526 & 528

Boston Post Road Redevelopment
Sudbury, MA

MEADOW WALK
SUDBURY

AVALON
SUDBURY

Environmental Notification Form

February 16, 2016

SUBMITTED TO
Executive Office of Energy and Environmental Affairs

Massachusetts Environmental Policy Act Office

A PARTNERSHIP OF
BPR Sudbury Development LLC

AvalonBay COMMUNITIES

ND NATIONAL DEVELOPMENT

PREPARED BY
vhb
101 Walnut Street
PO Box 9151
Watertown, Massachusetts 02471

IN ASSOCIATION WITH
Tata & Howard
Sanborn, Head & Associates
Goulston & Storrs

February 16, 2016

Ref: 13125.00

Matthew A. Beaton, Secretary
Executive Office of Energy and
Environmental Affairs
100 Cambridge Street, Suite 900
Boston, MA 02114

Re: Environmental Notification Form
526 and 528 Boston Post Road
Redevelopment
Sudbury, MA

Dear Secretary Beaton:

On behalf of BPR Sudbury Development LLC, a joint venture of National Development and AvalonBay Communities, Inc. affiliates (collectively the "Proponent"), VHB is pleased to submit the enclosed Environmental Notification Form (ENF) for the redevelopment of the former Raytheon site in Sudbury, MA (the "Project"). The Project proposes to transform an obsolete and aging office, research and development complex into a vibrant mixed-use development with retail, active-adult residential condominiums, a memory care assisted living community, and mixed-income residential apartment homes.

The Project brings countless benefits to the community and the region including new jobs, a variety of housing opportunities, additional open space and new village-style retail/grocery and dining options. The proposed development program provides a broad range of housing options that advance the Town's affordable housing interests for the site and address the specific goals identified in various local and regional planning documents, including the 2001 Sustainable Sudbury Plan, the 2012 Sudbury Housing Production Plan, the 2012 Route 20 business district Project Evaluation Report, and the Route 20 Corridor Study. In addition to providing a broad spectrum of much needed housing options and new retail space, the Project will improve environmental conditions on the Site through a reduction in impervious area and the enhancement of existing Site infrastructure and systems (including modernizing the on-site wastewater treatment plan), and by the replacement of inefficient and antiquated buildings with high-efficiency buildings and fixtures.

The redevelopment Project is consistent with local and regional planning efforts and will, as a redevelopment project, result in net environmental benefits. The Project does not exceed any MEPA Environmental Impact Report thresholds. Notwithstanding this fact, the Proponent has provided a substantially higher level of analysis in this document than is typically required in an ENF in an effort to

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fully document the existing and proposed conditions on the Project Site. This additional documentation is intended to support the ongoing local review of the Project, and to provide an opportunity for the community to better understand the potential impacts, corresponding mitigation, and numerous benefits of the proposed Project.

We respectfully request the EOEEA Publish notice of availability of the ENF for public review in the February 24th edition of the *Environmental Monitor*. Based upon this tentative schedule, public comments will be due by March 15, and a decision will be due March 25, 2015. We look forward to your review of this Project. Please don't hesitate to contact me at (617) 607-2973 or via email at slattrell@vhb.com if you have any questions or need any additional information

Sincerely,

Seth Lattrell

Environmental Planner
slattrell@vhb.com

CC: Distribution List

526 and 528 Boston Post Road Redevelopment

Sudbury, Massachusetts

SUBMITTED TO **Executive Office of Energy and Environmental Affairs**
Massachusetts Environmental Policy Act Office
100 Cambridge St., Suite 900
Boston, MA 02114

PROPONENT **BPR Sudbury Development LLC**
2310 Washington Street
Newton Lower Falls
MA 02462

PREPARED BY **VHB**
101 Walnut Street
Watertown, MA 02472

In association with:
Tata & Howard
Sanborn, Head & Associates
Goulston & Storrs

February 16, 2016

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Commonwealth of Massachusetts

Executive Office of Energy and Environmental Affairs
Massachusetts Environmental Policy Act (MEPA) Office

Environmental Notification Form

For Office Use Only

EEA#: _____

MEPA Analyst: _____

The information requested on this form must be completed in order to submit a document electronically for review under the Massachusetts Environmental Policy Act, 301 CMR 11.00.

Project Name: **526 and 528 Boston Post Road Redevelopment**		
Street Address: **526 and 528 Boston Post Road**		
Municipality: **Sudbury**	Watershed: **Concord (SuAsCo)**	
Universal Transverse Mercator Coordinates: **205,615.64m, 901,477.17m**	Latitude: **42.363804** Longitude: **-71.431824**	
Estimated commencement date: **April 2016**	Estimated completion date: **Dec. 2018**	
Project Type: **Mixed-Use (commercial, retail, residential)**	Status of project design: 50 %complete	
Proponent: **BPR Sudbury Development LLC**		
Street Address: **2310 Washington Street**		
Municipality: **Newton Lower Falls**	State: **MA**	Zip Code: **02462**
Name of Contact Person: **Seth Lattrell**		
Firm/Agency: **VHB**	Street Address: **101 Walnut Street**	
Municipality: **Watertown**	State: **MA**	Zip Code: **02472**
Phone: **617-728-7777**	Fax: **N/A**	E-mail: **slattrell@vhb.com**

Does this project meet or exceed a mandatory EIR threshold (see 301 CMR 11.03)?
☐Yes ☒**No**

If this is an Expanded Environmental Notification Form (ENF) (see 301 CMR 11.05(7)) or a Notice of Project Change (NPC), are you requesting:

a Single EIR? (see 301 CMR 11.06(8)) ☐Yes ☐No
a Special Review Procedure? (see 301CMR 11.09) ☐Yes ☐No
a Waiver of mandatory EIR? (see 301 CMR 11.11) ☐Yes ☐No
a Phase I Waiver? (see 301 CMR 11.11) ☐Yes ☐No
(Note: Greenhouse Gas Emissions analysis must be included in the Expanded ENF.)

Which MEPA review threshold(s) does the project meet or exceed (see 301 CMR 11.03)?
301 CMR 11.03(6)(b)13.: Generation of 2,000 or more New ADT on roadways providing access to a single location.

301 CMR 11.03(5)(b)3.a.: Construction of one or more New sewer mains that will: a. that will result in an Expansion in the flow to a wastewater treatment and/or disposal facility by 10% of existing Capacity;

301 CMR 11.03(5)(b)4.c.i.: New discharge or Expansion in discharge to groundwater of 10,000 or more gpd of sewage within an area, zone or district established, delineated or identified as necessary or

appropriate to protect a public drinking water supply, an area established to protect a nitrogen sensitive embayment, an area within 200 feet of a tributary to a public surface drinking water supply, or an area within 400 feet of a public surface drinking water supply;

Which State Agency Permits will the project require?
Vehicle Access Permit from the Massachusetts Department of Transportation (MassDOT), Superseding Order of Conditions from the Massachusetts Department of Environmental Protection (MassDEP) (if required), Groundwater Discharge Permit Application (Modification) from MassDEP.

Identify any financial assistance or land transfer from an Agency of the Commonwealth, including the Agency name and the amount of funding or land area in acres:

The Proponent will receive bond financing from the Massachusetts Housing Partnership. The amount has not yet been determined.

Summary of Project Size & Environmental Impacts	Existing	Change	Total
LAND			
Total site acreage	**50±**		
New acres of land altered	**-0-**	**-0*-**	
Acres of impervious area	**28.8±**	**(2.5)±**	**26.3±**
Square feet of new bordering vegetated wetlands alteration		**<5000 sf (temp)****	
Square feet of new other wetland alteration		**-0-**	
Acres of new non-water dependent use of tidelands or waterways		**-0-**	
STRUCTURES			
Gross square footage	**563,300±**	**37,000±**	**600,000±**
Number of housing units	**-0-**	**358±**	**358±**
Maximum height (feet)	**44 ± (BELTRAN)**	**16±**	**60±**
TRANSPORTATION			
Vehicle trips per day	**5,110±**	**2,810±**	**7,920±**
Parking spaces	**2,040±**	**(740)±**	**1,300±**
WASTEWATER			
Water Use (Gallons per day)***	**42,200 GPD±**	**Up to 47,800 GPD±**	**Up to 90,000 GPD±**
Water withdrawal (GPD)****	**0**	**35,000±**	**35,000±**
Wastewater generation/treatment (GPD)*****	**50,000 GPD±**	**Up to 40,000 GPD±**	**Up to 90,000 GPD±**
Length of water mains (miles) ***Project includes only privately-owned on-site water mains**	**0.9 MILES±**	**0.5 MILES±**	**1.4 MILES±**

Length of sewer mains (miles) ***Project includes only privately-owned on-site sewer mains**	**0.3 MILES±**	**0.5 MILES±**	**0.8 MILES±**
Has this project been filed with MEPA before? ☐ Yes (EEA #_____) ☒No			
Has any project on this site been filed with MEPA before? ☐ Yes (EEA #_____) ☒No			

*** Entire Project Site has been previously altered**
**** No impact anticipated. See the wetlands section below for additional information.**
***** Existing and proposed water usage is based on Title V wastewater estimates.**
****** Water withdrawal is a preliminary estimate for potential irrigation wells on the Site.**
*******Existing wastewater generation is assumed to be the equivalent of the permitted flow for the existing treatment plant.**

GENERAL PROJECT INFORMATION – all proponents must fill out this section

PROJECT DESCRIPTION:

Describe the existing conditions and land uses on the project site:

The Project Site totals approximately 50 acres and is bordered by Boston Post Road (Route 20) to the south, to the east by commercial properties, to the west by an agricultural use and open space and to the north by a former railroad right of way. Refer to Figure 1 for a Site location map and Figure 2 for Project context. The Site currently contains over 563,300 square feet of building consisting of a mix of office and research and development space.

The two existing main office buildings fronting Boston Post Road (Route 20) are composed of several smaller connected structures with buildings 2, 3 and 4 to the west, and buildings 1 and 5 to the east. There is also a separate smaller building in the westernmost portion section of the Site which is referred to as the Beltran building. The northern portion of the Site consists of two large parking lots providing a combined 2,040 parking spaces straddling a vegetated area, retention pond, wastewater treatment plant, and helipad. In the northwest corner of the Site there are several small buildings/structures that were previously used for research and development. Refer to Figure 3 for an existing conditions site plan.

Describe the proposed project and its programmatic and physical elements:

The Proponent, BPR Sudbury Development LLC, is proposing to redevelop the existing 50 acre Raytheon parcel with a mixed-use development (the Project). The Project is programmed to include a mix of village- style commercial/retail space, mixed-income residential apartment homes, age-restricted condominiums, and a memory care assisted living community. Refer to Figure 4 for the proposed conditions site plan.

The Project also includes local roadway improvements including pedestrian and bicycle accommodations and a new signalized intersection at the main Site entrance on Route 20, major upgrades to the on-site streetscape and landscaping, new and enhanced public open spaces, improved water quality, and creative integration of existing environmental resources that form the framework for the development. Refer to Figure 5 for the proposed open space and pedestrian connections.

The Project is uniquely positioned to provide substantial benefits to the community through the redevelopment and environmental improvement of a heavily developed office and Rsite. The proposed development program will introduce a mix of uses including new retail/grocery opportunities, provide a broad range of new housing options, and assist the Town in meeting the requirements of the Commonwealth's M.G.L. Chapter 40B housing requirements. The change in use on the Project Site, coupled with roadway and intersection improvements is anticipated to noticeably improve traffic conditions on Boston Post Road in part due to reductions in weekday peak hour traffic. Refer to Attachment D for the complete transportation analysis. New open space, reduced impervious area and improvement of adjacent natural resources will lead to a substantially cleaner, active, and sustainable development.

The Project also benefits from the reuse of an existing private on-site wastewater treatment facility that will be improved and modernized to accommodate the new site uses while implementing enhanced water treatment. A key benefit of the proposed on-site treatment system is that it recharges treated wastewater back into the underlying aquifer instead of transferring water from one watershed to another as is common in a public or municipal sewer system. This benefits the underlying aquifer and regional watershed, as well as minimizes potential impacts on the adjacent wetland resources areas.

Please refer to Section 1 of the attached narrative for additional information on the Project and associated benefits.

NOTE: The project description should summarize both the project's direct and indirect impacts (including construction period impacts) in terms of their magnitude, geographic extent, duration and frequency, and reversibility, as applicable. It should also discuss the infrastructure requirements of the project and the capacity of the municipal and/or regional infrastructure to sustain these requirements into the future.

Describe the on-site project alternatives (and alternative off-site locations, if applicable), considered by the proponent, including at least one feasible alternative that is allowed under current zoning, and the reasons(s) that they were not selected as the preferred alternative:

Please refer to Section 1 of the attached narrative for an analysis of Project alternatives.

NOTE*: The purpose of the alternatives analysis is to consider what effect changing the parameters and/or siting of a project, or components thereof, will have on the environment, keeping in mind that the objective of the MEPA review process is to avoid or minimize damage to the environment to the greatest extent feasible. Examples of alternative projects include alternative site locations, alternative site uses, and alternative site configurations.*

Summarize the mitigation measures proposed to offset the impacts of the preferred alternative:

The Project is anticipated to improve environmental conditions at the Project Site, provide new retail/grocery opportunities, and create a variety of new housing options, including affordable rental apartments in furtherance of the Town's Housing Production Plan, and M.G.L. Chapter 40B requirements. With improvements in stormwater management, wastewater treatment, pedestrian and bicycle accommodations and connectivity, new open spaces and enhanced wetland buffers, the Project will provide environmental enhancements, provide new community recreational opportunities, and create a meaningful and environmentally beneficial redevelopment in close proximity to the commercial center of Sudbury.

The proposed development program provides a broad range of housing options that advance the

Town's M.G.L. 40B needs and address the specific goals identified in several local and regional planning documents including the 2001 Sustainable Sudbury Plan, the 2012 Sudbury Housing Production Plan, the 2012 Route 20 business district Project Evaluation Report, and the Route 20 Corridor Study. In addition to providing a broad spectrum of much needed housing options and new retail space, the Project will enhance existing site infrastructure and systems (including modernizing the on-site wastewater treatment plan), and replace inefficient and antiquated buildings with high-efficiency buildings and fixtures

The change in use and substantial investment to improve adjacent roadway and intersections, including the construction of a new signalized intersection at the Project's primary access drive, will benefit local and regional traffic conditions by spreading vehicle trips out throughout the day/week to minimize roadway congestion during the busiest times of the day. To further minimize traffic impacts, a robust Transportation Demand Management (TDM) plan has been developed to reduce the overall traffic impact by minimizing the demand for vehicle trips. The plan includes incentives to encourage ridesharing and transit usage, bicycle/pedestrian enhancements, and offers coordination services to residents and visitors of the development.

For additional information on Project mitigation and benefits please refer to Section 1 of the attached narrative.

If the project is proposed to be constructed in phases, please describe each phase:

Construction of the various elements of the Project is planned to occur concurrently; however based on the time required to construct certain components of the Project, as well as existing lease commitments to the current tenant, parts of the Project will start and be completed at different times, described generally as follows.

Subject to receipt of the required permits, site preparation and construction of the Project is anticipated to commence in the Spring of 2016 with building demolition and construction of the grocery store. Once the existing tenant vacates Building 1 and 5 at the end of 2016, construction of the residential uses and the remaining commercial buildings is envisioned to begin. The grocery store opening date is anticipated to be late summer 2017, with the remainder of the Project construction concluding at the end of 2018. Off-site improvements proposed at the site frontage with Boston Post Road, including the traffic signal work, will be constructed as part of the Project's retail/grocery store phase and are expected to be substantially complete concurrent with the grocery store opening.

The overall Project is anticipated to be complete by December 2018.

AREAS OF CRITICAL ENVIRONMENTAL CONCERN:

Is the project within or adjacent to an Area of Critical Environmental Concern?

☐ Yes (Specify_____)

☒ No

if yes, does the ACEC have an approved Resource Management Plan? ___ Yes ___ No;
If yes, describe how the project complies with this plan.

_____

Will there be stormwater runoff or discharge to the designated ACEC? ___ Yes ___ No;
If yes, describe and assess the potential impacts of such stormwater runoff/discharge to the designated ACEC.

_____

RARE SPECIES:

Does the project site include Estimated and/or Priority Habitat of State-Listed Rare Species? (see http://www.mass.gov/dfwele/dfw/nhesp/regulatory_review/priority_habitat/priority_habitat_home.htm)

☐ Yes (Specify_____) ☒ No

HISTORICAL /ARCHAEOLOGICAL RESOURCES:
Does the project site include any structure, site or district listed in the State Register of Historic Place or the inventory of Historic and Archaeological Assets of the Commonwealth?
☐Yes (Specify_____) ☒No
If yes, does the project involve any demolition or destruction of any listed or inventoried historic or archaeological resources? ☐Yes (Specify_____) ☐No

WATER RESOURCES:
Is there an Outstanding Resource Water (ORW) on or within a half-mile radius of the project site? ___Yes **X** No;
if yes, identify the ORW and its location. _____

(NOTE: Outstanding Resource Waters include Class A public water supplies, their tributaries, and bordering wetlands; active and inactive reservoirs approved by MassDEP; certain waters within Areas of Critical Environmental Concern, and certified vernal pools. Outstanding resource waters are listed in the Surface Water Quality Standards, 314 CMR 4.00.)

Are there any impaired water bodies on or within a half-mile radius of the project site? ___Yes **X** No; if yes, identify the water body and pollutant(s) causing the impairment:_____.

Is the project within a medium or high stress basin, as established by the Massachusetts Water Resources Commission? ___Yes **X** No

STORMWATER MANAGEMENT:

Generally describe the project's stormwater impacts and measures that the project will take to comply with the standards found in MassDEP's Stormwater Management Regulations:

The Project will comply with the MassDEP Stormwater Management regulations through the following improvements:

- **Increasing open space and groundwater recharge to contribute to re-establishing components of a more natural water cycle (evapotranspiration, groundwater recharge and runoff) on the Site.**
- **Improving the surface water and groundwater quality will further protect the watershed of critical environmental resources.**
- **Protecting and minimizing disruption to existing wetland resource areas and wildlife habitat corridors through the maintenance and enhancement of existing vegetative protective buffers.**
- **Implementing a comprehensive temporary and permanent erosion control system and Long Term Operations and Maintenance Plan.**

Please see Section 3 of the attached narrative for a summary of compliance with specific stormwater standards.

MASSACHUSETTS CONTINGENCY PLAN:
Has the project site been, or is it currently being, regulated under M.G.L.c.21E or the Massachusetts Contingency Plan? Yes **X** No ___ ; if yes, please describe the current status of the site (including Release Tracking Number (RTN), cleanup phase, and Response Action Outcome classification):_____

Three MCP sites are located in the Project Site area. These have achieved either Temporary or

Permanent Solutions and are summarized below:

RTN 3-3037, 528 Boston Post Road – Pending No Further Action – August 1997
RTN 3-17106, 528 Boston Post Road – Class A-2 RAO filed in September 1998
RTN 3-27243, 528 Boston Post Road – Class C-1 RAO filed in November 2008

Please see Section 2 of the attached narrative for additional information.

Is there an Activity and Use Limitation (AUL) on any portion of the project site? Yes ___ No _**X**__;
if yes, describe which portion of the site and how the project will be consistent with the AUL:
_____.

Are you aware of any Reportable Conditions at the property that have not yet been assigned an RTN?
Yes ___ No _**X**_ ; if yes, please describe:_____

SOLID AND HAZARDOUS WASTE:

If the project will generate solid waste during demolition or construction, describe alternatives considered for re-use, recycling, and disposal of, e.g., asphalt, brick, concrete, gypsum, metal, wood:_

Demolition of existing on-site buildings will be required for the Project. The Project Construction Manager will implement a waste management plan to divert Project-related construction waste material from landfills through recycling and salvaging where practicable. Existing pavement will either be processed on-site for re-use as structural fill or shipped off-site to an asphalt recycling facility.

Should excess soil be generated during construction that requires off-site disposal, analytical testing of the soil will be required so that it can be properly disposed of at an off-site facility. Materials will be handled according to all applicable federal, state, and municipal environmental laws and regulations. In the event that subsurface contamination exceeding MCP reporting thresholds is encountered (although based on thorough analysis and historic monitoring of the Site, none is expected) MassDEP will be notified and the contamination managed in accordance with the MCP, and as outlined in the Release Abatement Measures Plan.

(NOTE: Asphalt pavement, brick, concrete and metal are banned from disposal at Massachusetts landfills and waste combustion facilities and wood is banned from disposal at Massachusetts landfills. See 310 CMR 19.017 for the complete list of banned materials.)

Will your project disturb asbestos containing materials? Yes _**X**_ No ___ ;
if yes, please consult state asbestos requirements at http://mass.gov/MassDEP/air/asbhom01.htm

A hazardous building materials survey was performed for the Project by TRC on in June of 2015. The survey identified detectable levels of hazardous materials on building components, as is typical in buildings of this era. Asbestos and hazardous building materials abatement will be performed prior to demolition of the existing Site buildings in accordance with applicable laws and regulations.

Describe anti-idling and other measures to limit emissions from construction equipment:

The Project will comply with the requirements of the Clean Construction Equipment Initiative to the extent reasonably practicable, including retrofitting diesel construction vehicles, or utilizing vehicles that use alternative fuels, such as ultra-low-sulfur diesel fuel to reduce emissions during temporary construction activities. In addition, the Commonwealth of Massachusetts anti-idling law will be enforced during the construction phase of the Project with the installation of on-site anti-idling signage.

DESIGNATED WILD AND SCENIC RIVER:

Is this project site located wholly or partially within a defined river corridor of a federally designated Wild and Scenic River or a state designated Scenic River? Yes ___ No **_X_**;
if yes, specify name of river and designation:

If yes, does the project have the potential to impact any of the "outstandingly remarkable" resources of a federally Wild and Scenic River or the stated purpose of a state designated Scenic River? Yes ___ No ___ ; if yes, specify name of river and designation: _____;
if yes, will the project will result in any impacts to any of the designated "outstandingly remarkable" resources of the Wild and Scenic River or the stated purposes of a Scenic River.
Yes ___ No ___ ;
if yes,describe the potential impacts to one or more of the "outstandingly remarkable" resources or stated purposes and mitigation measures proposed.

ATTACHMENTS:

1. List of all attachments to this document.
   See Table of Contents

2. U.S.G.S. map (good quality color copy, 8-½ x 11 inches or larger, at a scale of 1:24,000) indicating the project location and boundaries.
   See Figure 1

3.. Plan, at an appropriate scale, of existing conditions on the project site and its immediate environs, showing all known structures, roadways and parking lots, railroad rights-of-way, wetlands and water bodies, wooded areas, farmland, steep slopes, public open spaces, and major utilities.
   See Figure 3

4 Plan, at an appropriate scale, depicting environmental constraints on or adjacent to the project site such as Priority and/or Estimated Habitat of state-listed rare species, Areas of Critical Environmental Concern, Chapter 91 jurisdictional areas, Article 97 lands, wetland resource area delineations, water supply protection areas, and historic resources and/or districts.
   See Figures 2 and 7

5. Plan, at an appropriate scale, of proposed conditions upon completion of project (if construction of the project is proposed to be phased, there should be a site plan showing conditions upon the completion of each phase).
   See Figure 4

6. List of all agencies and persons to whom the proponent circulated the ENF, in accordance with 301 CMR 11.16(2).
   See Attachment C

7. List of municipal and federal permits and reviews required by the project, as applicable.
   See Table 1.2, Section 1.

LAND SECTION – all proponents must fill out this section

I. Thresholds / Permits

A. Does the project meet or exceed any review thresholds related to **land** (see 301 CMR 11.03(1)
___ Yes **_X_**No; if yes, specify each threshold:

II. Impacts and Permits

A. Describe, in acres, the current and proposed character of the project site, as follows:

	Existing	Change	Total
Footprint of buildings	8.8 AC±	-0.3 AC±	8.5 AC±
Internal roadways	4.7 AC±	0.4 AC±	5.1 AC±
Parking and other paved areas	15.3 AC±	-2.6 AC±	12.7 AC±
Other altered areas	20.7 AC±	2.5 AC±	23.2 AC±
Undeveloped areas	0 AC±	0 AC±	0 A±
Total: Project Site Acreage	49.5 AC±	0 AC±	49.5 AC±

B. Has any part of the project site been in active agricultural use in the last five years?
___ Yes **_X_**No; if yes, how many acres of land in agricultural use (with prime state or locally important agricultural soils) will be converted to nonagricultural use?

C. Is any part of the project site currently or proposed to be in active forestry use?
___ Yes **_X_**No; if yes, please describe current and proposed forestry activities and indicate whether any part of the site is the subject of a forest management plan approved by the Department of Conservation and Recreation:

D. Does any part of the project involve conversion of land held for natural resources purposes in accordance with Article 97 of the Amendments to the Constitution of the Commonwealth to any purpose not in accordance with Article 97? ___ Yes **_X_**No; if yes, describe:

E. Is any part of the project site currently subject to a conservation restriction, preservation restriction, agricultural preservation restriction or watershed preservation restriction? ___ Yes**_X_**No; if yes, does the project involve the release or modification of such restriction? ___Yes ___No; if yes, describe:

F. Does the project require approval of a new urban redevelopment project or a fundamental change in an existing urban redevelopment project under M.G.L.c.121A? ___ Yes **X**No; if yes, describe:

G. Does the project require approval of a new urban renewal plan or a major modification of an existing urban renewal plan under M.G.L.c.121B? Yes ___ No **X**if yes, describe:

III. Consistency

A. Identify the current municipal comprehensive land use plan
Title:_ **Sustainable Sudbury – 2001 Master Plan**

B. Describe the project's consistency with that plan with regard to:
1) economic development
2) adequacy of infrastructure
3) open space impacts
4) compatibility with adjacent land uses

The 2001 Master Plan specifically identifies the Project Site as a key location for redevelopment and expansion once vacated by Raytheon to maintain the tax base and

capitalize on the existing infrastructure available on the Site. The plan notes that the infrastructure, including the wastewater treatment plant, is in place to support continued and expanded development on the Site.

The Project is consistent with the planning goals to preserve open space by redeveloping a previously developed site, and is consistent and compatible with the adjacent land uses. The Project also supports the plan's goal of encouraging a greater diversity of housing opportunities in Sudbury to meet the needs of a changing and diversified population with respect to age, household size and income. The Site is specifically designated as an appropriate location to develop multifamily housing pursuant to M.G.L Ch. 40B and the Project advances this goal.

C. Identify the current Regional Policy Plan of the applicable Regional Planning Agency (RPA)
RPA: Metropolitan Area Planning Council (MAPC)

Title: **MetroFuture** Date **May 2008**

D. Describe the project's consistency with that plan with regard to:
1) economic development
2) adequacy of infrastructure
3) open space impacts

The Town of Sudbury has identified the Site as a preferred location for redevelopment with an expressed desire to include a mix of commercial and residential uses including affordable housing.

Refer to Section 1.8 for additional information.

RARE SPECIES SECTION

I. Thresholds / Permits

A. Will the project meet or exceed any review thresholds related to **rare species or habitat** (see 301 CMR 11.03(2))? ___ Yes **_X_** No; if yes, specify, in quantitative terms:

(NOTE: If you are uncertain, it is recommended that you consult with the Natural Heritage and Endangered Species Program (NHESP) prior to submitting the ENF.)

B. Does the project require any state permits related to **rare species or habitat**? ___ Yes **_X_** No

C. Does the project site fall within mapped rare species habitat (Priority or Estimated Habitat?) in the current Massachusetts Natural Heritage Atlas (attach relevant page)? ___ Yes **_X_** No.

D. If you answered "No" to all questions A, B and C, proceed to the **Wetlands, Waterways, and Tidelands Section**. If you answered "Yes" to either question A or question B, fill out the remainder of the Rare Species section below.

WETLANDS, WATERWAYS, AND TIDELANDS SECTION

I. Thresholds / Permits

A. Will the project meet or exceed any review thresholds related to **wetlands, waterways, and tidelands** (see 301 CMR 11.03(3))? ___ Yes **_X_** No; if yes, specify, in quantitative terms:

B. Does the project require any state permits (or a local Order of Conditions) related to **wetlands, waterways, or tidelands**? **_X__** Yes **___**No; if yes, specify which permit:
Local Order of Conditions and, if required, a Superseding Order of Conditions from MassDEP

C. If you answered "No" to both questions A and B, proceed to the **Water Supply Section**. If you answered "Yes" to either question A or question B, fill out the remainder of the Wetlands, Waterways, and Tidelands Section below.

II. Wetlands Impacts and Permits

A. Does the project require a new or amended Order of Conditions under the Wetlands Protection Act (M.G.L. c.131A)? **_X_**Yes ___ No; if yes, has a Notice of Intent been filed? **X** Yes __ No; if yes, list the date and MassDEP file number: _10/30/15 (301-1169); if yes, has a local Order of Conditions been issued? **X** Yes ___ No; Was the Order of Conditions appealed? **X** Yes ___ No. Will the project require a Variance from the Wetlands regulations? ___ Yes **X** No.

B. Describe any proposed permanent or temporary impacts to wetland resource areas located on the project site:

The Project as currently designed is not anticipated to require any permanent impacts to wetlands or waterways. Temporary impacts due to construction may occur in association with the roadway improvements on Boston Post Road. The applicant will utilize construction best practices to minimize construction related impacts and will restore all impacted wetland areas upon completion of construction.

C. Estimate the extent and type of impact that the project will have on wetland resources, and indicate whether the impacts are temporary or permanent:

Coastal Wetlands	Area (square feet) or Length (linear feet)	Temporary or Permanent Impact?
Land Under the Ocean		
Designated Port Areas		
Coastal Beaches		
Coastal Dunes		
Barrier Beaches		
Coastal Banks		
Rocky Intertidal Shores		
Salt Marshes		
Land Under Salt Ponds		
Land Containing Shellfish		
Fish Runs		
Land Subject to Coastal Storm Flowage		
Inland Wetlands		
Bank (lf)		
Bordering Vegetated Wetlands	**<5,000 sf***	**Temporary**
Isolated Vegetated Wetlands		
Land under Water		
Isolated Land Subject to Flooding		
Borderi ng Land Subject to Flooding		

Riverfront Area _____ _____

*** No impact anticipated**

D. Is any part of the project:

1. proposed as a **limited project**? ___ Yes **_X_**No; if yes, what is the area (in sf)?____
2. the construction or alteration of a **dam**? ___ Yes **_X_**No; if yes, describe:
3. fill or structure in a **velocity zone** or **regulatory floodway**? ___ Yes _X_No
4. dredging or disposal of dredged material? ___ Yes **_X_**No; if yes, describe the volume of dredged material and the proposed disposal site:
5. a discharge to an **Outstanding Resource Water (ORW)** or an **Area of Critical Environmental Concern (ACEC)**? ___ Yes **_X_**No
6. subject to a wetlands restriction order? ___ Yes **_X_**No; if yes, identify the area (in sf):
7. located in buffer zones? **_X_**Yes ___No; if yes, how much (in sf) **330,000 SF±***

***This calculation includes areas were state jurisdictional buffer zones are redeveloped (i.e. new parking or buildings replace old parking lots,) AND where existing pervious and impervious developed areas are replaced with new open space areas. Overall the Project will improve wetland quality by enhancing buffer zones and reducing impervious coverage on the Site.**

E. Will the project:

1. be subject to a local wetlands ordinance or bylaw? **_X_**Yes ___ No
2. alter any federally-protected wetlands not regulated under state law? ___ Yes **_X_**No; if yes, what is the area (sf)?

III. Waterways and Tidelands Impacts and Permits

A. Does the project site contain waterways or tidelands (including filled former tidelands) that are subject to the Waterways Act, M.G.L.c.91? ___ Yes **_X_**No; if yes, is there a current Chapter 91 License or Permit affecting the project site? ___ Yes ___ No; if yes, list the date and license or permit number and provide a copy of the historic map used to determine extent of filled tidelands:

B. Does the project require a new or modified license or permit under M.G.L.c.91? ___Yes **_X_**No; if yes, how many acres of the project site subject to M.G.L.c.91 will be for non-water-dependent use? Current ___ Change ___ Total ___
If yes, how many square feet of solid fill or pile-supported structures (in sf)?

C. For non-water-dependent use projects, indicate the following:
Area of filled tidelands on the site:_____
Area of filled tidelands covered by buildings:_____
For portions of site on filled tidelands, list ground floor uses and area of each use:
_____
Does the project include new non-water-dependent uses located over flowed tidelands? Yes ___ No ___
Height of building on filled tidelands_____

Also show the following on a site plan: Mean High Water, Mean Low Water, Water-dependent Use Zone, location of uses within buildings on tidelands, and interior and exterior areas and facilities dedicated for public use, and historic high and historic low water marks.

D. Is the project located on landlocked tidelands? ___ Yes **_X_**No; if yes, describe the project's impact on the public's right to access, use and enjoy jurisdictional tidelands and describe

measures the project will implement to avoid, minimize or mitigate any adverse impact:

E. Is the project located in an area where low groundwater levels have been identified by a municipality or by a state or federal agency as a threat to building foundations? ___Yes **_X_**No; if yes, describe the project's impact on groundwater levels and describe measures the project will implement to avoid, minimize or mitigate any adverse impact:

F. Is the project non-water-dependent **and** located on landlocked tidelands **or** waterways or tidelands subject to the Waterways Act **and** subject to a mandatory EIR? ___ Yes **_X_** No;
(NOTE: If yes, then the project will be subject to Public Benefit Review and Determination.)

G. Does the project include dredging? ___ Yes **_X_** No; if yes, answer the following questions:
What type of dredging? Improvement ___ Maintenance ___ Both ____
What is the proposed dredge volume, in cubic yards (cys) _____
What is the proposed dredge footprint ____length (ft) ___width (ft)____depth (ft);
Will dredging impact the following resource areas?
Intertidal Yes__ No__; if yes, ___ sq ft
Outstanding Resource Waters Yes__ No__; if yes, ___ sq ft
Other resource area (i.e. shellfish beds, eel grass beds) Yes__ No__; if yes __ sq ft
If yes to any of the above, have you evaluated appropriate and practicable steps to: 1) avoidance; 2) if avoidance is not possible, minimization; 3) if either avoidance or minimize is not possible, mitigation?
If no to any of the above, what information or documentation was used to support this determination?
Provide a comprehensive analysis of practicable alternatives for improvement dredging in accordance with 314 CMR 9.07(1)(b). Physical and chemical data of the sediment shall be included in the comprehensive analysis.
Sediment Characterization
Existing gradation analysis results? __Yes ___No: if yes, provide results.
Existing chemical results for parameters listed in 314 CMR 9.07(2)(b)6? ___Yes ____No; if yes, provide results.
Do you have sufficient information to evaluate feasibility of the following management options for dredged sediment? If yes, check the appropriate option.

Beach Nourishment ___
Unconfined Ocean Disposal ___
Confined Disposal:
Confined Aquatic Disposal (CAD) ___
Confined Disposal Facility (CDF) ___
Landfill Reuse in accordance with COMM-97-001 ___
Shoreline Placement ___
Upland Material Reuse____
In-State landfill disposal____
Out-of-state landfill disposal ____
(NOTE: This information is required for a 401 Water Quality Certification.)

IV. Consistency:

A. Does the project have effects on the coastal resources or uses, and/or is the project located within the Coastal Zone? ___ Yes **_X_** No; if yes, describe these effects and the projects consistency with the policies of the Office of Coastal Zone Management:

B. Is the project located within an area subject to a Municipal Harbor Plan? ___ Yes **_X_** No; if yes, identify the Municipal Harbor Plan and describe the project's consistency with that plan:

WATER SUPPLY SECTION

I. Thresholds / Permits

A. Will the project meet or exceed any review thresholds related to **water supply** (see 301 CMR 11.03(4))? ___ Yes **_X_** No; if yes, specify, in quantitative terms:

B. Does the project require any state permits related to **water supply**? ___ Yes **_X_** No; if yes, specify which permit:

C. If you answered "No" to both questions A and B, proceed to the **Wastewater Section**. If you answered "Yes" to either question A or question B, fill out the remainder of the Water Supply Section below.

WASTEWATER SECTION

I. Thresholds / Permits

A. Will the project meet or exceed any review thresholds related to **wastewater** (see 301 CMR 11.03(5))? **_X_** Yes ___ No; if yes, specify, in quantitative terms:

301 CMR 11.03(5)(b)3.a.: Construction of one or more New sewer mains that will result in an Expansion in the flow to a wastewater treatment and/or disposal facility by 10% of existing Capacity;

301 CMR 11.03(5)(b)4.c.i.: New discharge or Expansion in discharge to groundwater of 10,000 or more gpd of sewage within an area, zone or district established, delineated or identified as necessary or appropriate to protect a public drinking water supply, an area established to protect a nitrogen sensitive embayment, an area within 200 feet of a tributary to a public surface drinking water supply, or an area within 400 feet of a public surface drinking water supply;

B. Does the project require any state permits related to **wastewater**? **_X_** Yes ___ No; if yes, specify which permit:

Groundwater Discharge Permit Application (Modification) from MassDEP

C. If you answered "No" to both questions A and B, proceed to the **Transportation -- Traffic Generation Section**. If you answered "Yes" to either question A or question B, fill out the remainder of the Wastewater Section below.

II. Impacts and Permits

A. Describe the volume (in gallons per day) and type of disposal of wastewater generation for existing and proposed activities at the project site (calculate according to 310 CMR 15.00 for septic systems or 314 CMR 7.00 for sewer systems):

	Existing	Change	Total
Discharge of sanitary wastewater	**50,000 GPD**	**40,000 GPD**	**90,000 GPD***
Discharge of industrial wastewater	**N/A**	**N/A**	**N/A**
TOTAL	**50,000 GPD**	**40,000 GPD**	**90,000 GPD***

	Existing	Change	Total
Discharge to groundwater	**50,000 GPD**	**40,000 GPD**	**90,000 GPD***
Discharge to outstanding resource water	**N/A**	**N/A**	**N/A**
Discharge to surface water	**N/A**	**N/A**	**N/A**
Discharge to municipal or regional wastewater facility	**N/A**	**N/A**	**N/A**
TOTAL	**50,000 GPD**	**40,000 GPD**	**90,000 GPD***

***Existing wastewater generation is assumed to be the equivalent of the permitted flow for the existing treatment plant. Wastewater generation for the Project is estimated to be 82k GPD based on Title V estimates for the proposed Project uses. The Proponent is seeking to permit up to 90k GPD of flow (based on Title V estimates) for the enhanced wastewater treatment plant to allow limited additional flexibility within the commercial portion of the Project where tenants have not been identified. Through the use of water conservation measures, it is anticipated that the actual wastewater generation will be substantially less**

than the Title V estimates for the uses proposed, with anticipated reductions of 20-40% percent based on Title V rates, depending on the use.

B. Is the existing collection system at or near its capacity? ___ Yes __X__ No; if yes, then describe the measures to be undertaken to accommodate the project's wastewater flows:

A new collection system will be constructed within the Site to serve the proposed buildings and uses. The system will be consistent with current standards and as such will serve to dramatically reduce the potential for inflow and infiltration in the collection system.

C. Is the existing wastewater disposal facility at or near its permitted capacity? __X__ Yes___ No; if yes, then describe the measures to be undertaken to accommodate the project's wastewater flows:

The Project proposes to improve and enhance the existing on-site wastewater treatment plant. The upgrades will provide system redundancy and treatment enhancements to maintain an effective and resilient system, and to protect adjacent water resources. Please see Section 3 for additional information on Project wastewater treatment.

D. Does the project site currently contain a wastewater treatment facility, sewer main, or other wastewater disposal facility, or will the project involve construction of a new facility? __X__ Yes ___ No; if yes, describe as follows:

	Permitted	Existing Avg Daily Flow	Project Flow	Total
Wastewater treatment plant capacity (in gallons per day)	**50,000 GPD**	**42,200 GPD***	**90,000 GPD****	**90,000 GPD**

*Per Title V estimates.

E. If the project requires an interbasin transfer of wastewater, which basins are involved, what is the direction of the transfer, and is the interbasin transfer existing or new?

Not applicable, the Project does not require an interbasin transfer of wastewater.

F. Does the project involve new sewer service by the Massachusetts Water Resources Authority (MWRA) or other Agency of the Commonwealth to a municipality or sewer district? ___ Yes__X__ No

G. Is there an existing facility, or is a new facility proposed at the project site for the storage, treatment, processing, combustion or disposal of sewage sludge, sludge ash, grit, screenings, wastewater reuse (gray water) or other sewage residual materials? __X__ Yes ___ No; if yes, what is the capacity (tons per day):

	Existing	Change	Total
Storage	**N/A**	**N/A**	**N/A**
Treatment	**N/A**	**N/A**	**N/A**
Processing	**N/A**	**N/A**	**N/A**
Combustion	**N/A**	**N/A**	**N/A**
Disposal **(treated wastewater)**	**0.05±**	**0.04±**	**0.9±**

H. Describe the water conservation measures to be undertaken by the project, and other wastewater mitigation, such as infiltration and inflow removal.

Water conservation will be implemented throughout the Project to minimize the use of

potable water and subsequent generation of wastewater with an estimated reduction of 20-40% compared to Title V rates. In addition, the construction of new watertight sewer pipes throughout the Site will eliminate any old cracked pipes that may be contributing to inflow and infiltration into the existing system. Refer to Section 3 for additional information.

III. Consistency

A. Describe measures that the proponent will take to comply with applicable state, regional, and local plans and policies related to wastewater management:

The Proponent will prepare and submit a Hydrogeological Evaluation Report to the MassDEP, followed by an application to modify the existing Groundwater Discharge Permit. Through these filings the Proponent will detail compliance with all applicable state, regional, and plans and policies related to wastewater management.

B. If the project requires a sewer extension permit, is that extension included in a comprehensive wastewater management plan? ___ Yes__**X**__ No; if yes, indicate the EEA number for the plan and whether the project site is within a sewer service area recommended or approved in that plan:

TRANSPORTATION SECTION (TRAFFIC GENERATION)

I. Thresholds / Permit

A. Will the project meet or exceed any review thresholds related to **traffic generation** (see 301 CMR 11.03(6))? **__X__** Yes ___ No; if yes, specify, in quantitative terms:

B. Does the project require any state permits related to **state-controlled roadways**? **__X__** Yes ___ No; if yes, specify which permit:

Vehicle Access Permit from MassDOT

C. If you answered "No" to both questions A and B, proceed to the **Roadways and Other Transportation Facilities Section**. If you answered "Yes" to either question A or question B, fill out the remainder of the Traffic Generation Section below.

II. Traffic Impacts and Permits

A. Describe existing and proposed vehicular traffic generated by activities at the project site:

	Existing	Change	Total
Number of parking spaces	**2,040 ±**	**(740) ±**	**1,300 ±**
Number of vehicle trips per day	**5,110**	**2,810**	**7,920**
ITE Land Use Code(s):	**710, 760, 140**	**- * -**	**820, 220, 252, 254**

*** All existing LUCs are replaced by the new LUCs shown in the "Total" category**

B. What is the estimated average daily traffic on roadways serving the site?

Roadway	Existing	Change	Total
1. Boston Post Rd (Route 20)	**20,500**	**5,200± ***	**25,700±**

*** Based on "unadjusted" trip generation estimates (does not include internal capture and pass-by adjustments)**

C. If applicable, describe proposed mitigation measures on state-controlled roadways that the project proponent will implement:

The full-build Project involves the implementation of multi-modal improvement measures (passenger vehicles, trucks, emergency responders, pedestrians and cyclists). Specifically, the Project's retail/grocery store phase will include a signalized Site access that will also improve access for the existing retail plaza across the street (presently unsignalized), geometric improvements, traffic signal coordination, installation of a fire station preemption signal and bicycle and pedestrian measures.

Please see the attached TIAS in Attachment D for details.

D. How will the project implement and/or promote the use of transit, pedestrian and bicycle facilities and services to provide access to and from the project site?

Off-site mitigation measures will comply with the requirements of the Heathy Transportation Policy Directive. Specifically, improvement measures associated with the Project's retail/grocery store phase will include new sidewalk, bicycle and signalized crosswalk enhancement on Boston Post Road along the Site frontage that are presently lacking. The Project will also make allowances for an internal pedestrian connection to an

adjacent commercial property as well as potential connections to the future Mass Central Rail Trail.

Please see the attached TIAS in Attachment D for details.

C. Is there a Transportation Management Association (TMA) that provides transportation demand management (TDM) services in the area of the project site? **X** Yes ____ No; if yes, describe if and how will the project will participate in the TMA:

D. Will the project use (or occur in the immediate vicinity of) water, rail, or air transportation facilities? ____ Yes **X** No; if yes, generally describe:

E. If the project will penetrate approach airspace of a nearby airport, has the proponent filed a Massachusetts Aeronautics Commission Airspace Review Form (780 CMR 111.7) and a Notice of Proposed Construction or Alteration with the Federal Aviation Administration (FAA) (CFR Title 14 Part 77.13, forms 7460-1 and 7460-2)?

Not applicable

III. Consistency

Describe measures that the proponent will take to comply with municipal, regional, state, and federal plans and policies related to traffic, transit, pedestrian and bicycle transportation facilities and services:

The improvement measures proposed in connection with this Project are consistent with the Town of Sudbury's Route 20 Corridor Study findings as well as MassDOT's Healthy Transportation Policy Directive.

See Section 1 of the attached narrative for additional information.

TRANSPORTATION SECTION (ROADWAYS AND OTHER TRANSPORTATION FACILITIES)

I. Thresholds

A. Will the project meet or exceed any review thresholds related to **roadways or other transportation facilities** (see 301 CMR 11.03(6))? ___ Yes __**X**__ No; if yes, specify, in quantitative terms:

B. Does the project require any state permits related to **roadways or other transportation facilities**? ___ Yes __**X**__ No; if yes, specify which permit:

C. If you answered "No" to both questions A and B, proceed to the **Energy Section**. If you answered "Yes" to either question A or question B, fill out the remainder of the Roadways Section below.

ENERGY SECTION

I. Thresholds / Permits

A. Will the project meet or exceed any review thresholds related to **energy** (see 301 CMR 11.03(7))? ___ Yes _**X**_ No; if yes, specify, in quantitative terms:

B. Does the project require any state permits related to **energy**? ___ Yes _**X**_ No; if yes, specify which permit:

C. If you answered "No" to both questions A and B, proceed to the **Air Quality Section**. If you answered "Yes" to either question A or question B, fill out the remainder of the Energy Section below.

AIR QUALITY SECTION

I. Thresholds

A. Will the project meet or exceed any review thresholds related to **air quality** (see 301 CMR 11.03(8))? ___ Yes _**X**_ No; if yes, specify, in quantitative terms:

B. Does the project require any state permits related to **air quality**? ___ Yes _**X**_ No; if yes, specify which permit:

C. If you answered "No" to both questions A and B, proceed to the **Solid and Hazardous Waste Section**. If you answered "Yes" to either question A or question B, fill out the remainder of the Air Quality Section below.

SOLID AND HAZARDOUS WASTE SECTION

I. Thresholds / Permits

A. Will the project meet or exceed any review thresholds related to **solid or hazardous waste** (see 301 CMR 11.03(9))? ___ Yes _**X**_ No; if yes, specify, in quantitative terms:

E. Does the project require any state permits related to **solid and hazardous waste**? ___ Yes _**X**_ No; if yes, specify which permit:

C. If you answered "No" to both questions A and B, proceed to the **Historical and Archaeological Resources Section**. If you answered "Yes" to either question A or question B, fill out the remainder of the Solid and Hazardous Waste Section below.

HISTORICAL AND ARCHAEOLOGICAL RESOURCES SECTION

I. Thresholds / Impacts

A. Have you consulted with the Massachusetts Historical Commission? ___ Yes _**X**_ No; if yes, attach correspondence. For project sites involving lands under water, have you consulted with the Massachusetts Board of Underwater Archaeological Resources? ____Yes ____ No; if yes, attach correspondence

B. Is any part of the project site a historic structure, or a structure within a historic district, in either case listed in the State Register of Historic Places or the Inventory of Historic and Archaeological Assets of the Commonwealth? ___ Yes _**X**_ No; if yes, does the project involve the demolition of all or any exterior part of such historic structure? ___ Yes ___ No; if yes, please describe:

C. Is any part of the project site an archaeological site listed in the State Register of Historic Places or the Inventory of Historic and Archaeological Assets of the Commonwealth? ___ Yes _**X**_ No; if yes, does the project involve the destruction of all or any part of such archaeological site? ___ Yes ___ No; if yes, please describe:

D. If you answered "No" to all parts of both questions A, B and C, proceed to the **Attachments and Certifications** Sections. If you answered "Yes" to any part of either question A or question B, fill out the remainder of the Historical and Archaeological Resources Section below.

CERTIFICATIONS:

1. The Public Notice of Environmental Review has been/will be published in the following newspapers in accordance with 301 CMR 11.15(1):

   Sudbury Town Crier on February 18, 2016

2. This form has been circulated to Agencies and Persons in accordance with 301 CMR 11.16(2).

Signatures:

2/12/16	Stephen C Senna		
Date	Signature of Responsible Officer or Proponent	Date	Signature of person preparing NPC (if different from above)
STEPHEN C. SENNA		Seth Lattrell	
Name (print or type)		Name (print or type)	
BPR Sudbury Development LLC		VHB	
Firm/Agency		Firm/Agency	
2310 Washington Street		101 Walnut Street	
Street		Street	
Newton Falls/MA/02462		Watertown/MA/02472	
Municipality/State/Zip		Municipality/State/Zip	
617-527-9800		617-728-7777	
Phone		Phone	

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Project Description and Alternatives

1.1 Introduction

Pursuant to the regulations of the Massachusetts Environmental Policy Act (MEPA), BPR Sudbury Development LLC, a joint venture of National Development and AvalonBay Communities, Inc. affiliates (the "Proponent") submits this Environmental Notification Form (ENF) for the redevelopment of the former Raytheon site in Sudbury, MA (the "Project"). The Project Site totals approximately 50 acres bordered by Boston Post Road (Route 20) to the south, to the east by commercial properties, to the west by an agricultural use and open space and to the north by a former railroad right of way (the "Project Site" or the "Site"). Refer to Figure 1 for a Site location map and Figure 2 for project context.

The mixed-use redevelopment Project will reinvigorate the Site and introduce new grocer, shopping and dining options, public uses, a variety of housing options, open space, and environmental benefits. The Project consists of demolition of the existing buildings and construction of a new mixed-use development including retail, active-adult residential condominiums, a memory care assisted living community, and mixed-income residential apartment homes developed pursuant to Chapter 40B of the Massachusetts General Laws (M.G.L.).[1] Included in the new retail space is a 45,000 square foot village-style grocery store and 35,000 square feet of restaurant/commercial space.

The Project brings myriad benefits to the community and the region including new jobs, housing opportunities and retail/grocery options. The proposed development program provides a broad range of housing options, including affordable rental apartments that advance the Town's M.G.L. Chapter 40B needs and address the specific goals identified in various local and regional planning documents including the 2001 Sustainable Sudbury Plan, the 2012 Sudbury Housing Production Plan, the 2012 Route 20 business district Project Evaluation Report, and the Route 20 Corridor Study. In addition to providing a broad spectrum of much needed housing options and new retail space, the Project will enhance existing Site infrastructure and systems (including modernizing the

[1] M.G.L. Chapter 40B is a state statute that enables local Zoning Boards of Appeals to approve affordable housing developments.

on-site wastewater treatment plan), and replace inefficient and antiquated buildings with high-efficiency buildings and fixtures

1.2 Existing Site Conditions

The Project Site is approximately 50 acres in size and located at 526 and 528 Boston Post Road in Sudbury. Approximately 46 acres are zoned Limited Industrial (LID), and the remainder of the Site is zoned Residential A (RESA). The Site is bounded to the south by Boston Post Road (Route 20) and to the north by a former railroad right of way, with commercial and agricultural properties to the east and west. Figure 3 illustrates the existing site conditions.

The existing buildings, totaling 563,300 square feet, were constructed in several phases throughout the latter half of the 20th century, and beginning around 1958 by the former owner Raytheon (the "Former Owner"). The two main buildings are located on the industrially zoned portion of the property, and an approximately 7,000-square foot building (the Beltran building) is located on the residential portion of the Site. The remainder of the Site includes impervious parking surfaces (2,040 spaces), stormwater control features, landscaped areas and jurisdictional wetlands. Currently, approximately 28 acres of the 50-acre property is impervious area, comprised of buildings, parking areas and related infrastructure

According to the most recently available data provided by the Massachusetts Natural Heritage and Endangered Species Program[2] (NHESP), the Site is not located within any Priority Habitat of Rare Species and Estimated Habitat of Rare Wildlife. There are no certified or potential vernal pools located on or adjacent to the Site. No portion of the Site is located within an Area of Critical Environmental Concern (ACEC). According to DEP, the Site is not located in an area designated as an Outstanding Resource Water[3]. The Site is subject to the Massachusetts Contingency Plan and there are three previously reported Release Tracking Numbers for the Site. Refer to Section 2 *Environmental Conditions* of this ENF for further details.

The most recently issued Flood Insurance Rate Map (FIRM)[4] for the area (FEMA Floodway Map Number 25017C0506F, Panel 506, dated July 7, 2014, produced by the Federal Emergency Management Agency (FEMA)), indicates that the Project Site is not located within a 100- or 500-year floodplain.

1.3 Project Description

The following section presents the proposed development program and other project components, and the construction schedule.

[2] NHESP, 2008. Massachusetts Natural Heritage Atlas. 13th Edition.
[3] DEP, 2010. Designated Outstanding Resource Waters of Massachusetts.
[4] Federal Emergency Management Agency, National Hazard Flood Layer, Digital Flood Insurance Rate Map (DFIRM).

1.3.1 Development Program

As illustrated in the table below, the Project consists of several independent components which collectively will comprise a vibrant mixed-use development with new open space, retail and restaurants that will transform an obsolete and aging office, research and development site. In addition to these on-site amenities, the development provides walkable access to adjacent retail, office, and other services along Boston Post Road. The final development program may be subject to modification based upon tenant or user demands as well as the completion of the necessary entitlement processes. The new uses will contribute to a vibrant mixed-use community, which is consistent with local planning and housing initiatives and will act as a catalyst for future planned development of the Route 20 corridor. The Project also includes local roadway improvements, major upgrades to the streetscape and landscaping, improved water quality and creative integration of existing environmental resources that form the framework of the development.

TABLE 1.1 PROPOSED DEVELOPMENT PROGRAM

Use	***Size***
Avalon	
Residential Apartment Homes	250 Homes Anticipated to be approximately 50% 1 bedroom, 40% 2 bedroom 10% 3 bedroom
Leasing Office	6,000 sf
Maintenance Shop	1,500 sf
National Development	
Memory Care Assisted Living (Bridges) Community	48 Units – 54 Beds
Active Adult Residential Condominium	Up to 60 condo units
Retail	Up to 80,000 sf total - 45k village grocery - 35k dry goods and restaurants
Total	**600,000 SF±**

As illustrated in Figure 4, the retail component of the Project will abut Boston Post Road and serve as the main entrance to the development. Positioned behind the retail space and surrounding a central pond feature is the memory care assisted living community and active adult condominiums to the east and the mixed-income residential apartment community to the west. The development program may be subject to modification based on tenant/user demands and the completion of all necessary entitlement process. The current vision/program for the various components are described in further detail below.

Residential Apartments

The residential apartment community is anticipated to include approximately 250 new homes in a combination of building types, including 2- and 3-story townhouse buildings, containing approximately 54 units, and 3-story walk-up buildings containing 196 units. All of the homes are envisioned to have private entries and attached garages. A separate clubhouse building and leasing center includes a clubroom, fitness center, outdoor barbeque area, and swimming pool. Parking spaces are provided, located primarily in garages or surface lots behind buildings, with some additional spaces provided on-streets in front of the proposed buildings.

The proposed site plan design gives priority to a range of outdoor landscaped open spaces and pedestrian-friendly residential streets. A new green at the main entrance to the residential community evokes traditional residential greens, defined by the clarity of the surrounding streets and buildings. The new green draws on the public realm of the proposed market and retail development to the south and provides a 'front door' to the residential community. A new street, lined with 2- and 3-story townhouses and direct-entry buildings with expansive front porches, connects the entry green to the proposed 1-story clubhouse beyond. Centrally located, the clubhouse building serves as a focal point for the development, providing the primary recreational amenity for residents. The plan introduces a new street and sidewalk network across the Site reducing the scale of the 17.4-acre parcel to a comfortable residential scale. Unit entry doors and porches face the new street, contributing to a walkable neighborhood. On-street parallel parking is proposed, serving to slow passing vehicular traffic and also, together with the street trees, providing a buffer between the moving vehicles and pedestrians.

Retail

The retail component of the Project will feature up to 80,000 square feet of village-style mixed retail including a 45,000 square foot Whole Foods Market grocery store as the anchor retail tenant. The Whole Foods is anticipated to be constructed ahead of the rest of the retail area, and will serve to help maintain tax revenues generated from the Project Site during the transition period between the existing and proposed uses. In this role, the grocery store will serve as the catalyst for the redevelopment of the Project Site in accordance with the Town's planning goals.

Massing of the remaining buildings along Boston Post Road (Route 20) and the primary site entry drive are aimed at creating an activated streetscape with pedestrian amenities framed by buildings. Pedestrian walkways throughout the retail area will connect the commercial buildings to Boston Post Road and the other buildings on the Site, creating a walkable environment for visitors and residents. The retail area streetscape will be enhanced by trees and other plantings, benches and outdoor seating areas, as well as outdoor seating areas for the restaurants within the Site. The retail area will also engage the central green area, which is an open space amenity available to all further described below. These strategies are aimed to be in line with the Town's planning goals for the corridor and to help transform the character of the Route 20 corridor by limiting the view of larger parking lots, also in furtherance of the Town's planning goals.

Active-Adult Community

The active-adult community will consist of 60 for-sale residences, including 21 townhomes and 39 garden-style condos. The townhomes are proposed within two, three, and four-unit buildings and the garden-style cone within one 39-unit building. As an age-restricted community, every residence will be occupied by at least one person age 55 or older. Consistent with Low Impact Development (LID) design practices, the Project minimizes impervious area by utilizing a compact design approach and surface parking is minimized through the use of garage parking beneath the garden building and within the townhomes. The layout has been crafted in a manner that contains the proposed impervious footprint within the limits of the existing parking lot, and the design will result in an overall reduction of impervious area and enhancements to stormwater quality.

The proposed community will create an environment of residents of like-age looking to enjoy independent retirement living. Their location on the Site will afford many opportunities to engage with other 55+ residents, or with other residents of the project. Ample opportunities will exist to enjoy the outdoor spaces created by the Project; Residents will retire, relax, and rejuvenate without the worries that can come from living alone and maintaining a single family home.

Memory Care Assisted Living (Bridges)

The proposed memory care assisted living community is a 48 unit (54 bed) memory care assisted living complex focused on enhancing the health, well-being and overall quality of life for seniors suffering from Alzheimer's disease and memory loss. Modelled after a similar state of the art facility developed by National Development and EPOCH Senior Living, the complex features an open but secure floor plan with ample natural light. The Building will be organized into three distinct "households" each with private apartments and dedicated common areas including secure outdoor areas. Residents live in a family-like setting with supportive staff and programs.

The building orientation is designed to provide physical and visual separation between the main site entrance and the rest of the Site. This is intended to provide a sense of privacy for residents and users of the public open spaces, including views overlooking the central pond.

Residents of the memory care assisted living community receive specialized care designed specifically for individuals with memory challenges. With researched-based programming and specialized care teams on-site 24/7, the program provides a high quality level of care with personalized and individualized service. In addition to providing top-tier state of the art service and facilities, the community will be designed and programmed to encourage a social and engaging environment that supports healthy living and well-being.

1.3.2 Open Space and Landscaping

The open space and landscaping for the Project Site seeks to create an interconnected network of open spaces, varying in scale and use, both within the Project Site and to the adjacent off-site network. These interconnected areas are intended to serve both active and passive needs and be connected by a series of multimodal sidewalks and walking paths.

On-Site

The circulation network provides a dynamic connection between the planned mixed-uses for the Site and surrounding areas. This network will be buffered and softened by new edge plantings that adapt and change depending on the environments they travel through. A mix of wetland buffer restoration plantings and naturalized sweeps of native grasses will transition to traditional streetscape plantings of trees and shrubs, then will shift to a more traditional commercial/retail planting scheme of parking lot trees, stormwater treatment Low Impact Development plantings and ornamental grasses and screening shrubs. These multimodal circulation corridor will provide passage for residents, visitors, and animals within and across the Site.

The circulation corridor is intended to connect the future bike path planned for the right-of-way north of the Site through the parks, communities, and open spaces to the on-site retail to the roadway. The circulation corridor continues through to the off-site improvements discussed in detail below. The goal of the interconnected circulation corridor is to create new opportunities for active recreation, as well as to encourage walking/biking as an alternative to vehicle use.

Unique elements of the open space design on the Project are the opportunity to engage visually with the naturalized feature of the existing pond, as well as the opportunity to create usable open spaces within the Project for the passive or active enjoyment of residents and visitors. A new green, centrally located and framed by the retail area to the south and the residential apartment homes and memory care assisted living community to the north, is a modest park or green area. This programming of this space is in a preliminary state, but it is intended to provide an outdoor gathering space and amenity for residents and visitors.

Off-Site

The new layout will provide seamless visual, vehicular and pedestrian connections to the surrounding context by aligning the new intersection with the existing Shaw's Plaza across Boston Post Road (Route 20), and reinforcing the new intersection with an improved active streetscape that provides an anchor to Route 20. The roadway improvements will include new sidewalks on both sides of Boston Post Road, as well as bike lanes to tie the adjacent commercial areas into the on-site circulation corridor.

This open space will include elements such as a new sidewalk that runs through the Site to the property lines, street trees and select landscape with a variety of seasonal interest, and activated open spaces. The streetscape is further reinforced by a strong building edge with iconic architectural features and well landscaped parking lots that include parking lot trees, ornamental grasses, evergreen buffering shrubs and trees, landscaped stormwater treatment areas, and clean and functional site amenities.

1.3.3 Sustainability

As discussed below, the Proponent intends to implement sustainable design and construction principles and practices for the Project, which include energy efficient development.

Planning and Site Design

The Project location utilizes a developed property in close proximity to major commercial and retail amenities including grocery stores, pharmacies, restaurants and medical services. By utilizing an existing previously disturbed property, the Project avoids new environmental impacts, and instead will improve environmental conditions in and around the Site. The mixed-use nature of the Project will provide residents with on-site retail and entertainment to reduce vehicle trips and limit residents' dependency on car usage.

Site layout and landscaping treatment is designed with well-defined pedestrian ways leading to public spaces to promote walking, bicycling, and other active transportation options. With two bicycle trails planned within close proximity to the Site, the Mass Central Trail along the northern edge of the property and the Bruce Freeman Rail Trail approximately 1/4 mile away, the Site is well served by nearby recreational opportunities that encourage alternatives to motorized transportation.

Building Design and Operation

The individual components of the Project are designed separately, each with their own sustainability goals or certifications, however all buildings will be designed with energy saving building envelopes, fixtures, and appliances aimed toward limiting consumption and waste and reducing greenhouse gas emissions. The Project also will include water conserving measures aimed at reducing the potable water demand by at least 20% as compared to Title V flows.

Additionally, the Proponent has explored potential alternative energy sources such as rooftop solar power within the commercial uses. The Proponent has a proven record of environmental stewardship and responsibility, and is fully committed to exploring additional sustainability initiatives as the Project design progresses.

In addition to the direct sustainability initiatives of the Project, the retail partners of the Project will implement their own plans and programs geared toward sustainability. For example, the future grocer, Whole Foods, has a composter for sustainably managing food waste where food wasted is collected from the different departments within the grocery store, sorted in a collection table and ground into a slurry. The slurry is then held in a subsurface storage tank located outside the building. The tank is emptied regularly and the slurry is transferred to an anaerobic digester where it can generate electricity. The specific recipient of the slurry has not been identified yet for this specific Project, but with other Whole Foods stores, the recipients are typically farms who use it to create green electricity to run the farm operations or to sell back to the electric grid.

Massachusetts Stretch Energy Code

As part of the Green Communities Act of 2008, Massachusetts developed an optional building code that gives cities and towns the ability to choose stronger energy performance in buildings than the state building code (the "Stretch Energy Code"). Codified by the Board of Building Regulations and Standards as 780 CMR Appendix 115.AA of the 8th edition Massachusetts Building Code, the Stretch Energy Code is an appendix to the Massachusetts building code, based on further amendments to the International Energy Conservation Code (IECC). The Stretch Energy Code increases the energy efficiency code requirements for new construction and major residential renovations or additions in municipalities that adopt it. The Stretch Energy Code applies to both residential and commercial buildings and, specifically, for new commercial buildings over 5,000 square feet in size, including multi-family residential buildings over three (3) stories.

In 2010, the Town of Sudbury was designated a Green Community under the Green Communities Designation and Grant Program—an initiative of the Massachusetts Department of Energy Resources. In order to be designated a Green Community and, therefore, eligible for grant money available annually, communities are required to meet five rigorous qualification criteria one of which includes minimizing life-cycle costs, such as adopt and implement the Stretch Energy Code. The goal of the grant program is for a municipality to use grant money to assist residents, businesses, and the municipality departments/facilities reduce energy use or install renewable energy systems.

The current Stretch Energy Code requires projects to achieve at minimum a 20 percent energy efficiency compared to the state's energy code (the "Base Energy Code") by either meeting the performance standard of 20 percent better than ASHRAE 90.1-2007, or using a prescriptive energy code. On July 1, 2014, the IECC2009 and ASHRAE 90.1-2007 ceased to be a code option for non-Stretch Energy Code communities, and the IECC 2012 and ASHRAE standard 90.1-2010 became the new/updated state-wide Base Energy Code. The Project is committed to achieving or exceeding Stretch Energy Code requirements applicable to the Project at the time of construction.

1.4 Project Benefits

This section summarizes the mitigation, improvements and benefits of the Project. Each of these mitigations and benefits is described in greater detail in the sections and appendices following this section.

1.4.1 Land

- By siting the Project on previously developed land, the Project avoids alteration of any undisturbed land.
- The Project will create new open space and a network of pedestrian pathways throughout the 50-acre site with connections anticipated for future planned trail systems.

- The Project will reduce the overall impervious area on the Site by 2-3 acres by reducing the total number of parking spaces and replacing vast surface lots with a mix of surface, garage, and street parking in the residential portion of the Project.

1.4.2 Natural Resources Benefits

- The Project will incorporate measures to increase the function of these resources by enhancing the upland buffers where practicable.
- There are no state-listed Priority Habitats of Rare Species, no state Estimated Habitats of Rare Wildlife, and no Certified Vernal Pools located within the Project Site.
- Impacts to wetland resources associated with proposed roadway upgrades are anticipated to be minimal. The current design avoids any permanent impacts to wetland resources, however temporary impacts may occur during construction access, or modification to existing stormwater inlets and outfalls.
- The net environmental improvement of the site will help restore the functions of the on-site and off-site resource areas.

1.4.3 Site Environmental Conditions

- After extensive analysis by the current and Former Owner, no contamination in soil or groundwater that could pose a health risk to future residents has been identified based on the proposed redevelopment plan.
- Extensive analysis indicates that no impacts to neighboring properties or Town public water supply wells.
- The Proponent has engaged an LSP to develop a Release Abatement Measure Plan to identify and address any unanticipated conditions that could arise during the redevelopment of the site.

1.4.4 Stormwater and Water Quality

- Increasing open space and groundwater recharge to contribute to re-establishing components of a more natural water cycle (evapotranspiration, groundwater recharge and runoff) on the Site.
- Improving the surface water and groundwater quality will further protect the watershed of critical environmental resources.
- Protecting and minimizing disruption to existing wetland resource areas and wildlife habitat corridors through the maintenance and enhancement of existing vegetative protective buffers.
- Implementing a comprehensive temporary and permanent erosion control system and Long Term Operations and Maintenance Plan.

1.4.5 Water/Wastewater

The overall goal of the water and wastewater systems are to minimize the use of water and benefit the underlying aquifer by:

- Minimizing the potable water demand and corresponding wastewater discharge through the implementation of water-conservation measures such as low-flow fixtures, high efficiency appliances, individual metering of residential units where practicable, and limiting the use of potable water for irrigation purposes.
- Increasing recharge to the underlying aquifer through the upgrades of the existing wastewater treatment plant (WWTP).
- Avoiding inter-basin transfer by utilizing Town-supplied potable water from wells in Sudbury combined with the on-site WWTP.
- Enhancing the quality of the water discharged from the WWTP and reliability of the WWTP to provide additional benefits and protection of the underlying groundwater aquifer and public drinking water supply.

1.4.6 Transportation

- Improvements are consistent with the town's Route 20 Corridor Study and MassDOT's Healthy Transportation Policy Directive.
- Project is expected to generate less traffic during the weekday morning and weekday evening peak hours as compared to the existing use.
- Reduction in the peak hour traffic volumes is expected to have a noticeable beneficial effect on the area roadway weekday traffic operations.
- Improved safety at Site intersections by the implementation of traffic safety improvements on Boston Post Road.
- Includes Transportation Demand Management (TDM) measures.
- In connection with the Project's retail/grocery store phase, improved pedestrian accommodations by widening the existing sidewalk on the north side of Boston Post Road along the Site frontage and extending the limits of the existing sidewalk on the south side of Boston Post Road.
- Subject to right of way availability and in connection with the Project's retail/grocery store phase, addition of five-foot paved shoulders (which could become part of future bike lanes) on either side of Boston Post Road within the limits of the roadway improvements.

Refer to Attachment D for the full Traffic Impact and Access Study for analysis and supporting documentation.

1.4.7 Construction

Construction impacts are temporary in nature and will be minimized to the extent feasible through the implementation of a Construction Management Plan which will be reviewed by the Town. Mitigation associated with the plan is listed below:

- An Erosion Control and Sedimentation Plan to control construction-related land disturbance activities will be implemented, in accordance with the National Pollutant Discharge Elimination System (NPDES) General Permit requirements.
- The Proponent is committed to working with public officials to help ensure that appropriate traffic maintenance and protection measures are in place during construction.
- The Proponent will work to recycle building materials during demolition to the fullest extent practicable, except wallboard, fabric material, and insulation.
- Hazardous materials recovered during demolition will be disposed of in accordance with Massachusetts Department of Environmental Protection (DEP) requirements.
- The Proponent has engaged a third-party industrial hygienist to oversee the abatement contractor to preserve air quality.
- The Proponent has engaged an LSP who will develop and implement Release Abatement Measures Plans which are intended to identify and address any unknown conditions that may arise during construction.
- The Proponent will require on-site construction vehicles to use ultra-low-sulfur diesel fuel in vehicles, to the extent practicable, and will implement a no idling policy for on-site construction delivery vehicles.

1.4.8 Meeting Housing Demand

In regards to housing for the Town of Sudbury and the region, the Project will:

- Assist the Town in meeting its housing goals by providing affordable and alternative housing opportunities, in accordance with the Housing Production Plan approved by the Board of Selectmen on May 17, 2011, which specifically targets the site for such housing development.
- In addition to providing affordable housing, the Project will provide a housing mix that meets the needs of the community, by furnishing a range of sizes, styles, and rental as well as home ownership options that will cater to a variety of consumers including empty nesters, working families, working professionals, young families, retirees, and residents with memory care needs.

1.5 Construction Schedule/Phasing

Construction of the various elements of the Project is planned to occur concurrently; however based on the time required to construct certain components of the Project, as well as existing lease commitments to the current tenant, parts of the Project will start and be completed at different times, described generally as follows.

Subject to receipt of the required permits, site preparation and construction of the Project is anticipated to commence in the spring of 2016 with building demolition and construction of the grocery store. Once the existing tenant vacates Building 1 and 5 at the end of 2016, construction of the residential uses and the remaining commercial buildings is envisioned to begin. The

grocery store opening date is anticipated to be late summer 2017, with the remainder of the Project construction concluding at the end of 2018. Off-site improvements proposed at the Site frontage with Boston Post Road, including the traffic signal work, will be constructed as part of the Project's retail/grocery store phase and are expected to be substantially complete concurrent with the grocery store opening.

The overall Project is anticipated to be complete by December 2018.

1.6 Anticipated Permits/Approvals

Table 1.2 lists the anticipated permits and approvals from state and local governmental agencies, which are anticipated to be required for the Project.

TABLE 1.2 ANTICIPATED PROJECT PERMITS

Agency/Department	Permit
Federal	
U.S. Environmental Protection Agency	National Pollutant Discharge Elimination System (NPDES) Construction General Permit
State	
Executive Office of Energy and Environmental Affairs	MEPA Certificate
Massachusetts Department of Environmental Protection	Groundwater Discharge Permit Modification
Massachusetts Department of Environmental Protection	Superseding Order of Conditions
Massachusetts Department of Transportation	Vehicle Access Permit
Local	
Sudbury Conservation Commission	Order of Conditions
Sudbury Zoning Board of Appeals	Major Commercial Project Special Permit, Signage Permits, Comprehensive Permit M.G.L. Ch. 40B (encompasses all local approvals required for the Project's multi-family phase)
Sudbury Town Meeting	Amendment to the Town of Sudbury Zoning By-Law
Sudbury Planning Board	Site Plan Review, Stormwater Permit, Consistency Review
Design Review Board	Architectural and Signage Design Review, Landscape Review
Sudbury Board of Health	Irrigation Well Permit

1.7 Project Alternatives

1.7.1 No Build

The No-Build Alternative considers the reoccupation of the existing 563,300 square feet of office space by other office/R&D tenants. The No-Build Alternative does not consider the practical obsolescence of the existing buildings/facilities and the lack of market demand for this scale and building type. Nor does it include the site improvements or amenities needed to attract future clients and does not meet the identified mixed-use redevelopment goals or housing needs of the Town. The benefits associated with improvements to the stormwater management system, reduction in impervious coverage, enhancements to pedestrian accommodations and upgrades to the wastewater treatment plan would not be realized in this scenario. Please refer to Figure 3 for the Existing Conditions Plan.

1.7.2 As-of-Right Alternative

The As-of-Right Alternative includes 80,000 sf of retail space, 260,000 square feet of office space, and 230,000 square feet of research and development and warehouse space, consistent with the current Limited Industrial Zoning District. In an As-of-Right scenario, many of the Town's planning goals would not be realized, which is why the Route 20 Corridor Study and the Sudbury Housing Production Plan, as discussed in Section 1.8, suggest a mixed-use overlay zone for this parcel. As with the No-Build Alternative, the As-of-Right Alternative does not consider the practical market limitations associated with this development program and its failure to advance the Town's identified housing needs. Please refer to Figure 12 the As-of-Right Alternative Plan.

1.7.3 Preferred Alternative

The Preferred Alternative represents the Project, as described previously above (shown in Figure 4) and analyzed in this ENF. Overall the Preferred Alternative aims to provide for a mix of uses which support and enhance the community, and reflect the nature and character of the Town. The Preferred Alternative will also serve the needs of the community by satisfying the existing affordable housing gap. Please refer to Figure 4.

	No – Build Alternative	As-of Right Alternative	Preferred Alternative
Impervious Cover	No change	No change	Reduction
Peak Hour Trips	Re-tenanting of the existing buildings for office/R&D uses would generate more impacts on weekdays than the proposed use	Similar to the No-Build alternative , with the added intensity of the retail traffic	Substantially lower weekday peak hour traffic impacts when compared to the re-tenanting and as-of-right alternatives. Additionally, this alternative will include pedestrian and

			roadway improvements and better time/day of week distribution to disperse impacts of the mixed-use development.
Number of Parking Spaces	2040	+/-1850	Decrease in parking spaces to 1,300
Wastewater Generation/ Water Usage	No change required (50kgpd)	No change required, (50kgpd) No WWTP upgrades	Increase in total useage (82-90k GPD) results inmore recharge to aquifer, improvements to the WWTP
Stormwater Quality	No change	Improved SW system	Improved SW system
Energy Usage/ Sustainability	Existing inefficient buildings will remain	Modern buildings with energy saving features	Modern buildings with energy saving features

1.7.4 Comparison of Impacts

Land

While the No-Build Alternative would not result in new land alternation or create new impervious area, it does not provide for upgraded stormwater management facilities and, therefore, would not improve water quality. Under the No-Build Alternative, stormwater runoff would continue to be served by the existing stormwater management system on the Site. While some recent improvements have been made to the existing system, stormwater treatment and stormwater quality would not be in compliance with current DEP standards.

Because the Project Site is already developed, from a coverage perspective, neither build alternative would result in significant new land alteration. The As-of-Right build alternative would increase the quantity of pavement on the Site and, therefore, would be unlikely to reduce the impervious surface area. The Preferred Alternative on the other hand minimizes paved parking areas, utilizes garage parking for much of the residential parking areas, and actually reduces impervious coverage on the Site by a few acres. Both build alternatives would be retrofitted with new drainage infrastructure that meets the current MassDEP Stormwater Management Policy to the maximum extent practicable. The new drainage system will provide enhanced stormwater treatment and improved groundwater recharge, relative to existing conditions that would otherwise remain in the No-Build Alternative.

Water and Wastewater

The As-of-Right build alternative would not necessarily increase water demand or wastewater generation compared to the No-Build Alternative, and would consequently not include the

proposed upgrades to the waste water treatment facility which benefit the underlying aquifer. Furthermore, as part of the Preferred Alternative, the overall potable water demand will be mitigated by the continued use of water efficient irrigation systems utilizing well water, and installation of low-flow fixtures for the residential and commercial spaces, where practicable. The No-build alternative would not provide that benefit in that there would not be any reduction in the existing demand from new systems.

Traffic & Parking

The Preferred Alternative is anticipated to generate less traffic during the weekday morning and weekday evening peak hours as compared to the existing use (No-Build). The reduction in traffic is a result of the shift from predominately office uses to a broad mix of uses. Under the As-of-Right alternative, the traffic generation and associated air quality impacts would be greater than both the Preferred and No-Build alternatives due to the relatively greater intensity of the office/research and development use of the Site. In addition to causing greater impacts than the Preferred Alternative, the No-Build Alternative would not provide the safety accommodations, pedestrian improvement, and roadway improvements that were implemented under the Preferred Alternative.

1.7.5 Conclusion

The No-Build Alternative does not provide for the much needed site improvements and building upgrades, nor does it introduce new uses to create a more vibrant and accessible site in response to the community's identified goals for a mix of uses on the Site. The No-Build Alternative also fails to satisfy the affordable housing needs identified by the Town.

While the As-of-Right Alternative would implement upgrades to the stormwater management system, it would not necessarily provide the enhanced wastewater treatment system or the increased groundwater recharge associated with a reduction in impervious area and increased wastewater generation/ infiltration. It would also fail to achieve goals identified in the Town's Planning studies including activating the Route 20 streetscape and contributing to the affordable housing stock in furtherance of its designation as an appropriate site for such housing options under the Housing Production Plan. The Preferred Alternative, on the other hand, does meet these objectives. Lastly, the mixed-use nature of the Preferred Alternative improves traffic conditions on the surrounding roadways by distributing traffic throughout the day which would not be realized in either of the other alternatives.

1.8 Consistency with Applicable Plans and Policies

1.8.1 Local

Town of Sudbury Housing Production Plan

Prepared by the Town of Sudbury, the Housing Production Plan (HPP), which was unanimously approved by the Board of Selectmen on May 17, 2011, is intended to identify community housing

needs and to develop a strategy to meet the 10% threshold of M.G.L Ch. 40B. The HPP identifies the following eight goals:

1. Promote a diversity of housing types in Sudbury to meet the needs of a changing and diversified population, particularly with increased production of rental units, development of multi-family buildings, duplexes, and single-family attached dwellings, in addition to conversion of existing market rate homes to affordable.
2. Creating more affordable rental and homeownership units for eligible households making less than 80% of the area median income, with preference given for households with local ties.
3. Increase diversity of housing options by enabling housing in business districts including apartments above commercial space.
4. Preserve affordability restrictions on existing units for the longest period possible.
5. Leverage local Community Preservation Act funds and Sudbury Housing Trust funds and other local resources towards affordable housing production.
6. Preserve existing small homes and dwellings
7. Maintain and advance capacity with planning and advocacy
8. Through town policy, regulations, and local funding, encourage creation of workforce housing-units that are affordable to middle income households making between 80% and 120% of the area median income.

The HPP specifically identifies the Project Site as one of the top six preferred sites for development of affordable housing. The Project will advance the goals of the Sudbury HPP, and will provide a balance of assisted living, age-restricted residential, and a mix of 1-3 bedroom residential apartments to maintain the character of the community. The Project also meets the HPP's strategy of seeking mixed-use development to better activate the Site and to provide convenient community shopping amenities.

Town of Sudbury Master Plan

Completed in 2001, *Sustainable Sudbury* specifically identifies the Project Site as a key location for potential redevelopment and expansion to maintain the Town's tax base and capitalize on the existing infrastructure available on the Site. The plan notes that the infrastructure, including the wastewater treatment plant, is already in place to support continued and expanded development on the Site. The Project is consistent with the planning goals to preserve open space by redeveloping a previously developed site, instead of locating the Project on previously undisturbed land, and the proposed uses are consistent and compatible with the adjacent land uses. The Project also supports the plan's goal of encouraging a greater diversity of housing opportunities in Sudbury to meet the needs of a changing and diversified population with respect to age, household size, and income.

One of the action items identified in Sustainable Sudbury was for the Planning Board to create a plan for the future use of the Site. The outcome of this action item is most clearly summarized in a joint letter from the Board of Selectmen and the Planning Board to T. Bradley Duffin of the

Raytheon Company dated February 25, 2015. As noted in the letter the Town of Sudbury, acting through the Board of Selectmen, held several meetings to discuss the Town's goals and priorities as they related to the Site. The letter notes that from the Town's perspective, the Site is well suited for a mixed-use project with a focus on residential with supporting retail. The Town's stated objectives for the Site include:

- Create at least 240 affordable rental apartments to satisfy Sudbury's affordable housing gap
- Include age-restricted housing to minimize impacts on the school system and provide diversity in the housing stock for the growing senior population
- Provide a congregate care and assisted living facilities
- Introduce retail uses to complement the area and provide convenient services to the new residents

The Project, as proposed, satisfies all of these objectives and is in line with the Town's goals.

The letter further states that as with any project, there is an expectation that impacts to the Town will be mitigated. The Project includes substantial mitigation and environmental improvements, many of which were specifically noted in the letter, including;

- Access to the abutting future rail trail
- Opportunities for active and/or passive recreation within the Site
- Streetscape improvements within the Site
- Mitigation of project impacts with respect to traffic through the proposed transportation and environmental improvements on the Site

Town of Sudbury Project Evaluation Report

Completed for the Town of Sudbury in June of 2012, the purpose of the Project Evaluation Report was to investigate wastewater options for the Route 20 business district. The Plan provided recommendations intended to protect existing water resources and to improve public health and the environment. The Project Site is uniquely positioned throughout the study as it contains its own wastewater treatment facility and does not impact or present additional demand on the wastewater management needs of the surrounding area. The existing sequencing batch reactor secondary treatment facility on the Project Site provides nitrogen reduction and groundwater disposal through open sand beds. The evaluation report considers utilizing some of the capacity of the existing facility to address Town wastewater concerns, however the alternative was rejected due to the inherent risk of the Town taking ownership of an existing system.

Consistent with the plan, the Project will utilize and improve the existing on-site facility to provide the necessary capacity and to enhance the protection of surrounding water resources. Modernizing the decentralized system will improve wastewater treatment and water quality in the surrounding area.

Sudbury Route 20 Zoning Project

In December of 2012, at the request of the Town of Sudbury, the Metropolitan Area Planning Council published the Route 20 Zoning Project, which was intended to assist the town in developing land use controls along a portion of Boston Post Road (Route 20). The plan recommendations were based on a combination of community involvement and regulatory review. The community meeting identified three key themes;

1. The most desired uses for Route 20 are restaurants, offices, hair salons, spas, continuing care facilities
2. 69% of attendees were in favor of a mixed-use development
3. 43% of attendees were in support of multi-family uses

The Project will meet these key community goals by providing new restaurants, retail space, and continuing care facilities in a mixed-use development along with multi-family uses to address the Town's affordable housing deficit.

Route 20 Corridor Study

The Route 20 Corridor Study was completed by *The Cecil Group* in March of 2015 to assist the Town of Sudbury in evaluating potential changes in zoning for the commercial districts along Boston Post Road (Route 20) and Union Avenue. During the course of the Cecil Groups study, Raytheon publicly announced their intent to close their operations and vacate the Site, however The Cecil Group, on behalf of the Sudbury Planning Board, specifically identifies the Project Site as a location particularly well-suited for retail and related mixed-uses.

Although development potential of the Site was not specifically discussed, the Project meets the goals and objectives of the study by redeveloping the Site with mixed-uses, new pedestrian connections, new open space and new stormwater improvements, as well as by focusing that development within the Route 20 Corridor.

1.8.2 Regional Planning

Metropolitan Area Planning Council

The Town of Sudbury is located within the Metropolitan Area Planning Council (MAPC) planning area. In May 2008, the MAPC issued its *MetroFuture: Making a Greater Boston Region*.[5] MetroFuture is MAPC's plan for Greater Boston to better the lives of the people who live and work in the region through the year 2030. MetroFuture includes detailed goals for development and preservation, and specific strategies to equitably distribute the benefits and burdens of growth. A key goal of MetroFuture is to focus growth where infrastructure already exists in order to preserve natural resources. Other goals include the following:

[5] *MetroFuture: Making a Greater Boston Region*, Massachusetts Area Planning Council, May 2008 (updated December 2008).

- **Sustainable Growth Patterns:** Population and job growth will be focused in developed areas already well-served by infrastructure.
- **Housing Choices:** A diverse array of housing choices will meet the needs of the region's residents.
- **Healthy Communities:** Residents will be safe, healthy, well-educated, and engaged in their community.
- **Regional Prosperity:** A globally-competitive regional economy will provide opportunity for all the region's workers.
- **Transportation Choices:** An efficient transportation system will offer more choices and make it easier to get around.
- **Healthy Environment:** Natural resources will be protected thanks to a strong "environmental ethic."

The Project accomplishes many of the smart growth principles recommended by MAPC, including:

- Redevelopment of an outdated suburban development with existing infrastructure;
- Re-use of existing disturbed site and repurposed paved parking areas resulting in reduced site disturbance;
- New employment opportunities;
- A broad range of new housing opportunities, including affordable options;
- Transportation Demand Management measures to reduce single-occupancy vehicles; and
- Sustainable/green building features, including energy and water efficient building systems; thereby, reducing the Project's impacts on the environment.

1.8.3 Commonwealth of Massachusetts

Executive Order 385 – Planning for Growth

Generally, Executive Order 385 (EO 385) aims "…to actively promote sustainable economic development practices by advocating for state activities that are supported by adequate infrastructure and that are designed in such a way so that they do not adversely impact the natural environment." The Project is consistent with EO 385 because its design aims to redevelop a previously developed site with improvements to existing infrastructure; therefore, avoiding environmental impacts, such as new impervious surface, and new land alteration. The Project will improve water quality through proposed modifications/upgrades to the stormwater management system. The Project will create a vibrant mix of activity on the site and provides for new employment opportunities, including the creation of hundreds of construction jobs in all trades over the multi-year construction period and new employment opportunities (permanent part-time and full-time jobs) within the new facilities proposed on the Site — all of which will support the local and state economy. Furthermore, as demonstrated in this ENF, the Project will minimize any unavoidable environmental impacts through the implementation of mitigation measures, to the extent feasible.

Commonwealth's Sustainable Development Principles

The Project is consistent with several of the Office of Commonwealth Development's Sustainable Development Principles.[6] The following lists the smart growth principles that the Project is consistent with.

- **Concentrate Development and Mix Uses.** The Project best fits this principle because it consists of redevelopment of an existing property with improvements proposed to existing infrastructure and will result in a vibrant mixed-use development along the Route 20 corridor.
- **Advance Equity.** The Project will advance equity in the Town of Sudbury by providing an affordable housing option and address the need for affordable rental housing for community memebers in one of the most affluent communities in the Commonwealth
- **Make Efficient Decisions.** A key goal of the Project is to utilize the existing developed area on the Site to the extent practicable in order to limit site work. The 40B process will be used to develop housing through a streamlined entitlement process and in a cost-effective manner in order to create affordable rental housing on the Site as part of the Project.
- **Protect Land and Ecosystems.** The Site is currently developed with office and research and development buildings and large surface parking lots. By redeveloping the Site, as opposed to developing in a greenfield site, this Project does not have an adverse impact on the land and ecosystems.
- **Use Natural Resources Wisely.** The Project promotes sustainable planning by the inclusion of design elements, such as energy and water efficient building systems and operations, reduced construction and operational waste, and environmentally-preferable materials.
- **Expand Housing Opportunities.** Professionally managed market rate and affordable housing will expand housing opportunities in Sudbury. 25% of the apartment homes within the Project permitted under M.G.L. Chapter 40B will be restricted to households earning no more than 80% of the Area Median Income. The addition of this Project component will increase Sudbury's affordable housing inventory with a new diverse housing stock and offer handicap accessible apartment homes, as well as homes equipped for the hearing impaired.
- **Provide Transportation Choices.** The Site convenient access to I-95/128 and I-495 via Route 20 and I-90 via Landham Rd and Nobscot Rd. In addition, nearby commuter rail service connects the Site to Boston via both the Fitchburg and Worcester Lines.
- **Increase Job and Business Opportunities.** The Project provides for new employment opportunities (hundreds of construction jobs in all trades and new permanent part-time and full-time jobs ion all components of the mixed-use redevlopment).

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[6] Commonwealth of Massachusetts Sustainable Development Principles (website link: http://www.mass.gov/Agov3/docs/smart_growth/patrick-principles.pdf)

- **Promote Clean Energy.** The Project will be energy efficient and, therefore, will reduce stationary source Greenhouse Gas (GHG) emissions by approximately 20 percent when compared to conventional building design. The Proponent will construct appropriate buildings as "solar ready" so as to permit the installing an array of solar panels in the future, and is committed to evaluating alternative energy sources as design advances.
- **Plan Regionally.** The Project was developed taking into consideration regional context, access, market area, and economics and is consistent with the goals of the MAPC's *MetroFuture* plan for the region.

Governor's Clean Energy and Climate Plan

The Global Warming Solutions Act of 2008 requires the Secretary of Energy and Environmental Affairs (EEA) to establish a statewide limit on GHG emissions of between 10 percent and 25 percent below 1990 levels for 2020 - on the way toward an 80 percent reduction in emissions by 2050 - along with a plan to achieve the 2020 target. In 2010, Secretary Ian A. Bowles issued the state-wide Clean Energy and Climate Plan for 2020, which contains the measures necessary to meet these limits.7 A key goal of the plan is to assist and encourage businesses, households, municipalities, and institutions to better manage their energy needs by incorporating renewable and alternative sources of energy. The Project supports the state's Clean Energy and Climate plan by incorporating energy efficient building systems and significant upgrades to existing buildings to reduce the overall energy use and associated GHG emissions.

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[7] Secretary of the Executive Office of Energy and Environmental Affairs, *Massachusetts Clean Energy and Climate Plan for 2020*, December 29, 2010.

2

Environmental Conditions

2.1 Introduction

This section describes the existing environmental conditions on the Project Site, as well as an analysis of the proposed environmental conditions. Environmental resources on the Site were reviewed using available data from GIS, property records and on-site investigations.

The Project proposes to redevelop a 50 acre parcel in Sudbury, currently occupied by the Raytheon office park, into a vibrant mixed-use project. The Site currently includes paved parking areas, internal roadways and office/research and development buildings. The Project will take place predominantly within previously developed areas. The natural resources present on the Site consist of landscaped areas and wetland features that receive stormwater runoff from the Site. There are also wetland features on adjacent properties that include regulated buffer zones that extend into the subject property. The natural resources on the Site, anticipated effects of the Project, and regulatory jurisdiction are described below.

2.1.1 Key Findings and Benefits

The Site is entirely developed or previously disturbed land and, as such, the Project offers a unique opportunity to enhance overall environmental conditions at the Site. The Site includes several vegetated wetland resources surrounded by narrow buffers of vegetated upland and paved parking areas. Due to the large amount of paved surfaces on the property, the wetlands on-site now function predominantly as stormwater management features which limit their ability to provide significant wildlife functions and values.

The Site is the location of three previously reported Massachusetts Contingency Plan (MCP) Release Tracking Numbers (RTNs). The site has been subject to thorough environmental review and will be redeveloped in accordance with the MCP requirements under the evaluation of a Licensed Site Professional. Refer to Attachment E for the LSP's site evaluation letter. Sanborn, Head & Associates, Inc. (Sanborn Head) will provide Licensed Site Professional (LSP) services for the Project. Based on the available information, it is Sanborn Head's opinion that the proposed redevelopment project will not pose a health, environmental or natural resource risk to future residents, neighbors or the community.

Natural Resources Benefits

Redevelopment of the Site affords the opportunity to enhance the natural resources on the Site and provide an overall environmental benefit.

- The Project will incorporate measures to increase the function of adjacent resources by enhancing the upland buffers where possible.
- The Project restores components of the buffer zone on-site.
- There are no state-listed Priority Habitats of Rare Species, no state Estimated Habitats of Rare Wildlife, and no Certified Vernal Pools located within the Project Site.
- Impacts to wetland resources associated with proposed roadway upgrades are anticipated to be minimal. The current design avoids any permanent impacts to wetland resources, however temporary impacts may occur during construction access, or modification to existing stormwater inlets and outfalls.
- The net environmental improvement of the Site will help improve the conditions of resource areas and advance the interests protected under the Wetlands Protection Act.

Site Environmental Conditions

The Site environmental conditions have been thoroughly examined and, while the Site has been the location of three previously recorded MCP RTNs, the redevelopment will not pose health, environmental or natural resource risk to future residents, neighbors or the community. Furthermore, the Project will be undertaken in accordance with the MCP requirements under the direction of an LSP.

- After extensive analysis by the Proponent and Former Owner of the Site, no contamination in soil or groundwater that could pose a health risk to future residents has been identified based on the proposed redevelopment plan.
- Over 20 years of monitoring data indicates that on-site groundwater contamination is gradually decreasing and has not significantly impacted off-site receptors.
- Water infiltration associated with the reduction in impervious area, wastewater treatment/disposal, and construction activity is not anticipated to have any impact on residual contamination due to its depth below ground and/or size of the Site.
- Construction within the RTN boundary will be performed under a Release Abatement Measure Plan in accordance with the MCP.
- The Proponent has engaged an LSP to develop a Release Abatement Measure Plan to identify and address any unanticipated conditions.

2.2 Natural Resources

The Project Proponent has enhanced environmental conditions by siting the Project within a previously developed area. The following sections describe the resources on the Site and adjacent to the proposed work.

2.2.1 Wetland Resources

Wetland resources areas on the Project Site, regulated as Areas Subject to Protection under the Massachusetts Wetlands Protection Act (WPA) (310 CMR 10.00), include Bordering Vegetated Wetland, Bank, and Isolated Land Subject to Flooding. The Sudbury Wetlands Administration Bylaw also regulates these wetlands. In addition to the wetlands located on the subject property, there are several wetlands on adjacent properties that have a regulated 100-foot buffer zone that extends onto the Site. The proposed development has been carefully planned to avoid permanent impacts to wetland resources. The majority of the work proximate to wetland resource areas would be limited to the 100-foot buffer zone, however roadway work associated with the redevelopment may involve minor wetland impacts. The Project is in the conceptual phase and will require continued coordination with the Massachusetts Department of Transportation for roadway and sidewalk layouts. It is anticipated that multiple Notices of Intent for the various Project components will be filed with the Sudbury Conservation Commission for work within buffer zone and wetlands.

State Regulated Resource Areas

VHB environmental scientists delineated wetlands on and adjacent to the Site on September 15 and 24, 2015 in accordance with methods developed by the Massachusetts Department of Environmental Protection and the U.S. Army Corps of Engineers. These resources are also regulated under the Sudbury Wetlands Bylaw.

In general, due to the expansive existing development on the Site, wetlands on the Project Site are limited and consist of forested or scrub-shrub wetland communities with some elements of emergent marsh and open water. Dominant species throughout the wetlands on-site include silky dogwood (*Cornus amomum*), red maple (*Acer rubrum)*, glossy buckthorn (*Frangula alnus*), sensitive fern (*Onoclea sensibilis*), soft rush (*Juncus effuses),* and cattail (*Typha latifolia*). Vegetated ditches convey seasonal flow to wetlands on-site. Several wetlands drain to a large stormwater basin in the center of the Site through underground pipes.

A majority of the uplands within the state-regulated 100-foot buffer zone have been previously developed and consist of paved driveway/parking lot and the sewage treatment leaching beds located in the center of the Site. Undeveloped adjacent upland areas consist of mowed grass, landscaped plantings, and small areas of established mid-successional vegetation including shrubs and young trees.

Anticipated Effects

Reconfiguration of the section of Boston Post Road (Route 20) to the south of the Site to meet MassDOT Complete Streets guidelines would result in a slight widening of the overall paved footprint of the roadway. Wetlands are present to the north and south of Boston Post Road. The Proponent is coordinating with MassDOT to ensure that the roadway and sidewalk accommodations best meet the Complete Streets guidelines, while minimizing impacts to the adjacent wetlands. If necessary, retaining walls are proposed to avoid placement of fill within the resource areas. Any temporary impacts to wetland resource areas that are unavoidable due to construction would be restored to preconstruction conditions upon the completion of work. If the final roadway design requires unavoidable impacts to wetlands, the Project will provide an wetland replication area at least equal to that of the area lost as required by the WPA General Performance Standards for work under 5,000 square feet within BVW (310 CMR 10.55(4)(b)(1)). Impacts (both temporary and permanent) are anticipated to be less than 5,000 square feet and the Proponent is striving to avoid all permanent impacts to resources, if possible. If permanent impacts are unavoidable, wetland replication would be required to reproduce all functions and values of the original wetland as required by the WPA. Construction controls and best practices would be implemented throughout the Project Site to avoid secondary impacts to wetland resources.

Natural enhancements to improve functions and values of uplands surrounding the wetland areas on-site will be incorporated into the Project design with input from the Sudbury Conservation Commission.

2.2.2 Rare Species

State-Listed Species

According to the Massachusetts Natural Heritage Atlas (13th Edition), there are no Massachusetts listed Priority Habitats of Rare Species, no Estimated Habitats of Rare Wildlife, and no Certified Vernal Pools located within the Project Site.

Federally Listed Species

The northern long-eared bat (*Myotis septentrionalis*) is federally listed as threatened throughout the entire Commonwealth of Massachusetts as established in the Federal Register on April 2, 2015 by the U.S. Fish and Wildlife Service (USFWS)[1]. During the summer, northern long-eared bats roost singly or in colonies underneath bark, in cavities or in crevices of trees. The Project Site is predominantly developed with limited areas of open space and mature trees. Tree clearing for the proposed redevelopment will be limited to the area at the southern portion of the Site, between the existing buildings and Boston Post Road, around the Beltran Building and single trees located

[1] Endangered and Threatened Wildlife and Plants: Threatened Species Status for the Northern Long-Eared Bat With 4(d) Rule, 50 CFR Part 17

on islands within the parking area. The easternmost portion of the Site has mature trees at its border and is contiguous with a larger forested area offsite. This portion of the Site will not be developed as part of this Project and the trees will remain.

Anticipated Effects

The Project requires less than an acre of tree clearing. The Proponent will consult with the relevant agency – in this case NHESP – to confirm there are no issues related to the Northern Long Eared bat. In the unlikely event there are potential impacts, the Project will comply with the federal conservation methods restricting tree clearing during June and July when bats would be most impacted.

2.3 Site Characteristics

The Site consists of approximately 50 acres and was owned and operated by the Raytheon Company (the "Former Owner") since 1958 until the sale of the Site at the end of 2015. The Site has been used primarily for office space, although some research and development of microwave and radar components and limited scale manufacturing for prototype development has been performed.

The Site is the location of three MCP release sites, the status of which are described thoroughly in the LSP Letter provided in Attachment E. The Former Owner has performed numerous rounds of sampling over the past 20 years, and data has been further confirmed by the Proponent's LSP. In addition to the work previously performed by the Former Owner, the LSP, Sanborn Head, also performed a Phase I Environmental Site Assessment with Subsurface Investigation for the Site in August 2015. This included advancement of ten soil borings and installation of two monitoring wells. Six soil samples and seven groundwater samples were collected (one from each of the new wells and five from existing wells). Based on the data collected, Sanborn Head did not identify any new Recognized Environmental Conditions at the Site. A Site Plan showing the key existing Site features and boring locations is shown on Figure 11.

2.3.1 MCP Compliance

Under the supervision of the LSP, the work will be performed in accordance with MCP requirements. Construction activities within the boundary of RTNs 3-27243 and 3-3037 will be performed in accordance with a Release Abatement Measure (RAM) Plan, which will include a Soil and Groundwater Management Plan that will be prepared and submitted to the DEP prior to construction activities. Given the lack of any soil contamination on-site (and the depth and low levels of contamination of isolated areas of deep groundwater), no unusual measures would be anticipated. Soil excavated during construction will be handled according to all applicable federal, state, and municipal environmental laws and regulations.

Despite extensive testing over 20 years by both the previous owner and the Proponent, no contamination in soil that would pose a health risk to future residents has been identified.

However, in the event that subsurface contamination exceeding MCP reporting thresholds is encountered, MassDEP will be notified and the contamination managed in accordance with the MCP. Excess soil generated during construction that requires off-site disposal will be tested so that it can be properly disposed of at an appropriate type of off-site landfill facility.

Depending on the depth of the proposed excavation for the new development, construction dewatering may be required. Such activities would be performed in accordance with the MCP and Environmental Protection Agency (EPA) National Pollutant Discharge Elimination System (NPDES) permits, as applicable.

Please refer to Attachment E for additional information on the Site conditions.

3

Water Resources

3.1 Introduction

This Section provides an overview of the water resources as they relate to the 526 and 528 Boston Post Road Redevelopment. Wetland resource areas and the underlying aquifer which helps to support the Town's drinking water supply, are important existing natural resources on the Site. The following chapter presents the stormwater management, water supply and wastewater systems employed by the Project that will preserve, protect and improve;

- Surface water quantity and quality;
- Groundwater quality and recharge;
- Wetlands resource areas and water features.

As part of the review processes, detailed design plans for individual components of the Project will be completed and the preliminary analyses presented in this ENF will be further refined based on more advanced design work. Design of the wastewater aspect of the Project will also be subject to detailed technical review as part of the Massachusetts Department of Environmental Protection (MassDEP) Groundwater Discharge Permit process.

3.1.1 Key Findings and Benefits

Stormwater Management

An overall goal of the Project is to protect environmental resources both on the Site and downstream, including wetland resource areas and the aquifer supporting the Raymond Road drinking water well field. The Project will, vastly improve the existing conditions on the Site through the implementation of a comprehensive Stormwater Management Plan including the use of Low Impact Development (LID) Techniques, Best Management Practices (BMPs) and a comprehensive permanent and temporary erosion control system. These goals will be achieved by implementing the following:

- Increasing open space and groundwater recharge to contribute to re-establishing components of a more natural water cycle (evapotranspiration, groundwater recharge and runoff) on the Site.
- Improving the surface water and groundwater quality will further protect the watershed of critical environmental resources.
- Protecting and minimizing disruption to existing wetland resource areas and wildlife habitat corridors through the maintenance and enhancement of existing vegetative protective buffers.
- Implementing a comprehensive temporary and permanent erosion control system and Long Term Operations and Maintenance Plan.

Water and Wastewater

The overall goal of the water and wastewater systems are to minimize the use of water and benefit the underlying aquifer by:

- Minimizing the potable water demand and corresponding wastewater discharge through the implementation of water-conservation measures such as low-flow fixtures, high efficiency appliances, individual metering of residential units where feasible, and limiting the use of potable water for irrigation purposes.
- Increasing recharge to the underlying aquifer through the upgrades of the existing wastewater treatment plant (WWTP).
- Avoiding inter-basin transfer by utilizing Town-supplied potable water from wells in Sudbury combined with the on-site WWTP.
- Enhancing the quality of the water discharged from the WWTP, adding equipment redundancy, and improving reliability of the WWTP to provide additional benefits and protection of the underlying groundwater aquifer and public drinking water supply.

3.2 Stormwater Management

3.2.1 Existing Site and Drainage Conditions

The approximately 50-acre commercial site is currently developed and consists of predominately impervious surfaces including several buildings, most notably two large buildings and associated paved parking areas, with generally flat topography sloping southeasterly. The Site also includes two smaller research buildings, and a wastewater treatment plant. Pervious surfaces on the site include a centrally located vegetated area including lawn areas surrounding the larger buildings, a manmade stormwater retention pond and a series of wetlands which were originally constructed as stormwater conveyances.

The Site lies within the Town of Sudbury's Nobscot sub-watershed, which flows via an unnamed stream to Landham Brook and Wash Brook and eventually to the Sudbury River. The Site consists of two major catchment areas; on-site and off-site areas tributary to the centrally located retention

basin and an area that drains via a closed pipe system to the municipal stormwater system. On the southwestern perimeter of the site, stormwater swales and wetlands also collect and convey water to the retention pond, which accepts stormwater from a majority of the site area. Outflows from the retention pond combine with the closed drainage system located on the southern portion of the site through an existing piping network, which ultimately discharges to a wetland on the southern side of Boston Post Road, east of the Sudbury Plaza.

The site currently contains a stormwater management system that was constructed prior to the current DEP Stormwater Management Standards and as such is a "grandfathered" existing condition. Raytheon recently undertook a significant maintenance effort, with approval of the Sudbury Conservation Commission, to re-establish and enhance the functional characteristics of the on-site stormwater management system. While the system is compliant as an existing condition, the water quality treatment is not consistent with current state stormwater management standards that would be applicable to new developments.

3.2.2 Proposed Drainage Conditions

The Project will include the removal of 8.3 acres of existing buildings and associated large paved parking areas, construction of a mixed-use redevelopment including a grocery store, various retail/restaurant buildings, mixed-income apartments, active adult condominiums, and a memory care assisted living complex. The Project proposes to demolish all of the existing buildings and parking on site (other than the 15,000 sf Beltran Building located in the rear of the property along the westerly property line), and will maintain/upgrade the wastewater treatment plant.

The Project provides a unique opportunity to enhance the existing on-site stormwater management system. The forthcoming analysis will demonstrate compliance with current standards developed to improve the existing conditions through the implementation of an environmentally sensitive design that optimizes open space features, provides a pleasant pedestrian experience, and protects critical environmental receptors.

As proposed, the Project will maintain the existing retention pond and other wetlands throughout the site, and will reduce impervious cover on a net basis by approximately 2 to 3 acres. The stormwater management system will result in further attenuation of peak rates of runoff, improved water quality and balanced hydrologic conditions to existing wetland resource areas through the implementation of supplemental Low Impact Development techniques including decentralized stormwater BMPs. The addition of stormwater BMP's will aid to treat the site runoff before discharging to the closed drainage system and introduce the opportunity for additional groundwater recharge to the underlying aquifer. The Project will also incorporate appropriate temporary and permanent erosion controls and a comprehensive stormwater management operations and maintenance plan to enable the long-term functionality of the drainage system and associated BMPs.

The Project site design incorporates a progressive and comprehensive stormwater management system that has been developed in accordance with the Massachusetts Stormwater Handbook to improve water quality and groundwater recharge. Low Impact Development (LID) techniques and

stormwater BMPs implemented into the Project site design include reduction of impervious area, addition of grassed swales, deep-sump and hooded catch basins, water quality units, subsurface infiltration equipped with isolator rows, bioretention ponds, and other treatment BMPs. All treatment BMPs will be designed to provide a minimum of 80% removal of Total Suspended Solids (TSS). In accordance with MassDEP requirements for stormwater BMPs within a Zone II including separation of recharge BMPs from groundwater, sizing for the one-inch water quality volume and 44% pretreatment prior to infiltration will also be incorporated into the design.

As each development area of the Project advances, the Proponent will provide detailed technical analyses demonstrating compliance with the MassDEP Stormwater Management Standards.

3.2.3 Compliance with Stormwater Management Regulations

The following state and federal stormwater related regulations and guidelines apply to the proposed site development:

- Massachusetts State Stormwater Management Performance Standards and Guidelines, Department of Environmental Protection and Office of Coastal Zone Management (DEP/CZM, 2008).
- Environmental Protection Agency (EPA) National Pollutant Discharge Elimination System (NPDES) Stormwater Permit for Construction Activities disturbing greater than one acre (EPA, Federal Register, December 8, 1999 and amendments).

Compliance with these regulations is described in the following sections.

Massachusetts DEP Stormwater Management Standards

As stated previously, the stormwater management system for the Project will be designed and constructed in accordance with the MassDEP Stormwater Management Standards required by the Wetlands Protection Act (WPA) regulations (310 CMR 10.05(6)(k)) as further defined and specified in the Massachusetts Stormwater Handbook (January 2008). Specifically, the methods for compliance with the ten stormwater performance standards developed by MassDEP are summarized below.

1. *No new stormwater conveyances may discharge untreated stormwater directly to or cause erosion in wetlands or waters of the Commonwealth.*

   The temporary and permanent stormwater management systems will be implemented to eliminate sources of untreated stormwater discharging to, or causing erosion in wetlands or water bodies.
2. *Stormwater management systems shall be designed so that post-development peak discharge rates do not exceed pre-development peak discharge rates.*

   The stormwater management system for the Project is designed to further attenuate the post-development peak discharge rates resulting in a net reduction in the pre-development discharge rates for the Site.

3. *Loss of annual recharge to ground water shall be eliminated or minimized through the use of infiltration measures including environmentally sensitive site design, low impact development techniques, stormwater best management practices, and good operation and maintenance. At a minimum, the annual recharge from the post-development site shall approximate the annual recharge from pre-development conditions based on soil type. This Standard is met when the stormwater management system is designed to infiltrate the required recharge volume as determined in accordance with the Massachusetts Stormwater Handbook.*

   The Project storwmwater design will meet the recharge requirements through the reduction of impervious coverage on the site, and will also implement LID techniques and traditional stormwater BMPs including vegetated swales, bio-retention basins and subsurface infiltration, where feasible, to further promote groundwater recharge.

4. *Stormwater management systems shall be designed to remove 80 percent of the average annual post-construction load of Total Suspended Solids (TSS). This Standard is met when:*

   - *Suitable practices for source control and pollution prevention are identified in a long-term pollution prevention plan, and thereafter are implemented and maintained;*
   - *Structural stormwater best management practices are sized to capture the required water quality volume determined in accordance with the Massachusetts Stormwater Handbook; and*
   - *Pretreatment is provided in accordance with the Massachusetts Stormwater Handbook.*

   The Project's stormwater management system is designed to remove a minimum of 80 percent of the average annual post-construction load of TSS and will be in compliance with the design and pre-treatment requirements for the selected BMPs and specific land use.

5. *For land uses with higher potential pollutant loads, source control and pollution prevention shall be implemented in accordance with the Massachusetts Stormwater Handbook to eliminate or reduce the discharge of stormwater runoff from such land uses to the maximum extent practicable. If through source control and/or pollution prevention all land uses with higher potential pollutant loads cannot be completely protected from exposure to rain, snow, snow melt, and stormwater runoff, the proponent shall use the specific structural stormwater BMPs determined by the Department to be suitable for such uses as provided in the Massachusetts Stormwater Handbook. Stormwater discharges from land uses with higher potential pollutant loads shall also comply with the requirements of the Massachusetts Clean Waters Act, M.G.L. c. 21, §§ 26-53 and the regulations promulgated there under at 314 CMR 3.00, 314 CMR 4.00 and 314 CMR 5.00.*

   Any components of the Project which involve land uses with higher potential pollutant loads, such as parking lots with high-intensity-uses, will comply with requirements for such areas, with a focus on source control and BMPs to treat the subject-pollutants. Detailed design of these areas will be presented to the Town as the designs of these areas are

finalized.

6. *Stormwater discharges within the Zone II or Interim Wellhead Protection Area of a public water supply and stormwater discharges near or to any other critical area require the use of the specific source control and pollution prevention measures and the specific structural stormwater best management practices determined by the Department to be suitable for managing discharges to such areas as provided in the Massachusetts Stormwater Handbook. A discharge is near a critical area, if there is a strong likelihood of a significant impact occurring to said area, taking into account site-specific factors. Stormwater discharges to Outstanding Resource Waters and Special Resource Waters shall be removed and set back from the receiving water or wetland and receive the highest and best practical method of treatment. A "storm water discharge" as defined in 314 CMR 3.04(2) (a) 1 or (b) to an Outstanding Resource Water or Special Resource Water shall comply with 314 CMR 3.00 and 314 CMR 4.00. Stormwater discharges to a Zone I or Zone A are prohibited unless essential to the operation of public water supply.*

   The Project is located within a Zone II Interim Wellhead Protection Area and within the Town of Sudbury water resource protection overlay district[1]. Specific source control and pollution prevention measures and the specific structural stormwater BMPs will be employed to prevent an adverse impact to these water supply sources. This includes treatment of the 1-inch water quality volume and pre-treatment requirements prior to infiltration.

7. *A redevelopment project is required to meet the following Stormwater Management Standards only to the maximum extent practicable: Standard 2, Standard 3, and the pretreatment and structural best management practice requirements of Standards 4, 5, and 6. Existing stormwater discharges shall comply with Standard 1 only to the maximum extent practicable. A redevelopment project shall also comply with all other requirements of the Stormwater Management Standards and improve existing conditions.*

   Based on the historic site usage, the Project is considered a redevelopment project. Notwithstanding, the Project will be designed to be substantially compliant with the MassDEP Stormwater Management Standards for new development except where impractical due to existing site constraints (for example, depth to groundwater) and will result in significant stormwater enhancements relative to the existing Site conditions.

8. *A plan to control construction related impacts including erosion, sedimentation and other pollutant sources during construction and land disturbance activities (construction period erosion, sedimentation, and pollution prevention plan) shall be developed and implemented.*

   During the Site Plan Review process for the Project with the Town of Sudbury, an erosion control plan will be formulated for each phase of construction which will limit the impacts of erosion, sedimentation and other pollutant sources during construction and land disturbance activities. The Project will also employ LID measures, which will contribute to

[1] DEP, 2012. Approved Wellhead Protection Areas (Zone II).

minimizing these construction related impacts. These efforts will be finalized for the Project in future filings with the Sudbury Conservation Commission and/or Planning Board. The Project will require the preparation of a Stormwater Pollution Prevention Plan (SWPPP) for Construction Activities in compliance with the NPDES regulations and the Town's Stormwater Regulations. The SWPPP will include the details of the erosion, sedimentation and pollution prevention plan implementation.

9. *A long-term operation and maintenance plan shall be developed and implemented to ensure that stormwater management systems function as designed.*

   A long-term operation and maintenance plan will be developed and implemented for the Project during the Town of Sudbury review processes, as part of future filings. The property owner will be ultimately responsible for long term maintenance of the stormwater management system. Both the multi-family and retail components of the Project are anticipated to retain management personnel who can take an active role in implementing the site and stormwater maintenance obligations.

10. *All illicit discharges to the stormwater management system are prohibited.*

    A long-term Pollution Prevention Plan will include measures to prevent known illicit discharges of sanitary sewer and stormwater drainage remaining from previous development that are part of the Site to be removed or will be incorporated into updated sanitary sewer and separate stormwater systems. Detailed design plans will be submitted during future filings for the Project, which will include components in full compliance with current standards.

The Stormwater Management Policy issued by the MassDEP in January 2008 states that the "use of the standards should prevent or minimize adverse environmental impacts due to unmanaged stormwater while limiting undue costs and recognizing site constraints."

Federal NPDES Construction-Related General Stormwater Permit Compliance

The Project will result in the disturbance of more than one acre of land and thus requires the preparation and implementation of a Stormwater Pollution Prevention Plan (SWPPP) by the site contractor and owner in accordance with the Environmental Protection Agency's (EPA's) National Pollutant Discharge Elimination System (NPDES) General Permit Program for Stormwater Discharges from Construction Sites. Standard recommended components of the Stormwater Pollution Prevention Plan for construction phases of the development to be prepared and implemented by the site contractor include perimeter erosion controls such as straw bales, silt fences and stone tracking pads, combined with elements such as diversion swales and temporary sedimentation basins.

3.3 Water Supply

3.3.1 Existing Water Supply System

The Town of Sudbury is served by the Sudbury Water District, an independent municipal entity established by an Act of the Massachusetts Legislature in 1934, responsible for the water supply system and water distribution through the Town of Sudbury municipal water system. The Site is serviced by two existing 8" water mains and one 3" connection connected to a recently constructed 12" water main located within the Boston Post Road right-of-way. Raytheon has historically been a consumer of water on the Site.

3.3.2 Proposed Water Supply System

In the proposed conditions, the Site will continue to rely upon water as supplied by the Sudbury Water District, via the 12" water main located within Boston Post Road. The Project proposes to construct a network of new redundant 8" water mains and fire hydrants throughout the Site, which will be adequately sized for the domestic and fire flows associated with the Project. Water usage will be reduced through the use of low flow water fixtures and other water conservation measures. Hydrant flow tests performed on the main indicate that adequate pressures and flows are available to serve the Project.

3.3.3 Proposed Water Conservation Measures and Mitigation Measures

Estimates of unadjusted maximum projected water demand have been determined conservatively assuming water use equivalent to wastewater flows calculated in accordance with 310 CMR 15.203 (Title V). In all cases, the Town's water distribution system is believed to have sufficient capacity to meet the normal daily peak demands of the Project. The Proponent has met with the Town of Sudbury municipal officials and Sudbury Water District to discuss the Project's water demands.

The projected unadjusted water consumption rates assume water use to be equivalent to wastewater flows calculated in accordance with the DEP Wastewater Design Flow Guidelines in 310 CMR 15.203 (Title V), generally as follows:

Apartments: 110 gallons per day per bedroom
Senior Living: 150 gallons per day per two bedroom unit
Retail: 50 gallons per day per 1,000 square feet
Restaurant: 35 gallons per day per seat

The MassDEP wastewater design flows are considered very conservative in relation to actual flow volumes, therefore, no increase in water consumptive rates have been applied to these figures. Furthermore, potable water use will be minimized by implementing the following water conservation measures:

- Installing low-flow plumbing fixtures and high efficiency appliances;
- Metering and sub-metering of water usage, for example, residents will be responsible for their own water usage;
- Serving multi-family units with efficient water heating systems which utilize less water;

- Selecting drought-tolerant plants and optimizing irrigation through the use of water efficient irrigation systems including rain sensors; and
- Limiting the use of potable water for irrigation.

The projected water demand adjusted to account for the aforementioned water conservation commitments is anticipated to lower the maximum unadjusted water demand by approximately a minimum of 20%. Accordingly based on this project, the Project water demand is anticipated to be approximately 65,600 gpd.

3.4 Wastewater

The Site is currently serviced by a private wastewater collection, treatment and disposal system. The Town of Sudbury does not provide municipal wastewater service to the area. In the future condition, all wastewater collection, treatment, and disbursement will continue to be handled entirely by the on-site systems. Discharge of highly treated effluent on-site to sand beds will increase groundwater recharge and benefit the underlying aquifer by contributing to the aquifer, thereby eliminating the detrimental effects of a potential inter-basin transfer.

3.4.1 Existing Wastewater Supply System

Wastewater from the existing on-site buildings is collected via a mix of gravity and force sewer mains prior to being treated and discharged to an on-site wastewater treatment plant (WWTP), as described herein.

Prior to 1990, wastewater treatment on site at the Raytheon facility was achieved using a package extended aeration plant followed by chlorination with disposal of treated wastewater to open sand beds via infiltration. Around 1990, the Raytheon replaced the aging package treatment plant with an advanced form of secondary treatment referred to as a sequencing batch reactor (SBR), which would be capable of achieving a discharge limitation of less than 5 milligrams per liter (mg/l) of nitrate nitrogen. The upgrade also included the addition of ultraviolet (UV) disinfection to replace the chlorination process.

A second round of upgrades to the WWTP completed in 2009 included rehabilitation of the influent pump station; replacement of the aeration blowers for the flow equalization tanks (FETs), the SBR, and the sludge holding tank; replacement of the decanter in the SBR; upgrade of the UV disinfection system; installation of a cloth disk filter; installation of chemical addition systems; and installation of a Supervisory Control and Data Acquisition (SCADA) system with process control instrumentation.

The existing facility has continued the practice of disposing treated effluent to three open sand beds via infiltration to the ground. The WWTP and the disposal of treated effluent are currently permitted to discharge up to 50,000 gallons per day (gpd) under the Groundwater Discharge Permit (GWDP) issued by the MassDEP.

3.4.2 Proposed Wastewater Supply System

Wastewater from the proposed on-site buildings will be collected via a mix of newly constructed gravity and force sewer mains prior to being discharged to the upgraded on-site wastewater treatment plant (WWTP), as described herein.

Based on 310 CMR 15.203 (Title V) estimates for the proposed uses are expected to be approximately 82,000 gpd. Once adjusted to reflect the aforementioned water conservation measures, the total water demand and wastewater generation is estimated to be further reduced by a minimum of 20% from Title V rates to approximately 65,600 gpd. The actual net incremental flow will be approximately 15,600 gpd or less when compared to the existing former use and permitted discharge rate

As part of the GWDP Modification Process, a hydrogeological evaluation is currently being conducted to determine the capacity of the sand beds to accommodate the additional flow or identify the need for supplemental measures to provide a total capacity of up to 90,000 gpd. The specific design of the WWTP upgrades are dependent on the quantity of wastewater effluent the current sand beds will accommodate. The Proponent will work closely with MassDEP during this process, and proposed upgrades will be designed to comply with the current regulations for groundwater discharge and redundancy. Any additional capacity will provide some flexibility that may be necessary to accommodate the final programming of the site (i.e., an additional restaurant would increase the design flow).

3.4.3 Proposed Wastewater Conservation Measures and Mitigation Measures

The on-site WWTP will dose the highly treated effluent into on-site leaching fields. The on-site dosing fields overlay the Town of Sudbury's Nobscot sub basin of the SuAsCo watershed. As noted above, water conservation measures will be implemented throughout the project to minimize the use of potable water and the subsequent generation of wastewater. The wastewater generation estimates included herein for the Project are based on the Title V generation rates. Actual generation rates are typically significantly lower than Title V rates, which include a factor of safety and pre-date many of the water conservation measures generally used in new construction projects. For example, similar Avalon projects in Acton and Cohasset generate and average of 60 GPD per bedroom, whereas Title V estimates 110 GPD per bedroom. As noted above, the projected wastewater generation, 65,600 gpd (a 20% overall reduction from Title V) is forecasted to be consistent with the water demand as adjusted to reflect the commitment to provide water conservation measures and the flow rates determined from existing similar projects.

In addition to the water conservation measures, the construction of new, watertight sewer pipes throughout the site will replace older pipes that may be contributing to inflow and infiltration in the existing system.

4 Transportation

4.1 Introduction

This section is summarizes the findings of the recently completed Traffic Impact and Access Study (the "Study"). The analysis concludes that the Project will have comparable, if not improved operations on weekdays at the study locations when compared to reoccupation of the existing 563,300 square foot office and research and development buildings. The operational impacts of the limited additional new traffic on Saturdays is also expected to be nominal.

For the full report, please see Attachment D.

4.1.1 Key Findings and Benefits

Key Project findings and benefits related to transportation include:

- Improvements are consistent with the town's Route 20 Corridor Study and MassDOT's Healthy Transportation Policy Directive.
- Project is expected to generate less traffic during the weekday morning and weekday evening peak hours as compared to the existing use.
- Reduction in the peak hour traffic volumes is expected to have a noticeable beneficial effect on the area roadway weekday traffic operations.
- Improved safety at Site intersections.
- Includes Transportation Demand Management (TDM) measures.
- In connection with Project's retail/grocery store phase, improved pedestrian accommodations by widening the existing sidewalk on the north side of Boston Post Road along the Site frontage and extending the limits of the existing sidewalk on the south side of Boston Post Road.
- Subject to right of way availability and In connection with Project's retail/grocery store phase, addition of five-foot paved shoulders (which could become part of future bike lanes) on either side of Boston Post Road within the limits of the roadway improvements.

4.2 Traffic Summary

Compared to the re-use of the existing facilities on the Site by a new office and research and development tenant, the Project is expected to generate less traffic during the weekday morning and weekday evening peak hours. Specifically, in comparison to a 563,300± sf office/R&D user that would generate 765 weekday morning peak hour trips and 710 weekday evening peak hour trips, the Project would generate 63 percent and 37 percent fewer trips during the same peak hours, respectively. Due to the mixed-use nature of the development, distribution of Site traffic is expected to occur over the course of the day rather than being focused during just the peak commute hours, and the lower traffic intensity of the proposed uses contributes to the peak hour trip reduction during the weekdays. Such a significant reduction in the peak hour traffic volumes can be expected to have a noticeable beneficial effect on the area roadway weekday traffic operations.

Due to the introduction of a retail component in the proposed development plan, the Project is estimated to generate 365 net new additional vehicular trips per hour during the Saturday midday peak hour when compared to an office/R&D use. Distributed over the study area roadway network, this total hourly increase corresponds to an increase in the range of five (5) to 85 vehicle trips per hour at different locations/directions.

Detailed capacity analysis indicates that even without the implementation of any capacity improvements, the Project will have comparable, if not improved operations on weekdays at the study locations when compared to a 563,300± sf office/R&D tenant on the Site. The operational impact due to the limited additional new traffic on Saturdays is also expected to be nominal.

Nonetheless, the Proponent plans to implement multiple improvements as part of the grocery store portion of the project to help further reduce the impact of the Project and improve existing conditions. An outline of the improvement measures is presented below.

- Construction of a new traffic signal on Boston Post Road by aligning the primary Site driveway with the westerly driveway for Sudbury Plaza and Highland Avenue (a private way). This would also include the construction of designated left turn lanes on Boston Post Road, a new actuated pedestrian crosswalk and bicycle accommodations at the intersection that will also benefit the retail plaza across Route 20;
- Improved safety through the elimination of traffic control by a police officer at the primary Site driveway during the weekday evening peak hour;
- In connection with Project's retail/grocery store phase, improved pedestrian accommodations by widening the existing sidewalk on the north side of Boston Post Road along the Site frontage and extending the limits of the existing sidewalk on the south side of Boston Post Road;
- Implementation of a time-based coordinated signal system between the new signalized Site driveway, Nobscot Road and Union Avenue intersections on Boston Post Road to better manage vehicular queues and improve progression of through traffic at multiple intersections;

- Construction of a new emergency preemption signal at the fire station located along the Site frontage and integration of the signal into the new traffic signal at the primary Site driveway;
- Subject to right-of-way availability and in connection with the Project's retail/grocery store phase, addition of five-foot paved shoulders (which could become part of future bike lanes) on either side of Boston Post Road within the limits of the roadway improvements; and,
- Implementation of a robust Traffic Demand Management (TDM) program as part of the full build-out of the Project, underpinned by a significant investment in on-site circulation enhancements.

Please see Attachment D for the complete traffic impact and access study. The supporting documentation for the analysis is provided in a CD on the back cover of the ENF.

4.3 Transportation Alternatives

The Project will employ a Traffic Demand Management (TDM) program to reduce the overall traffic impact. The program will implement measures aimed at affecting the demand side of the transportation equation, rather than the supply side. By their very nature, TDM programs attempt to change people's behavior, and to be successful, they must rely on incentives or disincentives to make these shifts in behavior attractive to the commuter.[1] TDM programs are designed to maximize the people-moving capability of the existing transportation infrastructure by increasing the number of persons in a vehicle, providing alternate modes of travel, or influencing the time of, or need to, travel.

In addition to the roadway and traffic signal improvements, the Proponent is considering the implementation of various TDM services on the Site. The TDM plan will be aimed at minimizing the use of single-occupant vehicles and reducing peak hour vehicular demands. This program, which will be available to all residents, retail customer and employees of the Site, includes the following components:

- Designation of a Transportation Coordinator
- MetroWest/495 Transportation Management Association (TMA) Membership
- Ridesharing Programs
- Transit Service
- Bicycle and Pedestrian Enhancements

▼

1 Implementing Effective Traffic Demand Management Measures: Inventory of Measures and Synthesis of Experience, prepared by Comsis Corporation and the Institute of Transportation Engineers, for the U.S. Department of Transportation, DOT-T-94-02, September, 1993, p. I-1.

4.3.1 Transportation Coordinator

The Proponent will designate a transportation coordinator to prepare and implement the TDM program for the Site. This person will be available to provide residents, employees and customers with information regarding their commuting options and will coordinate the implementation of the TDM programs. This person will also be responsible for coordinating with the Metrowest/495 TMA, MassRides, and the MWRTA.

4.3.2 Metrowest/495 TMA Membership

The Proponent will explore membership opportunities with the Metrowest/ 495 Transportation Management Association (TMA). The TMA serves the commuting needs of member communities in the MetroWest region (Framingham, Natick, Marlborough, Hudson, Southborough, Ashland, Sudbury, Wayland, Holliston, Hopkinton, Sherborn, Westborough, and Northborough) including those located along Interstate 495, by advocating for community interests relating to area wide transportation, aiming to relieve traffic congestion and broadening commuting options for residents of the towns it serves.

4.3.3 Ridesharing Programs

The Proponent will encourage residents and employees on the Site to participate in ridesharing programs to promote trip reduction and travel demand management during peak commuting hours. Ridesharing refers to encouraging commuters to ride in vehicles with other commuters, rather than drive alone. The most common forms of ridesharing are carpools and vanpools. The benefits of such programs include less congestion, reduced fuel consumption and better air quality. These programs are generally available to members of the TMA.

4.3.4 Transit Service

The nearest MWRTA bus service in the area is currently located approximately three miles to the west in Marlborough and three miles to the south in Framingham.

A recently completed Comprehensive Service Assessment by the MWRTA indicates that services gaps have been identified and their resolution could service specific mobility needs in the region. Specifically, the assessment refers to the extension of the current weekday service along Route 7C in Marlborough to include Sudbury and Wayland along Boston Post Road as a new service recommendation. The route, when extended, would provide hourly service along Boston Post Road between 6:00 AM and 8:00 PM. Additionally, the potential for extending MWRTA Routes 2 and 3 that currently serve Nobscot Shopping Center in Framingham to Boston Post Road in Sudbury has been noted as means to open up the system to the significant growth along the Boston Post Road corridor. The Proponent met with representatives of the MWRTA to gain a better understanding of the MWRTA's long-term growth plans and to ensure that the proposed roadway improvements and/or Site design could accommodate MWRTA vehicles if service is expanded to the study area in the future.

4.3.5 Bicycle and Pedestrian Enhancements

The proposed redevelopment plans for the Site reflects a conscious effort to make the overall Site more pedestrian and bicycle friendly. The bicycle/pedestrian enhancements proposed as part of the Project are listed below. The enhancements within and along Boston Post Road are anticipated to be completed concurrent with the off-site roadway improvement project implemented in conjunction with the Grocery store construction.

- Widening of the existing sidewalk on the north side of Boston Post Road within the limits of the roadway improvements and extending of the limits of the existing sidewalk on the south side of Boston Post Road.
- Subject to right-of-way availability and in connection with Project's retail/grocery store phase, the introduction of five-foot paved shoulders on either side of Boston Post Road within the limits of the improvements. These shoulders would become part of future bicycle lanes that may be implemented by others along the corridor in the future.
- Construction of a fully actuated pedestrian crosswalk at the proposed signalized Site driveway.
- Installation of bicycle detection at the signalized intersection.
- Secure bicycle parking at convenient locations on the Site.
- A well planned network of sidewalks throughout the Site.
- Accommodation of future connections to the planned Mass Central rail trail that would run along the north side of the Site.
- A potential pedestrian connection to the adjacent property on the east side of the Site has been discussed with the abutter.

Please see Attachment D for the complete traffic impact and access study which incorporates review comments from the Town of Sudbury's traffic peer review consultant.

5 Construction

5.1 Introduction

Construction impacts are temporary in nature and will be minimized through the implementation of a Construction Management Plan that will be reviewed by the Town. The following section describes the potential temporary impacts due to construction activities and proposed mitigation measures to reduce these impacts. Due to market conditions and the operational needs of the existing occupants, Project components will be sequenced as discussed herein.

5.1.1 Key Findings and Benefits

Key findings and benefits related to construction include:

- An Erosion Control and Sedimentation Plan to control construction-related land disturbance activities will be implemented, in accordance with the National Pollutant Discharge Elimination System (NPDES) General Permit requirements.
- The Proponent is committed to working with public officials to help ensure that appropriate traffic maintenance and protection measures are in place during construction.
- The Proponent will work to recycle building materials during demolition to the fullest extent practicable, except wallboard, fabric material, and insulation.
- Hazardous materials recovered during demolition will be disposed of in accordance with Massachusetts Department of Environmental Protection (DEP) requirements.
- The Proponent has engaged a third-party industrial hygienist to oversee the abatement contractor to preserve air quality.
- The Proponent has engaged an LSP who will develop and implement a Release Abatement Measures Plan which are intended to identify and address any unknown conditions that may arise during construction.
- The Proponent will require on-site construction vehicles to use ultra-low-sulfur diesel fuel in vehicles, to the extent practicable, and will implement a no idling policy for on-site construction delivery vehicles.

5.2 Construction Schedule

Construction of the various elements of the Project is planned to occur concurrently; however based on the time required to construct certain components of the Project, as well as existing lease commitments to the current tenant, parts of the Project will start and be completed at different times, described generally as follows.

Subject to receipt of the required permits, site preparation and construction of the Project is anticipated to commence in the spring of 2016 with building demolition and construction of the grocery store. Once the existing tenant vacates Building 1 and 5 at the end of 2016, construction of the residential uses and the remaining commercial buildings is envisioned to begin. The grocery store opening date is anticipated to be late summer 2017, with the remainder of the Project construction concluding at the end of 2018. Off-site improvements proposed at the site frontage with Boston Post Road, including the traffic signal work, will be constructed as part of the Project's retail/grocery store phase and are expected to be substantially complete concurrent with the grocery store opening.

The overall Project is anticipated to be complete by December 2018.

5.3 Site Preparation and Staging

5.3.1 Erosion and Sedimentation Control

The Project will comply with all local, state, and federal regulations regarding construction phase erosion and sedimentation control. A Storm Water Pollution Prevention Plan (SWPPP) will be prepared for each phase of construction in accordance with Environmental Protection Agency (EPA) requirements under the National Pollutant Discharge Elimination System (NPDES) program. A Notice of Intent (NOI) will be filed with the EPA for coverage under Construction General Permit. The SWPPP will address stormwater management Best Management Practices to be implemented during construction. Several requirements of the SWPPP address erosion of sediment by both forces of water and wind. In general, erosion and sedimentation control will include the following measures:

- Disturbed areas will be protected from stormwater runoff. Runoff will be diverted from flowing over disturbed areas by means of temporary diversion swales.
- BMPs including silt fences and hay bales will be installed down gradient of construction areas.
- Catch basins will be fitted with silt sacks to prevent runoff impact and will be cleaned regularly and after any rain/storm event.
- Erosion and sedimentation control measures will be in place prior to the commencement of any site work or earth work operations, will be maintained during construction, and remain in place until all site work is complete and groundcover is established.

- All erosion control measures will be routinely inspected, cleaned and repaired or replaced as necessary throughout all phases of construction. Daily field reports will be kept during site work activities and available for inspection by federal and local authorities.
- Erosion control measures will be inspected prior to any forecasted significant storm event and repaired as necessary.
- Erosion control measures will be inspected after any significant storm event and repaired as necessary.
- Earthwork activity on the site will be done in a manner such that runoff is directed to the existing drainage system.
- Dewatering, if required during construction, shall discharge into a temporary sedimentation basin and be directed to treatment in accordance with the U.S. EPA Remediation General Permit.

In addition to the previously described measures, all on-site drainage and adjacent roadway drainage will be maintained in proper working condition during and after construction. Sediment will be removed from structures when they accumulate to a depth of 1/3 of the structure's height or as recommended by the manufacturer or local authority having jurisdiction. Structures will be repaired or replaced as needed. The Proponent will require contractor(s) to attend a pre-construction meeting to discuss the erosion and sedimentation control plan and how it relates to the intended construction schedule and expectations for compliance with federal, state, and local requirements.

5.4 Dust and Air Quality

Dust generated from earthwork and other construction activities will be controlled by spraying with water. If necessary, other dust suppression methods will be implemented to ensure minimization of the off-site transport of dust, including hydroseeding or covering with anti-erosion mats any stockpiled material that is anticipated to be stored for greater than 30 days. There also will be regular sweeping of the pavement of adjacent roadway surfaces during the construction period as appropriate and necessary to minimize the potential for vehicular traffic to kick up dust and particulate matter. A construction tracking mat will be installed at locations of exiting site work vehicles so that tires will not track soils off-site and vehicles will be required to wash tires of excess soil before leaving the Project Site.

The Proponent will contractually require the construction contractors to adhere to all applicable regulations regarding control of construction vehicle-related emissions. This will include, but not be limited to, maintenance of all motor vehicles, machinery, and equipment associated with construction activities and proper fitting of equipment with mufflers or other regulatory-required emissions control devices. The Commonwealth of Massachusetts anti-idling law will be enforced during the construction phase of the Project with the installation of on-site anti-idling signage.

The Project will comply with the requirements of the Clean Construction Equipment Initiative to the extent reasonably practicable. This initiative is aimed at reducing air emissions from diesel-

powered construction equipment. Oxidation catalysts and catalyzed particulate filters may be utilized on all construction vehicles and equipment to reduce air quality degradation caused by emissions from heavy-duty, diesel-powered construction equipment. All pre-2007 diesel construction vehicles working on the Project may be retrofitted using retrofit technologies approved by the EPA. Additionally, ultra-low-sulfur diesel fuel (15 parts per million) may be used for all off-road diesel equipment.

5.5 Construction Traffic

The construction period will include generation of truck/construction vehicle traffic and construction employee traffic. The following is a summary of the expected effects of construction truck traffic and the measures to be used to reduce any potentially negative impacts during the construction period.

5.5.1 Truck Traffic

The construction involves the use of designated routes for all associated construction truck traffic. No construction vehicles will be allowed to use residential streets. Designated routes will be identified for each component to limit disruption to neighbors and completed portions of the project by using routes that provide the most direct routes for construction traffic in and out of the Project Site.

The Proponent has initiated discussions with the Sudbury Fire Department regarding the Project, and has committed to working closely with the Fire officials regarding impact of construction and specifically construction phase traffic on the operations at the fire station along the Site's frontage.

5.5.2 Traffic Maintenance

The Proponent is committed to working with public officials to provide appropriate traffic maintenance and protection measures are in place throughout construction. It is expected that any off-site work required for utility connections will limit disruption during peak travel periods and only one side of the roadway at any given time, if required by authorities having jurisdiction. It is anticipated that traffic patterns would be maintained on affected roadways at all times and that there would be no need for any full road closures or detours during the period of construction of improvements. Police or traffic control officers will be utilized, as necessary or required.

5.6 Construction Noise

The construction activity associated with the Project may temporarily increase nearby sound levels due to the use of heavy machinery. Heavy machinery is expected to be used intermittently throughout the Project's construction phases during daytime periods. The construction phases that will generate the highest sound levels include the demolition of existing buildings, site excavation and grading, and construction of the foundations for the proposed buildings.

5.7 Hazardous Materials and Solid Waste

5.7.1 Construction Waste Management

Demolition of existing on-site buildings will be required for the Project. The Project Construction Manager will implement a waste management plan to divert Project-related construction waste material from landfills through recycling and salvaging to the extent feasible. Existing pavement will either be processed on-site for re-use as structural fill or shipped off-Site to an asphalt recycling facility.

Should excess soil be generated during construction that requires off-Site disposal, analytical testing of the soil will be required so that it can be properly disposed of at an off-site facility. Materials will be handled according to all applicable federal, state, and municipal environmental laws and regulations. In the event that subsurface contamination exceeding MCP reporting thresholds is encountered, MassDEP will be notified and the contamination managed in accordance with the MCP

A hazardous building materials survey was performed for the Project by TRC in June of 2015. The survey identified detectable levels of hazardous materials on various building components. Asbestos and hazardous building materials abatement will be performed prior to demolition of the existing site buildings in accordance with applicable laws and regulations.

Waste containers will be provided in sufficient size and quantities to contain all construction waste. Containers will be inspected to ensure no waste material has overflowed and will be emptied on a regular basis. Waste collection containers will be provided for construction and demolition waste as well as packaging and domestic waste from workers on-site.

5.7.2 Spill Prevention

A spill prevention plan will be implemented to prevent and respond to leaks, spills, and other releases. The spill prevention plan will comply with all local, state, and federal regulations.

- Address appropriate storage, handling, and disposal of construction products and materials such as paints, petroleum products, and landscaping materials (pesticides, fertilizers, etc.).
- Equipment necessary to quickly attend to inadvertent spills or leaks will be stored on-site in a secure but accessible location.
- Spills or leaks will be treated properly according to material type, volume of spillage, and location of the spill. Mitigation will include preventing further spillage, containing the spilled material in a safe and environmentally sound manner, and remediating any damage done to the environment.
- After perimeter site erosion control measures are installed, but before any further site work occurs, a 55-gallon spill containment kit will be maintained on-site throughout the construction period.

5.7.3 Soil/Groundwater Management

The Proponent has engaged an LSP for the Project, and the work will be performed in accordance with Massachusetts Contingency Plan requirements. Construction activities within the boundary of RTNs 3-27243 and 3-3037 will be performed in accordance with a Release Abatement Measure (RAM) Plan, which will include a Soil and Groundwater Management Plan that will be prepared and submitted to the DEP prior to construction activities. Given the low concentration and depth and lack of any soil contamination, no unusual measures would be anticipated. Soil excavated during construction will be handled according to all applicable federal, state, and municipal environmental laws and regulations.

526 & 528

Boston Post Road Redevelopment
Sudbury, MA

MEADOW WALK
SUDBURY

AVALON
SUDBURY

Environmental Notification Form

February 16, 2016

SUBMITTED TO
Executive Office of Energy and Environmental Affairs

Massachusetts Environmental Policy Act Office

A PARTNERSHIP OF
BPR Sudbury Development LLC

AvalonBay COMMUNITIES

ND NATIONAL DEVELOPMENT

PREPARED BY
vhb
101 Walnut Street
PO Box 9151
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IN ASSOCIATION WITH
Tata & Howard
Sanborn, Head & Associates
Goulston & Storrs

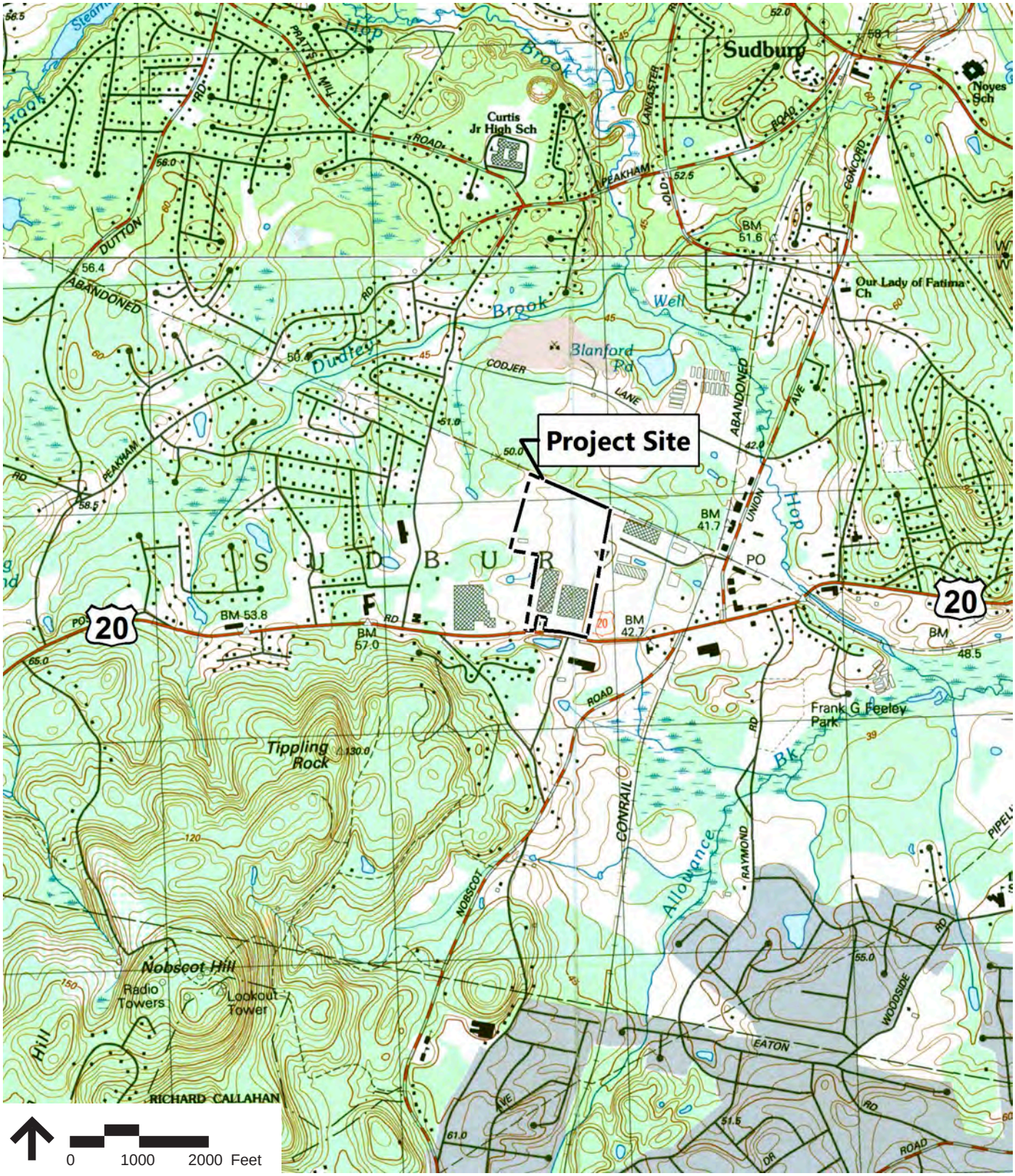
ATTACHMENT A: FIGURES

1. Locus Map
2. Project Area Context
3. Existing Conditions Site Plan
4. Proposed Conditions Site Plan
5. Proposed Open Space and Pedestrian Connections
6. Project Renderings
7. Existing Wetlands Resources
8. Existing Drainage Conditions
9. Proposed Drainage Conditions

10a. Water Distribution

10b. Sewer System

11. Boring Locations
12. As-of-Right Building Alternative



AVALON SUDBURY

MEADOW WALK SUDBURY

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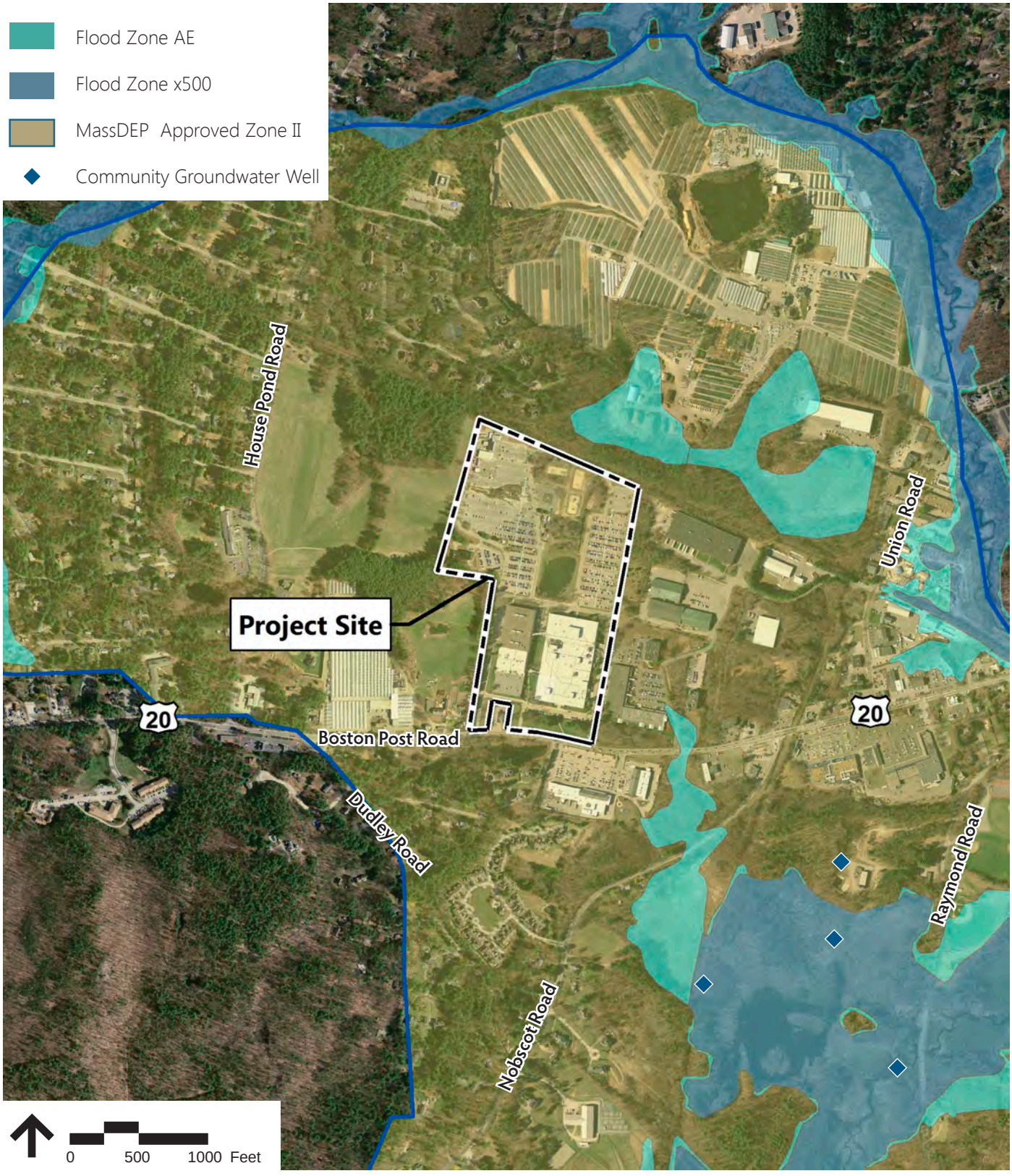
Figure 1

USGS Locus Map

526 and 528 Boston Post Road Redevelopment

Source: MassGIS



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526 and 528 Boston Post Road Redevelopment

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Figure 2

Project Area Context

Source: ArcGIS Bing Aerial

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526 and 528 Boston Post Road Redevelopment

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Figure 3

Existing Conditions Site Plan

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526 and 528 Boston Post Road Redevelopment

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Figure 4

Proposed Conditions Site Plan

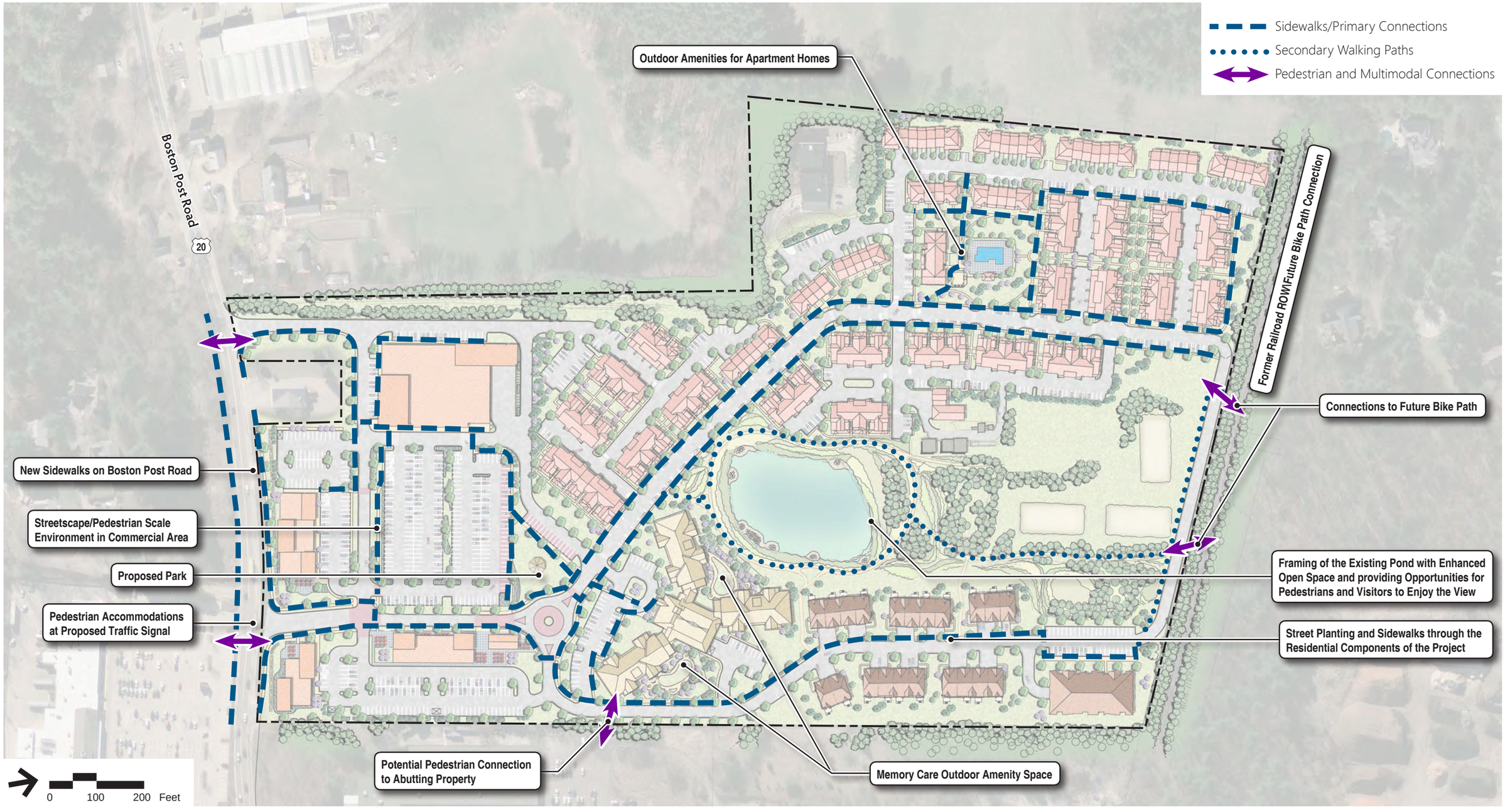

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Figure 5

Proposed Open Space and Pedestrian Corridors

Residential Apartments

Retail/Grocer

Memory Care Assisted Living

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526 and 528 Boston Post Road Redevelopment

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Figure 6
Project Renderings

Source: TAT

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526 and 528 Boston Post Road Redevelopment

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Figure 7

Existing Wetland Resources

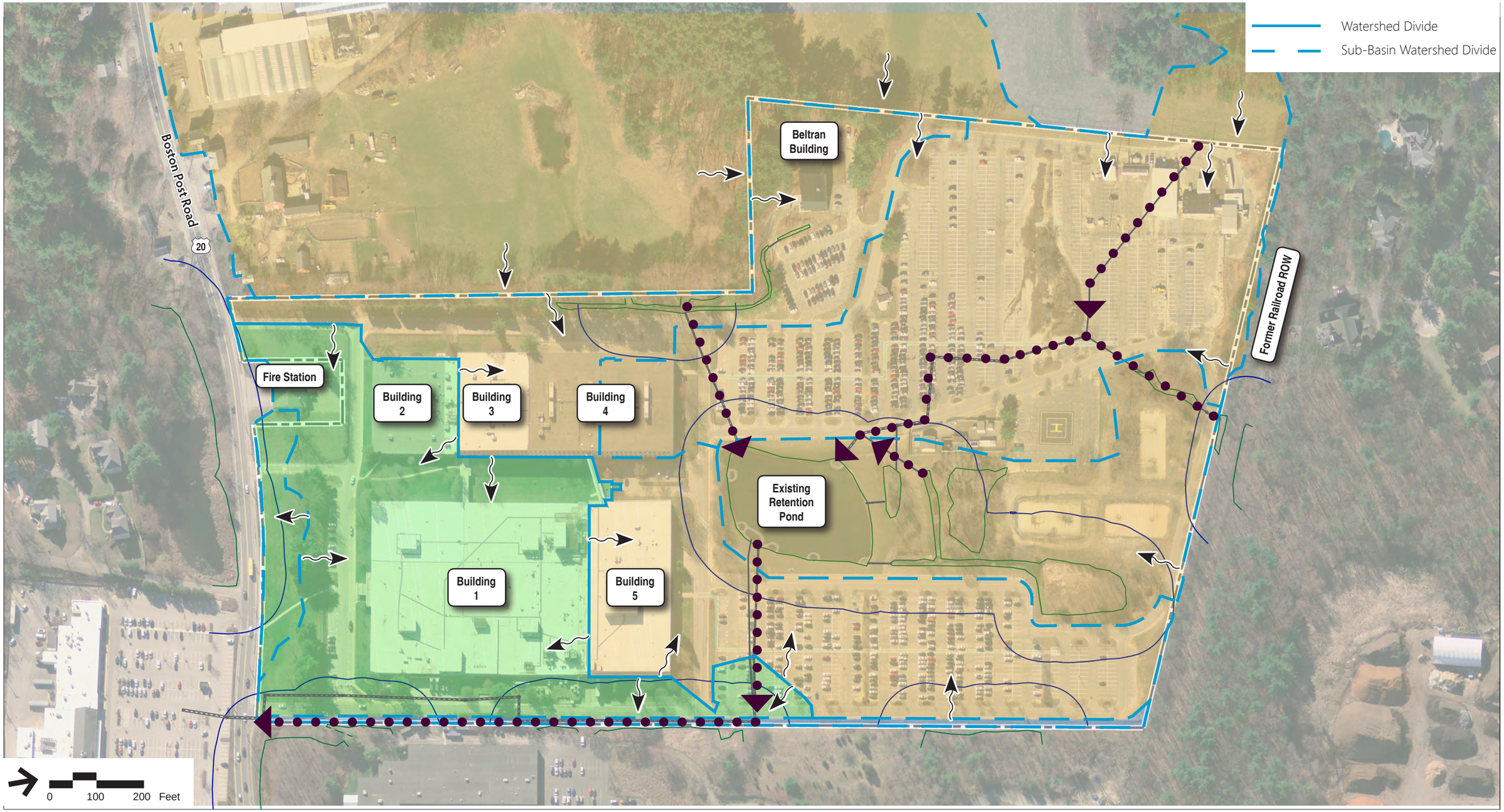

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Figure 8

Existing Drainage Conditions

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526 and 528 Boston Post Road Redevelopment

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Figure 9

Proposed Drainage Conditions

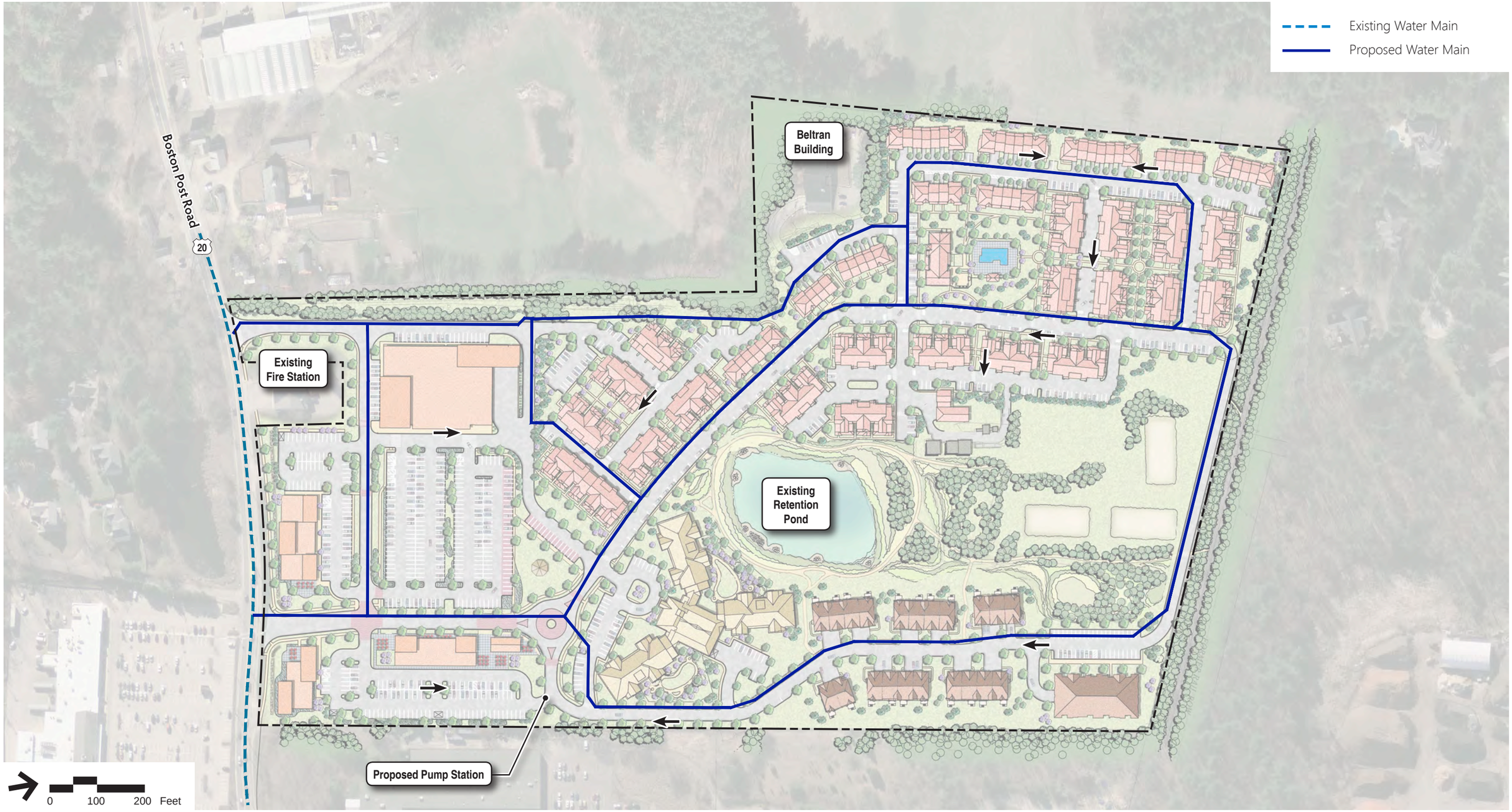

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Figure 10a

Water Distribution System

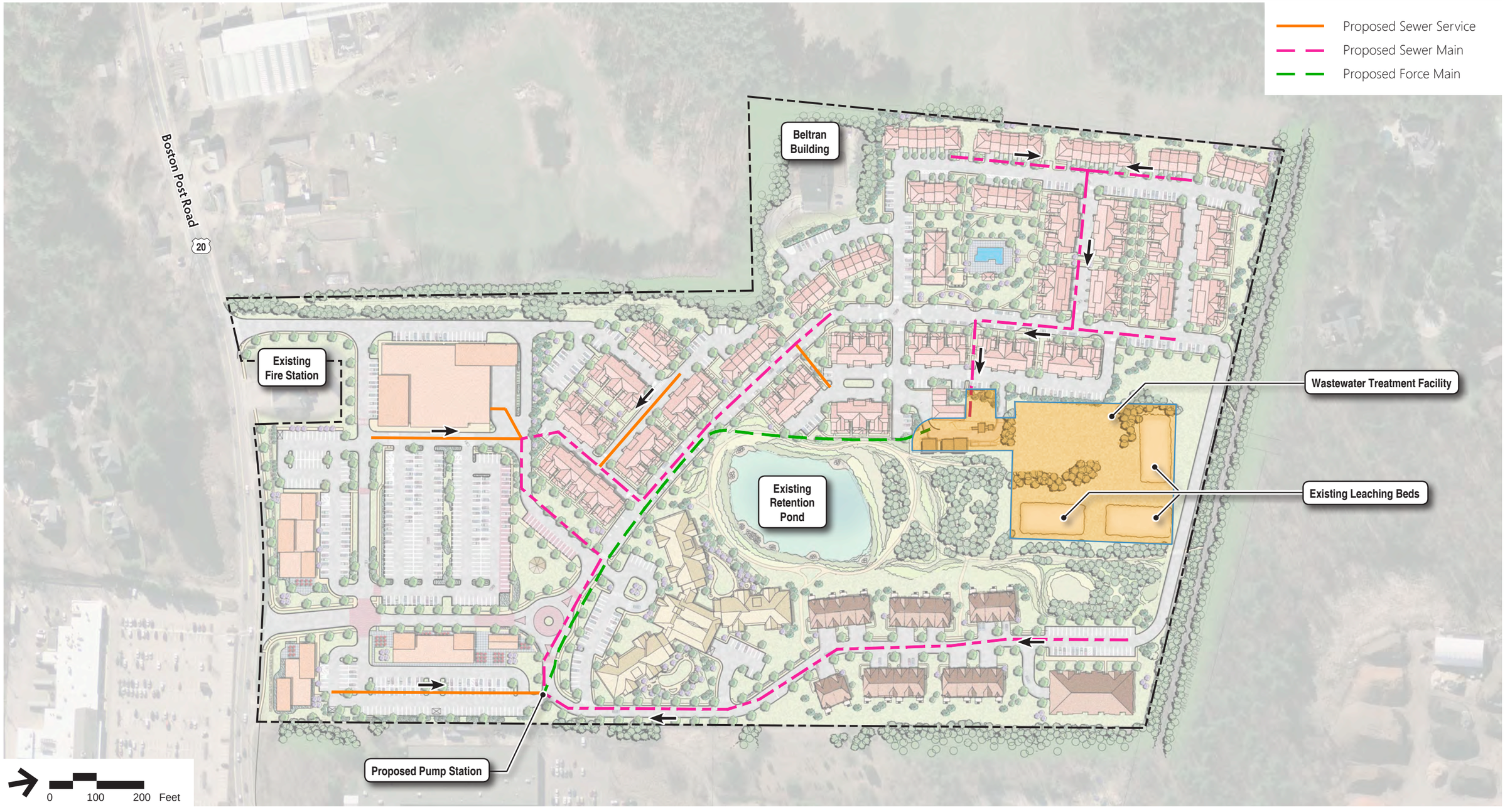

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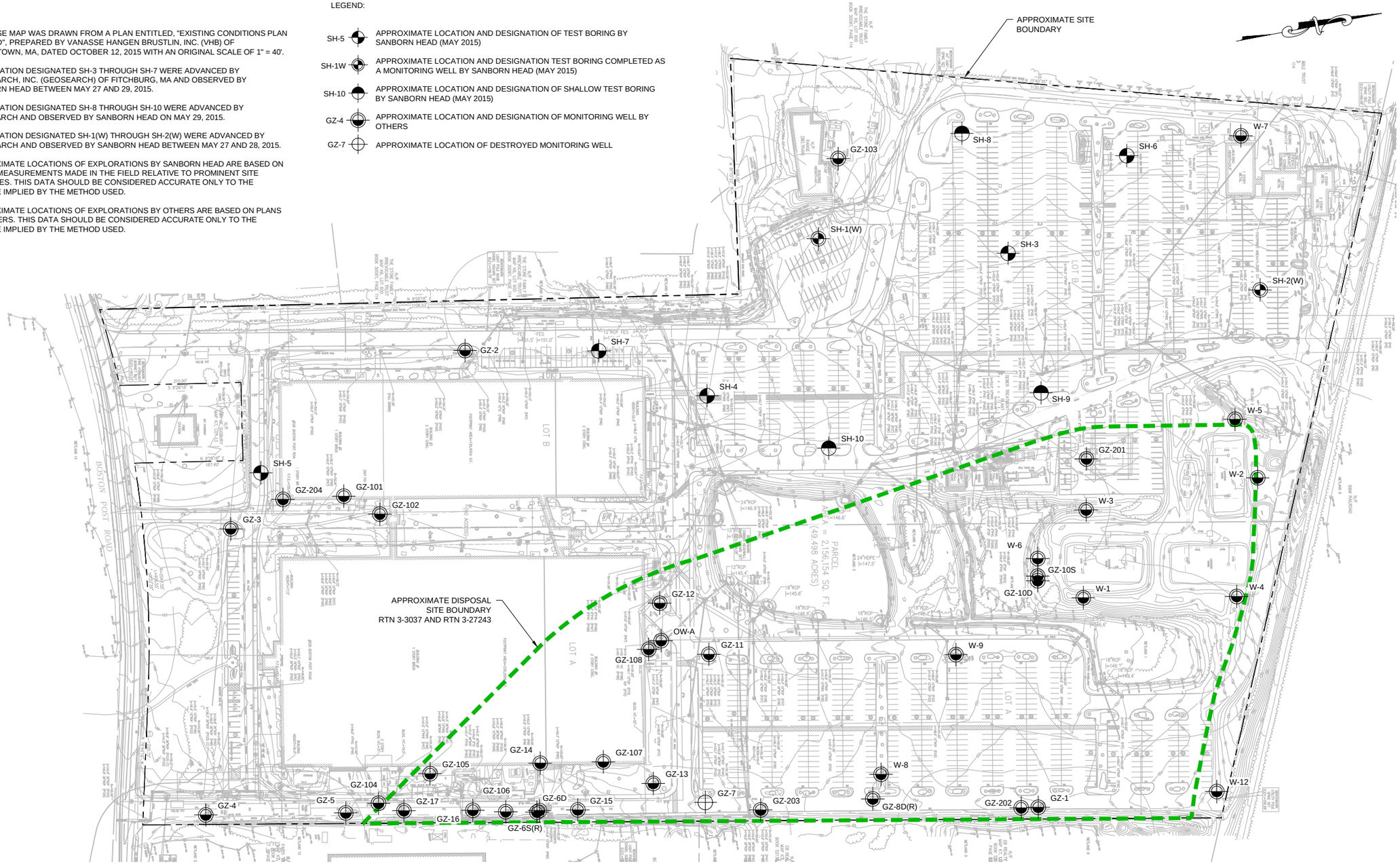
Figure 10b
Sewer System

NOTES:

1. THE BASE MAP WAS DRAWN FROM A PLAN ENTITLED, "EXISTING CONDITIONS PLAN OF LAND", PREPARED BY VANASSE HANGEN BRUSTLIN, INC. (VHB) OF WATERTOWN, MA, DATED OCTOBER 12, 2015 WITH AN ORIGINAL SCALE OF 1" = 40'.
2. EXPLORATION DESIGNATED SH-3 THROUGH SH-7 WERE ADVANCED BY GEOSEARCH, INC. (GEOSEARCH) OF FITCHBURG, MA AND OBSERVED BY SANBORN HEAD BETWEEN MAY 27 AND 29, 2015.
3. EXPLORATION DESIGNATED SH-8 THROUGH SH-10 WERE ADVANCED BY GEOSEARCH AND OBSERVED BY SANBORN HEAD ON MAY 29, 2015.
4. EXPLORATION DESIGNATED SH-1(W) THROUGH SH-2(W) WERE ADVANCED BY GEOSEARCH AND OBSERVED BY SANBORN HEAD BETWEEN MAY 27 AND 28, 2015.
5. APPROXIMATE LOCATIONS OF EXPLORATIONS BY SANBORN HEAD ARE BASED ON TAPED MEASUREMENTS MADE IN THE FIELD RELATIVE TO PROMINENT SITE FEATURES. THIS DATA SHOULD BE CONSIDERED ACCURATE ONLY TO THE DEGREE IMPLIED BY THE METHOD USED.
6. APPROXIMATE LOCATIONS OF EXPLORATIONS BY OTHERS ARE BASED ON PLANS BY OTHERS. THIS DATA SHOULD BE CONSIDERED ACCURATE ONLY TO THE DEGREE IMPLIED BY THE METHOD USED.

LEGEND:

- SH-5 — APPROXIMATE LOCATION AND DESIGNATION OF TEST BORING BY SANBORN HEAD (MAY 2015)
- SH-1W — APPROXIMATE LOCATION AND DESIGNATION TEST BORING COMPLETED AS A MONITORING WELL BY SANBORN HEAD (MAY 2015)
- SH-10 — APPROXIMATE LOCATION AND DESIGNATION OF SHALLOW TEST BORING BY SANBORN HEAD (MAY 2015)
- GZ-4 — APPROXIMATE LOCATION AND DESIGNATION OF MONITORING WELL BY OTHERS
- GZ-7 — APPROXIMATE LOCATION OF DESTROYED MONITORING WELL



AVALON SUDBURY

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Figure 11

Boring Locations

Source: Sanborn Head Associates

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MEADOW WALK SUDBURY

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Figure 12

As-of-Right Build Alternative

ATTACHMENT B: LETTERS OF SUPPORT

Town of Sudbury

Office of Selectmen
www.sudbury.ma.us

Flynn Building
278 Old Sudbury Rd
Sudbury, MA 01776-1843
978-639-3381
Fax: 978-443-0756
Email: selectmen@sudbury.ma.us

February 25, 2015

Mr. T. Bradley Duffin
Director of Facilities and Real Estate
Raytheon Company
350 Lowell Street
Andover, MA 01810

RE: Sudbury Raytheon Redevelopment

Dear Mr. Duffin:

The Town of Sudbury, acting through its Board of Selectmen and Planning Board, has held several meetings to discuss the Town's goals and priorities as they relate to redevelopment of the Raytheon property upon its sale to a private developer. First, we thank you for meeting with Town officials and indicating Raytheon's desire for a smooth transition. These early discussions set the stage for a productive process which we hope results in a redevelopment scheme that is mutually beneficial for all parties. We also thank Raytheon for being an outstanding corporate citizen for six decades. While the decision to vacate the property by Raytheon is a great loss for Sudbury, we trust that a continued cooperative approach by all parties will result in positive developments for the community. This letter is the product of several months of discussion between the parties on this topic and is intended to provide clarity regarding the Town's goals for the disposition and future development of the property.

We have studied the property and understand its development potential, acknowledging current zoning and other permitting limitations. We have come to understand limitations in the market for certain commercial uses, including the current use of the property for large scale office. This knowledge has encouraged us to consider new uses for the property that can help fulfill several different Town needs and goals.

From the Town's perspective, we feel that the property is well suited for a mixed use project with a focus on residential with supporting retail. The Town's objective in suggesting these uses is to help promote a project that reflects the nature and character of Sudbury and which will create enough affordable housing units to reach, or nearly reach, our 10% state requirement in order to enable Sudbury to successfully prevent undesirable 40B projects that would circumvent town planning and zoning. Sudbury's affordable housing gap is approximately 240 units. It is our strong preference that any housing component be developed entirely as rental housing under a state-recognized subsidy program so that all units count towards this requirement. This will entail that no less than 25% of the units are affordable under the state's definition and are eligible to count on Sudbury's Subsidized Housing Inventory. It is our desire that the maximum allowable percentage of the new housing units be age restricted housing, in order to minimize the impacts of this redevelopment on our already burdened school system and provide additional housing diversity for our growing senior population. Congregate care and assisted living facilities would be welcomed, especially if they also included an affordable component. We also think some amount of retail and limited office use of proper scale and character would complement the area and provide convenient services to the new residents.

Town of Sudbury

Office of Selectmen
www.sudbury.ma.us

Flynn Building
278 Old Sudbury Rd
Sudbury, MA 01776-1843
978-639-3381
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Email: selectmen@sudbury.ma.us

The Town will consider endorsing a Local Initiative Program (LIP) 40B application if the proposed development is responsive to the above Town objectives and helps the Town achieve its affordable housing goal. The LIP process will likely prove to be the most expeditious, as it would not require a zoning change.

With any project, we expect that all impacts will be fully mitigated, including but not limited to increases in the number of school-aged children, potential environmental contamination, traffic and support service needs. The Town will also seek to obtain certain additional items from the developer to enhance the new development on the site and provide benefits to the Town as a whole, including but not limited to access to the abutting rail trail, expansion/relocation of the Route 20 Fire Station, reservation of land for active and/or passive recreation, streetscape improvements and maintaining a location for the medi-vac helipad.

We have appreciated your forthright approach to the discussion regarding the property thus far. The redevelopment of this property provides a unique opportunity for Sudbury and may be a catalyst for longer term mutually beneficial economic development initiatives, including renewed interest in installing a sewer along Route 20. We are exploring innovative funding initiatives at the state level to fund the sewer project, including District Increment Financing. With such expanded wastewater capacity, the future value of the Raytheon property will increase and additional community-embraced development opportunities will be possible. Such an economic development tool will be most effective if supported by the developer and Raytheon and we would seek such support if we proceed in this manner.

The Town is ready and willing to continue to work with Raytheon and its partners to discuss the redevelopment of this property in a manner that is consistent with Town goals and mitigates identified impacts. Please let us know how and when we can be of continued service as this project proceeds.

On behalf of the Board of Selectmen,

Charles C. Woodard, Chairman

On behalf of the Planning Board,

Craig Lizotte, Chairman

cc: Albert G. Tierney III, McCall & Almy

ATTACHMENT C: DISTRIBUTION LIST

ENF Distribution List

In accordance with the MEPA regulations at 301 CMR 11.16, the Proponent is circulating this Environmental Notification Form (ENF) for the Mixed-Use Redevelopment of 526 and 528 Boston Post Road to the public agencies and interested stakeholders listed below.

It is expected that notice of the availability of this ENF will be published in the February 24th edition of the *Environmental Monitor*, initiating a 20-day public comment period that will end on **March 15th.** The Secretary will issue a determination on **March 25th.**

Federal

EPA New England, Region 1
Attention: NPDES Permit Division
5 Post Office Square, Suite 100
Boston, MA 02109-3912

Commonwealth of Massachusetts

Secretary Matthew Beaton (provided herein)
Executive Office of Energy and Environmental Affairs (EEA)
Attn: MEPA Office
100 Cambridge Street, Suite 900
Boston, MA 02114

Department of Environmental Protection
Commissioner's Office
One Winter Street
Boston, MA 02108

DEP/Northeast Regional Office
Attn: MEPA Coordinator
205B Lowell Street
Wilmington, MA 01887

Massachusetts Department of Transportation
Public/Private Development Unit
10 Park Plaza
Boston, MA 02116

MassDOT - District #3
Attn: MEPA Coordinator
403 Belmont Street
Worcester, MA 01604

Metropolitan Area Planning Council
60 Temple Place/6th floor
Boston, MA 02111

Metropolitan Area Planning Council
Attn: Tanya Paglia, MAGIC Subregional Coordinator
60 Temple Place/6th floor
Boston, MA 02111

Massachusetts Water Resource Authority
Attn: MEPA Coordinator
100 First Avenue
Charlestown Navy Yard
Boston, MA 02129

Town of Sudbury

Sudbury Board of Selectmen
278 Old Sudbury Road
Sudbury, MA 01776

Sudbury Planning and Community Development Department
278 Old Sudbury Road
Sudbury, MA 01776

Sudbury Conservation Office
275 Old Lancaster Road
Sudbury, MA 01776

Sudbury Health Department
275 Old Lancaster Road
Sudbury, MA 01776

Sudbury Fire Department
77 Hudson Road
Sudbury, MA 01776

ATTACHMENT D: TRANSPORTATION IMPACT AND ACCESS STUDY

[Supporting documentation provided in CD on back cover]

Meadow Walk

526-528 Boston Post Road

Sudbury, Massachusetts

PREPARED FOR

MEADOW WALK
SUDBURY

BPR Sudbury Development, LLC

PREPARED BY

101 Walnut Street
PO Box 9151
Watertown, MA 02471
617.924.1770

February 16, 2016

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Summary

On behalf of BPR Sudbury Development, LLC (the "Proponent"), VHB has prepared this traffic impact and access study (the "Study") to evaluate the impacts of *Meadow Walk Sudbury,* a proposed mixed-use retail and residential development that will be located at the existing Raytheon office/R&D facility located at 526-528 Boston Post Road in Sudbury (the "Site"). The Study incorporates comments from the Town of Sudbury's traffic peer review consultant.

The Site is currently developed with a 563,300± sf Raytheon facility, which consists of office space (421,300± sf), research & development space (112,000± sf) and manufacturing facilities (28,000± sf) in multiple buildings. Parking needs of the office/R&D facility is supported by 2,040± paved surface parking spaces. Raytheon has begun their relocation process and will be winding down their operations at the Site over the next year. The Proponent will demolish the existing buildings on the Site in phases and construct a mixed-use development comprising of 80,000± sf of retail (including a grocery store), a 250-unit apartment development, a 60-unit active adult residential development and a 54-bed assisted living/memory care facility. While the Study has been prepared to quantify and address the impacts of the full build-out of the development, various elements of the Study, such has trip generation, distribution and traffic signal warrant analysis, have been separately calculated to provide an understanding of the effect of the phased construction of the proposed uses.

Compared to the re-use of the existing facilities on the Site by a new office/R&D tenant, the Project is expected to generate less traffic during the weekday morning and weekday evening peak hours. Specifically, in comparison to a 563,300± sf office/R&D user that would generate 765 weekday morning peak hour trips and 710 weekday evening peak hour trips, the Project would generate 63 percent and 37 percent fewer trips during the same peak hours, respectively. Due to the mixed-use nature of the development, distribution of Site traffic is expected to occur over the course of the day rather than being focused during just the peak commute hours, and the lower traffic intensity of the proposed uses contributes to the peak hour trip reduction during the weekdays. Such a significant reduction in the peak hour traffic

volumes can be expected to have a noticeable beneficial effect on the area roadway weekday traffic operations.

Due to the introduction of a retail component in the proposed development plan, the Project is estimated to generate 365 *net new* additional vehicular trips per hour during the Saturday midday peak hour when compared to an office/R&D use. Distributed over the study area roadway network, this total hourly increase corresponds to an increase in the range of five (5) to 85 vehicle trips per hour at different locations/directions.

Detailed capacity analysis indicates that even without the implementation of any capacity improvements, the Project will have comparable, if not improved operations on weekdays at the study locations when compared to a 563,300± sf office/R&D tenant on the Site. The operational impact due to the limited additional new traffic on Saturdays is also expected to be nominal.

Nonetheless, the Proponent plans to implement multiple improvements to help further reduce the impact of the Project and improve existing conditions. An outline of the improvement measures is presented below.

- Construction of a new traffic signal on Boston Post Road by aligning the primary Site driveway with the westerly driveway for Sudbury Plaza and Highland Avenue (a private way). This would also include the construction of designated left turn lanes on Boston Post Road, a new actuated pedestrian crosswalk and bicycle accommodations at the intersection; in addition to the Project, these improvements will also benefit the retail plaza and the residents of Highland Avenue on the south side of Boston Post Road.
- Improved safety through the elimination of traffic control by a police officer at the primary Site driveway during the weekday evening peak hour;
- Improved pedestrian accommodations by widening the existing sidewalk on the north side of Boston Post Road along the Site frontage and extending the limits of the existing sidewalk on the south side of Boston Post Road;
- Implementation of a time-based coordinated signal system between the new signalized Site driveway, Nobscot Road and Union Avenue intersections on Boston Post Road to better manage vehicular queues and improve progression of through traffic at multiple intersections;
- Construction of a new emergency preemption signal at the fire station located along the Site frontage and integration of the signal into the new traffic signal at the primary Site driveway;
- Subject to right of way availability, addition of five-foot paved shoulders (which could become part of future bike lanes) on either side of Boston Post Road within the limits of the roadway improvements; and,

- Implementation of a robust Traffic Demand Management (TDM) program as part of the full build-out of the Project, underpinned by a significant investment in on-site circulation enhancements.

1

Introduction

VHB, on behalf of BPR Sudbury Development LLC (the "Proponent"), has prepared a traffic impact and access study (the "Study") in support of the redevelopment of an approximately 50-acre parcel of land at 526-528 Boston Post Road (aka Route 20) (the "Site") in Sudbury, Massachusetts. The Site is currently occupied by a 563,300± sf square foot (sf) Raytheon facility that includes a mix of office and research and development space, supported by approximately 2,040 parking spaces. Figure 1 shows a Site location map.

As part of the overall redevelopment, all existing buildings on the Site (with the exception of approximately 15,000± sf of ancillary R&D space) would be eventually demolished and a new mixed-use development would be constructed in multiple construction phases.

The Project described in this Study consists of the following new development components:

- 80,000± sf of mixed retail use (including a 45,000± sf grocery store);
- A residential development with 250 apartment units;
- An active adult (age-restricted) residential development with up to 60 housing units; and,
- An assisted living/memory care facility with up to 54 beds.

The Study quantifies existing and projected future traffic conditions with and without the Project. Based on these analyses, the Study includes recommendations for access and traffic improvements to provide safe and efficient access to the Site and to improve some of the deficiencies that currently exist independent of the Project. The improvement plan also takes into consideration the Massachusetts Department of Transportation (MassDOT) Healthy Transportation Policy Directive relative to multi-modal accommodations to the extent that such accommodations can be constructed

0 2000 4000 Feet

Study Intersections

MEADOW WALK
SUDBURY

Figure 1

Study Area Intersections

Source: MassGIS, BING

within the public right of way, on land controlled by the Proponent and/or land negotiated for permanent easements from abutting properties, while at the same time, balancing the potential environmental (wetland) impacts associated with such improvements.

Study Methodology

The Site abuts Boston Post Road (Route 20), which is a state-owned and operated highway. Development on the Site and the construction of off-site traffic improvements on Boston Post road will therefore require an Access Permit from MassDOT. The Project is also subject to review by the Town of Sudbury. As a precursor for the review through the Massachusetts Environmental Protection Act (MEPA) process, a Traffic Scoping Letter (TSL) was submitted to MassDOT's Private/Public Development Unit in October 2015. This letter included a study area, as well as an overview of the methodologies to be used in developing this Study. The TSL and subsequent responses from MassDOT are included in the Appendix. Concurrent with the review of the TSL by MassDOT, VHB also consulted with the Planning Department staff in Sudbury to confirm the study area as well as to identify focus areas relative to traffic and safety issues that are of interest to the town.

Following the consultation with MassDOT and the town's planning staff, VHB prepared the traffic assessment in three stages. The first stage involved an assessment of existing traffic conditions within the Project study area including an inventory of existing roadway geometry; observations of traffic flow, including daily and peak period traffic counts; and a review of vehicular crash data.

The second stage of the study established the framework for evaluating the transportation impacts of the proposed Project. Specific travel demand forecasts for the Project were assessed along with future traffic demands on the study area roadways due to projected background traffic growth and other proposed area developments that may occur independent of the proposed development. The year 2022, a seven-year time horizon from the time of the MassDOT scoping review process, was selected as the design year for analysis for the preparation of this traffic impact and access assessment in accordance with MassDOT guidelines.

The third and final stage involved conducting traffic analyses to identify both existing and projected future roadway capacities and demands. This analysis was used as the basis for determining potential Project impacts and to identify mitigation measures that would be implemented by the Proponent as part of the Project.

Finally, the initial version of the Study was updated, as presented herein, to incorporate review comments from the town's traffic peer review consultant.

2

Existing Conditions

Evaluation of the transportation impacts associated with the Project requires a thorough understanding of the existing transportation conditions in the study area including, roadway geometry, traffic controls, daily and peak hour traffic flow, and traffic safety data. Each of these elements is described in detail below.

Study Area

The study area includes the following locations and their approach roadways recommended by MassDOT for the review of the Project. The study area locations are identified in Figure 1.

- Boston Post Road at Horse Pond Road
- Boston Post Road at Dudley Road
- Boston Post Road at Highland Avenue and Sudbury Plaza (West)
- Boston Post Road at Sudbury Plaza (East)
- Boston Post Road at Nobscot Road (*signalized)*
- Boston Post Road at Union Avenue *(signalized)*
- Boston Post Road at Raymond Road
- Boston Post Road at Concord Road *(signalized)*
- Boston Post Road at Landham Road *(proposed to be signalized by MassDOT)*

The existing conditions analysis consisted of an inventory of the traffic control, roadway, driveway, and intersection geometry in the study area, the collection of daily and peak hour traffic volumes, and a review of recent crash history.

Roadway Geometry

Descriptions of the Study area roadways and intersections are included below. Figure 2 shows lane configuration and traffic control at the study intersections.

Roadways

Boston Post Road

Boston Post Road within the Study area is functionally classified as an Urban Arterial and is under the jurisdiction of MassDOT. Within the study area, Boston Post Road is a two-lane roadway, which widens out to accommodate exclusive turn lanes at two of the signalized study intersections. Sidewalks are provided intermittently along both sides of Boston Post Road throughout the corridor with shoulders of varying width. The posted speed limit within the study area varies from 30 mph to 45 mph. The land use along Boston Post Road in the study area primarily consists of commercial uses with some residential and agricultural uses.

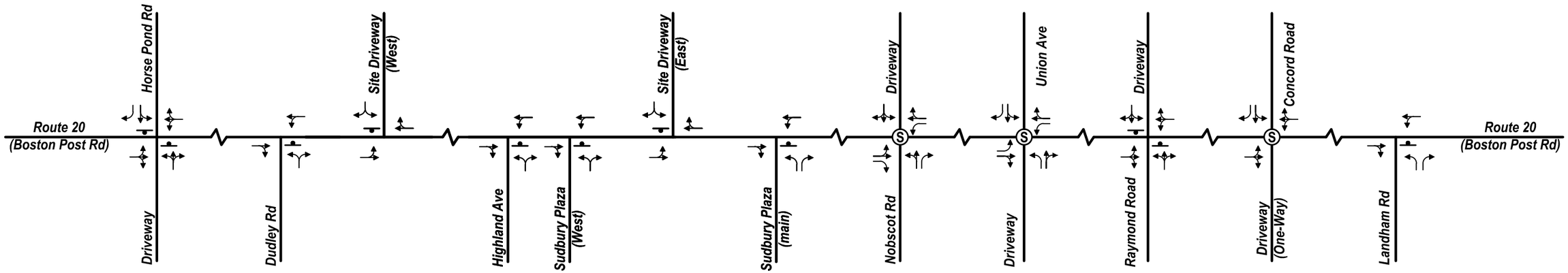
Intersections

Boston Post Road at Horse Pond Road

Horse Pond Road Intersects Boston Post Road from the north to form a three-legged unsignalized intersection. A small retail plaza is located directly on the south side of the intersection with open driveway width of approximately 140 feet. Both approaches from Boston Post Road have one general-purpose lane while the Horse Pond Road approach has one exclusive left-turn lane and one exclusive right-turn lane with approximately 125 feet of storage. Horse Pond Road operates under "STOP" control. Sidewalks are provided along the northern side of Boston Post Road and the western side of Horse Pond Road. A crosswalk is provided along Horse Pond Road, setback approximately 30 feet from the intersection. Land use in the vicinity of this intersection is primarily commercial and underdeveloped land.

Boston Post Road at Dudley Road

Dudley Road intersects Boston Post Road at an angle from the south to form a three-legged unsignalized intersection. Each approach to the intersection provides one general-purpose lane with Dudley Road operating under "STOP" control. A sidewalk is



Existing Lane Configurations

Legend

Neg	<5 Vehicles
XX →	Traffic Volume
⊣	Stop Controlled
Ⓢ	Signalized Intersection

MEADOW WALK
SUDBURY

Existing Lane Configurations
Meadow Walk
Mixed-Use Develpment
Sudbury, Massachusetts

Figure 2

February 16, 2016

provided along the northern side of Boston Post Road. There are no sidewalks along Dudley Road near Boston Post Road. No crosswalks are provided at the intersection. Land use varies in the vicinity of this intersection with undeveloped land and residential uses along the south/east, a plant nursery to the north and commercial to the west of the intersection.

Boston Post Road at Highland Avenue and Sudbury Plaza West driveway

Highland Avenue (a private way) serving five single family homes, intersects Boston Post Road from the south to form a three-legged unsignalized intersection. The westerly Sudbury Plaza driveway, located approximately 50 feet to the east of Highland Avenue, also intersects Boston Post Road from the south to form another three-legged unsignalized intersection in proximity to the Highland Avenue intersection. Each approach to the intersection provides one general-purpose lane. A narrow walking path is provided along the northern side of Boston Post Road and the eastern side of Sudbury Plaza (West). A crosswalk is provided across Boston Post Road on the eastern side of Sudbury Plaza (West) that connects to a pedestrian walkway on the Site. Land uses in the vicinity of the intersection includes commercial, office/R&D and residential uses.

Boston Post Road at Sudbury Plaza (East)

The Sudbury Plaza easterly driveway intersects Boston Post Road from the south to form a three-legged unsignalized intersection. Each approach to the intersection provides one general-purpose lane. Sidewalks are provided along the northern side of Boston Post Road, along the southern side of Boston Post Road east of the intension, and the western side of Sudbury Plaza (East) driveway. Land use in the vicinity of the intersection includes commercial and office/R&D uses.

Boston Post Road at Nobscot Road

Nobscot Road intersects Boston Post Road from the south and a bank driveway intersects it from the north to form a four-legged signalized intersection. From the west, Boston Post Road provides two approach lanes with one thru/left-turn lane and one exclusive right-turn lane. From the east Boston Post Road provides two approach lanes with one thru/right-turn lane and one exclusive left turn lane. From the South, Nobscot Road provides one thru/left-turn lane and one exclusive right-turn lane. The bank driveway provides one general-purpose lane. Sidewalks are provided along the northern side of Boston Post Road. Crosswalks are provided across three of the four intersection approaches, including signalized walk/don't walk displays. A crosswalk is

not provided across the Boston Post Road eastbound approach. At this intersection, wheelchair ramps are provided on the southeast and southwest corners, however there are no sidewalks extending from these ramps. Land use in the vicinity of the intersection is primarily commercial in nature.

Boston Post Road at Union Avenue

Union Avenue intersects Boston Post Road from the north to form a four-legged signalized intersection with the Sudbury Crossing Plaza driveway. Boston Post Road has two approach lanes in both the eastbound and westbound directions, with one thru/right-turn, and one exclusive left-turn lane. On the southbound approach, Union Avenue has two approach lanes with one thru/left-turn lane and one exclusive right-turn lane. In the northbound direction the Sudbury Crossing Plaza driveway has two approach lanes with one thru/right- turn lane and one exclusive right turn lane. Sidewalks are provided along the northern side if Boston Post Road and the western side of the Sudbury Crossing driveway. An unsignalized crosswalk is provided across the Union Avenue approach. Land use in the vicinity of the intersection is primarily commercial in nature.

Boston Post Road at Raymond Road

Raymond Road intersects Boston Post Road from the south to form a three-legged unsignalized intersection. Boston Post Road has one general-purpose approach lane in both the eastbound and westbound directions. In the northbound direction, Raymond Road has one general-purpose approach lane. Sidewalks are provided on both sides of Boston Post Road and on the eastern side of Raymond Road. A crosswalk is provided across Raymond Road. Lane use in the vicinity of the intersection is commercial and residential in nature.

Boston Post Road at Concord Road

Concord Road intersects Boston Post Road from the North to form a three-legged signalized intersection. Boston Post Road has one general-purpose approach lane in both the eastbound and westbound directions. In the southbound direction, Concord Road has two approach lanes with one exclusive left-turn lane and one exclusive right-turn lane. A driveway for a retail plaza is located within the signalized intersection footprint, on the south side of Boston Post Road, but it is not signalized. Sidewalks are provided on both sides of Boston Post Road and the eastern side of Concord Road. Crosswalks are provided across all approaches with signalized crossings. Lane use in the vicinity of the intersection is commercial in nature.

Boston Post Road at Landham Road

Landham Road intersects Boston Post Road from the south to form a three-legged unsignalized intersection. In the eastbound direction, Boston Post Road has two approach lanes with one through lane and a short channelized right-turn lane. In the westbound direction, Boston Post Road has one general-purpose lane. In the northbound direction Landham Road has two approach lanes, with one left-turn land and one channelized right-turn lane. Sidewalks are provided along the northern side of Boston Post Road, along the southern side of Boston Post Road (east of Landham Road), and the western side of Landham Road. Crosswalks are provided across the Landham Road approach, with pedestrian refuges located within the median/channelizing islands. This intersection is planned for a major upgrade, including signalization, as part of an on-going MassDOT project that is currently in the design phase.

Traffic Volumes

Traffic volumes for the study area roadways and intersections were recorded in May and November 2015. Peak hour turning movement and classification (TMC) counts were collected at the study area intersections during the weekday morning peak period from 7:00 AM to 9:00 AM, weekday evening peak period from 4:00 PM to 6:00 PM, and Saturday midday peak period from 11:00 AM to 2 PM. These three peak periods represents the times that are appropriate for traffic impact analysis of the Project. These times also represent typical times when the roadway traffic also peaks in the area.

Based on a review of the data, it was determined that the analysis peak hours for the Study are from 7:30 AM to 8:30 AM and 5:00 PM to 6:00 PM on weekdays and from 11:30 AM to 12:30 PM on Saturday.

In addition, an automatic traffic recorder (ATR) count was conducted on Boston Post Road in May 2015. The ATR count is summarized below in Table 1.

The ATR count indicates that on a typical weekday, approximately 20,500 vehicles per day (vpd) travel along Boston Post Road, in the vicinity of the Site. The traffic volumes along Boston Post Road are heavier in the eastbound direction during the weekday morning and heavier in the westbound direction during the weekday evening peak hours, respectively, depicting the commuter traffic patterns on the roadway. Traffic volume on Boston Post Road is slightly heavier in the westbound direction during the Saturday midday peak hour.

Table 1 Existing Daily Traffic Volume

Location	Daily [a]	Weekday Morning Peak Hour			Weekday Evening Peak Hour			Daily [a]	Saturday Midday Peak Hour		
	Weekday	Volume[b]	K Factor[c]	Dir. Dist.[d]	Volume	K Factor	Dir. Dist.	Saturday	Volume	K Factor	Dir. Dist.
Boston Post Road West of Highland Avenue	20,500	1,275	6%	67% EB	1,585	8%	65% WB	17,600	1,430	8%	56% WB

Source: Based on automatic traffic recorder (ATR) counts conducted in May 2015
a average daily traffic (ADT) volume expressed in vehicles per day
b peak period traffic volumes expressed in vehicles per hour
c percent of daily traffic that occurs during the peak period
d directional distribution of peak period traffic
Note: peak hours do not necessarily coincide with the peak hours of the individual intersection turning movement counts

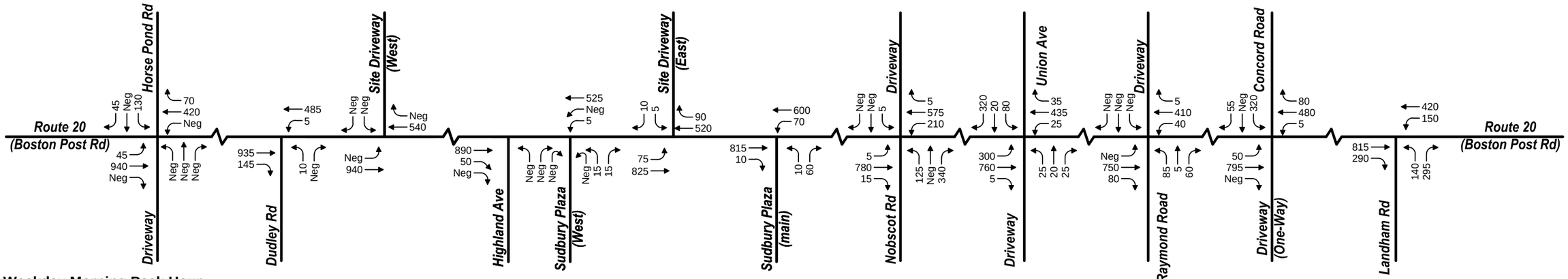
Seasonal Adjustment

The traffic data collected for the Study was obtained during the months of May and November. To quantify the seasonal variation of traffic volumes in the area, historic traffic data available from MassDOT were reviewed. According to published MassDOT seasonal factors, May and November traffic counts are higher than average month conditions. However, to present a conservative analysis, the traffic volumes were not reduced to reflect average month conditions. Where appropriate, traffic volumes were balanced between the intersections. The resulting 2015 Existing conditions weekday morning, weekday evening and Saturday midday peak hour traffic volume networks are presented in Figure 3.

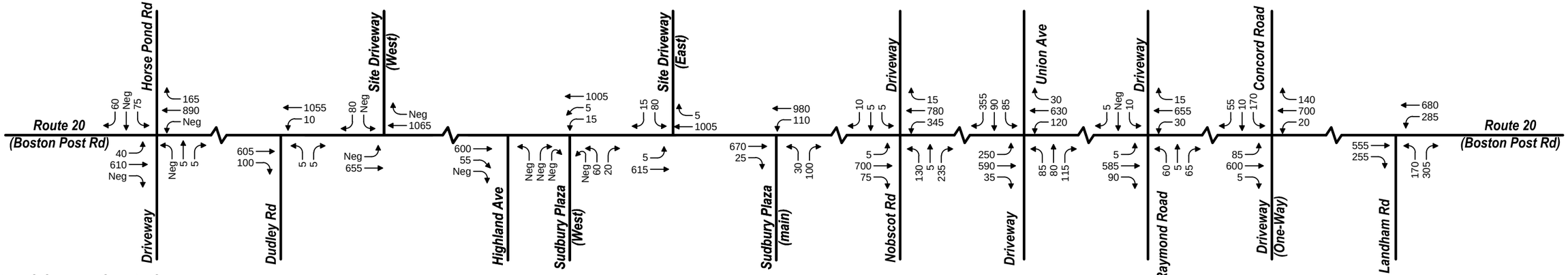
Bicycle and Pedestrian Accommodations

Within the study area, there are limited accommodations for bicyclists and pedestrians. A sidewalk of variable width runs along the north side of Boston Post Road along the entire study area, while intermittent segments of sidewalk exist along the south side of the roadway. Condition of the sidewalk in some areas along the corridor appears to be poor.

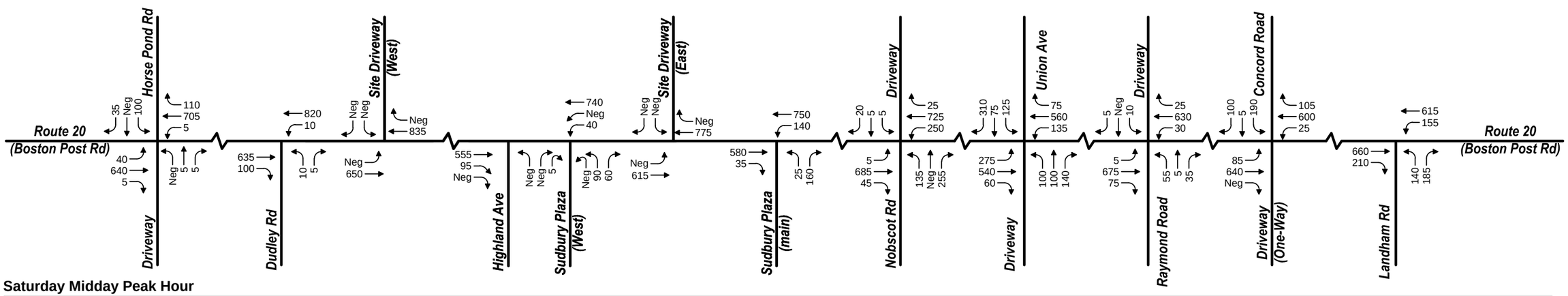
Existing on-street bicycle accommodations within the study area are limited, with varying width shoulders. Two proposed bicycle trails that will run through Sudbury are in proximity to the Site, including the Mass Central Rail Trail (to the north of the Site) and the Bruce Freeman Rail Trail (to the east of the Site). A temporary section of the Bay Circuit Trail currently runs along Boston Post Road to the east of the Site, connecting with a permanent trail along Nobscot Road.



Weekday Morning Peak Hour



Weekday Evening Peak Hour



Saturday Midday Peak Hour

Legend
Neg **<5 Vehicles**
XX → **Traffic Volume**

MEADOW WALK
SUDBURY

2015 Existing Traffic Volumes
Meadow Walk
Mixed-Use Development
Sudbury, Massachusetts

Figure 3

February 16, 2016

Public Transportation

Sudbury is a member community of the MetroWest regional Transit Authority (MWRTA) system, with a seat on the Advisory Board. Currently, there is no MWRTA service on Boston Post Road in Sudbury near the Site. The nearest MWRTA bus routes to the Site are located at Hager Street in Marlborough to the west (Route 7C) and at Nobscot Shopping Center in Framingham to the South (Routes 2 and 3). The nearest stops to the Site along these routes are located at a distance of approximately three miles to the west and south, respectively.

A recently completed Comprehensive Service Assessment by the MWRTA indicates that service gaps have been identified and their resolution could enhance mobility needs in the region. Specifically, the assessment refers to the extension of the current weekday service along Route 7C in Marlborough to include Sudbury and Wayland along Boston Post Road as a new service recommendation. The route, when extended, would provide hourly service along Boston Post Road between 6:00 AM and 8:00 PM. Additionally, the potential for extending MWRTA Routes 2 and 3 that currently serve Nobscot Shopping Center in Framingham to Boston Post Road in Sudbury was noted in the MWRTA Service Assessment.

Crash History

To identify crash trends in the study area, the most current available crash data were obtained for the study area intersections from MassDOT for a five-year period (2009 through 2013). A summary of the data is presented in Table 2.

Angle collisions and rear-end collisions represent the majority of the crashes at the Study locations. A fatal crash occurred at the intersection of Boston Post Road and Landham Road in May 2011. A total of four non-motor vehicles crashes (pedestrian or bicycle related) were reported during the study period, two of which occurred at the Boston Post Road at Highland Avenue and the Sudbury Plaza (West) driveway.

According to MassDOT, the year 2010 MassDOT District 3 average crash rate is 0.89 for signalized intersections and 0.66 for unsignalized intersections. The crash rates represent the number of reported crashes for every million vehicles that pass through an intersection.

As shown in Table 2, two of the unsignalized study area intersections have crash rates that are currently higher than the respective District 3 averages. The intersection of Boston Post Road at Highland Avenue and the Sudbury Plaza (West) driveway had an average crash rate of 0.80 and the Landham Road intersection has a crash rate of 0.94, both of which are over that District 3 average.

As noted earlier, the Landham Road intersection is currently the subject of an on-going MassDOT design project that is aimed at addressing the safety and capacity deficiencies at the intersection. Chapter 5 of this Study discusses potential improvements at the Sudbury Plaza driveways and at the Site driveways.

Table 2 Vehicle Crash Summary (2009-2013) along Boston Post Road

	At Horse Pond Road	At Dudley Road	At Highland Avenue and Sudbury Plaza (West) Driveway	At Sudbury Plaza (East) Driveway	At Nobscot Road	At Union Avenue	At Landham Road	At Raymond Road	At Concord road
Year									
2009	3	1	11	1	5	12	4	2	7
2010	4	4	6	0	8	13	12	1	2
2011	1	0	6	0	6	6	9	0	3
2012	5	5	3	0	6	8	13	0	2
2013	3	2	5	1	1	5	10	2	3
Total	16	12	31	2	26	44	48	5	17
Collision Type									
Angle	7	0	11	0	10	27	21	2	3
Head-on	0	0	0	0	0	0	2	0	0
Rear-end	6	11	11	1	13	10	15	3	12
Rear-to-Rear	0	0	0	0	0	0	0	0	0
Sideswipe, opposite direction	1	0	2	1	1	2	2	0	0
Sideswipe, same direction	1	0	0	0	0	1	2	0	2
Single vehicle crash	1	1	5	0	1	3	6	0	0
Unknown	0	0	1	0	0	0	0	0	0
Not reported	0	0	1	0	1	1	0	0	0
Crash Severity									
Fatal injury	0	0	0	0	0	0	1	0	0
Non-fatal injury	3	4	9	1	9	6	9	1	6
Property damage only (none injured)	12	8	21	1	16	38	37	4	11
Not Reported	1	0	1	0	1	0		0	0
Unknown	0	0	0	0	0	0	1	0	0
Time of Day									
Weekday, 7:00 AM - 9:00 AM	3	5	2	0	5	6	3	3	2
Weekday, 4:00 PM - 6:00 PM	4	4	9	1	6	7	8	1	2
Saturday, 11:00 AM - 2:00 PM	1	0	2	0	0	1	1	0	0
Weekday, other time	2	2	15	1	11	25	29	1	7
Weekend, other time	6	1	3	0	4	5	7	0	6
Pavement Conditions									
Dry	10	8	21	2	17	33	39	5	11
Wet	6	2	7	0	5	8	6	0	5
Snow	0	1	0	0	1	1	2	0	1
Ice	0	0	0	0	0	0	1	0	0
Sand, mud, dirt, oil, gravel	0	0	2	0	0	1	21	0	0
Not reported	0	1	1	0	3	1	2	0	0
Non Motorist (Bike, Pedestrian)	1	0	2	0	0	1	0	0	0
MassDOT Crash Rates	0.38	0.29	0.80	0.05	0.49	0.78	0.94	0.14	0.42

Source: MassDOT Crash Data

3

Future Conditions

Traffic volumes in the study area were projected to the year 2022, which reflects a seven-year traffic-planning horizon from the time of the MassDOT scoping process. Independent of the Project, volumes on the roadway network under year 2022 No-Build conditions were assumed to include existing traffic and new traffic resulting from background traffic growth. Under the 2022 Build condition, Project generated traffic volumes were added to the 2022 No-Build volumes to reflect the year 2022 Build conditions within the Project study area.

Planned Roadway Improvements

The intersection of Landham Road and Boston Post Road is currently under design by MassDOT. The intersection, which is currently under STOP sign control, is proposed to be reconstructed and improved with the installation of a fully actuated traffic signal, widening Boston Post Road to accommodate a westbound designated left turn lane, an eastbound designated right turn lane, five-foot shoulders, new sidewalk on the south side of Boston Post Road and west side of Landham Road, and new ADA-compliant wheelchair ramps and crosswalks. Earlier conceptual designs for the intersection contemplated additional widening of Boston Post Road to accommodate a second through lane in each direction, but was subsequently dropped from the plan. 25-percent design plans for the intersection are currently under review by MassDOT. Construction start date has not yet been identified for the improvements at this time. This Study assumes that the intersection will be improved within the seven-year time horizon used in the traffic analysis.

Background Traffic Growth

Traffic growth on area roadways is a function of the expected land development, economic activity, and changes in demographics. Several methods can be used to estimate this growth. A procedure frequently employed is to estimate an annual percentage increase and apply that increase to study area traffic volumes. An alternative procedure is to identify estimated traffic generated by planned new major developments that would be expected to impact the project study area roadways. For the purpose of this assessment, both methods were utilized.

Historic Traffic Growth

To determine an applicable annual growth rate, historical traffic volumes within the study area were reviewed. Based on the data in the Route 20 Corridor Study completed in 2012 by the Town of Sudbury, the peak hour volumes have generally either remained constant or decreased slightly. To present a conservative analysis and for consistency with the corridor study assumptions, an annual growth rate of one percent per year was used for the future conditions traffic analyses to account for growth in traffic over the next seven years.

Site-specific Growth

In addition to accounting for background growth, the traffic associated with other planned and/or approved developments near the Site were considered. Based on feedback from the Town of Sudbury planning staff, and knowledge of planned developments in the area, the projects shown in Table 3 below were reviewed to determine if they could generate additional traffic through the study area.

Table 3 Summary of Planned Background Developments

Project Name	Type of Development	Project Size
Village at Sudbury Station	Residential	250 units
Concord Road Retail Plaza (existing vacant site)	Retail/Commercial	8,040 sf
275-290 Boston Post Road (currently inactive)	Residential	72 units

No record traffic studies are available at this time for the potential projects noted in Table 3. Therefore, potential future traffic volumes associated with each of the developments was estimated using ITE rates and distributed through the Study network for consideration in the future conditions analysis where appropriate.

In addition to the aforementioned background traffic growth assumptions, and with MassDOT's concurrence on the approach, full reuse of the existing office and R&D facilities was also included in the No-Build traffic growth assumptions. This is because, if the currently proposed Project is not constructed, the existing office and R&D facilities on the Site would be re-tenanted to a new office and/or R&D user. The estimation of these "Site re-use" trips is discussed below.

The Site currently houses a 563,300± sf office complex, which consists of office space (421,300± sf), research & development space (112,000± sf) and manufacturing facilities (28,000± sf) in multiple buildings. Raytheon has begun their relocation process and will be winding down their operations at the Site over the next two years. If Raytheon were to vacate the Site entirely and the Proponent were not to construct the proposed mixed-use Project, other office/R&D tenant(s) would be identified to move in and use the entire 563,300± sf space and 2,040± parking spaces that currently exist on the Site. To estimate the effect of such a reuse of the Site, Institute of Transportation Engineers (ITE) *Trip Generation*[1] guidelines were used to calculate the number of vehicle trips that would be generated by a new re-use tenant. Specifically, ITE Land Use Code (LUC) 710 (General Office Building), ITE LUC 760 (R&D) and LUC 140 (Manufacturing) were used in the calculations summarized in Table 4. These estimated "No-Build Site re-use" traffic volumes were included in the analysis.

Table 4 Peak Hour Site Trips under "No-Build" Condition

Time Period	Reuse of Office/R&D Space
Morning Peak Hour (vph)	
Enter	665
Exit	100
Total	765
Evening Peak Hour (vph)	
Enter	125
Exit	585
Total	710
Saturday Midday Peak Hour (vph)	
Enter	115
Exit	100
Total	215

vph vehicle trips per hour

An additional element of future traffic that was also considered the No-Build conditions analysis is the relocation of Raytheon's current operations. Based on information provided by Raytheon, the employees that currently work at the Site will

▼

1 Trip Generation Handbook; *9th Edition* Institute of Transportation Engineers; Washington, DC; 2009.

be reassigned to their other existing facilities. For analysis purposes, and based on input from the town's traffic consultant, it was assumed that any reassigned Raytheon related trips along Boston Post Road are covered by the background growth rate assumption.

The average annual traffic growth rate of one-percent per year was applied to the existing roadway traffic volumes and estimated future traffic volumes from the above development related assumptions were added, where appropriate, to the 2015 Existing traffic volumes to develop the 2022 No-Build traffic volumes for the weekday morning, weekday evening and Saturday midday peak hours. The resulting 2022 No-Build peak hour traffic volume networks are presented in Figure 4.

Site-generated Traffic Volumes

The rate at which any development generates traffic is dependent upon a number of factors such as size, location, and nature of the use. To estimate the trip-generating characteristics for a development project, traffic projections are typically derived from trip generation rates published in the Institute of Transportation Engineers (ITE) *Trip Generation*[2] manual. Empirical data, if available for a specific use, is also used to further refine the trip projections that are based on the ITE rates. As noted previously, the analysis methodology used for the estimation of Project related traffic volumes in this Study was discussed with, and approved by MassDOT during the Transportation Scoping Letter review process. This methodology is described in the following sections.

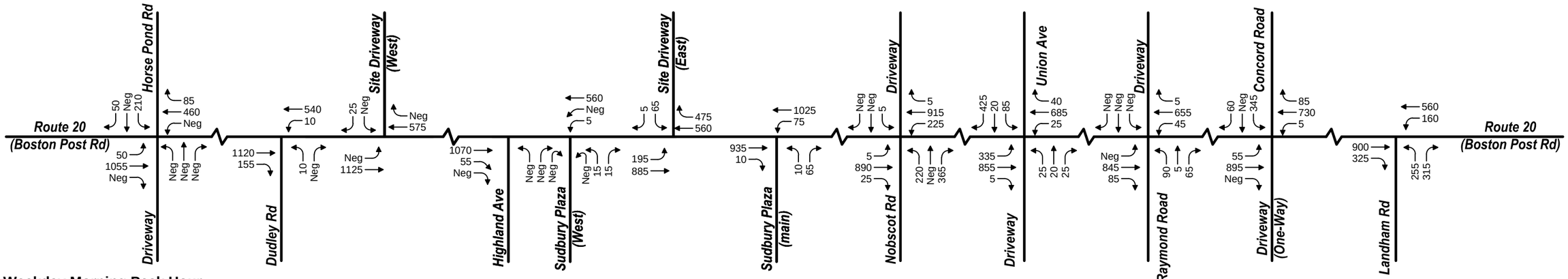
Project Trip Generation

Future conditions daily trip generation estimates were developed based on the following ITE land use codes. The unadjusted daily trip generation calculations are summarized in Table 5. For comparison, the table also includes a corresponding estimate of the daily traffic for the re-use of the existing office and R&D space on the Site.

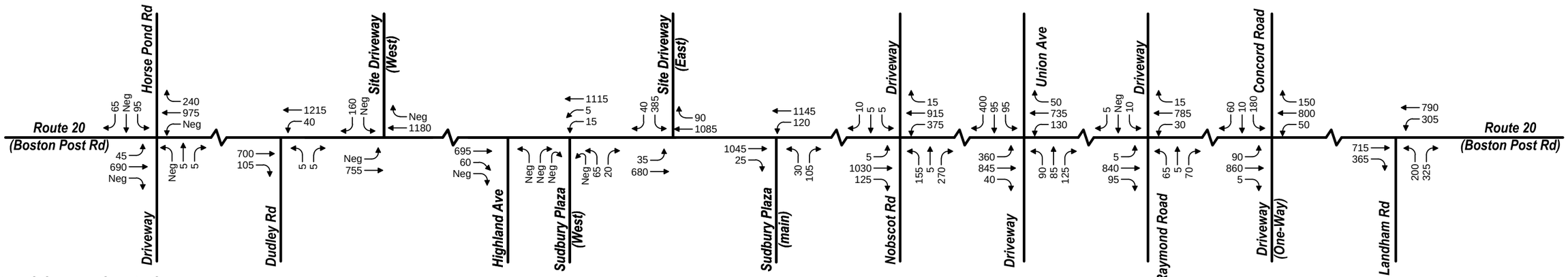
- Mixed-use retail: ITE LUC 820 (Shopping Center)
- Apartments: ITE LUC 220 (Apartments)
- Active adult residential use: ITE LUC 252 (Senior Adult Housing – *Attached*)
- Memory care/Assisted living use: ITE LUC 254 (Assisted Living)

The daily trip generation in Table 5 represents unadjusted trip estimates as required by MassDOT for the purpose of determining the Massachusetts Environmental Policy Act (MEPA) trip threshold calculations. As shown in the table, the Project is projected to generated approximately 2,810 unadjusted new daily vehicle trips when compared to the trips that could be generated by a re-use of the Site by an office/R&D tenant.

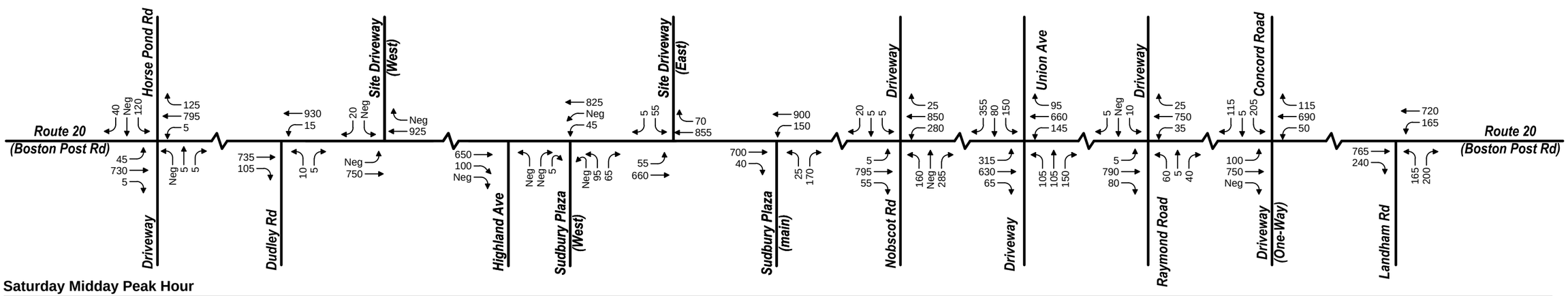
2 Trip Generation Handbook; *9th Edition* Institute of Transportation Engineers; Washington, DC; 2009.



Weekday Morning Peak Hour



Weekday Evening Peak Hour



Saturday Midday Peak Hour

Legend
Neg **<5 Vehicles**
XX → **Traffic Volume**

MEADOW WALK
SUDBURY

2022 No-Build Traffic Volumes
Meadow Walk
Mixed-Use Development
Sudbury, Massachusetts

Figure 4

February 16, 2016

Table 5 Daily Trip Generation Comparison

	Existing Development on the Site			Future Full Build-out				Increase
Movement	Office Space	R&D	Manufacturing	Mixed-Retail	Apartments	Age-restricted Housing	Assisted Living	(Future – Existing)
ITE LUC	*710*	*760*	*140*	*820* [a]	*220*	*252*	*254*	
Size	*421.3 ksf*	*112 ksf*	*28,000 sf*	*80 ksf*	*250 Units*	*60 Units*	*54 Beds*	
Enter	1,960	550	45	2,940	820	100	100	**+ 1,405**
Exit	1,960	550	45	2,940	820	100	100	**+ 1,405**
Total	3,920	1,100	90	5,880	1,640	200	200	**+ 2,810**

Note: All numbers in the table represent "vehicle trips per day"

a LUC 820 used only for the estimation of the retail daily trips. Retail peak hour trips are based on empirical rates, as discussed in the MassDOT Transportation Scoping Letter

Peak Hour Retail Trip Generation

The previously noted daily retail trip estimates are based on ITE LUC 820 (Shopping Center). While the use of LUC 820 for daily estimates is adequate for determining MEPA review thresholds, etc., as discussed in the MassDOT TSL and acknowledged by MassDOT, retail trips in the region have been generally known to be lower than ITE estimates. As a result, use of ITE LUC 820 estimates for peak hour retail trip generation may not be appropriate as such a methodology could result in an overestimation of Site generated traffic and, as a consequence, the potential overdesign of roadway infrastructure improvements. Therefore, using MassDOT's recommended methodology for the use of empirical trip rates, peak hour data was collected at four other retail plazas that have a supermarket anchors. Based on input from the town's traffic consultant, empirical trip rates were developed by averaging the rates for the individual plazas rather than base on calculation on weighted averages. This methodology resulted in trip rates that are slightly higher than the weighted average methodology, thus resulting in a more conservative (worse case) analysis. The data and calculations for the empirical trip rates are included in the Appendix.

Peak Hour Trip Generation for the Site

Similar to the comparison of the daily trip estimates, unadjusted peak hour trip generation calculations were also performed for the Project and compared to the corresponding estimate for the re-use of the existing office and R&D facilities on the Site. The calculations are summarized in Table 6. Future Site trips are based on the following land use codes. Detailed calculations showing the estimated unadjusted peak hour trips for each use is included in the Appendix.

- Mixed-use retail: Empirical trip rates
- Apartments: ITE LUC 220 (Apartments)
- Active adult residential use: ITE LUC 252 (Senior Adult Housing – *Attached*)
- Memory care/Assisted living use: ITE LUC 254 (Assisted Living)

As shown in Table 6, when compared to the re-use of the existing facilities on the Site by a new office/R&D tenant, the future uses are expected to generate less entering traffic during the weekday morning peak hour and less exiting traffic during the weekday evening peak hours. These changes are representative of the effect of the mixed-use nature of the Project and can be expected to have a beneficial effect on the area roadway traffic operations. The Project is expected to result in an increase in traffic during the Saturday midday peak hour (gross estimates) when compared to the re-use of the existing facilities. This is an expected outcome in the redevelopment of office focused uses to mixed-uses redevelopment projects that are aimed at creating a vibrant and thriving community that activates the development site on weekends. It is noted that the traffic volumes presented in Table 6 are *gross* trip estimates, and do not reflect the effect of trip reduction characteristics that are inherent to mixed-use developments. Application of the adjustment factors further reduces the overall trip generation for the Project as discussed and demonstrated below.

Table 6 Comparison of Gross Peak Hour Trip Generation

Movement	Existing Development On The Site	Future Full Build-Out [a]	Gross Increase (Future – Existing)
Morning Peak Hour			
Enter	665	155	-510
Exit	100	185	85
Total	765	340	-425
Evening Peak Hour			
Enter	125	350	225
Exit	585	325	-260
Total	710	675	-35
Saturday Midday Peak Hour			
Enter	100	435	335
Exit	85	395	310
Total	185	830	645

Note: All numbers in the table represent "vehicle trips per hour"

a Represents *gross* trips as they do not reflect adjustments for shared trips between uses and pass-by trip reductions associated with retail uses

Traffic projections for mixed-use development should reflect the efficiency between the uses on the Site in the form of internal capture or shared trips. The peak hour traffic projections would also need to take into account customer visits to the retail

uses that are drawn from vehicles currently passing the Site on Boston Post Road in the form of pass-by trips. These adjustments, described briefly below, have the net effect of reducing the number of new trips on the area roadways. The adjustments outlined below were reviewed by MassDOT as part of the TSL review process.

Internal Capture

Given the mixed-use nature of the Project, it is expected that there will be shared trips between the residential and retail components of the Project. These shared trips, summarized in Table 7, would not show up as additional new vehicle trips on the surrounding roadway network. An example of this could be a resident of the apartments shopping at the retail tenants on the Site or dining at a restaurant without needing to drive onto Boston Post Road. While it is highly likely that some of the residents on the Site would also shop at Sudbury Plaza located directly across from the Site, no shared trips adjustments were applied between the Site and Sudbury Plaza or other retail tenants within a walking distance of the Site.

Based on input from the town's peer review consultant, VHB limited the total internal capture to no more than 15 percent of the total residential trips during the weekday evening peak hours. During the Saturday midday peak hours, when higher internal capture could be expected, a capture of 30 percent of the total residential trips was assumed. Guidelines provided by the National Cooperative Highway Research Program (NCHRP) for the calculation of internal capture trips were also initially reviewed. These guidelines resulted in internal capture rates higher than the values assumed in this Study. While use of the NCHRP trip capture rates is an acceptable method for estimating internal trips, the lower trip capture rates discussed with the town's consultant were used to develop the trip estimates presented in Table 7.

Pass-by Vehicle Trips

While the ITE rates provide estimates for all the traffic associated with each land use, not all of the traffic generated by the Project will be new to the area roadways. For example, a portion of the retail vehicle-trips generated by the Site will likely be drawn from motorists already on the roadways adjacent to the Site. The primary origin and destination for these trips is elsewhere and the primary trip will be resumed following the visit to the Site. Based on MassDOT guidelines, ITE recommended pass-by rates were utilized to estimate pass-by trips for the proposed retail plaza. ITE recommends pass-by trip adjustment rates of 42 percent for the weekday evening peak hour and 37 percent for the Saturday midday peak hours. As ITE does not provide pass-by rates for the weekday morning peak hour for retail uses, the lower of the two ITE rates (i.e., the Saturday adjustment rate) was utilized for the morning peak hour adjustment.

Table 7 summarizes the peak hour trip adjustment calculations for the determination of the net change in trips associated with the Project when compared to the re-use of the Site by an office/R&D tenant.

Table 7 Peak Hour Trip Generation – Net Change

Time Period	Gross Increase Due to Project [a]	Internal Capture [b]	Pass-By [c]	Net New Trips [d]
Morning Peak Hour				
Enter	-510	Neg	30	-540
Exit	85	Neg	30	55
Total	-425	Neg	60	-485
Evening Peak Hour				
Enter	225	15	100	110
Exit	-260	15	100	-375
Total	-35	30	200	-265
Saturday Midday Peak Hour				
Enter	335	20	120	195
Exit	310	20	120	170
Total	645	40	240	365

Note: All numbers in the table represent "vehicle trips per hour"

Neg Negligible
a From table 6
b Internal capture assumed between retail and residential uses limited to 15-percent and 30-percent of the total residential trips during the weekday evening and the Saturday midday peak hour conditions, respectively.
c Retail pass-by trips rates of 37% for AM & Saturday peak hours and 42% for PM peak hour
d Net new trips = gross increase – adjustments noted above

It is noted that the Build conditions analysis and the Project mitigation will be based on the Future Condition volumes shown in Table 6 less internal capture trips shown in Table 7 and adjusted to reflect pass-by trip making patterns. The intent of calculating "Net New Trips" in Table 7 is to demonstrate the relative degree of impact associated with a by-right reuse of the office/R&D facilities versus the proposed mixed-use redevelopment of the Site. The lower level of future trip generation when compared to the existing uses at their full occupancy can be expected to result in better overall traffic operations in the future on weekdays. During the Saturday midday peak hours, the analysis shows that there would be an estimated increase in *net new* traffic of approximately 365 trips per hour when compared to the prior use.

Trip Distribution

The directional distribution of Site-generated traffic is based on various factors. The methodology used in developing the individual distributions is described below:

Retail Distribution: The retail distribution was based on the three hours of existing driveway turning movements at the Sudbury Plaza and Sudbury Farms retail centers during the Saturday midday peak period. The data during this period indicated that approximately 38% of the retail traffic is oriented to/from the west along Boston Post Road, and the remaining from the east. This general east/west distribution of retail traffic was further refined based on the observed travel patterns within the study area, such as propensity of drivers to rely on right turns over left turns, etc., to develop the final trip assignment percentages for the retail traffic.

Non-Retail Distribution: Since Boston Post Road is a commuter route, it is expected that residential trip distribution for the Site would be consistent with the weekday commuting patterns on the roadway. The existing travel patterns were also confirmed and refined using a U.S. Census journey-to-work model.

Table 8 summarizes the calculations. Related information and calculation worksheets are provided in the Appendix.

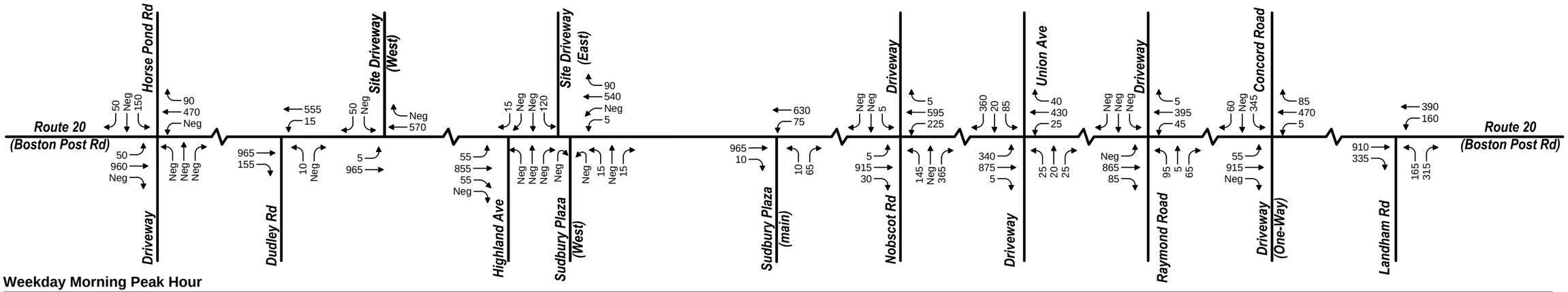
Table 8 Trip Distribution Summary

Roadway	Direction (From/To)	Retail % Site Traffic	Residential % Site Traffic
Boston Post Road	East	22%	30%
	West	23%	18%
Landham Road	South	15%	16%
Union Avenue	North	15%	12%
Local roads to/from the south	South	15%	13%
Local roads to/from the west/north	North	10%	11%
	Total	*100%*	*100%*

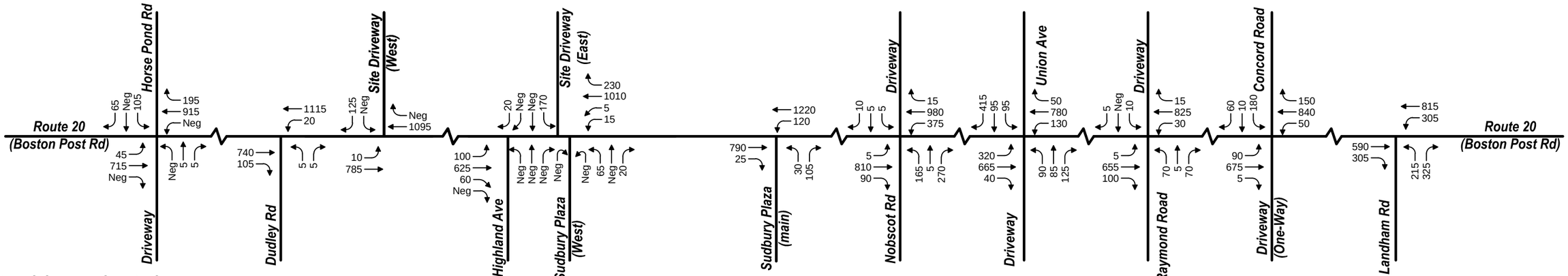
To develop the 2022 Build conditions peak hour traffic volume, Project generated traffic volumes noted above were added to the 2022 No-Build conditions peak hour traffic volumes. The 2022 Build traffic volume networks are shown in Figure 5. Separate traffic volume networks showing trip assignments for the reuse of the Site by a new office/R&D tenant and the future development related traffic are included in the Appendix.

Traffic Volume Increases

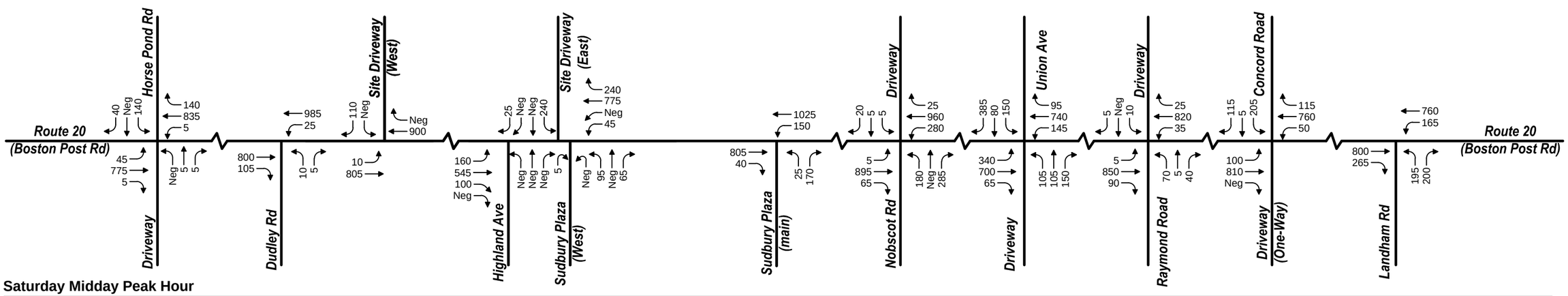
Table 9 provides a comparison of Existing, No-Build and Build condition peak period traffic volumes for various roadway segments within the study area, and the increase in traffic associated with the Project (difference between the Build condition that includes the Project and the No-Build conditions that includes the re-tenanting of the Site to a new office/R&D tenant).



Weekday Morning Peak Hour



Weekday Evening Peak Hour



Saturday Midday Peak Hour

Legend
Neg **<5 Vehicles**
XX → **Traffic Volume**

MEADOW WALK
SUDBURY

2022 Build Traffic Volumes
Meadow Walk
Mixed-Use Development
Sudbury, Massachusetts

Figure 5

February 16, 2016

Table 9 Change in Peak hour Traffic Volume

Location	Peak Period	Peak Hour Traffic Volumes			
		2015 Existing	2022 No-Build	2022 Build	CHANGE [a]
Boston Post Road east of Landham Road	Weekday Morning	1,680	1,935	1,775	-160
	Weekday Evening	1,825	2,135	2,035	-100
	Saturday Midday	1,615	1,850	1,925	75
Boston Post Road west of Horse Pond Road	Weekday Morning	1,450	1,615	1,615	-85
	Weekday Evening	1,600	1,775	1,740	-35
	Saturday Midday	1,425	1,615	1,700	85
Landham Road south of Boston Post Road	Weekday Morning	875	1,055	975	-80
	Weekday Evening	1,015	1,195	1,150	-45
	Saturday Midday	610	770	825	55
Concord Road north of Boston Post Road	Weekday Morning	505	545	545	Neg
	Weekday Evening	460	490	490	Neg
	Saturday Midday	485	540	540	Neg
Raymond Road south of Boston Post Road	Weekday Morning	270	290	295	5
	Weekday Evening	250	265	275	10
	Saturday Midday	200	220	240	20
Union Avenue north of Boston Post Road	Weekday Morning	775	905	845	-60
	Weekday Evening	890	1,085	975	-110
	Saturday Midday	960	1,100	1,050	-50
Nobscot Road south of Boston Post Road	Weekday Morning	690	835	765	-70
	Weekday Evening	795	935	905	-30
	Saturday Midday	690	785	810	25
Dudley Road south of Boston Post Road	Weekday Morning	160	175	195	20
	Weekday Evening	115	155	135	-20
	Saturday Midday	125	135	140	5
Horse Pond Road north of Boston Post Road	Weekday Morning	290	395	340	-55
	Weekday Evening	345	450	410	-40
	Saturday Midday	290	335	365	30

a Decrease (- value) or increase (+ value) in Project related traffic when compared to Office/R&D reuse of the Site
Neg Negligible

As shown in Table 9, weekday peak hour traffic is expected to decrease at most study area locations with the Project when compared to the scenario where a new office/R&D tenant reuses the Site as-is. In instances where traffic is expected to increase on study area roadways, overall increases in traffic as a result of the Project are expected to be nominal and in the range of five trips per hour on some of the side streets and up to approximately 85 trips per hour on Boston Post Road, depending on the specific location and the specific peak hour under consideration. Compared to the overall traffic volumes on area roadways, the above calculated increases associated with the Project are relatively small, and fall within the range of daily fluctuations or

roadway traffic flow. Traffic improvement measures to handle the additional Site generated traffic, independent of the reuse considerations of the Site, are discussed later in this report.

Signal Warrant Analysis

A traffic signal Warrant analysis was conducted to determine if the projected traffic volumes utilizing the primary Site drive at its intersection with Boston Post Road would exceed the thresholds for the installation of a traffic signal at the location. The analysis was conducted for three scenarios; an initial development phase that involves the construction of the 45,000± sf grocery store only, a phase that involves the construction of the 250-unit apartment community only, and a build-out of the full development plan.

The Manual on Uniform Traffic Control Devices[3] (MUTCD) is the established standard for Warrant analyses. The Warrants consider the roadway geometry, traffic volume entering the intersection, and speeds. Specifically, the traffic projections were evaluated for following three volume-based Warrants.

- **Warrant 1 (Eight Hour Vehicular Volume) –** Warrant 1 is based on any eight hours of a day where the traffic entering the intersection reaches a threshold that warrants considering signal control.
- **Warrant 2 (Four Hour Vehicular Volume) –** Warrant 2 is for any four hours of a day.
- **Warrant 3 (Peak Hour) –** Warrant 3 is for the peak hour of any given day.

The traffic signal Warrant analysis worksheets for two of the three scenarios (grocery store only and the full build-out of the development) indicates that the proposed primary Site driveway intersection on Boston Post Road would satisfy all three traffic volume-based Warrants for the installation of a traffic signal. The remaining scenario (construction of the 250-unit apartment community only) does not exceed the thresholds for the installation of a traffic signal. These findings were taken into consideration when developing the Site access improvements for the Project.

3 Manual on Uniform Traffic Control Devices, Federal Highway Administration, Washington DC

Sight Distance Analysis

A sight distance analysis, in conformance with guidelines of the American Association of State Highway and Transportation Officials (AASHTO)[4] was performed at the unsignalized Site driveway at the westerly limits of the property (approximately 550 feet west of Highland Avenue) that will be maintained. A sight-distance analysis was also conducted at the existing easterly driveway in the event that project phasing requires it to remain for some period prior to completion of the full-build out. These analyses are discussed below and summarized in Table 10.

Stopping Sight Distance (SSD) is the distance required for a vehicle approaching an intersection from either direction to perceive, react and come to a complete stop before colliding with an object in the road, in this case the exiting vehicle from a driveway. In this respect, SSD can be considered as the minimum visibility criterion for the safe operation of an unsignalized intersection.

Intersection Sight Distance (ISD) is based on the time required for perception, reaction and completion of the desired critical exiting maneuver (typically, a left turn) once the driver on a minor street approach (or a driveway) decides to execute the maneuver. Calculation for the critical ISD include the time to (1) turn left, and to clear the near half of the intersection without conflicting with the vehicles approaching from the left; and (2) upon turning left, to accelerate to the operating speed on the roadway without causing approaching vehicles on the main road to unduly reduce their speed. In this context, ISD can be considered as a desirable visibility criterion for the operation of an unsignalized intersection.

An additional criterion that is used especially in built-up areas with sight line constraints in proximity to driveways, is the use of "minimum ISD". This essentially involves the comparison of the available ISD to the SSD measurement to ensure that if the available ISD is not sufficient to cause approaching vehicles on the main road to only reduce their speed (as in the case of desirable ISD), that it is at least adequate for the approaching vehicle to come to a stop at the driveway, if necessary.

4 A Policy on the Geometric Design of Highways and Streets; AASHTO; Washington DC

Table 10 Sight Distance Analysis Summary

	Boston Post Road at the Unsignalized West Site Driveway						
	Stopping Sight Distance (SSD)			Intersection Sight Distance (ISD)			
	Traveling	Required [a]	Measured [c]	Looking	Desired [a]	Minimum [b]	Measured [c]
Boston Post Road at West Driveway	Westbound	290′	>500′	Right	430′	290′	445′
	Eastbound	290′	>500′	Left	430′	290′	>500′
Boston Post Road at East Driveway	Westbound	290′	>500′	Right	430′	290′	>500′
	Eastbound	290′	>500′	Left	430′	290′	330′

a calculated sight distance, expressed in feet, based on observed travel speeds of 39 mph
b Minimum ISD = SSD
c measured sight distance, expressed in feet

Table 10 indicates that adequate SSD and ISD are available for traffic approaching the existing easterly driveway along Boston Post Road from the eastbound direction. When looking to the left, the view is obscured by vegetation along the back of the sidewalk, however sight distance in excess of the minimum SSD is available. If this driveway were to be utilized for an extended period of time, the Proponent will review the visibility criteria in the field and selectively trim/prune vegetation within the right of way to improve sight lines to and from the driveway.

As indicated in Table 10, adequate SSD and ISD are available for traffic approaching the westerly unsignalized Site drive intersection along Boston Post Road in both the eastbound and westbound directions. Field observations indicate that when looking to the right, the view is somewhat obscured by overgrown vegetation located at the back of the sidewalk. Selective trimming/pruning of this vegetation would result in the further improved ISD in that direction. Based on sight distance considerations, no turn restrictions will be necessary for the operation of the driveway.

The Project team will continue to work with the Town of Sudbury's Engineering Department and Fire Department to determine an appropriate configuration for the westerly Site driveway.

4

Traffic Operations Analysis

Measuring existing traffic volumes and projecting future traffic volumes quantifies traffic flow within the study area. To assess quality of flow, roadway capacity analyses were conducted with respect to Existing and projected No-Build and Build traffic volume conditions. Capacity analyses provide an indication of how well the roadway facilities serve the traffic demands placed upon them. Roadway operating conditions are classified by calculated levels of service.

Level-of-Service Criteria

Capacity analyses provide an indication of how well the roadway facilities serve the traffic demands placed upon them. Roadway operating conditions are classified by calculated levels-of-service. The evaluation criteria used to analyze area intersections in this traffic study are based on the 2010 Highway Capacity Manual (HCM).[5] The term 'Level of Service' (LOS) is used to denote the different operating conditions that occur on a given roadway segment under various traffic volume loads. It is a qualitative measure that considers a number of factors including roadway geometry, speed, travel delay and freedom to maneuver. LOS provides an index to the operational qualities of a roadway segment or an intersection. LOS designations range from A to F, with LOS A representing the best operating conditions and LOS F representing congested operating conditions.

In addition to LOS, two other measures of effectiveness (MOEs) are typically used to quantify the traffic operations at intersections; volume-to-capacity ratio (v/c) and delay (expressed in seconds per vehicle). For example, an existing v/c ratio of 0.9 for an intersection indicates that the intersection is operating at 90 percent of its available capacity. A delay of 15 seconds for a particular vehicular movement or approach indicates that vehicles on the movement or approach will experience an average additional travel time of 15 seconds. For a given LOS letter designation there may be a wide range of values for both v/c ratios and delay. Comparison of intersection capacity results therefore requires that, in addition to the LOS, the other MOEs should also be considered. The LOS criteria are summarized in Table 11.

▼

5 Transportation Research Board, Highway Capacity Manual, Washington, DC

Table 11 Level-of-Service Criteria

Level of Service	Unsignalized Intersections Delay	Signalized Intersections Delay
A	0 to 10 seconds	0 to 10 seconds
B	10 to 15 seconds	10 to 20 seconds
C	15 to 25 seconds	20 to 35 seconds
D	25 to 35 seconds	35 to 55 seconds
E	35 to 50 seconds	55 to 80 seconds
F	> 50 seconds	> 80 seconds

It should be noted that the analytical methodologies typically used for the analysis of unsignalized intersections use conservative analysis parameters, such as long critical gaps. Actual field observations indicate that drivers on minor streets generally accept shorter gaps in traffic than those used in the analysis procedures and therefore experience less delay than reported by the analysis software. The analysis methodologies also do not fully take into account the beneficial grouping effects caused by nearby signalized intersections. The net effect of these analysis procedures is the over-estimation of calculated delays at unsignalized intersections in the study area. Cautious judgment should therefore be exercised when interpreting the capacity analysis results at unsignalized intersections

Signalized Intersections Capacity Analysis

Capacity analyses conducted for the signalized intersections are summarized in Table 12 through 14. The capacity analyses were conducted for 2015 Existing, 2022 No-Build and 2022 Build conditions. It is noted that the Build conditions analysis presented in this report are for the full build-out of the Site. As noted earlier, the traffic signal warrant analysis results indicates that construction of the grocery store only would trigger the need for traffic signal control. However, construction of the apartment community only would not warrant signalization of the primary Site driveway.

Based on the traffic signal warrant analysis results presented in the previous chapter for the full build-out of the Site, and prior field observations of traffic flow into and out of the Site, it has been determined that signalization of the primary Site driveway is an essential element of the Site access plan when it is fully developed. As such, the Build conditions analysis presented in this chapter assumes that traffic signal control is provided at the primary Site driveway. An unsignalized analysis of the Site driveway is not provided for the Build condition. It is noted that if only the apartment community is constructed, the relatively low volume of traffic generated by it would be supported by an unsignalized driveway.

Based on discussions with the abutters regarding a preferred location of a new traffic signal along the Site frontage, and taking into consideration right of way and wetland constraints along the Boston Post Road corridor, it is proposed that the primary Site driveway be located opposite the westerly Sudbury Plaza driveway and Highland Avenue (a private way). This results in a new five-legged signalized intersection, with an exclusive signal phase for Highland Avenue. Due to the very low traffic volume that utilizes Highland Avenue (less than five total trips per hour during the peak hours), it is expected that the exclusive Highland Avenue signal phase will be rarely activated.

For review purposes, the intersection has been analyzed with two intersection signal phasing configurations. The analysis presented in Tables 12, 13 and 14 reflects the typical condition when the Highland Avenue phase is not in use. A separate analysis, presented in Table 15, was conducted to document the operations when the Highland Avenue signal phase is activated. The degradation in capacity shown in Table 15 when the exclusive Highland Avenue phase is activated can be expected to last approximately one to two cycles before operations return to normal, similar to the activation of an exclusive pedestrian phase.

As noted earlier, the intersection of Boston Post Road with Landham Road is currently under design by MassDOT. The proposed signal timings obtained from MassDOT from the intersection design plans were utilized in all future analyses of this intersection.

Table 12 Signalized Analysis Summary — Weekday Morning

Intersection	Lane Group	2015 Existing Conditions V/C[1]	Delay[2]	LOS[3]	50th[4]	95th[5]	2022 No-Build Conditions V/C	Delay	LOS	50th	95th	2022 Build Conditions V/C	Delay	LOS	50th	95th
Boston Post Road at Site Driveway, Sudbury Plaza and Highland Avenue																
Boston Post Road	EB LT											0.13	9.6	A	<20	27
Boston Post Road	EB TH-RT											0.84	16.6	B	245	655
Boston Post Road	WB LT			Unsignalized				Unsignalized				0.33	51.9	D	<20	<20
Boston Post Road	WB TH-RT											0.65	12.0	B	203	332
Sudbury Plaza	NB LT											0.10	29.0	C	<20	29
Sudbury Plaza	NB TH-RT											0.01	28.4	C	<20	<20
Site Driveway	SB LT											0.60	35.7	D	59	#159
Site Driveway	SB TH-RT											0.01	28.4	C	<20	<20
	Overall											**0.82**	**16.5**	**B**	-	-
Boston Post Road at Nobscot Road/ Bank Driveway																
Boston Post Road	EB LT-TH	0.88	24.9	C	343	#631	1.07	70.7	E	~541	#765	1.07	68.2	E	~543	#793
Boston Post Road	EB RT	0.01	8.2	A	<20	<20	0.02	10.2	B	<20	<20	0.03	9.4	A	<20	<20
Boston Post Road	WB LT	0.66	18.2	B	38	#141	0.84	41.5	D	72	#196	0.82	38.2	D	68	#196
Boston Post Road	WB TH-RT	0.49	4.5	A	114	208	0.82	13.7	B	315	524	0.52	5.9	A	129	220
Nobscot Road	NB LT-TH	0.72	43.0	D	62	118	0.90	60.8	E	118	#247	0.67	37.2	D	73	135
Nobscot Road	NB RT	0.55	24.4	C	95	180	0.58	24.4	C	123	216	0.61	25.6	C	125	219
Bank Driveway	SB TH-RT	0.08	28.0	C	<20	<20	0.09	26.9	C	<20	<20	0.07	27.4	C	<20	<20
	Overall	**0.82**	**19.4**	**B**	-	-	**1.02**	**40.3**	**D**	-	-	**0.96**	**38.9**	**D**	-	-

1 V/C – Volume-to-capacity ratio
2 Delay – Control delay per vehicle
3 LOS – Level-of-Service
4 50th – 50th percentile queue length estimate, in feet
5 95th – 95th percentile queue length estimate, in feet
95th percentile volume exceeds capacity, queue may be longer. Queue shown is maximum after two cycles
M Volume for 95th percentile queue is metered by upstream signal
NB = Northbound; SB = Southbound; EB = Eastbound; WB = Westbound; LT = left-turn; TH = through; RT = right-turn

Table 12 Signalized Analysis Summary — Weekday Morning (Continued)

Intersection	Lane Group	2015 Existing Conditions V/C[1]	Delay[2]	LOS[3]	50th[4]	95th[5]	2022 No-Build Conditions V/C	Delay	LOS	50th	95th	2022 Build Conditions V/C	Delay	LOS	50th	95th
Boston Post Road at Union Avenue/ Shopping Plaza																
Boston Post Road	EB LT	0.58	9.5	A	40	136	0.80	33.9	C	133	#296	0.66	11.4	B	52	169
Boston Post Road	EB TH-RT	0.65	7.5	A	149	350	0.67	7.6	A	224	440	0.75	10.1	B	212	462
Boston Post Road	WB LT	0.11	13.9	B	<20	28	0.10	13.6	B	<20	28	0.12	14.2	B	<20	28
Boston Post Road	WB TH-RT	0.78	24.6	C	180	371	0.96	46.0	D	424	#750	0.77	24.3	C	181	360
Shopping Plaza	NB LT	0.17	23.9	C	<20	35	0.20	32.8	C	<20	35	0.17	23.6	C	<20	35
Shopping Plaza	NB TH-RT	0.13	23.5	C	<20	34	0.14	32.2	C	<20	34	0.12	23.2	C	<20	34
Union Avenue	SB LT-TH	0.49	26.7	C	38	105	0.59	39.1	D	58	111	0.50	26.6	C	41	111
Union Avenue	SB RT	0.22	24.1	C	<20	72	0.31	33.6	C	<20	90	0.25	24.0	C	<20	77
	Overall	**0.71**	**16.1**	**B**	-	-	**0.85**	**28.6**	**C**	-	-	**0.76**	**16.9**	**B**		
Boston Post Road at Concord Road																
Boston Post Rd	EB LT	0.87	17.1	B	218	390	0.93	23.6	C	299	#634	0.93	23.2	C	301	#640
Boston Post Rd	WB LT	0.61	7.8	A	111	172	0.77	10.9	B	201	353	0.53	6.2	A	99	165
Concord Road	SB LT-TH	1.15	117.9	F	~197	#325	1.19	>120	F	~206	#360	1.17	>120	F	~206	#360
Concord Road	SB RT	0.12	19.2	B	<20	34	0.11	23.1	C	<20	39	0.11	22.6	C	<20	39
	Overall	**0.94**	**35.0**	**D**	-	-	**0.98**	**37.2**	**D**	-	-	**0.98**	**37.6**	**D**	-	-
Boston Post Road at Landham Road																
Boston Post Rd	EB LT-TH						0.96	34.3	C	382	#830	0.94	30.2	C	356	#775
Boston Post Rd	EB RT						0.27	4.7	A	<20	41	0.29	4.8	A	<20	41
Boston Post Rd	WB LT			Unsignalized			0.60	18.7	B	24	97	0.58	16.0	B	<20	83
Boston Post Rd	WB TH-RT						0.47	3.6	A	81	188	0.32	2.6	A	39	90
Landham Road	NB LT-TH						1.47	>120	F	~186	#310	1.18	>120	F	~105	#200
Landham Road	NB RT						0.36	22.6	C	29	94	0.22	22.1	C	<20	55
	Overall						**1.20**	**45.8**	**D**	-	-	**1.14**	**29.3**	**C**	-	-

1 V/C – Volume-to-capacity ratio
2 Delay – Control delay per vehicle
3 LOS – Level-of-Service
4 50th – 50th percentile queue length estimate, in feet
5 95th – 95th percentile queue length estimate, in feet
95th percentile volume exceeds capacity, queue may be longer. Queue shown is maximum after two cycles
M Volume for 95th percentile queue is metered by upstream signal
NB = Northbound; SB = Southbound; EB = Eastbound; WB = Westbound; LT = left-turn; TH = through; RT = right-turn

Table 13 Signalized Analysis Summary — Weekday Evening

Intersection	Lane Group	2015 Existing Conditions V/C[1]	Delay[2]	LOS[3]	50th[4]	95th[5]	2022 No-Build Conditions V/C	Delay	LOS	50th	95th	2022 Build Conditions V/C	Delay	LOS	50th	95th
Boston Post Road at Site Driveway, Sudbury Plaza and Highland Avenue																
Boston Post Rd	EB LT											0.60	51.7	D	22	#126
Boston Post Rd	EB TH-RT											0.59	9.4	A	186	378
Boston Post Rd	WB LT			Police Control				Police Control				0.58	81.2	F	<20	33
Boston Post Rd	WB TH-RT											1.13	89.6	F	~1007	#1268
Sudbury Plaza	NB LT											0.46	44.0	D	58	83
Sudbury Plaza	NB TH-RT											0.02	39.4	D	<20	<20
Site Driveway	SB LT											0.88	76.3	E	123	#241
Site Driveway	SB TH-RT											0.01	39.4	D	<20	<20
	Overall											**1.06**	**60.3**	**E**	-	-
Boston Post Road at Nobscot Road/ Bank Driveway																
Boston Post Rd	EB LT-TH	0.82	21.1	C	289	#482	1.17	106.3	F	~681	#913	0.94	35.7	D	389	#650
Boston Post Rd	EB RT	.05	9.3	A	<20	<20	0.11	10.1	B	9	37	0.06	10.1	B	<20	20
Boston Post Rd	WB LT	0.91	40.4	D	~105	#293	1.25	>120	F	~208	#382	1.22	>120	F	~205	#378
Boston Post Rd	WB TH-RT	0.64	6.2	A	193	322	0.76	10.3	B	282	454	0.82	12.8	B	328	541
Nobscot Road	NB LT-TH	0.79	49.0	D	66	#131	0.75	43.9	D	81	#170	0.78	45.2	D	88	#186
Nobscot Road	NB RT	0.26	19.1	B	34	90	0.44	22.7	C	86	156	0.36	21.1	C	64	130
Bank Driveway	SB TH-RT	0.08	26.2	C	<20	<20	0.07	27.3	C	<20	<20	0.07	26.5	C	<20	<20
	Overall	**0.93**	**20.0**	**B**	-	-	**1.19**	**66.7**	**F**	-	-	**1.17**	**40.7**	**D**	-	-

1 V/C – Volume-to-capacity ratio
2 Delay – Control delay per vehicle
3 LOS – Level-of-Service
4 50th – 50th percentile queue length estimate, in feet
5 95th – 95th percentile queue length estimate, in feet
95th percentile volume exceeds capacity, queue may be longer. Queue shown is maximum after two cycles
M Volume for 95th percentile queue is metered by upstream signal
NB = Northbound; SB = Southbound; EB = Eastbound; WB = Westbound; LT = left-turn; TH = through; RT = right-turn

Table 13 Signalized Analysis Summary — Weekday Evening (Continued)

Intersection	Lane Group	2015 Existing Conditions					2022 No-Build Conditions					2022 Build Conditions				
		V/C[1]	Delay[2]	LOS[3]	50th[4]	95th[5]	V/C	Delay	LOS	50th	95th	V/C	Delay	LOS	50th	95th
Boston Post Road at Union Avenue/ Shopping Plaza																
Boston Post Rd	EB LT	0.64	22.9	B	82	163	0.87	44.1	D	164	#321	0.79	35.3	C	134	#259
Boston Post Rd	EB TH-RT	0.53	8.0	A	165	241	0.72	11.3	B	298	445	0.58	8.6	A	200	294
Boston Post Rd	WB LT	0.39	18.4	B	50	104	0.56	23.4	C	63	132	0.45	20.1	C	59	117
Boston Post Rd	WB TH-RT	0.92	39.6	D	370	#622	1.08	82.4	F	~583	#808	1.13	101.7	F	~638	#878
Shopping Plaza	NB LT	0.43	30.4	C	51	98	0.50	34.8	C	53	106	0.49	34.4	C	53	105
Shopping Plaza	NB TH-RT	0.46	30.2	C	82	148	0.48	33.6	C	84	160	0.48	33.3	C	84	160
Union Avenue	SB LT-TH	0.82	53.1	D	107	#235	1.00	100.2	F	~125	#269	0.99	94.6	F	124	#268
Union Avenue	SB RT	0.25	28.2	C	<20	78	0.30	31.8	C	<20	90	0.37	32.2	C	<20	112
	Overall	**0.83**	**27.3**	**C**	-	-	**1.01**	**44.8**	**D**	-	-	**1.01**	**50.8**	**D**	-	-
Boston Post Road at Concord Road																
Boston Post Rd	EB LT	0.77	10.8	B	150	270	0.94	23.9	C	314	#673	0.81	11.4	B	192	#417
Boston Post Rd	WB LT	0.80	11.4	B	185	322	0.90	16.8	B	289	#664	0.92	19.1	B	311	#694
Concord Road	SB LT-TH	0.68	27.8	C	62	#184	0.83	50.0	D	88	#194	0.82	47.1	D	88	#194
Concord Road	SB RT	0.04	19.7	B	<20	28	0.04	26.4	C	<20	31	0.04	25.7	C	<20	31
	Overall	**0.77**	**13.1**	**B**	-	-	**0.92**	**23.0**	**C**	-	-	**0.90**	**19.0**	**B**	-	-
Boston Post Rd at Landham Road																
Boston Post Rd	EB LT-TH						0.93	26.6	D	312	#598	0.76	20.9	C	227	#445
Boston Post Rd	EB RT						0.33	9.5	A	19	55	0.25	9.0	A	<20	37
Boston Post Rd	WB LT			Unsignalized			0.61	18.1	B	74	168	0.52	8.1	A	27	103
Boston Post Rd	WB TH-RT						0.58	3.8	A	105	224	0.60	3.9	A	111	238
Landham Road	NB LT-TH						1.38	>120	F	~135	#239	1.49	>120	F	~150	#259
Landham Road	NB RT						0.22	15.3	B	<20	45	0.22	15.3	B	<20	45
	Overall						**1.11**	**33.8**	**C**	-	-	**1.02**	**34.3**	**C**	-	-

1 V/C – Volume-to-capacity ratio
2 Delay – Control delay per vehicle
3 LOS – Level-of-Service
4 50th – 50th percentile queue length estimate, in feet
5 95th – 95th percentile queue length estimate, in feet
95th percentile volume exceeds capacity, queue may be longer. Queue shown is maximum after two cycles
M Volume for 95th percentile queue is metered by upstream signal
NB = Northbound; SB = Southbound; EB = Eastbound; WB = Westbound; LT = left-turn; TH = through; RT = right-turn

Table 14 Signalized Analysis Summary — Saturday Midday

Intersection	Lane Group	2015 Existing Conditions V/C[1]	Delay[2]	LOS[3]	50th[4]	95th[5]	2022 No-Build Conditions V/C	Delay	LOS	50th	95th	2022 Build Conditions V/C	Delay	LOS	50th	95th
Boston Post Road at Site Driveway, Sudbury Plaza and Highland Avenue																
Boston Post Rd	EB LT											0.95	80.2	F	~83	#210
Boston Post Rd	EB TH-RT											0.65	16.9	B	376	445
Boston Post Rd	WB LT											0.40	50.7	D	28	69
Boston Post Rd	WB TH-RT	Unsignalized					Unsignalized					1.01	54.5	D	~782	#1036
Sudbury Plaza	NB LT											0.47	37.8	D	81	105
Sudbury Plaza	NB TH-RT											0.06	33.3	C	<20	<20
Site Driveway	SB LT											0.92	73.6	E	172	#319
Site Driveway	SB TH-RT											0.02	33.0	C	<20	<20
	Overall											**0.99**	**45.9**	**D**	**-**	**-**
Boston Post Rd at Nobscot Road/ Bank Driveway																
Boston Post Rd	EB LT-TH	0.84	24.1	C	276	439	0.92	32.6	C	366	#623	1.00	50.0	D	~490	#742
Boston Post Rd	EB RT	0.03	10.3	B	<20	<20	0.04	10.2	B	<20	<20	0.04	10.0	B	<20	<20
Boston Post Rd	WB LT	0.73	20.6	C	49	#163	0.87	41.8	D	89	#237	0.92	53.6	D	95	#245
Boston Post Rd	WB TH-RT	0.63	7.8	A	171	283	0.71	9.1	A	237	383	0.79	11.6	B	315	507
Nobscot Road	NB LT-TH	0.64	31.2	C	73	124	0.69	37.0	D	82	#161	0.78	45.8	D	94	#191
Nobscot Road	NB RT	0.34	18.2	B	49	94	0.38	20.6	C	68	137	0.42	22.4	C	81	152
Bank Driveway	SB TH-RT	0.05	23.1	C	<20	27	0.05	25.8	C	<20	27	0.05	27.0	C	<20	27
	Overall	**0.78**	**17.7**	**B**	**-**	**-**	**0.87**	**23.7**	**C**	**-**	**-**	**0.95**	**32.2**	**C**	**-**	**-**

1 V/C – Volume-to-capacity ratio
2 Delay – Control delay per vehicle
3 LOS – Level-of-Service
4 50th – 50th percentile queue length estimate, in feet
5 95th – 95th percentile queue length estimate, in feet
95th percentile volume exceeds capacity, queue may be longer. Queue shown is maximum after two cycles
M Volume for 95th percentile queue is metered by upstream signal
NB = Northbound; SB = Southbound; EB = Eastbound; WB = Westbound; LT = left-turn; TH = through; RT = right-turn

Table 14 Signalized Analysis Summary — Saturday Midday (Continued)

Intersection	Lane Group	2015 Existing Conditions V/C[1]	Delay[2]	LOS[3]	50th[4]	95th[5]	2022 No-Build Conditions V/C	Delay	LOS	50th	95th	2022 Build Conditions V/C	Delay	LOS	50th	95th
Boston Post Road at Union Avenue/ Shopping Plaza																
Boston Post Rd	EB LT	0.69	25.3	C	99	188	0.78	34.9	C	134	#255	0.83	39.0	D	153	#296
Boston Post Rd	EB TH-RT	0.53	8.4	A	159	235	0.59	8.7	A	202	297	0.65	9.7	A	239	355
Boston Post Rd	WB LT	0.45	20.1	C	59	117	0.50	20.8	C	68	133	0.55	22.4	C	69	139
Boston Post Rd	WB TH-RT	0.91	40.5	D	359	#585	1.03	65.8	E	~532	#764	1.14	106.1	F	~643	#880
Shopping Plaza	NB LT	0.55	33.0	C	61	#130	0.72	49.2	D	65	#154	0.73	49.9	D	65	#155
Shopping Plaza	NB TH-RT	0.55	31.2	C	110	194	0.61	36.1	D	116	204	0.61	36.6	D	116	204
Union Avenue	SB LT-TH	1.24	>120	F	~182	#315	1.70	>120	F	~224	#375	1.72	>120	F	~225	#375
Union Avenue	SB RT	0.23	27.7	C	<20	62	0.25	31.0	C	<20	79	0.27	31.4	C	<20	81
	Overall	**0.95**	**38.9**	**D**	-	-	**1.14**	**64.3**	**E**	-	-	**1.21**	**75.2**	**E**	-	-
Boston Post Road at Concord Road																
Boston Post Rd	EB LT	0.80	12.6	B	170	300	0.90	19.2	B	250	#564	0.94	25.4	C	303	#630
Boston Post Rd	WB LT	0.73	9.7	A	157	262	0.83	13.1	B	224	#423	0.87	16.0	B	273	#609
Concord Road	SB LT-TH	0.61	23.1	C	61	#183	0.73	33.2	C	94	#195	0.77	38.1	D	94	#195
Concord Road	SB RT	0.07	17.9	B	<20	39	0.08	22.2	C	<20	39	0.08	24.0	C	<20	41
	Overall	**0.75**	**12.9**	**B**	-	-	**0.86**	**18.2**	**B**	-	-	**0.91**	**22.5**	**C**	-	-
Boston Post Rd at Landham Road																
Boston Post Rd	EB LT-TH						0.86	20.2	C	238	#550	0.90	24.2	C	260	#587
Boston Post Rd	EB RT						0.22	4.7	A	<20	29	0.24	4.8	A	<20	32
Boston Post Rd	WB LT			Unsignalized			0.51	9.6	A	<20	51	0.56	11.6	B	<20	65
Boston Post Rd	WB TH-RT						0.58	4.1	A	96	189	0.61	4.4	A	106	211
Landham Road	NB LT-TH						1.09	>120	F	~77	#182	1.29	>120	F	~104	#220
Landham Road	NB RT						0.14	17.3	B	<20	41	0.14	17.3	B	<20	41
	Overall						**1.16**	**20.1**	**C**	-	-	**1.24**	**28.5**	**C**	-	-

1 V/C – Volume-to-capacity ratio
2 Delay – Control delay per vehicle
3 LOS – Level-of-Service
4 50th – 50th percentile queue length estimate, in feet
5 95th – 95th percentile queue length estimate, in feet
95th percentile volume exceeds capacity, queue may be longer. Queue shown is maximum after two cycles
M Volume for 95th percentile queue is metered by upstream signal
NB = Northbound; SB = Southbound; EB = Eastbound; WB = Westbound; LT = left-turn; TH = through; RT = right-turn

Table 15 Site Driveway Signalized Analysis Comparison

Intersection	Lane Group	2022 Build Conditions – without Highland Avenue Phase Activation V/C[1]	Delay[2]	LOS[3]	50th[4]	95th[5]	2022 Build Conditions – with Highland Avenue Phase Activation V/C	Delay	LOS	50th	95th
Weekday Morning											
Boston Post Rd	EB LT	0.13	9.6	A	<20	27	0.15	14.1	B	<20	33
Boston Post Rd	EB TH-RT	0.84	16.6	B	245	655	0.89	24.2	C	266	806
Boston Post Rd	WB LT	0.33	51.9	D	<20	<20	0.36	59.0	E	<20	<20
Boston Post Rd	WB TH-RT	0.65	12.0	B	203	332	0.69	15.7	B	214	415
Sudbury Plaza	NB LT	0.10	29.0	C	<20	29	0.11	33.1	C	<20	32
Sudbury Plaza	NB TH-RT	0.01	28.4	C	<20	<20	0.01	32.4	C	<20	<20
Site Driveway	SB LT	0.60	35.7	D	59	#159	0.63	41.8	D	57	#208
Site Driveway	SB TH-RT	0.01	28.4	C	<20	<20	0.08	32.8	C	<20	34
Highland Ave	NEB LTR	N/A	N/A	N/A	N/A	N/A	0.15	49.4	D	<20	<20
	Overall	**0.82**	**16.5**	**B**	-	-	**0.86**	**22.4**	**C**	-	-
Weekday Evening											
Boston Post Rd	EB LT	0.60	51.7	D	22	#126	0.60	54.9	D	23	#141
Boston Post Rd	EB TH-RT	0.59	9.4	A	186	378	0.63	13.0	B	198	516
Boston Post Rd	WB LT	0.58	81.2	F	<20	33	0.71	118.6	F	<20	42
Boston Post Rd	WB TH-RT	1.13	89.6	F	~1007	#1268	1.22	131.8	F	~1069	#1513
Sudbury Plaza	NB LT	0.46	44.0	D	58	83	0.47	47.6	D	60	91
Sudbury Plaza	NB TH-RT	0.02	39.4	D	<20	<20	0.02	42.8	D	<20	<20
Site Driveway	SB LT	0.88	76.3	E	123	#241	0.89	82.9	F	126	#271
Site Driveway	SB TH-RT	0.01	39.4	D	<20	<20	0.09	43.4	D	<20	40
Highland Ave	NEB LTR	N/A	N/A	N/A	N/A	N/A	0.17	64.9	E	<20	<20
	Overall	**1.06**	**60.3**	**E**	-	-	**1.12**	**84.7**	**F**	-	-
Saturday Midday											
Boston Post Rd	EB LT	0.95	80.2	F	~83	#210	0.92	90.9	F	71	#243
Boston Post Rd	EB TH-RT	0.65	16.9	B	376	445	0.70	21.2	C	316	515
Boston Post Rd	WB LT	0.40	50.7	D	28	69	0.53	59.3	E	32	76
Boston Post Rd	WB TH-RT	1.01	54.5	D	~782	#1036	1.12	94.0	F	~786	#1219
Sudbury Plaza	NB LT	0.47	37.8	D	81	105	0.47	40.2	D	81	117
Sudbury Plaza	NB TH-RT	0.06	33.3	C	<20	<20	0.06	35.5	D	<20	<20
Site Driveway	SB LT	0.92	73.6	E	172	#319	0.92	77.4	E	172	#367
Site Driveway	SB TH-RT	0.02	33.0	C	<20	<20	0.08	35.7	D	<20	43
Highland Ave	NEB LTR	N/A	N/A	N/A	N/A	N/A	0.00	56.1	E	<20	<20
	Overall	**0.99**	**45.9**	**D**	**-**	**-**	**1.03**	**65.4**	**E**	-	-

1 V/C – Volume-to-capacity ratio
2 Delay – Control delay per vehicle
3 LOS – Level-of-Service
4 50th – 50th percentile queue length estimate, in feet
5 95th – 95th percentile queue length estimate, in feet
95th percentile volume exceeds capacity, queue may be longer. Queue shown is maximum after two cycles
M Volume for 95th percentile queue is metered by upstream signal
NB = Northbound; SB = Southbound; EB = Eastbound; WB = Westbound; LT = left-turn; TH = through; RT = right-turn

A review of the analysis worksheets for the signalized study locations summarized in Tables 12 through 14 indicates that, when compared to the operations with traffic generated by an office/R&D use on the Site, the signalized study intersections are expected to operate better during the weekday peak hour conditions. All signalized intersections are expected to operate at LOS D or better during all peak periods, except the intersection of Union Street and Boston Post Road, which is expected to operate at LOS E during the Saturday midday peak hour in all the future condition analyses.

It is noted that even with the substantially reduced weekday peak hour trip generation for the full build-out of the Project when compared to the office/R&D reuse of the property, relatively long vehicular queues are estimated on Boston Post Road at the signalized Site driveway. It is expected that additional enhancements, including traffic signal coordination discussed later in this report, have the potential to better manage vehicular queues on the roadway after their implementation and performance of necessary field adjustments to the traffic signal controllers' settings.

Unsignalized Intersection Capacity Analysis

Table 16 presents a summary of the capacity analyses for the unsignalized intersections in the study area.

The unsignalized intersection analysis summary indicates that the stop controlled movements from Horse Pond Road, Dudley Street and Raymond Road are currently operating at congested levels and they will continue to operate at these levels in the future No-Build condition (i.e., with an office/R&D tenant on the Site). A review of the delay and v/c measures in the table indicate that compared to the No-Build condition, the weekday peak hour operations at these locations are expected to operate in a similar manner or see a slight improvement under the Build condition (i.e., with the Project). This is also corroborated by the information in Table 9 in the previous chapter, which indicates that the Project is expected to result in a decrease in peak hour traffic on these roadways during some periods, and relatively limited additional traffic during other peak times.

Table 16 Unsignalized Intersection Analysis Summary

Location	Period	Movement	2015 Existing				2022 No-Build				2022 Build			
			Dem [a]	v/c [b]	Delay [c]	LOS [d]	Dem	v/c	Delay	LOS	Dem	v/c	Delay	LOS
Boston Post Road at Horse Pond Road and Barnstead Shoppes Driveway	Weekday Morning	SB-LR	175	1.81	>120	F	260	>2	>120	F	200	>2	>120	F
	Weekday Evening	SB-LR	135	1.96	>120	F	160	>2	>120	F	170	>2	>120	F
	Saturday Midday	SB-LR	135	1.67	>120	F	160	>2	>120	F	180	>2	>120	F
Boston Post Road at Dudley Road	Weekday Morning	NB-LR	10	0.16	42.7	E	10	0.24	65.4	F	10	0.23	52.6	F
	Weekday Evening	NB-LR	10	0.13	34.4	D	10	0.21	56.5	F	10	0.18	48.1	E
	Saturday Midday	NB-LR	15	0.15	32.2	D	15	0.21	44.8	E	15	0.26	57.2	F
Boston Post Road at Existing Site Driveway (West)	Weekday Morning	SB-LR	0	0	0	A	25	0.05	12.6	B	45	0.10	12.2	B
	Weekday Evening	SB-LR	80	0.36	29.5	D	160	>2	>120	F	125	0.79	77.2	F
	Saturday Midday	SB-LR	0	0	0	A	20	0.07	18.3	C	110	0.36	21.9	C
Boston Post Road at Sudbury Plaza Driveway (West)	Weekday Morning	NB-LR	30	0.24	32.2	D	30	0.33	46.7	E	Reconfigured to operate as Signalized Intersection			
	Weekday Evening	NB-LR	80	>2	>120	F	85	>2	>120	F				
	Saturday Midday	NB-LR	150	1.20	>120	F	160	1.67	>120	F				
Boston Post Road at Existing Site Driveway (East)	Weekday Morning	SB-LR	15	0.08	23.9	C	70	>2	>120	F	Relocated Site Driveway to align with Sudbury Plaza Driveway and Highland Avenue			
	Weekday Evening	SB-LR	Police Control				Police Control							
	Saturday Midday	SB-LR	0	0	0	A	60	0.77	>120	F				
Boston Post Road at Sudbury Plaza Driveway (East)	Weekday Morning	NB-L	10	0.12	48.6	E	10	0.26	113.3	F	10	0.21	89.4	F
		NB-R	60	0.19	17.5	C	65	0.25	20.8	C	65	0.27	22.8	C
	Weekday Evening	NB-L	30	0.61	>120	F	30	>2	>120	F	30	>2	>120	F
		NB-R	100	0.28	16.8	C	105	0.58	43.2	E	105	0.35	20.7	C
	Saturday Midday	NB-L	25	0.50	107.6	F	25	0.74	>120	F	25	>2	>120	F
		NB-R	160	0.43	18.5	C	170	0.47	21.8	C	170	0.54	27.2	D
Boston Post Road at Raymond Road	Weekday Morning	NB-LR	150	1.31	>120	F	160	0.80	66.2	F	165	1.93	>120	F
	Weekday Evening	NB-LR	130	0.60	38.6	E	140	0.73	58.8	F	145	0.91	100.9	F
	Saturday Midday	NB-LR	95	0.58	45.7	E	105	0.80	91.0	F	115	1.04	>120	F
Boston Post Road at Landham Road	Weekday Morning	NB-LR	435	>2	>120	F	Signalized				Signalized			
	Weekday Evening	NB-LR	475	>2	>120	F								
	Saturday Midday	NB-LR	325	>2	>120	F								

5

Potential Traffic Improvements

Chapter 3 indicated that increase in traffic associated with the Project on the study area roadways, when compared to the re-tenanting of the Site to a new office/R&D tenant, is lower at most locations during the weekday. Increase are mostly during the Saturday midday peak hours and are expected range from five trips per hour up to approximately 65 trips per hour, depending on the specific location. Compared to the overall traffic volumes on area roadways, the calculated traffic increases associated with the Project are relatively small and fall within the range of daily fluctuations of roadway traffic flow. Detailed capacity analyses in Chapter 4 confirmed that the Project-related traffic is expected to cause minimal additional impacts at study area locations when compared to the No-Build condition.

This chapter discusses potential traffic improvement measures could be implemented to further minimize the potential for Project-related traffic impacts. It is noted that improvements on Boston Post Road that are presented in this chapter are subject to review and approval by MassDOT as part of the MEPA review as well as the Access Permit review process.

Potential Intersection and Roadway Improvements

Site Access Improvements

As noted earlier, signalization of the primary Site driveway has been determined to be an essential element of the Site access improvement plan at full build-out of the Project. However, the traffic signal warrant analysis indicates that the construction of the apartment community only does not warrant signalization of the primary Site

driveway. If an apartment community is only constructed on the Site, it will be supported by an unsignalized driveway onto Boston Post Road.

Traffic signal control at the primary Site driveway at full build-out will not only accommodate safe and efficient vehicular access for the Site, it will also provide a signalized access for the customers of Sudbury Plaza and residents of Highland Avenue located on the south side of Boston Post Road as well as provide a much desired safe pedestrian crossing location on Boston Post Road west of the Nobscot Road signalized intersection.

Figure 6 shows a conceptual Site access improvement plan for the Project. As shown in the conceptual access improvement plan, the existing westerly driveway will be maintained at its current location, albeit modified to accommodate truck turning maneuvers. The existing middle and easterly driveways will be eliminated. A new Site driveway will be constructed opposite the existing westerly driveway to Sudbury Plaza and a traffic signal system will be installed at the intersection. The existing westerly driveway for Sudbury Plaza would need to be modified as indicated on the plan.

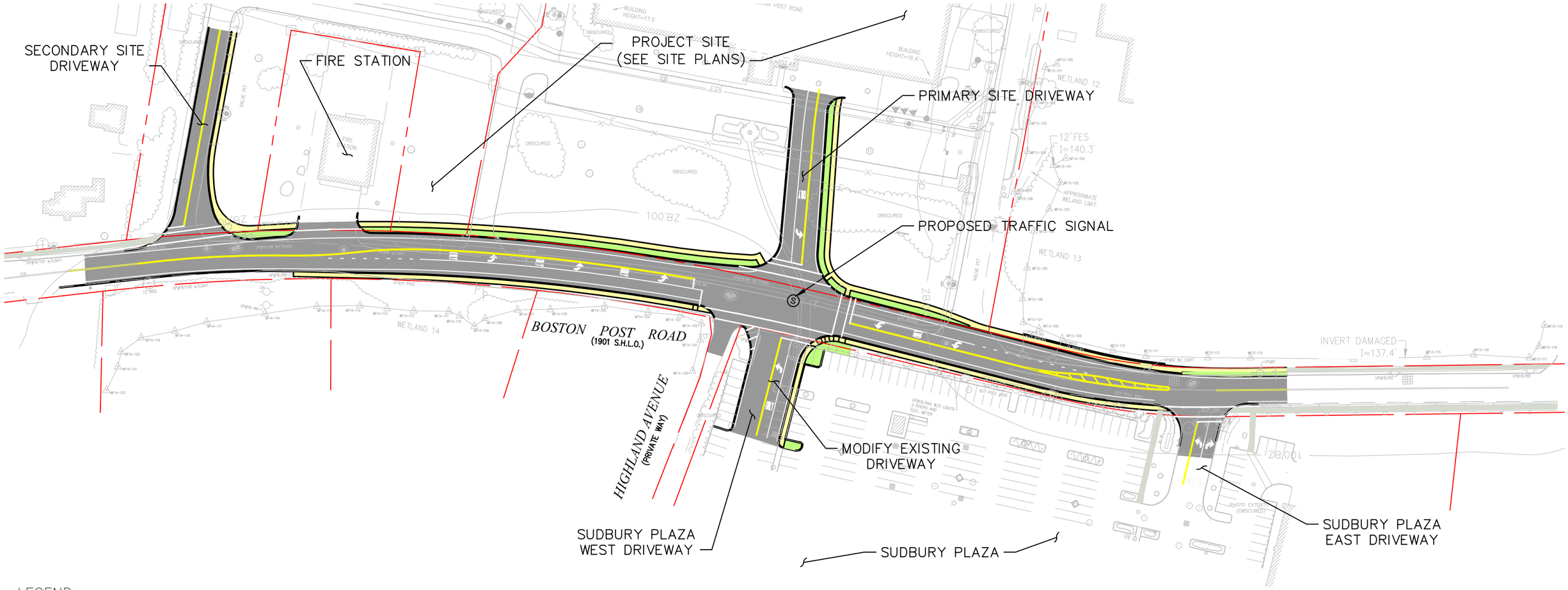
In general, the proposed signalized intersection control for the Site will have the following features to enhance Site access, vehicular traffic flow and pedestrian safety.

- Construction of a new traffic signal on Boston Post Road by aligning the primary Site driveway with the westerly driveway for Sudbury Plaza and Highland Avenue (a private way). This would also include the construction of designated left turn lanes on Boston Post Road, a new actuated pedestrian crosswalk and bicycle accommodations at the intersection; in addition to the Project, these improvements will also benefit the retail plaza and the residents of Highland Avenue on the south side of Boston Post Road.
- Widen the existing sidewalk on the north side of Boston Post Road along the Site frontage and extend the limits of the existing sidewalk on the south side of Boston Post Road; and,
- Subject to right of way availability, addition of five-foot paved shoulders (which could become part of future bike lanes) on either side of Boston Post Road within the limits of the roadway improvements.

Traffic signal analysis results based on the signalized Site access are presented under the Build condition in Tables 12 through 15 in Chapter 4.

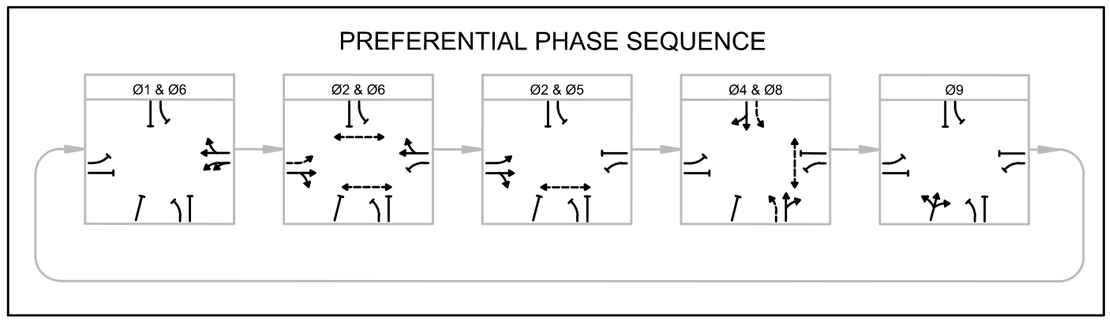
A review of the intersection traffic volumes, available crash data and the operational configuration of the signal control indicate that a new traffic signal at the proposed location and the associated geometric improvements will serve multiple purposes. It will:

- Provide a long desired traffic signal on Boston Post Road near the Site which enhances the redevelopment potential of a very valuable, visible and significant property in the Town of Sudbury;



LEGEND:

- EXISTING STATE HIGHWAY LAYOUT
- PROP CEMENT CONCRETE WALK
- PROP MILLING AND OVERLAY OR FULL DEPTH PAVEMENT
- PROP LOAM AND SEED
- EXISTING SIDEWALK



0 50 100 Feet

Conceptual Access Improvement Plan **Figure 6**
Meadow Walk
Mixed-Use Development February 16, 2016
Sudbury, Massachusetts

- Improved safety through the elimination of traffic control by a police officer at the primary Site driveway during the weekday evening peak hour;
- Enhance the operations of an existing major retail plaza in town by incorporating its driveway into the new traffic signal;
- Provide safe access and egress for residents of Highland Avenue;
- Limit the effect of turning traffic on the through traffic flow on Boston Post Road by means of exclusive turn lanes;
- Minimize vehicular backup and congestion on the Site;
- Help reduce angle crashes for vehicles entering and exiting the both the Site and Sudbury Plaza driveways; and,
- Provide safe pedestrian access between the Site and Sudbury Plaza.

As the design progresses and advances to the 25% MassDOT submittal, the geometry will be optimized further to minimize impacts along Boston Post Road while balancing the need to provide an enhanced roadway cross-section.

Fire Station Preemption Signal

Sudbury Fire Department has expressed a desire to fulfill its long term goal of implementing preemption traffic signal control on Boston Post Road in front of the fire station that is located along the Site frontage. The proximity of the fire station to the proposed new traffic signal at the primary Site driveway requires that consideration be given to the integration of the fire station preemption signal into the proposed driveway signal. The specific details of how the preemption can be accommodated into the overall intersection design will be worked out with the fire department and MassDOT during later stages of design development.

Traffic Signal Coordination

In addition to the Site access improvements outlined previously, the Proponent proposes to implement a time-based coordinated signal system that will comprise of three signalized intersections on Boston Post Road including the signalized primary Site driveway, Nobscot Road and Union Street intersections[6]. The coordination will likely be accomplished with GPS timers or radio technology. The specific technology for the coordination will be identified during the design phase of the improvements.

[6] Consideration was given to extending the coordinated signal system to include the existing signal at Concord Road; however, it was determined that due to the number of driveways between Union Avenue and Concord Road, as well as the shorter cycle length needed at Concord Road, there would be little benefit to extending the system to that location.

To accommodate the commuter peak traffic patterns along Boston Post Road, separate timing plans would be required for the weekday morning, weekday evening and Saturday midday peak hours. Table 17 through 19 summarizes the analysis results based on the implementation of a time based coordination system between the three intersections.

As shown in Tables 17 through 19, the benefits of the coordinated system will be realized the most during the weekday evening and Saturday midday peak hours at the intersections of Nobscot Road and Union Avenue. The coordinated system provides a metering effect which helps in better queue management. The effect of this is observed the most in the segment of Boston Post Road between Nobscot Road and Union Street. The improved flow along Boston Post Road would also benefit the numerous unsignalized intersections and driveways along that section of roadway by introducing more gaps within the Boston Post Road traffic flow. Fine tuning of the coordinated signal system settings during construction can be expected to provide additional opportunities to further manage queues and optimize operations in real-time.

Table 17 Coordination Analysis Summary - Weekday Morning

Intersection	Lane Group	2022 No-Build Conditions V/C[1]	Delay[2]	LOS[3]	50th[4]	95th[5]	2022 Build Conditions V/C	Delay	LOS	50th	95th	2022 Build Conditions With Mitigation V/C	Delay	LOS	50th	95th
Boston Post Road at Site Driveway, Sudbury Plaza and Highland Avenue																
Boston Post Rd	EB LT						0.13	9.6	A	<20	27	0.12	10.2	B	<20	33
Boston Post Rd	EB TH-RT						0.84	16.6	B	245	655	0.79	15.6	B	273	#848
Boston Post Rd	WB LT			Unsignalized			0.33	51.9	D	<20	<20	0.22	62.6	E	<20	<20
Boston Post Rd	WB TH-RT						0.65	12.0	B	203	332	0.63	8.1	A	274	209
Sudbury Plaza	NB LT						0.10	29.0	C	<20	29	0.11	37.3	D	<20	25
Sudbury Plaza	NB TH-RT						0.01	28.4	C	<20	<20	0.01	36.6	D	<20	<20
Site Driveway	SB LT						0.60	35.7	D	59	#159	0.64	47.1	D	79	132
Site Driveway	SB TH-RT						0.01	28.4	C	<20	<20	0.01	36.5	D	<20	<20
	Overall						**0.82**	**16.5**	**B**	-	-	**0.78**	**15.6**	**B**	-	-
Boston Post Road at Nobscot Road/ Bank Driveway																
Boston Post Rd	EB LT-TH	1.07	70.7	E	~541	#765	1.07	68.2	E	~543	#793	0.91	29.6	C	372	#813
Boston Post Rd	EB RT	0.02	10.2	B	<20	<20	0.03	9.4	A	<20	<20	0.03	8.1	A	<20	<20
Boston Post Rd	WB LT	0.84	41.5	D	72	#196	0.82	38.2	D	68	#196	0.88	51.3	D	92	#234
Boston Post Rd	WB TH-RT	0.82	13.7	B	315	524	0.52	5.9	A	129	220	0.48	6.0	A	136	240
Nobscot Road	NB LT-TH	0.90	60.8	E	118	#247	0.67	37.2	D	73	135	0.79	60.1	E	97	#191
Nobscot Road	NB RT	0.58	24.4	C	123	216	0.61	25.6	C	125	219	0.65	36.8	D	152	266
Bank Driveway	SB TH-RT	0.09	26.9	C	<20	<20	0.07	27.4	C	<20	<20	0.10	37.5	D	<20	<20
	Overall	**1.02**	**40.3**	**D**	-	-	**0.96**	**38.9**	**D**	-	-	**0.89**	**28.4**	**C**	-	-

1 V/C – Volume-to-capacity ratio
2 Delay – Control delay per vehicle
3 LOS – Level-of-Service
4 50th – 50th percentile queue length estimate, in feet
5 95th – 95th percentile queue length estimate, in feet
95th percentile volume exceeds capacity, queue may be longer. Queue shown is maximum after two cycles
M Volume for 95th percentile queue is metered by upstream signal
NB = Northbound; SB = Southbound; EB = Eastbound; WB = Westbound; LT = left-turn; TH = through; RT = right-turn

Table 17 Coordination Analysis Summary - Weekday Morning (Continued)

Intersection	Lane Group	2022 No-Build Conditions V/C[1]	Delay[2]	LOS[3]	50th[4]	95th[5]	2022 Build Conditions V/C	Delay	LOS	50th	95th	2022 Build Conditions With Mitigation V/C	Delay	LOS	50th	95th
Boston Post Road at Union Avenue/ Shopping Plaza																
Boston Post Rd	EB LT	0.80	33.9	C	133	#296	0.66	11.4	B	52	169	0.59	5.9	A	49	M91
Boston Post Rd	EB TH-RT	0.67	7.6	A	224	440	0.75	10.1	B	212	462	0.67	6.4	A	138	M529
Boston Post Rd	WB LT	0.10	13.6	B	<20	28	0.12	14.2	B	<20	28	0.08	10.0	A	<20	29
Boston Post Rd	WB TH-RT	0.96	46.0	D	424	#750	0.77	24.3	C	181	360	0.51	13.6	B	180	385
Shopping Plaza	NB LT	0.20	32.8	C	<20	35	0.17	23.6	C	<20	35	0.21	38.0	D	<20	36
Shopping Plaza	NB TH-RT	0.14	32.2	C	<20	34	0.12	23.2	C	<20	34	0.14	37.2	D	<20	35
Union Avenue	SB LT-TH	0.59	39.1	D	58	111	0.50	26.6	C	41	111	0.61	45.9	D	66	114
Union Avenue	SB RT	0.31	33.6	C	<20	90	0.25	24.0	C	<20	77	0.25	38.1	D	<20	78
	Overall	**0.85**	**28.6**	**C**	-	-	**0.76**	**16.9**	**B**			**0.70**	**15.9**	**B**	-	-

1 V/C – Volume-to-capacity ratio
2 Delay – Control delay per vehicle
3 LOS – Level-of-Service
4 50th – 50th percentile queue length estimate, in feet
5 95th – 95th percentile queue length estimate, in feet
95th percentile volume exceeds capacity, queue may be longer. Queue shown is maximum after two cycles
M Volume for 95th percentile queue is metered by upstream signal

NB = Northbound; SB = Southbound; EB = Eastbound; WB = Westbound; LT = left-turn; TH = through; RT = right-turn

Table 18 Coordination Analysis Summary - Weekday Evening

Intersection	Lane Group	2022 No-Build Conditions V/C[1]	Delay[2]	LOS[3]	50th[4]	95th[5]	2022 Build Conditions V/C	Delay	LOS	50th	95th	2022 Build Conditions With Mitigation V/C	Delay	LOS	50th	95th
Boston Post Road at Site Driveway, Sudbury Plaza and Highland Avenue																
Boston Post Rd	EB LT						0.60	51.7	D	22	#126	0.55	44.4	D	<20	#108
Boston Post Rd	EB TH-RT						0.59	9.4	A	186	378	0.61	9.9	A	178	372
Boston Post Rd	WB LT			Unsignalized			0.58	81.2	F	<20	33	0.54	68.3	E	<20	M23
Boston Post Rd	WB TH-RT						1.13	89.6	F	~1007	#1268	1.18	104.6	F	~947	#1210
Sudbury Plaza	NB LT						0.46	44.0	D	58	83	0.45	39.5	D	54	78
Sudbury Plaza	NB TH-RT						0.02	39.4	D	<20	<20	0.02	35.4	D	<20	<20
Site Driveway	SB LT						0.88	76.3	E	123	#241	0.84	64.8	E	114	#227
Site Driveway	SB TH-RT						0.01	39.4	D	<20	<20	0.01	35.4	D	<20	<20
	Overall						**1.06**	**60.3**	**E**	-	-	**1.08**	**66.8**	**E**	-	-
Boston Post Road at Nobscot Road/Bank Driveway																
Boston Post Rd	EB LT-TH	1.17	106.3	F	~681	#913	0.94	35.7	D	389	#650	0.90	34.5	C	366	#735
Boston Post Rd	EB RT	0.11	10.1	B	9	37	0.06	10.1	B	<20	20	0.08	14.6	B	<20	M28
Boston Post Rd	WB LT	1.25	>120	F	~208	#382	1.22	>120	F	~205	#378	0.99	68.0	E	~237	m#325
Boston Post Rd	WB TH-RT	0.76	10.3	B	282	454	0.82	12.8	B	328	541	0.77	5.9	A	141	M122
Nobscot Road	NB LT-TH	0.75	43.9	D	81	#170	0.78	45.2	D	88	#186	0.87	71.3	E	116	#239
Nobscot Road	NB RT	0.44	22.7	C	86	156	0.36	21.1	C	64	130	0.34	24.6	C	76	149
Bank Driveway	SB TH-RT	0.07	27.3	C	<20	<20	0.07	26.5	C	<20	<20	0.07	35.9	D	<20	21
	Overall	**1.19**	**66.7**	**F**	-	-	**1.17**	**40.7**	**D**	-	-	**1.00**	**29.4**	**C**	-	-

1 V/C – Volume-to-capacity ratio
2 Delay – Control delay per vehicle
3 LOS – Level-of-Service
4 50th – 50th percentile queue length estimate, in feet
5 95th – 95th percentile queue length estimate, in feet
95th percentile volume exceeds capacity, queue may be longer. Queue shown is maximum after two cycles
M Volume for 95th percentile queue is metered by upstream signal
NB = Northbound; SB = Southbound; EB = Eastbound; WB = Westbound; LT = left-turn; TH = through; RT = right-turn

Table 18 Coordination Analysis Summary - Weekday Evening (Continued)

Intersection	Lane Group	2022 No-Build Conditions					2022 Build Conditions					2022 Build Conditions With Mitigation				
		V/C[1]	Delay[2]	LOS[3]	50th[4]	95th[5]	V/C	Delay	LOS	50th	95th	V/C	Delay	LOS	50th	95th
Boston Post Road at Union Avenue/ Shopping Plaza																
Boston Post Rd	EB LT	0.87	44.1	D	164	#321	0.79	35.3	C	134	#259	1.05	79.7	E	~177	m#268
Boston Post Rd	EB TH-RT	0.72	11.3	B	298	445	0.58	8.6	A	200	294	0.57	12.5	B	390	M452
Boston Post Rd	WB LT	0.56	23.4	C	63	132	0.45	20.1	C	59	117	0.39	18.7	B	53	103
Boston Post Rd	WB TH-RT	1.08	82.4	F	~583	#808	1.13	101.7	F	~638	#878	0.97	48.2	D	526	#811
Shopping Plaza	NB LT	0.50	34.8	C	53	106	0.49	34.4	C	53	105	0.51	36.8	D	56	111
Shopping Plaza	NB TH-RT	0.48	33.6	C	84	160	0.48	33.3	C	84	160	0.49	35.6	D	91	169
Union Avenue	SB LT-TH	1.00	100.2	F	~125	#269	0.99	94.6	F	124	#268	1.01	106.7	F	~136	#283
Union Avenue	SB RT	0.30	31.8	C	<20	90	0.37	32.2	C	<20	112	0.57	37.7	D	63	#200
	Overall	**1.01**	**44.8**	**D**	-	-	**1.01**	**50.8**	**D**	-	-	**1.08**	**42.8**	**D**	-	-

1 V/C – Volume-to-capacity ratio
2 Delay – Control delay per vehicle
3 LOS – Level-of-Service
4 50th – 50th percentile queue length estimate, in feet
5 95th – 95th percentile queue length estimate, in feet
95th percentile volume exceeds capacity, queue may be longer. Queue shown is maximum after two cycles
M Volume for 95th percentile queue is metered by upstream signal
NB = Northbound; SB = Southbound; EB = Eastbound; WB = Westbound; LT = left-turn; TH = through; RT = right-turn

Table 19 Coordination Analysis Summary - Saturday Midday

Intersection	Lane Group	2022 No-Build Conditions					2022 Build Conditions					2022 Build Conditions With Mitigation				
		V/C[1]	Delay[2]	LOS[3]	50th[4]	95th[5]	V/C	Delay	LOS	50th	95th	V/C	Delay	LOS	50th	95th
Boston Post Road at Site Driveway, Sudbury Plaza and Highland Avenue																
Boston Post Rd	EB LT						0.95	80.2	F	~83	#210	0.89	60.2	E	~77	#196
Boston Post Rd	EB TH-RT						0.65	16.9	B	376	445	0.66	18.3	B	347	419
Boston Post Rd	WB LT			Unsignalized			0.40	50.7	D	28	69	0.43	46.2	D	25	M51
Boston Post Rd	WB TH-RT						1.01	54.5	D	~782	#1036	1.04	57.7	E	~722	M#973
Sudbury Plaza	NB LT						0.47	37.8	D	81	105	0.46	35.0	C	76	99
Sudbury Plaza	NB TH-RT						0.06	33.3	C	<20	<20	0.06	30.8	C	<20	<20
Site Driveway	SB LT						0.92	73.6	E	172	#319	0.91	69.3	E	161	#306
Site Driveway	SB TH-RT						0.02	33.0	C	<20	<20	0.02	30.5	C	<20	<20
	Overall						**0.99**	**45.9**	**D**	**-**	**-**	**1.00**	**45.5**	**D**	-	-
Boston Post Road at Nobscot Road/ Bank Driveway																
Boston Post Rd	EB LT-TH	0.92	32.6	C	366	#623	1.00	50.0	D	~490	#742	0.88	23.5	C	323	M#621
Boston Post Rd	EB RT	0.04	10.2	B	<20	<20	0.04	10.0	B	<20	<20	0.04	7.4	A	<20	<20
Boston Post Rd	WB LT	0.87	41.8	D	89	#237	0.92	53.6	D	95	#245	1.00	79.9	E	~144	M#189
Boston Post Rd	WB TH-RT	0.71	9.1	A	237	383	0.79	11.6	B	315	507	0.74	4.7	A	43	M31
Nobscot Road	NB LT-TH	0.69	37.0	D	82	#161	0.78	45.8	D	94	#191	0.87	69.5	E	124	#254
Nobscot Road	NB RT	0.38	20.6	C	68	137	0.42	22.4	C	81	152	0.41	29.9	C	89	175
Bank Driveway	SB TH-RT	0.05	25.8	C	<20	27	0.05	27.0	C	<20	27	0.06	35.5	D	<20	32
	Overall	**0.87**	**23.7**	**C**	**-**	**-**	**0.95**	**32.2**	**C**	**-**	**-**	**1.00**	**26.1**	**C**	-	-

1 V/C – Volume-to-capacity ratio
2 Delay – Control delay per vehicle
3 LOS – Level-of-Service
4 50th – 50th percentile queue length estimate, in feet
5 95th – 95th percentile queue length estimate, in feet
95th percentile volume exceeds capacity, queue may be longer. Queue shown is maximum after two cycles
M Volume for 95th percentile queue is metered by upstream signal
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Table 19 Coordination Analysis Summary - Saturday Midday

Intersection	Lane Group	2022 No-Build Conditions					2022 Build Conditions					2022 Build Conditions With Mitigation				
		V/C[1]	Delay[2]	LOS[3]	50th[4]	95th[5]	V/C	Delay	LOS	50th	95th	V/C	Delay	LOS	50th	95th
Boston Post Road at Union Avenue/ Shopping Plaza																
Boston Post Rd	EB LT	0.78	34.9	C	134	#255	0.83	39.0	D	153	#296	1.12	103.9	F	~215	m#319
Boston Post Rd	EB TH-RT	0.59	8.7	A	202	297	0.65	9.7	A	239	355	0.70	20.2	C	465	M556
Boston Post Rd	WB LT	0.50	20.8	C	68	133	0.55	22.4	C	69	139	0.62	32.5	C	74	155
Boston Post Rd	WB TH-RT	1.03	65.8	E	~532	#764	1.14	106.1	F	~643	#880	1.10	92.2	F	~654	#895
Shopping Plaza	NB LT	0.72	49.2	D	65	#154	0.73	49.9	D	65	#155	0.50	32.5	C	61	120
Shopping Plaza	NB TH-RT	0.61	36.1	D	116	204	0.61	36.6	D	116	204	0.49	31.5	C	111	194
Union Avenue	SB LT-TH	1.70	>240	F	~224	#375	1.72	>120	F	~225	#375	1.13	>120	F	~184	#339
Union Avenue	SB RT	0.25	31.0	C	<20	79	0.27	31.4	C	<20	81	0.42	30.7	C	39	139
	Overall	**1.14**	**64.3**	**E**	-	-	**1.21**	**75.2**	**E**	-	-	**1.16**	**61.1**	**E**	-	-

1 V/C – Volume-to-capacity ratio
2 Delay – Control delay per vehicle
3 LOS – Level-of-Service
4 50th – 50th percentile queue length estimate, in feet
5 95th – 95th percentile queue length estimate, in feet
95th percentile volume exceeds capacity, queue may be longer. Queue shown is maximum after two cycles
M Volume for 95th percentile queue is metered by upstream signal
NB = Northbound; SB = Southbound; EB = Eastbound; WB = Westbound; LT = left-turn; TH = through; RT = right-turn

Traffic Demand Management Program

The goal of the Traffic Demand Management (TDM) plan is to reduce the Project's overall traffic impact through the implementation of measures that are aimed at affecting the demand side of the transportation equation, rather than the supply side. By their very nature, TDM programs attempt to change people's behavior, and to be successful, they must rely on incentives or disincentives to make these shifts in behavior attractive to the commuter.[7] TDM programs are designed to maximize the people-moving capability of the existing transportation infrastructure by increasing the number of persons in a vehicle, providing alternate modes of travel, or influencing the time of, or need to, travel.

In addition to the roadway and traffic signal improvements discussed in the previous sections, the Proponent is considering the implementation of various TDM services on the Site. The TDM plan will be aimed at minimizing the use of single-occupant vehicles and reducing peak hour vehicular demands. This program, which will be available to all residents, retail customer and employees of the Site, includes the following components:

- Designation of a Transportation Coordinator
- MetroWest/495 Transportation Management Association (TMA) Membership
- Ridesharing Programs
- Transit Service
- Bicycle and Pedestrian Enhancements

Transportation Coordinator

The Proponent will designate a transportation coordinator to prepare and implement the TDM program for the Site. This person will be available to provide residents, employees and customers with information regarding their commuting options and will coordinate the implementation of the TDM programs. This person will also be responsible for coordinating with the Metrowest/495 TMA, MassRides, and the MWRTA.

Metrowest/495 TMA Membership

The Proponent will explore membership opportunities with the Metrowest/ 495 Transportation Management Association (TMA). The TMA serves the commuting

▼

7 Implementing Effective Traffic Demand Management Measures: Inventory of Measures and Synthesis of Experience, prepared by Comsis Corporation and the Institute of Transportation Engineers, for the U.S. Department of Transportation, DOT-T-94-02, September, 1993, p. I-1.

needs of member communities in the MetroWest region (Framingham, Natick, Marlborough, Hudson, Southborough, Ashland, Sudbury, Wayland, Holliston, Hopkinton, Sherborn, Westborough, and Northborough) including those located along Interstate 495, by advocating for community interests relating to area wide transportation, aiming to relieve traffic congestion and broadening commuting options for residents of the towns it serves.

Ridesharing Programs

The Proponent will encourage residents and employees on the Site to participate in ridesharing programs to promote trip reduction and travel demand management during peak commuting hours. Ridesharing refers to encouraging commuters to ride in vehicles with other commuters, rather than drive alone. The most common forms of ridesharing are carpools and vanpools. The benefits of such programs include less congestion, reduced fuel consumption and better air quality. These programs are generally available to members of the TMA.

Transit Service

The nearest MWRTA bus service in the area is currently located approximately three miles to the west in Marlborough and three miles to the south in Framingham.

A recently completed Comprehensive Service Assessment by the MWRTA indicates that services gaps have been identified and their resolution could service specific mobility needs in the region. Specifically, the assessment refers to the extension of the current weekday service along Route 7C in Marlborough to include Sudbury and Wayland along Boston Post Road as a new service recommendation. The route, when extended, would provide hourly service along Boston Post Road between 6:00 AM and 8:00 PM. Additionally, the potential for extending MWRTA Routes 2 and 3 that currently serve Nobscot Shopping Center in Framingham to Boston Post Road in Sudbury has been noted as means to open up the system to the significant growth along the Boston Post Road corridor. The Proponent met with representatives of the MWRTA to gain a better understanding of the MWRTA's long-term growth plans and to ensure that the proposed roadway improvements and/or Site design could accommodate MWRTA vehicles if service is expanded to the study area in the future.

Bicycle and Pedestrian Enhancements

The proposed redevelopment plans for the Site reflects a conscious effort to make the overall Site more pedestrian and bicycle friendly. The bicycle/pedestrian enhancements proposed as part of the Project are listed below.

- Widening of the existing sidewalk on the north side of Boston Post Road within the limits of the roadway improvements and extending of the limits of the existing sidewalk on the south side of Boston Post Road, as depicted in Figure 6.
- Subject to right of way availability, addition of five-foot paved shoulders on either side of Boston Post Road within the limits of the roadway improvements depicted in Figure 6. These shoulders would become part of future bicycle lanes that may be implemented by others along the corridor in the future.
- Construction of a fully actuated pedestrian crosswalk at the proposed signalized Site driveway.
- Installation of bicycle detection at the signalized intersection.
- Secure bicycle parking at convenient locations on the Site.
- A well planned network of sidewalks throughout the Site.
- Accommodation of future connections to the planned Mass Central rail trail that would run along the north side of the Site.
- A potential pedestrian connection to the adjacent property on the east side of the Site has been discussed with the abutter.

6

Conclusion

This Study has been prepared in conformance with the Transportation Scoping Letter (TSL) reviewed by MassDOT. The Town of Sudbury planning staff was also consulted concurrent with MassDOT's review of the scope. The Study includes an evaluation of the existing traffic operations and safety conditions of the roadways near the Project, analyzed the impact of background traffic growth, estimated the impacts of the Project and identified improvements that are aimed at offsetting Project impacts as well as improve existing deficiencies.

The Site currently serves as an office/R&D facility for Raytheon and has 563,300± sf usable space and 2,040± parking spaces. Raytheon has begun their relocation process and will be winding down their operations at the Site over the next two years. The Proponent proposes to demolish the existing buildings in phases and construct a mixed-use residential/retail development with 80,000± sf of mixed retail (including a 45,000± sf grocery store), 250 apartment units, up to 60 age-restricted condominium units and a 54-bed assisted living/memory care facility. If the proposed redevelopment were not to proceed, a new office/R&D tenant could occupy the Site with minimal improvements.

Compared to the reuse of the existing office/R&D facilities, the Project is estimated to generate less traffic during the weekday peak hours. Specifically, in comparison to an office/R&D user that generates 765 weekday morning peak hour trips and 710 weekday evening peak hour trips, the Project is estimated to generate 63 and 37 percent fewer trips, respectively.

During the Saturday midday peak hour, replacement of the office/R&D use with the Project would result in an increase of approximately 365 additional *net new* trips. Distributed over the area roadway network, this represents an increase of five to 85 trips per hour at various Study locations. These calculated traffic increases during

the Saturday peak are relatively small and fall within the range of daily fluctuations of roadway traffic volumes.

Detailed capacity analyses indicate that deficiencies currently exist at certain locations within the study area. However, the analysis herein demonstrates that the limited additional Project related traffic will not have a noticeable effect on are roadway traffic operations.

The following improvements are proposed to mitigate the limited incremental effect of the peak hour and daily traffic demands of the Project as well as improve the existing conditions. They are designed to address some of the existing deficiencies that are identified as part of the Study.

- Construction of a new traffic signal on Boston Post Road by aligning the primary Site driveway with the westerly driveway for Sudbury Plaza and Highland Avenue (a private way). This would also include the construction of designated left turn lanes on Boston Post Road, a new actuated pedestrian crosswalk and bicycle accommodations at the intersection; in addition to the Project, these improvements will also benefit the retail plaza and the residents of Highland Avenue on the south side of Boston Post Road.
- Improved safety through the elimination of traffic control by a police officer at the primary Site driveway during the weekday evening peak hour;
- Widen the existing sidewalk on the north side of Boston Post Road along the Site frontage and extend the limits of the existing sidewalk on the south side of Boston Post Road;
- Subject to right of way availability, addition of five-foot paved shoulders on either side of Boston Post Road within the limits of the roadway widening. These shoulders would become part of future bicycle lanes that may be implemented by others along the corridor in the future.
- Possible implementation of a time-based coordinated signal system between the new signalized Site driveway, Nobscot Road and Union Avenue intersections on Boston Post Road;
- Pending Fire Department input, construction of a potential new emergency preemption signal at the fire station located along the Site frontage and integration of the signal into the new traffic signal at the primary Site driveway; and,
- Implementation of a comprehensive Traffic Demand Management (TDM) program to further promote vehicular traffic associated with the Project.

ATTACHMENT E: SITE CONDITIONS
LSP LETTER

SANBORN HEAD
Building Trust. Engineering Success.

1 Technology Park Drive
Westford, MA 01886

Mr. Steve Senna
National Development
2310 Washington Street
Newton Lower Falls, MA 02462

February 4, 2016
File No. 3888.02

Mr. Scott Dale
AvalonBay Communities, Inc.
51 Sleeper Street, Suite 750
Boston, MA 02210

Re: Proposed Redevelopment Project
528 Boston Post Road, Sudbury, MA
RTNs 3-03037, 3-17106, and 3-27243

Dear Steve and Scott:

Sanborn, Head & Associates, Inc. (Sanborn Head) has prepared this letter to describe the environmental conditions at the former Raytheon facility located at 528 Boston Post Road in Sudbury, MA (the Site) in the context of National Development/AvalonBay's proposed redevelopment. The Site is the location of three previously reported Massachusetts Contingency Plan (MCP) Release Tracking Numbers (RTNs), the status of which are described herein.

Raytheon has performed numerous rounds of sampling over the past 20 years and the results of these investigations have been filed with the Massachusetts Department of Environmental Protection (DEP) in accordance with the MCP. As a result, the environmental conditions at the Site have been thoroughly studied and are well understood. Specifically, 43 soil samples have been collected at the Site by Raytheon, and no residual contamination in soil that would pose a health risk to future users/residents has been identified. In addition, approximately 40 groundwater monitoring wells have been advanced at the Site by Raytheon, as shown on the attached figure. Currently, only three of these monitoring wells contain concentrations of constituents above applicable MCP standards. These wells are highlighted in yellow on the attached figure. The years of monitoring data show that the concentrations present in groundwater are decreasing over time. The groundwater containing concentrations above MCP standards represents about 5% of the total Site area.

In addition to the work previously performed by Raytheon, Sanborn Head also performed a Phase I Environmental Site Assessment with Subsurface Investigation for the Site in August 2015. This included advancement of ten soil borings and installation of two monitoring wells. Six soil samples and seven groundwater samples were collected (one from each of the new wells and five from existing wells). Based on the data collected, Sanborn Head did not identify any new Recognized Environmental Conditions at the Site.

During demolition and construction within the RTN area, we will implement a Release Abatement Measure (RAM) Plan which will identify the policies and procedures that will be followed in the event additional contamination is encountered. This plan will include a condition to stop work and contact the Licensed Site Professional (LSP) if suspected contamination is detected.

Additional details regarding the MCP status, current conditions and the proposed redevelopment project are provided below.

Massachusetts Contingency Plan (MCP) Status

The three MCP RTNs associated with the Raytheon facility are summarized below:

- Release Tracking Numbers (RTNs) 3-27243 and 3-3037 are related to the presence of chlorinated volatile organic compounds (CVOCs) in groundwater in the northeastern portion of the property. The presence of CVOCs in groundwater, primarily trichloroethylene (TCE), was first identified between 1990 and 1991, and the Site was initially assigned RTN 3-3037. RTN 3-3037 achieved regulatory closure with DEP (Pending No Further Action status) in 1997. Raytheon continued to monitor groundwater quality at the Site, and in 2007 provided an additional notification to DEP under the MCP. While the groundwater concentrations had remained consistent with those detected during earlier studies, Raytheon provided notification as a conservative approach to assure regulatory compliance. That notification was assigned RTN 3-27243. In November 2008, Raytheon submitted a Class C Response Action Outcome (RAO) for RTN 3-27243, which concluded that a Temporary Solution had been achieved, active remediation was not required and that regulatory compliance would be maintained through monitored natural attenuation (MNA) and periodic groundwater monitoring. Raytheon has retained responsibility for performing ongoing monitoring activities related to this release.

- A 1987 spill of about 35 gallons of no. 2 heating oil occurred during filling of an underground storage tank (UST) associated with the former Boresite Building in the west-central portion of the Site. Documentation of the cleanup activities was provided in the DEP files for RTN 3-3037. The UST and impacted soil near the tank were removed for off-Site disposal. The UST closure report states that DEP concurred that sufficient soil removal had been performed. The report concluded that the site did not necessitate being listed on DEP's Location to be Investigated list for potential disposal sites in 1990, indicating that there is not a significant risk to human health and the environment related to this spill.

- A 1998 spill of 15 to 20 gallons of hydraulic oil, resulting from an overturned crane, was assigned RTN 3-17106. Absorbent materials were applied to remediate the spill, and approximately 1.5 cubic yards of impacted soil were also removed for off-site disposal. A Class A-2 RAO was filed with DEP for the release in September 1998, demonstrating that a Permanent Solution (i.e. regulatory closure) has been achieved for this release.

Current Conditions

The most recent groundwater sampling round was performed in March 2015. Based on this most recent data set, concentrations of TCE in groundwater have continued to decrease over time. TCE was only detected in two monitoring wells located on the eastern side of the property in 2015. These wells are screened from approximately 59 to 91 feet below ground surface in deep groundwater, and their locations are highlighted in yellow on the attached figure. While the concentrations detected slightly exceed the MCP GW-2 standards that are protective of vapor intrusion potential, TCE was not detected above laboratory reporting limits in shallower groundwater at the Site. DEP has concluded that the TCE contamination is too deep to cause vapor intrusion concerns and we agree.

Freon 7 was also detected in one groundwater well (GZ-106) at a concentration of 45 µg/L in 2015. GZ-106 is also highlighted in yellow on the attached figure. Although this concentration slightly exceeds the previously derived Method 2 GW-2 standard of 13 µg/L, this concentration is significantly lower than the Freon 7 level detected in GZ-106 during prior sampling rounds performed in 2013. Freon 7 has not been detected above the Method 2 GW-2 standard in the wells surrounding GZ-106. This data further supports that the residual groundwater concentrations in GZ-106 are localized and naturally decreasing over time.

Proposed Redevelopment Project

The proposed project will include demolition of the existing buildings and construction of a mix of retail and residential buildings. There are no plans to install drinking water wells at the Site and all buildings will be connected to the public water supply.

The lack of detectable TCE in shallow groundwater indicates that the potential for vapor intrusion of TCE into future Site buildings is not a concern. The presence of Freon 7 in one groundwater well on the eastern edge of the property does not indicate a potential for vapor intrusion as no buildings are currently planned in the vicinity of GZ-106. Should design plans change, Sanborn Head will provide a LSP evaluation of the potential for Freon 7 vapor intrusion in this area of the Site. Should a vapor intrusion potential be identified, appropriate and commonly used mitigation measures (e.g. vapor barriers and/or sub-slab venting systems) will be included in the design for the potentially affected building.

During redevelopment, Sanborn Head will provide monitoring and LSP services, and the work will be performed in accordance with MCP requirements. Specifically, the work performed within RTNs 3-27243 and 3-3037 will be performed under a RAM Plan. The RAM Plan will include requirements for soil management, construction dewatering, dust control and air monitoring. Provisions will also be included in the RAM Plan for addressing unanticipated conditions, should evidence of soil contamination be encountered beneath existing buildings or elsewhere. If such conditions are discovered, they will be addressed by the development team in accordance with the MCP and relevant local, state and federal regulations.

The 20 years of monitoring data available for the Site indicate that the groundwater constituents are not significantly impacting off-Site receptors, including the Town public water supply wells. Based on the data, it is our opinion that water infiltration related to demolition of Site buildings (e.g., a temporary reduction in impervious surface) or related to changes in the on-Site waste water treatment and disposal system will not affect the residual contamination due to its depth below ground surface and/or the size of the Site. No impacts to neighboring properties or the Town public water supply wells are expected.

We understand that DEP performed a recent review of the available files for the Site, which they summarized in a letter addressed to Mr. Bob Haarde, dated January 22, 2016. The conclusions described in DEP's letter are consistent with those described herein. We note that more recent data was collected in 2015 which showed even lower concentrations than reported in DEP's letter, as described above. A copy of the letter is attached for reference.

Conclusions

Current Site conditions indicate relatively low-level concentrations of TCE in two deep groundwater wells and Freon-7 in one shallow groundwater well. These concentrations continue to decrease with time. No drinking water wells are planned for the Site, and impacts to off-Site properties from Site redevelopment activities are not anticipated. Based on the current development plans, potential vapor intrusion issues are also not a concern.

No contamination in soil that would pose a health risk to future users/residents has been identified. Regardless, procedures will be implemented to appropriately address unanticipated conditions in soil, should they arise during construction. Construction activities performed within RTNs 3-27243 and 3-3037 will be performed under a RAM Plan in accordance with the MCP. Based on the above information, it is our opinion that the proposed redevelopment project will not pose a health, environmental or natural resource risk to future residents, neighbors or the community.

Please contact the undersigned if you have any questions.

Very truly yours,
SANBORN, HEAD & ASSOCIATES, INC.

Patricia M. Pinto, P.E., LSP
Vice President

PMP/KPS: pmp

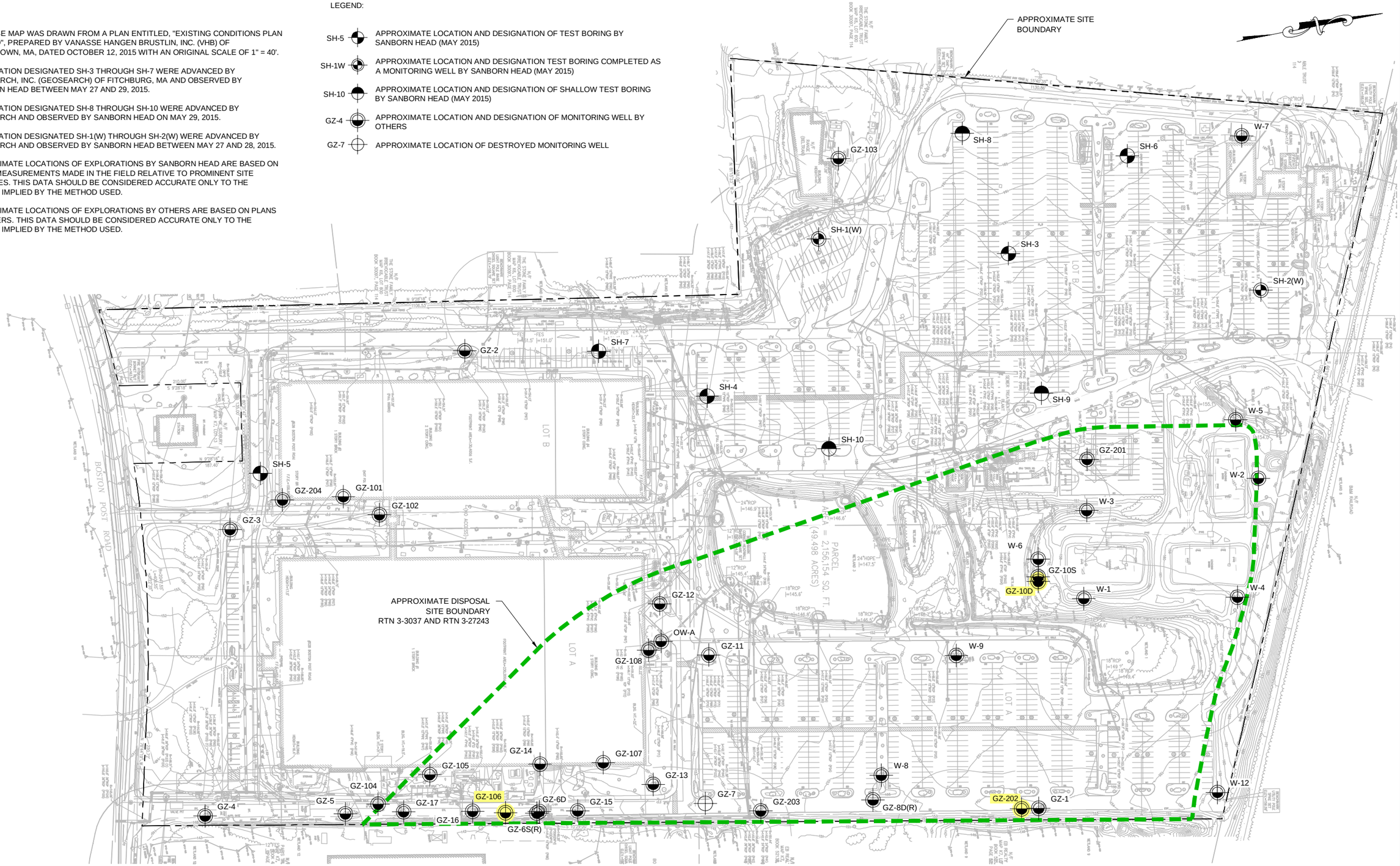
Encl: Figure 1, Exploration Location Plan
Letter from DEP to Bob Haarde, dated January 22, 2016

NOTES:

1. THE BASE MAP WAS DRAWN FROM A PLAN ENTITLED, "EXISTING CONDITIONS PLAN OF LAND", PREPARED BY VANASSE HANGEN BRUSTLIN, INC. (VHB) OF WATERTOWN, MA, DATED OCTOBER 12, 2015 WITH AN ORIGINAL SCALE OF 1" = 40'.
2. EXPLORATION DESIGNATED SH-3 THROUGH SH-7 WERE ADVANCED BY GEOSEARCH, INC. (GEOSEARCH) OF FITCHBURG, MA AND OBSERVED BY SANBORN HEAD BETWEEN MAY 27 AND 29, 2015.
3. EXPLORATION DESIGNATED SH-8 THROUGH SH-10 WERE ADVANCED BY GEOSEARCH AND OBSERVED BY SANBORN HEAD ON MAY 29, 2015.
4. EXPLORATION DESIGNATED SH-1(W) THROUGH SH-2(W) WERE ADVANCED BY GEOSEARCH AND OBSERVED BY SANBORN HEAD BETWEEN MAY 27 AND 28, 2015.
5. APPROXIMATE LOCATIONS OF EXPLORATIONS BY SANBORN HEAD ARE BASED ON TAPED MEASUREMENTS MADE IN THE FIELD RELATIVE TO PROMINENT SITE FEATURES. THIS DATA SHOULD BE CONSIDERED ACCURATE ONLY TO THE DEGREE IMPLIED BY THE METHOD USED.
6. APPROXIMATE LOCATIONS OF EXPLORATIONS BY OTHERS ARE BASED ON PLANS BY OTHERS. THIS DATA SHOULD BE CONSIDERED ACCURATE ONLY TO THE DEGREE IMPLIED BY THE METHOD USED.

LEGEND:

- SH-5 — APPROXIMATE LOCATION AND DESIGNATION OF TEST BORING BY SANBORN HEAD (MAY 2015)
- SH-1W — APPROXIMATE LOCATION AND DESIGNATION TEST BORING COMPLETED AS A MONITORING WELL BY SANBORN HEAD (MAY 2015)
- SH-10 — APPROXIMATE LOCATION AND DESIGNATION OF SHALLOW TEST BORING BY SANBORN HEAD (MAY 2015)
- GZ-4 — APPROXIMATE LOCATION AND DESIGNATION OF MONITORING WELL BY OTHERS
- GZ-7 — APPROXIMATE LOCATION OF DESTROYED MONITORING WELL



SANBORN HEAD

GRAPHICAL SCALE
80' 40' 0' 80' 160'

NO.	DATE	DESCRIPTION	BY

DRAWN BY: C.GREEN
DESIGNED BY: L.NORTON
REVIEWED BY: P.PINTO
PROJECT MGR: L.NORTON
PIC: P.PINTO
DATE: FEBRUARY 2016

ENVIRONMENTAL CONSULTING SERVICES
528 BOSTON POST ROAD
SUDBURY, MASSACHUSETTS

PROJECT NUMBER: 3888.02

EXPLORATION LOCATION PLAN

SHEET NUMBER: 1

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

Matthew A. Beaton
Secretary

Martin Suuberg
Commissioner

January 22, 2016

Bob Haarde, Selectman
37 Belcher Drive
Sudbury, MA 01776
Delivered via email to rhaarde@comcast.net

RE: Sudbury
528 Boston Post Road
Raytheon Facility
RTNs 3-03037, 3-17106, 3-27243

Dear Mr. Haarde,

In response to your inquiry of October 9, 2015, the Massachusetts Department of Environmental Protection (MassDEP) has reviewed our files for the Raytheon site located at 528 Boston Post Road in Sudbury. The review focused on potential risks to future residents, from the presence of oil and hazardous materials at the property. A summary of the review is presented in the attached memorandum.

While investigations at the site began in 1984, the most pertinent information is presented in a Comprehensive Site Assessment and a Periodic Review submitted to MassDEP in 2008 and 2013, respectively. The majority of environmental work focused on the presence of solvents in groundwater.

Based on the presence of solvent contamination remaining in groundwater, MassDEP recommends that a Licensed Site Professional evaluate any proposal to install drinking water wells in the contaminated areas, and the possible need for treatment.

MassDEP's evaluation found that the potential for exposures due to solvent vapor migration into buildings is generally not a concern for the current proposed locations of residential buildings, because at those locations the groundwater contamination is deep below the ground surface. However, one particular location of concern is monitoring well GZ-106, which has Freon contamination in groundwater. This monitoring well is located on the eastern edge of the property. Buildings constructed near GZ-106 should be evaluated for the possibility of Freon vapor intrusion to indoor air.

Limited soil testing has been performed at the property. Although the soil testing is limited, the information submitted to MassDEP does not indicate any contamination in soil that would pose a health risk to future residents. However, given the past uses of the facility and associated use of hazardous materials, further assessment is recommended to evaluate the soil beneath the buildings, if redevelopment of the site creates the potential for exposure to untested soils.

If you have any questions regarding this letter or the attached memorandum, please contact Andrew Friedmann at (978) 694-3217 or andrew.friedmann@state.ma.us.

Sincerely,

Andrew Friedmann
Site Management
Bureau of Waste Site Cleanup

John Miano
Chief, Site Management Section
Bureau of Waste Site Cleanup

cc (electronically):
Joanne Lynch (jjmlynch@gmail.com)
Bill Murphy, Board of Health, email: health@sudbury.ma.us
Rebecca McEnroe, Sudbury Water District, email: customerservice@sudburywater.com

Attachments:
Memorandum to File

Commonwealth of Massachusetts
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Department of Environmental Protection

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Charles D. Baker
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Secretary

Martin Suuberg
Commissioner

MEMORANDUM

To: File

By: Andrew Friedmann, Ph.D., Site Management Section AF
Bureau of Waste Site Cleanup, Northeast Regional Office (BWSC/NERO)
Massachusetts Department of Environmental Protection (MassDEP)

Through: Jack Miano, Chief, Site Management Section, BWSC/NERO/MassDEP JFM
Stephen Johnson, Deputy Regional Director, BWSC/NERO/MassDEP

Subject: 528 Boston Post Road, Sudbury
MassDEP Release Tracking Numbers (RTN) 3-27243, 3-17106 & 3-3037
Evaluation of Site Investigation and Risk Assessment

Date: January 22, 2016

This memorandum was prepared in response to an inquiry regarding the possible human health risks related to the proposed residential redevelopment at this Site. The proposed development may include about 300 units of residential housing, a supermarket, retail stores and a 50 unit Alzheimer's care center.

MassDEP reviewed the site investigation reports and the Risk Characterization, and conducted a combined Method 1 and Method 2 Risk Characterization for the vapor intrusion pathway, as this pathway often has the greatest potential to pose risk to future residents of sites contaminated with volatile organic compounds. The vapor intrusion risk characterization was performed using groundwater and soil data that are presented in a Phase II Comprehensive Site Assessment, dated November 13, 2008, and a Periodic Review of the Temporary Solution (Periodic Review), dated November 8, 2013. The Phase II Comprehensive Site Assessment and the Periodic Review were written by GZA GeoEnvironmental, Inc. (GZA) on behalf of Raytheon Company.

Groundwater

According to the Periodic Review, groundwater samples collected from forty-four groundwater monitoring wells, obtained between 1990 and 2013, were analyzed for Volatile Organic Compounds (VOCs). A summary of the analytical results for VOC compounds detected in the groundwater investigation (obtained directly from the Periodic Review) are presented in Table 1 of this memo. A subset of samples collected in 2008 were also analyzed for metals. Of the three samples analyzed for metals, only zinc was detected. Zinc was present in monitoring well GZ-204 at 0.016 mg/L, well below the Method 1 Risk Assessment Standard. The following chlorinated VOCs were detected in groundwater samples:

- Trichlorofluoromethane (Freon 7)
- cis-1,2-Dichloroethene (cis-1,2-DCE)
- Chloroform
- Trichloroethene (TCE)

Tetrachloroethene (PCE) was not detected in the groundwater investigation, according to the Periodic Review.

The concentrations of three of the four Site contaminants in groundwater were compared to MassDEP's Method 1 GW-2 Standards. GW-2 Standards are designed to be protective of exposure to VOC vapors that can migrate from groundwater to indoor air. MassDEP has not developed a Method 1 GW-2 Standard for Freon 7. A Method 2 GW-2 Standard for Freon 7 (13 µg/L) was developed by GZA in accordance with MassDEP regulations.

Freon 7 was detected in one well, GZ-106, above the Method 2 GW-2 Standard. The well screen for GZ-106 is 14 to 19 feet below ground surface (bgs). Concentrations of Freon 7 in this well were detected up to 410 µg/L, greater than ten times the estimated Method 2 GW-2 Standard.

Cis-1,2-DCE and chloroform were both detected in one well each, GZ-202 and GZ-108, respectively. Both were detected at levels below the Method 1 GW-2 Standards. The Method 1 GW-2 Standard for cis-1,2-DCE is 20 µg/L, and the maximum detected concentration was 4.0 µg/L. The Method 1 GW-2 Standard for chloroform is 50 µg/L, and the maximum chloroform concentration detected was 1.5 µg/L.

In the most recent sampling rounds, TCE was detected in three wells at concentrations above the GW-2 Standard of 5 µg/L. These levels were detected in GZ-8D (screened at 98 to 108 feet bgs), GZ-10D (screened at 59 to 69 feet bgs), and GZ-202 (screened at 86.7 to 91.7 feet bgs). Contamination in these three wells is too deep to cause concern for vapor migration into indoor air. However, if private potable water wells were to be installed at this site in the future, a potential exposure pathway may exist.

Soil

In July 1998, a hydraulic oil release occurred as a result of an overturned crane that was performing work at the Raytheon facility. Approximately 15 gallons of hydraulic oil was released to a gravel parking area and a paved surface immediately east of the pavement. MassDEP assigned RTN 3-17106 for the hydraulic oil release. During an Immediate Response Action, impacted soil and gravel was removed from the Site. Two soil samples were collected from the excavation. The soil samples contained up to 5.8 mg/kg of C9-C18 Aliphatic Petroleum Compounds, 21.3 mg/kg of C19-C36 Aliphatic Petroleum Compounds, and 12.9 mg/kg of C11-C22 Aromatic Petroleum Compounds. These concentrations are well below the residential Method 1 Standards, indicating that a Condition of No Significant Risk has been established for soils impacted by the hydraulic oil release.

Soil samples were also obtained during the installation of soil borings and monitoring wells. Soil testing by photo-ionization detector (PID) field screening, and laboratory analysis, indicated that VOC levels in soil are very low. Field screening indicated the presence of VOCs in two soil samples. Therefore, two samples, from borings GZ-108 and GZ-202, were analyzed for chlorinated VOCs, and the laboratory results were "none detected". Based on the lack of detectable VOCs in soils from the vadose zone, there is no indication of a Significant Risk from exposures related to soil at the Site.

Historic Site Use

The following language from a 1990 study describes the past use of the site. "Only limited scale prototype production occurs at the Sudbury Equipment Development Laboratories (EDL) which is mainly occupied by office space. Small quantities of solvents and other process chemicals are used at the EDL. Chemical wastes are collected and disposed off-site in accordance with applicable RCRA regulations. Sanitary wastes are treated on site and discharged to sand filters (leaching beds) in the northern portion of the site."

The Periodic Review report notes a number of areas where VOCs were likely used. According to the Periodic Review, the buildings on the property are primarily used for office space, but that "... some research and development of microwave and radar components has historically been performed at the Site in the past" and that a "Test Area affiliated with these former activities is located in the northwest corner of the Property, which was used to test microwave and radar equipment." A sanitary waste water treatment plant and leaching fields are located on the north central part of the property. The Periodic Review also states that a "Former Bore Site Building" is located on the western property boundary. Presumably some industrial activities occurred in this building. Figure 1, from the 2013 report indicates other industrial use areas including:

- A "Chemical Receiving and Storage" area in Building No. 1;
- "Former Assembly and Lab Areas" in Building No. 1;
- A "Former Plated Wire Lab" in Building No. 2;
- A "Former Chemical Storage" area adjacent to Building No. 5; and
- A former "Waste Water Treatment Plant" in Building No. 5.

Shallow groundwater samples (e.g., 0 to 15 feet below ground surface) obtained downgradient of these areas where hazardous materials were likely used did not contain levels of VOCs above the GW-2 Standards, with the exception of Freon in GZ-106.

Recommendations

With the exception of the location of GZ-106, available groundwater and soil data from this Site indicate that vapor intrusion is not likely to be a pathway of concern for future residents at the property. However, given the possible presence of soil contaminated with VOCs beneath the buildings, if residential development occurs in the areas where buildings are/were present, further assessment is recommended to evaluate the soil beneath the buildings. Future private potable water wells could become contaminated with volatile organic chemicals present in deep groundwater, and if installed, an evaluation should be made to determine whether treatment of the water is needed.

LIMITATIONS

MassDEP's review of this site was intended to ascertain whether the response actions taken, as presented, appeared to be protective of public health and environmental interests, and consistent with pertinent MassDEP regulations, policies, and accepted engineering practices. MassDEP's findings in this matter are based upon

the information contained in MassDEP's files. MassDEP's findings would be subject to further review if MassDEP becomes aware of material omissions or misstatements.

Data Summary Tables, Prepared by MassDEP

Table 1

Groundwater Concentrations (ug/l)

	Maximum	GW-1 Standards	GW-2 Standards
Tetrachloroethene	ND	5	50
Trichloroethene	63	5	5
Cis-1,2-dichloroethene	4.0	70	20
Chloroform	1.5	70	50
Trichlorofluoromethane	410	Not Applicable	13 (estimated)
Zinc	16	5000	Not Applicable

Table 2

Soil Concentrations

	Maximum (mg/kg)	S1/GW1 Standard (mg/kg)
C9-C18 Aliphatic Petroleum Compounds	5.8	1000
C19-C36 Aliphatic Petroleum Compounds	21.3	3000
C11-C22 Aromatic Petroleum Compounds	12.9	1000

Notes:
ND=Not Detected
GW-1 & 2 Standards are 2014 values (To evaluate potential future exposures)
*Trichloroethene exceeds the GW-2 standard at several locations, but the contamination is deep below the ground surface, and therefore is not likely to pose a risk of exposure by vapor intrusion.