess Algal Growth" to "Harmful Algal Blooms".
				Turbidity	Impairment added based on new data/assessment.
Middle Pond	MA96198	5	5	Harmful Algal Blooms	Impairment added based on new data/assessment.
Moll Pond	MA96355	--	5	Harmful Algal Blooms	New segment - Impairment added based on new data/assessment.
Red Lily Pond	MA96257	5	5	(Aquatic Plants (Macrophytes)*)	Impairment added based on new data/assessment.
Red River	MA96-107	--	5	Escherichia Coli (E. Coli)	New segment - Impairment added based on new data/assessment.
Round Cove	MA96-75	4A	5	Fecal Coliform	Impairment added based on new data/assessment.
Santuit Pond	MA96277	5	5	Harmful Algal Blooms	Impairment changed from "Excess Algal Growth" to "Harmful Algal Blooms".
Uncle Harvey Pond	MA96319	--	5	Harmful Algal Blooms	New segment - Impairment added based on new data/assessment.
Unnamed Tributary	MA96-100	--	5	Escherichia Coli (E. Coli)	New segment - Impairment added based on new data/assessment.
Unnamed Tributary	MA96-104	--	5	Escherichia Coli (E. Coli)	New segment - Impairment added based on new data/assessment.
Unnamed Tributary	MA96-108	--	5	Escherichia Coli (E. Coli)	New segment - Impairment added based on new data/assessment.
Walkers Pond	MA96331	5	5	Chlorophyll-a	Impairment added based on new data/assessment.
				Harmful Algal Blooms	Impairment added based on new data/assessment.
Whites Brook	MA96-102	--	5	Escherichia Coli (E. Coli)	New segment - Impairment added based on new data/assessment.
Wychmere Harbor	MA96-96	--	5	Fecal Coliform	New segment - Impairment added based on new data/assessment.

* TMDL not required (Non-pollutant)

Appendix 2
Impairments *added* to categories 4 or 5 of the integrated list in 2016
(waters listed alphabetically by major watershed)

Water Body	Segment ID	Category 2014	Category 2016	Impairment Cause	Explanation
Charles					
Cambridge Reservoir	MA72014	3	5	Chloride	Impairment added based on new data/assessment. Public comments by EPA, City of Cambridge Water Department, and Charles River Watershed Association.
Cambridge Reservoir, Upper Basin	MA72156	5	5	Chloride	Impairment added based on new data/assessment. Public comments by EPA, City of Cambridge Water Department, and Charles River Watershed Association.
Charles River	MA72-03	5	5	DDT in Fish Tissue	Impairment changed from "DDT" to "DDT in Fish Tissue".
Charles River	MA72-04	5	5	Chlordane in Fish Tissue	Impairment changed from "Chlordane" to "Chlordane in Fish Tissue".
				DDT in Fish Tissue	Impairment changed from "DDT" to "DDT in Fish Tissue".
Charles River	MA72-05	5	5	Chlordane in Fish Tissue	Impairment changed from "Chlordane" to "Chlordane in Fish Tissue".
				DDT in Fish Tissue	Impairment changed from "DDT" to "DDT in Fish Tissue".
Charles River	MA72-06	5	5	DDT in Fish Tissue	Impairment changed from "DDT" to "DDT in Fish Tissue".
Charles River	MA72-07	5	5	DDT in Fish Tissue	Impairment changed from "DDT" to "DDT in Fish Tissue".
Charles River	MA72-36	5	5	DDT in Fish Tissue	Impairment changed from "DDT" to "DDT in Fish Tissue".
Charles River	MA72-38	5	5	DDT in Fish Tissue	Impairment changed from "DDT" to "DDT in Fish Tissue".
Chicken Brook	MA72-34	2	5	Escherichia Coli (E. Coli)	Impairment added based on new data/assessment.
Crystal Lake	MA72030	3	5	Harmful Algal Blooms	Impairment added based on new data/assessment.
Hobbs Brook	MA72-45	--	5	Chloride	New segment - Impairment added based on new data/assessment. Public comments by EPA, City of Cambridge Water Department, and Charles River Watershed Association.
Hobbs Brook	MA72-46	--	5	Chloride	New segment - Impairment added based on new data/assessment. Public comments by EPA, City of Cambridge Water Department, and Charles River Watershed Association.
Hopping Brook	MA72-35	2	5	Escherichia Coli (E. Coli)	Impairment added based on new data/assessment.
Mine Brook	MA72-14	5	5	Escherichia Coli (E. Coli)	Impairment added based on new data/assessment.
Muddy River	MA72-11	5	5	DDT in Fish Tissue	Impairment changed from "DDT" to "DDT in Fish Tissue".
Populatic Pond	MA72096	5	5	Chlordane in Fish Tissue	Impairment changed from "Chlordane" to "Chlordane in Fish Tissue".
				DDT in Fish Tissue	Impairment changed from "DDT" to "DDT in Fish Tissue".
Seaverns Brook	MA72-44	--	5	Escherichia Coli (E. Coli)	New segment - Impairment added based on new data/assessment.
Unnamed Tributary	MA72-31	5	5	(Debris*)	Impairment added based on new data/assessment.
				(Trash*)	Impairment added based on new data/assessment.
				Turbidity	Impairment added based on new data/assessment.
Unnamed Tributary	MA72-41	--	5	Escherichia Coli (E. Coli)	New segment - Impairment added based on new data/assessment.

Appendix 2
Impairments *added* to categories 4 or 5 of the integrated list in 2016
(waters listed alphabetically by major watershed)

Water Body	Segment ID	Category 2014	Category 2016	Impairment Cause	Explanation
Unnamed Tributary	MA72-43	--	5	Escherichia Coli (E. Coli)	New segment - Impairment added based on new data/assessment.
Unnamed Tributary	MA72-47	--	5	Chloride	New segment - Impairment added based on new data/assessment. Public comments by EPA, City of Cambridge Water Department, and Charles River Watershed Association.
Unnamed Tributary	MA72-48	--	5	Chloride	New segment - Impairment added based on new data/assessment. Public comments by EPA, City of Cambridge Water Department, and Charles River Watershed Association.
Chicopee					
Abbey Brook	MA36-40	5	5	Escherichia Coli (E. Coli)	Impairment added based on new data/assessment.
Chicopee Brook	MA36-21	3	5	Escherichia Coli (E. Coli)	Impairment added based on new data/assessment.
Chicopee River	MA36-24	5	5	Escherichia Coli (E. Coli)	Impairment added based on new data/assessment.
Danforth Brook	MA36-50	--	5	Escherichia Coli (E. Coli)	New segment - Impairment added based on new data/assessment.
Forget-Me-Not Brook	MA36-18	2	5	Escherichia Coli (E. Coli)	Impairment added based on new data/assessment.
Lake Lorraine	MA36084	4C	5	Enterococcus	Impairment added based on new data/assessment.
Prince River	MA36-08	3	5	Escherichia Coli (E. Coli)	Impairment added based on new data/assessment.
Quaboag River	MA36-15	2	5	Escherichia Coli (E. Coli)	Impairment added based on new data/assessment.
Quaboag River	MA36-16	5	5	Escherichia Coli (E. Coli)	Impairment added based on new data/assessment.
Sevenmile River	MA36-11	2	5	Escherichia Coli (E. Coli)	Impairment added based on new data/assessment.
Sevenmile River	MA36-12	2	5	Escherichia Coli (E. Coli)	Impairment added based on new data/assessment.
Unnamed Tributary	MA36-39	5	5	(Bacterial Slimes*)	Impairment added based on new data/assessment.
				(Debris*)	Impairment added based on new data/assessment.
				(Trash*)	Impairment added based on new data/assessment.
Ware River	MA36-06	5	5	Escherichia Coli (E. Coli)	Impairment added based on new data/assessment.
Concord (SuAsCo)					
Assabet River	MA82B-02	5	5	(Aquatic Plants (Macrophytes)*)	Impairment added based on new data/assessment.
				Escherichia Coli (E. Coli)	Impairment added based on new data/assessment.
Assabet River	MA82B-03	5	5	Escherichia Coli (E. Coli)	Impairment added based on new data/assessment.
Assabet River	MA82B-04	5	5	Escherichia Coli (E. Coli)	Impairment added based on new data/assessment.
Assabet River	MA82B-05	5	5	Escherichia Coli (E. Coli)	Impairment added based on new data/assessment.
Assabet River	MA82B-07	5	5	Escherichia Coli (E. Coli)	Impairment added based on new data/assessment.
Assabet River Reservoir	MA82004	5	5	Dissolved Oxygen	TMDL [CN 201.0; 9/23/2004] removed from this impairment due to clerical error.
				Dissolved Oxygen Supersaturation	TMDL [CN 201.0; 9/23/2004] removed from this impairment due to clerical error.
Beaver Brook	MA82A-34	--	5	Escherichia Coli (E. Coli)	New segment - Impairment added based on new data/assessment.

Appendix 2
Impairments *added* to categories 4 or 5 of the integrated list in 2016
(waters listed alphabetically by major watershed)

Water Body	Segment ID	Category 2014	Category 2016	Impairment Cause	Explanation
Coles Brook	MA82B-22	--	5	Escherichia Coli (E. Coli)	New segment - Impairment added based on new data/assessment.
Concord River	MA82A-07	5	5	Escherichia Coli (E. Coli)	Impairment added based on new data/assessment.
Concord River	MA82A-09	5	5	Escherichia Coli (E. Coli)	Impairment added based on new data/assessment.
				Turbidity	Impairment added based on new data/assessment.
Dean Park Pond	MA82026	--	5	Harmful Algal Blooms	New segment - Impairment added based on new data/assessment.
Elizabeth Brook	MA82B-12	5	5	Escherichia Coli (E. Coli)	Impairment added based on new data/assessment.
Fort Meadow Reservoir	MA82042	5	5	Chlordane in Fish Tissue	Impairment changed from "Chlordane" to "Chlordane in Fish Tissue".
Hop Brook	MA82A-05	5	5	(Non-Native Aquatic Plants*)	Historic impairment from former segment (MA82104) transferred to this segment.
				Aquatic Plants (Macrophytes)	Historic impairment from former segment (MA82104) transferred to this segment.
				Escherichia Coli (E. Coli)	Impairment added based on new data/assessment.
				Turbidity	Historic impairment from former segment (MA82104) transferred to this segment.
Hop Brook	MA82A-06	5	5	Nutrient/Eutrophication Biological Indicators	Impairment added based on new data/assessment. Public comments by Organization for the Assabet, Sudbury, and Concord Rivers.
Nashoba Brook	MA82B-14	5	5	Escherichia Coli (E. Coli)	Impairment added based on new data/assessment.
River Meadow Brook	MA82A-10	5	5	Escherichia Coli (E. Coli)	Impairment added based on new data/assessment.
Sudbury River	MA82A-03	5	5	Escherichia Coli (E. Coli)	Impairment added based on new data/assessment.
Sudbury River	MA82A-25	5	5	Escherichia Coli (E. Coli)	Impairment added based on new data/assessment.
Unnamed Tributary	MA82A-22	5	5	(Debris*)	Impairment added based on new data/assessment.
				(Trash*)	Impairment added based on new data/assessment.
				Escherichia Coli (E. Coli)	Impairment added based on new data/assessment.
Unnamed Tributary	MA82A-31	--	4C	(Flow Regime Modification*)	New segment - Historic impairment from former segment (MA82096) transferred to this segment.
				(Non-Native Aquatic Plants*)	New segment - Historic impairment from former segment (MA82096) transferred to this segment.
Connecticut					
Bachelor Brook	MA34-07	4A	5	Escherichia Coli (E. Coli)	Impairment added based on new data/assessment.
Connecticut River	MA34-03	5	5	Escherichia Coli (E. Coli)	Impairment added based on new data/assessment.
Longmeadow Brook	MA34-21	3	5	(Debris*)	Impairment added based on new data/assessment.
				(Trash*)	Impairment added based on new data/assessment.
				Escherichia Coli (E. Coli)	Impairment added based on new data/assessment.
				Phosphorus, Total	Impairment added based on new data/assessment.
				Turbidity	Impairment added based on new data/assessment .

* TMDL not required (Non-pollutant)

Appendix 2
Impairments *added* to categories 4 or 5 of the integrated list in 2016
(waters listed alphabetically by major watershed)

Water Body	Segment ID	Category 2014	Category 2016	Impairment Cause	Explanation
Mill River	MA34-29	5	5	(Debris*)	Impairment added based on new data/assessment.
				(Trash*)	Impairment added based on new data/assessment.
				Odor	Impairment added based on new data/assessment.
Scantic River	MA34-30	2	5	Escherichia Coli (E. Coli)	Impairment added based on new data/assessment.
Unnamed Tributary	MA34-60	--	5	Escherichia Coli (E. Coli)	New segment - Impairment added based on new data/assessment.
Deerfield					
Bear River	MA33-17	2	5	Temperature	Impairment added based on new data/assessment.
Cherry Rum Brook	MA33-97	--	5	Benthic Macroinvertebrates	New segment - Impairment added based on new data/assessment.
Davis Mine Brook	MA33-18	5	5	Fish Bioassessments	Impairment added based on new data/assessment.
Deerfield River	MA33-01	2	4C	(Flow Regime Modification*)	Impairment added based on new data/assessment.
Deerfield River	MA33-03	2	5	Escherichia Coli (E. Coli)	Impairment added based on new data/assessment.
Deerfield River	MA33-04	2	5	Escherichia Coli (E. Coli)	Impairment added based on new data/assessment.
Dragon Brook	MA33-20	3	5	Temperature	Impairment added based on new data/assessment.
East Branch North River	MA33-19	2	5	Escherichia Coli (E. Coli)	Impairment added based on new data/assessment.
Green River	MA33-30	5	5	Escherichia Coli (E. Coli)	Impairment added based on new data/assessment.
				Turbidity	Impairment added based on new data/assessment.
Hinsdale Brook	MA33-21	3	5	Escherichia Coli (E. Coli)	Impairment added based on new data/assessment.
Johnson Brook	MA33-131	--	4C	(Dewatering*)	New segment - Impairment added based on new data/assessment.
Mill Brook	MA33-70	--	5	Benthic Macroinvertebrates	New segment - Impairment added based on new data/assessment.
South River	MA33-07	2	5	Temperature	Impairment added based on new data/assessment.
South River	MA33-101	--	5	Escherichia Coli (E. Coli)	New segment - Impairment added based on new data/assessment.
				Fecal Coliform	New segment - Historic impairment from former segment (MA33-08) transferred to this segment.
South River	MA33-102	--	5	(Physical substrate habitat alterations*)	New segment - Historic impairment from former segment (MA33-08) transferred to this segment.
				Escherichia Coli (E. Coli)	New segment - Impairment added based on new data/assessment.
				Fecal Coliform	New segment - Historic impairment from former segment (MA33-08) transferred to this segment.
Farmington					
Benton Brook	MA31-11	2	5	Benthic Macroinvertebrates	Impairment added based on new data/assessment.
Cranberry Pond Brook	MA31-21	--	5	Lack of a coldwater assemblage	New segment - Impairment added based on new data/assessment.
Palmer Brook	MA31-29	--	5	Lack of a coldwater assemblage	New segment - Impairment added based on new data/assessment.

Appendix 2
Impairments *added* to categories 4 or 5 of the integrated list in 2016
(waters listed alphabetically by major watershed)

Water Body	Segment ID	Category 2014	Category 2016	Impairment Cause	Explanation
Pond Brook	MA31-33	--	5	Lack of a coldwater assemblage	New segment - Impairment added based on new data/assessment.
Spectacle Pond Brook	MA31-27	--	5	Lack of a coldwater assemblage	New segment - Impairment added based on new data/assessment.
Thomas Brook	MA31-06	3	5	Lack of a coldwater assemblage	Impairment added based on new data/assessment.
West Branch Farmington River	MA31-01	5	5	Temperature	Impairment added based on new data/assessment.
French					
Carbuncle Pond	MA42008	3	5	Harmful Algal Blooms	Impairment added based on new data/assessment.
Webster Lake	MA42064	4C	5	(Non-Native Fish/Shellfish/Zooplankton*)	Impairment added based on new data/assessment.
				Dissolved Oxygen	Impairment added based on new data/assessment.
Wellington Brook	MA42-11	2	5	Escherichia Coli (E. Coli)	Impairment added based on new data/assessment.
Housatonic					
East Branch Housatonic River	MA21-02	5	5	Escherichia Coli (E. Coli)	Impairment added based on new data/assessment.
Housatonic River	MA21-04	5	5	Escherichia Coli (E. Coli)	Impairment added based on new data/assessment.
Karner Brook	MA21-38	--	4C	(Dewatering*)	New segment - Historic impairment from former segment (MA21-16) transferred to this segment.
Karner Brook	MA21-39	--	4C	(Dewatering*)	New segment - Historic impairment from former segment (MA21-16) transferred to this segment.
Southwest Branch Housatonic River	MA21-17	5	5	Escherichia Coli (E. Coli)	Impairment added based on new data/assessment.
West Branch Housatonic River	MA21-18	5	5	Escherichia Coli (E. Coli)	Impairment added based on new data/assessment.
Hudson: Hoosic					
Hoosic River	MA11-03	5	5	(Other anthropogenic substrate alterations*)	Impairment changed from "(Physical substrate habitat alterations*)" to "(Other anthropogenic substrate alterations*)".
				Escherichia Coli (E. Coli)	Impairment added based on new data/assessment.
Hoosic River	MA11-05	5	5	Escherichia Coli (E. Coli)	Impairment added based on new data/assessment.
				Nutrient/Eutrophication Biological Indicators	Impairment added due to clerical error/earlier omission.
North Branch Hoosic River	MA11-01	2	5	Temperature	Impairment added based on new data/assessment.
North Branch Hoosic River	MA11-02	5	5	Escherichia Coli (E. Coli)	Impairment added based on new data/assessment.
Paull Brook	MA11-20	5	4C	(Dewatering*)	Impairment added based on new data/assessment.
Ipswich					
Fish Brook	MA92-14	2	5	Escherichia Coli (E. Coli)	Impairment added based on new data/assessment.
Gravelly Brook	MA92-18	2	5	Benthic Macroinvertebrates	Impairment added based on new data/assessment.
Howlett Brook	MA92-17	5	5	Escherichia Coli (E. Coli)	Impairment added based on new data/assessment.
Kimball Brook	MA92-21	5	5	Escherichia Coli (E. Coli)	Impairment added based on new data/assessment.

Appendix 2
Impairments *added* to categories 4 or 5 of the integrated list in 2016
(waters listed alphabetically by major watershed)

Water Body	Segment ID	Category 2014	Category 2016	Impairment Cause	Explanation
Lubbers Brook	MA92-05	2	5	(Dewatering*)	Impairment added based on new data/assessment.
				Dissolved Oxygen	Impairment added based on new data/assessment.
				Escherichia Coli (E. Coli)	Impairment added based on new data/assessment.
Maple Meadow Brook	MA92-04	4C	5	Dissolved Oxygen	Impairment added based on new data/assessment.
Martins Brook	MA92-08	5	5	Escherichia Coli (E. Coli)	Impairment added based on new data/assessment.
Silver Lake	MA92059	5	5	DDT in Fish Tissue	Impairment changed from "DDT" to "DDT in Fish Tissue".
Unnamed Tributary	MA92-09	3	5	Fish Bioassessments	Impairment added based on new data/assessment.
Unnamed Tributary	MA92-12	5	5	Escherichia Coli (E. Coli)	Impairment added based on new data/assessment.
				Flocculant Masses	Impairment added based on new data/assessment.
				Oil And Grease	Impairment added based on new data/assessment.
				Scum/Foam	Impairment added based on new data/assessment.
Wenham Lake	MA92073	5	5	DDT in Fish Tissue	Impairment changed from "DDT" to "DDT in Fish Tissue".
Islands					
Chilmark Pond	MA97-05	5	5	Enterococcus	Impairment added based on new data/assessment.
				Estuarine Bioassessments	Impairment added based on new data/assessment.
				Nitrogen, Total	Impairment added based on new data/assessment.
				Nutrient/Eutrophication Biological Indicators	Impairment added based on new data/assessment.
Head of Hummock Pond	MA97035	--	5	Harmful Algal Blooms	New segment - Impairment added based on new data/assessment.
Lake Tashmoo	MA97-12	5	5	Dissolved Oxygen	Impairment added based on new data/assessment.
				Nitrogen, Total	Impairment added based on new data/assessment.
				Nutrient/Eutrophication Biological Indicators	Impairment added based on new data/assessment.
Oak Bluffs Harbor	MA97-07	5	5	(Other anthropogenic substrate alterations*)	Impairment added based on new data/assessment.
Sengekontacket Pond	MA97-10	2	5	Fecal Coliform	Impairment added based on new data/assessment.
Tisbury Great Pond	MA97-18	5	5	Dissolved Oxygen	Impairment added based on new data/assessment.
				Estuarine Bioassessments	Impairment added based on new data/assessment.
				Nitrogen, Total	Impairment added based on new data/assessment.
				Nutrient/Eutrophication Biological Indicators	Impairment added based on new data/assessment.
Vineyard Haven Harbor	MA97-09	5	5	Estuarine Bioassessments	Impairment added based on new data/assessment.
Merrimack					
Lake Attitash	MA84002	5	5	Harmful Algal Blooms	Impairment added based on new data/assessment.
Long Pond	MA84032	5	5	Harmful Algal Blooms	Impairment added based on new data/assessment.
Lowell Canals	MA84A-29	5	5	DDT in Fish Tissue	Impairment changed from "DDT" to "DDT in Fish Tissue".
Merrimack River	MA84A-01	5	5	Escherichia Coli (E. Coli)	Impairment added based on new data/assessment.
Nabnasset Pond	MA84044	4A	5	Harmful Algal Blooms	Impairment added based on new data/assessment.
South Branch Souhegan River	MA84A-31	2	5	Escherichia Coli (E. Coli)	Impairment added based on new data/assessment.
Stevens Pond	MA84064	5	5	Harmful Algal Blooms	Impairment added based on new data/assessment.

Appendix 2
Impairments *added* to categories 4 or 5 of the integrated list in 2016
(waters listed alphabetically by major watershed)

Water Body	Segment ID	Category 2014	Category 2016	Impairment Cause	Explanation
Millers					
Beaver Brook	MA35-28	--	5	PCBs In Fish Tissue	New segment - Impairment added based on existing DPH fish consumption advisory.
East Branch Tully River	MA35-29	--	5	PCBs In Fish Tissue	New segment - Historic impairment from former segment (MA35-12) transferred to this segment.
East Branch Tully River	MA35-30	--	5	PCBs In Fish Tissue	New segment - Historic impairment from former segment (MA35-12) transferred to this segment.
Ellinwood Brook	MA35-22	--	5	PCBs In Fish Tissue	New segment - Impairment added based on existing DPH fish consumption advisory.
Jacks Brook	MA35-31	--	5	PCBs In Fish Tissue	New segment - Impairment added based on existing DPH fish consumption advisory.
Keyup Brook	MA35-16	5	5	Escherichia Coli (E. Coli)	Impairment added based on new data/assessment.
Mahoney Brook	MA35-27	--	5	PCBs In Fish Tissue	New segment - Impairment added based on existing DPH fish consumption advisory.
Millers River	MA35-01	5	5	Lack of a coldwater assemblage	Impairment added based on new data/assessment.
				Temperature	Impairment added based on new data/assessment.
Millers River	MA35-20	3	5	Lack of a coldwater assemblage	Impairment added based on new data/assessment.
				Temperature	Impairment added based on new data/assessment.
North Pond Brook	MA35-23	--	5	PCBs In Fish Tissue	New segment - Impairment added based on existing DPH fish consumption advisory.
Otter River	MA35-06	2	5	Ambient Bioassays - Chronic Aquatic Toxicity	Impairment added based on new data/assessment.
				Dissolved Oxygen	Impairment added based on new data/assessment.
Stockwell Brook	MA35-25	--	5	PCBs In Fish Tissue	New segment - Impairment added based on existing DPH fish consumption advisory.
Tully Lake	MA35111	3	5	Harmful Algal Blooms	Impairment added based on new data/assessment.
Unnamed Tributary	MA35-26	--	5	Copper	New segment - Impairment added based on new data/assessment.
West Branch Tully River	MA35-11	5	5	Temperature	Impairment added based on new data/assessment.
West Gulf Brook	MA35-24	--	5	PCBs In Fish Tissue	New segment - Impairment added based on existing DPH fish consumption advisory.
Mount Hope Bay (Shore)					
Lewin Brook	MA61-09	--	5	Escherichia Coli (E. Coli)	New segment - Impairment added based on new data/assessment.
Quequechan River	MA61-05	4C	5	(Debris*)	Impairment added based on new data/assessment.
				(Trash*)	Impairment added based on new data/assessment.
				Algae	Impairment added based on new data/assessment.
				Dissolved Oxygen	Impairment added based on new data/assessment.
				Escherichia Coli (E. Coli)	Impairment added based on new data/assessment.
				Nutrient/Eutrophication Biological Indicators	Impairment added based on new data/assessment.

* TMDL not required (Non-pollutant)

Appendix 2
Impairments *added* to categories 4 or 5 of the integrated list in 2016
(waters listed alphabetically by major watershed)

Water Body	Segment ID	Category 2014	Category 2016	Impairment Cause	Explanation
Narragansett Bay (Shore)					
Bliss Brook	MA53-19	--	5	Escherichia Coli (E. Coli)	New segment - Impairment added based on new data/assessment.
Clear Run Brook	MA53-13	4A	5	Dissolved Oxygen	Impairment added based on new data/assessment.
Palmer River	MA53-22	--	5	Temperature	New segment - Impairment added based on new data/assessment.
Runnins River	MA53-20	--	5	Escherichia Coli (E. Coli)	New segment - Impairment added based on new data/assessment.
Shad Factory Pond	MA53005	--	5	(Dewatering*)	New segment - Historic impairment from former segment (MA53-04) transferred to this segment.
				Nutrient/Eutrophication Biological Indicators	New segment - Historic impairment from former segment (MA53-04) transferred to this segment.
Torrey Creek	MA53-14	3	4A	(Alteration in stream-side or littoral vegetative covers*)	Impairment added based on new data/assessment.
				(Habitat Assessment*)	Impairment added based on new data/assessment.
Unnamed Tributary	MA53-21	--	5	Escherichia Coli (E. Coli)	New segment - Impairment added based on new data/assessment.
Nashua					
Baker Brook	MA81-62	3	5	Escherichia Coli (E. Coli)	Impairment added based on new data/assessment.
Catacoonamug Brook	MA81-74	--	5	Escherichia Coli (E. Coli)	New segment - Impairment added based on new data/assessment.
Fall Brook	MA81-39	2	5	Escherichia Coli (E. Coli)	Impairment added based on new data/assessment.
Falulah Brook	MA81-63	3	5	Escherichia Coli (E. Coli)	Impairment added based on new data/assessment.
Gates Brook	MA81-24	5	5	Escherichia Coli (E. Coli)	Impairment added based on new data/assessment. Review comments by EPA.
Lake Shirley	MA81122	5	5	Harmful Algal Blooms	Impairment changed from "Excess Algal Growth" to "Harmful Algal Blooms".
Pearl Hill Brook	MA81-80	--	5	Enterococcus	New segment - Impairment added based on new data/assessment.
Stillwater River	MA81-31	2	5	Escherichia Coli (E. Coli)	Impairment added based on new data/assessment.
Wekepeke Brook	MA81-72	--	5	Escherichia Coli (E. Coli)	New segment - Historic impairment from former segment(s) (MA81008, MA81-61) transferred to this segment.
Willard Brook	MA81-79	--	5	Enterococcus	New segment - Impairment added based on new data/assessment.
North Coastal					
Beaver Brook	MA93-37	5	5	Escherichia Coli (E. Coli)	Impairment added based on new data/assessment.
Crane River	MA93-38	2	5	Escherichia Coli (E. Coli)	Impairment added based on new data/assessment.
Flax Pond	MA93023	5	5	Chlordane in Fish Tissue	Impairment changed from "Chlordane" to "Chlordane in Fish Tissue".
				DDT in Fish Tissue	Impairment changed from "DDT" to "DDT in Fish Tissue".
Foster Pond	MA93026	5	5	DDT in Fish Tissue	Impairment changed from "DDT" to "DDT in Fish Tissue".

Appendix 2
Impairments *added* to categories 4 or 5 of the integrated list in 2016
(waters listed alphabetically by major watershed)

Water Body	Segment ID	Category 2014	Category 2016	Impairment Cause	Explanation
Hawkes Brook	MA93-33	4A	4A	(Debris*)	Impairment added based on new data/assessment.
				(Trash*)	Impairment added based on new data/assessment.
Lake Quannapowitt	MA93060	5	5	DDT in Fish Tissue	Impairment changed from "DDT" to "DDT in Fish Tissue".
				Harmful Algal Blooms	Impairment changed from "Excess Algal Growth" to "Harmful Algal Blooms".
Unnamed Tributary	MA93-58	--	5	Escherichia Coli (E. Coli)	New segment - Impairment added based on new data/assessment.
Unnamed Tributary	MA93-59	--	5	Escherichia Coli (E. Coli)	New segment - Impairment added based on new data/assessment.
Quinebaug					
Cady Brook	MA41-06	5	5	Escherichia Coli (E. Coli)	Impairment added based on new data/assessment.
Quinebaug River	MA41-03	5	5	Escherichia Coli (E. Coli)	Impairment added based on new data/assessment.
West Brook	MA41-17	2	5	Escherichia Coli (E. Coli)	Impairment added based on new data/assessment.
Shawsheen					
Content Brook	MA83-09	2	5	Benthic Macroinvertebrates	Impairment added based on new data/assessment.
Elm Brook	MA83-24	--	5	(Physical substrate habitat alterations*)	New segment - Historic impairment from former segment (MA83-05) transferred to this segment.
				Sedimentation/Siltation	New segment - Impairment added based on new data/assessment.
Shawsheen River	MA83-08	5	5	Dissolved Oxygen	Impairment added based on new data/assessment.
Unnamed Tributary	MA83-15	5	5	(Dewatering*)	Impairment added based on new data/assessment.
Vine Brook	MA83-06	4A	5	Dissolved Oxygen	Impairment added based on new data/assessment.
				Turbidity	Historic impairment from former segment (MA83003) transferred to this segment.
Webb Brook	MA83-22	--	5	Escherichia Coli (E. Coli)	New segment - Impairment added based on new data/assessment.
South Coastal					
Cushing Brook	MA94-40	--	5	Escherichia Coli (E. Coli)	New segment - Impairment added based on new data/assessment.
Drinkwater River	MA94-21	5	5	(Debris*)	Historic impairment from former segment (MA94037) transferred to this segment.
				(Non-Native Aquatic Plants*)	Historic impairment from former segment (MA94037) transferred to this segment.
				(Trash*)	Historic impairment from former segment (MA94037) transferred to this segment.
				Chlorophyll-a	Historic impairment from former segment (MA94037) transferred to this segment.
				Dissolved Oxygen Supersaturation	Historic impairment from former segment (MA94037) transferred to this segment.

* TMDL not required (Non-pollutant)

Appendix 2
Impairments *added* to categories 4 or 5 of the integrated list in 2016
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Water Body	Segment ID	Category 2014	Category 2016	Impairment Cause	Explanation
Eel River	MA94-37	--	4C	(Fish Passage Barrier*)	New segment - Historic impairment from former segment (MA94-23) transferred to this segment.
				(Non-Native Aquatic Plants*)	New segment - Historic impairment from former segment (MA94-23) transferred to this segment.
Eel River	MA94-38	--	4C	(Fish Passage Barrier*)	New segment - Historic impairment from former segment (MA94-23) transferred to this segment.
				(Non-Native Aquatic Plants*)	New segment - Historic impairment from former segment (MA94-23) transferred to this segment.
Indian Head Pond	MA94071	3	5	Harmful Algal Blooms	Impairment added based on new data/assessment.
Indian Head River	MA94-04	5	5	Escherichia Coli (E. Coli)	Impairment added based on new data/assessment.
Longwater Brook	MA94-39	--	5	Escherichia Coli (E. Coli)	New segment - Impairment added based on new data/assessment.
Oldham Pond	MA94114	4C	5	Harmful Algal Blooms	Impairment added based on new data/assessment.
Savery Pond	MA94136	2	5	Harmful Algal Blooms	Impairment added based on new data/assessment.
Wampatuck Pond	MA94168	5	5	Harmful Algal Blooms	Impairment changed from "Excess Algal Growth" to "Harmful Algal Blooms".
Taunton					
Glue Factory Pond	MA62078	--	5	(Physical substrate habitat alterations*)	New segment - Historic impairment from former segment (MA62-39) transferred to this segment.
				Benthic Macroinvertebrates	New segment - Historic impairment from former segment (MA62-39) transferred to this segment.
				Fish Bioassessments	New segment - Historic impairment from former segment (MA62-39) transferred to this segment.
				Sedimentation/Siltation	New segment - Historic impairment from former segment (MA62-39) transferred to this segment.
Mill River	MA62-29	3	4C	(Non-Native Aquatic Plants*)	Historic impairment from former segment (MA62228) transferred to this segment.
Monponsett Pond, East Basin	MA62218	4A	5	Chlorophyll-a	Impairment added based on new data/assessment.
				Harmful Algal Blooms	Impairment added based on new data/assessment.
Monponsett Pond, West Basin	MA62119	5	5	Chlorophyll-a	Impairment added based on new data/assessment.
				Harmful Algal Blooms	Impairment changed from "Excess Algal Growth" to "Harmful Algal Blooms".
Queset Brook	MA62-67	--	4C	(Non-Native Aquatic Plants*)	New segment - Historic impairment from former segment (MA62172) transferred to this segment.
Reservoir (White Oak Reservoir)	MA62157	3	5	Nutrient/Eutrophication Biological Indicators	Impairment added based on new data/assessment.

Appendix 2
Impairments *added* to categories 4 or 5 of the integrated list in 2016
(waters listed alphabetically by major watershed)

Water Body	Segment ID	Category 2014	Category 2016	Impairment Cause	Explanation
Rumford River	MA62-62	--	5	(Non-Native Aquatic Plants*)	New segment - Historic impairment from former segment (MA62112) transferred to this segment.
				(Physical substrate habitat alterations*)	New segment - Historic impairment from former segment (MA62-39) transferred to this segment.
				Benthic Macroinvertebrates	New segment - Historic impairment from former segment (MA62-39) transferred to this segment.
				Fish Bioassessments	New segment - Historic impairment from former segment (MA62-39) transferred to this segment.
				Sedimentation/Siltation	New segment - Historic impairment from former segment (MA62-39) transferred to this segment.
Rumford River	MA62-63	--	5	(Physical substrate habitat alterations*)	New segment - Historic impairment from former segment (MA62-39) transferred to this segment.
				Benthic Macroinvertebrates	New segment - Historic impairment from former segment (MA62-39) transferred to this segment.
				Dioxin (including 2,3,7,8-TCDD)	New segment - Historic impairment from former segment(s) (MA62029, MA62075, MA62091, MA62-39) transferred to this segment.
				Fish Bioassessments	New segment - Historic impairment from former segment (MA62-39) transferred to this segment.
				Pentachlorophenol (PCP)	New segment - Historic impairment from former segment(s) (MA62029, MA62075, MA62091, MA62-39) transferred to this segment.
				Sedimentation/Siltation	New segment - Historic impairment from former segment (MA62-39) transferred to this segment.
Salisbury Brook	MA62-08	5	5	(Debris*)	Impairment added based on new data/assessment.
				(Trash*)	Impairment added based on new data/assessment.
				Algae	Impairment added based on new data/assessment.
Salisbury Plain River	MA62-05	5	5	(Debris*)	Impairment added based on new data/assessment.
				(Trash*)	Impairment added based on new data/assessment.
Sassaquin Pond	MA62232	5	5	Harmful Algal Blooms	Impairment added based on new data/assessment.
Shumatuscacant River	MA62-33	5	5	(Non-Native Aquatic Plants*)	Historic impairment from former segment (MA62090) transferred to this segment.
Stetson Pond	MA62182	5	5	Harmful Algal Blooms	Impairment added based on new data/assessment.
Taunton River	MA62-01	2	5	Escherichia Coli (E. Coli)	Impairment added based on new data/assessment.
Wading River	MA62-47	5	5	Algae	Impairment added based on new data/assessment.
Wading River	MA62-60	--	4C	(Non-Native Aquatic Plants*)	New segment - Historic impairment from former segment (MA62185) transferred to this segment.
Watson Pond	MA62205	5	5	Enterococcus	Impairment added based on new data/assessment.
Ten Mile					
Bungay River	MA52-06	5	5	Benthic Macroinvertebrates	Impairment added based on new data/assessment.
				Dissolved Oxygen	Impairment added based on new data/assessment.

Appendix 2
Impairments *added* to categories 4 or 5 of the integrated list in 2016
(waters listed alphabetically by major watershed)

Water Body	Segment ID	Category 2014	Category 2016	Impairment Cause	Explanation
Coles Brook	MA52-11	4C	5	Dissolved Oxygen	Impairment added based on new data/assessment.
				Escherichia Coli (E. Coli)	Impairment added based on new data/assessment.
James V. Turner Reservoir	MA52022	5	5	Harmful Algal Blooms	Impairment added based on new data/assessment.
Scotts Brook	MA52-09	4C	5	Escherichia Coli (E. Coli)	Impairment added based on new data/assessment.
Sevenmile River	MA52-07	2	5	Escherichia Coli (E. Coli)	Impairment added based on new data/assessment.
Sevenmile River	MA52-08	5	5	Escherichia Coli (E. Coli)	Impairment added based on new data/assessment.
Speedway Brook	MA52-05	5	5	Escherichia Coli (E. Coli)	Impairment added based on new data/assessment.
Ten Mile River	MA52-02	5	5	Escherichia Coli (E. Coli)	Impairment added based on new data/assessment.
Ten Mile River	MA52-03	5	5	Benthic Macroinvertebrates	Impairment added based on new data/assessment.
				Chlordane in Fish Tissue	Impairment changed from "Chlordane" to "Chlordane in Fish Tissue".
				Escherichia Coli (E. Coli)	Impairment added based on new data/assessment.
				Nutrient/Eutrophication Biological Indicators	Impairment added based on new data/assessment.
Westfield					
Buck Pond	MA32012	4C	5	Chlorophyll-a	Impairment added based on new data/assessment.
				Dissolved Oxygen	Impairment added based on new data/assessment.
Congamond Lakes	MA32021	5	5	(Non-Native Fish/Shellfish/Zooplankton*)	Impairment added based on new data/assessment.
				Harmful Algal Blooms	Impairment added based on new data/assessment.
Congamond Lakes	MA32023	4C	5	Dissolved Oxygen	Impairment added based on new data/assessment. Public comments by Congamond Lakes Group, Lake Management Committee, Town of Southwick.
				Nutrient/Eutrophication Biological Indicators	Impairment added based on new data/assessment. Public comments by Congamond Lakes Group, Lake Management Committee, Town of Southwick.
Dead Branch (Brook)	MA32-63	--	5	Lack of a coldwater assemblage	New segment - Impairment added based on new data/assessment.
Horse Pond	MA32043	4C	5	Chlorophyll-a	Impairment added based on new data/assessment.
				Dissolved Oxygen	Impairment added based on new data/assessment.
Little River	MA32-16	2	5	Temperature	Impairment added based on new data/assessment.
Middle Branch Westfield River	MA32-65	--	5	Temperature	New segment - Impairment added based on new data/assessment.
Miller Brook	MA32-27	2	5	Escherichia Coli (E. Coli)	Impairment added based on new data/assessment.
Moose Meadow Brook	MA32-41	--	5	Escherichia Coli (E. Coli)	New segment - Impairment added based on new data/assessment.
				Fecal Coliform	New segment - Historic impairment from former segment (MA32-23) transferred to this segment.
Pequot Pond	MA32055	5	5	Chlorophyll-a	Impairment added based on new data/assessment.
				Enterococcus	Impairment added based on new data/assessment.
Powdermill Brook	MA32-09	5	5	Escherichia Coli (E. Coli)	Impairment added based on new data/assessment.

Appendix 2
Impairments *added* to categories 4 or 5 of the integrated list in 2016
(waters listed alphabetically by major watershed)

		Category			
Water Body	**Segment ID**	**2014**	**2016**	**Impairment Cause**	**Explanation**
West Falls Branch	MA32-13	3	5	Temperature	Impairment added based on new data/assessment.
Westfield River	MA32-04	2	5	Enterococcus	Impairment added based on new data/assessment.
				Temperature	Impairment added based on new data/assessment.
White Brook	MA32-28	2	5	Escherichia Coli (E. Coli)	Impairment added based on new data/assessment.

Appendix 3
Impairments *removed* from categories 4 or 5 of the integrated list in 2016
(waters listed alphabetically by major watershed)

Water Body	Segment ID	Category 2014	Category 2016	Impairment Cause	EPA TMDL No.	Explanation
Blackstone						
Beaver Brook	MA51-07	5	5	(Debris/Floatables/Trash*)		Applicable WQS attained; reason for recovery unspecified.
				Taste and Odor		Applicable WQS attained; reason for recovery unspecified.
Blackstone River	MA51-04	5	5	DDT (dichlorodiphenyltrichloroethane)		Impairment changed from "DDT" to "DDT in Fish Tissue".
Blackstone River	MA51-06	5	5	DDT (dichlorodiphenyltrichloroethane)		Impairment changed from "DDT" to "DDT in Fish Tissue".
Brierly Pond	MA51010	4A	4C	Aquatic Plants (Macrophytes)	175	Not caused by a pollutant, impairment still exists.
Dark Brook	MA51-16	5	5	Aquatic Plants (Macrophytes)	2377	Applicable WQS attained; reason for recovery unspecified.
Eddy Pond	MA51043	4A	4A	Aquatic Plants (Macrophytes)	2382	Not caused by a pollutant, impairment still exists.
				Nutrient/Eutrophication Biological Indicators	2382	New impairment, covered under existing TMDL [CN 070.1, 5/2/2002], added to this segment for 2016.
Flint Pond	MA51050	4A	4A	Aquatic Plants (Macrophytes)	444	Not caused by a pollutant, impairment still exists.
				Nutrient/Eutrophication Biological Indicators	444	New impairment, covered under existing TMDL [CN 115.0, 6/28/2002], added to this segment for 2016.
Flint Pond	MA51188	4A	4A	Aquatic Plants (Macrophytes)	444	Not caused by a pollutant, impairment still exists.
				Nutrient/Eutrophication Biological Indicators	444	New impairment, covered under existing TMDL [CN 115.0, 6/28/2002], added to this segment for 2016.
Howe Reservoirs	MA51071	4A	4A	Aquatic Plants (Macrophytes)	550	Not caused by a pollutant, impairment still exists.
				Nutrient/Eutrophication Biological Indicators	550	New impairment, covered under existing TMDL [CN 070.1, 5/2/2002], added to this segment for 2016.
Indian Lake	MA51073	4A	4A	Aquatic Plants (Macrophytes)	2323	Applicable WQS attained; according to new assessment method.
				Harmful Algal Blooms	2323	New impairment, covered under existing TMDL [CN 116.0, 6/28/2002], added to this segment for 2016.
				Nutrient/Eutrophication Biological Indicators	2323	New impairment, covered under existing TMDL [CN 116.0, 6/28/2002], added to this segment for 2016.
Jordan Pond	MA51078	4A	4A	Harmful Algal Blooms	2385	New impairment, covered under existing TMDL [CN 070.1, 5/2/2002], added to this segment for 2016.
Kettle Brook	MA51-01	5	5	(Debris/Floatables/Trash*)		Applicable WQS attained; reason for recovery unspecified.
				Aquatic Plants (Macrophytes)	2391	Applicable WQS attained; reason for recovery unspecified.
				Turbidity	2389	Applicable WQS attained; reason for recovery unspecified.
Mill River	MA51-36	5	5	Aquatic Plants (Macrophytes)		Applicable WQS attained; according to new assessment method.
Newton Pond	MA51110	4A	4C	Aquatic Plants (Macrophytes)	862	Applicable WQS attained; according to new assessment method.
Shirley Street Pond	MA51196	4A	4A	Aquatic Plants (Macrophytes)	2392	Not caused by a pollutant, impairment still exists.
				Nutrient/Eutrophication Biological Indicators	2392	New impairment, covered under existing TMDL [CN 070.1, 5/2/2002], added to this segment for 2016.
Singletary Brook	MA51-31	5	5	Aquatic Plants (Macrophytes)		Original basis for listing was incorrect.

* TMDL not required (Non-pollutant)

Appendix 3
Impairments *removed* from categories 4 or 5 of the integrated list in 2016
(waters listed alphabetically by major watershed)

Water Body	Segment ID	Category 2014	Category 2016	Impairment Cause	EPA TMDL No.	Explanation
Southwick Pond	MA51157	4A	4A	Aquatic Plants (Macrophytes)	2390	Not caused by a pollutant, impairment still exists.
				Nutrient/Eutrophication Biological Indicators	2390	New impairment, covered under existing TMDL [CN 070.1, 5/2/2002], added to this segment for 2016.
Tatnuck Brook	MA51-15	5	5	(Debris/Floatables/Trash*)		Applicable WQS attained; reason for recovery unspecified.
				Turbidity		Applicable WQS attained; reason for recovery unspecified.
Unnamed Tributary	MA51-08	5	5	Aquatic Plants (Macrophytes)	2319	Applicable WQS attained; according to new assessment method.
Unnamed Tributary	MA51-20	5	5	Aquatic Plants (Macrophytes)	360, 361	Applicable WQS attained; according to new assessment method.
				Fecal Coliform		Applicable WQS attained; due to change in WQS.
West Brook	MA51-43	--	2	Turbidity	804	New segment - Historic impairment from former segment (MA51105) transferred to this segment. Applicable WQS attained; reason for recovery unspecified.
West River	MA51-12	5	5	Aquatic Plants (Macrophytes)		Applicable WQS attained; according to new assessment method.
Boston Harbor (Proper)						
Dorchester Bay	MA70-03	5	5	Total Suspended Solids (TSS)		Applicable WQS attained; due to restoration activities.
				Turbidity		Applicable WQS attained; due to restoration activities.
Boston Harbor: Mystic						
Aberjona River	MA71-01	5	5	Turbidity		Applicable WQS attained; reason for recovery unspecified.
Clay Pit Pond	MA71011	5	5	Chlordane		Impairment changed from "Chlordane" to "Chlordane in Fish Tissue".
Horn Pond	MA71019	5	5	Excess Algal Growth		Impairment changed from "Excess Algal Growth" to "Harmful Algal Blooms".
Lower Mystic Lake	MA71027	5	5	DDT (dichlorodiphenyltrichloroethane)		Impairment changed from "DDT" to "DDT in Fish Tissue".
Malden River	MA71-05	5	5	Chlordane		Impairment changed from "Chlordane" to "Chlordane in Fish Tissue".
				DDT (dichlorodiphenyltrichloroethane)		Impairment changed from "DDT" to "DDT in Fish Tissue".
Mystic River	MA71-02	5	5	Chlordane		Impairment changed from "Chlordane" to "Chlordane in Fish Tissue".
				DDT (dichlorodiphenyltrichloroethane)		Impairment changed from "DDT" to "DDT in Fish Tissue".
Spy Pond	MA71040	5	5	Chlordane		Impairment changed from "Chlordane" to "Chlordane in Fish Tissue".
				DDT (dichlorodiphenyltrichloroethane)		Impairment changed from "DDT" to "DDT in Fish Tissue".
				Excess Algal Growth		Impairment changed from "Excess Algal Growth" to "Harmful Algal Blooms".
Boston Harbor: Neponset						
Beaver Meadow Brook	MA73-20	5	5	Escherichia Coli (E. Coli)	2592	New impairment, covered under existing TMDL [CN 121.0, 6/21/2002], added to this segment for 2016.
East Branch	MA73-05	5	5	DDT (dichlorodiphenyltrichloroethane)		Impairment changed from "DDT" to "DDT in Fish Tissue".

Appendix 3
Impairments *removed* from categories 4 or 5 of the integrated list in 2016
(waters listed alphabetically by major watershed)

Water Body	Segment ID	Category 2014	Category 2016	Impairment Cause	EPA TMDL No.	Explanation
Germany Brook	MA73-15	5	5	(Debris/Floatables/Trash*)		Applicable WQS attained; reason for recovery unspecified.
				Color		Original basis for listing was incorrect.
Hawes Brook	MA73-16	5	5	(Debris/Floatables/Trash*)		Applicable WQS attained; reason for recovery unspecified.
Massapoag Brook	MA73-21	5	5	Turbidity		Applicable WQS attained; reason for recovery unspecified.
Mine Brook	MA73-09	5	5	Fecal Coliform	2592	Applicable WQS attained; due to change in WQS.
Mother Brook	MA73-28	5	5	DDT (dichlorodiphenyltrichloroethane)		Impairment changed from "DDT" to "DDT in Fish Tissue".
Neponset River	MA73-01	5	5	DDT (dichlorodiphenyltrichloroethane)		Impairment changed from "DDT" to "DDT in Fish Tissue".
				Excess Algal Growth		Applicable WQS attained; reason for recovery unspecified.
				Sedimentation/Siltation		Applicable WQS attained; reason for recovery unspecified.
				Total Suspended Solids (TSS)		Applicable WQS attained; reason for recovery unspecified.
				Turbidity		Applicable WQS attained; reason for recovery unspecified.
Neponset River	MA73-02	5	5	DDT (dichlorodiphenyltrichloroethane)		Impairment changed from "DDT" to "DDT in Fish Tissue".
Neponset River	MA73-03	5	5	DDT (dichlorodiphenyltrichloroethane)		Impairment changed from "DDT" to "DDT in Fish Tissue".
School Meadow Brook	MA73-06	4A	2	Fecal Coliform	2592	Applicable WQS attained; due to change in WQS.
Traphole Brook	MA73-17	4A	2	Fecal Coliform	2592	Applicable WQS attained; due to change in WQS.
Unnamed Tributary	MA73-33	5	5	Color		Applicable WQS attained; reason for recovery unspecified.
				Taste and Odor		Applicable WQS attained; reason for recovery unspecified.
Unquity Brook	MA73-26	5	5	(Debris/Floatables/Trash*)		Applicable WQS attained; reason for recovery unspecified.
Boston Harbor: Weymouth & Weir						
Cochato River	MA74-06	5	5	Chlordane		Impairment changed from "Chlordane" to "Chlordane in Fish Tissue".
				DDT (dichlorodiphenyltrichloroethane)		Impairment changed from "DDT" to "DDT in Fish Tissue".
Mill River	MA74-04	5	5	Nutrient/Eutrophication Biological Indicators		Applicable WQS attained; according to new assessment method.
Sylvan Lake	MA74021	5	5	Chlordane		Impairment changed from "Chlordane" to "Chlordane in Fish Tissue".
				DDT (dichlorodiphenyltrichloroethane)		Impairment changed from "DDT" to "DDT in Fish Tissue".
Whitmans Pond	MA74025	5	5	DDT (dichlorodiphenyltrichloroethane)		Impairment changed from "DDT" to "DDT in Fish Tissue".
Buzzards Bay						
Acushnet River	MA95-31	5	5	Enterococcus	36170	New impairment, covered under existing TMDL [CN 251.1, 5/15/2009], added to this segment for 2016.
				Escherichia Coli (E. Coli)	36170	New impairment, covered under existing TMDL [CN 251.1, 5/15/2009], added to this segment for 2016.
				Sedimentation/Siltation		Applicable WQS attained; reason for recovery unspecified.
Acushnet River	MA95-32	5	5	Enterococcus	36170	New impairment, covered under existing TMDL [CN 251.1, 5/15/2009], added to this segment for 2016.
				Escherichia Coli (E. Coli)	36170	New impairment, covered under existing TMDL [CN 251.1, 5/15/2009], added to this segment for 2016.

Appendix 3
Impairments *removed* from categories 4 or 5 of the integrated list in 2016
(waters listed alphabetically by major watershed)

Water Body	Segment ID	Category 2014	Category 2016	Impairment Cause	EPA TMDL No.	Explanation
Acushnet River	MA95-33	5	5	Enterococcus	36171	New impairment, covered under existing TMDL [CN 251.1, 5/15/2009], added to this segment for 2016.
Agawam River	MA95-29	5	5	Ammonia, Un-ionized		Applicable WQS attained; due to restoration activities.
				Whole Effluent Toxicity (WET)		Applicable WQS attained; due to restoration activities.
Bread and Cheese Brook	MA95-58	4A	4A	Enterococcus	36170	New impairment, covered under existing TMDL [CN 251.1, 5/15/2009], added to this segment for 2016.
Buttonwood Brook	MA95-13	4A	4A	Enterococcus	36170	New impairment, covered under existing TMDL [CN 251.1, 5/15/2009], added to this segment for 2016.
				Escherichia Coli (E. Coli)	36170	New impairment, covered under existing TMDL [CN 251.1, 5/15/2009], added to this segment for 2016.
Clarks Cove	MA95-38	5	5	Enterococcus	36172	New impairment, covered under existing TMDL [CN 251.1, 5/15/2009], added to this segment for 2016.
Crooked River	MA95-51	4A	4A	Enterococcus	36172	New impairment, covered under existing TMDL [CN 251.1, 5/15/2009], added to this segment for 2016.
East Branch Westport River	MA95-40	4A	4A	Enterococcus	36170	New impairment, covered under existing TMDL [CN 251.1, 5/15/2009], added to this segment for 2016.
Little River	MA95-66	5	2	Nitrogen, Total		Original basis for listing was incorrect.
New Bedford Inner Harbor	MA95-42	5	5	Enterococcus	36171	New impairment, covered under existing TMDL [CN 251.1, 5/15/2009], added to this segment for 2016.
New Bedford Reservoir	MA95110	5	5	DDT (dichlorodiphenyltrichloroethane)		Impairment changed from "DDT" to "DDT in Fish Tissue".
Outer New Bedford Harbor	MA95-63	5	5	Enterococcus	36172	New impairment, covered under existing TMDL [CN 251.1, 5/15/2009], added to this segment for 2016.
				Estuarine Bioassessments		Applicable WQS attained; reason for recovery unspecified.
Phinneys Harbor	MA95-15	4A	4A	Estuarine Bioassessments	35069	New impairment, covered under existing TMDL [CN 247.0, 2/5/2008], added to this segment for 2016.
Sampson Pond	MA95125	5	5	DDT (dichlorodiphenyltrichloroethane)		Impairment changed from "DDT" to "DDT in Fish Tissue".
Sippican Harbor	MA95-69	4A	2	Fecal Coliform	36172	Applicable WQS attained; reason for recovery unspecified.
Sippican River	MA95-06	5	5	(Fish Passage Barrier*)		Applicable WQS attained; due to restoration activities.
Snell Creek	MA95-44	4A	4A	Enterococcus	36170	New impairment, covered under existing TMDL [CN 251.1, 5/15/2009], added to this segment for 2016.
				Escherichia Coli (E. Coli)	36170	New impairment, covered under existing TMDL [CN 251.1, 5/15/2009], added to this segment for 2016.
Snell Creek	MA95-45	4A	4A	Enterococcus	36170	New impairment, covered under existing TMDL [CN 251.1, 5/15/2009], added to this segment for 2016.
				Escherichia Coli (E. Coli)	36170	New impairment, covered under existing TMDL [CN 251.1, 5/15/2009], added to this segment for 2016.
Westport River	MA95-54	5	4A	Estuarine Bioassessments		Applicable WQS attained; according to new assessment method.
				Nitrogen, Total		Applicable WQS attained; according to new assessment method.

* TMDL not required (Non-pollutant)

Appendix 3
Impairments *removed* from categories 4 or 5 of the integrated list in 2016
(waters listed alphabetically by major watershed)

Water Body	Segment ID	Category 2014	Category 2016	Impairment Cause	EPA TMDL No.	Explanation
Weweantic River	MA95-05	5	5	Enterococcus	36172	New impairment, covered under existing TMDL [CN 251.1, 5/15/2009], added to this segment for 2016.
White Island Pond, East Basin	MA95166	4A	4C	Chlorophyll-a	38912	Applicable WQS attained; due to restoration activities.
				Dissolved Oxygen	38912	Applicable WQS attained; due to restoration activities.
				Excess Algal Growth	38912	Applicable WQS attained; due to restoration activities.
				Phosphorus, Total	38912	Applicable WQS attained; due to restoration activities.
				Secchi disk transparency	38912	Applicable WQS attained; due to restoration activities.
White Island Pond, West Basin	MA95173	4A	4C	Dissolved Oxygen	38914	Applicable WQS attained; due to restoration activities.
				Excess Algal Growth	38914	Applicable WQS attained; due to restoration activities.
				Phosphorus, Total	38914	Applicable WQS attained; due to restoration activities.
Cape Cod						
Great Pond	MA96-54	4A	4A	Enterococcus	36772	New impairment, covered under existing TMDL [CN 252.0, 8/28/2009], added to this segment for 2016.
				Fecal Coliform	36772	Impairment, covered under existing TMDL [CN 252.0, 8/28/2009], removed in earlier cycle and relisted in 2016 based on new assessment.
Hyannis Harbor	MA96-05	4A	2	Fecal Coliform	36771	Applicable WQS attained; according to new assessment method.
Hyannis Inner Harbor	MA96-82	5	4A	Nitrogen, Total	64145	New TMDL [CN 314.0, 4/15/2015] applied for the 2016 cycle.
Lewis Bay	MA96-36	5	4A	Estuarine Bioassessments	64146, 64147	New TMDL [CN 314.0, 4/15/2015] applied for the 2016 cycle.
Little Pleasant Bay	MA96-78	4A	4A	Fecal Coliform	42358	Applicable WQS attained; according to new assessment method.
Lovells Pond	MA96185	5	5	Excess Algal Growth		Impairment changed from "Excess Algal Growth" to "Harmful Algal Blooms".
Lower Mill Pond	MA96188	5	5	Secchi disk transparency		Applicable WQS attained; reason for recovery unspecified.
Mill Creek	MA96-80	5	4A	Nitrogen, Total	64148, 64149	New TMDL [CN 314.0, 4/15/2015] applied for the 2016 cycle.
Popponesset Creek	MA96-39	5	5	Fecal Coliform	36772	Impairment, covered under existing TMDL [CN 252.0, 8/28/2009], removed in earlier cycle and relisted in 2016 based on new assessment.
Santuit Pond	MA96277	5	5	Excess Algal Growth		Impairment changed from "Excess Algal Growth" to "Harmful Algal Blooms".
Town Cove	MA96-68	5	5	Fecal Coliform	36772	Applicable WQS attained; according to new assessment method.
Unnamed Tributary	MA96-97	--	4A	Nitrogen, Total	64151	New segment - New impairment, covered under existing TMDL [CN 314.0, 4/15/2015], added to this segment for 2016.

Appendix 3
Impairments *removed* from categories 4 or 5 of the integrated list in 2016
(waters listed alphabetically by major watershed)

Water Body	Segment ID	Category 2014	Category 2016	Impairment Cause	EPA TMDL No.	Explanation
Charles						
Beaver Brook	MA72-28	5	5	Taste and Odor		Applicable WQS attained; reason for recovery unspecified.
				Turbidity	40317	Applicable WQS attained; reason for recovery unspecified.
Bogastow Brook	MA72-16	4A	4A	Escherichia Coli (E. Coli)	32373	New impairment, covered under existing TMDL [CN 156.0, 5/22/2007], added to this segment for 2016. Review comments by EPA.
Charles River	MA72-03	5	5	DDT (dichlorodiphenyltrichloroethane)		Impairment changed from "DDT" to "DDT in Fish Tissue".
Charles River	MA72-04	5	5	Chlordane		Impairment changed from "Chlordane" to "Chlordane in Fish Tissue".
				DDT (dichlorodiphenyltrichloroethane)		Impairment changed from "DDT" to "DDT in Fish Tissue".
Charles River	MA72-05	5	5	Chlordane		Impairment changed from "Chlordane" to "Chlordane in Fish Tissue".
				DDT (dichlorodiphenyltrichloroethane)		Impairment changed from "DDT" to "DDT in Fish Tissue".
Charles River	MA72-06	5	5	DDT (dichlorodiphenyltrichloroethane)		Impairment changed from "DDT" to "DDT in Fish Tissue".
Charles River	MA72-07	5	5	DDT (dichlorodiphenyltrichloroethane)		Impairment changed from "DDT" to "DDT in Fish Tissue".
				Harmful Algal Blooms	40317	New impairment, covered under existing TMDL [CN 272.0, 6/10/2011], added to this segment for 2016.
Charles River	MA72-36	5	5	DDT (dichlorodiphenyltrichloroethane)		Impairment changed from "DDT" to "DDT in Fish Tissue".
				Harmful Algal Blooms	33826	New impairment, covered under existing TMDL [CN 301.0, 10/17/2007], added to this segment for 2016.
Charles River	MA72-38	5	5	DDT (dichlorodiphenyltrichloroethane)		Impairment changed from "DDT" to "DDT in Fish Tissue".
				Dissolved Oxygen Supersaturation	33826	TMDL [CN 301.0, 10/17/2007] added due to clerical error/earlier omission.
				Escherichia Coli (E. Coli)	32371	TMDL [CN 156.0, 5/22/2007] added due to clerical error/earlier omission.
				Excess Algal Growth	33826	Impairment changed from "Excess Algal Growth" to "Harmful Algal Blooms".
				Harmful Algal Blooms	33826	New impairment, covered under existing TMDL [CN 301.0, 10/17/2007], added to this segment for 2016.
Muddy River	MA72-11	5	5	DDT (dichlorodiphenyltrichloroethane)		Impairment changed from "DDT" to "DDT in Fish Tissue".
Populatic Pond	MA72096	5	5	Chlordane		Impairment changed from "Chlordane" to "Chlordane in Fish Tissue".
				DDT (dichlorodiphenyltrichloroethane)		Impairment changed from "DDT" to "DDT in Fish Tissue".
Rock Meadow Brook	MA72-21	5	5	Aquatic Plants (Macrophytes)	40317	Applicable WQS attained; reason for recovery unspecified.
Stop River	MA72-10	5	5	Escherichia Coli (E. Coli)	32372	Applicable WQS attained; reason for recovery unspecified.
Chicopee						
Forget-Me-Not Brook	MA36-28	5	5	Escherichia Coli (E. Coli)		Applicable WQS attained; reason for recovery unspecified.
				Taste and Odor		Applicable WQS attained; according to new assessment method.

Appendix 3
Impairments *removed* from categories 4 or 5 of the integrated list in 2016
(waters listed alphabetically by major watershed)

Water Body	Segment ID	Category 2014	Category 2016	Impairment Cause	EPA TMDL No.	Explanation
Wickaboag Pond	MA36166	4A	4A	Aquatic Plants (Macrophytes)	1332	Applicable WQS attained; according to new assessment method.
Concord (SuAsCo)						
Assabet River	MA82B-01	5	5	Fecal Coliform		Applicable WQS attained; due to change in WQS.
Assabet River	MA82B-02	5	5	Algae	35104	New impairment, covered under existing TMDL [CN 201.0, 9/23/2004], added to this segment for 2016.
Assabet River	MA82B-03	5	5	Nutrient/Eutrophication Biological Indicators	35105	New impairment, covered under existing TMDL [CN 201.0, 9/23/2004], added to this segment for 2016.
Assabet River	MA82B-06	5	5	(Debris/Floatables/Trash*)		Applicable WQS attained; due to restoration activities.
				Taste and Odor		Applicable WQS attained; due to restoration activities.
Concord River	MA82A-07	5	5	Phosphorus, Total		Applicable WQS attained; due to restoration activities.
Concord River	MA82A-08	5	5	Phosphorus, Total		Applicable WQS attained; due to restoration activities.
Concord River	MA82A-09	5	5	Phosphorus, Total		Applicable WQS attained; due to restoration activities.
Fort Meadow Reservoir	MA82042	5	5	Chlordane		Impairment changed from "Chlordane" to "Chlordane in Fish Tissue".
Hop Brook	MA82A-06	5	5	Excess Algal Growth		Applicable WQS attained; reason for recovery unspecified.
				Fecal Coliform		Applicable WQS attained; due to change in WQS.
Connecticut						
Bachelor Brook	MA34-07	4A	5	Nutrient/Eutrophication Biological Indicators	5, 6	Applicable WQS attained; according to new assessment method.
Connecticut River	MA34-05	5	5	Total Suspended Solids (TSS)		Applicable WQS attained; reason for recovery unspecified.
Leaping Well Reservoir	MA34040	5	5	(Non-Native Aquatic Plants*)		Original basis for listing was incorrect.
Loon Pond	MA34045	4A	3	Nutrient/Eutrophication Biological Indicators	726	Original basis for listing was incorrect.
Deerfield						
Chickley River	MA33-11	5	2	Fecal Coliform		Applicable WQS attained; due to change in WQS.
South River	MA33-101	--	5	(Physical substrate habitat alterations*)		New segment - Historic impairment from former segment (MA33-08) transferred to this segment. Applicable WQS attained; reason for recovery unspecified.
Tannery Pond	MA33020	4C	3	(Low flow alterations*)		Original basis for listing was incorrect.
French						
Buffumville Lake	MA42005	4A	4A	Excess Algal Growth	2358	Applicable WQS attained; reason for recovery unspecified.
Cedar Meadow Pond	MA42009	4A	4C	Aquatic Plants (Macrophytes)	2359	Original basis for listing was incorrect.
French River	MA42-03	5	5	Aquatic Plants (Macrophytes)	2357	Applicable WQS attained; according to new assessment method.
				Phosphorus, Total		Applicable WQS attained; due to restoration activities.
				Turbidity		Applicable WQS attained; due to restoration activities.

* TMDL not required (Non-pollutant)

Appendix 3
Impairments *removed* from categories 4 or 5 of the integrated list in 2016
(waters listed alphabetically by major watershed)

Water Body	Segment ID	Category 2014	Category 2016	Impairment Cause	EPA TMDL No.	Explanation
French River	MA42-05	5	5	(Debris/Floatables/Trash*)		Applicable WQS attained; reason for recovery unspecified.
				Fecal Coliform		Applicable WQS attained; due to change in WQS.
French River	MA42-06	5	5	(Debris/Floatables/Trash*)		Applicable WQS attained; reason for recovery unspecified.
				Fecal Coliform		Applicable WQS attained; due to change in WQS.
				Taste and Odor		Applicable WQS attained; reason for recovery unspecified.
				Turbidity		Applicable WQS attained; reason for recovery unspecified.
Granite Reservoir	MA42019	4A	4C	Aquatic Plants (Macrophytes)	2362	Applicable WQS attained; according to new assessment method.
Hudson Pond	MA42029	4A	4A	Aquatic Plants (Macrophytes)	2363	Not caused by a pollutant, impairment still exists.
				Nutrient/Eutrophication Biological Indicators	2363	New impairment, covered under existing TMDL [CN 110.0, 7/12/2002], added to this segment for 2016.
Jones Pond	MA42030	4A	4A	Aquatic Plants (Macrophytes)	2364	Not caused by a pollutant, impairment still exists.
				Nutrient/Eutrophication Biological Indicators	2364	New impairment, covered under existing TMDL [CN 110.0, 7/12/2002], added to this segment for 2016.
Larner Pond	MA42068	4A	4C	Aquatic Plants (Macrophytes)	2365	Not caused by a pollutant, impairment still exists.
Lowes Pond	MA42034	4A	4A	Aquatic Plants (Macrophytes)	2366	Applicable WQS attained; according to new assessment method.
				Nutrient/Eutrophication Biological Indicators	2366	New impairment, covered under existing TMDL [CN 110.0, 7/12/2002], added to this segment for 2016.
Mckinstry Pond	MA42035	4A	4A	Aquatic Plants (Macrophytes)	2367	Applicable WQS attained; according to new assessment method.
				Nutrient/Eutrophication Biological Indicators	2367	New impairment, covered under existing TMDL [CN 110.0, 7/12/2002], added to this segment for 2016.
Mosquito Pond	MA42060	4A	4C	Aquatic Plants (Macrophytes)	2374	Not caused by a pollutant, impairment still exists.
New Pond	MA42037	4A	3	Aquatic Plants (Macrophytes)	2368	Applicable WQS attained; according to new assessment method.
Peter Pond	MA42042	4A	3	Dissolved Oxygen	2369	Original basis for listing was incorrect.
				Phosphorus, Total	2369	Original basis for listing was incorrect.
Pierpoint Meadow Pond	MA42043	4A	4C	Aquatic Plants (Macrophytes)	2370	Applicable WQS attained; reason for recovery unspecified.
Shepherd Pond	MA42051	4A	4C	Aquatic Plants (Macrophytes)	2373	Not caused by a pollutant, impairment still exists.
Wallis Pond	MA42062	4A	4A	Aquatic Plants (Macrophytes)	2375	Not caused by a pollutant, impairment still exists.
				Nutrient/Eutrophication Biological Indicators	2375	New impairment, covered under existing TMDL [CN 110.0, 7/12/2002], added to this segment for 2016.
Housatonic						
East Branch Housatonic River	MA21-01	5	5	Fecal Coliform		Applicable WQS attained; due to change in WQS.
Pontoosuc Lake	MA21083	5	4A	DDT (dichlorodiphenyltrichloroethane)		Original basis for listing was incorrect.
Wahconah Falls Brook	MA21-11	5	2	Fecal Coliform		Applicable WQS attained; due to change in WQS.

Appendix 3
Impairments *removed* from categories 4 or 5 of the integrated list in 2016
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Water Body	Segment ID	Category 2014	Category 2016	Impairment Cause	EPA TMDL No.	Explanation
West Branch Housatonic River	MA21-18	5	5	Taste and Odor		Applicable WQS attained; reason for recovery unspecified.
Hudson: Hoosic						
Cheshire Reservoir, Middle Basin	MA11018	5	4C	Aquatic Plants (Macrophytes)		Applicable WQS attained; according to new assessment method.
Cheshire Reservoir, North Basin	MA11002	5	5	Aquatic Plants (Macrophytes)		Applicable WQS attained; according to new assessment method.
				Turbidity		Applicable WQS attained; according to new assessment method.
Green River	MA11-06	5	2	Fecal Coliform		Applicable WQS attained; due to change in WQS.
Hoosic River	MA11-03	5	5	(Physical substrate habitat alterations*)		Impairment changed from "(Physical substrate habitat alterations*)" to "(Other anthropogenic substrate alterations*)".
Hoosic River	MA11-04	5	4C	Fecal Coliform		Applicable WQS attained; due to change in WQS.
Hoosic River	MA11-05	5	5	Benthic Macroinvertebrates		Applicable WQS attained; reason for recovery unspecified.
Mauserts Pond	MA11009	5	2	Enterococcus		Applicable WQS attained; due to restoration activities.
Paull Brook	MA11-20	5	4C	Fecal Coliform		Applicable WQS attained; due to change in WQS.
Ipswich						
Boston Brook	MA92-13	2	2	(Non-Native Aquatic Plants*)		Historic impairment from former segment (MA92031) transferred to this segment. Original basis for listing was incorrect.
Howlett Brook	MA92-17	5	5	Fish Bioassessments		Applicable WQS attained; according to new assessment method.
Lubbers Brook	MA92-05	2	5	(Non-Native Aquatic Plants*)		Historic impairment from former segment(s) (MA92035, MA92036) transferred to this segment. Original basis for listing was incorrect.
				(Sedimentation/Siltation*)		Historic impairment from former segment(s) (MA92035, MA92036) transferred to this segment. Original basis for listing was incorrect.
Martins Brook	MA92-08	5	5	Fish Bioassessments		Applicable WQS attained; according to new assessment method.
Miles River	MA92-03	5	5	Fecal Coliform		Applicable WQS attained; due to change in WQS.
Norris Brook	MA92-11	5	5	Total Suspended Solids (TSS)		Original basis for listing was incorrect.
				Turbidity		Original basis for listing was incorrect.
Silver Lake	MA92059	5	5	DDT (dichlorodiphenyltrichloroethane)		Impairment changed from "DDT" to "DDT in Fish Tissue".
Wenham Lake	MA92073	5	5	DDT (dichlorodiphenyltrichloroethane)		Impairment changed from "DDT" to "DDT in Fish Tissue".
Wills Brook	MA92-10	5	2	Dissolved Oxygen		Original basis for listing was incorrect.
				Fecal Coliform		Applicable WQS attained; due to change in WQS.

Appendix 3
Impairments *removed* from categories 4 or 5 of the integrated list in 2016
(waters listed alphabetically by major watershed)

Water Body	Segment ID	Category 2014	Category 2016	Impairment Cause	EPA TMDL No.	Explanation
Islands						
Edgartown Great Pond	MA97-17	5	4A	Estuarine Bioassessments	64380	New TMDL [CN 318.0, 6/24/2015] applied for the 2016 cycle.
				Fecal Coliform		Applicable WQS attained; reason for recovery unspecified.
				Nitrogen, Total	64380	New TMDL [CN 318.0, 6/24/2015] applied for the 2016 cycle.
				Nutrient/Eutrophication Biological Indicators	64380	New TMDL [CN 318.0, 6/24/2015] applied for the 2016 cycle.
Farm Pond	MA97-30	--	4A	Dissolved Oxygen	64662	New segment - New TMDL [CN 391.1, 10/2/2015] applied for the 2016 cycle.
				Estuarine Bioassessments	64662	New segment - New TMDL [CN 391.1, 10/2/2015] applied for the 2016 cycle.
				Nitrogen, Total	64662	New segment - New TMDL [CN 391.1, 10/2/2015] applied for the 2016 cycle.
				Nutrient/Eutrophication Biological Indicators	64662	New segment - New TMDL [CN 391.1, 10/2/2015] applied for the 2016 cycle.
Hither Creek	MA97-28	5	4A	Dissolved Oxygen	64480	New TMDL [CN 283.0, 7/30/2015] applied for the 2016 cycle.
				Estuarine Bioassessments	64480	New TMDL [CN 283.0, 7/30/2015] applied for the 2016 cycle.
				Nitrogen, Total	64480	New TMDL [CN 283.0, 7/30/2015] applied for the 2016 cycle.
				Nutrient/Eutrophication Biological Indicators	64480	New TMDL [CN 283.0, 7/30/2015] applied for the 2016 cycle.
Lagoon Pond	MA97-11	5	4A	Dissolved Oxygen	64583, 64584	New TMDL [CN 390.1, 9/2/2015] applied for the 2016 cycle.
				Estuarine Bioassessments	64583, 64584	New TMDL [CN 390.1, 9/2/2015] applied for the 2016 cycle.
				Fecal Coliform		Applicable WQS attained; according to new assessment method.
				Nitrogen, Total	64583, 64584	New TMDL [CN 390.1, 9/2/2015] applied for the 2016 cycle.
				Nutrient/Eutrophication Biological Indicators	64583, 64584	New TMDL [CN 390.1, 9/2/2015] applied for the 2016 cycle.

Appendix 3
Impairments *removed* from categories 4 or 5 of the integrated list in 2016
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Water Body	Segment ID	Category 2014	Category 2016	Impairment Cause	EPA TMDL No.	Explanation
Long Pond	MA97-29	5	5	Dissolved Oxygen	64482	New TMDL [CN 283.0, 7/30/2015] applied for the 2016 cycle.
				Dissolved Oxygen Supersaturation	64482	New TMDL [CN 283.0, 7/30/2015] applied for the 2016 cycle.
				Estuarine Bioassessments	64482	New TMDL [CN 283.0, 7/30/2015] applied for the 2016 cycle.
				Nitrogen, Total	64482	New TMDL [CN 283.0, 7/30/2015] applied for the 2016 cycle.
				Nutrient/Eutrophication Biological Indicators	64482	New TMDL [CN 283.0, 7/30/2015] applied for the 2016 cycle.
				Secchi disk transparency	64482	New TMDL [CN 283.0, 7/30/2015] applied for the 2016 cycle.
Madaket Harbor	MA97-27	5	2	Fecal Coliform		Applicable WQS attained; reason for recovery unspecified.
Nantucket Harbor	MA97-01	5	5	Estuarine Bioassessments	36011	New impairment, covered under existing TMDL [CN 249.0, 5/12/2009], added to this segment for 2016.
				Nitrogen, Total	36011	New impairment, covered under existing TMDL [CN 249.0, 5/12/2009], added to this segment for 2016.
				Nutrient/Eutrophication Biological Indicators	36011	Applicable WQS attained; reason for recovery unspecified.
North Head Long Pond	MA97-34	--	4A	Nutrient/Eutrophication Biological Indicators	64481	New segment - New TMDL [CN 283.0, 7/30/2015] applied for the 2016 cycle.
Polpis Harbor	MA97-26	5	5	Nitrogen, Total	36012	New impairment, covered under existing TMDL [CN 249.0, 5/12/2009], added to this segment for 2016.
Sengekontacket Pond	MA97-10	2	5	Dissolved Oxygen	65320	New TMDL [CN 310.1, 1/7/2016] applied for the 2016 cycle.
				Estuarine Bioassessments	65320	New TMDL [CN 310.1, 1/7/2016] applied for the 2016 cycle.
				Nitrogen, Total	65320	New TMDL [CN 310.1, 1/7/2016] applied for the 2016 cycle.
				Nutrient/Eutrophication Biological Indicators	65320	New TMDL [CN 310.1, 1/7/2016] applied for the 2016 cycle.
Trapps Pond	MA97-32	--	4A	Dissolved Oxygen	65321	New segment - New TMDL [CN 310.1, 1/7/2016] applied for the 2016 cycle.
				Estuarine Bioassessments	65321	New segment - New TMDL [CN 310.1, 1/7/2016] applied for the 2016 cycle.
				Nitrogen, Total	65321	New segment - New TMDL [CN 310.1, 1/7/2016] applied for the 2016 cycle.
				Nutrient/Eutrophication Biological Indicators	65321	New segment - New TMDL [CN 310.1, 1/7/2016] applied for the 2016 cycle.
Westend Pond	MA97-20	5	2	Fecal Coliform		Applicable WQS attained; reason for recovery unspecified.
Merrimack						
Forest Lake	MA84014	5	5	Aquatic Plants (Macrophytes)		Applicable WQS attained; according to new assessment method.
Johnson Creek	MA84A-15	5	2	Escherichia Coli (E. Coli)		Applicable WQS attained; reason for recovery unspecified.

Appendix 3
Impairments *removed* from categories 4 or 5 of the integrated list in 2016
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Water Body	Segment ID	Category 2014	Category 2016	Impairment Cause	EPA TMDL No.	Explanation
Long Pond	MA84032	5	5	Aquatic Plants (Macrophytes)		Applicable WQS attained; according to new assessment method.
Lowell Canals	MA84A-29	5	5	DDT (dichlorodiphenyltrichloroethane)		Impairment changed from "DDT" to "DDT in Fish Tissue".
Spicket River	MA84A-10	5	5	Mercury in Water Column		Original basis for listing was incorrect.
Millers						
Beaver Brook	MA35-09	5	5	Fecal Coliform		Applicable WQS attained; due to change in WQS.
Bourn-Hadley Pond	MA35008	4A	4C	Aquatic Plants (Macrophytes)	4117	Not caused by a pollutant, impairment still exists.
Brazell Pond	MA35010	4A	4C	Aquatic Plants (Macrophytes)	4118	Not caused by a pollutant, impairment still exists.
Depot Pond	MA35018	4A	4C	Aquatic Plants (Macrophytes)	4124	Not caused by a pollutant, impairment still exists.
Ellis Pond	MA35023	4A	4C	Aquatic Plants (Macrophytes)	4125	Not caused by a pollutant, impairment still exists.
Greenwood Pond	MA35026	4A	4C	Aquatic Plants (Macrophytes)	4127	Not caused by a pollutant, impairment still exists.
Lake Monomonac	MA35047	5	5	Aquatic Plants (Macrophytes)	4133	Original basis for listing was incorrect.
Millers River	MA35-01	5	5	Fecal Coliform		Applicable WQS attained; due to change in WQS.
				PCBs in Fish Tissue		Applicable WQS attained; reason for recovery unspecified.
				Phosphorus, Total		Applicable WQS attained; reason for recovery unspecified.
Millers River	MA35-03	5	5	Phosphorus, Total		Applicable WQS attained; reason for recovery unspecified.
Millers River	MA35-04	5	5	Fecal Coliform		Applicable WQS attained; due to change in WQS.
				Phosphorus, Total		Applicable WQS attained; reason for recovery unspecified.
Otter River	MA35-07	5	2	Benthic Macroinvertebrates		Applicable WQS attained; reason for recovery unspecified.
				Fish Bioassessments		Applicable WQS attained; reason for recovery unspecified.
				Nutrient/Eutrophication Biological Indicators		Applicable WQS attained; reason for recovery unspecified.
				Turbidity		Applicable WQS attained; reason for recovery unspecified.
Otter River	MA35-08	5	5	(Total Dissolved Solids (TDS)*)		Applicable WQS attained; reason for recovery unspecified.
				Benthic Macroinvertebrates		Applicable WQS attained; reason for recovery unspecified.
				Fecal Coliform		Applicable WQS attained; due to change in WQS.
				Fish Bioassessments		Applicable WQS attained; reason for recovery unspecified.
				Nutrient/Eutrophication Biological Indicators		Applicable WQS attained; reason for recovery unspecified.
				Taste and Odor		Applicable WQS attained; reason for recovery unspecified.
				Turbidity		Applicable WQS attained; reason for recovery unspecified.
Parker Pond	MA35056	4A	4A	Aquatic Plants (Macrophytes)	4134	Not caused by a pollutant, impairment still exists.
				Nutrient/Eutrophication Biological Indicators	4134	New impairment, covered under existing TMDL [CN 123.2, 2/5/2003], added to this segment for 2016.
Ramsdall Pond	MA35062	4A	3	Aquatic Plants (Macrophytes)	4136	Applicable WQS attained; according to new assessment method.

* TMDL not required (Non-pollutant)

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Water Body	Segment ID	Category 2014	Category 2016	Impairment Cause	EPA TMDL No.	Explanation
Reservoir No. 1	MA35063	4A	4A	Aquatic Plants (Macrophytes)	4137	Not caused by a pollutant, impairment still exists.
				Nutrient/Eutrophication Biological Indicators	4137	New impairment, covered under existing TMDL [CN 123.2, 2/5/2003], added to this segment for 2016.
South Athol Pond	MA35078	4A	4C	Aquatic Plants (Macrophytes)	4140	Not caused by a pollutant, impairment still exists.
Stoddard Pond	MA35083	4A	4C	Aquatic Plants (Macrophytes)	4141	Not caused by a pollutant, impairment still exists.
Whites Mill Pond	MA35099	5	4A	Aquatic Plants (Macrophytes)	4144	Not caused by a pollutant, impairment still exists.
				Mercury in Fish Tissue		Original basis for listing was incorrect.
				Nutrient/Eutrophication Biological Indicators	4144	New impairment, covered under existing TMDL [CN 123.2, 2/5/2003], added to this segment for 2016.
Whitney Pond	MA35101	5	5	Aquatic Plants (Macrophytes)	4145	Not caused by a pollutant, impairment still exists.
Mount Hope Bay (Shore)						
Kickamuit River	MA61-08	4A	4A	Escherichia Coli (E. Coli)	30702	New impairment, covered under existing TMDL [CN 285.0, 9/29/2006], added to this segment for 2016.
Lee River	MA61-02	5	5	(Debris/Floatables/Trash*)		Original basis for listing was incorrect.
				Taste and Odor		Original basis for listing was incorrect.
Mount Hope Bay	MA61-06	5	5	Enterococcus	38908	New impairment, covered under existing TMDL [CN 351.0, 7/21/2010], added to this segment for 2016.
Mount Hope Bay	MA61-07	5	5	Enterococcus	38909	New impairment, covered under existing TMDL [CN 351.0, 7/21/2010], added to this segment for 2016.
Narragansett Bay (Shore)						
Clear Run Brook	MA53-13	4A	5	Escherichia Coli (E. Coli)	35097	New impairment, covered under existing TMDL [CN 182.0, 9/22/2004], added to this segment for 2016.
Fullers Brook	MA53-12	3	4A	Escherichia Coli (E. Coli)	35089	Impairment, covered under existing TMDL [CN 182.0, 9/22/2004], removed in earlier cycle and relisted in 2016 based on new assessment.
Oak Swamp Brook	MA53-15	3	4A	Escherichia Coli (E. Coli)	35091	Impairment, covered under existing TMDL [CN 182.0, 9/22/2004], removed in earlier cycle and relisted in 2016 based on new assessment.
Palmer River	MA53-22	--	5	(Low flow alterations*)		New segment - Historic impairment from former segment (MA53-04) transferred to this segment. Original basis for listing was incorrect.
				Escherichia Coli (E. Coli)	35086	New segment - Historic impairment from former segment (MA53-04) transferred to this segment. Impairment covered under existing TMDL [CN 182.0, 9/22/2004].
				Nutrient/Eutrophication Biological Indicators		New segment - Historic impairment from former segment (MA53-04) transferred to this segment. Original basis for listing was incorrect.
Rocky Run	MA53-16	4A	4A	Escherichia Coli (E. Coli)	35096	New impairment, covered under existing TMDL [CN 182.0, 9/22/2004], added to this segment for 2016.

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Water Body	Segment ID	Category 2014	Category 2016	Impairment Cause	EPA TMDL No.	Explanation
Runnins River	MA53-01	5	5	(Debris/Floatables/Trash*)		Applicable WQS attained; according to new assessment method.
				Escherichia Coli (E. Coli)	38903	New impairment, covered under existing TMDL [CN 351.0, 7/21/2010], added to this segment for 2016.
				Oil and Grease		Applicable WQS attained; reason for recovery unspecified.
Torrey Creek	MA53-14	3	4A	Escherichia Coli (E. Coli)	35088	Impairment, covered under existing TMDL [CN 182.0, 9/22/2004], removed in earlier cycle and relisted in 2016 based on new assessment.
Nashua						
Bare Hill Pond	MA81007	4A	4A	Nutrient/Eutrophication Biological Indicators	2615	Applicable WQS attained; according to new assessment method.
Lake Shirley	MA81122	5	5	Excess Algal Growth		Impairment changed from "Excess Algal Growth" to "Harmful Algal Blooms".
Squannacook River	MA81-18	5	5	Escherichia Coli (E. Coli)		Applicable WQS attained; reason for recovery unspecified.
North Coastal						
Alewife Brook	MA93-45	4A	2	Fecal Coliform	50120	Applicable WQS attained; due to change in WQS.
Beaverdam Brook	MA93-30	5	5	Escherichia Coli (E. Coli)	50120	New impairment, covered under existing TMDL [CN 155.0, 10/25/2012], added to this segment for 2016.
Bennetts Pond Brook	MA93-48	4A	4A	Escherichia Coli (E. Coli)	50120	New impairment, covered under existing TMDL [CN 155.0, 10/25/2012], added to this segment for 2016.
Cat Brook	MA93-29	5	5	Fecal Coliform	50120	Applicable WQS attained; due to change in WQS.
Causeway Brook	MA93-47	4A	4A	Escherichia Coli (E. Coli)	50120	New impairment, covered under existing TMDL [CN 155.0, 10/25/2012], added to this segment for 2016.
Crane Brook	MA93-02	4A	4A	Escherichia Coli (E. Coli)	50120	New impairment, covered under existing TMDL [CN 155.0, 10/25/2012], added to this segment for 2016.
Flax Pond	MA93023	5	5	Chlordane		Impairment changed from "Chlordane" to "Chlordane in Fish Tissue".
				DDT (dichlorodiphenyltrichloroethane)		Impairment changed from "DDT" to "DDT in Fish Tissue".
Foster Pond	MA93026	5	5	DDT (dichlorodiphenyltrichloroethane)		Impairment changed from "DDT" to "DDT in Fish Tissue".
Frost Fish Brook	MA93-36	4A	4A	Escherichia Coli (E. Coli)	50120	New impairment, covered under existing TMDL [CN 155.0, 10/25/2012], added to this segment for 2016.
Gloucester Harbor	MA93-18	5	5	Enterococcus	50122	New impairment, covered under existing TMDL [CN 155.0, 10/25/2012], added to this segment for 2016.
Goldthwait Brook	MA93-05	5	5	(Debris/Floatables/Trash*)		Applicable WQS attained; reason for recovery unspecified.
				Escherichia Coli (E. Coli)	50120	New impairment, covered under existing TMDL [CN 155.0, 10/25/2012], added to this segment for 2016.
				Foam/Flocs/Scum/Oil Slicks		Applicable WQS attained; reason for recovery unspecified.
Hawkes Brook	MA93-32	4A	4A	Escherichia Coli (E. Coli)	50120	New impairment, covered under existing TMDL [CN 155.0, 10/25/2012], added to this segment for 2016.
Hawkes Brook	MA93-33	4A	4A	Escherichia Coli (E. Coli)	50120	New impairment, covered under existing TMDL [CN 155.0, 10/25/2012], added to this segment for 2016.

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Water Body	Segment ID	Category 2014	Category 2016	Impairment Cause	EPA TMDL No.	Explanation
Lake Quannapowitt	MA93060	5	5	DDT (dichlorodiphenyltrichloroethane)		Impairment changed from "DDT" to "DDT in Fish Tissue".
				Excess Algal Growth		Impairment changed from "Excess Algal Growth" to "Harmful Algal Blooms".
Lynn Harbor	MA93-52	4A	4A	Enterococcus	50122	New impairment, covered under existing TMDL [CN 155.0, 10/25/2012], added to this segment for 2016.
Manchester Harbor	MA93-19	4A	4A	Enterococcus	50122	New impairment, covered under existing TMDL [CN 155.0, 10/25/2012], added to this segment for 2016.
Mill River	MA93-31	5	5	Escherichia Coli (E. Coli)	50120	New impairment, covered under existing TMDL [CN 155.0, 10/25/2012], added to this segment for 2016.
Nahant Bay	MA93-24	4A	4A	Enterococcus	50121	New impairment, covered under existing TMDL [CN 155.0, 10/25/2012], added to this segment for 2016.
Porter River	MA93-04	4A	4A	Enterococcus	50121	New impairment, covered under existing TMDL [CN 155.0, 10/25/2012], added to this segment for 2016.
Proctor Brook	MA93-39	5	5	Escherichia Coli (E. Coli)	50120	New impairment, covered under existing TMDL [CN 155.0, 10/25/2012], added to this segment for 2016.
				Foam/Flocs/Scum/Oil Slicks		Applicable WQS attained; reason for recovery unspecified.
				Taste and Odor		Applicable WQS attained; reason for recovery unspecified.
Salem Harbor	MA93-54	5	5	Enterococcus	50122	New impairment, covered under existing TMDL [CN 155.0, 10/25/2012], added to this segment for 2016.
Saugus River	MA93-34	5	5	Aquatic Plants (Macrophytes)		Original basis for listing was incorrect.
				Escherichia Coli (E. Coli)	50120	New impairment, covered under existing TMDL [CN 155.0, 10/25/2012], added to this segment for 2016.
Saugus River	MA93-35	4A	4A	Escherichia Coli (E. Coli)	50120	New impairment, covered under existing TMDL [CN 155.0, 10/25/2012], added to this segment for 2016.
Saugus River	MA93-44	5	5	Enterococcus	50122	New impairment, covered under existing TMDL [CN 155.0, 10/25/2012], added to this segment for 2016.
Shute Brook	MA93-50	4A	4A	Escherichia Coli (E. Coli)	50120	New impairment, covered under existing TMDL [CN 155.0, 10/25/2012], added to this segment for 2016.
Parker						
Pentucket Pond	MA91010	5	5	Fecal Coliform		Applicable WQS attained; reason for recovery unspecified.
Quinebaug						
Cady Brook	MA41-05	5	5	Fecal Coliform		Applicable WQS attained; due to change in WQS.
Hatchet Brook	MA41-14	5	2	Escherichia Coli (E. Coli)		Applicable WQS attained; reason for recovery unspecified.
Quinebaug River	MA41-01	5	5	Fecal Coliform		Applicable WQS attained; due to change in WQS.
Quinebaug River	MA41-03	5	5	(Debris/Floatables/Trash*)		Applicable WQS attained; reason for recovery unspecified.
				Taste and Odor		Applicable WQS attained; reason for recovery unspecified.
Shawsheen						
Content Brook	MA83-09	2	5	Escherichia Coli (E. Coli)	2587	New impairment, covered under existing TMDL [CN 122.0, 9/12/2002], added to this segment for 2016.

* TMDL not required (Non-pollutant)

Appendix 3
Impairments *removed* from categories 4 or 5 of the integrated list in 2016
(waters listed alphabetically by major watershed)

Water Body	Segment ID	Category 2014	Category 2016	Impairment Cause	EPA TMDL No.	Explanation
Elm Brook	MA83-23	--	2	(Physical substrate habitat alterations*)		New segment - Historic impairment from former segment (MA83-05) transferred to this segment. Applicable WQS attained; according to new assessment method.
				Fecal Coliform	2587	New segment - Historic impairment from former segment (MA83-05) transferred to this segment. Original basis for listing was incorrect.
				Turbidity		New segment - Historic impairment from former segment (MA83-05) transferred to this segment. Original basis for listing was incorrect.
Elm Brook	MA83-24	--	5	Escherichia Coli (E. Coli)	2587	New segment - Historic impairment from former segment (MA83-05) transferred to this segment. Impairment covered under existing TMDL [CN 122.0, 9/12/2002].
				Turbidity		New segment - Historic impairment from former segment (MA83-05) transferred to this segment. Original basis for listing was incorrect.
Long Meadow Brook	MA83-11	4A	4A	Escherichia Coli (E. Coli)	2587	New impairment, covered under existing TMDL [CN 122.0, 9/12/2002], added to this segment for 2016.
Rogers Brook	MA83-04	5	4A	Escherichia Coli (E. Coli)	2587	New impairment, covered under existing TMDL [CN 122.0, 9/12/2002], added to this segment for 2016.
				Turbidity		Applicable WQS attained; reason for recovery unspecified.
Sandy Brook	MA83-13	4A	4A	Escherichia Coli (E. Coli)	2587	New impairment, covered under existing TMDL [CN 122.0, 9/12/2002], added to this segment for 2016.
Shawsheen River	MA83-01	5	5	Escherichia Coli (E. Coli)	2587	New impairment, covered under existing TMDL [CN 122.0, 9/12/2002], added to this segment for 2016.
Shawsheen River	MA83-08	5	5	Escherichia Coli (E. Coli)	2587	New impairment, covered under existing TMDL [CN 122.0, 9/12/2002], added to this segment for 2016.
Shawsheen River	MA83-17	5	5	Escherichia Coli (E. Coli)	2587	New impairment, covered under existing TMDL [CN 122.0, 9/12/2002], added to this segment for 2016.
Shawsheen River	MA83-18	5	5	Mercury in Fish Tissue	2587	Applicable WQS attained; reason for recovery unspecified.
Shawsheen River	MA83-19	5	4A	Dissolved Oxygen		Applicable WQS attained; reason for recovery unspecified.
				Escherichia Coli (E. Coli)	2587	New impairment, covered under existing TMDL [CN 122.0, 9/12/2002], added to this segment for 2016.
Spring Brook	MA83-14	4A	2	Fecal Coliform	2587	Applicable WQS attained; due to change in WQS.
Strong Water Brook	MA83-07	4A	4A	Escherichia Coli (E. Coli)	2587	New impairment, covered under existing TMDL [CN 122.0, 9/12/2002], added to this segment for 2016.
Unnamed Tributary	MA83-15	5	5	Escherichia Coli (E. Coli)	2587	New impairment, covered under existing TMDL [CN 122.0, 9/12/2002], added to this segment for 2016.
Unnamed Tributary	MA83-21	3	4A	Escherichia Coli (E. Coli)	2587	New impairment, covered under existing TMDL [CN 122.0, 9/12/2002], added to this segment for 2016.
Vine Brook	MA83-06	4A	5	Aquatic Plants (Macrophytes)		Historic impairment from former segment (MA83003) transferred to this segment. Applicable WQS attained; according to new assessment method.
				Fecal Coliform	2587	Applicable WQS attained; due to change in WQS.

Appendix 3
Impairments *removed* from categories 4 or 5 of the integrated list in 2016
(waters listed alphabetically by major watershed)

Water Body	Segment ID	Category 2014	Category 2016	Impairment Cause	EPA TMDL No.	Explanation
South Coastal						
Bluefish River	MA94-30	5	4A	Fecal Coliform	61738	New TMDL [CN 255.0, 9/25/2014] applied for the 2016 cycle.
Cohasset Cove	MA94-32	5	4A	Fecal Coliform	61706, 61739	New TMDL [CN 255.0, 9/25/2014] applied for the 2016 cycle.
Cohasset Harbor	MA94-01	5	4A	Fecal Coliform	61708	New TMDL [CN 255.0, 9/25/2014] applied for the 2016 cycle.
Drinkwater River	MA94-21	5	5	Escherichia Coli (E. Coli)	61724	New TMDL [CN 255.0, 9/25/2014] applied for the 2016 cycle.
				Fecal Coliform	61724	New TMDL [CN 255.0, 9/25/2014] applied for the 2016 cycle.
Duxbury Bay	MA94-15	5	4A	Fecal Coliform	61735	New TMDL [CN 255.0, 9/25/2014] applied for the 2016 cycle.
Ellisville Harbor	MA94-34	5	4A	Fecal Coliform	61716	New TMDL [CN 255.0, 9/25/2014] applied for the 2016 cycle.
French Stream	MA94-03	5	5	Escherichia Coli (E. Coli)	61718	New TMDL [CN 255.0, 9/25/2014] applied for the 2016 cycle.
				Fecal Coliform	61718	New TMDL [CN 255.0, 9/25/2014] applied for the 2016 cycle.
Green Harbor	MA94-11	5	4A	Fecal Coliform	61731	New TMDL [CN 255.0, 9/25/2014] applied for the 2016 cycle.
Herring River	MA94-07	5	4A	Enterococcus	61727	New TMDL [CN 255.0, 9/25/2014] applied for the 2016 cycle.
				Fecal Coliform	61727	New TMDL [CN 255.0, 9/25/2014] applied for the 2016 cycle.
Iron Mine Brook	MA94-24	5	2	Fecal Coliform		Applicable WQS attained; due to change in WQS.
Jones River	MA94-14	5	4A	Fecal Coliform	61734	New TMDL [CN 255.0, 9/25/2014] applied for the 2016 cycle.
Musquashcut Pond	MA94-33	5	5	Fecal Coliform	61713	New TMDL [CN 255.0, 9/25/2014] applied for the 2016 cycle.
North River	MA94-05	5	5	Fecal Coliform	61725	New TMDL [CN 255.0, 9/25/2014] applied for the 2016 cycle.
North River	MA94-06	5	4A	Fecal Coliform	61730	New TMDL [CN 255.0, 9/25/2014] applied for the 2016 cycle.
Plymouth Harbor	MA94-16	5	5	Fecal Coliform	61737	New TMDL [CN 255.0, 9/25/2014] applied for the 2016 cycle.
Scituate Harbor	MA94-02	5	4A	Fecal Coliform	61715	New TMDL [CN 255.0, 9/25/2014] applied for the 2016 cycle.
Second Herring Brook	MA94-31	5	4A	Fecal Coliform	61721	New TMDL [CN 255.0, 9/25/2014] applied for the 2016 cycle.

Appendix 3
Impairments *removed* from categories 4 or 5 of the integrated list in 2016
(waters listed alphabetically by major watershed)

Water Body	Segment ID	Category 2014	Category 2016	Impairment Cause	EPA TMDL No.	Explanation
South River	MA94-09	5	4A	Enterococcus	61728	New TMDL [CN 255.0, 9/25/2014] applied for the 2016 cycle.
				Fecal Coliform	61728	New TMDL [CN 255.0, 9/25/2014] applied for the 2016 cycle.
The Gulf	MA94-19	5	4A	Fecal Coliform	61710	New TMDL [CN 255.0, 9/25/2014] applied for the 2016 cycle.
Third Herring Brook	MA94-27	5	2	Fecal Coliform		Applicable WQS attained; due to change in WQS.
Wampatuck Pond	MA94168	5	5	Excess Algal Growth		Impairment changed from "Excess Algal Growth" to "Harmful Algal Blooms".
Taunton						
Beaver Brook	MA62-09	4A	4A	Escherichia Coli (E. Coli)	40308	New impairment, covered under existing TMDL [CN 256.0, 6/16/2011], added to this segment for 2016.
Glue Factory Pond	MA62078	--	5	Dioxin (including 2,3,7,8-TCDD)		New segment - Historic impairment from former segment (MA62-39) transferred to this segment. Original basis for listing was incorrect.
				Fecal Coliform	40308	New segment - Historic impairment from former segment (MA62-39) transferred to this segment. Applicable WQS attained; reason for recovery unspecified.
				Pentachlorophenol (PCP)		New segment - Historic impairment from former segment (MA62-39) transferred to this segment. Original basis for listing was incorrect.
Matfield River	MA62-32	5	5	Escherichia Coli (E. Coli)	40308	New impairment, covered under existing TMDL [CN 256.0, 6/16/2011], added to this segment for 2016.
Meadow Brook	MA62-38	4A	4A	Escherichia Coli (E. Coli)	40308	New impairment, covered under existing TMDL [CN 256.0, 6/16/2011], added to this segment for 2016.
Monponsett Pond, West Basin	MA62119	5	5	Excess Algal Growth		Impairment changed from "Excess Algal Growth" to "Harmful Algal Blooms".
Rumford River	MA62-62	--	5	Dioxin (including 2,3,7,8-TCDD)		New segment - Historic impairment from former segment (MA62-39) transferred to this segment. Original basis for listing was incorrect.
				Fecal Coliform	40308	New segment - Historic impairment from former segment (MA62-39) transferred to this segment. Applicable WQS attained; due to change in WQS.
				Pentachlorophenol (PCP)		New segment - Historic impairment from former segment (MA62-39) transferred to this segment. Original basis for listing was incorrect.
Rumford River	MA62-63	--	5	Fecal Coliform	40308	New segment - Historic impairment from former segment (MA62-39) transferred to this segment. Applicable WQS attained; due to change in WQS.
Salisbury Brook	MA62-08	5	5	Escherichia Coli (E. Coli)	40308	New impairment, covered under existing TMDL [CN 256.0, 6/16/2011], added to this segment for 2016.
Salisbury Plain River	MA62-05	5	5	Escherichia Coli (E. Coli)	40308	New impairment, covered under existing TMDL [CN 256.0, 6/16/2011], added to this segment for 2016.

Appendix 3
Impairments *removed* from categories 4 or 5 of the integrated list in 2016
(waters listed alphabetically by major watershed)

Water Body	Segment ID	Category 2014	Category 2016	Impairment Cause	EPA TMDL No.	Explanation
Salisbury Plain River	MA62-06	5	5	(Debris/Floatables/Trash*)		Applicable WQS attained; reason for recovery unspecified.
				Escherichia Coli (E. Coli)	40308	New impairment, covered under existing TMDL [CN 256.0, 6/16/2011], added to this segment for 2016.
Shumatuscacant River	MA62-33	5	5	Turbidity		Historic impairment from former segment (MA62090) transferred to this segment. Applicable WQS attained; reason for recovery unspecified.
Taunton River	MA62-02	4A	4A	Enterococcus	40310	New impairment, covered under existing TMDL [CN 256.0, 6/16/2011], added to this segment for 2016.
Taunton River	MA62-04	5	5	Enterococcus	40310	New impairment, covered under existing TMDL [CN 256.0, 6/16/2011], added to this segment for 2016.
Three Mile River	MA62-56	4A	2	Fecal Coliform	40308	Applicable WQS attained; due to change in WQS.
Trout Brook	MA62-07	5	5	Escherichia Coli (E. Coli)	40308	New impairment, covered under existing TMDL [CN 256.0, 6/16/2011], added to this segment for 2016.
				Total Suspended Solids (TSS)		Applicable WQS attained; reason for recovery unspecified.
				Turbidity		Applicable WQS attained; reason for recovery unspecified.
Wading River	MA62-47	5	5	Fecal Coliform	40307	Applicable WQS attained; due to change in WQS.
Wading River	MA62-60	--	4C	Fecal Coliform	40308	New segment - Historic impairment from former segment (MA62-49) transferred to this segment. Applicable WQS attained; due to change in WQS.
Wading River	MA62-61	--	2	Fecal Coliform	40308	New segment - Historic impairment from former segment (MA62-49) transferred to this segment. Applicable WQS attained; due to change in WQS.
Ten Mile						
Bungay River	MA52-06	5	5	Fecal Coliform		Applicable WQS attained; due to change in WQS.
Ten Mile River	MA52-02	5	5	Excess Algal Growth		Applicable WQS attained; reason for recovery unspecified.
				Phosphorus, Total		Original basis for listing was incorrect.
				Turbidity		Applicable WQS attained; reason for recovery unspecified.
Ten Mile River	MA52-03	5	5	Aquatic Plants (Macrophytes)		Not caused by a pollutant, impairment still exists.
				Chlordane		Impairment changed from "Chlordane" to "Chlordane in Fish Tissue".
				Dissolved Oxygen Supersaturation		Applicable WQS attained; according to new assessment method.
Westfield						
Moose Meadow Brook	MA32-40	--	2	Fecal Coliform		New segment - Historic impairment from former segment (MA32-23) transferred to this segment. Original basis for listing was incorrect.
				Turbidity		New segment - Historic impairment from former segment (MA32-23) transferred to this segment. Original basis for listing was incorrect.

* TMDL not required (Non-pollutant)

Appendix 3
Impairments *removed* from categories 4 or 5 of the integrated list in 2016
(waters listed alphabetically by major watershed)

Water Body	Segment ID	Category 2014	Category 2016	Impairment Cause	EPA TMDL No.	Explanation
Moose Meadow Brook	MA32-41	--	5	Turbidity		New segment - Historic impairment from former segment (MA32-23) transferred to this segment. Applicable WQS attained; reason for recovery unspecified.
Westfield River	MA32-05	5	2	Benthic Macroinvertebrates		Applicable WQS attained; due to restoration activities.
				Excess Algal Growth		Applicable WQS attained; reason for recovery unspecified.
				Taste and Odor		Applicable WQS attained; reason for recovery unspecified.
				Turbidity		Applicable WQS attained; reason for recovery unspecified.

Appendix 4
Changes made between the *proposed* and *final* versions of the 2016 integrated list

Water Body	Segment ID	Category: Proposed	Category: Final	Impairment Cause Newly Added or Restored
Boston Harbor: Neponset				
Mother Brook	MA73-28	5	5	Escherichia Coli (E. Coli)
Mother Brook	MA73-28	5	5	Fecal Coliform
Neponset River	MA73-01	5	5	Nutrient/Eutrophication Biological Indicators
Pecunit Brook	MA73-25	2	4a	Escherichia Coli (E. Coli)
Boston Harbor: Weymouth & Weir				
Weir River	MA74-02	5	5	Escherichia Coli (E. Coli)
Weir River	MA74-02	5	5	Fecal Coliform
Buzzards Bay				
Acushnet River	MA95-31	5	5	Nutrients
Acushnet River	MA95-32	5	5	Dissolved Oxygen
Acushnet River	MA95-32	5	5	Nutrients
Outer New Bedford Harbor	MA95-63	5	5	Dissolved Oxygen
Outer New Bedford Harbor	MA95-63	5	5	Metals
Outer New Bedford Harbor	MA95-63	5	5	Nitrogen, Total
Outer New Bedford Harbor	MA95-63	5	5	Other Organics
Nasketucket River	MA95-67	2	5	Nitrogen, Total
Nasketucket River	MA95-79	5	5	Nitrogen, Total
Rands Harbor	MA95-78	5	5	Nitrogen, Total
Wild Harbor	MA95-20	5	5	Nitrogen, Total
Wild Harbor River	MA95-68	4A	5	Nutrient/Eutrophication Biological Indicators
Charles				
Bogastow Brook	MA72-16	2	4a	Escherichia Coli (E. Coli)
Bogastow Brook	MA72-16	2	4a	Fecal Coliform
Cambridge Reservoir	MA72014	3	5	Chloride
Cambridge Reservoir, Upper Basin	MA72156	5	5	Chloride
Charles River	MA72-06	5	5	Cause Unknown (Fish Population Imbalance)[1]
Hobbs Brook	MA72-45	--	5	Chloride
Hobbs Brook	MA72-46	--	5	Chloride
Unnamed Tributary	MA72-47	--	5	Chloride
Unnamed Tributary	MA72-48	--	5	Chloride
Concord				
Hop Brook	MA82A-06	5	5	Nutrient/Eutrophication Biological Indicators
Connecticut				
Mill River	MA34-28	2	5	Escherichia Coli (E. Coli)
French				
French River	MA42-06	5	5	Nutrients
Ipswich				
Miles River	MA92-03	5	5	Benthic Macroinvertebrates
Nashua				
Gates Brook	MA81-24	2	5	Escherichia Coli (E. Coli)
Gates Brook	MA81-24	2	5	Fecal Coliform
Shawsheen				
Shawsheen River	MA83-18	4A	5	Dissolved Oxygen
Westfield				
Congamond Lakes	MA32023	4C	5	Dissolved Oxygen
Congamond Lakes	MA32023	4C	5	Nutrient/Eutrophication Biological Indicators

[1]Text shown in parentheses is not part of the ADB cause or ATTAINS parameter name, but is provided as further explanation of the impairment from the cause comment field in the ADB or ATTAINS database.

REPORT ON

NITROGEN LOADING ANALYSIS FOR GROUNDWATER SUPPLIES

FOR

THE SUDBURY WATER DISTRICT SUDBURY, MASSACHUSETTS

REVISED - MAY 1994

COMMONWEALTH OF MASSACHUSETTS
TSUNG TING CHIANG
No. 23891
REGISTERED PROFESSIONAL ENGINEER

T. T. Chiang

H_2O ENGINEERING CONSULTING ASSOCIATES, INC.

H_2O Engineering Consulting Associates, Inc.

6 Page Place, Woburn, MA 01801
Telephone (617) 933-6961 Fax (617) 935-1877

May 11, 1994

Board of Water Commissioners
Sudbury Water District
199 Raymond Road
Sudbury, MA 01776

RE: Nitrate Loading Analysis

Dear Commissioners:

As requested, the report on Nitrogen Loading Analysis for Groundwater Supplies for the Sudbury Water District, submitted in January 1994, has been revised. Enclosed in this revision is two additional Nitrogen Loading Analysis Models adjusted to the future development buildout condition of the District.

The first additional model accounts for the condition of

1. Five (5) persons and 10,000 square feet of lawn per house in the future development buildout of the District and

2. The existing houses have only three (3) persons per house

The second additional Model was performed for the condition of:

1. The same as the first model: Five (5) persons and 10,000 square feet of lawn per house in the future development buildout of the District and

2. The existing houses also have five (5) persons per house.

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The results of these models are tabulated and Pie graphed in Appendix C and Appendix D of this report for your study.

Should you have any questions, please call our office.

Very truly yours

T. T Chiang

Edward T. T. Chiang, Ph.D., P.E.
President

enclosures

TABLE OF CONTENTS

1. EXECUTIVE SUMMARY

2. APPENDIX A: ZONE II DELINEATION MAPS

3. APPENDIX B: HORSLEY & WITTEN, INC. REPORT

4. APPENDIX C: ADDITIONAL NITROGEN LOADING ANALYSIS MODEL
(For 5 person, 10,000 sf of lawn per future buildout house
and 3 persons, per existing house)

5. APPENDIX D: ADDITIONAL NITROGEN LOADING ANALYSIS MODEL
(For 5 person, 10,000 sf of lawn per future buildout house
and 5 persons per existing house)

H_2O Engineering Consulting Associates, Inc.

水利工程顧問

6 Page Place Woburn, MA 01801
Telephone (617) 933-6961, 933-9369 Fax (617) 935-1877

January 7, 1994

Board of Commissioners
Sudbury Water District
199 Raymond Road
Sudbury, MA 01776

RE: Nitrogen Loading Analysis for Groundwater Supplies of the Sudbury Water District

Gentlemen:

In accordance with our agreement, H_2O Engineering Consulting Associates, Inc., is pleased to submit our report on the results of the Nitrogen Loading Analysis for the Groundwater Supplies of the Sudbury Water District.

Purpose of Nitrate Loading Analysis:

Due to the revisions to Massachusetts DEP Drinking Water and Wellhead Protection Regulations, a Nitrate Loading Analysis for the Zone II area of all Sudbury Water District's existing wells and possible future wells must be conducted. The only alternative to that is to default to the State's maximum zoning allowance of 440 gallons per 40,000 square feet land area per day. The study predicts the concentration of nitrogen loading on groundwater at the buildout condition according to existing zoning, land use regulations and bylaws. If the concentration of Nitrogen Loading on groundwater exceed the limits set by the Massachusetts DEP, the zoning, land use regulation, the bylaws may have to be revised.

Scope of Nitrate Loading:

A. Data Collection - Information used to perform the analysis include the following:

o Sudbury zoning bylaws and Zoning maps

- Assessors maps and Records for the Zone II areas surrounding all public supply wells
- Available aerial photos for the Zone II areas
- Available wetland maps and Zone II maps
- Pumping records and Water quality data
- Large water use data within Zone II areas, especially commercial and industrial users
- Hydrologic maps and Topographical maps.

B. Buildout Analysis: A mass-balance accounting model shall be used and calibrated for current and future development within Zone II areas under existing Sudbury Board of Health regulations, zoning bylaws and maps.

C. Nitrogen Loading Analysis: Nitrogen Loading Analysis of Zone II areas for the Raymond Road Aquifer, Hop Brook Aquifer and Well 5 are conducted. Inputs to the model will include nitrogen from septic systems, lawn fertilizers, pavement and roof runoff, and natural precipitation. Using these calibrated models, the concentrations of nitrogen in the production wells under buildout conditions will be determined. The concentrations of nitrogen are defined as the total load of nitrate divided by the total volume of water. The total load of nitrate includes load of nitrate from recharge and load of nitrate from source.

D. Report and Meeting: After the completion of the Nitrate Loading Analysis, a report will be prepared to present the findings.

Summary:

Protection of groundwater quality for public water supply has become a priority environmental issue, especially for sources from unconfined aquifers such as Sudbury Water District's wells. The degradation of groundwater quality due to subsurface wastewater disposal systems, lawn fertilizers, and agricultural activities have become a serious problem. Nitrate concentrations in groundwater have been considered a good monitor of the level of groundwater degradation. Therefore, modeling existing nitrate concentration in groundwater and predicting the nitrate concentration due to the land use activities is necessary for possible change of land use in the future to control the level of groundwater quality degradation.

To complete the tasks, H_2O Engineering Consulting Associates, Inc., has teamed with Dr. Michael H. Frimpter of Horsley & Witten, Inc., an expert in the field of modeling nitrate concentration in groundwater.

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Nitrogen Loading Analyses were conducted for four Zone II wellhead protection areas for the Sudbury Water District for existing and buildout development conditions. The four Zone II areas include the following:

- Raymond Road Aquifer - Wells 2, 4, 6, 7 and 9
- Hop Brook Aquifer - Wells 3, 8 and 10
- Well 5 Zone II area (Zoned as Research District)
- Future Well 11 Zone II area

With the exception of Future Well 11, all other Zone II areas were determined based on field test data and computer analysis, and all have been approved by DEP.

Based on the calibrated mass-balance accounting model developed by Dr. Michael H. Frimpter, all four Zone II area nitrate concentrations at buildout condition will be below the maximum contaminant level(MCL) of 10 mg/l set by the U.S. Environmental Protection Agency and the Massachusetts DEP. However, the State DEP recommended planning goal limits for nitrate concentration is 5 mg/l. The following table indicates the analyses results:

SUMMARY OF MODELED NITRATE CONCENTRATION

ZONE II AREA OF WELL	NITRATE CONCENTRATION (Mg/l)		
	CONDITION		PERCENTAGE INCREASE
	CURRENT DEVELOPMENT	BUILDOUT DEVELOPMENT	
WELL No.5	2.25	7.98	254.7%
WELL No. 11	1.16	2.46	112.1%
HOP BROOK AQUIFER WELL 3, 8, AND 10	3.91	4.20	7.4%
RAYMOND ROAD AQUIFER WELLS 2, 4, 6, 7, AND 9.	3.35	3.85	14.9%

The largest increase of nitrate concentration would be at Well 5 Zone II due to the fact that current land use and the possible future land use based upon current zoning bylaw is significantly different. A major portion of the Well 5 Zone II area is undeveloped at present (sand pits, grass and wooded). The buildout prediction is based on this area as zoned Research District with allowable maximum 1000 gallons per day per acre wastewater disposal rate. The result indicated that the nitrate concentration in Well 5 will reach to about 8.0 mg/l, exceeding the State recommended planning goal limit of 5.0 mg/l by a significant margin.

The estimated Well 11 Zone II area currently has little development. This area, developed or not developed, would not heavily degrade the groundwater quality due to the major portion of this area is wetlands and owned by the State Fish and Game and National Wild Life Refuge.

Appendix A includes maps of the four Zone II areas.

Appendix B contains the analysis report prepared by Dr. Michael H. Frimpter of Horsley & Witten, Inc.

Recommendations:

Although the analysis indicated that the buildout Nitrogen Loading in all four Zone II areas will not exceed the MCL set by the U.S. EPA and the State DEP, it is very important that these sources be protected. The following is recommended:

A. The District working with the Sudbury Board of Health and Planning Board should review any subdivision and development of land within Zone II areas so to make sure that all:

- future sub-surface wastewater disposal systems be designed and installed properly.
- Repairing or modification of existing wastewater disposal systems are upgraded to the latest standards.

B. Land owners within the Zone II areas should be educated to minimize the use of lawn fertilizers.

C. For industrial zoned areas, the type of industry and commerce which will generate hazardous wastes should not be allowed to locate within Zone II area.

D. Given the potential impact to Well 5 by the Research District full buildout, Sudbury Water District should work with Sudbury Planning Board to reconsider the

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1000 gallons per day per acre limit of the wastewater generation allowances in the Research District.

H_2O Engineering Consulting Associates, Inc., wishes to express our appreciation for the cooperation, data research, and assistance received from the District staff, especially Mr. Carroll and Mr. Leupold, of the Sudbury Board of Health.

H_2O Engineering suggests that two copies of the report be submitted to DEP (Northeast Region, Woburn and DEP Main Office, Boston) for their review and comment.

Should have any questions, please contact us.

Very truly yours,

Dr. Edward T.T. Chiang, P.E.
President

Enclosures

REPORT ON

NITROGEN LOADING ANALYSIS FOR GROUNDWATER SUPPLIES

FOR

THE SUDBURY WATER DISTRICT SUDBURY, MASSACHUSETTS

DECEMBER 1993

COMMONWEALTH OF MASSACHUSETTS
TSUNG TING CHIANG
No. 23891
REGISTERED PROFESSIONAL ENGINEER

T. T. Chiang

H_2O ENGINNERING CONSULTING ASSOCIATES, INC.

H_2O Engineering Consulting Associates, Inc.

水利工程顧問

6 Page Place Woburn, MA 01801
Telephone (617) 933-6961, 933-9369 Fax (617) 935-1877

January 7, 1994

Board of Commissioners
Sudbury Water District
199 Raymond Road
Sudbury, MA 01776

RE: Nitrogen Loading Analysis for Groundwater Supplies of the Sudbury Water District

Gentlemen:

In accordance with our agreement, H_2O Engineering Consulting Associates, Inc., is pleased to submit our report on the results of the Nitrogen Loading Analysis for the Groundwater Supplies of the Sudbury Water District.

Purpose of Nitrate Loading Analysis:

Due to the revisions to Massachusetts DEP Drinking Water and Wellhead Protection Regulations, a Nitrate Loading Analysis for the Zone II area of all Sudbury Water District's existing wells and possible future wells must be conducted. The only alternative to that is to default to the State's maximum zoning allowance of 440 gallons per 40,000 square feet land area per day. The study predicts the concentration of nitrogen loading on groundwater at the buildout condition according to existing zoning, land use regulations and bylaws. If the concentration of Nitrogen Loading on groundwaters exceed the limits set by the Massachusetts DEP, the zoning, land use regulation, the bylaws may have to be revised.

Scope of Nitrate Loading:

A. Data Collection - Information used to perform the analysis include the following:

- Sudbury zoning bylaws and Zoning maps
- Assessors maps and Records for the Zone II areas surrounding all public supply wells
- Available aerial photos for the Zone II areas
- Available wetland maps and Zone II maps
- Pumping records and Water quality data
- Large water use data within Zone II areas, especially commercial and industrial users
- Hydrologic maps and Topographical maps.

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B. Buildout Analysis: A mass-balance accounting model shall be used and calibrated for current and future development within Zone II areas under existing Sudbury Board of Health regulations, zoning bylaws and maps.

C. Nitrogen Loading Analysis: Nitrogen Loading Analysis of Zone II areas for the Raymond Road Aquifier, Hop Brook Aquifier and Well 5 are conducted. Inputs to the model will include nitrogen from septic systems, lawn fertilizers, pavement and roof runoff, and natural precipitation. Using these calibrated models, the concentrations of nitrogen in the production wells under buildout conditions will be determined. The concentrations of nitrogen are defined as the total load of nitrate divided by the total volume of water. The total load of nitrate includes load of nitrate from recharge and load of nitrate from source.

D. Report and Meeting: After the completion of the Nitrate Loading Analysis, a report will be prepared to present the findings.

Summary:

Protection of groundwater quality for public water supply has become a priority environmental issue, especially for sources from unconfined aquifiers such as Sudbury Water District's wells. The degradation of groundwater quality due to subsurface wastewater disposal systems, lawn fertilizers, and agricultural activities have become a serious problem. Nitrate concentrations in groundwater have been considered a good monitor of the level of groundwater degradation. Therefore, modeling existing nitrate concentration in groundwater and predicting the nitrate concentration due to the land use activities is necessary for possible change of land use in the future to control the level of groundwater quality degradation.

To complete the tasks, H_2O Engineering Consulting Associates, Inc., has teamed with Dr. Michael H. Frimpter of Horsley & Witten, Inc., an expert in the field of modeling nitrate concentration in groundwater.

Nitrogen Loading Analyses were conducted for four Zone II wellhead protection areas for the Sudbury Water District for existing and buildout development conditions. The four Zone II areas include the following:

- Raymond Road Aquifier - Wells 2, 4, 6, 7 and 9
- Hop Brook Aquifier - Wells 3, 8 and 10
- Well 5 Zone II area (Zoned as Research District)
- Future Well 11 Zone II area

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With the exception of Future Well 11, all other Zone II areas were determined based on field test data and computer analysis, and all have been approved by DEP.

Based on the calibrated mass-balance accounting model developed by Dr. Michael H. Frimpter, all four Zone II area nitrate concentrations at buildout condition will be below the maximum contaminant level(MCL) of 10 mg/l set by the U.S. Environmental Protection Agency and the Massachusetts DEP. However, the State DEP recommended planning goal limits for nitrate concentration is 5 mg/l. The following table indicates the analyses results:

SUMMARY OF MODELED NITRATE CONCENTRATION

Zone II Area of Wells	Nitrate Concentration, Mg/l		
	Current	Buildout	Percentage Increase
Well 5	2.25	7.98	254.7%
Well 11	1.16	2.46	112.1%
Hop Brook Aquifier Wells 3, 8, and 10	3.91	4.20	7.4%
Raymond Road Aquifier Wells 2, 4, 6, 7, and 9	3.35	3.85	14.9%

The largest increase of nitrate concentration would be at Well 5 Zone II due to the fact that current land use and the possible future land use based upon current zoning bylaw is significantly different. A major portion of the Well 5 Zone II area is undeveloped at present (sand pits, grass and wooded). The buildout prediction is based on this area as zoned Research District with allowable maximum 1000 gallons per day per acre wastewater disposal rate. The result indicated that the nitrate concentration in Well 5 will reach to about 8.0 mg/l, exceeding the State recommended planning goal limit of 5.0 mg/l by a significant margin.

The estimated Well 11 Zone II area currently has little development. This area, developed or not developed, would not heavily degrade the groundwater quality due to the major portion of this area is wetlands and owned by the State Fish and Game and National Wild Life Refuge.

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Appendix A includes maps of the four Zone II areas.

Appendix B contains the analysis report prepared by Dr. Michael H. Frimpter of Horsley & Witten, Inc.

Recommendations:

Although the analysis indicated that the buildout Nitrogen Loading in all four Zone II areas will not exceed the MCL set by the U.S. EPA and the State DEP, it is very important that these sources be protected. The following is recommended:

A. The District working with the Sudbury Board of Health and Planning Board should review any subdivision and development of land within Zone II areas so to make sure that all:

   - future sub-surface wastewater disposal systems be designed and installed properly.
   - Repairing or modification of existing wastewater disposal systems are upgraded to the latest standards.

B. Land owners within the Zone II areas should be educated to minimize the use of lawn fertilizers.

C. For industrial zoned areas, the type of industry and commerce which will generate hazardous wastes should not be allowed to locate within Zone II area.

D. Given the potential impact to Well 5 by the Research District full buildout, Sudbury Water District should work with Sudbury Planning Board to reconsider the 1000 gallons per day per acre limit of the wastewater generation allowances in the Research District.

H_2O Engineering Consulting Associates, Inc., wishes to express our appreciation for the cooperation, data research, and assistance received from the District staff, especially Mr. Carroll and Mr. Leupold, of the Sudbury Board of Health.

H_2O Engineering suggests that two copies of the report be submitted to DEP (Northeast Region, Woburn and DEP Main Office, Boston) for their review and comment.

Should have any questions, please contact us.

Very truly yours,

T. T. Chiang

Dr. Edward T.T. Chiang, P.E.
President

Enclosures

SUDBURY PLANNING BOARD
FLYNN BUILDING
SUDBURY, MA 01776

HOP BROOK PONDS SYSTEM STUDY
SUDBURY, MASSACHUSETTS

Prepared for:

Board of Health
Town of Sudbury

Prepared by:

Whitman & Howard, Inc.
Wellesley, Massachusetts

JULY 1989

J.N. 87-368

TABLE OF CONTENTS

Section		Page
	LETTER OF TRANSMITTAL	
	LIST OF TABLES	v
	LIST OF FIGURES	vii
I.	EXECUTIVE SUMMARY	1-1
	A. Purpose of the Study	1-1
	B. Summary of Findings and Recommendations	1-1
II.	INTRODUCTION	2-1
	A. Background Information	2-1
	1. Process of Lake Eutrophication	2-1
	2. Previous Studies of the Hop Brook Ponds System	2-2
	3. Hop Brook Ponds System Study	2-3
	B. Historical Review of the Hop Brook Watershed	2-4
III.	CHARACTERISTICS OF THE WATERSHEDS	3-1
	A. Size and Location	3-1
	1. Hager Pond Watershed	3-1
	2. Grist Millpond Watershed	3-3
	3. Carding Millpond Watershed	3-3
	4. Stearns Millpond Watershed	3-3
	B. General Climatology	3-4
	C. Topography and Drainage	3-4
	D. General Hydrology	3-6
	E. General Soils Information	3-7
	1. Soil Properties	3-7
	2. Soil Groups	3-7
	3. Soil Mapping	3-9
	4. Relationship to Subsurface Wastewater Disposal and Aquifer Areas	3-11
	F. Land Use	3-12
IV.	DESCRIPTION OF HOP BROOK PONDS	4-1
	A. Hager Pond	4-1
	1. Overview	4-1
	2. Pond Morphology	4-1

TABLE OF CONTENTS (CONT)

Section | Page

B. Grist Millpond 4-1

1. Overview 4-1
2. Pond Morphology 4-4

C. Carding Millpond 4-4

1. Overview 4-4
2. Pond Morphology 4-7

D. Stearns Millpond 4-7

1. Overview 4-7
2. Pond Morphology 4-10

E. Pond Water-Level Controls 4-10

V. MARLBOROUGH EASTERLY WASTEWATER TREATMENT PLANT (MEWWTP) 5-1

A. History of MEWWTP 5-1
B. Current MEWWTP NPDES Permit Status 5-1
C. Implications for Future Water Quality in the Hop Brook System 5-2

VI. ANALYSES OF DIAGNOSTIC DATA 6-1

A. Objective of Study 6-1
B. Sampling Collection and Analyses 6-1

1. Sampling Stations 6-1
2. Sampling Methodology 6-1
3. Sample Analyses 6-3
4. Comparative Analyses 6-3

C. Analyses of Physical Data 6-3

1. Water Temperature 6-3
2. Water Transparency 6-4

D. Analyses of Chemical Data 6-9

1. Dissolved Oxygen 6-9
2. pH and Alkalinity 6-11
3. Chlorides 6-14
4. Suspended Solids, Dissolved Solids, and Turbidity 6-15
5. Phosphorus 6-15
6. Nitrogen 6-23
7. Summary of Chemical Analyses 6-28

TABLE OF CONTENTS (CONT)

Section		Page
	E. Analyses of Biological Data	6-29
	1. Bacteriological Samples	6-29
	2. Phytoplankton and Chlorophyll a	6-31
	3. Aquatic Macrophytes	6-35
	F. In-Pond Sediment Investigations	6-44
VII.	SANITARY QUESTIONNAIRE SURVEY RESULTS	7-1
	A. Objective of Study	7-1
	B. Results of Hop Brook Watershed Wastewater Questionnaire Survey	7-1
VIII.	HYDROLOGIC BUDGET	8-1
	A. Introduction	8-1
	B. Hager Pond Calculations	8-3
	C. Grist Millpond Calculations	8-3
	D. Carding Millpond Calculations	8-7
	E. Stearns Millpond Calculations	8-7
IX.	LIMITING NUTRIENT (PHOSPHORUS) BUDGET	9-1
X.	DISCUSSION OF ALTERNATIVES	10-1
	A. Introduction	10-1
	B. Reduction in Nutrient Loadings into the Ponds System	10-1
	C. In-Pond Restoration Techniques	10-3
	1. Dredging	10-3
	2. Chemical Treatment	10-4
	D. Pond Management Techniques	10-4
	1. Water-Level Manipulation	10-4
	2. Watershed Management	10-5
	3. Aquatic Macrophyte Harvesting	10-6
XI.	RECOMMENDATIONS	11-1
XII.	REFERENCES	12-1
Appendix		
A.	Hop Brook Pond System Questionnaire	A-1

LIST OF TABLES

Table		Page
3-1	Watershed Coverage Area	3-3
3-2	Climatological Data	3-5
3-3	Subwatershed Areas within the Hop Brook Study Area	3-8
3-4	Soil Hydrologic Group by Subwatershed	3-10
4-1	Hager Pond Morphometric Data	4-3
4-2	Grist Millpond Morphometric Data	4-6
4-3	Carding Millpond Morphometric Data	4-9
4-4	Stearns Millpond Morphometric Data	4-12
6-1	Sampling Stations in Sudbury Ponds Study	6-2
6-2	Pond Temperature, Dissolved Oxygen, and Percent Saturation: Grist Millpond	6-5
6-3	Pond Temperature, Dissolved Oxygen, and Percent Saturation: Carding Millpond	6-6
6-4	Pond Temperature, Dissolved Oxygen, and Percent Saturation: Stearns Millpond	6-7
6-5	Secchi Disk Transparency	6-8
6-6	Inlet and Outlet Temperatures, Dissolved Oxygen, and Percent Saturation	6-10
6-7	Alkalinity	6-12
6-8	pH	6-13
6-9	Chloride	6-16
6-10	Total Suspended Solids	6-17
6-11	Total Dissolved Solids	6-18
6-12	Turbidity	6-19
6-13	Total Phosphorus	6-21
6-14	Ammonia Nitrogen	6-25
6-15	Nitrate Nitrogen	6-26

LIST OF TABLES (CONT)

Table		Page
6-16	Total Kjeldahl Nitrogen	6-27
6-17	Fecal Coliform Bacteria	6-30
6-18	Fecal Streptococci Bacteria	6-32
6-19	Chlorophyll a	6-33
6-20	Phytoplankton	6-34
6-21	In-Pond Sediment Data	6-49
6-22	Great Lakes Sediment Rating Criteria	6-50
6-23	Comparative Pollutional Status of the Sudbury Ponds' Sediments	6-51
8-1	Marlborough Easterly Wastewater Treatment Plant Effluent Volumes	8-4
8-2	Determination of Wastewater Flow Versus Contributions from Other Sources Entering Hager Pond	8-5
9-1	Grist Millpond Existing Phosphorus Loading Rates	9-3
9-2	Carding Millpond Existing Phosphorus Loading Rates	9-4
9-3	Stearns Millpond Existing Phosphorus Loading Rates	9-5
9-4	Phosphorus Loading Results	9-6

LIST OF FIGURES

Figures		Page
3-1	Hop Brook Ponds Study - Watershed Areas	3-2
4-1	Hager Pond Bathymetric Map and Location of Sampling Stations	4-2
4-2	Grist Pond Bathymetric Map and Location of Sampling Stations	4-5
4-3	Carding Pond Bathymetric Map and Location of Sampling Stations	4-8
4-4	Stearns Pond Bathymetric Map and Location of Sampling Stations	4-11
6-1	Grist Millpond Aquatic Macrophyte Density Map	6-36
6-2	Grist Millpond Aquatic Macrophyte Distribution Map	6-37
6-3	Carding Millpond Aquatic Macrophyte Density Map	6-38
6-4	Carding Millpond Aquatic Macrophyte Distribution Map	6-39
6-5	Stearns Millpond Aquatic Macrophyte Density Map	6-40
6-6	Stearns Millpond Aquatic Macrophyte Distribution Map	6-41
6-7	Grist Millpond Substrate Map	6-45
6-8	Carding Millpond Substrate Map	6-46
6-9	Stearns Millpond Substrate Map	6-47
8-1	Hydrologic Cycle Diagram	8-2

I. EXECUTIVE SUMMARY

A. PURPOSE OF THE STUDY

This study was conducted to determine the current pollutional status of Grist, Carding, and Stearns Millponds in Sudbury. A further purpose was was to identify the sources of the ponds' water quality problems and propose cleanup alternatives.

The study consisted of two phases; a diagnostic phase and a feasibility phase. The diagnostic phase involved collecting data and identifying the existing and potential sources of pollution affecting the Sudbury ponds. The feasibility phase involved analyzing and applying collected data to assess methods for pollution control.

B. SUMMARY OF FINDINGS AND RECOMMENDATIONS

The conclusion of the 12-month diagnostic phase is that the excessive algal and macrophyte growth within the Sudbury ponds is primarily due to the discharge from the Marlborough Easterly Wastewater Treatment Plant (MEWWTP) which has, since 1896, discharged treated effluent to Hop Brook. The treatment plant effluent comprises between 50 and 90 percent of the flow in Hop Brook. The effluent is a rich source of phosphorus, the nutrient determined to be the key influence to aquatic plant growth rates within the ponds.

The gradual filling of the ponds, exacerbated by both the MEWWTP effluent and watershed development, has significantly decreased the water depths within the ponds. This depth decrease has led to an increase in the area available for rooted macrophyte growth. The elevated nutrient levels have provided an ideal media for algal and floating macrophyte growth. The profusion of aquatic plant growth is symptomatic of the hypereutrophic state of the ponds. These problems have further negative impacts to the community because they depreciate many of what are considered the finer characteristics of the ponds and are limiting the ponds uses. Specifically, recreational-uses, such as boating and fishing are becoming impossible due to the excessive aquatic plant growth caused by nutrient loading. Also, the aesthetic beauty once seen in the ponds is diminishing. Repugnant odors from the ponds, unsightly plant growth, and mosquitos have changed the ponds from the once open water area to inland wetlands.

A multi-phased approach to solving the problems of the Sudbury ponds should be undertaken. First, nutrient inputs to the ponds must be curtailed. Since 95 percent of the phosphorus loading to the ponds comes from the MEWWTP, the nutrient levels in the effluent should be reduced. The City of Marlborough should consider additional tertiary treatment techniques, effluent redirection/reduction, and influent controls to achieve a meaningful decrease in nutrient (especially phosphorus) loading to Hop Brook.

Dredging portions of each pond to physically remove phosphorus-laden sediments and decrease the area of the littoral zone should be considered. The dredging alternative involves the mechanical removal of approximately 140,000 cubic yards of soft sediment at an estimated cost of $2.1 million.

Mechanical removal of vegetation (harvesting), or physically limiting the area available for plant growth, show promise as an alternative to dredging. These methods may result in a decrease in rooted plant densities, but do not effectively remove sediments from the ponds or increase pond depths.

Watershed management techniques and pond water-level manipulation should also be part of the restoration plan for the three ponds. Lawn fertilizers, unmonitored septic systems, and improper development techniques add to the nutrient loadings to the ponds. Water-level manipulation can be an effective tool in limiting the growth of aquatic macrophytes by removing a portion of the biomass from the pond system.

In order to achieve the goal of cleaning up these ponds, it is essential for the City of Marlborough and the Town of Sudbury to cooperate in these efforts. This is an effort that can provide a healthy and desirable recreational and aesthetic asset to both communities.

Report On
Raymond Road Aquifer Study

Sudbury Water District
Sudbury, Massachusetts

For
The Board of Water Commissioners
Milton D. Bartlett, Chairman
Robert F. Boyle
George Mercury

Winthrop H. Fairbank, Executive Secretary

H_2O Engineering Consulting Associates, Inc.
4 Glenfeld East
Weston, Massachusetts

January, 1985

H_2O

Engineering Consulting Associates

水利工程顧問

4 Glenfeld East, Weston, MA 02193 • Tel. 617-891-4988

January 18, 1985

Board of Water Commissioners
Sudbury Water District
Raymond Road
Sudbury, MA 01776

Gentlemen:

We are please to submit herewith our report on Raymond Road Aquifer Study to your Board in accordance with our Agreement with you dated May 16, 1984.

The results of our study together with our conclusions and recommendations are described in detail in the Report.

We would like to take this opportunity to thank the employees of the Sudbury Water District, especially to Mr. Fairbank, for their generous cooperation in providing data and assistance during our study.

It is our hope that this report will assist the Board of Water Commissioners and other Board of Town of Sudbury in their move toward aquifer protection in the Town of Sudbury.

Very truly yours,
H_2O Engineering Consulting Associates, Inc.

COMMONWEALTH OF MASSACHUSETTS
TSUNG TING CHIANG
No. 23891
REGISTERED PROFESSIONAL ENGINEER

By T. T. Chiang
Edward T. T. Chiang, Ph.D., P.E.
President

TABLE OF CONTENTS

Section	Title	Page
SECTION 1.	INTRODUCTION	1
SECTION 2.	OBJECTIVE AND APPROACH	2
SECTION 3.	METHODOLOGY	3
3.1	Background	3
3.2	Model Development	4
SECTION 4.	RAYMOND ROAD AQUIFER	5
4.1	Topographic and Geologic Setting	5
4.2	Aquifer Hydrology	8
4.3	Environmental Condition	9
4.4	Existing Groundwater Supply	10
4.5	Aquifer Potential and Restriction	12
SECTION 5.	COMPUTER MODELING	15
5.1	Model Charactistics	15
5.2	Model Predictions	16
5.3	Model Inputs	17
5.4	Model Results	19
SECTION 6.	AQUIFER PROTECTION PROGRAM	21
6.1	Water Resources Development and Management Water Consumption Review and Projection	21
6.2	Aquifer and Wetland Delineation and Mapping	22
6.3	Regulations, By-Laws and Procedures	22
6.4	Inventory of Aquifer Hazards	23
6.5	Other Issues	24
SECTION 7.	CONCLUSION AND RECOMMENDATIONS	25
7.1	Potential Supply from Raymond Road Aquifer	25
7.2	Aquifer Management	26
7.3	Protection of Raymond Road Area	27
7.4	Long Range Water Resources Study and Plan	27
SECTION 8.	BIBOLOGROPHY	29
	APPENDIX A	30

especially at the Raymond Road area where it is so close to all established development along Route 20 and the nearby land.

A major portion of the Nobscot area, the Western part of the aquifer, generally is a wooded area with very few single family houses. Its surface runoff or groundwater quality are good. On the southern part of the watershed, between Potter Road and Edgell Road in Framingham is a heavily developed residential area. The aquifer in this area generally is very shallow; varies from few feet to 10-20 feet. Because the Town of Framingham is a sewered community, the possible pollutants from this area are fertilizers and road deicing chemicals and other general street wastes. A similar condition existing at the area between Woodside Road and Raymond Road in Sudbury is the possible pollution from septic tanks.

The worst area along the aquifer boundary is at the north side, where commercial development and industry are concentrated along Route 20. There do not have sewer system to carry any waste generated by these commercial and industry establishment away from the aquifer.

There are two municipal solid waste disposal sites along the Sudbury River. The closest one is about 4,000 feet east of Landham Road. The natural groundwater and surface water flow direction is from the well area toward the landfills and the Sudbury River. Due to the flow direction and distance from the wells to the landfills, it is unlikely that leachate from the landfill or the river water quality will affect the wells. Only extreme over pumping of the municipal wells could reverse the groundwater flow at so great a distance and cause contamination problems. This is not likely given the pumping rate for the Raymond Road wells.

4.4 Existing Groundwater Supply

The Raymond Road area is one of the major water supply sources of the Sudbury Water District. Currently, there are four production wells

APPENDIX H: MASSACHUSETTS HISTORICAL PROJECT NOTIFICATION FORM

The Commonwealth of Massachusetts

William Francis Galvin, Secretary of the Commonwealth
Massachusetts Historical Commission

April 22, 2021

Daniel Nason
Director of Public Works
Sudbury Department of Public Works
Public Works Building
275 Old Lancaster Road
Sudbury, MA 01776

RE: Sudbury Comprehensive Wastewater Management Plan, Sudbury, MA. MHC #RC.69626.

Staff of the Massachusetts Historical Commission (MHC) have reviewed the Project Notification Form (PNF), prepared and submitted by Woodward & Curran, received April 14, 2021, for the project referenced above.

The MHC proposes to review phased wastewater management projects as they are designed. Project planners should submit scaled project plans, sized no larger than 11" by 17", showing existing and proposed conditions to the MHC for review and comment for each phase of improvements or expansion projects, including wastewater treatment plant location(s), recharge areas, pump stations, equipment storage and materials staging areas, and cross-country sewer right-of-ways.

The PNF indicates that the project requires federal funding through the use of State Revolving Fund funding administered by the Massachusetts Department of Environmental Protection. The MHC will continue to review the project pursuant to Section 106 of the National Historic Preservation Act of 1966, as amended (36 CFR 800) in consultation with the involved state and federal agencies.

Project planners should consider feasible design and locational considerations that meet the engineering requirements, while also seeking to avoid or minimize impacts to historic and archaeological properties. The preliminary cultural resources identification effort presented in the PNF is insufficient to identify historic and archaeological resources and evaluate potential project effects.

Project planners should consult the MHC's *Inventory of Historic and Archaeological Assets of the Commonwealth* for identified historic and archaeological properties. Proposed above-ground construction (e.g. pump stations) in historic areas should be designed in consultation with the Sudbury Historical Commission and/or Historic District Commission to be compatible and sensitive to the historic characteristics of the surroundings as appropriate. Design elements for new construction in historic areas should consider size, scale, massing, height and materials in developing the specifications, and also consider vegetative screening to minimize visual effects.

Sewer lines and associated infrastructure are proposed primarily within existing paved roads. Review of the Inventory indicates that multiple archaeological sites associated with ancient and historical period land use and occupation in Sudbury are recorded in proximity to the current road network.

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(617) 727-8470 • Fax: (617) 727-5128
www.sec.state.ma.us/mhc

Project impact areas, including pump stations, pipeline within cross-country easements and/or unpaved roadways, effluent recharge sites, and equipment storage and vehicle staging areas proposed within areas that may have minimal previous ground disturbance are archaeologically sensitive. This archaeological sensitivity is primarily due to proximity to recorded archaeological sites and environmental setting, with level, sandy, well-drained soils in proximity to the wetlands and water resources of Sudbury, favorable for ancient and historical period land use and occupation.

The MHC requests that an archaeological reconnaissance survey (950 CMR 70) be conducted for the project. The goal of the investigation is to provide a detailed archaeological sensitivity assessment for the project, and to provide recommendations for further archaeological testing, if any, that may be required to locate and identify any significant archaeological resources that could be affected by the project, well in advance of project construction.

The archaeological survey is conducted under a State Archaeologists Permit (950 CMR 70) and an application should be submitted to the MHC by a professional archaeological consulting firm with previous experience in this region of Massachusetts. The scope should include limited subsurface testing to assist in the sensitivity assessment and implementation of a contingency for archaeological monitoring during construction as necessary. The maximum project impact area for each phase of the project should be staked in the field prior to conducting the investigation. The results of survey(s) will be used in consultation in order to avoid, minimize, or mitigate adverse effects to identified significant archaeological resources.

The MHC encourages project planners to consult with the Mashpee Wampanoag Tribe, Wampanoag Tribe of Gay Head (Aquinnah), Nipmuc Tribal Nation, Sudbury Historical Commission, and Historic District Commission, as project planning proceeds. The MHC looks forward to reviewing the information requested above and to consultation to avoid, minimize or mitigate adverse effects to significant historic and archaeological resources.

These comments are offered to assist in compliance with Section 106 of the National Historic Preservation Act of 1966, as amended (36 CFR 800), and Massachusetts General Laws, Chapter 9, Sections 26-27C (950 CMR 70-71). If you have questions or require additional information, then please contact Jonathan K. Patton at this office.

Sincerely,

Brona Simon

Brona Simon
State Historic Preservation Officer
Executive Director
State Archaeologist
Massachusetts Historical Commission

xc:
Maria Pinaud, DEP-SRF
David Weeden, Mashpee Wampanoag Tribe
Bettina Washington, Wampanoag Tribe of Gay Head (Aquinnah)
Cheryl Toney Holley, Nipmuc Tribal Nation
Sudbury Historical Commission
Sudbury Historical District Commission
Rosemary T. Blacquier, Woodward & Curran

APPENDIX A
MASSACHUSETTS HISTORICAL COMMISSION
220 MORRISSEY BOULEVARD
BOSTON, MASS. 02125
617-727-8470, FAX: 617-727-5128

PROJECT NOTIFICATION FORM

Project Name: Town of Sudbury, MA Comprehensive Wastewater Management Plan Update

Location / Address: Various locations in Town-see attached PNF Figures 1 through 8

City / Town: Sudbury

Project Proponent

Name: Sudbury Department of Public Works

Address: 275 Old Lancaster Road

City/Town/Zip/Telephone: Sudbury, MA 01776 978.440.5490

Agency license or funding for the project (list all licenses, permits, approvals, grants or other entitlements being sought from state and federal agencies).

Agency Name	Type of License or funding (specify)
MassDEP and Mass Clean Water Trust	State Revolving Funds

Project Description (narrative):

See attached.

Does the project include demolition? If so, specify nature of demolition and describe the building(s) which are proposed for demolition.

No

Does the project include rehabilitation of any existing buildings? If so, specify nature of rehabilitation and describe the building(s) which are proposed for rehabilitation.

No

Does the project include new construction? If so, describe (attach plans and elevations if necessary).

The Planning Project proposes to design and construct municipal sewer piping infrastructure in existing roadways, a Wastewater Treatment Facility at the existing DPW on Old Lancaster Road, five pump stations, and groundwater discharge beds under existing ballfields at the Curtis Middle School at 22 Pratts Mill Road. At this time, there are no record plans.

APPENDIX A (continued)

To the best of your knowledge, are any historic or archaeological properties known to exist within the project's area of potential impact? If so, specify.

There are a number of historic districts within the Needs Areas, none of which have any negative potential impact. Sewer along these areas will alleviate aesthetic impacts from mounded septic systems. See attached Narrative and PNF Figures.

What is the total acreage of the project area?

Woodland	0	acres	Productive Resources:		
Wetland	0.30	acres	Agriculture	0	acres
Floodplain	0.40	acres	Forestry	0	acres
Open space	3.24	acres	Mining/Extraction	0	acres
Developed	20.03	acres	Total Project Acreage	0	acres

What is the acreage of the proposed new construction? 23.96 acres

What is the present land use of the project area?

The majority of are are existing roadways. The Wastewater Treatment facility is proposed to be constructed at the existing Public Works site at 275 Old Lancaster Road and the groundwater discharge beds are to be located at the Curtis Middle School under existing ball fields.

Please attach a copy of the section of the USGS quadrangle map which clearly marks the project location.

Attached

This Project Notification Form has been submitted to the MHC in compliance with 950 CMR 71.00.

Signature of Person submitting this form: Rosemary T. Blacquier Date: April 13, 2021

Name: Rosemary T. Blacquier, Woodard & Curran

Address: 250 Royall Street

City/Town/Zip: Canton, MA 02021

Telephone: 781.613.0644

REGULATORY AUTHORITY

950 CMR 71.00: M.G.L. c. 9, §§ 26-27C as amended by St. 1988, c. 254.

ATTACHMENT 1 - PNF NARRATIVE

Town of Sudbury, Massachusetts
Massachusetts Historical Commission
Project Notification Form Narrative

The Town of Sudbury is in the process of completing a Comprehensive Wastewater Management Plan (CWMP) to identify the long-term sustainability of on-site wastewater disposal systems. The CWMP identified five geographic areas of Town that are not long-term sustainable on on-site wastewater disposal systems and are recommended for Municipal sewer- refer to Figure PNF 1. The CWMP recommends a Wastewater Treatment Facility & Collection System that includes the design and construction of the Town's first municipal Wastewater Treatment Facility, associated groundwater discharge and collection system infrastructure to support removing failing and/or improperly operating septic systems to preserve public health, as well as environmental resources, specifically nutrient degradation to the Town's major drinking supplies in the Raymond Road and Hop Brook Aquifer areas.

A comprehensive review of both the local Historic District Commission's "Inventory of Historic Buildings, Structures and Places-200726", as well as the "National Register of Historic Places" was completed to identify historic resources located in Sudbury, most specifically any within the CWMP recommended plan.

The "Inventory of Historic Buildings, Structures and Places 200726" contains over 458 historic, pre-1940 buildings and structures, with 403 of these being houses. The National Register of Historic Places inventories buildings, places, and a number of Milestone Markers located in Sudbury.

There are four identified Historic Districts located within Sudbury:

1. King Phillip Historic District
2. George Pitts Tavern Historic District
3. Sudbury Centre Historic District (Old Sudbury Historic District)
4. Wayside Inn Historic Districts

Only two of the Historic Districts above referenced are included in the "National Register of Historic Places":

1. Sudbury Centre Historic District*
2. Wayside Inn Historic Districts*

**None of the CWMP Needs Areas are located within either of these Historic Districts.*

The CWMP recommended plan has sewer infrastructure proposed within two of the four Historic Districts:

1. King Philip Historic District – This area was the site of the Indian Wars of 1676 where Captain Samuel Wadsworth and his troop were killed in an ambush and later buried in the Wadsworth Cemetery. The Wadsworth Monument was erected in 1852 in memory of the gallant men who fought the Battle of Green Hill and appears on the Town Seal of Sudbury. Also in the District is the Goodnow Library, included in the National Register of Historic Places, as well as homes of 17th and 18th century construction, including the Goulding House, Sudbury's oldest existing home, 1720. In the area of Mill Village is the site of the west-side Grist Mill, erected in 1659.
2. George Pitts Tavern Historic District – In 1721 at the George Pitts Tavern (located on Maple Avenue) a meeting was held to petition the Colonial Legislature for permission to erect a meeting house west of the Sudbury River, thereby separating the towns of Sudbury and Wayland. The outcome of this historic gathering effectively created the Town of Sudbury. According to maps of the 1800s, even the Old Boston Post Road passed along a portion of this street. Today, the architecture and structure of Maple Avenue showcases Sudbury's evolution throughout time. Many of the homes standing today were built between 1882 and 1920.

The CWMP recommended plan is as follows:

<u>Sewer Piping and Pump Stations</u>

The CWMP overall recommended Plan, as shown in PNF Figure 1, details the proposed areas of sewer infrastructure. All sewer pipe is proposed within existing pre-disturbed, roadway- areas. There are five proposed pump stations included in the overall plan. The pump stations' locations as detailed below, were all checked with the "Inventory of Historic Buildings, Structures and Places-200726", as well as the "National Register of Historic Places" to ensure none were located on an historic resource area. All pump proposed stations are located outside of historic resource areas and are shown on PNF Figures 4 through 8. Proposed pump station locations are as follows:

1. Route 20 Pump Station: MBL K07-0018, 490 Boston Post Road
2. Raymond Road South Pump Station: MBL M08-0126, 82 Warren Road
3. Raymond Road North Pump Station: MBL J06-0500, Tall Pine Drive (no number)
4. Route 20 East Pump Station: MBL K11-0052, 26 Goodmans Hill Road
5. Goodman Hill / Route 20 Sub-Area B Pump Station: MBL K08-0037, 378 Boston Post Road

All historic locations from the Inventory are shown on PNF Figures 4-8, which identifies all historic properties, building and markers in Town and clearly show all proposed pump stations outside of any inventoried properties.

Wastewater Treatment Facility

The recommended Municipal Wastewater system proposes to design and construct a Wastewater Treatment Facility (WWTF) at the existing Department of Public Works at 275 Old Lancaster Road. This location was checked with the "Inventory of Historic Buildings, Structures and Places-200726", as well as the "National Register of Historic Places", to ensure the parcel was not included in an historic resource area. The facility will be housed with the existing land use departments, including the Highway Department. This area is also outside of any of the four historic districts noted in Town and at a pre-disturbed location. See PNF Figure 2.

Groundwater Discharge Beds

The groundwater discharge beds are proposed to be located subsurface to the ball fields at the Curtis Middle School at 22 Pratts Mill Road. This location was checked with the "Inventory of Historic Buildings, Structures and Places-200726", as well as the "National Register of Historic Places", to ensure the parcel was not included in a historic resource area. This area is pre-disturbed, cleared land currently being utilized as ball fields. This area is also outside of any of the four historic districts noted in Town and at a pre-disturbed location. See PNF Figure 3.

Review of all data in the CWMP confirmed that the top priorities are a combination of properties along the Route 20/Union Avenue area and Raymond Road South Study Areas. These four Needs Areas directly abut the Raymond Road Aquifer-the Town's major drinking water wells- and includes both residential and non-residential properties all currently on on-site wastewater systems. The Needs Areas encompass the Zone II for the Raymond Road Aquifer.

The following summarizes the Needs Areas within noted historic districts:

- The George Pitts Tavern Historic District is along Maple Avenue with three parcels included along Route 20. This District is within the Route 20 Needs Area as shown on PNF Figures 4 and 7. All proposed sewer infrastructure in the Historic District is within pre-disturbed , existing roadway / right of way areas.
- The King Phillip Historic District is along portions of the Route 20 Needs Area and the Goodman Hill Needs Area. Refer to PNF Figures 4 and 7 for a map of this location. All proposed sewer infrastructure in the Historic District is within pre-disturbed , existing roadway / right of way areas.
- PNF Figure 5 details the Raymond Road North Needs Area. This area is not within a defined Historic District. All proposed sewer infrastructure is within pre-disturbed , existing roadway / right of way areas.
- PNF Figure 6 details the Raymond Road South Needs Area. All proposed sewer infrastructure is within pre-disturbed , existing roadway / right of way areas.
- PNF Figure 8 details the Route 20 East Needs Area. All proposed sewer infrastructure in the Historic District is within pre-disturbed , existing roadway / right of way areas.

It is noted that a positive impact to the myriad of historic buildings and places with the design and construction of Municipal Wastewater infrastructure is that all properties within the Needs Areas limits can be serviced with Municipal sewer and avoid failing septic systems, many of which fail due to high groundwater and require a mounded system. These mounded systems raise the on-site wastewater system above groundwater and create a negative aesthetic to the property. Location could be in the front yard, side yard or back yard with the mound clearly visible. A mounded system many times decreases the overall property values. Parcels located along Union Avenue and Goodman Hill Road detail high groundwater and severe soil conditions for long-term sustainability of on-site systems. Municipal sewer in these areas will offer these historic resources a pleasing alternative to a failed septic that would otherwise require a mounded system and avoid structures that impact the overall aesthetics of these valuable areas.

In addition to positively impacting aesthetics to the historic resources, removing the on-site wastewater systems from within this sensitive area will preserve and protect the drinking water supplies from potential threat of degradation of wastewater and the pollutants it contains. A fifth Needs Area, Route 20 East, Phase 3, is located along the Wayland Town border. This Needs Area is outside of any historic districts. Refer to PNF Figures 4 through 8 for maps of Needs Areas in relation to historic districts.

Septic to sewer will ensure that public health threats from on-site wastewater will be eliminated. Even an on-site that is considered “properly operating and maintained” has the ability to degrade water resources with the documented soil and groundwater conditions affording faster transport of improperly cleansed wastewater to water resources.

With the removal of the on-site wastewater systems in the proposed areas, the threat of continued degradation to the water resources is eliminated. The preservation and protection of the drinking water supplies is the major goal, with the overall environment benefiting as well. This positive approach also benefits the historical resources.

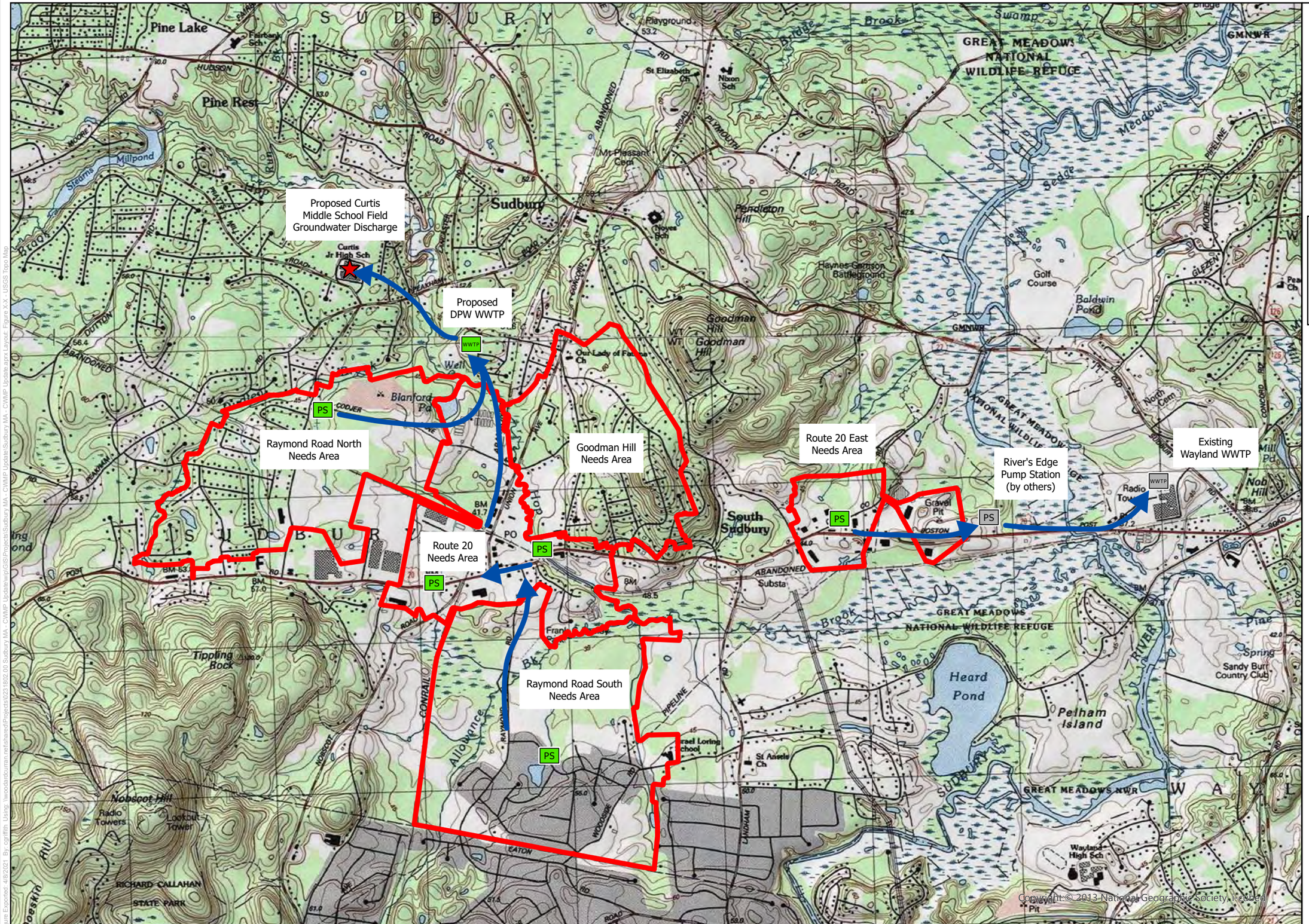
With the CWMP under the jurisdiction of Town Administration and Public Works, every effort will be expended to work with the local Historical Commission during Preliminary Design to maintain planned avoidance within noted historical resources.

ATTACHMENT 2 - USGS MAP WITH PROJECT LIMITS

USGS Topo Map

Massachusetts Historical Commission PNF Filing

Town of Sudbury, MA, 01776



Legend

- Groundwater Discharge
- WWTP Wastewater Treatment Plant
- PS Pump Station

PNF USGS Figure

0 500 1,000 2,000 Feet

WOODARD & CURRAN

Project #: 0231802.00
Map Created: April 2021

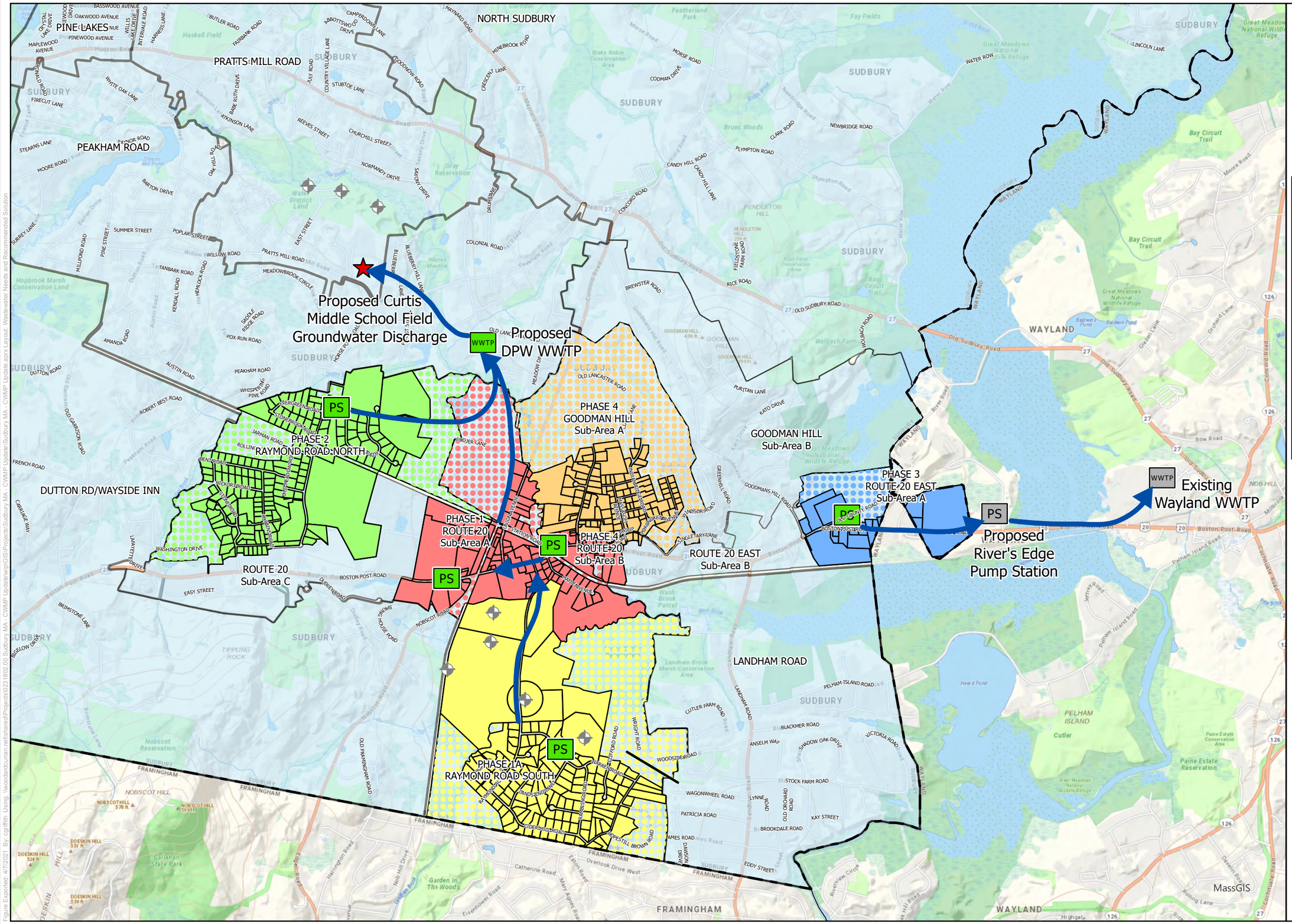
Third Party GIS Disclaimer: This map is for reference and graphical purposes only and should not be relied upon by third parties for any legal decisions. Any reliance upon the map or data contained herein shall be at the users' sole risk. **Data Sources:**

Figure Exported: 4/8/2021 By: cgriffith Using: \\woodardcurran.net\shared\Projects\0231802.00 Sudbury MA - CWMP Update\wip\GIS\Projects\Sudbury MA - CWMP Update\Sudbury MA - CWMP Update aprx Layout: Figure X-X - USGS Topo Map

ATTACHMENT 3 - PNF FIGURES 1 THROUGH 8

Wastewater Needs and Recommended Solutions

CWMP Update
Town of Sudbury, MA



Legend

- Groundwater Discharge
- WWTP Wastewater Treatment Plant
- PS Pump Station
- Public Wells
- Goodman Hill Project Area
- Raymond Road North Project Area
- Raymond Road South Project Area
- Route 20 Project Area
- Route 20 East Project Area

Onsite Septage Management Plan

- Raymond Road North
- Raymond Road South
- Route 20 East
- Goodman Hill
- Route 20
- Septage Management Plan Areas

PNF Figure 1

0 500 1,000 2,000 Feet

WOODARD & CURRAN

Project #: 0231802.00
Map Created: April 2021

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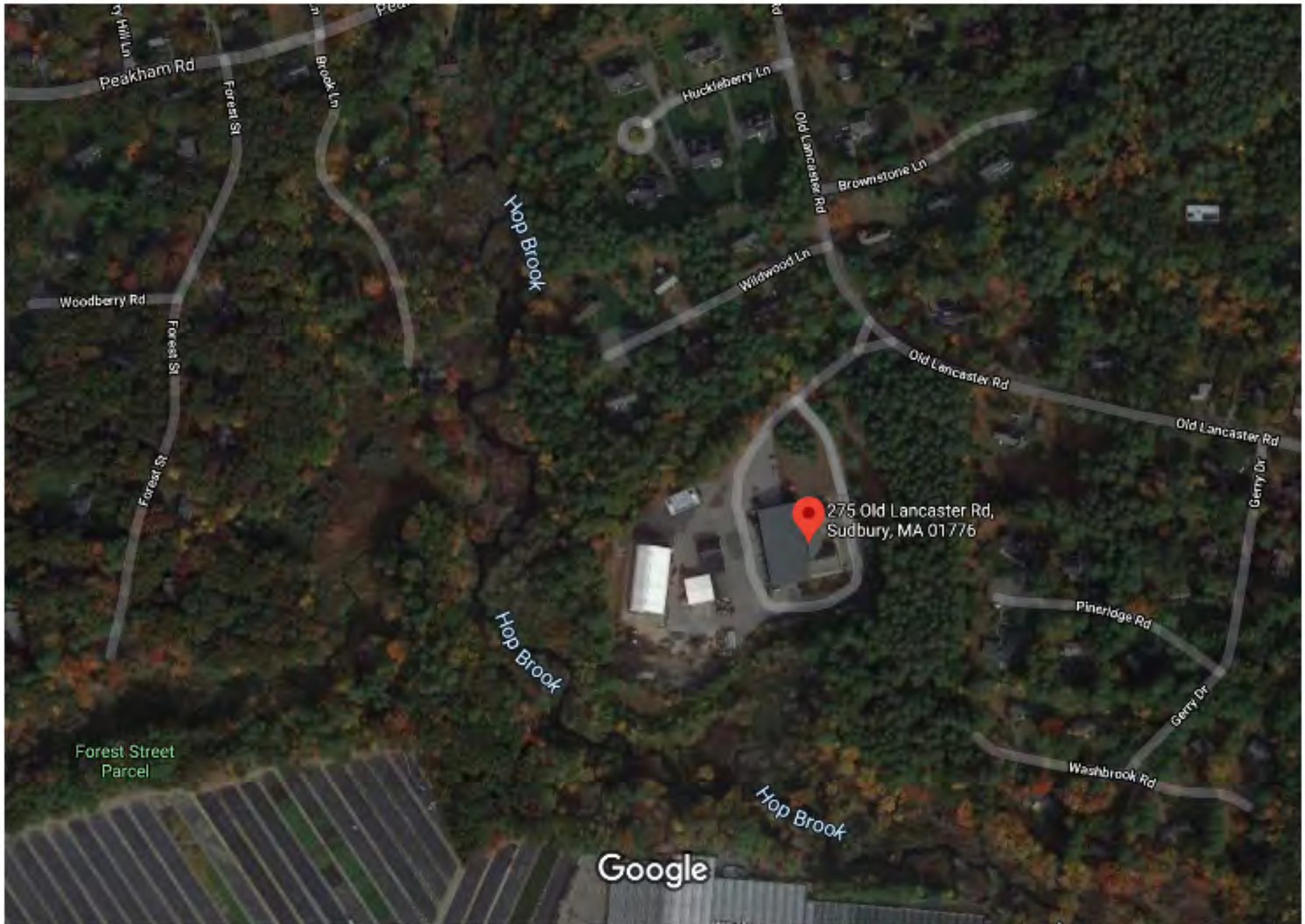
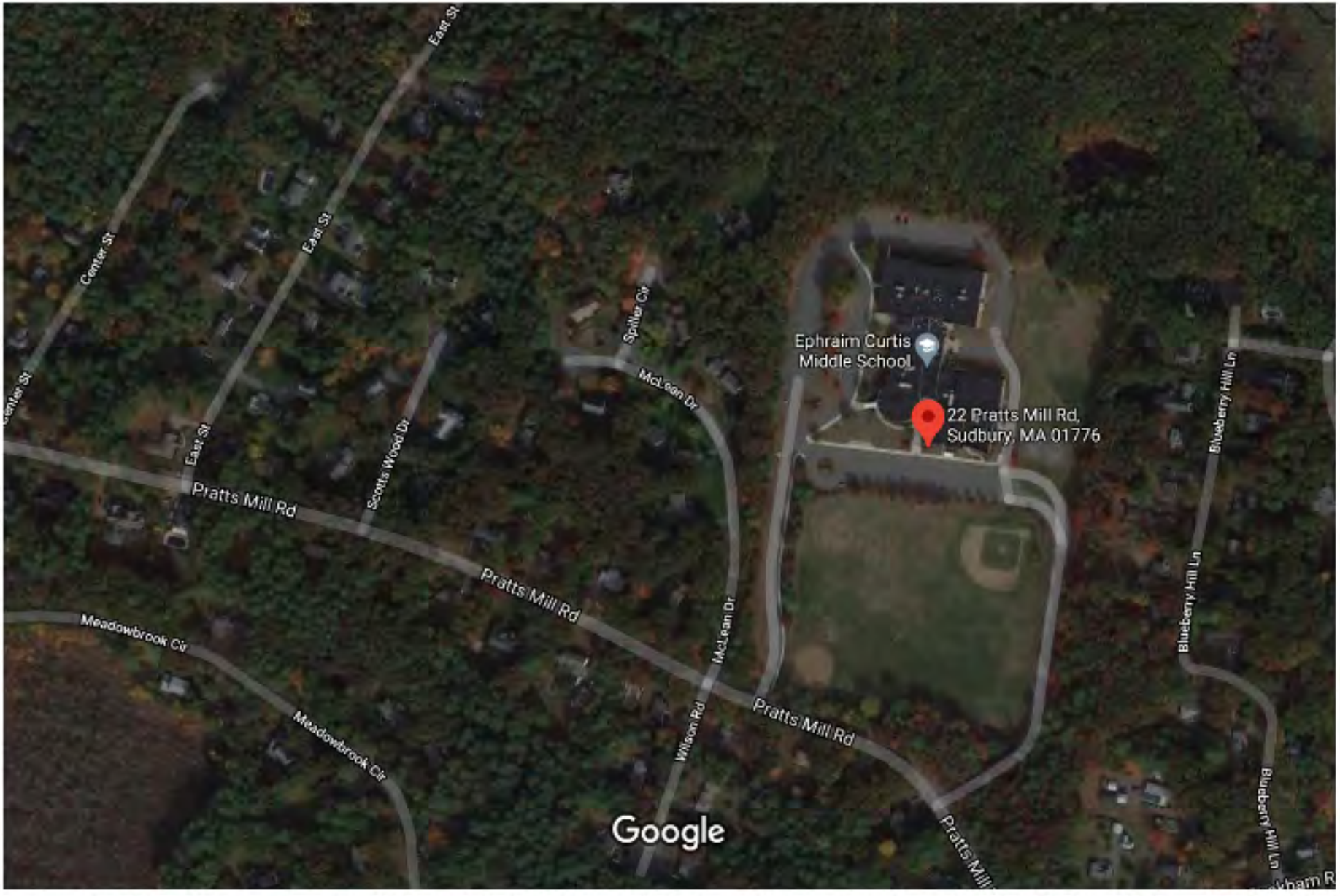
PNF Figure 2 - DPW Site for Wastewater Treatment Facility

Google Maps 275 Old Lancaster Rd DPW Site - Proposed Location of WWTF

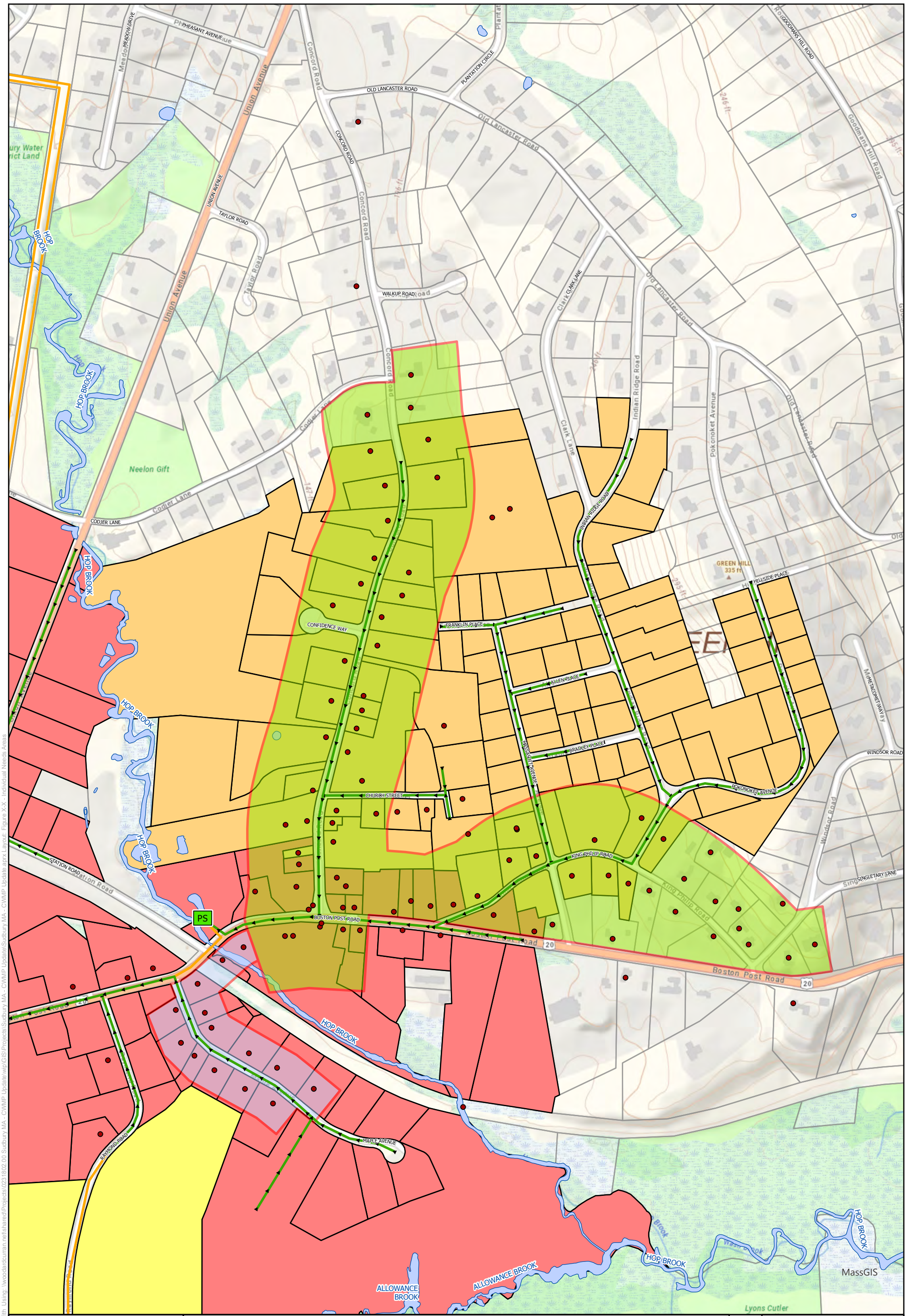


PNF Figure 3 – Curtis Middle School Site of Groundwater Discharge Beds

Google Maps 22 Pratts Mill Rd Proposed Location of Sub-Surface Groundwater Discharge Beds



Imagery ©2021 MassGIS, Commonwealth of Massachusetts EOEA, Maxar Technologies, USDA Farm Service Agency, Map data ©2021 200 ft



Goodman Hill Needs Area

CWMP Update
Town of Sudbury, MA

Legend

- Groundwater Discharge
- WWTP Wastewater Treatment Plant
- PS Pump Station
- Gravity Sewer
- Low Pressure Sewer
- Force Main
- Inventoried & Nationally Registered Historic Sites
- George Pitts Tavern Historic District
- King Philip Historic District
- Old Sudbury Historic District
- Wayside Inn Historic District #1
- Wayside Inn Historic District #2
- Goodman Hill Project Area
- Raymond Road North Project Area
- Raymond Road South Project Area
- Route 20 Project Area
- Route 20 East Project Area

PNF Figure 4

0 100 200 400 Feet

N

WOODARD & CURRAN

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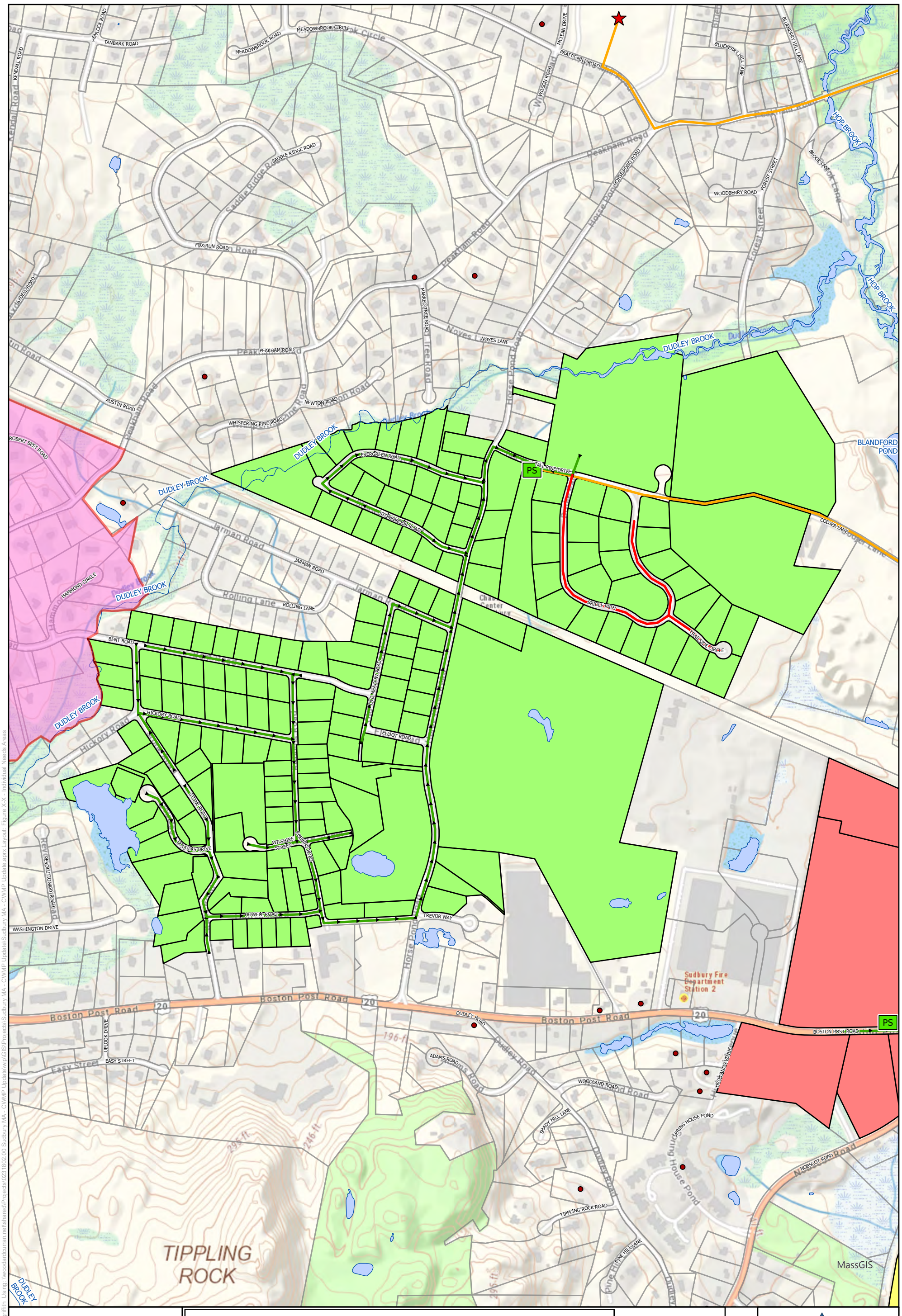

Raymond Road North Needs Area

CWMP Update
Town of Sudbury, MA

Legend

- Groundwater Discharge
- WWTP Wastewater Treatment Plant
- PS Pump Station
- Gravity Sewer
- Low Pressure Sewer
- Force Main
- Inventoried & Nationally Registered Historic Sites
- George Pitts Tavern Historic District
- King Philip Historic District
- Old Sudbury Historic District
- Wayside Inn Historic District #1
- Wayside Inn Historic District #2
- Goodman Hill Project Area
- Raymond Road North Project Area
- Raymond Road South Project Area
- Route 20 Project Area
- Route 20 East Project Area

PNF Figure 5

0 150 300 600 Feet

N

WOODARD & CURRAN

Project #: 0231802.00
Map Created: April 2021

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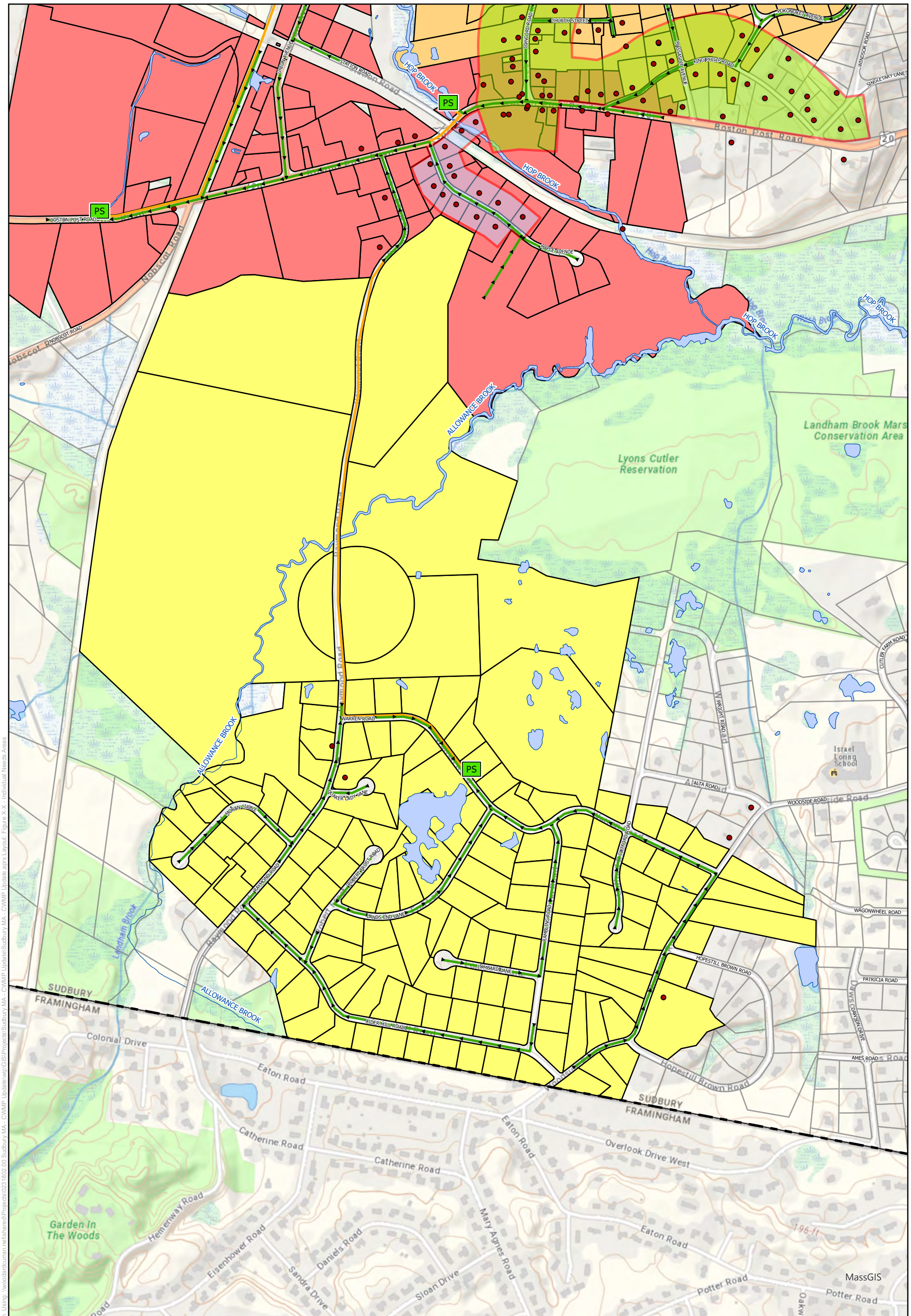

Raymond Road South Needs Area

CWMP Update
Town of Sudbury, MA

Legend

- Groundwater Discharge
- WWTP Wastewater Treatment Plant
- PS Pump Station
- Gravity Sewer
- Low Pressure Sewer
- Force Main
- Inventoried & Nationally Registered Historic Sites
- George Pitts Tavern Historic District
- King Philip Historic District
- Old Sudbury Historic District
- Wayside Inn Historic District #1
- Wayside Inn Historic District #2
- Goodman Hill Project Area
- Raymond Road North Project Area
- Raymond Road South Project Area
- Route 20 Project Area
- Route 20 East Project Area

PNF Figure 6

0 150 300 600 Feet

N

WOODARD & CURRAN

Project #: 0231802.00
Map Created: April 2021

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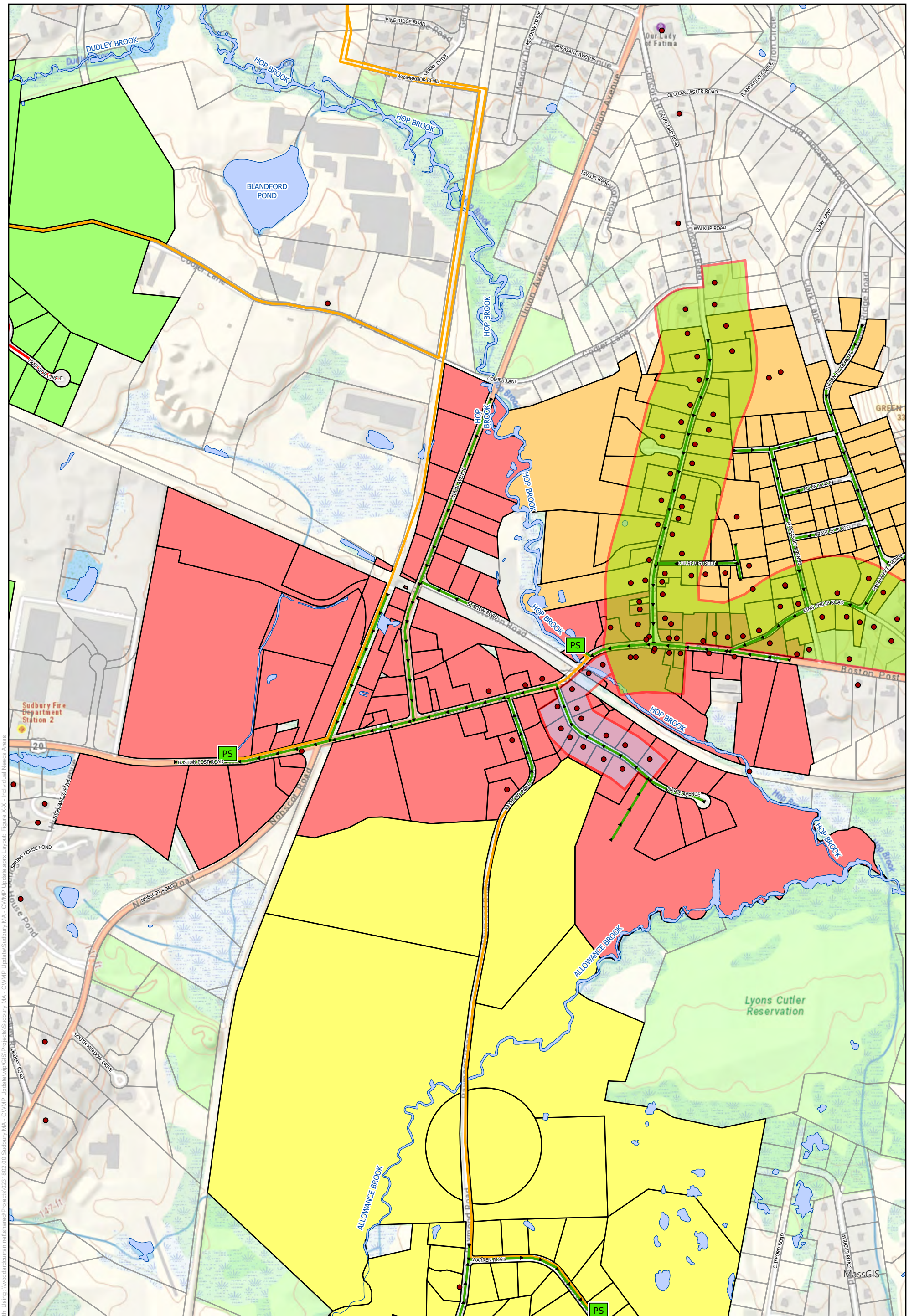

Route 20 Needs Area

CWMP Update
Town of Sudbury, MA

Legend

- Groundwater Discharge
- WWTP Wastewater Treatment Plant
- PS Pump Station
- Gravity Sewer
- Low Pressure Sewer
- Force Main
- Inventoried & Nationally Registered Historic Sites
- George Pitts Tavern Historic District
- King Philip Historic District
- Old Sudbury Historic District
- Wayside Inn Historic District #1
- Wayside Inn Historic District #2
- Goodman Hill Project Area
- Raymond Road North Project Area
- Raymond Road South Project Area
- Route 20 Project Area
- Route 20 East Project Area

PNF Figure 7

0 150 300 600 Feet

N

WOODARD & CURRAN

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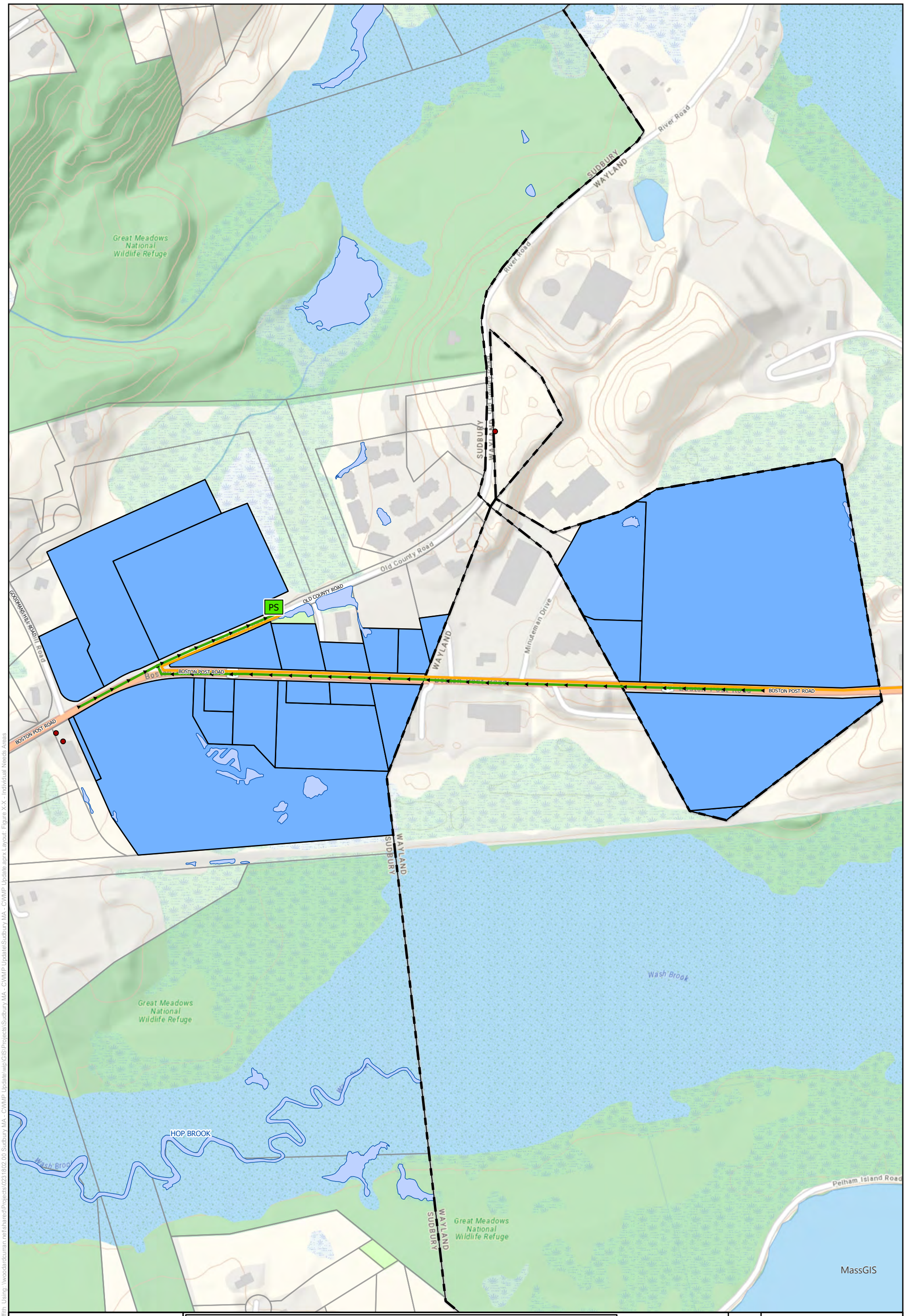

Route 20 East Needs Area

CWMP Update
Town of Sudbury, MA

Legend

- Groundwater Discharge
- Wastewater Treatment Plant
- Pump Station
- Gravity Sewer
- Low Pressure Sewer
- Force Main
- Inventoried & Nationally Registered Historic Sites
- George Pitts Tavern Historic District
- King Philip Historic District
- Old Sudbury Historic District
- Wayside Inn Historic District #1
- Wayside Inn Historic District #2
- Goodman Hill Project Area
- Raymond Road North Project Area
- Raymond Road South Project Area
- Route 20 Project Area
- Route 20 East Project Area

PNF Figure 8

0 100 200 400 Feet

N

WOODARD & CURRAN

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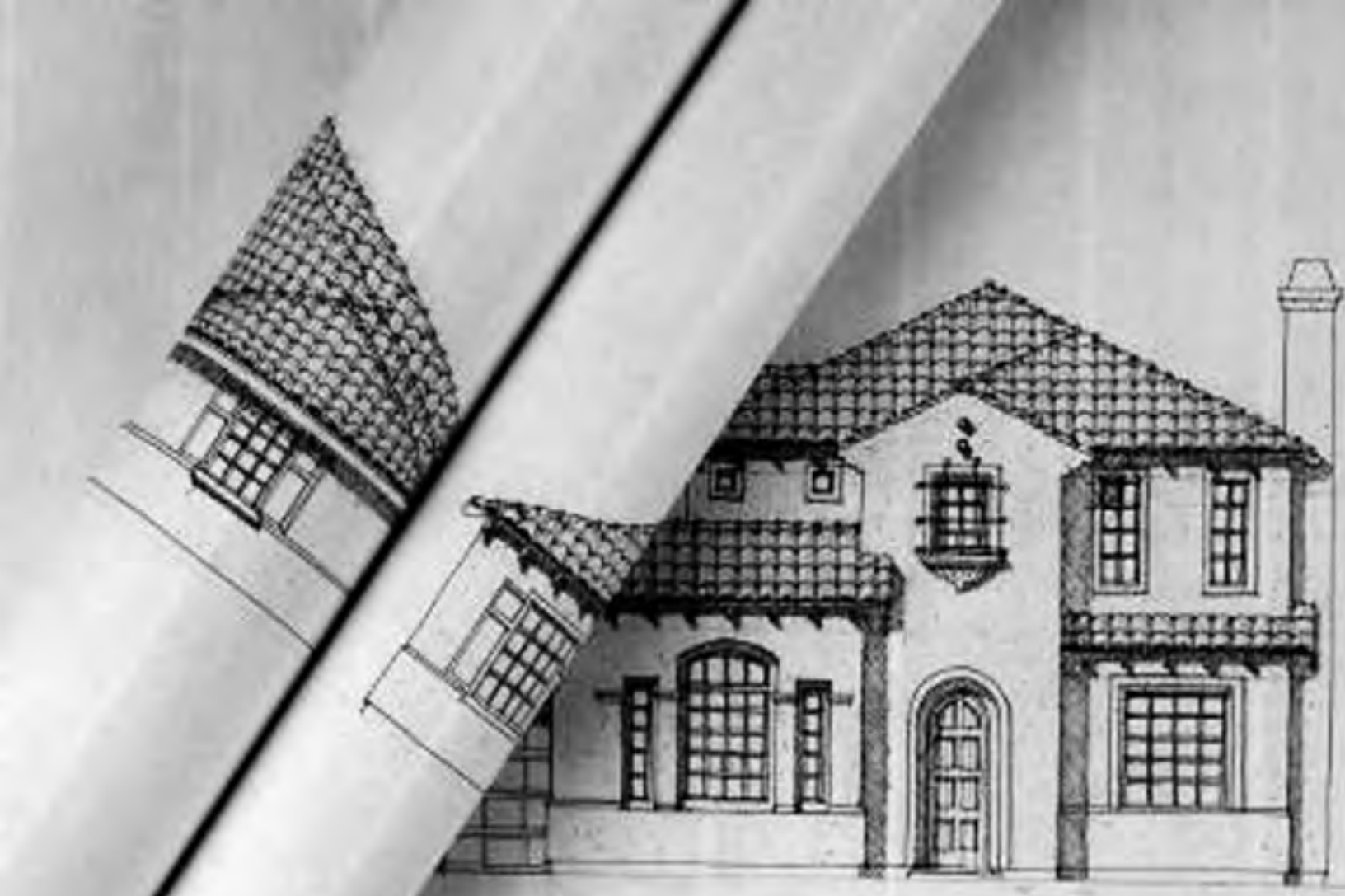
APPENDIX I: SEPTAGE MANAGEMENT PLAN, FLOWS AND LOADS



community septic management program

Massachusetts Department of Environmental Protection
Bureau of Resource Protection
Division of Municipal Services
July 2005

The Community Septic Management Program (CSMP) was developed through the collaboration of the Department of Environmental Protection (DEP), the Executive Office of Administration and Finance, the Office of State Treasurer, and the Department of Revenue to provide funds and assistance to Massachusetts homeowners for compliance with Title 5.

This document is a comprehensive step-by-step guide to help communities implement the CSMP at a local level.

The Department of Environmental Protection would like to thank the following for their insight, knowledge, and contributions in writing and editing this document:

Pamela Truesdale, DEP, Southeast Regional Office
Steve McCurdy, DEP, Boston
Nancy Parrillo, MA Water Pollution Abatement Trust

Page Layout and design: Sandy Rabb, DEP

Copies of this document can be found on DEP's web site at : http://www.mass.gov/dep/brp/mf/othergrt.htm.

images from MWPAT library

Massachusetts Water Pollution Abatement Trust
One Ashburton Place
Boston, MA 02108

Massachusetts Department of Environmental Protection
1 Winter Street
Boston, MA 02108

Table of Contents

Acknowledgements i

The Community Septic Management Program — Highlights ii

Section 1. The Community Septic Management Program — Introduction 1

Section 2. The Community Septic Management Program Planning Guidance 2
- Guidelines for Option A 3
- Guidelines for Option B 7

Section 3. Program Applications and Instructions 13
- A. General Information 13
- B. Application 14

Section 4. Betterment Agreements 15

Section 5. Project Management 17
- Septic System Betterment Program Checklist 19
- Using the Betterment Agreement 20

Section 6. Sample Form: Betterment Agreement 21

Section 7. Notice of Betterment Agreement 27

Section 8. The Betterment Bill 28

Section 9. Project Approval Certificate/Project Regulatory Agreement (PAC/PRA) 29
- PAC/PRA Exhibit A 34

Section 10. State Revolving Fund Procedures 35

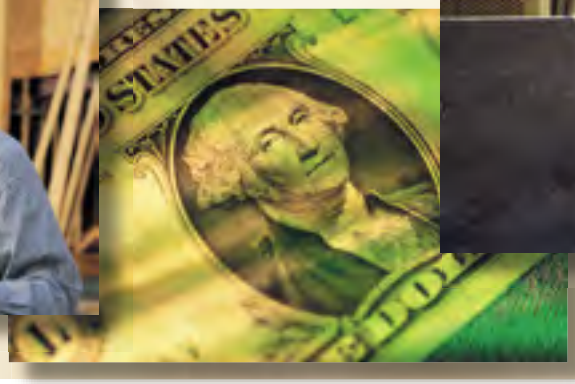
Appendices 36
- Forms xiv

THE COMMUNITY SEPTIC MANAGEMENT PROGRAM

Highlights of the Community Septic Management Plan:

- The Commonwealth provides funding for the Community Septic Management Program to the Community through a "State Revolving Fund" (SRF) loan.
- The SRF loan is offered at an effective 0% interest rate (the technical term is "50% Grant Equivalency") by the Commonwealth to the Community. The Community reloans these funds usually at the rate of 5% interest to homeowners.
- The Town Meeting (or City Council) Vote authorizes Communities to borrow the SRF loan funds from the Massachusetts Water Pollution Abatement Trust.
- If less than the authorized SRF is borrowed (drawn down), the Community only repays the amount it has borrowed from the Commonwealth.
- The 5% interest charged on the betterment loans to homeowners provides "positive" cash flow and additional security to the Community.
- There should be NO additional taxes if the town participates in this program – the primary repayment obligation is undertaken by the homeowners receiving betterment loans.
- If a participating homeowner defaults on the payment, the Community has a municipal lien on the property. Any homeowner defaults will be charged an accrued interest rate of 14% rising to 16% if a "taking" is required (state law for "delinquent" municipal charges).
- The Community's repayment to the Commonwealth begins in the second year after the program commences – a year or more after the homeowners begin making payments to the Community. This enables the Community to accumulate at least one year of payments, including 5% interest, to cover unexpected defaults.
- The participation of homeowners in areas identified as environmentally sensitive (to failed systems) is not mandatory. However, if the homeowner's septic system constitutes an imminent health hazard according to the local Board of Health, the homeowner can be given priority for assistance. Homeowner participation is encouraged because correctly operating septic systems are beneficial to the environment and the low interest rate offered by the Program helps homeowners comply with Title 5.
- The Community has an option to set aside up to 2.5% of the loan funds to obtain consulting services to administer the Program. There is also a $20,000 grant available for first-time Communities entering the Program to provide additional funds to assist with administrative costs.
- The betterment payments can be spread over a period of up to 20 years and is assumable by the buyer of a property.
- The Community can require repayment of betterment loans by the homeowner sooner than the SRF payments are required by the Commonwealth (for example: betterment loans are made to homeowners over 10 years; the Community takes its SRF loan for 20 years). This provides extra protection to the town.
- The Community does not have to adopt any special provision at the Town Meeting to accept the 'Betterment Law' Chapter 111, Section 127B ½ is a 'General Law' and is always available.

These points, presented during town meetings, can explain how the program works, where the funding sources come from, who can apply for funding, and how this program will address the environmental issues facing your community.



Introduction

Across Massachusetts, failing cesspools and septic systems are a leading cause of contaminated drinking water, tainted shellfish beds, weed-choked lakes and ponds, and polluted beaches. In 1995, the Department of Environmental Protection (DEP) with the help of key stakeholders, revised Title 5 of the State Environmental Code to protect the health of Massachusetts citizens and the state's natural resources. This was the first time the state's septic system rules were revised since 1978. This revised code reflects a new understanding of the impact of septic systems on the subsurface environment and groundwater and surface waters like rivers, lakes, and ponds. Title 5 requires inspection of private on-site sewage disposal systems before properties using them are sold, expanded, or undergo a change in use. Systems deemed "failed" are required by Title 5 to be repaired, replaced, or upgraded to protect the public health and the environment.

To help homeowners comply with the revised Title 5 rules, the Commonwealth has invested approximately $164 million in various assistance programs aimed at upgrading septic systems, building community systems, or new sewers. The Community Septic Management Program (CSMP) was developed through the collaboration of DEP, the Executive Office of Administration and Finance, the Office of the State Treasurer, and the Department of Revenue. Funding for the Program was provided by the 1996 Open Space Bond Bill that authorized DEP to spend $30 million to assist homeowners to comply with Title 5. DEP will use the appropriation to fund loans to communities through the Massachusetts Water Pollution Abatement Trust (the Trust). Using the State Revolving Fund (SRF) loans from the Trust, communities can provide betterment loans to assist homeowners who must address septic system failures. Betterment loans are described in greater detail in section 4 and 5 of this document.

This manual is a comprehensive step-by-step guide to help communities implement the Community Septic Management Program at the local level. Implementation includes the development of a local inspection or management plan and a betterment loan program administered by the Board or Department of Health that will provide direct financial assistance to homeowners with failed septic systems. The effectiveness of the Community Septic Management Program's implementation depends largely on the initiative of local officials and their sensitivity to the needs and concerns of homeowners and the community.

Communities must identify and devise a plan to protect environmentally sensitive areas from septic system contamination. Such plans always include the creation of a database and the provision of financial assistance to homeowners using betterments. As discussed in these materials, the community may devise either a Community Inspection Plan (Option A) or a Local Septic Management Plan (Option B). Communities are eligible for a planning grant and a SRF loan of $200,000 with either Option A or Option B. The SRF loan proceeds may be used to provide betterment loans to homeowners and for eligible administrative costs.

APPENDIX J: HYDROGEOLOGICAL REPORT

MEMO

Date: October 14, 2020

To: Rosemary Blacquier and Jack Troidl, Woodard & Curran

From: Maura Callahan, Callahan Consulting, Inc.

Subject: Review of Data Related to Potential Discharge at the Curtis Middle School Sudbury, Massachusetts

The Town of Sudbury is a predominantly residential community encompassing 24.4 square miles located in Middlesex County, Massachusetts, approximately 20 miles west of Boston and 26 miles east of Worcester. Sudbury is divided by Routes 20 and 117 running east to west, and Route 27 running north to south. The Town is bordered by Wayland and Lincoln to the east, Framingham to the south, Concord and Maynard to the north, and Marlborough, Stow and Hudson to the west.

The two major geologic features in Sudbury are the Sudbury River, which flows from south to north along the town's eastern boundary, and Nobscot Hill, which reaches a summit of 600 feet above sea level near the town's southern border.

Sudbury Water District provides drinking water to nearly the entire town (reporting a population served of 18,442 in 2019) from 9 active groundwater sources. The District's wells have a combined capacity of 7.6 million gallons per day (MGD); however, the system is not designed to operate all the wells simultaneously (Stantec, 2017). The public water supply wells are located within the Raymond Road Aquifer (Well Nos. 2A, 4, 6, 7 and 9), Hop Brook Aquifer (Well Nos. 3A, 8A, 10), and an aquifer located in the northeast part of town (Well No. 5). Well No.1 has been abandoned due to salt contamination caused by nearby highway department storage and Well 5 has not been operated in at least the last 3 years. The District has seen a relatively steady demand over the past three years of Annual Statistical Report data, reporting 598.5, 592.7, and 563.6 MGY of finished water in 2017, 2018 and 2019, respectively.

Commercial development in Sudbury has been focused along Route 20 which lies within the Zone II Wellhead Protection Area of the District's Raymond Road Wells. A Technical Advisory Committee (TAC) has been working for many years to identify options to address the wastewater issues in the commercial district. Expansion of the commercial area is limited by aquifer protection land use zoning and local constraints to on-site septic systems.

WSE identified the following on-site constraints to individual septic systems:

- Soil types – moderate to severe limitations
- Shallow depth to groundwater
- Public Water Supply – aquifer protection areas
- Hop Brook listed on the State's Impaired Surface Water List
- Large parcels of land preserved as Open Space

Callahan Consulting
Hydrogeologic Services

Over the years, the TAC has evaluated several options to address wastewater issues. In 2010, the preferred solution was the installation of a decentralized wastewater treatment system for the commercial corridor only. Engineering studies conducted by WSE verified suitable locations on Town owned properties for the construction of a treatment facility and the leaching fields for discharge. However, funding for the design of the proposed project was not supported by Town meeting in 2011.

In 2013, the Town sought to connect to Marlborough's sewer system though Marlborough did not approve the option. Sudbury has recently elected to revisit their options for a groundwater discharge within Town.

DATA REVIEWED FOR WASTEWATER DISCHARGE AT THE CURTIS MIDDLE SCHOOL

As requested, Callahan Consulting (CCI) has reviewed several documents as part of the hydrogeologic investigation of the Curtis Middle School located on 22 Pratts Mill Road in Sudbury for potential discharge of treated wastewater effluent. Specifically, CCI reviewed documents, hydrogeologic data collected and calculations made by WSE to evaluate the basis of the conclusions and recommendations presented in WSE's 2010 Project Evaluation Report (PER).

The following documents were obtained and reviewed:

- **Project Evaluation Report** (PER) WSE, June 2010 with Town Revisions incorporated June 2013.
- **Chapter 7.0** – Hydrogeological Investigation for Disposal Sites
- **Appendix C:** Initial Testing Results
    1. June 16, 2003 Schofield Brothers to Technical Advisory Committee (Former Bushey Property and 625 Boston Post Road)
    2. March 31, 2004 Schofield Brothers to Sudbury Board of Health (Soil Testing at 275 Old Lancaster Road)
    3. June 14, 2004 Schofield Brothers to Technical Advisory Committee (DPW Property 275 Old Lancaster Road)
    4. August 13, 2007 Schofield Brothers to Jody Kablack, Director of Planning and Community Development (Young Property)
- **Appendix D:** Subsurface Data Results - Letter to Town of Sudbury February 18, 2010 WSE February 18, 2010 Subsurface Data Results in a Letter to Ms. Kablack, Town Planner regarding Subsurface Data Results
- **Appendix E:** WSE's DEP Approved Hydrogeologic Work Plan - Curtis Middle School Wastewater Disposal submitted on August 6, 2010 to MassDEP NERO's Criss Stephen and Kevin Brander.
    1. **ATTACHMENT A:** WSE February 18, 2010 Subsurface Data Results in a Letter to Ms. Kablack, Town Planner regarding Subsurface Data Results
       Appendix A: Soil Borings Logs (Haskell Field, CMS and Old Lancaster Road)
       Appendix B: Slug Test and Particle Size Analysis
       Appendix C: Water Table Mounding Calculations
    2. **ATTACHMENT B:** CMS Preliminary Site Screening - Interoffice Memorandum November 3, 2009: Preliminary Feasibility Study

- **Draft Report on Updated Water Distribution Facilities Analysis** for Sudbury Water District, 1998, H2O Engineering Consulting Associates, Burlington, MA
- **Water System Hydraulic Model Report**, Sudbury Water District, Massachusetts January 2017, Stantec
- **Sudbury Water District's 2017, 2018 and 2019 Annual Statistical Reports**
- **Route 20 Business District Wastewater Management Plan Update,** August 2010, WSE

SUMMARY OF HYDROGEOLOGIC REPORTS *(with CCI comments in italics)*

Interoffice Memorandum November 3, 2009: Preliminary Feasibility Study Appendix E Attachment B:

WSE conducted a desk top feasibility study of the Curtis Middle School located off Pratts Mill Road in Sudbury. The results of the study were presented in an Interoffice Memorandum dated November, 3, 2009 (Memo).

- The study identified three (3) public water supply wells within a 1-mile radius of the site identified as Sudbury Water District Wells Nos. 3, 8 and 10 (Hop Brook Wells). The Memo stated that the wells were located at 439, 550 and 1,150 feet north and north-west of the site, respectively.
  The distances will vary depending on where on the property measurements are taken. WSE measurements appear to reference the distance from the property boundary and not the distance from the proposed discharge beds.
- The northern half of the CMS property contains the southern (down gradient) extent of the combined Zone II delineated for the Hop Brook Wells. A second Zone II was identified at 1,650 feet to the south of the site.
  According to James Persky of DEP's Northeast Regional Office Drinking Water Program (personal communication on 8/24/20), the combined Zone II was completed during New Source Approval permitting of Well No. 10. The Zone II Report is not available for review. Additionally, the second Zone II mentioned is the DEP approved combined Zone II for the Sudbury Water District's Raymond Road Wells.
- Hop Brook was identified approximately 550 feet east of the site and flows south and confluences with Dudley Brook 1,710 feet south east of the site, and continues to flow south until it joins the Sudbury River.
- Several wetlands were identified within the 500-foot radius of the property. The closest being 150 feet north of the property boundary. Approximately 400 feet northeast is a large wetland associated with Hop Brook as well as the 100-year flood zone.
- Potential vernal pools (PVPs) were identified within the 1-mile radius with the closest being 130-feet outside the property boundary.
  Currently, the Natural Heritage and Endangered Species Program's (NHESP) interactive map identifies two PVPs and two Certified Vernal Pools (CVPs) located north and northwest on Sudbury Water District property behind the CMS. The two PVPs were identified in the kettle depressions and have not been certified. The CVPs are located over 1,000 from the center of the proposed discharge beds.

- Based on review of the October 2008 NHESP Priority and Estimated Habitat GIS data layers, no protected habitat was identified on the project property, though approximately 3,930 feet from the site protected habitat was noted.
  Currently, the NHESP's interactive map does not identify any priority habitat on the CMS property. Priority Habitat (PH1140) is identified approximately 6,500 feet west of the CMS; PH 1334 approximately 7,500 feet southwest of the property; PH 1436 about 8,500 feet east of the property and PH 1412 about 7,900 feet to the NE.
- Potential sources of contamination within the 1-mile radius identified only one underground storage tanks (UST).
  Currently, OLIVER MassGIS online mapping lists the Sudbury DPW facility, located approximately 3,000 feet from the site as having a UST.

WSE February 18, 2010 Subsurface Data Results in a Letter to Ms. Kablack, Town Planner regarding Subsurface Data Results (Appendix D):

In August 2009, three borings were advanced and wells were installed at the CMS along the perimeter of the existing playing fields in the front of the school. WSE reported the following:

- Soils generally consist of dense, fine to medium sand and fine gravel.
- Static water levels were between 29 and 32 feet below ground surface (ft bgs).
- Slug testing calculated a **hydraulic conductivity** ranged from **1.45 to 7.23 ft/day**; and
- Soil grain size distribution analyses estimated **vertical K** range between **4.02 and 8.68** ft/d using Bouwer & Rice and Hvorslev. Assumed poorly sorted, anisotropic deposits, used Shepard, 1989 $K=800d^{1.5}$ and a ratio of 20:1 or 50:1 to represent layered or stratified glacial deposits. *All acceptable, conservative methods.*
- Soil Descriptions: Boring B1, generally described coarse sand and gravel over medium sand to 24 ft bgs, fine sand to a depth of **35 feet when the boring was terminated**. Boring B2 described a dense fine sand with trace of **silt** to a depth of 35 feet. Boring B3 described soils as a dense medium sand with a trace of silt over fine sand (boundary between 21 to 29 ft bgs).
  Did not drill below a depth of 35 feet.
- Mounding: Potential mounding was calculated using an **analytical model by the Colorado School of Mines**. At 200,000 gpd maximum mound height of 36.6 feet and mound at 500 ft of 25.8 ft. *Conservative and acceptable method.*
- Conclusion: WSE concluded the CMS site appears favorable for the disposal of <u>significant quantities</u> of treated wastewater in a soil adsorption system.
  All calculations were made using acceptable, conservative methods and appear accurate. Grain size analysis correlate with soils described on boring logs installed onsite. Colorado School of Mines analytical model is an industry wide acceptable and conservative model. The data presented and conclusion drawn are acceptable to recommend further investigation into the suitability of the site for discharge of treated wastewater effluent.

<u>Hydrogeologic Work Plan (WSE, August 6, 2010 letter to MassDEP's Criss Stephens and Kevin Brander (Appendix E):</u>

- Appendix A contains W&S February 18, 2010 Subsurface Data Results;
- Appendix B contains November 3, 2009 WSE Interoffice Memorandum;
- Appendix C contains Well Construction Details for Wells A, B, C, C1, D, E and G; Soil Grain Size Analysis, Water Levels and Mounding Analysis)

WSE produced a Hydrogeologic Investigation Plan designed in accordance with 314 CMR 5.09 and approved by MassDEP (email correspondence with Kevin Brander DEP NERO 091520 confirmed DEP approval on 10/12/2010).
Based on the Needs Assessment work conducted at the time, the design flow was estimated at 130,000 to 318,000 gpd. The Hydrogeologic Plan was designed to:

1) *Evaluate ability of soils to discharge 100,000 gpd, and*
2) *Characterize the potential impacts to local sensitive receptors*

Proposed Scope of Work:

<u>Proposed work to Characterize CMS Site</u>

- Create Maps to identify – well information, PWSs, Zone II, surface water protection areas, sensitive habitat
- More maps – watershed boundaries for Hop Brook, estimated groundwater gradients, areas of potential water supply development.
- Half mile radius – identify private wells,
- Load scale test – determine potential gradient changes for the respective discharge.
- Collect additional subsurface data to characterize depth to bedrock, subsurface stratigraphy, hydraulic mounding response and groundwater elevations.

<u>Proposed field work to obtain additional data</u>

- Nine borings/wells advanced to bedrock with monitoring wells installed at distances from 20 ft to 870 ft.
  Seven additional observation wells were installed as part of the loading test. Borings did not confirm depth to bedrock, instead terminated in silt and clay at 51 ft bgs (extending to a minimum of 60 - 65 ft bgs). This depth is used as the bottom of the aquifer or low permeability layer that would impede vertical flow in the analytical model.
- Two staff gauges (drainage swale to east and northeast of site) and a staff gauge in discharge pit.
  Staff gauges were not installed. DEP agreed with WSE's assessment that staff gauges were not appropriate due to the distance from the river and absence of standing water in drainage swales at the time of testing.
- All wells/gauges to be surveyed.
  Well elevations are provided in Table 7-2, no latitude/longitude survey presented.
- Delay test pits to November to avoid disturbing playing fields.
  Test pit logs are not provided.

Proposed Loading Test

- Construct 10x20x2 ft pit and run 72-hour test with 50,000 gpd discharge.
- Antecedent water levels for 5 days at 2-hour intervals (Manual readings 5, 3 and 1 day prior to testing).
- Water levels during test at 1 min. for 24 hrs then every 10 minutes. Manual in 3 closest wells for 2 hours, then hourly for 8 hrs.
- Water quality to be taken in Well 1, WSE-1 and WSE-3 to determine current conditions (regional and impacts from existing on-site Title V leaching field. (BOD, Ammonia, Total N, Phosphorus, TSS and Fecal coliform).
  This data was not presented and has not been reviewed.

Proposed Data Analysis

- Borings to provide depth to water and aquifer saturated thickness and K values.
- Test pits to observe seasonal high water, depth to restrictive layers (to determine breakout).
  Test pit logs not included in report and have not been reviewed.
- K Values range to be estimated by soil characterization and soil sieve analysis (Shepard, 1989; Fair-Hatch, 1959)
- Load scale test water level response to 50,000 gpd, estimate of K values using well function (analyze water levels versus time; water levels versus distance).

Proposed Analytical Modeling

- Colorado School of Mines (Guidance for Evaluation of Potential Groundwater Mounding Associated with Cluster and High-Density WW Soil Absorption Systems, 2005 *(based on Hantush, 1967 equation to predict mound height).*
- Model also predicts mound height at a distance.
- Compare model output to field data for accuracy,
- Vary input to calibrate model (match observed water levels),
- Simulate seasonal high water table *(creates conservatism)*,
- Finally, simulate larger discharge volumes.

Proposed Nutrient Analysis

- Quantify new nutrient loads based on planned effluent limits of less than 10 mg/L total N and less than 1 mg/L P.
- Look at groundwater discharge zones for local and regional surface waters,
- Potential water quality impacts to Zone IIs, and
- Changes in the total nutrient loads for the watershed.
  None of this was completed. It appears that WSE ultimately decided on a higher level of treatment in lieu of this analysis.

Proposed Sensitive Receptor Analysis

- Potential impacts to abutting properties with respect to breakout, private well impact, septic systems and existing structures.
  No private wells identified in the area, Water District serves nearly all of Town; no discussion on home owner septic system impacts or potential impact to existing school structure (basement flooding). However, they did conclude that a proposed discharge of 350,000 gpd would create a mound of 3.22 feet at a distance of 1,000 feet.

Proposed Summary Report complete in accordance with MassDEP's guidance characterization of site conditions, potential receptors, groundwater flow and water quality impacts, assessment of hydraulic mounding, nutrient impact and design consideration.

Chapter 7.0 Hydrogeologic Investigation For Disposal Sites

- Seven (7) additional wells were installed (wells A-G) in the playing field. Soils generally consisted of fill and gravel from 5 to 7 feet below ground surface (ft bgs) overlying fine to medium sand, silt ranging from 1 to 15%. Coarsens with depth until 51 ft bgs; soils described as highly permeable sand and gravel with cobbles.
- Silt and clay beneath 51 ft to at least 65 ft bgs.
- Soil grain analysis (methods by Shepard and Fair-Hatch Equation – *acceptable and suitable method*). K values ranged from 54 to 5,015 ft/d;
- Lowest k values from 20 – 25 ft bgs at Well A in the center of the field, D_{50}=0.3094. Used this value for K to represent a conservative value.
- Also sieved layer above silt and clay in Wells C and D to represent dominant sand units for lateral flow below the mound. (k=1,775 to 5,015 ft/day)
- Sieve permeable sand in Well G, extensive material continues to Hop Brook and regional discharge features.

Table 7-1

Hydraulic Conductivity Estimates

Well ID	Interval (ft bgs)	D_{50} (mm)	Hydraulic Conductivity Estimate (ft/d)	
			Shepard	Fair-Hatch
Well A	20-25	0.3094	68	54
Well C	40-45	4.2102	5,015	1,775
Well D	35-40	1.6937	1,116	330
Well G	25-30	0.6174	211	158

Load Scale Test- conducted between December 19-26, 2010 7 Day Test, reached stabilization

- Per agreement with DEP, streamflow monitoring and shallow piezometers were not necessary, due to the distance to Hop Brook and lack of standing water in nearby topographic swales.
- 20x20x3.5 ft pit, calibrated 1-inch flow meter, constant depth of 19-inches averaged 46,000gpd. {200' x 300'=60,000 ft^2, x 2 beds = 120,000 ft^2 x 3 gpd/ft^2 = 360,000 gpd}
- 6-12-inches of snow during test.
  Loading tests are not typically conducted in the winter months when soils could be frozen but WSE excavated pit to between 3.5 and 5 feet bgs and reported 'freezing conditions and snow did not affect water in the pit which remained clear and free of ice"
- Mounding most pronounced in Well A (20 to 25 ft bgs) northeast (downgradient) of pit, 1.82 ft. Well B also downgradient recorded a mound of 1.06 ft.

Table 7-2

Groundwater Elevations

Well_ID	Well Elevation	Water Elevation (static)	Water Elevation (end of test)	Water Level Change (end of test)
C-1	187.53	153.63	154.65	1.02
C	187.25	153.67	154.20	0.53
A	187.15	153.48	155.30	1.82
B	187.21	153.07	154.13	1.06
E	186.30	153.16	154.62	1.46
D	187.50	153.63	154.17	0.54
I	185.78	153.78	154.00	0.22
F	186.90	152.64	152.77	0.13
G	185.83	152.52	152.61	0.09
H	188.46	151.40	151.39	-0.01
WSE-1	186.17	153.14	153.23	0.09
WSE-2	184.68	154.86	155.01	0.15
WSE-3	184.54	153.55	153.67	0.12

- Mound evident at perimeter wells, WSE 1, 2 and 3 but minor, 'indicates permeable subsurface deposits between 30 and 51 are laterally extensive and in good hydraulic communication.'
- Well H, located at far end of 'reserve' field near back of school, did not reveal a change in water level.
  Field visit on July 23, 2020 revealed two irrigation wells in this reserve field and a Vortechnics Stormwater System in the field by the school's back parking lot.

Analytical Modeling Colorado School of Mines modified Hantush (1967).
This is an analytical model; proposed large volumes of discharge may be require to construct a groundwater flow model.

Two Steps – 1st calibrate model to loading test water levels and validate aquifer parameters; 2nd simulate with actual bed size and discharge rates.

1st used the following input data: 20 x 20 ft discharge field, 45,000 gpd loading, silt/clay at 51 ft bgs, static of 33 ft, saturated thickness of 18 ft, conservative K value of 68 ft/day.
Used 45,000 gpd instead of 46,000 gpd of actual test, which is not an issue.
K value of 68 ft/day is appropriate based on boring logs and grain size analysis.

At Well A the model results simulated a mound of 1.811 feet, actual loading test observed a 1.82 ft mound. WSE concluded this was 'excellent correlation'.

2nd used **3 gpd per square foot of discharge bed** per "DEP Guidelines at the time"; two (2) 200 by 300-foot beds, 50 feet apart, simulated 150,000, 250,000, 350,000 and 400,000 gpd for 180 days for represent steady state conditions.

Table 7-3

Mound Height Calculations for Various Discharge Rates

Discharge Rate (gpd)	Max Mound Height (feet)
150,000	4.7
250,000	7.1
350,000	9.3
400,000	10.28

Note: Model reflects 2 discharge fields, 200 x 300 feet separated 50 feet apart

- Mound - Bury pipes 4-5 ft bgs, static of 33 ft, plus 5-foot seasonal flux so WSE concluded a 10.28 mound works horizontally.
  Test pit logs are not included in report so have not seen documented depth of seasonal high water. A flux of 5 feet was used to represent seasonal water high.
- Radially - Q=350,000 gpd, 1,000 ft away 3.22-foot mound. WSE concluded "relatively small impact at radial distances beyond 1,000 ft.

<u>WSE Conclusion</u>
WSE concluded that, 'the Curtis Middle School was identified as the site most suitable for the development of a large-scale soil absorption system.'

Missing Data – Data not included in PER

- Test pit logs
- Seasonal high-water table
- Geologic cross sections
- Depth to bedrock (borings were terminated in a silt layer between 51 and at least 65 ft bgs which would impede vertical flow)
- Groundwater Flow Maps (Pre and Post loading ground water flow maps)
- Survey Plan - final grade and the relationship to seasonal high water and under loading conditions (site survey)
- Nutrient Analysis – proposed a higher level of wastewater treatment and apparently did not do this analysis.
- GW monitoring plan – no plan presented, though high level of treatment proposed.
- Well No. 10 Zone II Report with combined Zone IIs for Hop Brook Wells –
  The report would contain the aquifer characteristics used to model the aquifer and delineate Zone II.

CONCLUSIONS AND RECOMMENDATIONS

Based on the results of a loading test conducted between December 19 and 26, 2010 and the analytical mounding analysis, WSE concluded that a discharge of 350,000 gpd would produce a 3.22-foot mound at 1,000 feet from a soil absorption system (SAS) constructed at the Curtis Middle School. WSE characterized the mound as having a "relatively small impact at radial distances beyond 1,000 ft." WSE went on to state, "the 'minor rise at the corners of the athletic fields indicate that the permeable subsurface deposits between 30 and 51 feet are laterally extensive and in good hydraulic communication. This connection is ideal for long term assimilation of the planned discharge."

WSE's Hydrogeologic Investigation Plan for the Curtis Middle School was designed in accordance with 314 CMR 5.09 and approved by MassDEP on October 12, 2010. A Project Evaluation Report (PER) was prepared for the Town but was never submitted to DEP for review and approval.

Callahan Consulting has reviewed the hydrogeologic data collected at the Curtis Middle School and calculations presented by WSE and their June *2010 PER with Town Revisions incorporated June 2013*. It is our opinion that WSE used industry-wide acceptable methods to gather and interpret field data and applied appropriately conservative analytical analyses to calculate potential mounding.

It is our understanding that WSE's analysis is adequate to meet MassDEP's requirements for a hydrogeologic evaluation of the CMS. However, additional data may be beneficial to assure compliance with 314 CMR 5.00 and issuance of a groundwater discharge permit for a discharge greater than 200,000 gpd.

After review of the above referenced data, CCI offers the following recommendations to further evaluate the suitability of the Curtis Middle School for discharge of large volumes of highly treated wastewater effluent.

1) CCI recommends that a plan to complete the Hydrogeologic Evaluation be prepared to include the following data:
    - Test pit logs
    - Determination of the seasonal high-water table
    - Geologic cross sections
    - Determination of depth to bedrock or at least thickness of silt layer beneath 51 feet
    - Groundwater Flow Maps (pre and post loading ground water flow maps)
    - Site survey including SAS location, final grade and the relationship to seasonal high water and under loading conditions
    - Nutrient Analysis –unless proposed level of wastewater treatment precludes necessity for analysis
    - Determine ambient water quality
    - Boring logs and construction details on the irrigation wells located in the playing fields on the east side of the school if these fields are proposed as a potential discharge reserve area. Include a discussion on the irrigation wells' interaction with the proposed wastewater collection and dispersal system.

- Construction details on the Vortechnics stormwater system located in the parking area behind the school. Include a discussion on how this stormwater system may interact with the proposed wastewater collection and dispersion system.
- Proposed Groundwater Monitoring Plan including locations of monitoring wells. Plans for a minimum of three ground water monitoring wells (one upgradient and two downgradient) for compliance monitoring. The plans must specify the type of wells, their locations, depth, screen selection and method of construction, development and sampling.
- Evaluation of potential impacts on down gradient and cross gradient receptors. The list includes wells within 1 mile (public and private), wastewater discharges (such as the school's septic system and neighbor's systems), subsurface infrastructure (basements and pipelines), water supply protection areas (Zone I, Zone II, Zone A), and Outstanding Resource Water.

2) CCI recommends that Woodard & Curran request a scoping meeting with MassDEP to confirm that WSE's hydrogeologic evaluation along with the additional data is adequate to comply with 314 CMR 5.00 and the BRP WP 83 Groundwater Discharge Permit application.

3) CCI recommends Woodard & Curran request a meeting with Massachusetts Environmental Policy Act (MEPA) staff to determine the level of environmental impact analysis required to comply with 301 CMR 11.0 regulations. It would be beneficial to determine the level of assessment MEPA will require to evaluate potential impacts to nearby surface waters, aquifer protection areas and public supply wells and collect data simultaneously with the hydrogeologic evaluation.

4) CCI recommends Woodard & Curran request a meeting with the Sudbury Board of Health to determine if any additional requirements beyond those imposed by state laws and regulations apply to the proposed project.

5) CCI recommends that a numerical groundwater flow model be constructed to simulate the effects of discharge at the Curtis Middle School, if waste water discharge volumes of greater than 200,000 gpd are proposed. The site is located immediately outside of the downgradient delineation of the combined Zone II for the Sudbury Water District's Hop Brook Wells and in close proximity to Hop Brook and Hop Brook Well Nos. 3, 8 and 10. A numerical groundwater flow model could simulate the wastewater discharge and pumping under Zone II conditions and under more average pumping conditions. This would provide a more accurate assessment than the analytical model used in the preliminary evaluation. It would allow the Water District, TAC, stakeholders and regulators to make more informed decision in their wastewater planning.

APPENDIX K: GREEN HOUSE GAS

Baseline

Description of Work

Estimate GHG emissions from existing septic systems.

Assume GHG emissions from septic systems = 0.10 tonne CO2e/capita-yr. Evaluation of Greenhouse Gas Emissions from Septic Systems, Water Environment Research Foundation, December 2011.

= 0.11 tons CO2e/capita-yr

Per capita sewage flow = 59 gpd

Name	Low Estimate (Existing)			High Estimate (Buildout)		
	Near Term ADF, gpd	Equivalent in Capita	CO2e, tons/yr	Buildout ADF, gpd	Equivalent in Capita	CO2e, tons/yr
Phase 1: Route 20 Sub-Area A PS	38,692	656	72	146,150	2,477	273
Phase 1A: Raymond Road South	25,857	438	48	34,283	581	64
Phase 2 - Raymond Hills North PS	31,253	530	58	41,072	696	77
Phase 4: Route 20 Sub-Area B PS	27,482	466	51	54,589	925	102
Total	123,285	2,090	230	276,095	4,680	516

Abbreviations

ADF = Average Daily Flows
C = Assumed Hazen Williams Coefficient
CO2e = Carbon dioxide equivalent
D = Diameter
DS = Downstream
ft = feet
GHG = Greenhouse Gas
gpd = gallons per day
gpm = gallons per minute
HGL = Hydraulic Grade Line
HP = Horsepower
in = inches
kWh = Kilowatt-hour
L = Forcemain Length
MWH = Megawatt-Hour
P,m = Power Usage of Motor
PF = Peaking Factor
PHF = Peak Hourly Flows
PS = Pump Station
TDH = Total Dynamic Head
tpy = tons per year
US = Upstream
V = Flow Velocity
WW = Wetwell
yr = Year

Proposed Pump Stations

Description of Work

Estimate electrical usage for proposed pump stations.

Usage from Pumps

Pump Stations

Assumed pump efficiency, high usage =	65%
Assumed pump efficiency, low usage =	75%
Assumed motor efficiency =	85%

	Determine Flow						Determine TDH										Estimate Energy Usage							
	From service Parcels			From Upstream PS			Major Losses					Static Head												
Name	Buildout ADF, gpd	PF	PHF, gpm	US PSs	US PS Flow, gpm	Conceptual Design Pump Capacity, Q, gpm	L, ft	d, in	V, fps	C	Major Losses: $Q[gpm]^{1.85} \times 10.44 \times L[ft] / (C^{1.85} \times d[in]^{4.87})$	Assumed WW Level	Discharge Pt	Assumed Discharge HGL, ft	Static Head, ft	TDH: Major Losses + Static Head, ft (Neglect Minor Losses)	Pump HP, min	Assumed Pump HP	P,m,kW	Anticipated Runtime, hours/day	Energy Usage, kWh/day	High Estimate - Low Efficiency, Buildout Flow, MWH/yr	Existing / Buildout Flow	Low Estimate - High Efficiency, Existing Flow, MWH/yr
Phase 1: Route 20 Sub-Area A PS	147,000	5.6	572	Phase 1A & Phase 4	375	1,000	7,700	10	4.1	120	55	105	Prop WWTP	200	95	150	68.5	75	56	2.5	137	50.0	26%	11.5
Phase 1A: Raymond Road South	35,000	5.6	136			150	5,600	4	3.8	120	103	106	Raymond Road to Phase 1 PS	137	31	134	9.2	15	11	3.9	43	15.9	75%	10.4
Phase 2 - Raymond Hills North PS	42,000	5.6	163			175	7,900	4	4.5	120	194	125	Prop WWTP	200	75	269	21.5	30	22	4.0	89	32.7	76%	21.5
Phase 4: Route 20 Sub-Area B PS	55,000	5.6	214			225	1,500	4	5.7	120	59	102	Boston Post Rd to Phase 1 PS	127	25	84	8.6	15	11	4.1	46	16.6	50%	7.3
WWTP Discharge PS				Phase 1 & Phase 2	1,175	1,250	3,200	10	4.4	120	34	145	Curtis Middle School Field GW Discharge	185	40	74	42.6	75	56	3.7	208	75.9	27.7	29.4

W

Usage from Unit Heaters

Determine number of hours heater will run.

Assume unit heater runs eight hours per day in January, and scale all other usage off of that assumption based on heating-degre-days, per degreedays.net:

Month	Max HDD (1)	Hrs/day (2)	Hrs/mo.
Jan	959	8.0	248
Feb	777	6.5	181
Mar	768	6.4	199
Apr	479	4.0	120
May	194	1.6	50
Jun	46	0.4	12
Jul	75	0.6	19
Aug	24	0.2	6
Sep	45	0.4	11
Oct	275	2.3	71
Nov	528	4.4	132
Dec	912	7.6	236
		Total (Hrs/year) =	1,286

1. Max HDD represents the maximum heating-degree-day values for the respective month taken from degreedays.net, based on Hanscom Field in Bedford, MA (KBED) data from Dec 2019-Nov 2021, with a base temperature of 60°F.

2. The unit heater is assumed to run 1/3 of the day in January. The remainder of the year is scaled off of this assumption based on the max HDD.

Calculate usage for a typical pump station building, and for a typical cabinet.

Usage of a Building

Unit heater size = 3.0 kW/room. Small room assumed.

Energy usage / unit heater = 3.9 MWH/yr/unit heater

Usage for a Exterior Control Cabinet

Unit heater size = 0.5 kW

Energy usage / unit heater = 0.6 MWH/yr/unit heater

Assumptions

2019 Emission Rates per 2019 ISO New England Electric Generator Air Emissions Report, dated March 2021 by ISO New England Inc. System Planning

GHG	Emission, lbs/MWh	Assumed GWP	**CO2e, lbs/MWH**	**CO2e, tons/MWH**
CO_2	633	1	633	0.32
SO_2	0.05	0	0	0.00
NO_x	0.26	298	77.48	0.04
Total			710.48	0.36

W

Proposed Collection System Pump Stations, Summary

Note: WWTP Discharge Pumps included with Proposed WWTP

Name	Pump Size (for Comparison)	Low Estimate						High Estimate					
		Pump Usage, MWH/yr	Heating Usage, MWH/yr	Desc.	Other (5% Assumed)	Total	GHG Emissions (tpy CO2e)	Pump Usage, MWH/yr	Heating Usage, MWH/yr	Desc.	Other (5% Assumed)	Total	GHG Emissions (tpy CO2e)
Phase 1: Route 20 Sub-Area A PS	75	11.5	3.9	Controls room provided; generator on exterior slab.	0.8	16.1	5.7	50.0	7.7	Pump station with control room and generator room.	2.9	60.6	21.5
Phase 1A: Raymond Road South	15	10.4	0.6	Exterior Control cabinet; generator on slab	0.6	11.6	4.1	15.9	7.7		1.2	24.8	8.8
Phase 2 - Raymond Hills North PS	30	21.5	0.6		1.1	23.3	8.3	32.7	7.7		2.0	42.4	15.1
Phase 4: Route 20 Sub-Area B PS	15	7.3	0.6		0.4	8.3	2.9	16.6	7.7		1.2	25.6	9.1
						59.3	21.1					153	54.5

Proposed WWTP

Values from Transcend Package Plant Design Materials

Design Average Flow =	1,420	m^3/d
=	375,124	gpd
Daily Average Consumed Power =	79.85	kW
Yearly Average Consumed Power =	29.15	MWH/yr

Phase	Power Consumed At Plant, Prorated by Flow (See Baseline Section), MWH/yr		Power Consumed by Discharge PS, Prorated by Flow (See Baseline Section), MWH/yr		Total, MWH/yr		Corresponding GHG Emissions (tpy CO2e)	
	Low Estimate (Existing)	High Estimate (Buildout)	Low Estimate (Existing)[1]	High Estimate (Buildout)	Low Estimate	High Estimate	Low Estimate (Existing)	High Estimate (Buildout)
Phase 1: Route 20 Sub-Area A PS	3.0	11.4	4.1	40.0	7.1	51.4	2.5	18.2
Phase 1A: Raymond Road South	2.0	2.7	2.8	9.5	4.8	12.2	1.7	4.3
Phase 2 - Raymond Hills North PS	2.4	3.2	3.4	11.4	5.8	14.6	2.1	5.2
Phase 4: Route 20 Sub-Area B PS	2.1	4.2	2.9	15.0	5.1	19.2	1.8	6.8
Total	9.6	21.5	13.2	75.9	22.7	97.4	8.1	34.6

Total Summary

Phase	GHG Emissions (tpy CO2e)									
	Baseline - Low Estimate	Proposed - High Estimate			Delta - Low	High Estimate	Proposed - Low Estimate			Delta - High
		PS	WWTP	Total Proposed			PS	WWTP	Total Propose	
Phase 1: Route 20 Sub-Area A PS	72	21.5	18.2	39.8	-32.5	273	5.7	2.5	8.2	-264.8
Phase 1A: Raymond Road South	48	8.8	4.3	13.1	-35.2	64	4.1	1.7	5.8	-58.2
Phase 2 - Raymond Hills North PS	58	15.1	5.2	20.3	-38.1	77	8.3	2.1	10.3	-66.4
Phase 4: Route 20 Sub-Area B PS	51	9.1	6.8	15.9	-35.4	102	2.9	1.8	4.7	-97.2
Total	230.3	54.5	34.6	89.1	-141.3	515.8	21.1	8.1	29.1	-486.7

W

APPENDIX L: RMAT CLIMATE ADAPTATION TOOL (BETA)

RMAT Climate Resilience Design Standards Tool Project Report

Sudbury CWMP
Date Created: 12/15/2021 12:04:47 PM

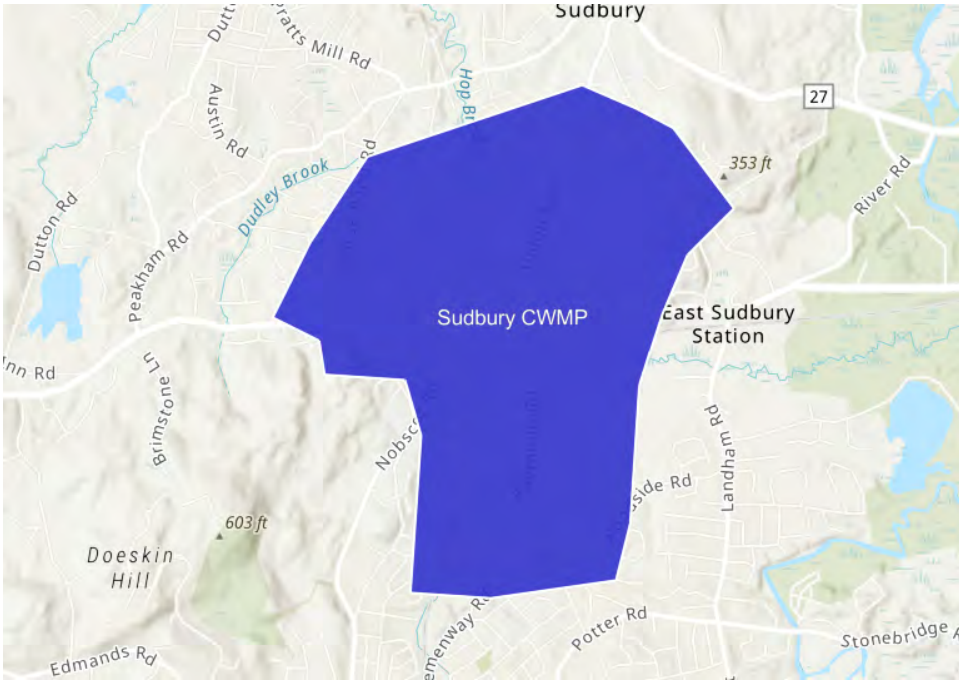
Created By: rblacquier

Project Summary

Link to Project

Estimated Construction Cost: $93300000.00
Useful Life: 2050 - 2059

Ecosystem Benefits	Scores
Project Score	Moderate
Exposure	**Scores**
Sea Level Rise/Storm Surge	Not Exposed
Extreme Precipitation - Urban Flooding	Low Exposure
Extreme Precipitation - Riverine Flooding	High Exposure
Extreme Heat	High Exposure



Asset Summary

Number of Assets: 2

Asset Risk	Sea Level Rise/Storm Surge	Extreme Precipitation - Urban Flooding	Extreme Precipitation - Riverine Flooding	Extreme Heat
Wastewater Treatment Facility	Low Risk	Low Risk	High Risk	High Risk
Pump Stations	Low Risk	Low Risk	High Risk	High Risk

Project Outputs

	Target Planning Horizon	Intermediate Planning Horizon	Percentile	Return Period	Tier
Sea Level Rise/Storm Surge					
Wastewater Treatment Facility					
Pump Stations					
Extreme Precipitation					
Wastewater Treatment Facility	2050			25-yr (4%)	Tier 2
Pump Stations	2050			10-yr (10%)	Tier 2
Extreme Heat					
Wastewater Treatment Facility	2050		90th		Tier 2
Pump Stations	2050		50th		Tier 2

Scoring Rationale - Exposure

Sea Level Rise/Storm Surge

This project received a "Not Exposed" because of the following:

- Not located within the predicted mean high water shoreline by 2030
- No historic coastal flooding at project site
- Not located within the Massachusetts Coastal Flood Risk Model

Extreme Precipitation - Urban Flooding

This project received a "Low Exposure" because of the following:

- No historic flooding at project site
- Minor projected increase in rainfall within project's useful life
- No increase to impervious area

Extreme Precipitation - Riverine Flooding

This project received a "High Exposure" because of the following:

- Exposed to riverine flooding within the project's useful life
- No historic riverine flooding at project site

Extreme Heat

This project received a "High Exposure" because of the following:

- 30+ days increase in days over 90 deg. F within project's useful life
- Tree removal
- Located within 100 ft of existing water body

Scoring Rationale - Asset Risk Scoring

Asset - Wastewater Treatment Facility
Primary asset criticality factors influencing risk ratings for this asset:

- Asset may inaccessible/inoperable during natural hazard event, but must be accessible/operable within one day after natural hazard event
- Less than 1,000 people would be directly affected by the loss/inoperability of the asset
- Some alternative programs and/or services are available to support the community
- Cost to replace is less than $10 million
- Spills and/or releases of hazardous materials would be relatively easy to clean up

Asset - Pump Stations
Primary asset criticality factors influencing risk ratings for this asset:

- Asset may inaccessible/inoperable for more than a day but less than a week after natural hazard event
- Loss/inoperability of the asset would have impacts limited to the location of infrastructure only
- Inoperability of the asset would not be expected to result in injuries
- Cost to replace is less than $10 million
- Spills and/or releases of hazardous materials would be relatively easy to clean up

Project Design Standards Output

Asset: Wastewater Treatment Facility — Building/Facility

Sea Level Rise/Storm Surge — Low Risk

Applicable Design Criteria

Tidal Benchmarks: No
Stillwater Elevation: No
Design Flood Elevation (DFE): No
Wave Heights: No
Duration of Flooding: No
Design Flood Velocity: No
Wave Forces: No
Scour or Erosion: No

Extreme Precipitation — Low Risk

Target Planning Horizon: 2050
Return Period: 25-yr (4%)

Applicable Design Criteria

Tiered Methodology: Tier 2 (Link)

Total Precipitation Depth for 24-hour Design Storms: Yes

Peak Intensity for 24-hour Design Storms: Yes
Riverine Peak Discharge: Yes
Riverine Peak Flood Elevation: Yes
Duration of Flooding for Design Storm: Yes
Flood Pathways: Yes

Extreme Heat High Risk

Target Planning Horizon: 2050
Percentile: 90th Percentile

Applicable Design Criteria

Tiered Methodology: Tier 2 (Link)

Annual/Summer/Winter Average Temperature: Yes
Heat Index: Yes
Days Per Year With Max Temperature > 95°F: Yes
Days Per Year With Max Temperature > 90°F: Yes
Days Per Year With Max Temperature < 32°F: Yes
Number of Heat Waves Per Year: Yes
Average Heat Wave Duration (Days): Yes
Cooling Degree Days (Base = 65°F): Yes
Heating Degree Days (Base = 65°F): Yes
Growing Degree Days: No

Asset: Pump Stations Infrastructure

Sea Level Rise/Storm Surge Low Risk

Applicable Design Criteria

Tidal Benchmarks: No
Stillwater Elevation: No
Design Flood Elevation (DFE): No
Wave Heights: No
Duration of Flooding: No
Design Flood Velocity: No
Wave Forces: No
Scour or Erosion: No

Extreme Precipitation Low Risk

Target Planning Horizon: 2050
Return Period: 10-yr (10%)

Applicable Design Criteria

Tiered Methodology: Tier 2 (Link)

Total Precipitation Depth for 24-hour Design Storms: Yes
Peak Intensity for 24-hour Design Storms: Yes
Riverine Peak Discharge: Yes
Riverine Peak Flood Elevation: Yes
Duration of Flooding for Design Storm: Yes
Flood Pathways: Yes

Extreme Heat High Risk

Target Planning Horizon: 2050
Percentile: 50th Percentile

Applicable Design Criteria

Tiered Methodology: Tier 2 (Link)

Annual/Summer/Winter Average Temperature: Yes
Heat Index: Yes
Days Per Year With Max Temperature > 95°F: Yes
Days Per Year With Max Temperature > 90°F: Yes
Days Per Year With Max Temperature < 32°F: Yes
Number of Heat Waves Per Year: Yes
Average Heat Wave Duration (Days): Yes
Cooling Degree Days (Base = 65°F): No
Heating Degree Days (Base = 65°F): No

Growing Degree Days: No

Project Inputs

Core Project Information

Name:	Sudbury CWMP
Given the expected useful life of the project, through what year do you estimate the project to last (i.e. before a major reconstruction/renovation)?	2050 - 2059
Location of Project:	Sudbury
Estimated Capital Cost:	$93,300,000
Entity Submitting Project:	Sudbury
Is this project being submitted as part of a state grant application?	No
Which grant program?	
Is climate resiliency a core objective of this project?	Yes
Is this project being submitted as part of the state capital planning process?	No
Is this project being submitted as part of a regulatory review process?	Yes
Brief Project Description:	20-year Comprehensive Wastewater Management Plan to identify areas not long-term sustainable with septic systems. Preserves drinking water supplies. Being Filed as part of MEPA.

Project Ecosystem Benefits

Provides flood protection through green infrastructure or nature-based solutions	No
Provides storm damage mitigation	Yes
Provides groundwater recharge	Yes
Protects public water supply	Yes
Filters stormwater	No
Improves water quality	Yes
Promotes decarbonization	No
Enables carbon sequestration	No
Provides oxygen production	No
Improves air quality	Yes
Prevents pollution	Yes
Remediates existing sources of pollution	Yes
Protects fisheries, wildlife, and plant habitat	Yes
Protects land containing shellfish	No
Provides pollination	No
Provides recreation	No
Provides cultural resources/education	No

Project Climate Exposure

Does the project site have a history of coastal flooding?	No
Does the project site have a history of flooding during extreme precipitation events (unrelated to water/sewer damages)?	No
Does the project site have a history of riverine flooding?	No
Does the project result in a net increase in impervious area of the site?	Unsure
Are existing trees being removed as part of the proposed project?	Yes

Project Assets

Asset: Wastewater Treatment Facility
Asset Type: Typically Unoccupied
Asset Sub-Type: Wastewater treatment plant
Construction Type: New Construction
Construction Year: 2023
Useful Life: 30

Identify the length of time the asset can be inaccessible/inoperable without significant consequences.
Building may be inaccessible/inoperable during natural hazard event, but must be accessible/operable within one day after natural hazard event

Identify the geographic area directly affected by permanent loss or significant inoperability of the building/facility.
Impacts limited to site only

Identify the population directly served that would be affected by the permanent loss of use or inoperability of the building/facility.
Less than 1,000 people

Identify if the building/facility is located within an environmental justice community or provides services to vulnerable populations.
The building is not located in an environmental justice community and does not provide services to vulnerable populations

If the building/facility became inoperable for longer than acceptable in Question 1, how, if at all, would it be expected to impact people's health and safety?
Inoperability of the building/facility would not be expected to result in injuries

What are the environmental impacts related to spills/releases of hazardous materials as a result of loss of the building/facility functionality?
Spills and/or releases of hazardous materials would be relatively easy to clean up

What are the impacts on other facilities, assets, and/or infrastructure as a result of loss of the building/facility functionality?
Minor – Inoperability will not likely affect other facilities, assets, or buildings

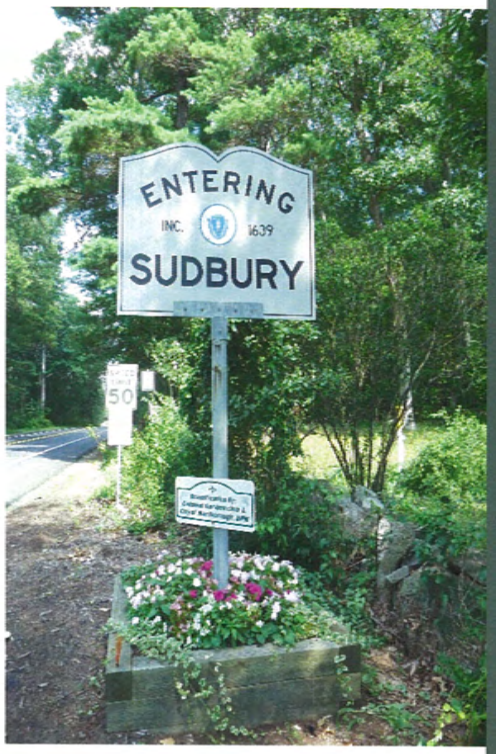
What are the direct costs to replace the loss of the building/facility?
Less than $10 million

Is this a recreational facility which can be vacated during a natural hazard event?
No
If the building/facility became inoperable for longer than acceptable in Question 1, what are the public and/or social services impacts?
Some alternative programs and/or services are available to support the community
If the building/facility became inoperable for longer than acceptable in Question 1, what are the environmental impacts related to natural resources?
Impact on natural resources can be mitigated naturally
What are the impacts to government services as a result of loss of building functionality (i.e. the building is not able to serve or operate its intended users or function)?
Loss of building is not expected to reduce the ability to maintain government services.
What are the impacts to loss of confidence in government resulting from loss of building functionality (i.e. the building asset is not able to serve or operate its intended users or function)?
No Impact
Asset: Pump Stations
Asset Type: Utility Infrastructure
Asset Sub-Type: Wastewater
Construction Type: New Construction
Construction Year: 2023
Useful Life: 30
Identify the length of time the asset can be inaccessible/inoperable without significant consequences.
Infrastructure may be inaccessible/inoperable for more than a day, but less than a week after natural hazard without consequences.
Identify the geographic area directly affected by permanent loss or significant inoperability of the infrastructure.
Impacts limited to location of infrastructure only
Identify the population directly served that would be affected by the permanent loss or significant inoperability of the infrastructure.
Less than 5,000 people
Identify if the infrastructure is located within an environmental justice community or provides services to vulnerable populations.
The infrastructure is not located in an environmental justice community and does not provide services to vulnearble populations
Will the infrastructure reduce the risk of flooding?
No
If the infrastructure became inoperable for longer than acceptable in Question 1, how, if at all, would it be expected to impact people's health and safety?
Inoperability of the infrastructure would not be expected to result in injuries
If there are hazardous materials in your infrastructure, what are the extents of impacts related to spills/releases of these materials?
Spills and/or releases of hazardous materials are expected with relatively easy cleanup
If the infrastructure became inoperable for longer than acceptable in Question 1, what are the impacts on other facilities, assets, and/or infrastructure?
Minor – Inoperability will not likely affect other facilities, assets, or buildings
If the infrastructure was damaged beyond repair, how much would it approximately cost to replace?
Less than $10 million
Does the infrastructure function as an evacuation route during emergencies? This question only applies to roadway projects.
No
If the infrastructure became inoperable for longer than acceptable in Question 1, what are the environmental impacts related to natural resources?
Impact on natural resources can be mitigated naturally
If the infrastructure became inoperable for longer than acceptable in Question 1, what are the impacts to government services (i.e. the infrastructure is not able to serve or operate its intended users or function)?
Loss of infrastructure is not expected to reduce the ability to maintain government services
What are the impacts to loss of confidence in government resulting from loss of infrastructure functionality (i.e. the infrastructure asset is not able to serve or operate its intended users or function)?
No Impact

APPENDIX M: PUBLIC OUTREACH MATERIALS

Outreach Meeting Presentations

NOTE: ALL PUBLIC OUTREACH INFORMATION CAN BE ACCESSED ON THE TOWN'S WEBPAGE AT HTTPS://SUDBURY.MA.US/DPW/CWMP



Town of Sudbury
Wastewater Planning Update

Board of Selectmen Meeting
Town Hall
January 8, 2019
7:00PM

Presented by

Department of Public Works

WOODARD
&CURRAN

Background

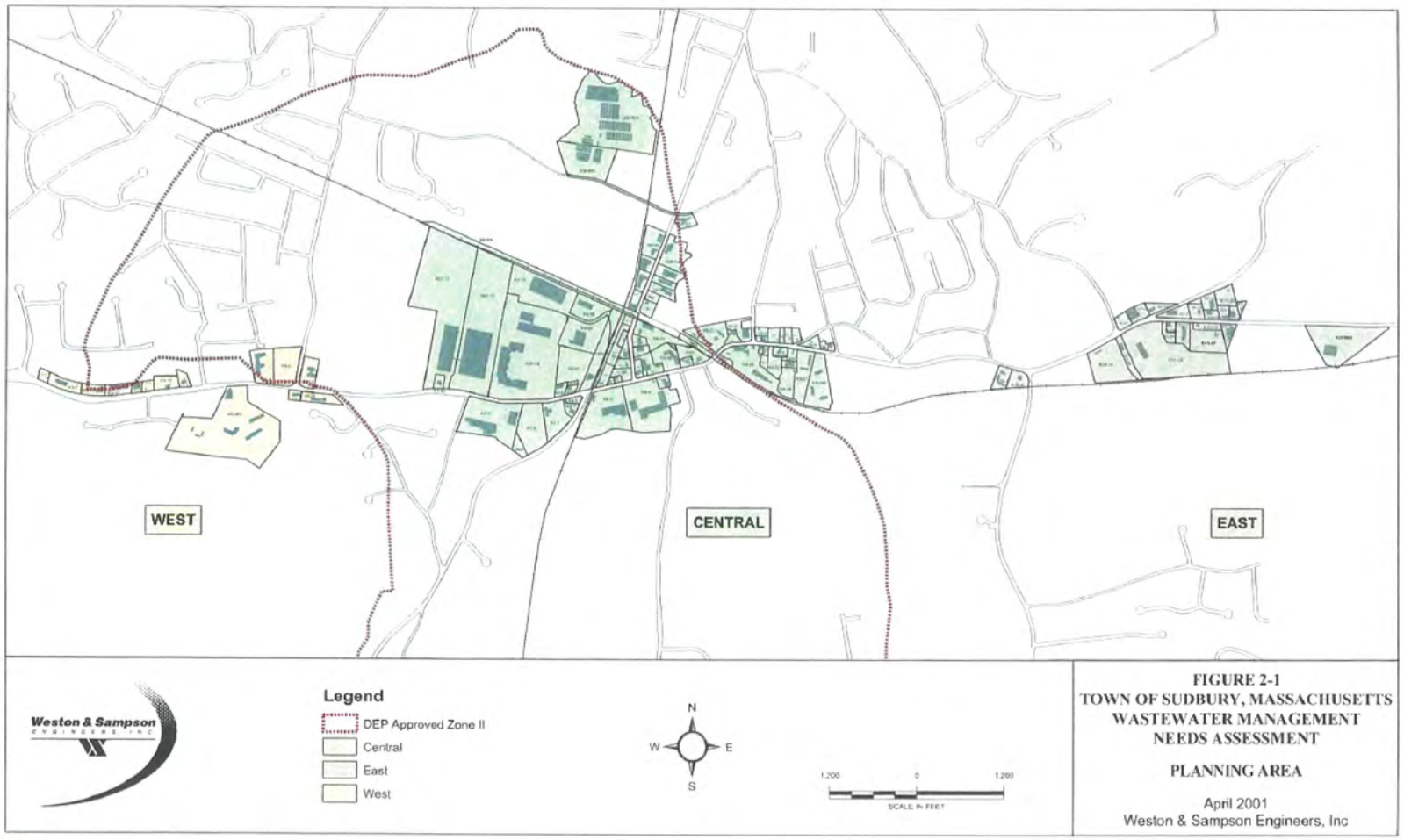
Town Wastewater Studies - Route 20 Business District

- 1995 – "Sudbury Wastewater Disposal Options, Route 20 Business District"
- 2001 – "Assessment of Wastewater Needs for the Route 20 Business District"
- 2010 – "Route 20 Business District Wastewater Management Plan Update"
- 2013 – "Project Evaluation Report"

All Reports Recommend Sewering Route 20 Business District For Economic Development And Environmental Reasons.

WOODARD &CURRAN

Route 20 Business District



CWMP Project Goals

- *Review Town-wide Wastewater Issues*
  - *Provide Support to All Areas*
- *Review Environmental Impacts*
  - *Raymond Road Aquifer Example*
- *Review Potential for Economic Development*
  - *Relief of Residential Tax Burden*
- *Coordinate Planning With Town Departments – 20 Year Planning Period*
  - *Planning Board*
  - *Board of Health*
- *Develop & Implement a Comprehensive Public Outreach Program*

CWMP Project Goals

- *Develop a Wastewater Plan to Meet Sudbury's Needs*
  - *Now and Future*
- *Create a Funding Plan to Support Implementation*
  - *Low Interest Loans and Grants*
- *Work with Route 20 Businesses on Needs/Plans*
- *Build A Public Comprehensive Outreach/Education Program*
  - *Town Departments*
  - *General Public*
- *Develop 20-Year Plan That Meets the Needs of Sudbury*

WOODARD &CURRAN

CWMP Project Benefits

Comprehensive Wastewater Management Plan and Environmental Impact Report

- ***Evaluates Wastewater Practices Town-Wide***
- ***Provides Environmental Resource Preservation & Protection***
- ***Promotes Town-Wide Economic Development***
- ***Coordinates With Local and Regional Planning Goals***
- ***Provides a Comprehensive Public Outreach/Education Program***
- ***Leverages Qualifications for State Loans and Grants***
- ***Gives the Town a 20-Year Planning Document***

WOODARD &CURRAN

Project Scope

Update Work to Meet MassDEP Guidelines

- Kick-Off Meeting
  - Town Administration & Departments
  - MassDEP
- Review and Update
  - Areas of Wastewater Study
  - Wastewater Flows and Loads
  - Previous Sites Recommended for Wastewater Treatment & Discharge
- Prepare Draft Report for Town Review
- Strategize State Filings
- Prepare Draft and Final Environmental Filings

WOODARD &CURRAN

Project Budget and Timeline

TASK	BUDGET	TIMEFRAME
1. Kick-Off Meeting with Town. Meet with Town Administration, Planning and School Department AND MassDEP on Project	*Included in Public Outreach*	*ONE MONTH**
2. Review and Update Needs Areas	$75,000.	TWO MONTHS
3. Update Flows and Loads	$50,000	TWO MONTHS
4. Review and Update 2013 Report Recommended Sites for WWTF and Discharge. Additional Site Review dependent on No. 3 above	$100,000	TWO MONTHS
5. Develop Pubic Outreach/Education Program to be conducted through Project	$45,000	*ON-GOING THROUGHOUT PLANNING PROCESS*
6. Prepare Draft CWMP for Town Review	$50,000	TWO MONTHS
7. Prepare Environmental Notification Form (ENF), file and address comments from	$30,000	THREE MONTHS*
8. Prepare an Environmental Impact Report based on ENF results, file and address comments	$150,000	TEN MONTHS*
TOTAL	**$500,000**	**22 MONTHS***

**Regulatory input and filings may impact times*

WOODARD &CURRAN

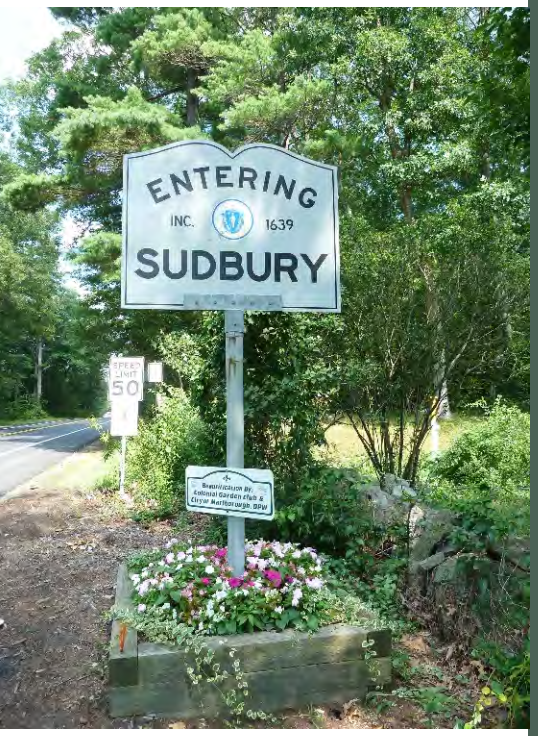
Potential Funding Source

The Town Filed a State Revolving Fund (SRF) Loan Application in August 2018

- Approved for $500,000 State Revolving Fund Loan
  - Interest Rate Reduced From 2% to 1.5%
    - Housing Choice Community
  - Payback Over 20 Years
- Will Review MassWorks Program-Grant Potential
  - Supports Economic Development & Job Creation
  - If Awarded, Could Offset SRF Borrowing
    - Directly Reduces Amount Borrowed
    - Reduces Amount of Payback
    - Reduces Individual Costs
- ***Does Not Obligate the Town Financially***

WOODARD &CURRAN

Questions Answers



Sudbury Capital Budget Meeting

Wastewater Planning Update

Town Hall
March 5, 2019
7:00PM

WOODARD & CURRAN

Background

Town Wastewater Studies to Date

- 1995 – "Sudbury Wastewater Disposal Options, Route 20 Business District"
- 2001 – "Assessment of Wastewater Needs for the Route 20 Business District"
- 2010 – "Route 20 Business District Wastewater Management Plan Update"
- 2013 – "Project Evaluation Report"

All Above Reports Detail Environmental Concerns Related to the Town's Main Drinking Water Supply, as well as Potential For Economic Development, as Reasons to Sewer Route 20 Area

CWMP Project Goals & Benefits

- Evaluates Wastewater Practices Town-Wide
  - Provides Support to All Areas of Town
- Provides Environmental Resource Preservation & Protection
  - Raymond Road Aquifer – Town's Main Drinking Water
- Coordinates With Local and Regional Planning Goals
- Provides a Comprehensive Public Outreach/Education Program

CWMP Project Goals & Benefits

- Works with Route 20 Businesses on Needs / Business Planning
  - Determine Town-Wide Economic Development Potential
- Leverages Qualifications for State Loans and Grants
- Gives the Town a 20-Year Planning Document

Completes ALL Wastewater Planning Done To Date

Project Scope

Update Wastewater Planning to Date to Meet Current Guidelines

- Kick-Off Meeting
  - Town Administration & Departments
  - Massachusetts Department of Environmental Protection (MassDEP)
- Review and Update
  - Areas of Wastewater Study
  - Wastewater Flows
  - Previous Sites Recommended for Wastewater Use
- Prepare Draft Report for Town review
- Strategize State Filings
- ***Prepare Environmental Impact Studies***

Scope, Schedule & Budget

TASK	BUDGET	TIMEFRAME
1. Kick-Off Meeting with Town. Meet with Town Administration, Planning and School Department AND MassDEP on Project	*Included in Public Outreach*	*ONE MONTH**
2. Review and Update Needs Areas	$75,000.	TWO MONTHS
3. Update Flows and Loads	$50,000	TWO MONTHS
4. Review and Update 2013 Report Recommended Sites for WWTF and Discharge. Additional Site Review dependent on No. 3 above	$100,000	TWO MONTHS
5. Develop Pubic Outreach/Education Program to be conducted through Project	$45,000	*ON-GOING THROUGHOUT PLANNING PROCESS*
6. Prepare Draft CWMP for Town Review	$50,000	TWO MONTHS
7. Prepare Environmental Notification Form (ENF), file and address comments from	$30,000	THREE MONTHS*
8. Prepare an Environmental Impact Report based on ENF results, file and address comments	$150,000	TEN MONTHS*
TOTAL	**$500,000**	**22 MONTHS***

Funding/Financing Sources

The Town Filed a State Revolving Fund (SRF) Loan Application in August 2018

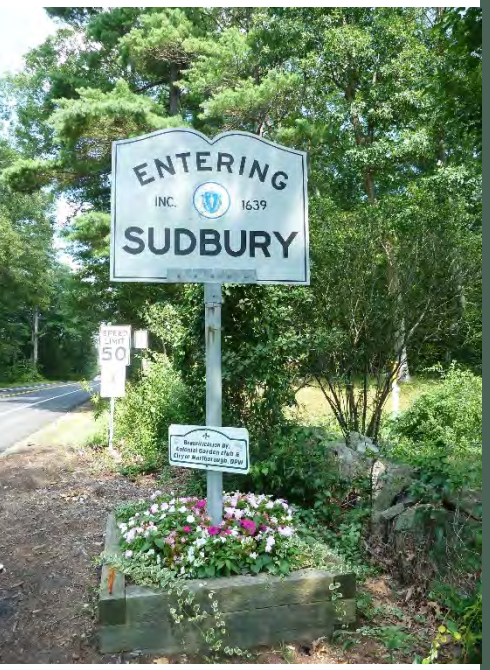
- Approved for SRF Borrowing up to $500,000
  - Interest Rate Reduced from 2% to 1.5%
    - Housing Choice Community Status
  - Payback Over 20 Years
- MassWorks Grant Program Eligible
  - Economic Development, Job Creation & Housing
  - Could Offset SRF Borrowing and Lower Individual Costs

Does Not Obligate the Town Financially

Next Steps - Timeline

- Spring 2019 - Town Meeting Approval of SRF Borrowing
- October 2019 - Full SRF Loan Application
- January 2020 - Complete Loan Paperwork with MassDEP and Massachusetts Clean Water Trust
- February 2020 – SRF Loan Set Up
- March 2020 – Begin Project
- January - March 2022 – Finalize Project

Questions & Answers



Sudbury Planning Board Meeting

Wastewater Planning Update

Town Hall
March 27, 2019
7:30PM

WOODARD & CURRAN

Background

Town Wastewater Studies to Date

- 1995 – "Sudbury Wastewater Disposal Options, Route 20 Business District"
- 2001 – "Assessment of Wastewater Needs for the Route 20 Business District"
- 2010 – "Route 20 Business District Wastewater Management Plan Update"
- 2013 – "Project Evaluation Report"

All Above Reports Detail Environmental Concerns Related to the Town's Main Drinking Water Supply, as well as Potential For Economic Development, as Reasons to Sewer Route 20 Area

CWMP Project Goals & Benefits

- Evaluates Wastewater Practices Town-Wide
  - Provides Support to All Areas of Town
- Provides Environmental Resource Preservation & Protection
  - Raymond Road Aquifer – Town's Main Drinking Water
- Coordinates With Local and Regional Planning Goals
- Provides a Comprehensive Public Outreach/Education Program

CWMP Project Goals & Benefits

- Works with Route 20 Businesses on Needs / Business Planning
  - Determine Town-Wide Economic Development Potential
- Leverages Qualifications for State Loans and Grants
- Gives the Town a 20-Year Planning Document

Completes ALL Wastewater Planning Done To Date

Project Scope

Update Wastewater Planning to Date to Meet Current Guidelines

- Kick-Off Meeting
  - Town Administration & Departments
  - Massachusetts Department of Environmental Protection (MassDEP)
- Review and Update
  - Areas of Wastewater Study
  - Wastewater Flows
  - Previous Sites Recommended for Wastewater Use
- Prepare Draft Report for Town review
- Strategize State Filings
- ***Prepare Environmental Impact Studies***

Scope, Schedule & Budget

TASK	BUDGET	TIMEFRAME
1. Kick-Off Meeting with Town. Meet with Town Administration, Planning and School Department AND MassDEP on Project	*Included in Public Outreach*	*ONE MONTH**
2. Review and Update Needs Areas	$75,000.	TWO MONTHS
3. Update Flows and Loads	$50,000	TWO MONTHS
4. Review and Update 2013 Report Recommended Sites for WWTF and Discharge. Additional Site Review dependent on No. 3 above	$100,000	TWO MONTHS
5. Develop Pubic Outreach/Education Program to be conducted through Project	$45,000	*ON-GOING THROUGHOUT PLANNING PROCESS*
6. Prepare Draft CWMP for Town Review	$50,000	TWO MONTHS
7. Prepare Environmental Notification Form (ENF), file and address comments from	$30,000	THREE MONTHS*
8. Prepare an Environmental Impact Report based on ENF results, file and address comments	$150,000	TEN MONTHS*
TOTAL	**$500,000**	**22 MONTHS***

Funding/Financing Sources

The Town Filed a State Revolving Fund (SRF) Loan Application in August 2018

- Approved for SRF Borrowing up to $500,000
  - Interest Rate Reduced from 2% to 1.5%
    - Housing Choice Community Status
  - Payback Over 20 Years
- MassWorks Grant Program Eligible
  - Economic Development, Job Creation & Housing
  - Could Offset SRF Borrowing and Lower Individual Costs

Does Not Obligate the Town

Next Steps - Timeline

- Spring 2019 - Town Meeting Approval of SRF Borrowing
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- January 2020 - Complete Loan Paperwork with MassDEP and Massachusetts Clean Water Trust
- February 2020 – SRF Loan Set Up
- March 2020 – Begin Project
- January - March 2022 – Finalize Project

Questions & Answers

Comprehensive Wastewater Management Plan (CWMP)

Project Update

Select Board Meeting

May 4, 2021

SUDBURY PUBLIC WORKS

COMMITMENT & INTEGRITY DRIVE RESULTS

WOODARD & CURRAN

Introduction / Background

- Woodard & Curran Team
- Town Wastewater Studies Date Back to the 1980s
  - *All Reports Detail Environmental Concerns Related to the Town's Main Drinking Water Supply, as well as Potential For Economic Development, as Reasons to Sewer Route 20 Area*
- Goal
  - Complete Town-wide Study With Public Participation
  - Preserve and Protect Sudbury's Drinking Water Supplies
  - Benefit From 20-Year Planning Document
  - Submit State and Regulatory Filings – Full Approvals
  - Leverage Funding Opportunities

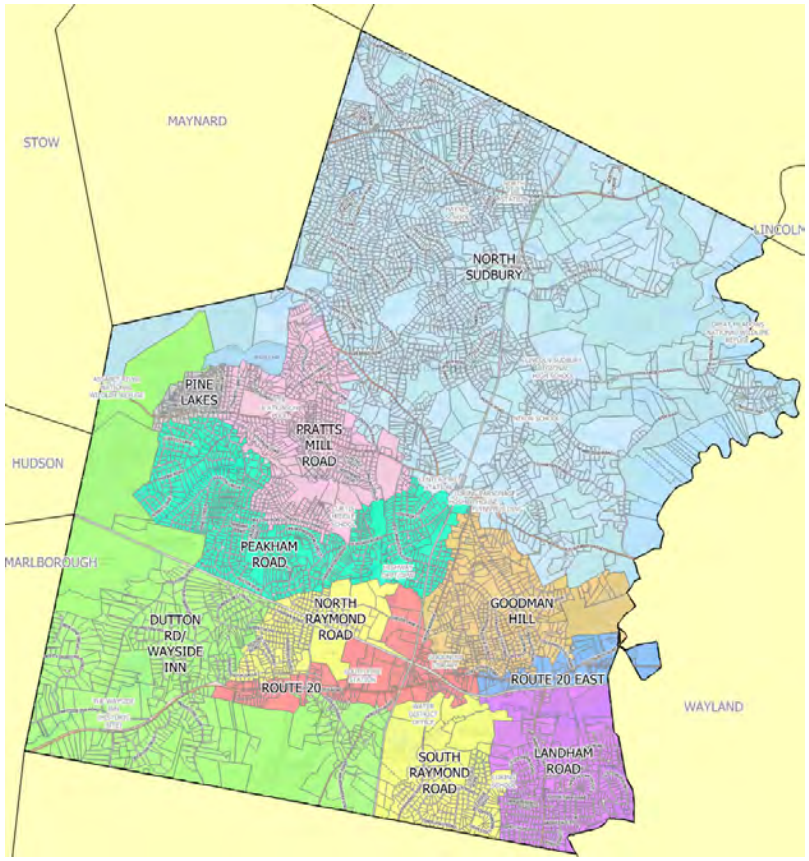
Project Scope

- Update Wastewater Planning to Date to Meet Current Guidelines
  - Kick-Off Meetings – Internal and External
- Review and Update
  - Areas of Wastewater Study
  - Wastewater Flows
  - Previous Sites Recommended for Wastewater Use
- Prepare Draft Report for Town Review
- Strategize State Filings
- ***Prepare Environmental Impact Studies***

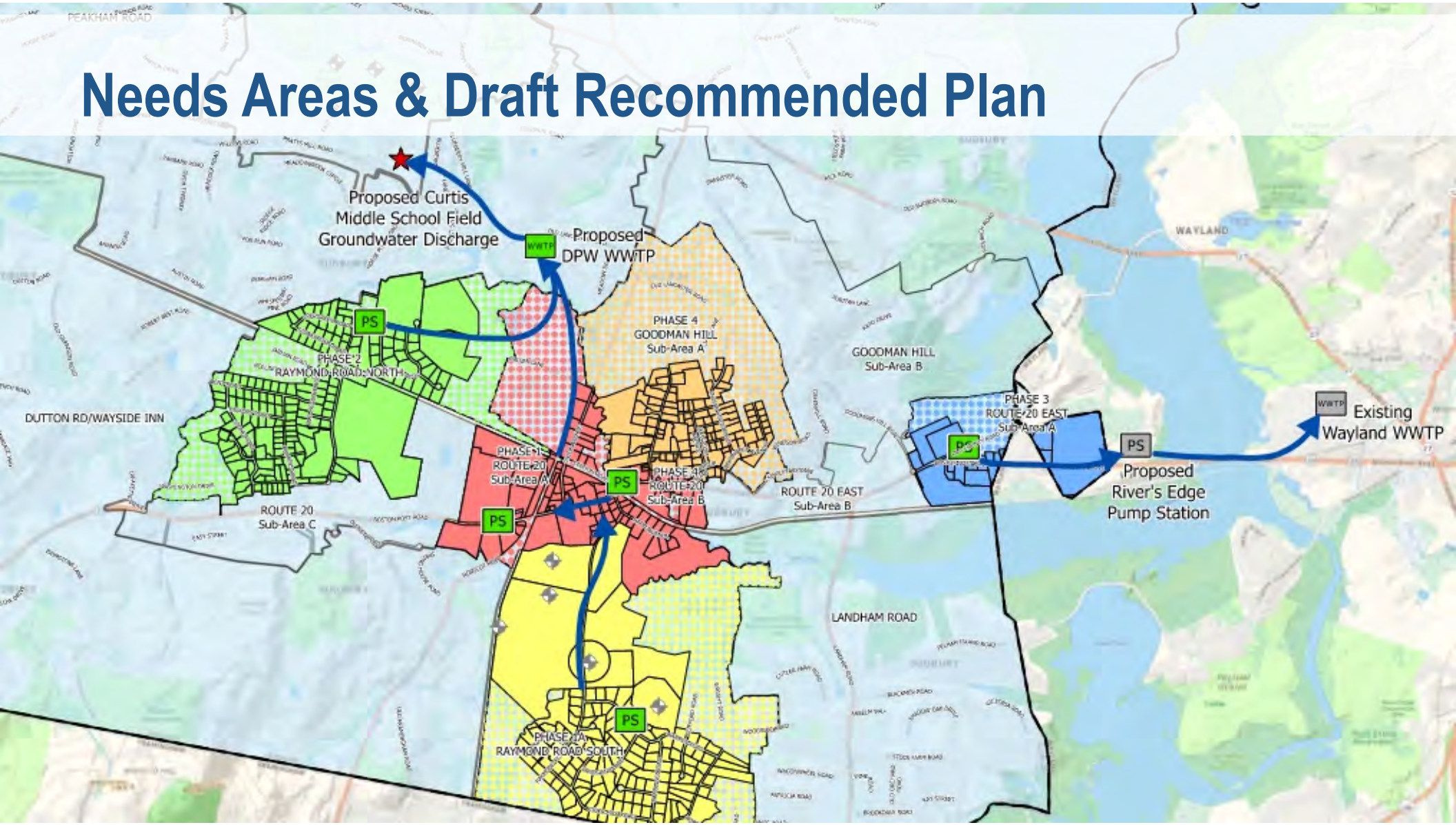
Completed

Develop Study Areas

- Town-wide Analysis
- Key Areas:
  - Hop Brook Wells (Pratts Mill)
  - Raymond Road Wells
  - Route 20 Corridor
- Developed Needs Areas:
  - Reviewed Health Department Records
  - Met With Health Director, Bill Murphy
  - GIS Mapping – Parcel Based
  - Historical / Environmental



Needs Areas & Draft Recommended Plan



Wastewater Needs & Draft Recommended Solutions

Phase 1: Route 20 (Sub A)
Phase 1A: Raymond Rd South
Phase 2: Raymond Rd North
Phase 4: Goodman's Hill/Rte 20 (Sub B)

→

WWTF: DPW Site
GW Discharge: Curtis Middle School
Phase 1 – 250,000 GPD

↓

Scalable for future Need

Remainder of Town

→

Septage Management Plan

Phase 3: Route 20 East (Sub A)

→

Town of Wayland Inter-Municipal Agreement (IMA)

Schedule of Next Tasks

Tasks	Timeframe
Project Update Memorandum to Select Board	May 2021
Public Outreach (Supported by Capital Strategic Solutions) - Mailings - Website Updates - Social Media Announcements - General & Targeted Public Workshops	May 2021 - Ongoing
State and Regulatory Meetings	May 2021
Funding Applications (MassWorks, State Revolving Fund, Stimulus, etc.)	On-Going
Massachusetts Environmental Policy Act (MEPA) Filing	Summer 2021

Questions & Answers

Comprehensive Wastewater Management Plan (CWMP)

Project Update

Select Board Meeting

May 25, 2021

SUDBURY PUBLIC WORKS

COMMITMENT & INTEGRITY DRIVE RESULTS

WOODARD & CURRAN

Introduction / Background

- Woodard & Curran Team
- Town Wastewater Studies Date Back to the 1980s
  - *All Reports Detail Environmental Concerns Related to the Town's Main Drinking Water Supply, as well as Potential For Economic Development, as Reasons to Sewer Route 20 Area*
- Goal
  - Complete Town-wide Study With Public Participation
  - Preserve and Protect Sudbury's Drinking Water Supplies
  - Benefit From 20-Year Planning Document
  - Submit State and Regulatory Filings – Full Approvals
  - Leverage Funding Opportunities

Project Scope

- Update Wastewater Planning to Date to Meet Current Guidelines
  - Kick-Off Meetings – Internal and External
- Review and Update
  - Areas of Wastewater Study
  - Wastewater Flows
  - Previous Sites Recommended for Wastewater Use
- Prepare Draft Report for Town Review
- Strategize State Filings
- ***Prepare Environmental Impact Studies***

Completed

Develop Study Areas

- Town-wide Analysis
- Key Areas:
  - Hop Brook Wells (Pratts Mill)
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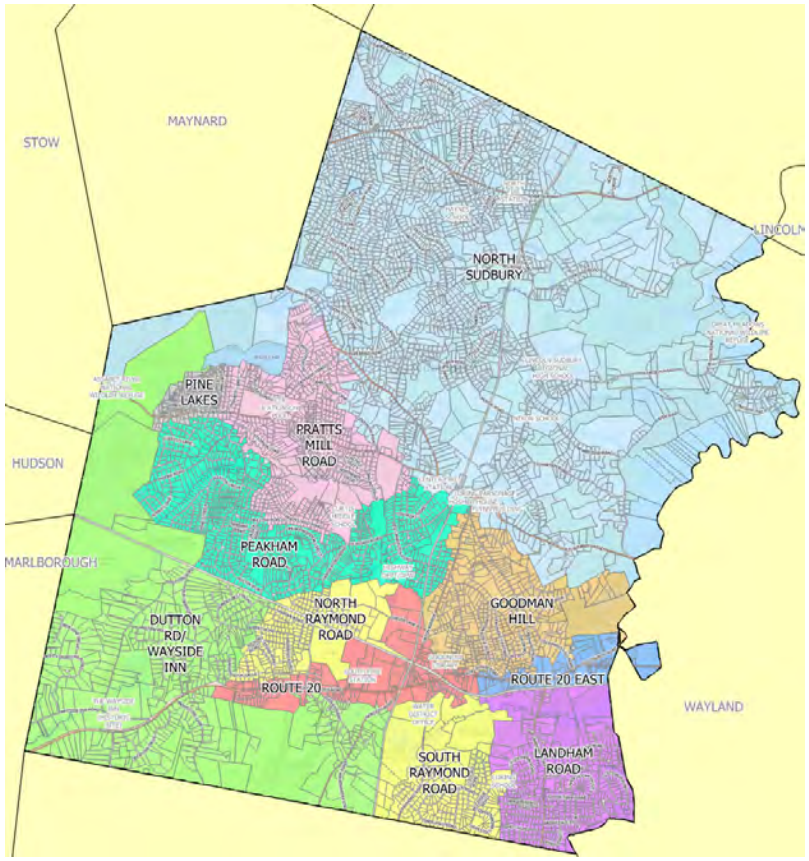
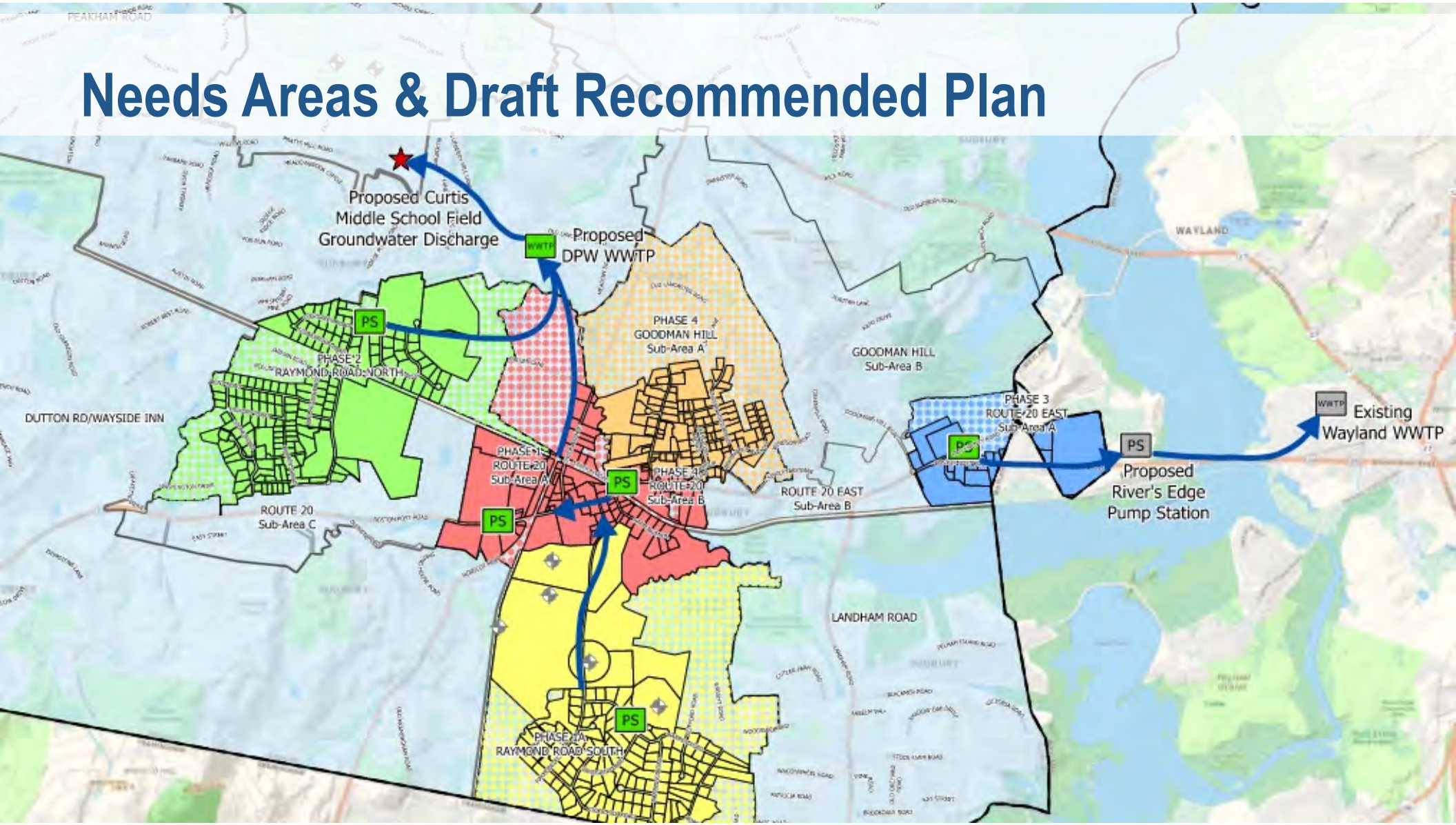
  - Route 20 Corridor
- Developed Needs Areas:
  - Reviewed Health Department Records
  - Met With Health Director, Bill Murphy
  - GIS Mapping – Parcel Based
  - Historical / Environmental



Needs Areas & Draft Recommended Plan



Wastewater Needs & Draft Recommended Solutions

Phase 1: Route 20 (Sub A)
Phase 1A: Raymond Rd South
Phase 2: Raymond Rd North
Phase 4: Goodman's Hill/Rte 20 (Sub B)

→

WWTF: DPW Site
GW Discharge: Curtis Middle School
Phase 1 – 250,000 GPD

↓

Scalable for future Need

Remainder of Town

→

Septage Management Plan

Phase 3: Route 20 East (Sub A)

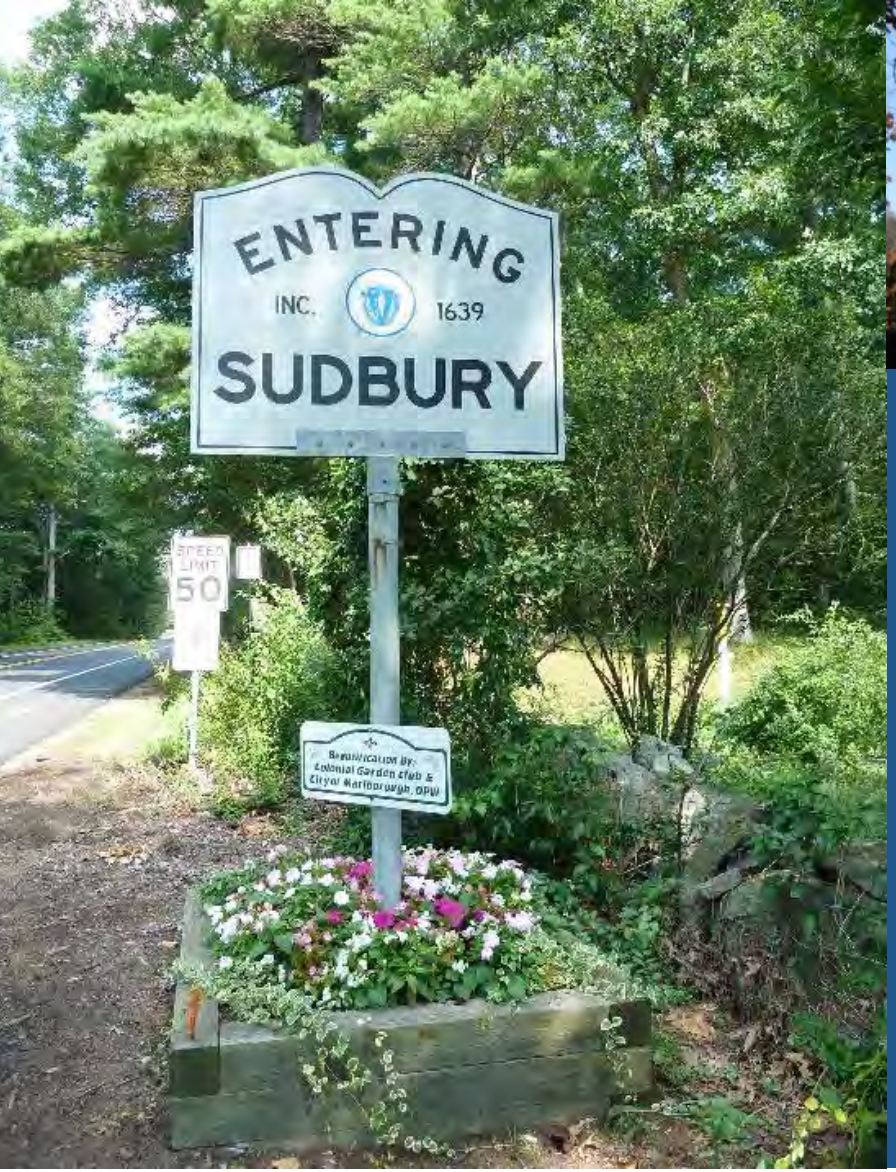
→

Town of Wayland Inter-Municipal Agreement (IMA)

Schedule of Next Tasks

Tasks	Timeframe
Project Update Memorandum to Select Board	May 2021
Public Outreach (Supported by Capital Strategic Solutions) - Mailings - Website Updates - Social Media Announcements - General & Targeted Public Workshops	May 2021 - Ongoing
State and Regulatory Meetings	May 2021
Funding Applications (MassWorks, State Revolving Fund, Stimulus, etc.)	On-Going
Massachusetts Environmental Policy Act (MEPA) Filing	Summer 2021

Questions & Answers



Comprehensive Wastewater Management Plan (CWMP)

Project Update

MEPA Filing Meeting

June 23, 2021

SUDBURY PUBLIC WORKS

COMMITMENT & INTEGRITY DRIVE RESULTS

WOODARD & CURRAN

Agenda

- Town and Woodard & Curran Introductions
- Project Background
- Project Scope
- Study Areas Summary
- Needs Areas Summary
- Environmental Resources Summary
- Recommended Solutions
- MEPA Filing Discussion

Introduction / Background

- CWMP Team
  - Town of Sudbury
  - Woodard & Curran
- Town Wastewater Studies Date Back to the 1980s
  - *All Reports Detail Environmental Concerns Related to the Town's Main Drinking Water Supply, as well as Potential For Economic Development, as Reasons to Sewer Route 20 Area*
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Project Scope

- Update Wastewater Planning to Date to Meet Current Guidelines
  - Kick-Off Meetings – Internal and External
- Review and Update
  - Areas of Wastewater Study
  - Wastewater Flows
  - Previous Sites Recommended for Wastewater Use
- Prepare Draft Report for Town Review
- Strategize State Filings
- ***Prepare Environmental Impact Study – Subject of this Meeting***

Completed

Develop Study Areas

- Town-wide Analysis
- Key Areas:
  - Hop Brook Wells (Pratts Mill)
  - Raymond Road Wells
  - Route 20 Corridor
- Developed Needs Areas:
  - Reviewed Health Department Records
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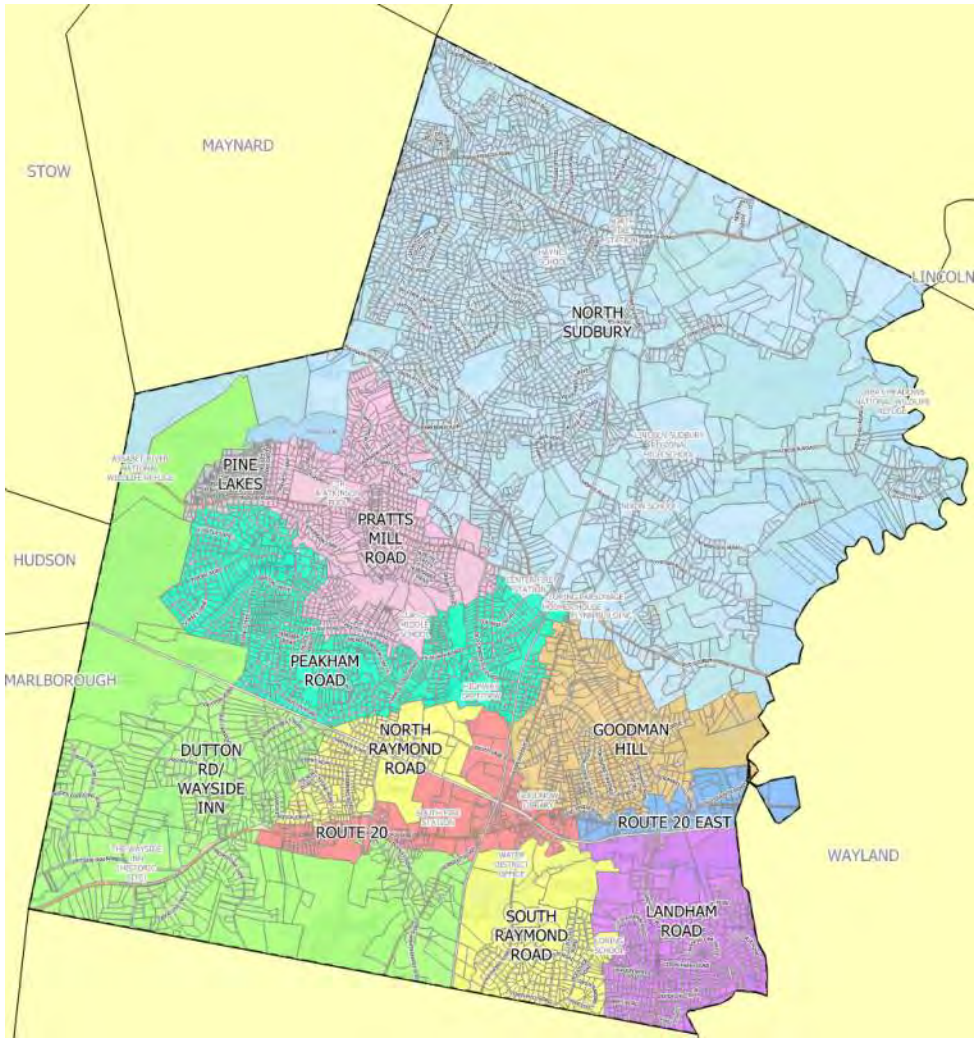
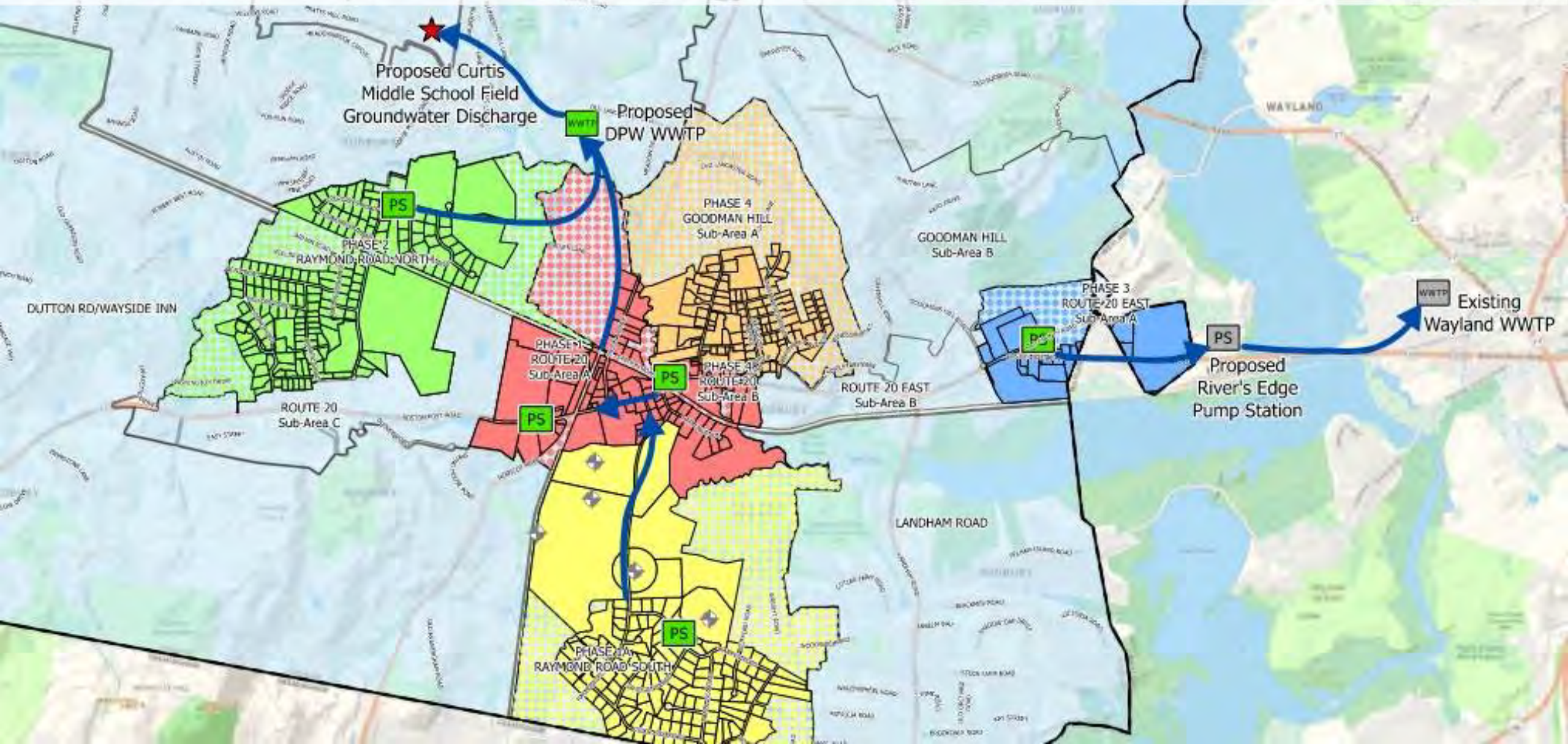


Needs Areas & Draft Recommended Plan



Environmental Resources

- Town-wide Overview
  - Delineated Individual Needs Areas
  - Identified Resource Areas on a Needs Areas Basis
- Key Environmental / Sensitive Resources
  - Drinking Water Supplies
  - Wetlands / Buffer Areas
  - NHESP & Vernal pools
  - Historic / Archaeological
  - AUL & 21E Sites
- Key Areas:
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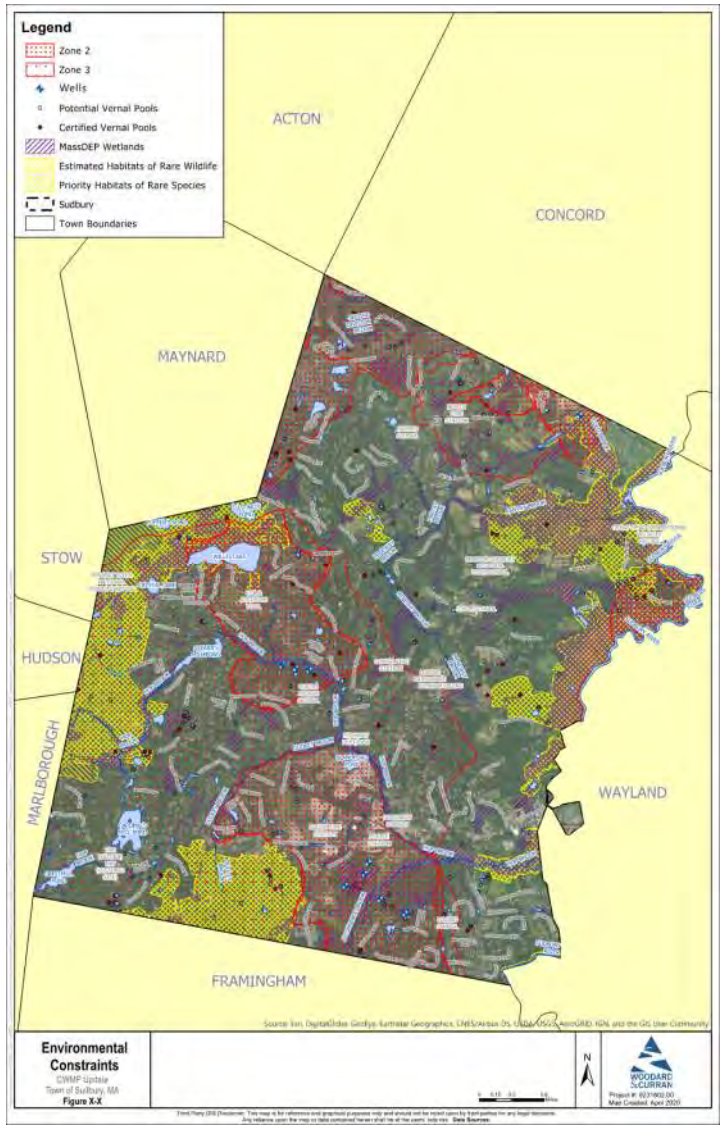
  - Route 20 Corridor



Wastewater Needs & Draft Recommended Solutions

Phase 1: Route 20 (Sub A)
Phase 1A: Raymond Rd South
Phase 2: Raymond Rd North
Phase 4: Goodman's Hill/Rte 20 (Sub B)

→

WWTF: DPW Site
GW Discharge: Curtis Middle School
Phase 1 – 250,000 GPD

↓

Scalable for future Need

Remainder of Town

→

Septage Management Plan

Phase 3: Route 20 East (Sub A)

→

Town of Wayland Inter-Municipal Agreement (IMA)

MEPA Filing

Determine EIR or SEIR

- ENF or EENF

- Smaller, Compact Areas of Need
  - More Extensive & Detailed:
    - Project Description/Alternatives Analysis
    - Project Impacts
    - Project Mitigation Measures
  - Section 61 Findings
  - Greenhouse Gas

MEPA Filing

Schedule for Filing

- File EENF Summer 2021
- Address Comments
- Complete CWMP
- File SEIR Fall 2021
- Complete CWMP Late Fall / Early Winter 2021

Questions & Answers

Comprehensive Wastewater Management Plan (CWMP)

Project Update

Zoom Public Meeting

August 5, 2021

SUDBURY PUBLIC WORKS

COMMITMENT & INTEGRITY DRIVE RESULTS

CAPITAL STRATEGIC SOLUTIONS

WOODARD & CURRAN

Introduction / Background

- Woodard & Curran Team
- Town Wastewater Studies Date Back to the 1980s
  - *All Reports Detail Environmental Concerns Related to the Town's Main Drinking Water Supply, as well as Potential For Economic Development, as Reasons to Sewer Route 20 Area*
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Project Scope

- Update Wastewater Planning to Date to Meet Current Guidelines
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- Prepare Draft Report for Town Review
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Completed

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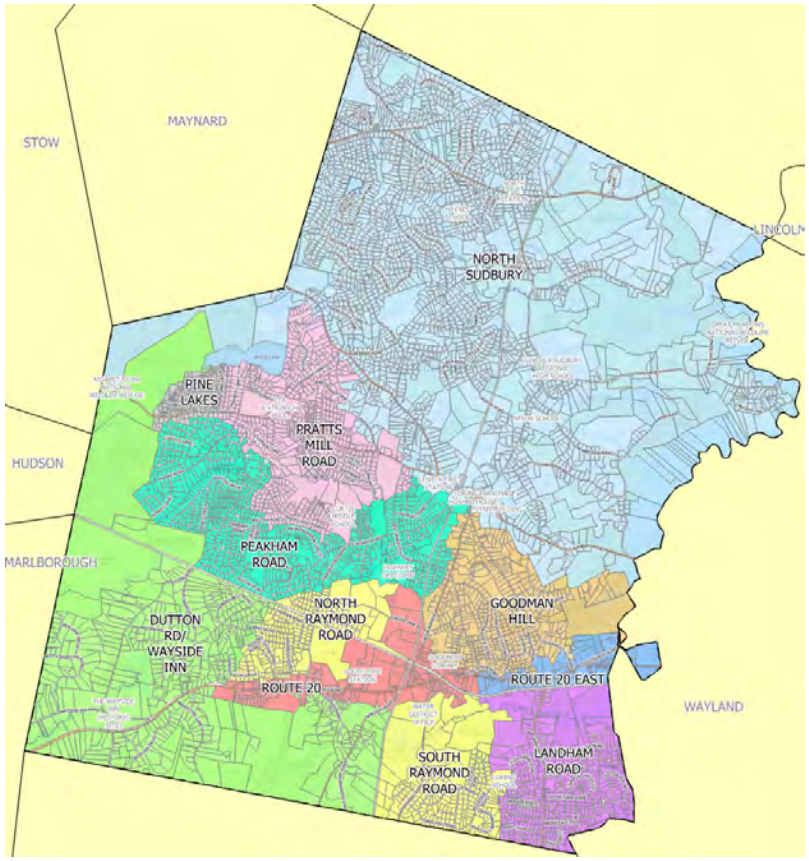
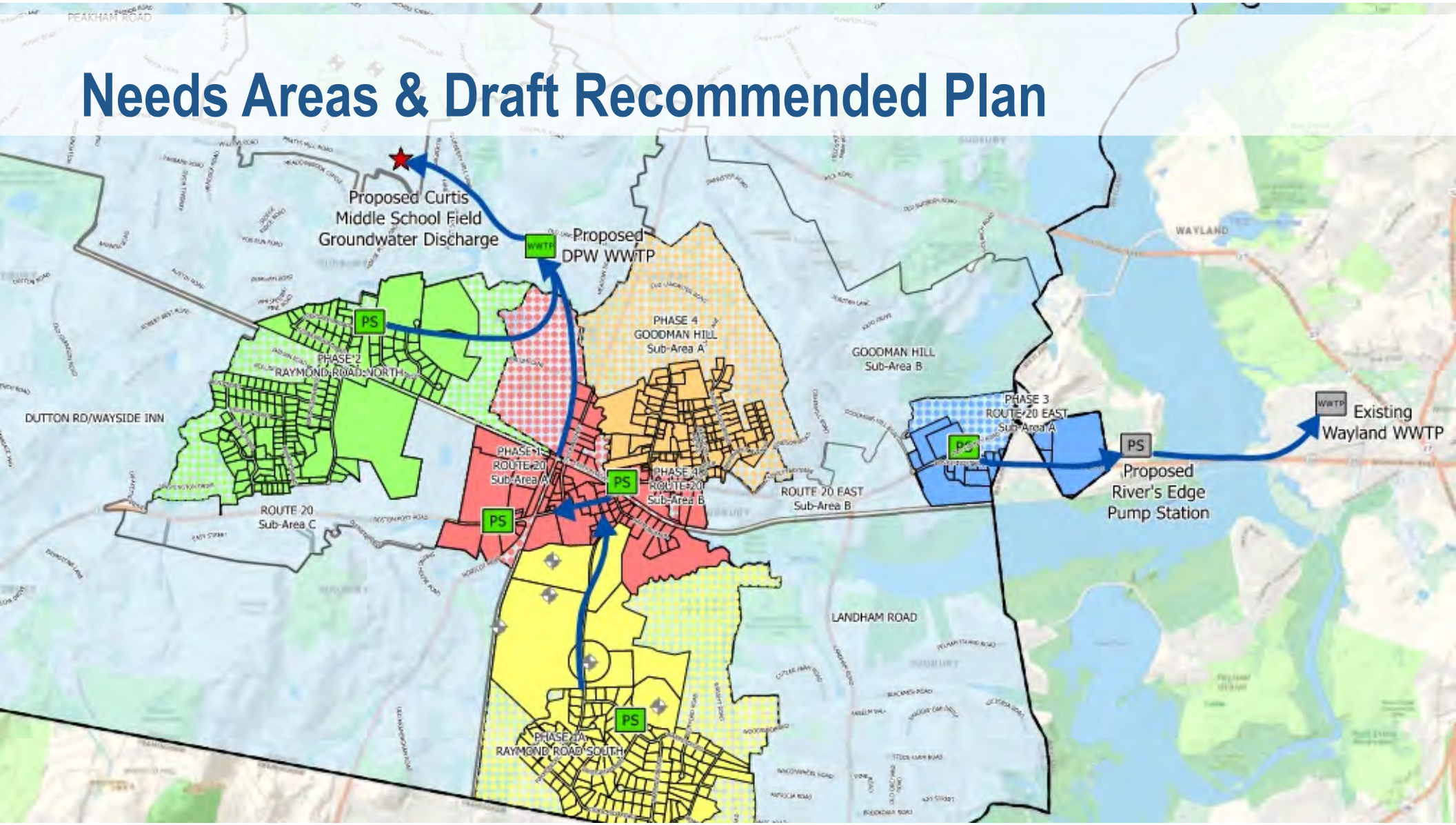


Needs Areas & Draft Recommended Plan



Wastewater Needs & Draft Recommended Solutions

Phase 1: Route 20 (Sub A)
Phase 1A: Raymond Rd South
Phase 2: Raymond Rd North
Phase 4: Goodman's Hill/Rte 20 (Sub B)

→

WWTF: DPW Site
GW Discharge: Curtis Middle School
Phase 1 – 250,000 GPD

↓

Scalable for future Need

Remainder of Town

→

Septage Management Plan

Phase 3: Route 20 East (Sub A)

→

Town of Wayland Inter-Municipal Agreement (IMA)

Wastewater Needs & Draft Recommended Solutions

Needs Area Residential & Non-Residential Parcel Counts

	# Residential Parcels		# Non-Residential Parcels		Total	
Needs Area	Total	Currently Occupied	Total	Currently Occupied	Total	Currently Occupied
Goodman's Hill	105	103	8	6	113	109
Raymond Road North	178	170	8	6	186	176
Raymond Road South	132	131	15	4	147	135
Route 20	29	29	69	62	98	91
Route 20 East	0	0	23	21	23	21
Total	444	433	123	99	567	532

Schedule of Next Tasks

Tasks	Timeframe
Project Update Memorandum to Select Board	May 2021
Public Outreach (Supported by Capital Strategic Solutions) - Mailings - Website Updates - Social Media Announcements - General & Targeted Public Workshops	May 2021 - Ongoing
State and Regulatory Meetings	May 2021
Funding Applications (MassWorks, State Revolving Fund, Stimulus, etc.)	On-Going
Massachusetts Environmental Policy Act (MEPA) Filing	Summer 2021

Questions & Answers

Comprehensive Wastewater Management Plan (CWMP)

Project Update

Public Meeting Via ZOOM

February 3, 2022

SUDBURY PUBLIC WORKS

COMMITMENT & INTEGRITY DRIVE RESULTS

WOODARD & CURRAN

Agenda

- Town and Woodard & Curran Introductions
- Project Background
- Project Scope
- Study Areas Summary
- Needs Areas Summary
- Environmental Resources Summary
- Draft Recommended Solutions
- MEPA Filing Discussion
- Public Outreach Efforts

Introduction / Background

- CWMP Team
  - Town of Sudbury
  - Woodard & Curran
- Town Wastewater Studies Date Back to the 1980s
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Project Scope

- Update Wastewater Planning to Date to Meet Current Guidelines
  - Kick-Off Meetings – Internal and External
- Review and Update
  - Areas of Wastewater Study
  - Wastewater Flows
  - Previous Sites Recommended for Wastewater Use
- Prepare Draft Report for Town Review

Completed

- Strategize State Filings
- ***Environmental Impact Study – Massachusetts Environmental Policy Act (MEPA) Filing***

Develop Study Areas

- Town-wide Analysis
- Key Areas:
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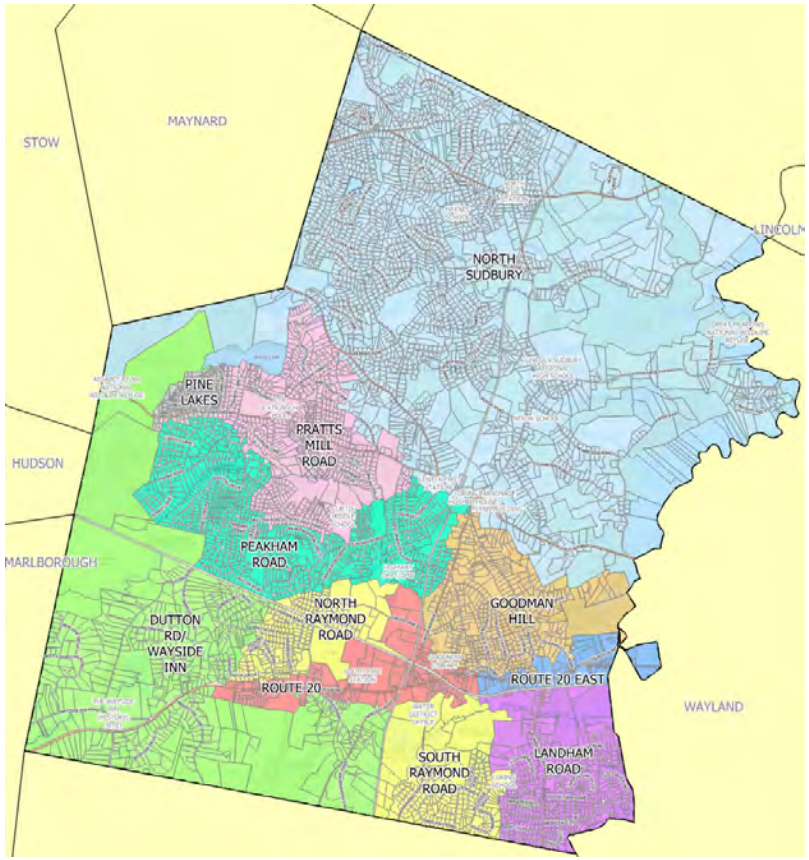
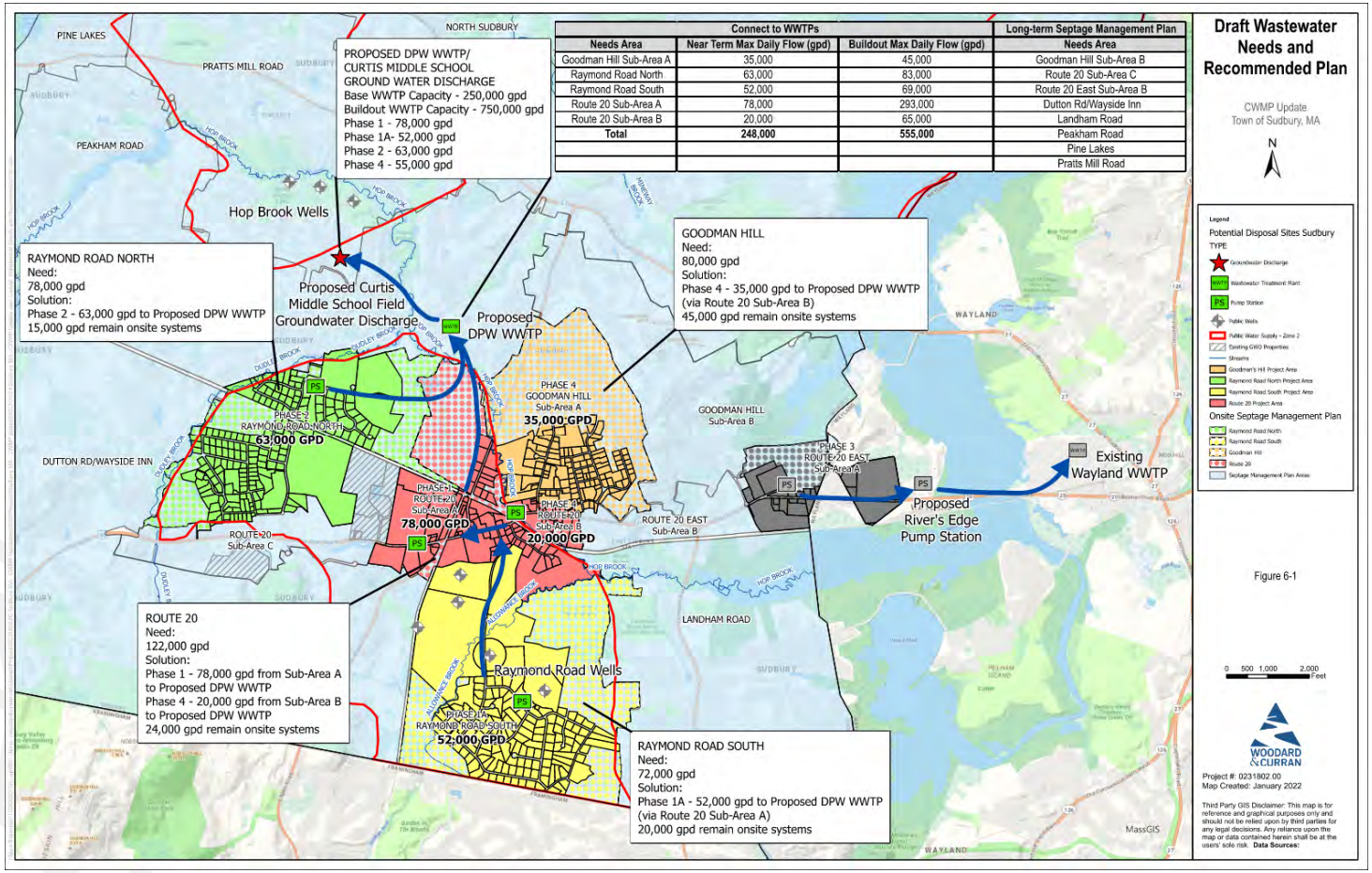


Needs Areas & Draft Recommended Plan



Connect to WWTPs			Long-term Septage Management Plan
Needs Area	Near Term Max Daily Flow (gpd)	Buildout Max Daily Flow (gpd)	Needs Area
Goodman Hill Sub-Area A	35,000	45,000	Goodman Hill Sub-Area B
Raymond Road North	63,000	83,000	Route 20 Sub-Area C
Raymond Road South	52,000	69,000	Route 20 East Sub-Area B
Route 20 Sub-Area A	78,000	293,000	Dutton Rd/Wayside Inn
Route 20 Sub-Area B	20,000	65,000	Landham Road
Total	**248,000**	**555,000**	Peakham Road
			Pine Lakes
			Pratts Mill Road

Environmental Resources

- Town-wide Overview
  - Delineated Individual Needs Areas
  - Identified Resource Areas on a Needs Areas Basis
- Key Environmental / Sensitive Resources
  - Drinking Water Supplies
  - Wetlands / Buffer Areas
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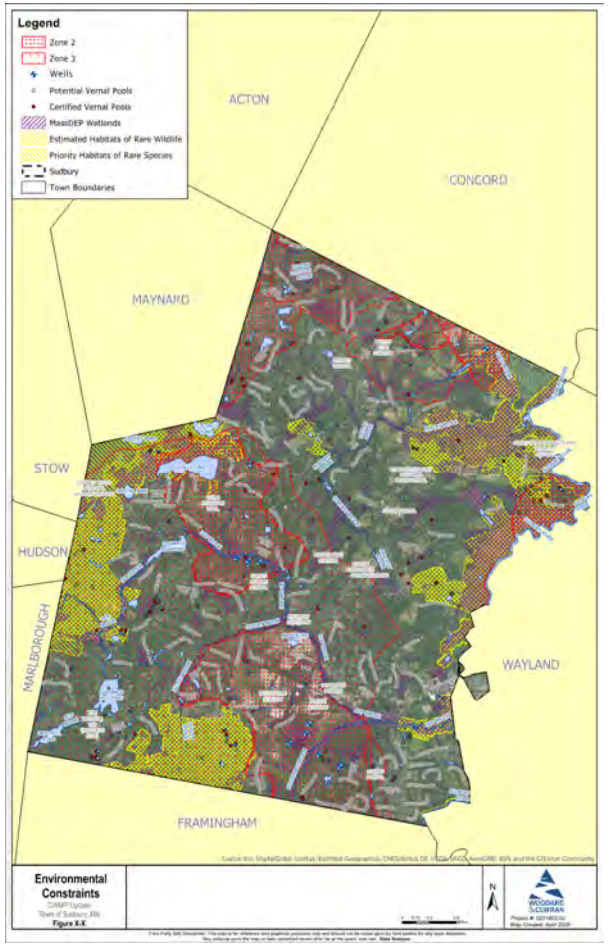


Wastewater Needs & Draft Recommended Solutions

Phase 1: Route 20 (Sub A)
Phase 1A: Raymond Rd South
Phase 2: Raymond Rd North
Phase 4: Goodman's Hill/Rte 20 (Sub B)

→

WWTF: DPW Site
GW Discharge: Curtis Middle School
Phase 1 – 250,000 GPD

↓

Scalable for future Need

Remainder of Town

→

Septage Management Plan

Phase 3: Route 20 East (Sub A)

→

Future Consideration

Schedule of Tasks

Tasks	Timeframe
Project Update Memorandums	Monthly
Public Outreach (Supported by Capital Strategic Solutions) - Mailings - Website Updates - Social Media Announcements - General & Targeted Public Workshops - Sudbury Chamber of Commerce Meetings	May 2021 - Ongoing
State and Regulatory Meetings	On-Going
Funding Applications (MassWorks, State Revolving Fund, Stimulus, ARPA, etc.)	On-Going
Massachusetts Environmental Policy Act (MEPA) Filing	December 2021

MEPA Filing

- Filed Expanded Environmental Notification Form (EENF) – December 2021
- Key Items:
  - Requested Single Environmental Impact Report – One Major Filing Versus Two
  - CWMP Draft Recommended Plan
    - Draft Environmental Impact Report
      - ✓ Historical Resources
      - ✓ Wetland Resources
  - New MEPA Regulations Include:
    - Environmental Justice Protocol
    - Climate Change and Adaptation
- Supplemental Information to be Submitted
  - Draft CWMP – February 4, 2022
- Comments Extended to March 11, 2022
- MEPA Certificate – March 18, 2022

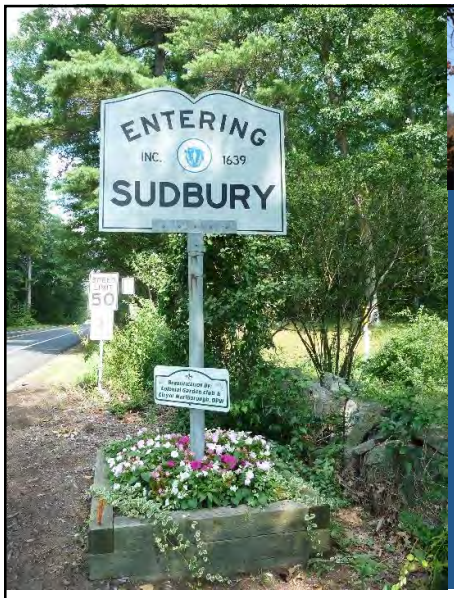
MEPA Filing

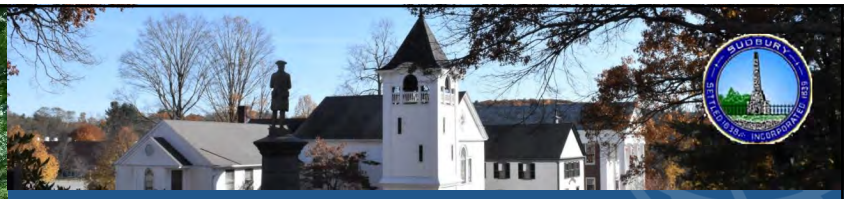
- EEA No. 16510 – Sudbury CWMP
- Access EENF Filing at https://Sudbury.ma.us/dpw/cwmp
- Comments Sent Through MEPA Portal: Mass.Gov - MEPA Public Comments (state.ma.us). *Comments Due 3/11/22*
- MEPA Certificate – March 18, 2022
  - Determines Next Submittal – Requested SEIR
- Next Steps

Public Outreach Efforts

- Schedule for Outreach
  - Town Website Updated Regularly https://Sudbury.ma.us/dpw/cwmp
  - Public Hearing Late March
    - Results of MEPA Filing
    - Plan to Complete CWMP
  - Continuation of Outreach Once CWMP/MEPA is Approved
    - Spring/Summer 2022
    - Outlook to Future Town Meeting to Accept CWMP
  - Sudbury Chamber of Commerce
    - Collaboration With Sudbury Business Community

Questions & Answers





Comprehensive Wastewater Management Plan (CWMP)

Project Update

Sudbury School Committee

February 7, 2022

SUDBURY PUBLIC WORKS

COMMITMENT & INTEGRITY DRIVE RESULTS

WOODARD & CURRAN

1

Introduction / Background

SUDBURY PUBLIC WORKS

- Woodard & Curran Team
- Town Wastewater Studies Date Back to the 1980s
  - *All Reports Detail Environmental Concerns Related to the Town's Main Drinking Water Supply, as well as Potential For Economic Development, as Reasons to Sewer Route 20 Area*
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  - Leverage Funding Opportunities

WOODARD & CURRAN

2

CWMP Project Scope

- Update Wastewater Planning to Date to Meet Current Guidelines
  - Kick-Off Meetings – Internal and External
- Review and Update
  - Areas of Wastewater Study
  - Wastewater Flows
  - ***Previous Sites Recommended for Wastewater Use***
- Prepare Draft Report for Town Review
- Strategize State Filings
- ***Prepare Environmental Impact Studies***

Completed

In Process

3

Groundwater Discharge Review

- 2012 Project Evaluation Report Recommendations (Section 7 PER)
  - Curtis Middle School – Groundwater Discharge Location
  - Recommended Plan from 2012

Report

Town of Sudbury

Project Evaluation Report

June 2012
(Town Revisions incorporated June 2013)

Prepared for:
Town of Sudbury
Planning & Community Development
278 Old Sudbury Road
Sudbury, MA 01776

The Recommended Plan

The Recommended Plan for wastewater management in the Route 20 business district includes the following components:

- Construction of a decentralized wastewater treatment system for between 208,500 and 268,400 gpd.
- Gravity-collected wastewater flows from the Central Area collected at a pump station located on Route 20 in the vicinity of Nobscot Road and transmitted to the proposed wastewater treatment facility by force main.
- Pressure sewers and individual grinder pumps to serve all properties located in the West Area.
- A Wastewater Treatment Facility located on town property at 641 Boston Post Road (Parcel K06-505) consisting of a 1.6 acre parcel located away from developed residential areas and with no current structures.
- A membrane bioreactor (MBR) process with a denitrification sand filter for wastewater treatment, allowing the treated effluent to be discharged without further treatment to an effluent disposal system.
- A 1.7 mile force main, beginning at the wastewater treatment facility, following along Horse Pond Road, and discharging onto the Curtis Middle School athletic fields.
- Continued reliance of the East Area on on-site systems, with each individual property owner responsible for septic system repairs in accordance with Title 5.

https://Sudbury.ma.us/dpw/cwmp

4

2012 Tasks Completed for Groundwater Discharge

- Completed Sub-Surface Borings to Determine
  - Depth to Groundwater & Bedrock
  - Types of Sub-Surface Soils Present
  - Permeability of Land
    - Can This Area Accept groundwater Discharge Appropriately
  - Loading Test
    - Constructed a Bed and Loaded With Water to Evaluate Permeability
      - ✓ Concluded Curtis Middle School Suitable for Groundwater Discharge

5

CWMP Tasks for Groundwater Discharge

- Met With MassDEP – Review Work Completed in 2012 Report
  - Determine Any Additional Tasks to be Updated
- Contracted With Hydrogeologist
  - Review Work Completed in 2012
  - Walk Site and Identify Any Constraints to Land Use
- Confirm Results of 2012 Investigation
- CWMP Results Confirm Curtis Middle School for Groundwater Discharge
  - School Ball Fields Common Location for Groundwater Discharge

6

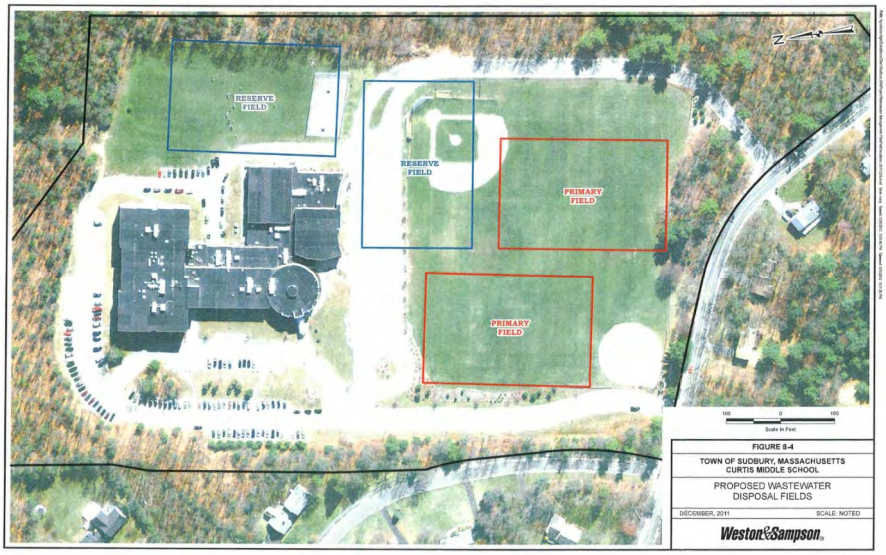
2012 Study Maps of Testing Areas

- Test Boring Sites

- Boring Observation Sites

7

2012 Study Proposed Discharge Fields Locations



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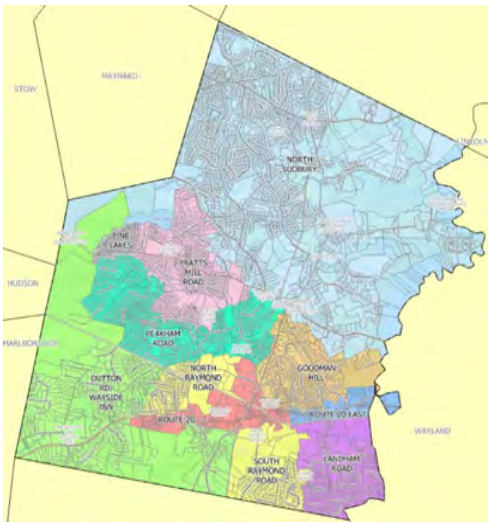
Next Steps for Groundwater Discharge

- Work With Town to Get CWMP Fully Approved
  - Massachusetts Environmental Policy Act Office (MEPA)
  - Future Sudbury Town Meeting
  - Preliminary to Final Design
    - Complete Survey
  - MassDEP Groundwater Discharge Permit

9

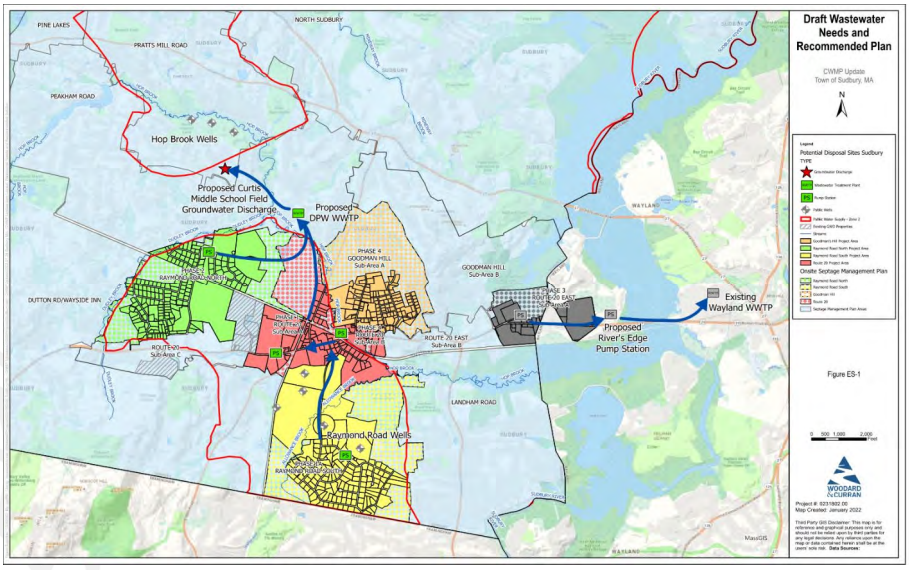
CWMP Task - Develop Study Areas

- Town-wide Analysis
- Key Areas:
  - Hop Brook Wells (Pratts Mill)
  - Raymond Road Wells
  - Route 20 Corridor
- Developed Needs Areas:
  - Reviewed Health Department Records
  - Met With Health Director, Bill Murphy
  - GIS Mapping – Parcel Based
  - Historical / Environmental



10

Needs Areas & Draft Recommended Plan



11

Public Outreach Efforts

- All Public Outreach Meetings Posted on Town's Webpage
  - https://Sudbury.ma.us/dpw/cwmp
- Future Meetings Will be Posted and Advertised

12

Questions & Answers

13

Comprehensive Wastewater Management Plan (CWMP)

Project Update

Select Board Meeting

February 9, 2022

SUDBURY PUBLIC WORKS

COMMITMENT & INTEGRITY DRIVE RESULTS

WOODARD & CURRAN

Introduction / Background

- Woodard & Curran Team
- Town Wastewater Studies Date Back to the 1980s
  - *All Reports Detail Environmental Concerns Related to the Town's Main Drinking Water Supply, as well as Potential For Economic Development, as Reasons to Sewer Route 20 Area*
- Goal
  - Complete Town-wide Study With Public Participation
  - Preserve and Protect Sudbury's Drinking Water Supplies
  - Benefit From 20-Year Planning Document
  - Submit State and Regulatory Filings – Full Approvals
  - Leverage Funding Opportunities

Project Scope

- Update Wastewater Planning to Date to Meet Current Guidelines
  - Kick-Off Meetings – Internal and External
- Review and Update
  - Areas of Wastewater Study
  - Wastewater Flows
  - Previous Sites Recommended for Wastewater Use
- Prepare Draft Report for Town Review
- Strategize State Filings
- ***Prepare Environmental Impact Studies***

Completed

In Process

Develop Study Areas

- Town-wide Analysis
- Key Areas:
  - Hop Brook Wells (Pratts Mill)
  - Raymond Road Wells
  - Route 20 Corridor
- Developed Needs Areas:
  - Reviewed Health Department Records
  - Met With Health Director, Bill Murphy
  - GIS Mapping – Parcel Based
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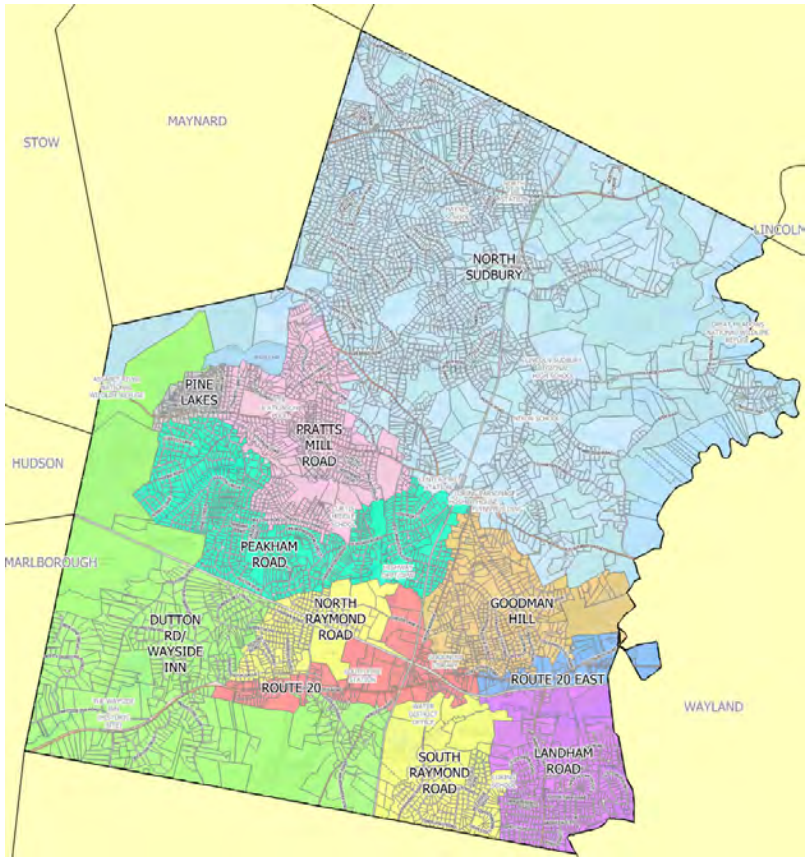
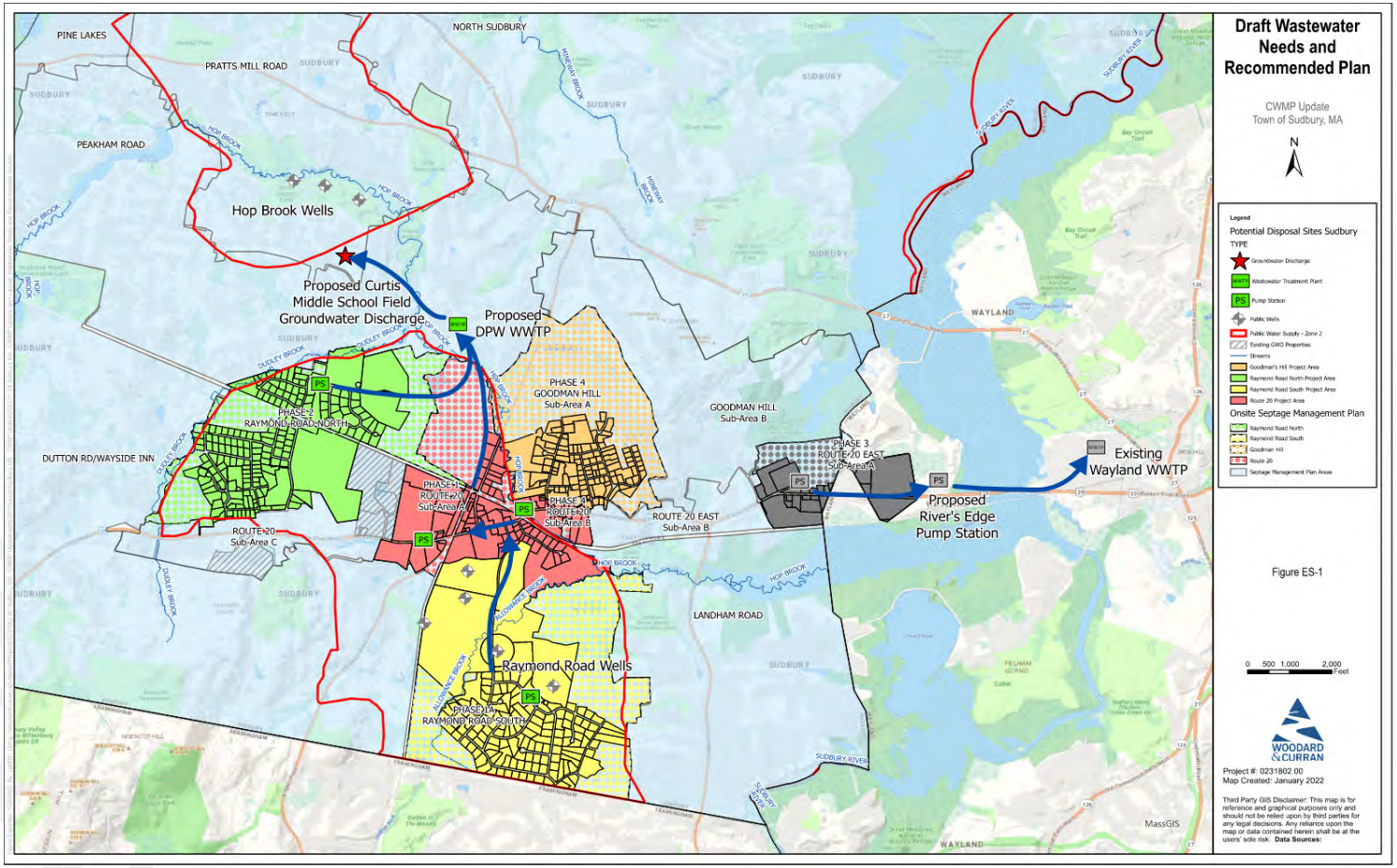


Needs Areas & Draft Recommended Plan



Wastewater Needs & Draft Recommended Solutions

Phase 1: Route 20 (Sub A)
Phase 1A: Raymond Rd South
Phase 2: Raymond Rd North
Phase 4: Goodman's Hill/Rte 20 (Sub B)

→

WWTF: DPW Site
GW Discharge: Curtis Middle School
Phase 1 – 250,000 GPD

↓

Scalable for Future Needs

Remainder of Town

→

Septage Management Plan

Phase 3: Route 20 East (Sub A)

→

Deferred to Future Date

Schedule of Tasks

Tasks	Timeframe
Project Update Memorandums	Monthly
Public Outreach (Supported by Capital Strategic Solutions) - Mailings - Website Updates - Social Media Announcements - General & Targeted Public Workshops - Sudbury Chamber of Commerce Meetings	May 2021 - Ongoing
State and Regulatory Meetings	On-Going
Funding Applications (MassWorks, State Revolving Fund, Stimulus, ARPA, etc.)	On-Going
Massachusetts Environmental Policy Act (MEPA) Filing	December 2021

MEPA Filing

- Filed Expanded Environmental Notification Form (EENF) – December 2021
- Key Items:
  - Requested Single Environmental Impact Report – One Major Filing Versus Two
  - CWMP Draft Recommended Plan
    - Draft Environmental Impact Report
      - ✓ Historical Resources
      - ✓ Wetland Resources
  - New MEPA Regulations Include:
    - Environmental Justice Protocol
    - Climate Change and Adaptation
- Supplemental Information to be Submitted
  - Draft CWMP – February 4, 2022
- Comments Extended to March 11, 2022
- MEPA Certificate – March 18, 2022

MEPA Filing

- EEA No. 16510 – Sudbury CWMP
- Access EENF Filing at https://Sudbury.ma.us/dpw/cwmp
- Comments Sent Through MEPA Portal: Mass.Gov - MEPA Public Comments (state.ma.us). *Comments Due 3/11/22*
- MEPA Certificate – March 18, 2022
  - Determines Next Submittal – Requested SEIR
- Next Steps

Public Outreach Efforts

- All Public Outreach Meetings Posted on Town's Webpage
  - https://Sudbury.ma.us/dpw/cwmp
- February 3, 2022
  - Completed Public Outreach Presentation
- Future Meetings Will be Posted and Advertised

Questions & Answers

July 12, 2022 CWMP/SEIR Public Hearing Information

250 Royall Street | Suite 200E
Canton, Massachusetts 02021
www.woodardcurran.com

T 800.426.4262
T 781.251.0200
F 781.251.0847

MEETING MEMORANDUM

PROJECT: Sudbury CWMP Public Hearing
LOCATION: Remote Via Sudbury SB
ATTENDEES:

MEETING DATE: 7-12-2022
ISSUED DATE: 7-13.2022
Maryanne Bilodeau-Interim TM
Charlie Russo-Chair Select Board (SB)
Janie Dretler-Vice Chair SB
Dan Carty-SB
Jennifer Roberts-SB
Lisa Kouchakd-SB
Deb Takacs
Public Number 8773 via phone
Dan Nason-DPW Director
Jack Troidl-Woodard & Curran (W&C)
Rosemary Blacquier-W&C

NOTE: this meeting was actively televised to Town and recorded for future viewing

The Select Board Chair, Charlie Russo, opened the CWMP Public Hearing at 7:15PM with a motion of the SB. Chair Charlie Russo read the Public Notice and entered it into the record.

Dan Nason gave a brief introduction of the CWMP Project to date and stated this Public Hearing was a requirement of the CWMP. While many on the SB have heard the updates in the past, this is meant to update all where the CWMP stands.

Dan introduced the Woodard & Curran team of Rosemary Blacquier and Jack Troidl and handed the Presentation (attached) to W&C to complete.

Rosemary Blacquier briefed all on the agenda topics that are on tap and continued with a summary of the Town's wastewater studies dating back to the 1980s, with the continuing theme of preservation of the Town's major drinking water supplies. She also touched on the goals of the CWMP, which included drinking water preservation and protection, completing a public outreach program to keep all informed, benefits of a completed CWMP, which included leveraging funding opportunities.

Jack Troidl talked about the Project tasks that updated all previous studies to meet current state guidelines, targeting key areas of town that include Hop Brook wells area, Raymond Road well areas and the Route 20 Corridor. Tasks reviewed Board of Health records, GIS mapping, historical/archaeological resources, as well as a host of environmental resource areas.

Jack presented a map detailing how the Town was delineated into areas of study-common characteristics of geographical location, neighborhoods, resources, etc. He then showed how the entire Town was short listed to the current areas that the CWMP recommends for an off-site wastewater solution. He detailed the geographic areas of Needs Areas 1, 1A, 2 and 3, with Needs Area 4 deferred to future consideration. This summary included the proposed DPW location for the WWTF and Curtis Middle School for the effluent discharge. Jack spoke on a

"modular" phased system that starts with Needs Areas 1, 1A and the WWTF and Groundwater Discharge and the potential to build on to this in the future with the additional Needs Areas. He explained that additional study of the school is required to reach full build out.

Jack showed a map detailing the environmental resources town-wide that were considered in the CWMP Study-and which ones drove short listing to Needs Areas. He explained the slide that set the proposed plan, as well as the timeline of CWMP tasks.

Rosemary concluded the Presentation with an explanation of the Massachusetts Environmental Policy Act (MEPA) Office process currently on-going. Sudbury filed its Draft CWMP through an Expanded Environmental Notification Form (EENF) with MEPA in late December 2021, requesting that the Town be approved to file the Final CWMP through a Single Environmental Impact Report (SEIR). MEPA approved the request through the Certificate issued April 1, 2021. Work is currently underway to file the Final CWMP/SEIR by end of July.

This concluded the presentation portion.

Question & Answer

1. Charlie Russo-When could sewer come to Town?

   Response : It is possible that if all proceeded accordingly, the first phase could be active in three years.

2. Dan Nason noted that three years would be an aggressive effort given the current DPW load. Rosemary Blacquier noted that staffing needs would need to be addressed based on MassDEP and NEWIPIC Guidelines and that there would certainly be additional needs once sewer was active.

3. Dan Carty – Great to hear of the CWMP progress. What would the capacity be at the WWTF? Top capacity 300,000 gpd?

   Response: 350,000 gpd to start and then added in 150,000 gpd increments based on the proposed technology. He also stated that there is additional work to be done to support the higher flows, but thinks that the previous study was only looking at the Route 20 Corridor's needs of 300,000 gpd and this number changed based on the wider CWMP study of the entire Town.

   Dan Nason noted that he is looking at water reuse opportunities that cannot be shared publicly at the moment that could offset the need for additional groundwater needs.

   Dan also noted that most of the flows are of residential nature with some small commercial. While an additional benefit of the proposed sewer is economic development, the main goal is the preservation and protection of the Town's drinking water supplies along the Route 20

Corridor. This area has properties within the Zone II of the Raymond Road wells that are a concern and have been for years.

4. Lisa Kouchakd-being a "newbie" on the SB, appreciate getting her up to speed.

5. Jennifer Roberts-What are the capital costs the town is looking at?

   Response: very early in the process, but planning level estimates, specifically State Revolving Loan (SRF) applications are being submitted with $30M for the WWTF/Groundwater Discharge and another $30M for phases 1 and 1A. The last two years have shown costs escalating, so these are being refined as we move forward.

   Rosemary noted that the Capital Cost recovery discussion with the Town has not been started as of yet. This is another major item that will need to be completed.

6. Janie Dretler-How would the additional staff needed be supported-that is a concern?

   Response: A full User Costs system will need to be instituted, typically under an Enterprise Fund, where the users pay for all associated with the system and its use.

7. Telephone caller #8773-talked about the public needing to know costs, transparency in money requests etc.

   Response: All information is on the DPW webpage and will continue to be throughout the process. All have access.

At 8:04PM the Chair officially closed the Public Hearing with a SB vote.

LOCALiQ
NEW ENGLAND

Order Confirmation

Not an Invoice

Account Number:	671112
Customer Name:	Sudbury Selectmen
Customer Address:	Sudbury Selectmen 278 Old Sudbury RD Attn: Leila Frank Sudbury MA 01776-1843
Contact Name:	Sudbury Selectmen
Contact Phone:	9784438891
Contact Email:	
PO Number:	

Date:	06/14/2022
Order Number:	7421378
Prepayment Amount:	$ 0.00

Column Count:	1.0000
Line Count:	1.0000
Height in Inches:	0.0000

Print

Product	#Insertions	Start - End	Category
NEO wickedlocal.com	2	06/28/2022 - 07/05/2022	Public Notices
NEO MET Daily News	2	06/28/2022 - 07/05/2022	Public Notices

Total Order Confirmation	**$83.72**

Ad Preview

LEGAL NOTICE
TOWN OF SUDBURY
NOTICE OF PUBLIC HEARING
TUESDAY, JULY 12, 2022, 7:15 PM

The Sudbury Select Board, in coordination with the Sudbury Department of Public Works, will hold a Public Hearing on Tuesday, July 12, 2022, 7:15 PM, for the purpose of updating the Town and public on the Draft Comprehensive Wastewater Management Plan (CWMP) per The Massachusetts Department of Environmental Protection (MassDEP) Bureau of Municipal Facilities Guide for the preparation of CWMPs. This virtual meeting can be accessed via Zoom at https://us02web.zoom.us/j/360217080.

Copies of all of the CWMP documents produced to date can be accessed on the Town's webpage at Comprehensive Wastewater Management Plan (CWMP) Updates » Department of Public Works (sudbury.ma.us). Copies are also available in the Department of Public Works office located at 275 Old Lancaster Road, Sudbury, MA.

SUDBURY SELECT BOARD

AD# 7421378
DN: 6/28, 7/05/2022

Comprehensive Wastewater Management Plan (CWMP)

Public Hearing for CWMP/Single Environmental Impact Report (SEIR)

Public Meeting Via ZOOM

July 12, 2022

SUDBURY PUBLIC WORKS

COMMITMENT & INTEGRITY DRIVE RESULTS

WOODARD & CURRAN

Agenda

- Town and Woodard & Curran Introductions
- Project Background
- Project Scope
- Study Areas Summary
- Needs Areas Summary
- Environmental Resources Summary
- Draft Recommended Solutions
- MEPA Filing Discussion
- Public Outreach Efforts

Introduction / Background

- CWMP Team
  - Town of Sudbury
  - Woodard & Curran
- Town Wastewater Studies Date Back to the 1980s
  - *All Reports Detail Environmental Concerns Related to the Town's Main Drinking Water Supply, as well as Potential For Economic Development, as Reasons to Sewer Route 20 Area*
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  - Submit State and Regulatory Filings – Full Approvals
  - Leverage Funding Opportunities

Project Scope – Completed Tasks

- Update Wastewater Planning to Date to Meet Current Guidelines
  - Kick-Off Meetings – Internal and External
- Review and Update
    - Areas of Wastewater Study
    - Wastewater Flows
    - Previous Sites Recommended for Wastewater Use
- Prepare Draft Report for Town Review
- Environmental Impact Study – Massachusetts Environmental Policy Act (MEPA) Filing

Develop Study Areas

- Town-wide Analysis
- Key Areas:
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- Developed Needs Areas:
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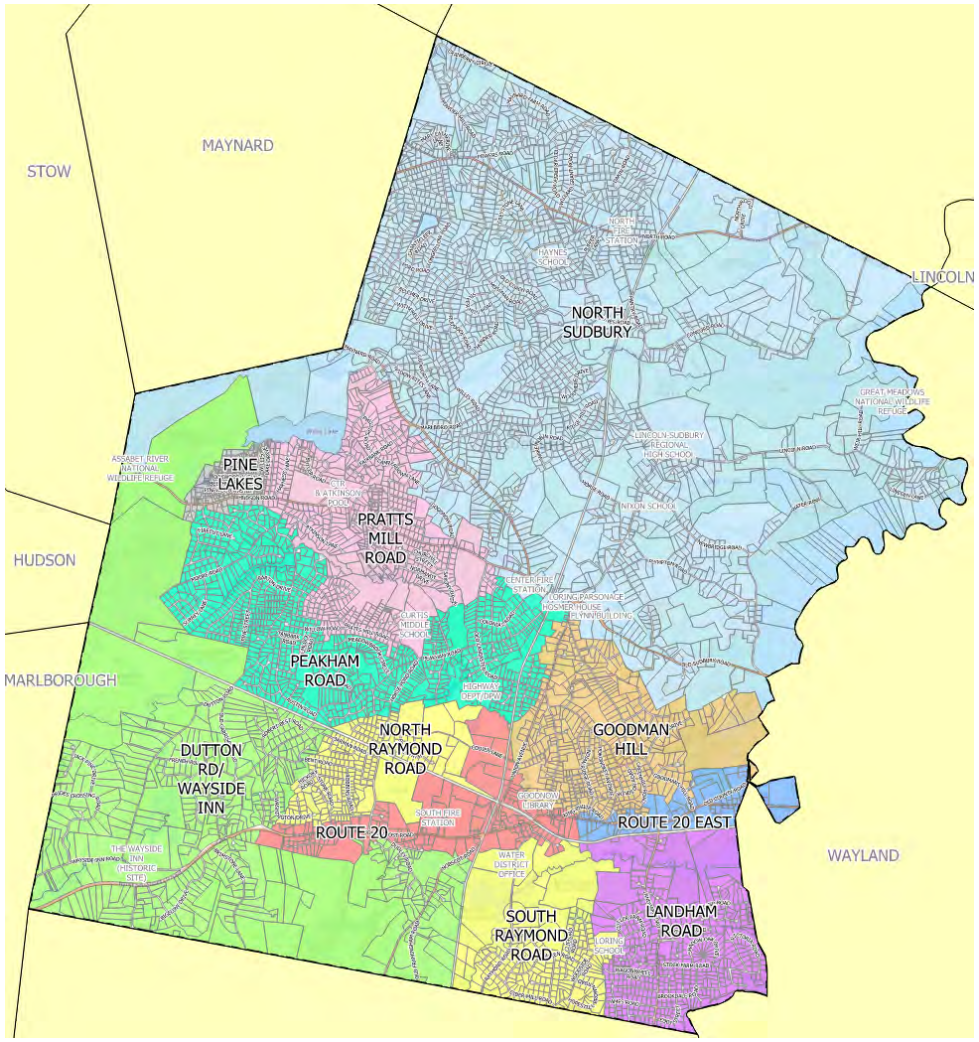
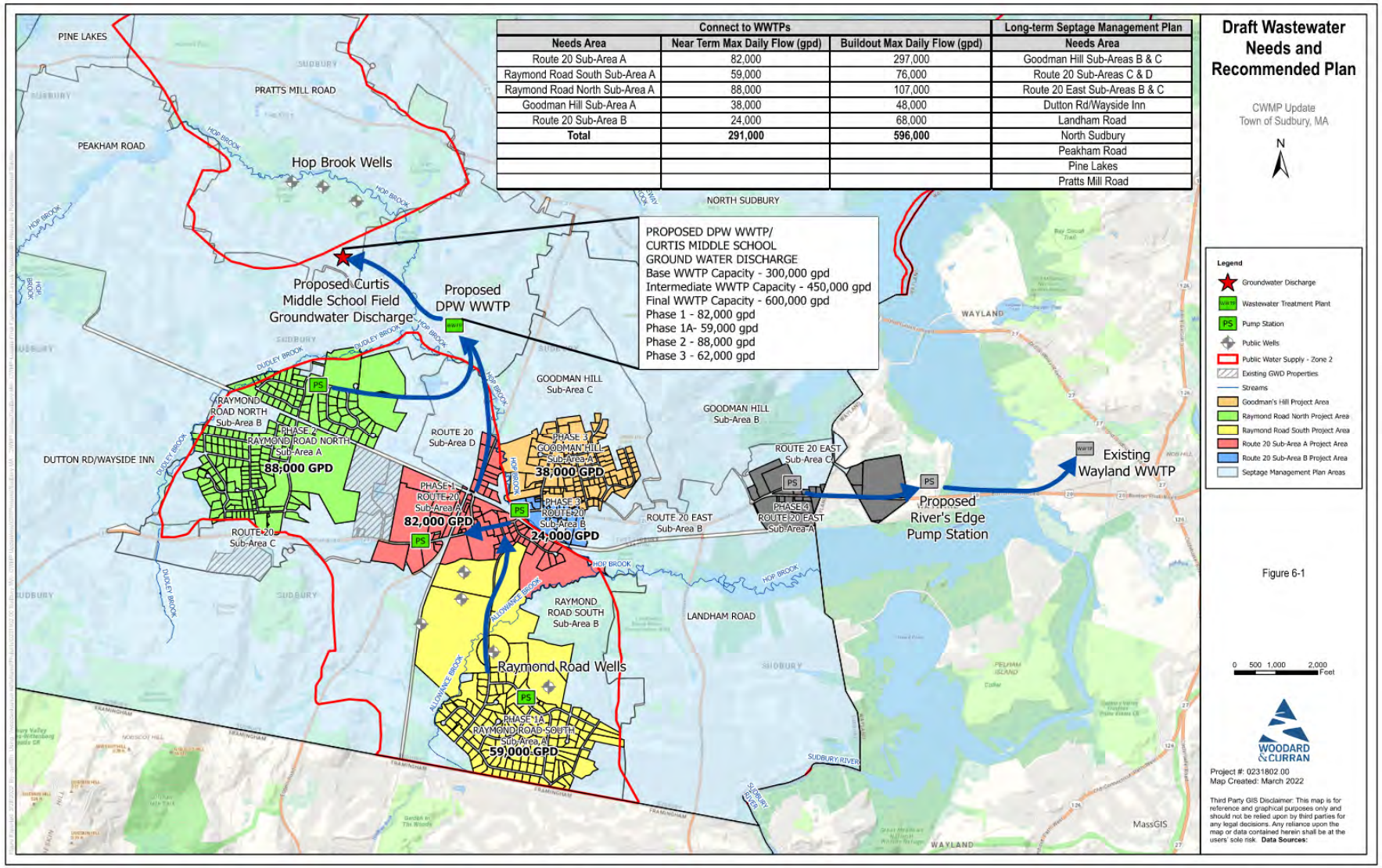


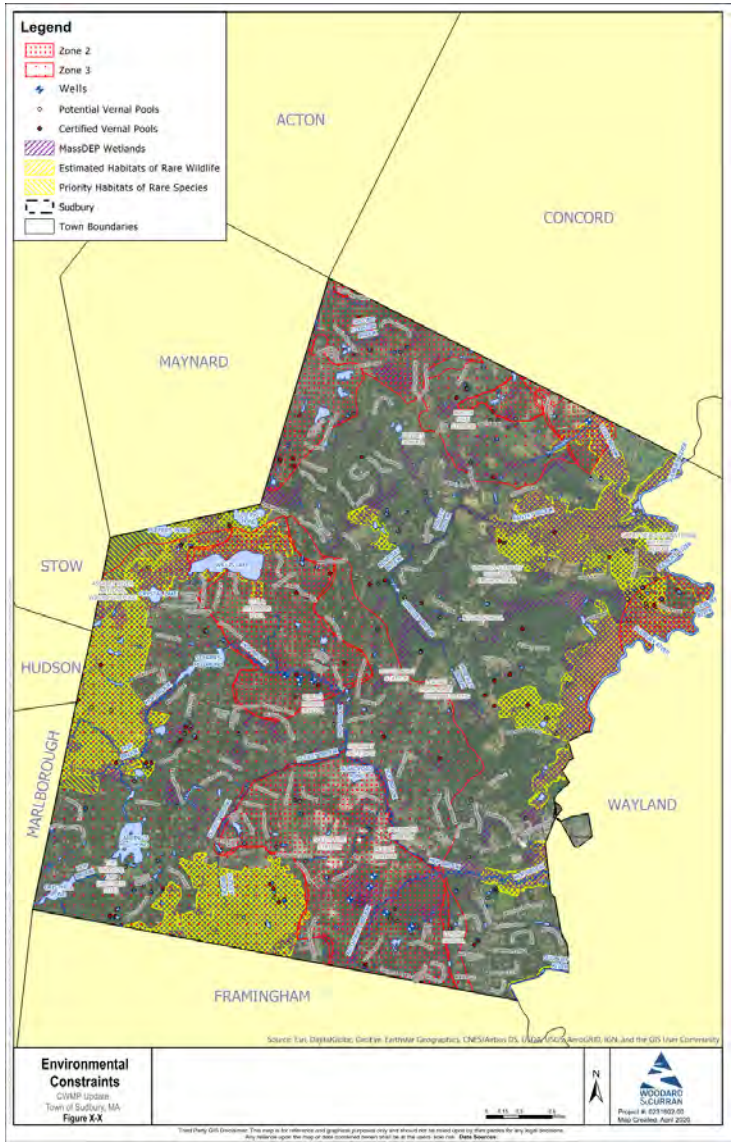
Needs Areas & Recommended Plan

Connect to WWTPs			Long-term Septage Management Plan
Needs Area	Near Term Max Daily Flow (gpd)	Buildout Max Daily Flow (gpd)	Needs Area
Route 20 Sub-Area A	82,000	297,000	Goodman Hill Sub-Areas B & C
Raymond Road South Sub-Area A	59,000	76,000	Route 20 Sub-Areas C & D
Raymond Road North Sub-Area A	88,000	107,000	Route 20 East Sub-Areas B & C
Goodman Hill Sub-Area A	38,000	48,000	Dutton Rd/Wayside Inn
Route 20 Sub-Area B	24,000	68,000	Landham Road
Total	**291,000**	**596,000**	North Sudbury
			Peakham Road
			Pine Lakes
			Pratts Mill Road



Environmental Resources

- Town-wide Overview
  - Delineated Individual Needs Areas
  - Identified Resource Areas on a Needs Areas Basis
- Key Environmental / Sensitive Resources
  - Drinking Water Supplies
  - Wetlands / Buffer Areas
  - NHESP & Vernal pools
  - Historic / Archaeological
  - AUL & 21E Sites
- Key Areas:
  - Hop Brook Wells (Pratts Mill)
  - Raymond Road Wells
  - Route 20 Corridor



Wastewater Needs & Draft Recommended Solutions

Phase 1: Route 20 (Sub A)
Phase 1A: Raymond Rd South
Phase 2: Raymond Rd North
Phase 4: Goodman's Hill/Rte 20 (Sub B)

→

WWTF: DPW Site
GW Discharge: Curtis Middle School
Phase 1 – 300,000 GPD

↓

Scalable for future Need

Remainder of Town

→

Septage Management Plan

Phase 3: Route 20 East (Sub A)

→

Future Consideration

Schedule of Tasks

Tasks	Timeframe
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Public Outreach (Supported by Capital Strategic Solutions) - Mailings - Website Updates - Social Media Announcements - General & Targeted Public Workshops - Sudbury Chamber of Commerce Meetings	May 2021 - Ongoing
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Funding Applications (MassWorks, State Revolving Fund, Stimulus, ARPA, etc.)	On-Going – Community One Stop, State & Federal Earmarks
Massachusetts Environmental Policy Act (MEPA) Filing	December 2021 EENF / July 2022 SEIR

MEPA Filing

- Filed Expanded Environmental Notification Form (EENF) – December 2021
- Key Items:
  - Requested Single Environmental Impact Report – One Major Filing Versus Two
  - CWMP Draft Recommended Plan
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- Supplemental Information to be Submitted
  - Draft CWMP – February 4, 2022
- Comments Extended to March 11, 2022
- MEPA Certificate – March 18, 2022
- Preparation of Final SEIR Filing On-Going – File July 2022
  - CWMP Complete

MEPA Filing Next Steps

- EEA No. 16510 – Sudbury CWMP
- Access EENF (12/21) Filing at https://Sudbury.ma.us/dpw/cwmp
- Comments Sent Through MEPA Portal: Mass.Gov - MEPA Public Comments (state.ma.us). *Will Post on Webpage for SEIR.*
- MEPA Certificate – March 18, 2022
  - Determined Next Submittal – Requested & Approved SEIR
- SEIR – July 2022
  - Finalizes CWMP

Public Outreach Efforts

- Schedule for Outreach
  - Town Website Updated Regularly https://Sudbury.ma.us/dpw/cwmp
  - Public Hearing July 2022
    - Results of MEPA Filing
    - Plan to Complete CWMP
  - Continuation of Outreach Once CWMP/MEPA is Approved
    - Spring/Summer 2022
    - Outlook to Future Town Meeting to Accept CWMP
  - Sudbury Chamber of Commerce
    - Collaboration With Sudbury Business Community

Funding Efforts

- Efforts to Date 2022
  - Massachusetts House Earmark Request – Filed April 2022
  - Massachusetts Senate Earmark Request – Awaiting Notice of Availability
  - Massachusetts Community One Stop Grant
    - Application Filed June 3, 2022
    - Most Probable Programs for Sudbury
      - ✓ MassWorks
      - ✓ Housing Choice
  - Massachusetts State Revolving Fund (SRF)
  - ***Continue to Monitor for Funding/Financing Programs***

Questions & Answers

Meeting Agendas
and
Meeting Minutes

COMMITMENT & INTEGRITY
DRIVE RESULTS

980 Washington Street | Suite 325
Dedham, Massachusetts 02026
www.woodardcurran.com

T 800.446.5518
T 781.251.0200
F 781.251.0847

MINUTES

Town of Sudbury CWMP Update
Health Department Discussion
Wednesday, July 15, 2020
10:00 AM

1. Introductions
    a. ***In Attendance:*** *Jack Troidl (W&C), Christian Griffith (W&C), Rosemary Blacquier (W&C), Dan Nason (Sudbury DPW), Bill Murphy (Sudbury Health Department), Bill O'Rourke (Sudbury DPW), Kevin McCabe (Sudbury DPW)*
2. CWMP Project Work Review
    a. *Rosemary: First exercise is delineating town into Study Areas to see if they can sustain long term onsite systems. We typically look at Health records for onsite systems to help delineate the areas. BOH can talk about areas that are hotspots.*
    b. *Jack: NRCS data had limited value. Soils data showed whole area was challenging for onsite systems. Current boundaries are based on natural divides, developments, & Zone IIs. Looking for Town input.*
    c. *Gotten water records from Water District. Built upon Weston & Sampson Study. Reached out to neighboring towns for any information on possible out of town solutions, but these could be challenging. Solutions currently seem limited compared to need. Current in-town solutions are the Curtis Middle School, Haskell Field, and DPW site.*
    d. *Weston & Sampson had their conceptual treatment plant at the west end of Route 20, which then pumped to the DPW for discharge. Jack thinks putting the plant at DPW instead could eliminate a pumping step and has the benefit of having all of the equipment in the same place.*
3. Review Study Areas
    a. Select Needs Areas from Study Areas
        i. *Bill Murphy: Sudbury has pretty good soils, common percolation rates of 10-15 mins per inch. Toughest soils and highest groundwater are in Goodman Hill, but even in this area there has never been any major issues with installing onsite systems.*
        ii. *Raymond Road also experiences high water tables, but there have still never been any major issues with septic there.*

iii. *DEP aware of need for sewer, especially on Route 20. Some engineering companies working on individual property solutions in Zone IIs.*

iv. *Bill Murphy: Has not really seen the use of new/alternative onsite systems for remedial purposes / to fix issues, only for nitrogen issues or for adding bedrooms.*

v. *Rosemary: The biggest issue in Raymond Road is the approximate distance to the public wells from the septic systems, as well as the fact that it is entirely within a Zone II.*

vi. *Bill Murphy: Okay with keeping North Sudbury as one Study Area, even with Zone IIs in the northwest.*

vii. *Rosemary: We believed Pine Lakes would be a hardship area but based on this meeting this does not seem to be the case. Even if the complete soils map shows the soils/groundwater being poor for the whole town, a property by property basis can tell a different story.*

viii. *Bill Murphy: Pine Lakes does need a lot of variances, but there has never been issues with finding onsite solutions.*

ix. *Bill Murphy: Study areas / areas that have parcels that have trouble changing to high flow parcels because of septic restrictions are Route 20, Raymond Road, and 29 Hudson (in the center of Town with CJ's Pizza and other businesses)*

x. *Dan: Route 20 should not include parcels further north along Union Ave, but parcels south of Codjer Lane should probably be included. This will be the top priority Needs Area, so it is important that it is delineated properly.*

xi. *Bill Murphy: Also potential to expand the Route 20 Study Area to the Wayside Inn, but the lots in this area are larger and have worse soils.*

xii. *Bill Murphy: Route 20 East could also potentially be included in the Route 20 Study Area, but the lack of density could make this a challenge.*

xiii. *Rosemary: One good reason to put the two Route 20 Study Areas together would be to dilute betterments, even if they are kept as two separate construction phases.*

xiv. *Large housing area on eastern border of Town along Old County Road should be moved from Goodman Hill to Route 20 East/Route 20.*

xv. *Bill Murphy: Wayland has a big housing development on Boston Post Road, DOT now pushing to have an outlet on Old County Road, but pushing for a treatment plan hasn't been easy. Right on west side of Wayland. Directly right of Sudbury Transfer Station. Bill Murphy is*

wondering if it could potentially tie into the sewer. Dan is unsure because of the landfill.

xvi. *W&C keeping an eye out for stimulus money, Route 20 East would definitely qualify for a MassWorks grant.*

xvii. *Bill Murphy believes the Raytheon WWTP has maxed out there design flow, but the plant was probably over-designed.*

xviii. *Jack: Rough priority ranking: Route 20 (+Route 20 East?), Raymond Road, Pine Lakes, then Pratts Mill. Bill Murphy agrees with these rough rankings.*

4. Failures/System Information for Needs Areas
    a. Access to records
        i. *Bill Murphy: It is hard to track failures, but most are aged out systems from the 60s as opposed to chronic failures from onsite conditions.*
        ii. *Rosemary: Some research of the BOH files needs to be done for the report, even if it's just for the highest priority areas. Files such as HIPAA logs, etc. BOH information is really important to these CWMPs. While there may not be many environmental constraints for the priority areas, Route 20 will be driven by the economic development and proximity to public wells.*
        iii. *Bill Murphy: Will work out logistics for Rosemary and Jack to come into BOH office after hours to review files.*
    b. Other available information
    c. Private wells
5. Review of Wastewater Solutions – Onsite, Community, Sewers, Regional
    a. Community Septic Management Plan
    b. In-Town Solutions
        i. DPW Site
            1. *Bill Murphy: Thinks DPW site has good sand and gravel and could help recharge Hop Brook.*
        ii. Curtis Middle School Site
            1. *Bill Murphy: There would be no public health issues with using Curtis Field as a discharge site, even if there would be some unfounded public pushback. Site is very close to some public wells, but is outside of Zone II.*
        iii. Haskell Fields
            1. *Bill Murphy: Site is completely within Zone II.*
6. Public Outreach

a. General

   i. *Bill Murphy: Both DPW & Curtis Middle School sites are surrounded by residential properties, both will probably see considerable opposition for that reason. DPW would potentially see less opposition.*

   ii. *Jack: We will continue to catch applications through MEPA like Sudbury Crossing as they come through.*

b. Development Projects – Coordination

   i.

7. Other Items for Discussion

   a. ***Consensus from meeting with BOH:*** *Helpful to hear that areas previously thought to be in more need might not be. If need is cut down, limited solutions may be able to support the remaining need more readily. Can concentrate on economic development and well protection along Route 20, starting with a small system that will have less public opposition.*

   b. ***Schedule:*** *Behind schedule with public outreach and hydrogeologic work ahead of schedule with study area delineation and flow development.*

8. Next Steps

   a. ***Action item: Per Dan's request, develop a map showing town-owned properties.***

   b. ***Action item: move large housing area on eastern border of Town along Old County Road from Goodman Hill Study Area to Route 20 East/Route 20 Study Areas.***

   c. Action item: Review BOH files once a time has been coordinated with Bill Murphy to go into their office.

   d. Action item: Develop a one-page monthly update on the CWMP for Dan to include on the DPW website and in his monthly report to the Town Manager.

   e. Potential upcoming meetings: Guest spot at Sudbury Chamber of Commerce to give an update on the CWMP? Meeting with Dan to outline public outreach campaign. Meeting with the Town Manager.

   f. A lot of hydrogeologic work that needs to be done, hopefully starting at DPW and Curtis Middle School soon. First step is determining how much flow potential there is based on leaching field sizing, soils, groundwater, etc., and from there you can back into your Needs Areas. DEP might be interested in a load test if DPW site is pursued. Particle Tracing Tests could also be conducted.

COMMITMENT & INTEGRITY
DRIVE RESULTS

980 Washington Street | Suite 325
Dedham, Massachusetts 02026
www.woodardcurran.com

T 800.446.5518
T 781.251.0200
F 781.251.0847

AGENDA

Town of Sudbury Route 20 Wastewater Plan Update
Friday, October 26, 2018
10:00AM
MassDEP, Northeast Regional Office

1. Introductions
2. Town of Sudbury Planning to Date
3. Status on Moving Planning Forward
    - CY2019 PEF
4. Next Steps
    - MassDEP Requirements
    - MEPA Requirements
5. Miscellaneous Items for Discussion

COMMITMENT & INTEGRITY
DRIVE RESULTS

980 Washington Street | Suite 325
Dedham, Massachusetts 02026
www.woodardcurran.com

T 800.446.5518
T 781.251.0200
F 781.251.0847

AGENDA

Town of Sudbury CWMP Update
Health Department Discussion
Wednesday, July 15, 2020
10:00 AM

1. Introductions
2. CWMP Project Work Review
3. Review Study Areas
    a. Select Needs Areas from Study Areas
4. Failures/System Information for Needs Areas
    a. Access to records
    b. Other available information
    c. Private wells
5. Review of Wastewater Solutions – Onsite, Community, Sewers, Regional
    a. Community Septic Management Plan
    b. In-Town Solutions
        i. DPW Site
        ii. Curtis Middle School Site
        iii. Haskell Fields
6. Public Outreach
    a. General
    b. Development Projects - Coordination
7. Other Items for Discussion
8. Next Steps

Copies of Project Outreach Strategies, Memos, Postings, Monthly Summaries

Town of Sudbury, Massachusetts
Comprehensive Wastewater Management Plan Update

Public Participation Program Work Plan

March 2020

Sudbury, Massachusetts
Comprehensive Wastewater Management Plan (CWMP) Update
Public Participation Work Plan

Type of Program

FULL SCALE. The Comprehensive Wastewater Management Plan (CWMP) Public Participation Program will be conducted by Department Public Works, under the jurisdiction of and in conjunction with the Board of Selectmen (Project proponents). The Town of Sudbury's consultant, Woodard & Curran, will assist in carrying out the public education/public forum aspect of the project.

The Project proponent will carry out Project execution and technical communication with the general public, interest groups and agencies having jurisdiction.

Proposed Schedule of Public Participation

Refer to the CWMP project Schedule. This schedule is updated by the Town and Woodard & Curran on an as needed basis. Public participation activities will follow the schedule of the CWMP Update. The Public Participation Plan conforms to the requirements of the Massachusetts Department of Environmental Protection's (MADEP)"Guide to Comprehensive Wastewater Management Planning".

The schedule anticipates arranging for and making presentations at one public informational meeting during each of the remaining two/three- phases of this CWMP Update, with one public hearing held in conjunction with the Draft CWMP/DEIR when this Report is available for public review and will have been submitted to MassDEP and other required regulatory agencies for review and approval.

Currently, the Department of Public Works schedules CWMP updates at various Board of Selectmen meetings at the Town Hall. Postings for meetings can be viewed at Town Hall for specific dates, times and locations. On-going regular update and work sessions are also being held amongst the consultant and the Town as needed.

It is also anticipated that the number of informal presentations and workshops will be held throughout the project for presentation and review by various entities having jurisdiction over or interest in the project.

Depository Records

The Town has been provided with two (2) three-ring Depository Record binders for placement in three locations in Town for general public viewing. The Depositories consist of copies of all reports filed on the project along with the Binder. The Binder contains information specific to the project including:

- Mailing List (for any interested party)
- Public Participation Work Plan
- ATTACHMENT A Scope of Services
- MassDEP State Revolving Fund Information
- Reference Materials
- Media Coverage
- Public Meeting Records
- Responsiveness Summaries
- Meeting Minutes
- Regulatory Information

These Depositories are located in the following locations:

Town of Sudbury Town Clerk's Office

Monday, Wednesday, Thursday: 8:30-4:30
Tuesday: 8:30-7:00
Friday: 8:30-12:30

Email: clerk@sudbury.ma.us
Phone: (978) 639 - 3351
Fax: (978) 639 - 3340
Building: Town Hall
322 Concord Road
Sudbury, MA01776

Town of Sudbury Department of Public Works - Sewer Department

Monday - Friday
8:00 A.M. - 3:30 P.M.

Email: DPW@sudbury.ma.us
Phone: (978) 440 - 5421
Fax: (978) 440 - 5404
Building: Department of Public Works Building
275 Old Lancaster Road
Sudbury, MA01776

Information and Consultation Mechanisms

The Town, through the Board of Selectmen and Department of Public Works - Sewer Department, will prepare and distribute periodic fact sheets, newsletters and mailings to the Mail List as a minimum and to a larger constituency at key points in the CWMP's development.

Mail List

A record will be kept of all persons attending public meetings and informal workshops. Periodic checks of the Depository Records under "Mail List" will update this list and be utilized for distribution of fact sheets, newsletters, and requested information and responsiveness summaries.

CAPITAL STRATEGIC SOLUTIONS

11 APEX DRIVE, SUITE 300
MARLBOROUGH, MA 01752
TEL. 508.690.0046

Town of Sudbury Comprehensive Wastewater Management Plan (CWMP) Community Engagement Strategy

Capital Strategic Solutions, LLC (CSS) proposes to implement the strategic outreach plan outlined below to educate and engage Town of Sudbury residents, businesses, and stakeholders about the benefits of the Comprehensive Wastewater Management Plan while disseminating first sewering phase information.

Website Content Management

- ✓ Working with the project team, CSS will maintain the Comprehensive Wastewater Management Plan website page within the Town of Sudbury's existing website (https://sudbury.ma.us/dpw/cwmp/) providing up-to-date project information. A unique domain such as *SudburyCWMP.com*, will be obtained and utilized to provide a streamlined, simplified web address so residents and business owners can find information with ease. The Comprehensive Wastewater Management Plan webpage will host an abundance of information in a straightforward, navigable format, including but not limited to:

    - Project Overview
    - ADA Compliant Graphics, Images and Maps
    - Anticipated Schedules
    - Hosting of All Past, Present and Future Presentation Materials
    - Streamlined Contact Information

Community Engagement & Outreach Services

- ✓ Development of the Comprehensive Wastewater Management Plan announcement and participation in virtual workshops. Work with community stakeholders and develop a line of communication. Engage the Sudbury Chamber of Commerce to assist businesses in the route 20 corridor.

- ✓ Participation in on-site/virtual meetings through the Town of Sudbury's Zoom Platform. *All virtual public and neighborhood meetings generate public records, for the purpose of maintaining those records it will be necessary for the project team to utilize the Town's Zoom account.

- ✓ Develop content for town-wide mailer, social media platform posting and email updates; and door-hangers for the Raymond Road Neighborhood.

- ✓ Establish an 800-project-hotline number to field and respond to community questions and concerns between the hours of 8 AM and 5 PM. A log of all calls including the caller's name, address, telephone number, email address and a description of the call will be maintained and provided to the project team weekly. Calls that are received after work hours or during the weekends will be returned promptly the following business day.

Developing and Implementing Media Strategies

- ✓ CSS will work in conjunction with local and regional media outlets to share information and keep the community informed of critical information.

CWMP Project Update

Sudbury, Massachusetts

SEPTEMBER 2021

Project Work

Recently Completed Work:

- Continued progress on Comprehensive Wastewater Management Plan (CWMP) Report summarizing work completed to date.
- Continued public outreach and participation.

Next Month:

- Preparing draft version of the CWMP Report.
- Designing conceptual wastewater treatment plant layout at the DPW site.
- Preparing Environment Notification Form (ENF) and Environmental Impact Review (EIR) for MEPA filing.
- Performing a Green House Gas (GHG) analysis as part of the MEPA filing.
- Continued implementation of public outreach schedule.

Highlights of Future Work / Tasks

- Preparing ENF and EIR for MEPA filing
- Continued implementation of public outreach schedule

Project Contacts:

- Daniel Nason, Director of Public Works; nasond@sudbury.ma.us; 978.440.5490

CWMP Project Update

Sudbury, Massachusetts

AUGUST 2021

Project Work

Recently Completed Work:

- Continued progress on Comprehensive Wastewater Management Plan (CWMP) Report summarizing work completed to date.
- Continued public outreach and participation, Public Participation Meeting hosted on August 5th.
- Updating CWMP subpage and FAQ section on the Town of Sudbury's website.
- Educational posts to Town of Sudbury DPW social media platforms.

Next Month:

- Preparing draft version of the CWMP Report.
- Preparing Environment Notification Form (ENF) and Environmental Impact Review (EIR) for MEPA filing.
- Continued implementation of public outreach schedule.

Highlights of Future Work / Tasks

- Preparing ENF and EIR for MEPA filing
- Continued implementation of public outreach schedule

Project Contacts:

- Daniel Nason, Director of Public Works; nasond@sudbury.ma.us; 978.440.5490

CWMP Project Update

Sudbury, Massachusetts

JULY 2021

Project Work

Recently Completed Work:

- Continued progress on Comprehensive Wastewater Management Plan (CWMP) Report summarizing work completed to date.
- Completed PEF application for SRF funding.
- Kickoff of public outreach and participation.
- Updating CWMP subpage and FAQ section on the Town of Sudbury's website.
- Educational posts to Town of Sudbury DPW social media platforms.

Highlights of Future Work / Tasks

- Preparing ENF and EIR for MEPA filing
- Continued implementation of public outreach schedule

Next Month:

- Preparing draft version of the CWMP Report.
- Preparing Environment Notification Form (ENF) and Environmental Impact Review (EIR) for MEPA filing.
- Continued implementation of public outreach schedule, Public Participation Meeting on August 5th.
- Sudbury Chamber of Commerce outreach at the September Monthly Meeting.

Project Contacts:

- Daniel Nason, Director of Public Works; nasond@sudbury.ma.us; 978.440.5490

CWMP Project Update

Sudbury, Massachusetts

JUNE 2021

Project Work

Recently Completed Work:

- Continued progress on Comprehensive Wastewater Management Plan (CWMP) Report summarizing work completed to date.
- Pre-filing meeting with MEPA on June 23rd to discuss filing requirements, ENF/EIR can be done under a single MEPA filing.
- Developed and began implementing public outreach schedule.

Next Month:

- Preparing draft version of the CWMP Report.
- Preparing Environment Notification Form (ENF) and Environmental Impact Review (EIR) for MEPA filing.
- Updates to CWMP website.
- Public Outreach Workshop on August 5th.

Highlights of Future Work / Tasks

- Preparing ENF and EIR for MEPA filing
- Kickoff Public Participation with meeting on August 5th

Project Contacts:

- Daniel Nason, Director of Public Works; nasond@sudbury.ma.us; 978.440.5490

Rosemary Blacquier

From: Rosemary Blacquier
Sent: Tuesday, June 28, 2022 11:36 AM
To: mayor@framinghamma.gov; mat@framinghamma.gov; pottaviani@framinghamma.gov; jleombruno@framinghamma.gov; clonmg@framinghamma.gov
Cc: nasond@sudbury.ma.us; Scott Medeiros; Jack Troidl; nichol@capital-strategic-solutions.com
Subject: Sudbury, MA CWMP Public Notice per EJ Protocol

Good Morning!

As a required protocol for the Sudbury, MA Comprehensive Wastewater Management Plan (CWMP) Project, we will be holding a Public hearing to present the results of the draft wastewater recommended plan to the general public through the July 12th Select Board Meeting. The attached "Ad Preview" of the Public Notice gives all pertinent information for those wishing the participate. This is due to be published in today's edition of the MW News/Wicked Local papers, but we wanted to send along direct.

Ad Preview

LEGAL NOTICE
TOWN OF SUDBURY
NOTICE OF PUBLIC HEARING
TUESDAY, JULY 12, 2022, 7:15 PM

The Sudbury Select Board, in coordination with the Sudbury Department of Public Works, will hold a Public Hearing on Tuesday, July 12, 2022, 7:15 PM, for the purpose of updating the Town and public on the Comprehensive Wastewater Management Plan (CWMP) per The Massachusetts Department of Environmental Protection (MassDEP) Bureau of Municipal Facilities Guide for the preparation of CWMPs. This virtual meeting can be accessed via Zoom at https://us02web.zoom.us/j/360217080.

Copies of all of the CWMP documents produced to date can be accessed on the Town's webpage at Comprehensive Wastewater Management Plan (CWMP) Updates » Department of Public Works (sudbury.ma.us). Copies are also available in the Department of Public Works office located at 275 Old Lancaster Road, Sudbury, MA.

SUDBURY SELECT BOARD

AD# 7421378
DN: 6/28, 7/05/2022

With Framingham as an abutting community, as well as having an identified Environmental Justice Community off Edgell Road that is within the Massachusetts Environmental Policy Act (MEPA) Office protocol of inclusion in Project outreach, we respectfully ask that you post the attached notice to any and all media outlets that may have in interest in the Project. While we have determined that there is no environmental impact to either the Framingham EJ population or the general Sudbury population, we are required to circulate Project information for any wishing to participate or comment on the Project.

On behalf of the Town of Sudbury, I thank you in advance for your time and attention to this.

Regards,

Rosemary

Rosemary T. Blacquier
Senior Consultant
Woodard & Curran
250 Royall Street
Suite 200E
Canton, MA 02021
781.613.0644

Rosemary Blacquier

From: Rosemary Blacquier
Sent: Tuesday, June 28, 2022 11:05 AM
To: david.weeden@mwtribe-nsn.gov; THPO@wapanoagtribe-nsn.gov; chairperson@nipmucmation.org
Cc: nasond@sudbury.ma.us; Scott Medeiros; Jack Troidl; Strysky, Alexander (ENV)
Subject: Mashpee Wampanoag Tribe Communication per MEPA EJ Protocol

Good Morning,

Thank you to those I was able to speak with this morning. I wanted to make sure that I sent you my full contact, as well as a link to the Sudbury, MA Wastewater Project webpage. The Sudbury Comprehensive Wastewater Management Plan (CWMP) is an on-going planning study to determine the need for an off-site wastewater solution-no implementation work as of this date. As part of the Project, we are including a Public Outreach/Education Plan and we want to include you in this as your community contact. We will include your contact information in all future filings with MEPA, as well as give you an opportunity to be part of all communications with the Project.

We have a dedicated webpage to the Project that truly gives you a comprehensive overview of the Project. The Project information, as well as schedule of events can be accessed at Comprehensive Wastewater Management Plan (CWMP) Updates » Department of Public Works (sudbury.ma.us). As more information comes to light, we will send that along as well. We will be presenting the Project at a Public Hearing at the Sudbury Select Board Meeting on July 12-I attached a Preview of the Notice that will be published today and July 5th in the MetroWest Daily News/Wicked Local papers.

Ad Preview

LEGAL NOTICE
TOWN OF SUDBURY
NOTICE OF PUBLIC HEARING
TUESDAY, JULY 12, 2022, 7:15 PM

The Sudbury Select Board, in coordination with the Sudbury Department of Public Works, will hold a Public Hearing on Tuesday, July 12, 2022, 7:15 PM, for the purpose of updating the Town and public on the Comprehensive Wastewater Management Plan (CWMP) per The Massachusetts Department of Environmental Protection (MassDEP) Bureau of Municipal Facilities Guide for the preparation of CWMPs. This virtual meeting can be accessed via Zoom at https://us02web.zoom.us/j/360217080.

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SUDBURY SELECT BOARD

AD# 7421378
DN: 6/28, 7/05/2022

If you have any questions, please feel free to call or email me.

Again, thank you for your time!

Rosemary

Rosemary T. Blacquier
Senior Consultant
Woodard & Curran
250 Royall Street
Suite 200E
Canton, MA 02021
781.613.0644

APPENDIX N: DISTRIBUTION LIST

Sudbury, Massachusetts
EENF Distribution List
Comprehensive Wastewater Management Plan – Updated 8/17/22

Agency	Email Address	Address
Massachusetts Environmental Policy Act (MEPA) Office	MEPA@mass.gov	**MEPA Office** 100 Cambridge Street, Suite 900 Boston, MA 02144
Department of Environmental Protection, Boston Office	helena.boccadoro@mass.gov	**Commissioner's Office** One Winter Street Boston, MA 02108
Department of Environmental Protection, Regional Office	john.d.viola@mass.gov	**DEP/Northeast Regional Office** Attn: MEPA Coordinator 205B Lowell Street Wilmington, MA 01887
Department of Environmental Protection, Regional Office	Susannah.King@mass.gov kevin.brander@mass.gov Joseph.nerden@mass.gov Tenzin.lama@mass.gov	**DEP/Northeast Regional Office** 205B Lowell Street Wilmington, MA 01887
Massachusetts Department of Transportation - Boston	MassDOTPPDU@dot.state.ma.us	**Public/Private Development Unit** 10 Park Plaza, Suite #4150 Boston, MA 02116
Massachusetts Department of Transportation - Regional	jeffrey.r.gomes@dot.state.ma.us	**District #3** Attn: MEPA Coordinator 499 Plantation Parkway Worcester, MA 01605
Massachusetts Historical Commission	**Mail a hard copy of the filing to MHC.**	**The MA Archives Building** 220 Morrissey Boulevard Boston, MA 02125
Metropolitan Area Planning Council (MAPC)	Marc Draisen, Executive Director mdraisen@mapc.org	Metropolitan Area Planning Council 60 Temple Place Boston, MA 02111
MUNICIPALITIES AFFECTED BY OR ABUTTING PROJECT		
Town of Sudbury	Maryanne Bilodeau. Act. Town Manager BilodeauM@sudbury.ma.us	**Board of Selectmen / Town Administration**
	Daniel Nason, Director nasond@sudbury.ma.us	**Department of Public Works**
	Adam Duchesneau, Director of Planning duchesneaua@sudbury.ma.us	**Planning Board / Historic Districts Commission, Historical Commission**
	Lori Capone, Conservation Coordinator Concom@sudbury.ma.us	**Conservation Commission**
	Bill Murphy, Health Director murphyb@sudbury.ma.us	**Board of Health**

Revised 6/28/22

Sudbury, Massachusetts
EENF Distribution List
Comprehensive Wastewater Management Plan – Updated 8/17/22

Sudbury Water District	Vincent Roy, Executive Director	**Sudbury Water District**
City of Framingham (Also EJ Contacts)	Mayor Charlie Sisitsky Mayor@framinghamma.gov	**Mayor**
	Michael Tusino mat@framinghamma.gov	**COO**
	Robert McArthur, Commissioner rdm@framinghamma.gov	**Conservation Commission**
	Alexandra DePalo JHealth@framinghamma.gov	**Department/Board of Health**
	Phil Ottaviani pottaviani@framinghamma.gov	**City Council Vice Chair**
	Janet Lembruno jleombruno@framinghamma.gov	**City Council Vice Chair**
	Christine Long clong@framinghamma.gov	**District 1 City Councilor**
	William Sedewitcz DPWGeneral@framinghamma.gov	**Acting DPW Director**
	Eric Johnson evj@framinghamma.gov	**City Engineer**
Town of Wayland	Stephen Crane, Act. Town Manager scrane@wayland.ma.us	**Board of Selectmen /Town Administration**
	Chris Costello, Town Planning Dept. ccostello@wayland.ma.us	**Planning Board**
	Linda Hansen, Administrator lhansen@wayland.ma.us	**Conservation Commission**
	Julia Junghanns, R.S, C.H.O., Director jjunghanns@wayland.ma.us	**Board of Health**

Revised 6/28/22

Sudbury, Massachusetts
EENF Distribution List
Comprehensive Wastewater Management Plan – Updated 8/17/22

Town of Maynard	Gregory Johnson, Town Administrator gjohnson@TownofMaynard.Net	**Board of Selectmen / Town Administration**
	Bill Nemser, Director bnemser@TownofMaynard.Net	**Planning Board**
	Julia Flanary, Agent jflanary@TownofMaynard.Net	**Conservation Commission**
	John Robertson, Director jrobertson@TownofMaynard.Net	**Public Health**
	Justin DeMarco, Director jdemarco@TownofMaynard.Net	**Department of Public Works**
Town of Concord	Kerry Lafleur, Town Manager klafleur@concordma.gov	**Board of Selectmen / Town Administration**
	Elizabeth Hughes, Planner ehughes@concordma.gov	**Planning Board**
	Delia Kaye, Director dkaye@concordma.gov	**Natural Resources Department**
	Melanie Dineen, Director mdineen@concordma.gov	**Board of Health**
	Alan H. Cathcart, Director acathcart@concordma.gov Jeffrey Murawski, Wastewater Superintendent jmurawski@concordma.gov	**Department of Public Works**
If the Project site is within or contains designated significant or estimated habitat, or priority sites of endangered or threatened species or species of special concern in accordance with the Massachusetts Endangered Species Act	melany.cheeseman@mass.gov emily.holt@mass.gov	**Natural Heritage and Endangered Species Program** Division of Fisheries & Wildlife 1 Rabbit Hill Road Westborough, MA 01581
If the Project affects DCR roadways, watersheds or other properties or an ACEC	andy.backman@mass.gov	**DCR** Attn: MEPA Coordinator 251 Causeway St. Suite 600 Boston MA 02114

Revised 6/28/22

Sudbury, Massachusetts
EENF Distribution List
Comprehensive Wastewater Management Plan – Updated 8/17/22

If the Project implicates public health impacts	DPHToxicology@State.MA.US	**Department of Public Health** Director of Environmental Health 250 Washington Street Boston, MA 02115
If the Project is subject to Greenhouse Gas Emissions Policy or to review by Energy Facilities Siting Board	andrew.greene@mass.gov geneen.bartley@mass.gov	**Energy Facilities Siting Board** Attn: MEPA Coordinator One South Station Boston, MA 02110
	paul.ormond@mass.gov brendan.place@mass.gov	**Department of Energy Resources** Attn: MEPA Coordinator 100 Cambridge Street, 10th floor Boston, MA 02114
If the Project is located within 5 miles of an Environmental Justice Community	MEPA-EJ@mass.gov	MEPA Office Attn: EEA EJ Director 100 Cambridge Street, Suite 900 Boston, MA 02144
By Email Request 1/8/22	Eric.carlson@state.ma.us	**DCR-Flood Management Program**
By Email Request 1/20.22	afieldjuma@oars3rivers.org	**Alison Field-Juma** 363 Concord Street Cambridge, MA 02138
Per MEPA Certificate, p. 13 NOTE: Added to MEPA Tribal List	David.Weeden@mwtribe-nsn.gov	**David Weeden – THPO** **Mashpee Wampanoag Tribe** **483 Great Neck Road South** **Mashpee, MA 02649**
Per MEPA Certificate, p.13 NOTE: Added to MEPA Tribal List	THPO@wampanoagtribe-nsn.gov	**Bettina Washington, THPO** **Wampanoag Tribe of Gay Head** **20 Black Brook Road** **Aquinnah, MA 02535-1546**
Per MEPA Certificate, p.13 NOTE: Added to MEPA Tribal List	chairperson@nipmucnation.org	**Chairperson** **Nipmuc Tribal Nation** **25 Main Street** **South Grafton, MA 01560**

See attached spreadsheet for additional MEPA EJ Contacts:

Revised 6/28/22

Statewide EJ CBOs

First	Last	Title	Phone	Email	Affiliation
Alison	Bowden			abowden@tnc.org	The Nature Conservancy
Ben	Hellerstein		617-747-4368	ben@environmentmassachusetts.org	Environment Massachusetts
Brad	Campbell	president	617-850-1730	bcampbell@clf.org	Conservation Law Foundation
Burne	Stanley	Administrative Assistant	617-573-1291	burne.stanley-peters@mass.gov	Commission on Indian Affairs
Caitlin	Peale Sloan		617-850-1770	cpeale@clf.org	Conservation Law Foundation
Casey	Bowers		(617) 391-0980 or (781) 771-5404	cbowers@environmentalleague.org	Environmental League of MA
Catherine	Lang		(617) 714-4273	katharinelange@massriversalliance.org	Mass Rivers Alliance
Chaya	Harris	Program Director		program@outdoorafro.com	Outdoor Afro
Christina	Wiseman			cwiseman@massaudubon.org	MassAudubon
Cindy	Luppi		617-338-8131 x208	cluppi@cleanwater.org	Clean Water Action
Danielle	Williams			danielle@mcan.us	MA Communities Action Network
Deb	Pasternak		617-423-5775	deb.pasternak@sierraclub.org	Sierra Club MA
Dorothy	McGlincy		(617) 489-3930	dorothy.mcglincy@maccweb.org	Massachusetts Association of Conservation Commissions
Dwaign	Tyndal	Executive Director	617 442-3343	dwaign@ace-ej.org	Alternatives for Community & Environment
Elizabeth Turnbull	Henry	President	617-742-2553	ehenry@environmentalleague.org	Environmental League of MA
Elvis	Mendez	Organizing Director	508 904-5359	elvis@n2nma.org	Neighbor to Neighbor
Emily	Myron		617-532-8311 or 240-372-0792	emily.myron@tnc.org	The Nature Conservancy
Eugene	Benson	Adjunct Professor, City Planning & Urban Affairs (retired)		eugene.b.benson@gmail.com	Boston University
Eve	Vogel			evev@umass.edu	Mass Rivers Alliance
Gregory	King	Managing Director		gking@tskenergysolutions.com	TSK Energy Solutions LLC
Heather	Clish	Director of Conservation & Recreation Policy	(617) 523-0655	hclish@outdoors.org	Appalachian Mountain Club
Heidi	Ricci	Director of Policy		hricci@massaudubon.org	Mass Audubon
J. Cedric	Woods		(617) 287-5000 or (617) 287-5784	Cedric.Woods@umb.edu	Institute for New England Native American Studies, Umass Boston
Jade	Lu			jlu@masscec.com	MassCEC
Jim	Peters, Jr.	Executive Director	617-573-1292	john.peters@mass.gov	Massachusetts Commission on Indian Affairs (MCIA)
Johannes	Epke	Staff Attorney	617.350.0990	jepke@clf.org	Conservation Law Foundation
Juanita	Gibson	Charlotte E. Ray Legal Fellow	617.350.0990	jgibson@clf.org	Conservation Law Foundation
Julia	Blatt		(617) 714-4272	juliablatt@massriversalliance.org	Mass Rivers Alliance
Kai	Salem		(401) 861-6111	kai@greenenergyconsumers.org	Green Energy Consumers Alliance
Kalaina	Thorne			kalaina.thorne@tnc.org	The Nature Conservancy
Katharine	Lange			katharinelange@massriversalliance.org	Mass Rivers Alliance
Kelly	Boling		(617) 367-6200	kelly.boling@tpl.org	The Trust for Public Land
Kerry	Bowie	Board President		kerry@msaadapartners.com	Browning the GreenSpace
Kirstie	Pecci		617 350-0990	kpecci@clf.org	Conservation Law Foundation
Kristen	Sykes	Director of Southern NE Conservation Projects and Partnerships		ksykes@outdoors.org	Appalachian Mountain Club
Kristin	Uiterwyk			kristin.uiterwyk@umb.edu	Umass Boston
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