The Exchange Salem

252 Bridge Street

Salem, MA

Proposed Environmental Impact Report

SUBMITTED TO

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

SUBMITTED BY

WinnCompanies Development LP
One Washington Mall, Suite 500
Boston, MA 02108

PRODUCED BY

vhb

IN ASSOCIATION WITH

CUBE3
landworks studio inc.
Correnti & Darling LLP
Wozny/Barbar & Associates, Inc.
Windover Construction

OCTOBER 17, 2022

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October 17, 2022

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Project Description

In accordance with the Massachusetts Environmental Policy Act ("MEPA"), Massachusetts General Law ("MGL") Chapter 30, Section 61-62I and the regulations promulgated thereunder set forth in 301 CMR 11.00, WinnDevelopment Company Limited Partnership (the "Proponent"), is pleased to submit this Proposed Environmental Impact Report (Proposed EIR) for The Exchange Salem Project (the "Project") located at 252 Bridge Street in Salem, MA (the "Project Site").

This chapter describes existing and proposed conditions; summarizes public benefits, impacts and mitigation; details the Project's regulatory context; and describes the Project schedule. It also includes a request for a Rollover or Single EIR.

1.1 Project History

The Project originated with a 2019 request for proposals (RFP) organized by the Salem Redevelopment Authority (SRA) following intensive community planning efforts based on the SRA's Urban Renewal Plan and the Imagine Salem community visioning plan. The intent for the Project Site is to redevelop the existing surface parking lot adjacent to the Massachusetts Bay Transportation Authority's (MBTA) Salem commuter rail and bus station into a mixed-use development with strong urban design features. Specific goals for redevelopment established by the SRA include economic growth and vitality, public realm connectivity, compatibility with surrounding uses, and housing production.

The RFP included the lot at 252 Bridge Street, also known as the "Crescent Lot" (herein the "Project Site"), as well as two other lots at 32 and 34 Federal Street. In November 2020 the Proponent was selected as the preferred developer for all three parcels; however, the Federal Street lots will ultimately be renovated under a separate ownership entity and are not evaluated in this filing.

1.2 Site Context and Existing Conditions

The 0.97-acre Project Site is currently a municipal parking lot adjacent to the MBTA commuter rail and bus station. It consists of the "Crescent Parcel," currently owned by the SRA, and the "Remnant Parcel," currently owned by the MBTA. The Project Site is located within the North River watershed and is bounded to the south by Bridge Street and to the west, north, and east by access driveways serving the MBTA station (see Figures 1.1 and 1.2). The Project Site was formerly salt marshes and tidal flats associated with the North River. Sometime prior to 1869 and it was regraded

using fill material. Prior to 1952, the Project Site was occupied by a variety of commercial business such as wholesale grocers, beef and dairy operations, a dress-making facility, restaurants, and cold storage until all buildings. Since the early 1950s, the Project Site has been used as a surface parking lot. Today it is comprised of an asphalt surface lot with a perimeter grassed area strewn with granite blocks/boulders. The Site generally slopes gently downhill from south to north across the parking area with a slightly mounded grassed/boulder area at the northern tip. Elevations range from roughly 6 feet to 9 feet. There is currently no on-site stormwater treatment. Runoff is directed to the drainage infrastructure in the MBTA access driveway.

1.3 Project Description

The opportunity to redevelop the Project Site was awarded to the Proponent by the SRA as part of a Request for Proposals (RFP) process in 2019. The RFP was the result of a collaborative and intensive effort involving the City and the community, consisting of workshops and meetings to determine the goals and guidelines for Site redevelopment in accordance with the SRA's Urban Renewal Plan and City policies. This transformative project will deliver much needed transit-oriented, mixed-income rental housing that reflects the City's goals to create more affordable and workforce apartments in this area, enhances the public realm and strengthens the connection between North Salem and the city's core.

The Project will include the construction of a 120-unit, 5-story apartment building above a 2-story podium with public realm space/commercial space along Bridge Street and residential parking at the ground level (Figures 1.3, 1.4 & 1.5).

Table 1-1 Project Program

Height (stories)	5
Total GFA (sf)	122,450
Retail (sf)	6,930
Residential (sf)	115,520
Residential Units	120
▫ *Studio*	*27*
▫ *1 BR*	*64*
▫ *2 BR*	*29*
▫ Affordable Units	50%
Parking (spaces)	60
Bike Parking (spaces)	126

The development's design embraces the Project Site's change in elevation by adding open space on the river level while also improving pedestrian and bicycle connections leading to and from the higher Bridge Street level and the lower river level adjacent to the MBTA station. The landscape design includes herbaceous

ground cover throughout the Site including a combination of lawn, grasses and wildflowers. In addition, approximately 18 new trees will be planted.

The Project will include the construction of a stormwater management system designed to mimic existing, pre-construction drainage patterns and discharge rates. Stormwater runoff discharged from the Site will have the benefit of enhanced water quality treatment over the existing condition. The stormwater design will meet the intent of local, state, and MS4 requirements.

The Project will be certified under the PHIUS, Energy Star Multifamily new construction, Zero Energy Ready Homes, and Indoor airPLUS programs. It will also be built to Enterprise Green Communities standards, which is a platform for high quality affordable housing in the United States—and the only national green building framework developed explicitly with and for the affordable housing sector.

Due to the location of the Site and the limited amount of parking provided, many of the trips are expected to be made by modes of transportation other than personal vehicles. The Project has convenient access to various multi-modal transportation facilities, is within walking distance of Downtown Salem and will be promoted as a transit-oriented development. As such, it is expected that a portion of the trips generated by the Project will occur by modes other than motor vehicle.

1.4 Summary of Public Benefits

The Project will result in a variety of public benefits, such as:

- Activation of an underutilized and high-potential waterfront parcel,
- Creation of new publicly accessible amenities, including landscaped open spaces, at the Bridge Street and riverfront levels enhancing access to and enjoyment of the North River,
- Construction of new mixed-income, high quality, sustainable multifamily residential units, and
- Addition of street-level retail to generate foot traffic and enhance vibrancy

1.5 Summary of Impacts and Mitigation

The Project is anticipated to result in the following net new environmental impacts:

- 237 net new average daily unadjusted trips
- 17,600 gpd of water use
- 17,600 gpd of wastewater generation
- 536 tpy of stationary source CO_2 emissions
- 603 sf increase site-wide in impervious area
- Permanent impacts to 3,544 sf of Land Subject to Coastal Storm Flowage
- 82 sf decrease in impervious area within the Riverfront Area

To mitigate these environmental impacts, the Project will implement the following measures:

- Traffic-related impacts and associated mobile source GHG emissions
  - Provide four EVSE (electric vehicle supply equipment) installed parking spaces
  - Construct designated covered bicycle storage for residents
  - Enhance overall connectivity and safety for pedestrians and bicyclists by upgrading all sidewalks adjacent to the Site and constructing a new ramp connecting Bridge Street and the MBTA driveways.
- Water use and wastewater generation
  - Specify low-flow plumbing fixtures
  - Specify native and drought-tolerant plantings
  - Utilize low-water irrigation systems
  - Work with the City of Salem to identify and execute the required I/I mitigation strategies
- Stationary source CO_2 emissions
  - As design progresses, inclusion of potential measures to reduce GHG emissions will be selected in accordance with PHIUS, Energy Star Multifamily new construction, Zero Energy Ready Homes, Indoor airPLUS and Enterprise Green Communities program standards.
- Wetland Resource Areas
  - The Riverfront Area will be improved through the decrease in impervious surface as well as the addition of herbaceous and woody plantings that will provide food and habitat for local wildlife, which is not present under existing conditions.
  - Low Impact Development (LID) techniques and stormwater Best Management Practices (BMPs) include the use of porous pavers to provide stormwater infiltration through an area that would otherwise be completely impervious. In general, stormwater from the proposed impervious surfaces is either sent through porous pavers to a piped drainage system or sent through a water quality unit and then to the piped drainage system.
  - A stormwater management system will be constructed that includes measures to provide groundwater recharge, attenuate peak flows and provide water quality treatment.

1.6 Regulatory Context

1.6.1 Wetland Resource Areas

The Project Site contains wetland resource areas that are jurisdictional under the Massachusetts Wetlands Protection Act (WPA) and its implementing regulations (310 CMR 10.00) and the Salem Wetlands Ordinance, including the 200-foot Riverfront Area, Land Subject to Coastal Storm Flowage and the 100-foot buffer to

Coastal Bank . Compliance with performance standards is discussed in Chapter 4. The Project is classified as a redevelopment Project under the MassDEP and Salem Stormwater Regulations and has been designed to comply with the Massachusetts Stormwater Standards as demonstrated in the Notice of Intent submitted to the Salem Conservation Commission.

1.6.2 Chapter 91

The entirety of the Project Site consists of filled Commonwealth tidelands jurisdictional under the Public Waterfront Act (Chapter 91). The Project will be designed and built to comply with all applicable standards. Details are provided in Chapter 4.

1.6.3 Floodplain

The entirety of the Project Site is within the Federal Emergency Management Agency (FEMA)-designated 1% annual chance floodplain with a base flood elevation of 10 NAVD88. The Project will be constructed in compliance with the flood related portions of the Massachusetts Building Code.

1.6.4 Zoning

The Project is being reviewed by the City of Salem under its zoning ordinance as a Planned Unit Development (PUD).

1.6.5 Environmental Justice

While the Project Site is not within an Environmental Justice (EJ) community, there are 13 EJ communities located within a one-mile radius of the Project Site, and therefore must comply with the Public Involvement Protocol for Environmental Justice Populations and the Interim Protocol for Analysis of Project Impacts on Environmental Justice Populations. Compliance is described in Chapter 3.

1.6.6 Permits and Approvals

Table 1-2 lists the permits and approvals from federal, state and local governmental agencies, which are anticipated to be required for the Project. It is possible that only some of the permits and approvals identified below will be required, and that there are other permits and approvals which will be identified in the course of approval of the Project.

Table 1-2 List of Anticipated Permits and Approvals

Agency/Department	Permit/Approval/Action	Status
Federal		
National Environmental Policy Act	Environmental Assessment	Prior to Construction
Commonwealth of Massachusetts		
Massachusetts Executive Office of Energy and Environmental Affairs (MEPA Office)	Review under the Massachusetts Environmental Policy Act	Review commenced with this ENF filing
Massachusetts Department of Environmental Protection	Chapter 91 License	To be issued prior to construction
City of Salem		
Salem Conservation Commission	Order of Conditions	NOI submitted
Salem Planning Board	Board Approval	Prior to Construction
Salem Redevelopment Authority	Approval	Prior to Construction

1.7 Project Schedule

Construction is scheduled to commence in June 2024 and will take approximately two years to complete.

1.8 Request for Rollover or Single EIR

This Project is required to file an EIR in accordance with 301 CMR 11.06(7)(b). Upon submission of this dual Expanded ENF and Proposed EIR in accordance with 301 CMR 11.05(9), the Proponent respectfully request that the Secretary allow a Rollover EIR in accordance with 301 CMR 11.13, and that this Proposed EIR is reviewed as a Final EIR (FEIR).

If the Secretary finds that this filing does not meet the criteria allowing a Rollover EIR at 301 CMR 11.13(a-e), the Proponent requests that the Secretary allow a Single EIR in accordance with 301 CMR 11.06(8).

Source: USGS

Figure 1.1

Project Location

The Exchange Salem
Salem, Massachusetts

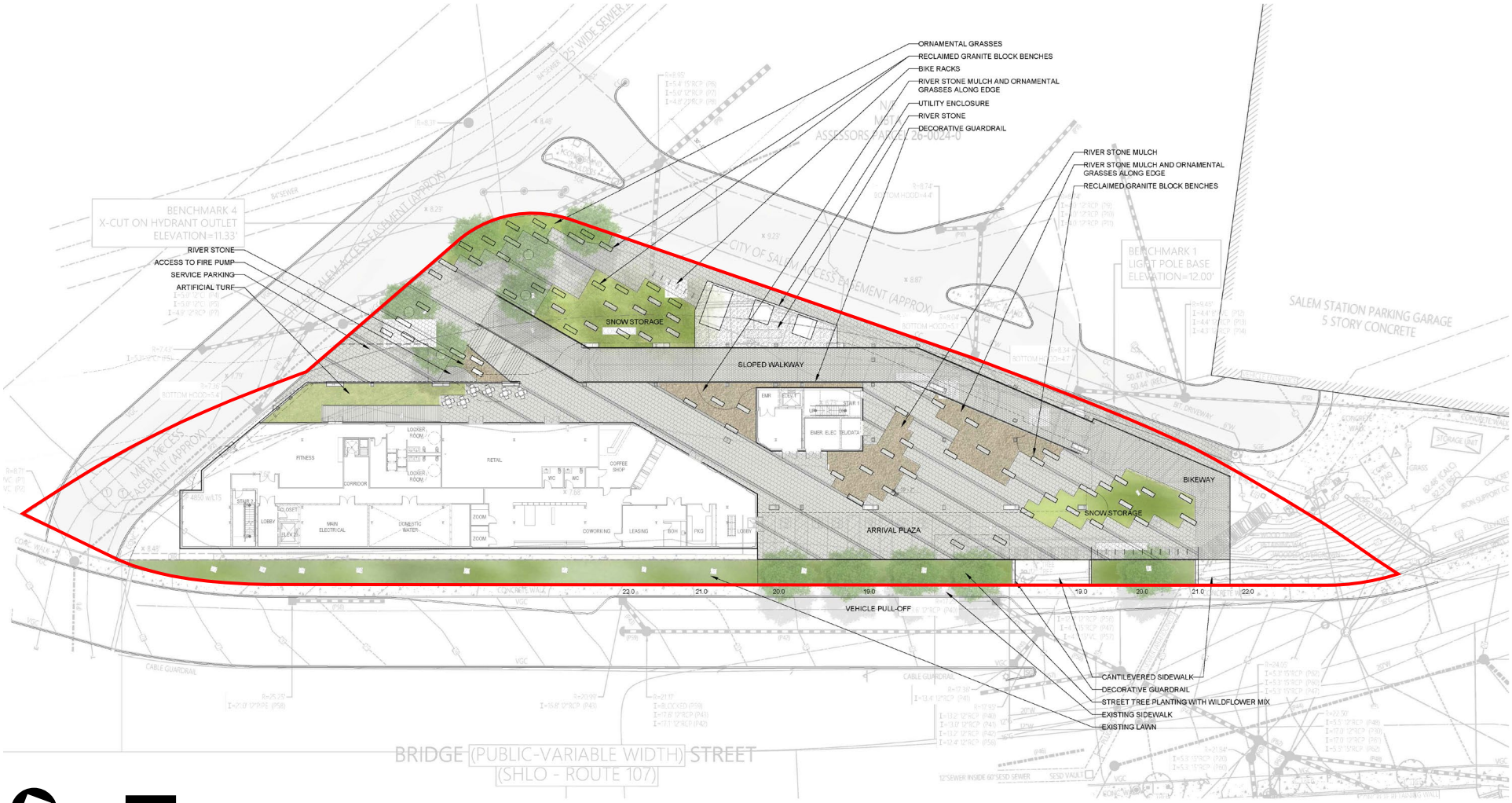
Source: Cube 3

Project Site

Figure 1.2

Existing Conditions

The Exchange Salem
Salem, Massachusetts



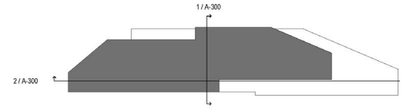
Source: Cube 3

Project Site

Figure 1.3

Proposed Project Site Plan

The Exchange Salem
Salem, Massachusetts



Building Section 2
1/16" = 1'-0"

2
A-300

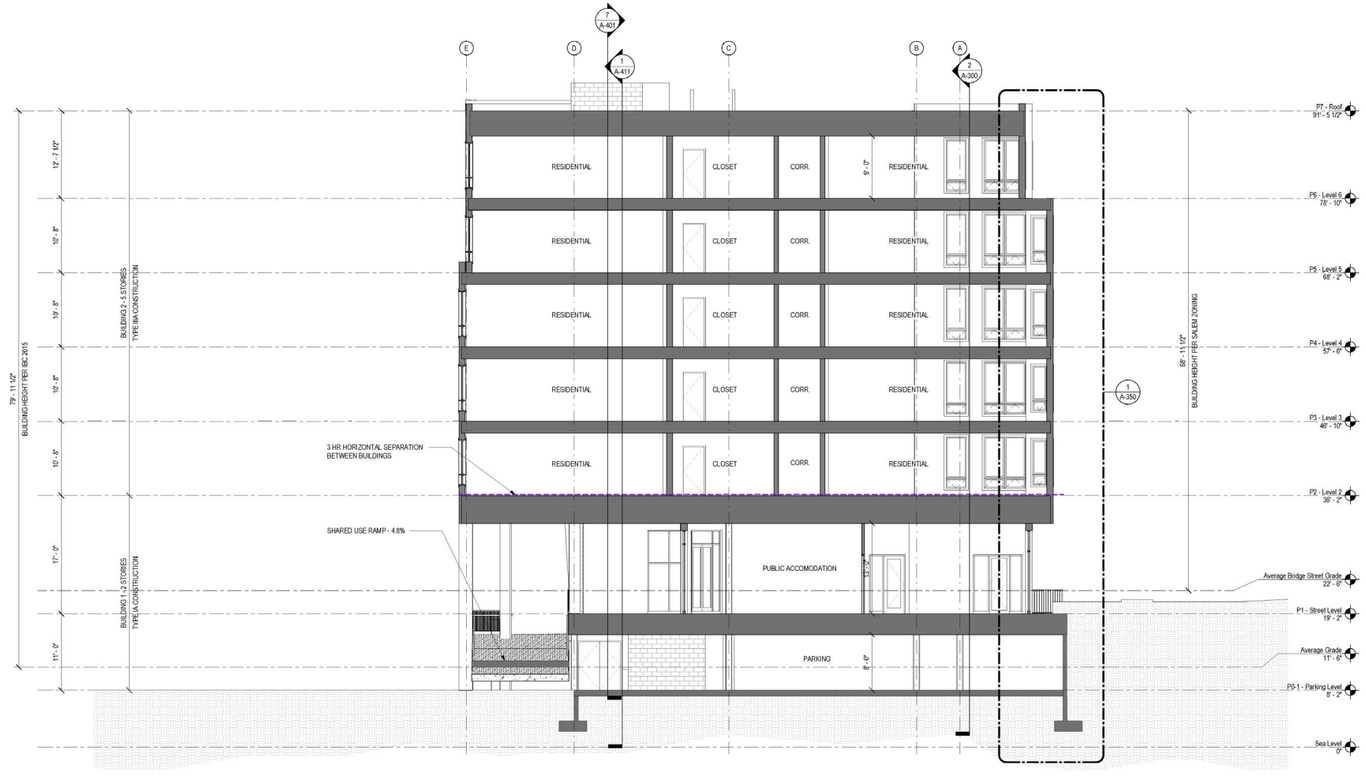


Figure 1.4
Sections

The Exchange Salem
Salem, Massachusetts

Source Info: Cube 3

Source: Cube 3

Figure 1.5a

Perspective from North Bridge Looking East

The Exchange Salem
Salem, Massachusetts

Source: Cube 3

Figure 1.5b

Perspective from Washington St Intersection Looking West
The Exchange Salem
Salem, Massachusetts

Source: Cube 3

Figure 1.5c

Perspective from North River Looking South

The Exchange Salem
Salem, Massachusetts

Source: Cube 3

Figure 1.5d

Perspective from North Bridge Leaving Downtown

The Exchange Salem
Salem, Massachusetts

2

Alternatives Analysis

This chapter provides an assessment of potential development alternatives for the Project Site. It describes each alternative, calculates and compares environmental impacts, and evaluates the alternatives against the Project goals.

2.1 Project Alternatives

The Project originated with a 2019 request for proposals (RFP) organized by the SRA following intensive community planning efforts based on the SRA's Urban Renewal Plan and the Imagine Salem community visioning plan. The intent for the Project Site is to redevelop the existing surface parking lot adjacent to the MBTA Salem commuter rail and bus station into a mixed-use development with strong urban design features. Specific goals for redevelopment established by the SRA include economic growth and vitality, public realm connectivity, compatibility with surrounding uses, and housing production. Specific Requirement include:

- Provide a minimum of 10% of the housing units as affordable to households who earn 80% of the Area Median Income (AMI).
- Improve the landscape to create an inviting atmosphere that draws people across Bridge Street to the Site and the adjacent MBTA station to provide connectivity where it is currently lacking.

The sections below compare three alternative scenarios for the Project Site, including a No-Build Alternative that maintains existing conditions, a Reduced Build Alternative that was reviewed by the Salem Redevelopment Authority (SRA), and a Preferred Alternative that best meets the Project Goals.

Table 2-1 Program Comparison

	No-Build	Reduced	Preferred
Gross Floor Area (gsf)	0	109,560	122,450
Height (ft)	0	83	69
Retail (sf)	0	10,300	6,930
Residential (sf)	0	99,260	115,520
Residential (units)	0	110	120
Parking (spaces)	70	50	60

2.1.1 No-Build

Under the No-Build scenario, the Project Site would continue to serve as a surface parking lot. No affordable housing would be provided, and no new connections from Bridge Street to the waterfront would be established.

2.1.2 Reduced Build

The Reduced Build Alternative consists of the design that was originally proposed by the Proponent and selected by the SRA during the RFP process (Figures 2.1a-b). It includes 110 residential units and substantial retail space. Publicly accessible open space is concentrated on the east side of the Site. After the Proponent was selected as the preferred developer, the City requested a revised design with a reduced height and more streamlined facade.

2.1.3 Preferred

The Preferred Alternative proposes an economically sustainable number of residential units and amount of retail space in a building that has more square footage but less height than the Reduced Build Alternative. Publicly accessible open space is spread across the east and north (waterfront) sides of the Project Site, opening up access to and vistas of the waterfront. A streamlined curved façade is currently being considered through the local plan review process.

2.2 Impact Comparison

The net new environmental impacts associated with the Reduced Build and DEIR Preferred alternatives as compared to the No Build scenario are presented in Table 2-2 below. The Preferred Alternative is estimated to emit 567 tpy of stationary source GHG emissions, while the Reduced Build alternative would emit 527 tpy, as per the MEPA Emissions Footprint Estimation Tool.

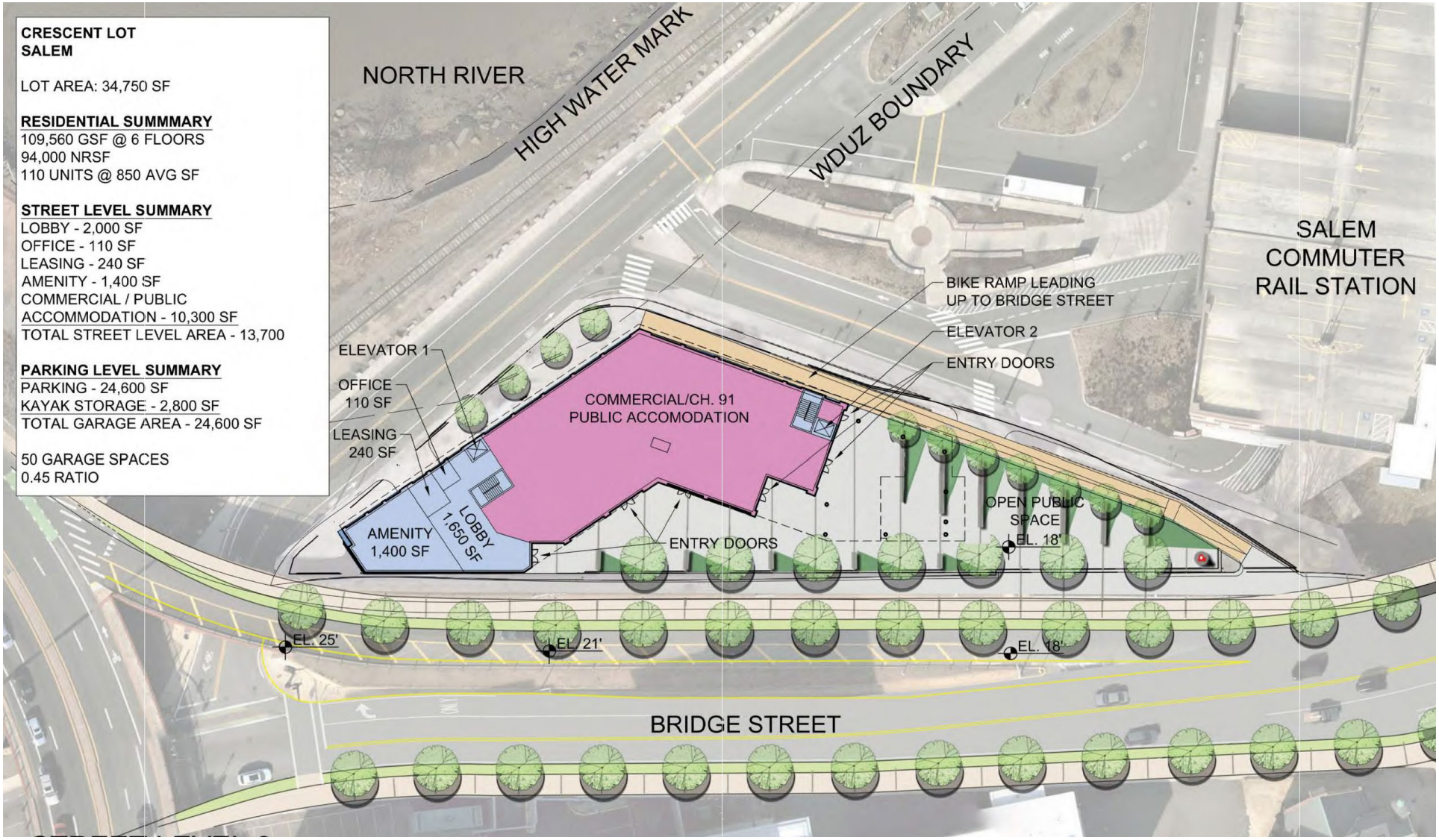
Table 2-2 Comparison of Net New Environmental Impacts

	Reduced Build	Preferred
Impervious Area (Acres)	+0.13	+0.01
Wetlands Alteration (Acres)	0.89	0.89
Unadjusted Average Daily Vehicle Trips	+191	+237
Parking Spaces	-20	-10
Water Use (gpd)	+13,130	+17,600
Wastewater Generation (gpd)	+13,130	+17,600

2.3 Evaluation of Alternatives

Although the Preferred Alternative results in more net new impacts related to impervious area, trip generation, water use, wastewater generation, and GHG

emissions, the differences are marginal as compared to the Reduced Build Alternative. The Preferred Alternative has many benefits, including that it exceeds the SRA's goal for affordable housing, maximizes the number of housing units proximate to public transit, will be certified under multiple green building programs, provides net new public benefits related to open space and waterfront access, and blends with the area's historic context. See Chapter 3, Section 3.3 for a description of beneficial public health impacts.



Source:

Figure 2.1a

Reduced Build Alternative

The Exchange Salem
Salem, Massachusetts

Source: WinnDevelopment

Figure 2.1b

Reduced Build Alternative: South Elevation

The Exchange Salem
Salem, Massachusetts

3

Environmental Justice and Public Health

This chapter provides an assessment of the Project's potential impacts on surrounding Environmental Justice ("EJ") populations, in accordance with the MEPA Public Involvement Protocol for Environmental Justice Populations effective January 1, 2022 (the "Public Involvement Protocol"). Following the direction of MEPA's EJ guidelines, this assessment utilized a mapping tool developed by the Massachusetts Executive Office of Energy and Environmental Affairs (EEA) and the Massachusetts Department of Public Health ("DPH") to identify the EJ populations in proximity to the Project Site, including the demographics of such populations. In addition to discussing the potential impacts of the Project on the identified EJ populations, this assessment also considers off-site sources that could result in a cumulative negative environmental impact on the surrounding EJ populations.

EEA defines EJ as "the equal protection and meaningful involvement of all people and communities" regarding environmental issues, including the equitable allocation of benefits and burdens. The EJ Policy builds upon Executive Order 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations,* which "directs federal agencies to identify and address the disproportionately high and adverse human health or environmental effects of their actions on minority and low-income populations, to the greatest extent practicable and permitted by law."

3.1 Compliance with the Public Involvement Protocol

In compliance with the MEPA Interim Protocol for Public Involvement Protocol for Environmental Justice Populations, effective January 1, 2022, this chapter describes measures taken by the Proponent to provide meaningful engagement with surrounding EJ populations.

3.1.1 Identification of Environmental Justice Populations

3.1.1.1 Project Location

In accordance with the EJ Policy, the Proponent consulted the EEA Massachusetts 2020 Environmental Justice Populations Map to identify potential EJ populations, as defined under the EJ Policy, that are within a 1-mile radius of the Project Site, which is located at 252 Bridge Street in Salem. As the Project does not exceed thresholds related to air quality, the Designated Geographic Area (DGA) for the Project is the

area within one-mile radius from the Project Site. Figure 3.1 identifies EJ populations within a 1-mile radius of the Project Site.

3.1.1.2 Characteristics of EJ Populations within the DGA

EJ Populations in Massachusetts are defined as:

A neighborhood that meets 1 or more of the following criteria:

- The annual median household income is not more than 65 per cent of the statewide annual median household income;
- Minorities comprise 40 per cent or more of the population;
- 25 percent or more of households lack English language proficiency; or
- Minorities comprise 25 percent or more of the population and the annual median household income of the municipality in which the neighborhood is located does not exceed 150 percent of the statewide annual median household income; or
- A geographic portion of a neighborhood designated by the Secretary as an environmental justice population pursuant to M.G.L. c. 30, § 62.

The EJ Population Map is derived from the 2020 U.S. Census (for EJ block groups) and 2015 American Community Survey 5-Year Estimates (for English isolation criteria). This map identifies 13 EJ communities located within the DGA that meet the EJ criteria related to Income; Minority Population; Minority Population and Income; and Minority Population, Income and English Isolation as listed below.

Income

- Block Group 5, Census Tract 2042, Essex County, Massachusetts, MHHI 64% of MA Median

Minority Based

- Block Group 4, Census Tract 2046, Essex County, Massachusetts, 26% Minority
- Block Group 1, Census Tract 2046, Essex County, Massachusetts, 26% Minority
- Block Group 1, Census Tract 2045, Essex County, Massachusetts, 25% Minority
- Block Group 2, Census Tract 2042, Essex County, Massachusetts, 39% Minority
- Block Group 4, Census Tract 2042, Essex County, Massachusetts, 47% Minority
- Block Group 3, Census Tract 2041.01, Essex County, Massachusetts, 35% Minority

Minority and Income

- Block Group 4, Census Tract 2044, Essex County, Massachusetts, 26% Minority, MHHI 62% of MA Median
- Block Group 1, Census Tract 2047.02, Essex County, Massachusetts, 58% Minority, MHHI 57% of MA Median
- Block Group 2, Census Tract 2043, Essex County, Massachusetts, 73% Minority, MHHI 39% of MA Median
- Block Group 1, Census Tract 2042, Essex County, Massachusetts, 35% Minority, MHHI 49% of MA Median

Minority, Income, English Isolation

- Block Group 2, Census Tract 2047.01, Essex County, Massachusetts, 51% Minority, MHHI 20% of MA Median, Language Isolation 32%
- Block Group 3, Census Tract 2043, Essex County, Massachusetts, 89% Minority, MHHI 33 % of MA median., Language Isolation 47%

According to the "Languages Spoken in Massachusetts" tab of the EJ Maps Viewer, languages spoken by 5 percent or more of the EJ population who identify as not speaking English "very well" are:

- Spanish or Spanish Creole in the DGA, and
- Portuguese or Portuguese Creole and Spanish or Spanish Creole within a 5-mile radius of the Project Site.

3.1.2 Enhanced Public Involvement Prior to the EENF Filing

As per the requirements of Section II of the Public Involvement Protocol, *Measures to Enhance Public Involvement Prior to Filing ENF/EENF*, the Proponent has made a meaningful effort to engage with the community through expanded outreach as described in the sections below.

3.1.2.1 Advance Notification

In accordance with the new MEPA Environmental Justice Protocols for Public Involvement, the Proponent completed the 45-day-Advance Notice to the MEPA determined Community Based Organizations, with an EJ Screening Form describing the proposed Project. In addition to federal, statewide and tribal organizations, the Proponent expanded its community outreach to the following:

- Bridge Street Neighborhood Association
- Salem Conservation Commission
- Endicott Street Neighborhood Association
- Federal Street Neighborhood Association
- Historic Derby Street Neighborhood Association
- Latino Leadership Coalition
- LEAP for Education
- Mack Park Neighborhood Association
- North Fields Neighborhood Association
- North Shore Branch, NAACP
- North Shore Community Action Programs
- North Shore Community Development Coalition
- North Shore Community Health // Salem Family Health Center
- North Shore Latino Business Association
- Point Neighborhood

- Race Equity Task Force
- ROOTS
- Salem Alliance for the Environment
- Salem Common Neighborhood Association
- Salem Recycles
- Salem Sound Coastwatch
- Salem Willows Neighborhood Group
- Sustainability, Energy, and Resiliency Committee
- Ward 4/Gallows Hill Neighborhood Group
- Ward 2 City Councilor Caroline Watson-Felt
- Ward 6 City Councilor Megan Riccardi

3.1.2.2 Community Outreach and Engagement

Since being selected as the Preferred Development Team on November 10, 2020, the Proponent has been working with many City departments, working groups, and neighborhood organizations to present information and gain feedback. Below is a list of Project-related meetings that were held, many of which were open to the public.

- February 12, 2021 – Design Working Session
- February 25, 2021 – Design Working Session #2
- March 15, 2021 – Design Working Session #3
- May 5, 2021 – Joint City Council and SRA Meeting
- May 21, 2021 – Historic Salem, Inc. Meeting #1
- July 12, 2021 – Community Meeting #1
- July 14, 2021 – SRA Schematic Design Hearing
- July 28, 2021 – Design Review Board Hearing #1
- August 3, 2021 – Federal St. Neighborhood Group Meeting #1
- August 18, 2021 – Historic Commission Meeting
- August 25, 2021 – Northfields Neighborhood Group Meeting
- August 25, 2021 – Design Review Board Hearing 2
- September 22, 2021 – Design Review Board Hearing 3
- September 27, 2021 – Historic Salem Meeting
- September 29, 2021 – DRB Special Meeting
- October 13, 2021 – SRA Schematic Design Hearing #2
- March 21, 2022 – Department Head One-Stop Meeting
- May 4, 2022 – City Staff Meeting
- May 5, 2022 – Planning Board Submission
- May 9, 2022 – City Councilor Staff Meeting

- May 25, 2022 – City Staff Meeting
- June 08, 2022 – SRA Final Design Review
- June 22, 2022 – DRB Consultation
- July 27, 2022 – DRB Consultation #2
- September 15, 2022 – Planning Board

3.1.2.3 Pre-Filing Consultation

As required with the filing of an ENF/EENF, the Proponent held a pre-filing meeting with the MEPA Office on August 25th, 2022. During this meeting, the Proponent and MEPA Director discussed the need to analyze environmental impacts to general public health and the need for outreach to the non-English speaking community.

3.1.3 Public Involvement After the EENF Filing

Following the filing on the EENF on October 17th, the Proponent will hold a Site Consultation to present the Project to the MEPA Office, state agencies, and the public. A translation services of the MEPA Site Visit Notice in Spanish and Portuguese will be offered by the Proponent. This Site Consultation will provide attendees the opportunity to ask questions about the Project and a direct access to the Proponent and Project team, allowing them to inquire about project specifics and better understand how impacts will be mitigated.

The Proponent will continue to meet with key stakeholders and community groups in an effort to ensure an inclusive process and to effectively reach EJ populations.

The Proponent will continue additional outreach measures, with a goal of reaching and engaging EJ populations proximate to the Project. These measures will include, but will not be limited to the following:

- Posting Project documents on the Project website at: https://www.livetheexchangesalem.com/
- Offering translation of the public meeting materials into Spanish and Brazilian Portuguese,
- Publishing a public notice in the Salem News in English, Spanish, and Brazilian Portuguese,
- Inviting state, tribal, and local community groups to a virtual site consultation,
- Offering a translation of the Site Consultation if requested, and
- Making Project documents available in the Salem Public Library.

3.1.4 Public Involvement for Other MEPA Filings

Upon submission of this dual Expanded ENF and Proposed EIR in accordance with 301 CMR 11.05(9), the Proponent respectfully request that the Secretary allow a Rollover EIR in accordance with 301 CMR 11.13, and that this Proposed EIR is

reviewed as a Final EIR (FEIR). Public involvement outside of that described above is not required.

3.2 Analysis of Project Impacts

In compliance with Section I of the *Interim Protocol for Analysis of Project Impacts on Environmental Justice Populations* (the "Interim Project Impacts Protocol"), the Project is subject to an EIR due to its proximity to EJ populations. This section identifies whether the Project is anticipated to cause unfair or inequitable harm to vulnerable communities.

3.2.1 Assessment of Existing Unfair or Inequitable Environmental Burden

Under Section 58 of Chapter 8 of the Acts of 2021: *An Act Creating a Next-Generation Roadmap for Massachusetts Climate Policy* ("the Act"), and consistent with 301 CMR 11.06(7)(b) and 11.07(6)(n), each project to which the new EIR requirement applies under Part I must submit an EIR that contains "statements about the results of an assessment of any existing unfair or inequitable environmental burden and related public health consequences impacting the environmental justice population from any prior or current private, industrial, commercial, state, or municipal operation or project that has damaged the environment."

This section is intended to meet this requirement. It discusses Vulnerable Health Criteria, Potential Sources of Pollution and Environmental Exposure, and Climate Change Vulnerability to help assess whether an existing unfair or inequitable environmental burden related to public health consequences has been placed upon the EJ communities, as compared to the general population, within one mile of the Project Site. As demonstrated below, the City of Salem, wherein the designated project area is located, is assessed as meeting two vulnerable health criteria and the Project Site has a "High" risk rating for future Extreme Precipitation – Urban Flooding and Riverine Flooding.

3.2.1.1 Vulnerable Health Criteria

Table 3-1 identifies which vulnerable health EJ criteria are met within the City of Salem and EJ communities within the DGA according to the MA DPH EJ Tool.

Table 3-1 Public Health Vulnerability at the Municipal and Census Tract Levels

Vulnerable Health EJ Criteria	Meets Criteria	
	Salem	Census Tract Level
Heart Attack	No	Not available
Childhood Blood Lead	Yes	Yes (rate is not stable/reliable for 1 of 3 census tracts)
Low Birth Weight	No	Yes (rate is not stable/reliable for 2 of 2 census tracts)
Childhood Asthma	Yes	Not available

According to the DPH Vulnerable Health Criteria Tool, the criteria for Childhood Blood Lead and Childhood Asthma are met at the municipality level, while the Low Birth Weight criterion is met only at the Census Tract level (however, the rate is not stable for the census tracts meeting this criterion). This data indicates that EJ populations in the DGA are not likely to be bearing an "unfair or inequitable" environmental burden or related public health consequences related to these indicators as compared to non-EJ populations.

3.2.1.2 Potential Pollution Sources and Environmental Exposure

The Project team used the MA DPH EJ Tool and the U.S. EPA's "EJ Screen" tool to identify potential sources of pollution that may have impacted, or may currently impact, EJ populations within the DGA.

MA DPH EJ tool

The MA DPH EJ Tool indicates that the following number of facilities/infrastructure are mapped in EJ communities within the DGA. Please note that none of these facilities are located on the Project Site itself.

- MassDEP major air and waste facilities – 5
- M.G.L. c. 21E sites – 14
- "Tier II" toxics use reporting facilities – 9 (5 Yes, 4 No)
- MassDEP sites with AULs – 51
- MassDEP groundwater discharge permits – 0
- Wastewater treatment plants – 0
- MassDEP public water suppliers – 1
- Underground storage tanks (UST) – 9
- EPA facilities – 1
- Road infrastructure – bike lanes
- MBTA bus and rapid transit – 73 bus stops, 1 commuter rail station
- Other transportation infrastructure – railroad tracks
- Regional transit agencies - 0
- Energy generation and supply – 0

Table 3-2 presents the enforcement records of EEA's Data Portal[1] for facilities that are permitted by MassDEP in EJ communities within the DGA.

[1] Enforcement information is available at https://eeaonline.eea.state.ma.us/Portal/#!/search/enforcements

Table 3-2 Enforcement History for Facilities Within the DGA

Facility/Infrastructure Category	Facility Name	Street Address	Enforcement Type	Date Issued
EPA facilities	EXCELITAS TECHNOLOGIES	35 CONGRESS ST	Notice Of Non-Compliance	12/29/2008
MassDEP major air and waste facilities	UNIVAR SOLUTIONS USA INC	1 COLONIAL RD	Administrative Consent Order No Penalty	08/09/1996
MassDEP major air and waste facilities	UNIVAR SOLUTIONS USA INC	1 COLONIAL RD	Notice Of Non-Compliance	01/03/2002
MassDEP major air and waste facilities	UNIVAR SOLUTIONS USA INC	1 COLONIAL RD	Notice Of Non-Compliance	08/22/2006
MassDEP major air and waste facilities	UNIVAR SOLUTIONS USA INC	1 COLONIAL RD	Administrative Consent Order with Penalty	01/14/2009
MassDEP major air and waste facilities	UNIVAR SOLUTIONS USA INC	1 COLONIAL RD	Notice Of Non-Compliance	08/01/2012
MassDEP major air and waste facilities	VALVOLINE INSTANT OIL CHANGE	87 NORTH ST	Notice Of Non-Compliance	11/10/2004
MassDEP sites with AULs	SALEM DPW	5 JEFFERSON AVE	Notice Of Non-Compliance	11/22/2021
USTs	SALEM SHELL	111 NORTH ST	Notice Of Non-Compliance	03/25/2022
USTs	SAMS MARKET	94 BRIDGE ST	Notice Of Non-Compliance	03/03/2022

U.S. EPA's "EJ Screen"

The Project team also consulted the U.S. EPA's "EJ Screen,"[2] which provides a percentile ranking by census block group compared against statewide averages for 12 environmental indicators.[3] The Buffer Report generated by this tool (see Appendix A) indicates the following for the area within the DGA:

1. 41st percentile for PM2.5
2. 61st percentile for Ozone
3. 64th percentile for NATA Diesel PM
4. 56th percentile for NATA Cancer Risk (cancer risk from inhalation of air toxics)
5. 81st percentile for NATA Respiratory HI (air toxics respiratory hazard index)
6. 84th percentile for Traffic Proximity (count of vehicles per day at major roads divided by the distance)
7. 80th percentile for Lead Paint Indicator (percent of housing built before 1960)

[2] United States Environmental Protection Agency. 2022 version. EJScreen. Retrieved: 05/28/22 from https://ejscreen.epa.gov/mapper/

[3] EJScreen was developed by EPA to highlight places that may be candidates for further review, analysis, or outreach to support the agency's environmental justice work. The EPA notes that the environmental indicators are only screening-level proxies for actual exposures or health risks, and that screening-level results do not, by themselves, determine the existence or absence of environmental justice concerns in a given location; do not provide a risk assessment; and have other significant limitations. EJScreen is not designed to take into account quantifiable cumulative or synergistic effects. https://www.epa.gov/ejscreen/purposes-and-uses-ejscreen Accessed 05/28/22.

8. 85th percentile for Superfund Proximity (count of National Priorities List/Superfund sites divided by the distance)
9. 71st percentile for RMP Proximity (count of facilities with Risk Management Plans divided by the distance)
10. 82nd percentile for Hazardous Waste Proximity (count of transfer, storage, and disposal facilities (TSDF) divided by the distance)
11. 69th percentile for Underground Storage Tanks (USTs)
12. 42nd percentile for Wastewater Discharge Indicator (toxicity-weighted concentration/meter distance)

The environmental indicators that are at or above the 80th percentile of the statewide average for the DGA are described below.[4] Of these, Traffic Proximity, Lead Paint, Superfund Proximity and Hazardous Waste Proximity may indicate an existing environmental burden for the area's EJ populations:

- **NATA Respiratory HI** – This indicator is an estimate of chronic noncancer hazards for multiple air toxics. An HI value less than or equal to 1 indicates that the exposure is not likely to result in adverse noncancer effects. An HI value greater than 1, however, does not necessarily suggest a likelihood of adverse health effects and cannot be interpreted as a statistical probability of adverse effects occurring.[5]

  The HI value for the DGA is 0.3, therefore adverse noncancer effects are not likely.

- **Traffic Proximity** – This indicator consists of a count of vehicles (AADT, avg. annual daily traffic) at major roads within 500 meters, divided by distance in meters as calculated from 2019 U.S. Department of Transportation traffic data. Proximity to roads can provide access to jobs, health care, food, recreational opportunities, and other benefits. However, proximity to motor vehicle traffic is associated with increased exposures to ambient noise, toxic gases and particulate matter including diesel particulates. Any indicator of residential proximity addresses exposures relevant to the residences within a block group and would not capture most exposures that occur away from the home, such as at work, at school or during a commute.

  The value for this indicator in the DGA is 3200, while the state average is 2100, and the USA average is just 710.

- **Lead Paint Indicator –** This indicator represents the likelihood of potential lead paint exposure. It was calculated by dividing the number of occupied housing units built prior to 1960 by the total number of housing units in the block group.

[4] According to the EJ Screen Technical Documentation (September 2019, p. 27), a relatively high percentile means the value is relatively uncommon. However, a high percentile is not necessarily a real concern from a health or legal perspective. To understand the actual health or other implications of any screening results requires looking at the actual data and the indicator represents, and also looking at other relevant data if available. Besides the percentile, other important considerations in interpreting any screening results include the following: whether and to what extent the environmental data shows values above any relevant health-based or legal threshold; the significance of any such thresholds, or the magnitude and severity of

[5] Technical Support Document EPA's Air Toxics Screening Assessment, 2017 AirToxScreen TSD, March 2022. https://www.epa.gov/system/files/documents/2022-03/airtoxscreen_2017tsd.pdf. Accessed 06/02/22

Lead paint and contaminated dust and soil are considered the leading cause of high lead levels in U.S. children (Levin et al., 2008). A home built prior to 1960 is far more likely to have lead hazards than one built more recently (Gaitens et al., 2009; Jacobs et al., 2002).[6] It is important to note that older housing alone may not represent any actual risk or even exposure.

The value of this indicator for the DGA shows 77% of occupied housing units were built prior to 1960, while the value for state is 49%.

- **Superfund Proximity** – This indicator contains a count of proposed and listed National Priorities List (NPL) sites within 5 km (or nearest one beyond 5 km), each divided by distance in km. The contaminants in NPL sites may reach humans in a number of ways, including direct or indirect inhalation route, agricultural products contamination, groundwater & drinking water contamination, etc. As with all proximity-based indicators, proximity alone may not represent any actual risk or even exposure.

  The report shows that there are 0.24 NPL facilities/km in the DGA, while the state has an average of 0.17 NPL facilities/km.

- **Hazardous Waste Proximity** – This indicator identifies the presence of facilities that are permitted as Hazardous Waste TSDFs. As with all proximity-based indicators, proximity alone may not represent any actual risk or even exposure.

  Due to the density of the Project Site's urban location, there are more proximate TSDFs (7/km distance) than the state average (5.2/km distance).

3.2.1.3 RMAT Climate Resilience Tool

The RMAT Climate Resilience Design Standards Tool indicates that the Project has a moderate risk of impact from sea level rise/storm surge, a high risk of extreme precipitation-urban flooding and riverine flooding, and a high risk of extreme heat. Table 3-3 indicates potential reasons leading to the exposure from extreme climate events according to RMAT Tool report (refer to Appendix B). See further discussion in Chapter 5, *Climate Change Preparedness and Resiliency*.

Table 3-3 Exposure Rationale

Sea level rise/storm surge (Moderate)
› Exposed to the 1% annual coastal flood event as early as 2030
› Located within the 0.1% annual coastal flood event within the project's useful life
› Not located within the predicted mean high-water shoreline by 2030
Extreme precipitation-urban flooding (High)
› Maximum annual daily rainfall exceeds 10 inches within the overall project's useful life
› Existing impervious area of the project site is greater than 50%
› No historic flooding at project site

[6] EJ Screen Technical Documentation (September 2019, pp. 44-47)

› No increase to impervious area

Extreme precipitation-riverine flooding (High)

› Part of the project is within a mapped FEMA floodplain, outside of the Massachusetts Coast Flood Risk Model (MC-FRM)
› No historic riverine flooding at project site
› Project is more than 500ft from a waterbody
› Project is not likely susceptible to riverine erosion

Extreme heat (High)

› 30+ days increase in days over 90 deg. F within project's useful life
› Existing impervious area of the project site is greater than 50%
› Located within 100 ft of existing water body
› No increase to the impervious area of the project site
› No tree removal

3.2.1.4 Concerns Expressed During the Outreach Process

Prior to the EENF filing, no community concerns were expressed regarding the Project. The Proponent will continue public involvement and outreach efforts and address any concerns that may arise.

3.2.2 Analysis of Impacts to Determine Disproportionate Adverse Effect

This section discusses whether the Project will have adverse impacts that materially exacerbate any existing unfair or inequitable environmental or public health burden impacting the EJ population, and whether the Project will improve environmental conditions or the public health of the EJ population, or otherwise reduce the potential for unfair or inequitable effects on the EJ population.

3.2.2.1 Adverse Impact Analysis

Nature and severity of Project impacts

The Project will redevelop the existing surface parking lot adjacent to the MBTA's Salem commuter rail and bus station into a mixed-use development with strong urban design features, including residential units, retail space, parking area and waterfront area for public access. As demonstrated in Section 3.2.1.1 above, there are no environmental or public health indicators directly related to the MEPA thresholds exceeded by the Project, which are related solely to wetlands and waterways. The Project will result in improvements to wetland resource areas and the public realm and will mitigate the impacts of climate change on the EJ populations anticipated to access the Project Site. Additionally, the Proponent has considered potential construction-period and traffic-related impacts to the EJ communities within the DGA:

› **Construction-period Impacts –** The Proponent will employ a Construction Manager who will be responsible for developing a Construction Management Plan (CMP) that addresses erosion, sedimentation, air quality, noise, and other

pollutant sources, as well as any land disturbance activities, during construction. The CMP will address coordination of construction activities with all appropriate utility companies and regulatory agencies. Refer to Chapter 6 for details of construction management and chapter 7 for mitigation measures.

- **Vehicle Trips/Traffic –** The Project does not significantly impact mobile source air quality, as it does not meet or exceed MEPA review thresholds under 301CMR 11.03(8)(a)-(b), nor does it generate 150 or more New adt of diesel vehicle traffic, excluding public transit trips, over a duration of 1 year or more.

Comparable Impacts to EJ and Non-EJ Populations

The Project Site is NOT located within an EJ community but is within one mile of 13 EJ communities. Based on the analyses presented in this Chapter, there is no clear existing disproportionate burden on EJ populations versus non-EJ populations. The Proponent is undertaking mitigation strategies on the Project Site to minimize impacts to all populations. As noted above, the Proponent is committed to working with the surrounding community and being as transparent as possible regarding potential Project impacts and appropriate mitigation measures.

3.2.2.2 Project Benefits

The Project will improve Project Site conditions by prioritizing a sustainable and resilient development. Through the expansion of housing opportunities and public space in Salem, the Project will provide the following public benefits:

- Constructing much-needed new affordable, workforce and market rate housing,
- Providing improved physical access to and views of the North River,
- Creating a new waterfront destination, thereby promoting local economic growth and vitality, and
- Improving pedestrian and bicycle connectivity between the Bridge Street and riverfront elevations, including to the MBTA station.

In addition, specific environmental benefits of the Project include:

- Upgrading the stormwater management system, resulting in improved water quality,
- Increasing climate resilience though site and building design,
- Expanding open space with landscaping including new trees, and
- Conserving the capacity of water-dependent use of tidelands by increasing open space and protecting public rights on filled tidelands.

3.2.3 Analysis of Project Impacts to Determine Climate Change Effects

This section analyzes the effect that the impacts of climate change at the Project Site may have on the EJ community. As demonstrated below, the Project is not likely to exacerbate the climate risks shown in the RMAT tool in a manner that affects the identified EJ populations. Further, the greenhouse gas (GHG) emissions associated

with the Project are not likely to affect EJ populations that use or occupy the Project, as CO_2 emissions do not directly impact health.

3.2.3.1 Climate Adaptation

As indicated in the RMAT Report (Appendix B), the primary climate change impacts to nearby EJ communities are related to flooding and extreme heat. The Project has been designed specifically to mitigate these impacts through resilient building and site design as well as stormwater management enhancements as described in detail in Chapter 5.

3.2.3.2 GHG Emissions

In accordance with the EJ Policy, an estimate of Greenhouse Gas (GHG) emissions is required for buildings that are likely to be used or occupied by EJ populations. An estimate of stationary source GHG emissions was generated via the Emissions Footprint Estimation Tool. The 115,5200-sf residential use (Residential other than single family <8 stories) is estimated to generate 503 tons per year (tpy), and the 6,930-sf retail space (stand-alone retail) would generate 34 tpy, for a total of 536 tpy of GHG emissions. This is well below the threshold of 2,000 tpy of stationary source GHG emissions that MEPA considers to be impactful to EJ populations. Further, while GHG emissions have cumulative impacts on the environment at a large scale due to their heat trapping qualities, individual stationary sources of GHG emissions do not directly impact the health of those in the vicinity of such sources.

3.3 Public Health

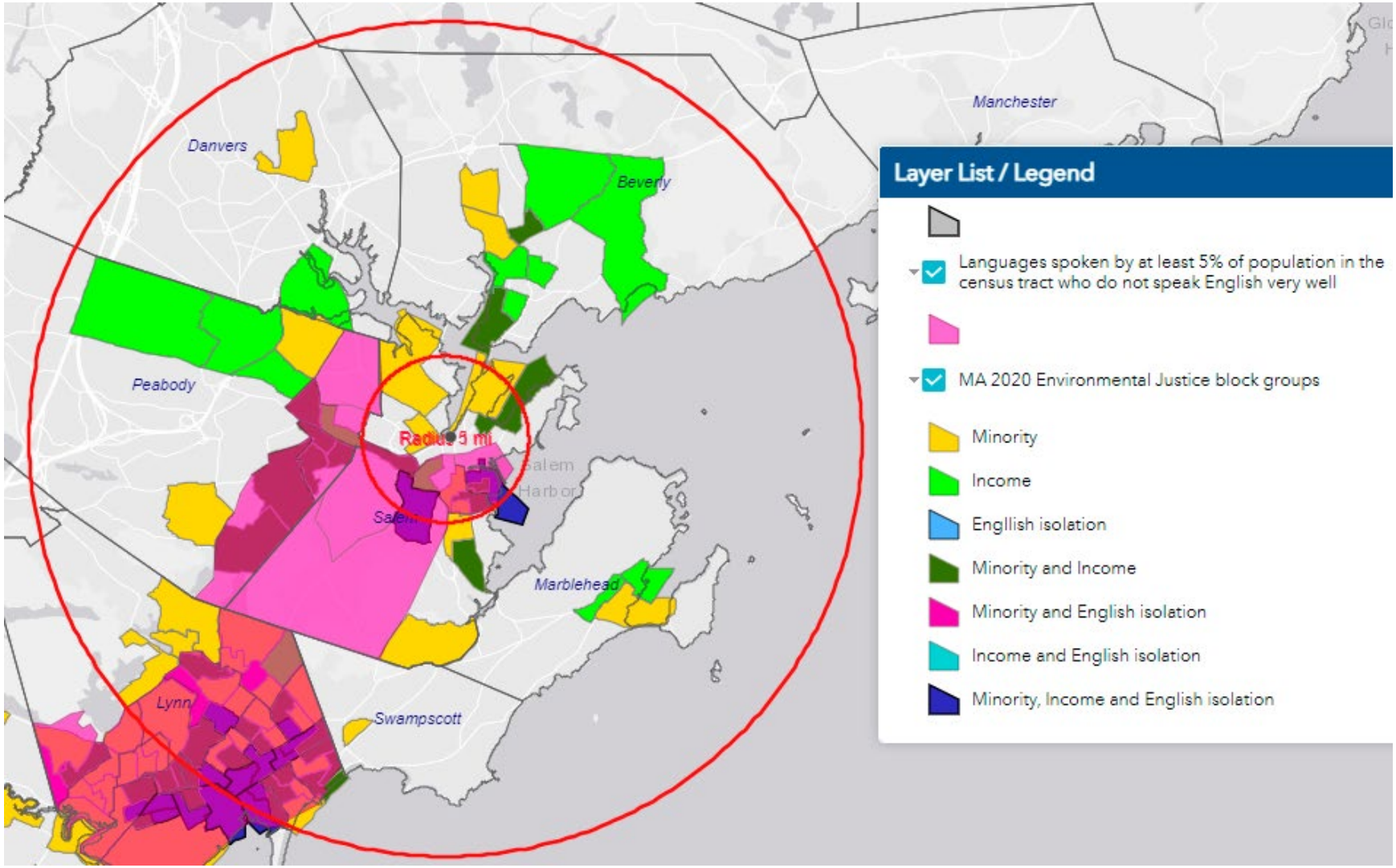
The Regulations at 301 CMR 11.00, as revised and adopted December 24, 2021, require an assessment of potential public health impacts and mitigation measures. The information in Section 3.2.1 above provides a baseline for existing public health conditions in the immediate vicinity of the Project Site.

The Project is expected to have beneficial impacts on public health, as the Project includes physical improvements to the built environment that will increase opportunities for walking and biking, improve access to healthy outdoor areas and reduce reliance on personal automobile use. Over 20 years of research shows higher urban density is related to a lower risk of chronic diseases, such as obesity, diabetes and heart disease.[7] This is largely due to people in higher-density communities being more physically active. Their local areas are more "walkable", meaning that more often they can walk to nearby shops, schools and other services. In addition, longer car commutes have been linked to increased depression, anxiety, social

[7] Adlakha, D. Sallis, J.F. Why Urban Density is Good for Health – Even During a Pandemic. The Conversation, July 24, 2020. https://theconversation.com/why-urban-density-is-good-for-health-even-during-a-pandemic-142108#:~:text=Over%2020%20years%20of%20research,communities%20being%20more%20physically%20active. Accessed 09/02/22.

isolation, weight, cholesterol levels, blood sugar levels, and blood pressure and decreased life satisfaction and happiness, sleep, and fitness.[8]

[8] Goldberg, C. Weight Gain, Heart Disease, B ack Pain: Longer Car Commutes May Harm Your Health. WBUR. April 28, 2016. https://www.wbur.org/news/2016/04/28/traffic-commute-health-impact Accessed 09/02/22.



Source:

Figure 3.1
EJ Populations

The Exchange Salem
Salem, Massachusetts

4

Wetlands and Waterways

This chapter discusses presence of and impacts to the on-site wetland resource areas. It also identifies Chapter 91 jurisdiction and demonstrates compliance with license requirements.

4.1 Key Findings

Key findings related to wetlands and waters include the following:

- The Project will alter previously developed Land Subject to Coastal Storm Flowage (LSCSF), 200-foot Riverfront Area and the 100-foot Buffer to Coastal Bank, which all overlap.
- All work is subject to and will be conducted in compliance with a Final Order of Conditions (OOC) from the Salem Conservation Commission.
- The entire Project Site consists of filled tidelands jurisdictional under the Massachusetts Public Waterfront Act, Chapter 91.
- The Proponent will seek a new Chapter 91 license for this Project.
- The Project meets the regulatory criteria for a nonwater-dependent use as demonstrated in Table 4-1.
- The Project complies with the Coastal Zone Management Policies as demonstrated in Table 4-2.

4.2 Wetlands

4.2.1 Jurisdiction

The Project includes work in wetland resource areas including LSCSF and Riverfront Area and is therefore subject to the Wetlands Protection Act (WPA)(MGL Chapter 131, Section 40) and its implementing regulations (310 CMR 10.00), and the Requirements of the Salem Wetlands Ordinance (the "Ordinance") and associated regulations (Figure 4.1).

4.2.2 Impacts

This Project will impact approximately 38,911 square feet (sf) of previously developed LSCSF, including 35,367 square feet of temporary impacts, which includes those areas of impervious surface that will remain impervious as well as pervious

surface that will remain pervious; and 3,544 square feet of permanent impacts, which includes areas where pervious surface will be converted to impervious surface.

The Project is a redevelopment consisting entirely of degraded and previously developed portions of land within the Riverfront Area (RFA). A total of 24,503 square feet of RFA is located within the Project area of which 19,215 square feet consist of degraded area from impervious asphalt parking lot and sidewalk and 5,288 square feet consists of previously developed land with an existing perennial grass cover. Proposed impervious surface for the Project is 19,133 square feet, which will result in an overall decrease of impervious surface from existing conditions within the RFA of 82 square feet. The Project will also impact 342 sf of Buffer Zone to Bank.

A suite of mitigation measures is proposed to prevent short- and long-term impacts to wetland resource areas including Project phasing and an erosion and sedimentation control program, which will include structural and non-structural practices such as erosion control barriers, catch basin inlet protection, temporary stabilization and seeding, and dust control.

4.2.3 Regulatory Compliance

A Notice of Intent for the proposed work within jurisdictional resource areas has been filed with the Salem Conservation Commission. All work will be conducted in compliance with the final OOC. The Project has been designed to comply with the standards of the WPA and the Ordinance, and to meet Massachusetts Stormwater Regulations.

Under the WPA, there are no general performance standards for LSCSF or work in the buffer zone. The Project complies with the Massachusetts Stormwater Management Standards and applicable general performance standards for Riverfront Area as described below.

Riverfront Area

The Project complies with the performance standards enumerated in 310 CMR 10.58(5) as follows:

310 CMR 10.58 (5) Redevelopment Within Previously Developed Riverfront Areas; Restoration and Mitigation. Notwithstanding the provisions of 310 CMR 10.58(4)(c) and (d), the issuing authority may allow work to redevelop a previously developed riverfront area, provided the proposed work improves existing conditions. Redevelopment means replacement, rehabilitation or expansion of existing structures, improvement of existing roads, or reuse of degraded or previously developed areas. A previously developed riverfront area contains areas degraded prior to August 7, 1996 by impervious surfaces from existing structures or pavement, absence of topsoil, junkyards, or abandoned dumping grounds. Work to redevelop previously developed riverfront areas shall conform to the following criteria:

a) *At a minimum, proposed work shall result in an improvement over existing conditions of the capacity of the riverfront area to protect the interests identified in*

M.G.L. c. 131 § 40. When a lot is previously developed but no portion of the riverfront area is degraded, the requirements of 310 CMR 10.58(4) shall be met.

› **Compliance:** Improvements to the Riverfront Area will include an overall decrease in impervious surface of 82 square feet, the planting of woody and herbaceous species, and increase of stormwater infiltration by using porous pavers and an underground stone-filled water quality unit. The Riverfront Area within the Project site was degraded with parking lot and sidewalk prior to 1996 and is currently occupied in large part by a parking lot with a small portion of perennial grass.

b) Stormwater management is provided according to standards established by the Department.

› **Compliance:** The Project has been designed to meet Massachusetts Stormwater Standards, the City of Salem rules and regulations for stormwater design and mitigation and MS4 Permit, which has been demonstrated in detail in the Notice of Intent Application filed to MassDEP and Salem Conservation Commission.

c) Within 200-foot riverfront areas, proposed work shall not be located closer to the river than existing conditions, 100 feet, whichever is less, or not closer than existing conditions within 25-foot riverfront areas, except in accordance with 310 CMR 10.58(5)(f) or (g).

› **Compliance:** The proposed work is located at the same distance from the North River as existing conditions.

d) Proposed work, including expansion of existing structures, shall be located outside the riverfront area or toward the riverfront area boundary and away from the river, except in accordance with 310 CMR 10.58(5)(f) or (g).

› **Compliance:** As noted above, the proposed work is located at the same distance from the North River as existing conditions.

e) The area of proposed work shall not exceed the amount of degraded area, provided that the proposed work may alter up to 10 percent if the degraded area is less than 10 percent of the riverfront area, except in accordance with 310 CMR 10.58(5)(f) or (g).

› **Compliance:** The majority of the Riverfront Area within the Project site were degraded with parking lot and sidewalk. The area of proposed work will not exceed the amount of degraded area.

f) When an applicant proposes restoration on-site of degraded riverfront area, alteration may be allowed notwithstanding the criteria of 310 CMR 10.58(5)(c), (d), and (e) at a ratio in square feet of at least 1:1 of restored area to area of alteration not conforming to the criteria. Areas immediately along the river shall be selected for restoration. Alteration not conforming to the criteria shall begin at the riverfront area boundary.

› **Compliance:** Restoration is not proposed.

g) When an applicant proposes mitigation either on-site or in the riverfront area within the same general area of the river basin, alteration may be allowed notwithstanding the criteria of 310 CMR 10.58(5)(c), (d), or (e) at a ratio in square feet of at least 2:1 of mitigation area to area of alteration not conforming to the

criteria or an equivalent level of environmental protection where square footage is not a relevant measure.

› **Compliance:** The Project has been designed to improve the condition of the RA. No mitigation is required or proposed.

4.3 Waterways

The Project Site contains filled tidelands subject to the licensure requirements of Massachusetts General Law, Public Waterfront Act, MGL Chapter 91 ("Chapter 91") as implemented by the Department of Environmental Protection ("DEP") through the Waterways Regulations (310 CMR 9.00).

4.3.1 Jurisdiction

According to the MassGIS *Tidelands Jurisdiction (M.G.L. c.91)* data layers, including CZM_HISTORIC_HIGHWATER, the Project Site is located within filled tidelands. The Site was filled prior to 1869.[1] The limits of Chapter 91 jurisdiction on the Project Site are shown in Figure 4.2. The filled tidelands are categorized as Commonwealth Tidelands because the Site is currently held by a political subdivision/authority of the Commonwealth.

The Project team identified the following existing Waterways License for the Project Site:

› DEP License No.13387, issued on April 25, 2013, to Mass Bay Transportation Authority

The regulations at 310 CMR 9.05(1)(a), *Activities Requiring a License*, require a new or amended license for the Project because it includes "construction, placement, excavation, addition, improvement, maintenance, repair, replacement, reconstruction, demolition or removal of any fill or structures, not previously authorized, or for which a previous grant or license is presently valid." The Project is regulated as a nonwater-dependent use project according to 310 CMR 9.12(2)(f). The Proponent is seeking a new non-water dependent license under Chapter 91 for the Project as described herein.

4.3.2 Regulatory Compliance

Table 4-1 provides a summary of the Project's compliance with the applicable provisions of the Waterways Regulations.

[1] According to the 1869 Salem Harbor map www.mapjunction.com Accessed 09-27-22.

Table 4-1 Waterways License and Permit Requirements

Regulation 310 CMR	Standard	Applicable?	Compliance Summary
9.31 (2)(b)	Proper Public Purpose Requirement	Yes	Chapter 91 regulations presume that a project meets the regulatory requirement if it serves a proper public purpose which provides greater benefit than detriment to the rights of the public in said lands. The Project Site currently is occupied with a large surface parking lot. The Project will result in an improved public realm in proximity to the waterfront. Compliance with 310 CMR 9.51-54 is described below.
9.32	Categorical Restrictions on Fill and Structures	Yes	The Project complies with this regulation because it includes placement of fill and structures within previously filled tidelands (310 CMR 9.32 (1)(a)).
9.33	Environmental Protection Standards	Yes	The Project complies with all applicable environmental regulatory programs and standards. In addition to a Waterways License, permits required for the Project include an Order of Conditions and compliance with the Massachusetts Stormwater Management Standards. Refer to Table 1-2 for a list of anticipated permits and approvals.
9.34 (1)	Conformance with Municipal Zoning	Yes	The Project is consistent with local zoning as a Planned Unit Development. Under the local zoning code, the Project requires Site Plan Approval from the Planning Board.
9.34 (2)	Conformance with Municipal Harbor Plan	No	The Project Site is not subject to a Municipal Harbor Plan.
9.35 (2)	Public Rights Applicable to All Waterways	No	The Project does not include work within flowed tidelands and will not interfere with the public rights of navigation, free passage over and through the water, and Town Landings.
9.35 (3)	Public Rights Applicable to Tidelands and Great Ponds	Yes	The Project complies with this condition by providing public pedestrian access. It meets the applicable provisions of 310 CMR 9.52 (see below).
9.35 (4)	Compensation for Interference with Public Rights in Commonwealth Tidelands and Great Ponds	No	This is not applicable as the Project is a nonwater-dependent use project.
9.35 (5)	Management of Areas Accessible to the Public	Yes	The Project will provide for long-term management to achieve effective public use and enjoyment while minimizing conflict with other legitimate interests, including the protection of natural resources. No limitation on hours of availability or scope of allowed activity, or other substantial restriction, will be placed on public access to outdoor areas. Public patronage will be encouraged by placing and maintaining adequate signage at all entryways and at other appropriate locations on the Project Site. No gates, fences, or other structures will be placed on any areas open to public access in a manner that would impede or discourage the free

Regulation 310 CMR	Standard	Applicable?	Compliance Summary
			flow of pedestrian movement thereon. Facilities required as per 9.53(2)(c) will meet the access requirements as defined for a Facility of Public Accommodation.
9.36 (1)	Standards to Protect Water-Dependent Uses	No	The Project Site is currently occupied by a parking lot which is not in use for water-dependent purposes.
9.36 (2)	Private Access to Littoral or Riparian Property	Yes	The Project does not interfere with riparian property owners' right to approach their property from a waterway, and to approach the waterway from their property.
9.36 (3)	Disruption of Water-Dependent Use in Operation	No	The Project does not propose to disrupt any water-dependent use in operation, as of the date of license application, at an off-site location within the vicinity of the Project Site.
9.36 (4)	Displacement of Previous Water-Dependent Use	No	The Project Site has been developed and used as a parking lot, which is not in use for water-dependent purposes, for more than five years prior to the date of license application.
9.36 (5)	Fill and/or Structures within a DPA	No	The Project is a not located within a Designated Port Area.
9.37	Engineering and Construction Standards	Yes	The Project meets the engineering and construction standards and is consistent with the Massachusetts State Building Code.
9.38	Use Standards for Recreational Boating Facilities	No	The Project does not include recreational boating facilities.
9.39	Standards for Marinas, Boatyards, and Boat Ramps	No	The Project does not include a marina, boat yard, or boat ramp.
9.40	Standards for Dredging and Dredged Material Disposal	No	The Project does not involve dredging or disposal of dredged material.
9.51	Conservation of Water Dependent Use	Yes	The Project is designed to improve the Site's existing condition. The proposed new building and open space will be developed to protect the utility and adaptability of the Site for water-dependent purposes. The Project does not unreasonably diminish the capacity of the filled tidelands to accommodate water-dependent use. The Project Site includes a de minimis area of WDUZ (approximately 1,580 sf/0.036 acres). No buildings or parking areas are located at the ground level of any filled tidelands within 100 feet of the project shoreline. A minimum of one square foot of the Project Site is reserved as open space for every square foot of tideland area within the building footprint.
9.52	Utilization of Shoreline for Water Dependent Use	Yes	The proposed public realm is located close to North River, and consists of a plaza, landscaping, and pedestrian access for the public to enjoy the waterfront view and gain access to

Regulation 310 CMR	Standard	Applicable?	Compliance Summary
			the shoreline, thereby promoting the active use of the shoreline and protecting the public rights.
9.53	Activation of Commonwealth Tidelands for Public Use	Yes	The Project is designed to improve the quantity and quality of benefits to the public and will promote the public use and enjoyment of Commonwealth tidelands. The Project includes exterior open spaces for passive public recreation, including plazas and vegetated open space with pedestrian amenities, near the water. The Bridge Street level includes interior spaces characterized as Facilities of Public Accommodation including retail space and publicly accessible residential lobby facilities. The project includes direct non-water related public benefits including meeting the community need for mixed-income residential development and reutilizing an idle waterfront property.
9.54	Consistency with Coastal Zone Management Policies	Yes	The Project Site is located within the Coastal Zone. Compliance with Coastal Zone Management Policies is demonstrated in Table 4-2 below.
9.55	Standards for Nonwater-Dependent Infrastructure Facilities	No	The Project is not a nonwater-dependent infrastructure facility.

4.4 Coastal Zone Management

The Project Site is located within Massachusetts Coastal Zone Boundary[2] and is therefore required to meet the Massachusetts Office of Coastal Zone Management program policies, effective as of October 4, 2011,[3] administered by the Massachusetts Office of Coastal Zone Management. The policies are presented in the following nine categories: Coastal Hazards, Energy, Growth Management, Habitat, Ocean Resources, Ports and Harbors, Protected Areas, Public Access, and Water Quality. Table 4-2 provides a summary of the Project's compliance with the applicable provisions of Coastal Zone Management Policies.

Table 4-2 Compliance with Coastal Zone Management Policies

CZM Policy	Summary of Policy	Summary of Consistency Statement
Coastal Hazards Policy # 1	Preserve, protect, restore, and enhance the beneficial functions of storm damage prevention and	As a result of the Project, the amount of impervious area on the Project Site will decrease slightly. The increased vegetation will improve the functions of Land

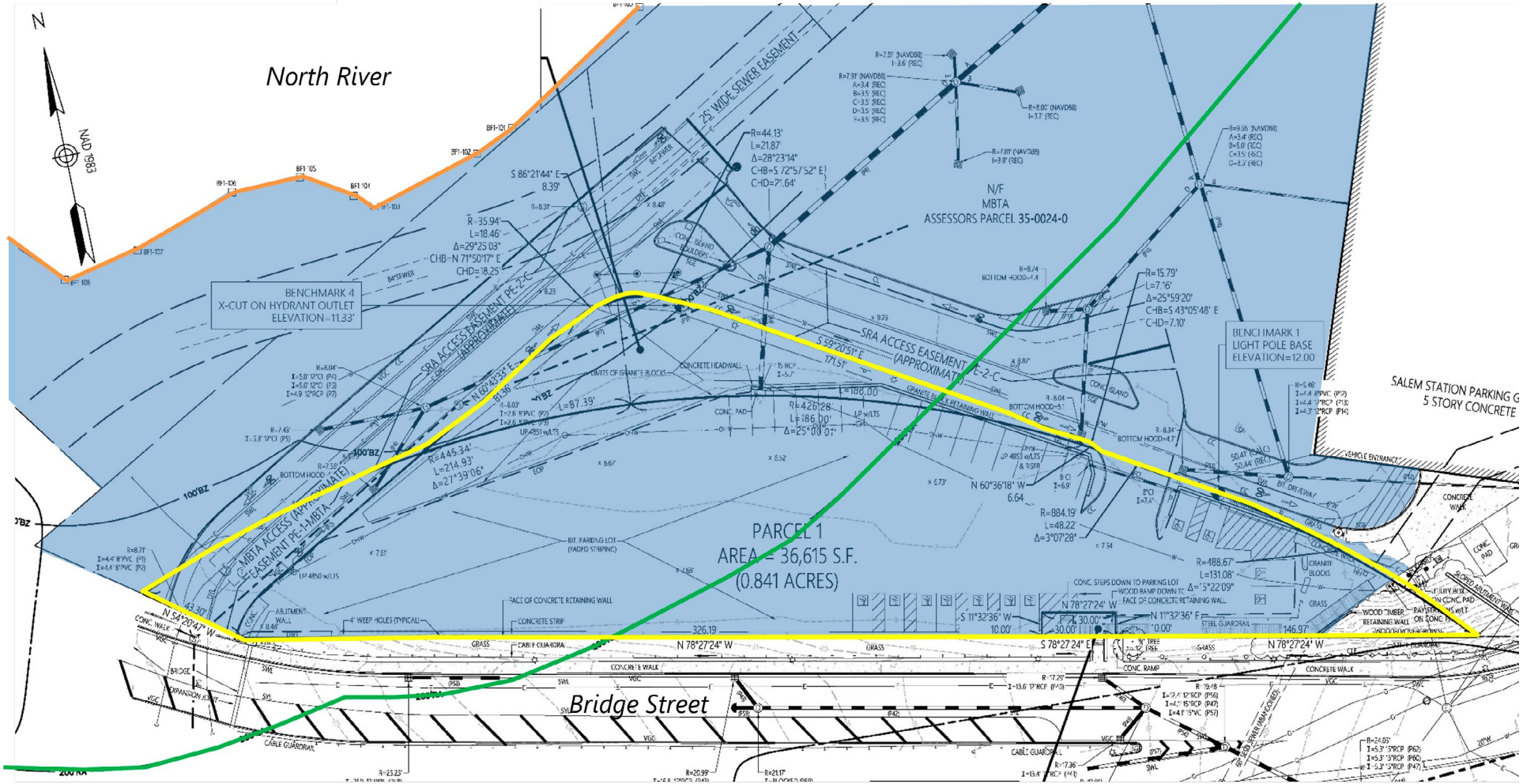
[2] Massachusetts Coastal Zone Boundary. https://www.mass.gov/service-details/massachusetts-coastal-zone-boundary

[3] Massachusetts Coastal Management Policies. https://www.mass.gov/files/documents/2021/01/14/czm-policy-guide-policies-with-index.pdf

CZM Policy	Summary of Policy	Summary of Consistency Statement
	flood control provided by natural coastal landforms.	Subject to Coastal Storm Flowage. The Project meets the applicable WPA performance standards at 310 CMR 10.00 and Chapter 91 regulations at 310 CMR 9.00.
Coastal Hazards Policy # 2	Ensure that construction in water bodies and contiguous land areas will minimize interference with water circulation and sediment transport.	The Project does not include construction in water bodies and is not anticipated to interfere with water circulation or sediment transport. The Project is considered a redevelopment Project and fully complies as such with the Stormwater Management Standards. The improved stormwater management system will attenuate the peak flow and increase infiltration through porous pavers and vegetation.
Coastal Hazards Policy # 3	Ensure that state and federally funded public works projects would be safe from flood and erosion-related damage.	The policy does not apply. The Project is not a state or federally funded public works project.
Coastal Hazards Policy #4	Prioritize acquisition of hazardous coastal areas that have high conservation and/or recreation values.	The Project Site does not constitute a hazardous coastal area. The Project has been designed to increase open space and adapt to future climate change. The public will have direct access to the waterfront and explore recreational activities on-site or off-site.
Energy Policy # 1	For coastally dependent energy facilities, assess siting in alternative coastal locations.	This policy does not apply. The Project is not an energy facility.
Energy Policy # 2	Encourage energy conservation and use of renewable sources.	The Project will be certified under the PHIUS, Energy Star Multifamily new construction, Zero Energy Ready Homes, and Indoor airPLUS programs. It will also be built to Enterprise Green Communities standards.
Growth Manage-ment Policy #1	Encourage sustainable development that is consistent with state, regional, and local plans.	The Project supports sustainability by incorporating future climate conditions into its design, increasing waterfront open space and providing improved pedestrian and bicycle facilities.
Growth Manage-ment Policy #2	Ensure that state and federally funded infrastructure projects serve developed urban areas.	The policy does not apply. The Project is not a state or federally funded infrastructure project.
Growth Manage-ment Policy #3	Encourage the revitalization and enhancement of existing development centers in the coastal zone through technical assistance and financial support for residential, commercial, and industrial development.	The Project is a redevelopment Project that will convert an existing impervious parking lot to a mixed-use development with a robust public realm. The Project design accommodates existing site grade changes, conserves the capacity and function of natural sources, and will promote economic growth.
Habitat Policy # 1	Protect coastal, estuarine, and marine habitats and coastal freshwater streams, ponds, and wetlands to preserve wildlife habitats.	The wetland resource areas on the Project Site include LSCSF, RA and buffer zone to Bank. All work within these areas will be subject to a final OOC. There are no specified habitat sites or rare species on the Project

CZM Policy	Summary of Policy	Summary of Consistency Statement
		Site. The Project will also apply for a new Chapter 91 license for work on filled tidelands.
Habitat Policy # 2	Advance the restoration of degraded or former habitats in coastal areas.	The Project does not include ecological restoration activities, but the proposed open space with vegetation in LSCSF and RA will improve the capacity of on-site wetland resource areas to protect interests of WPA.
Ocean Resources Policies # 1-3	Policies related to sustainable aquaculture; oil, natural gas, and marine mineral extraction; and offshore sand and gravel extraction.	These policies do not apply to Project because the activities to which it applies are not being proposed.
Ports and Harbors Policy # 1-2	Policies related to dredging activities.	These policies do not apply to the Project because the activities to which it applies are not being proposed.
Ports and Harbors Policy #3	Preserve and enhance the capacity of Designated Port Areas to accommodate water-dependent industrial uses and prevent the exclusion of such uses from tidelands and any other DPA lands over which an EEA agency exerts control by virtue of ownership or other legal authority.	The Project Site is not within a DPA.
Ports and Harbors Policy #4	For development on tidelands and other coastal waterways, preserve and enhance the immediate waterfront for vessel-related activities that require sufficient space and suitable facilities along the water's edge for operational purposes.	The Project will not impact any vessel-related activities, as no water-side work is proposed. The Project complies with the Chapter 91 regulations at 310 CMR 9.00. The Proponent will apply for a new Chapter 91 license for the proposed work on tidelands. Refer to Table 4-1 for a summary of regulatory compliance.
Ports and Harbors Policy #5	Encourage, through technical and financial assistance, expansion of water-dependent uses in Designated Port Areas and developed harbors, re-development of urban waterfronts, and expansion of physical and visual access.	The Project is a redevelopment project on an urban waterfront that will improve the existing site conditions. The new mixed-use development will provide direct public benefits including improved physical access to and views of the North River.
Protected Areas Policy # 1	Preserve, restore, and enhance coastal Areas of Critical Environmental Concern.	The Project Site is not within or proximate to any ACECs.
Protected Areas Policy # 2	Protect state designated scenic rivers in the coastal zone.	The Project will not adversely impact any state designated scenic rivers in the coastal zone.

CZM Policy	Summary of Policy	Summary of Consistency Statement
Protected Areas Policy # 3	Ensure that proposed developments in or near designated or registered historic places respect the preservation intent of the designation and that potential adverse effects are minimized.	The Project Site is located in the Salem historic district. It will not have any adverse impacts on nearby historic buildings and sites. Pedestrians and bike paths will be created to improve connections to historic resources.
Public Access Policy # 1	Ensure that development would promote general public use and enjoyment of the water's edge, to an extent commensurate with the Commonwealth's interests in flowed and filled tidelands under the Public Trust Doctrine.	The Project will create a new public realm with landscaping and offer the public physical and visual connections to and enjoyment of the waterfront area. The capacity of the tidelands will also be conserved though the Project design. Refer to Table 4-1 for a summary of regulatory compliance of Chapter 91 Waterways regulations.
Public Access Policy # 2	Improve public access to existing coastal recreation facilities and alleviate auto traffic and parking problems through improvements in public transportation and trail links (land- or water-based) to other nearby facilities….	The Project Site is currently comprised of a surface parking lot that hinders access to the waterfront. The Project is a Transit-Oriented Development directly adjacent to the MBTA's Salem Station, which provides commuter rail and bus service. Adding mixed-income residential units at this location will allow more people to have reduced reliance on privately owned vehicles. The Project is designed to improve walkability, connectivity, and pedestrian safety.
Public Access Policy # 3	Expand coastal recreational facilities and develop new public areas for recreational activities.	The Project's publicly accessible open space is designed to support commercial, cultural, educational, and/or recreational activities.
Water Quality Policy # 1-2	Implement pollution control to promote the attainment of water quality standards and protect designated uses and other interests.	The Project has been designed to meet the Massachusetts Stormwater Management Standards to the maximum extent practicable as a redevelopment project. Low Impact Development has been considered and applied during the Project design. Construction-related impacts and pollution will be controlled and managed under a Construction Management Plan. Refer to Chapter 6 *Construction Impacts* for details.
Water Quality Policy # 3	Ensure that subsurface waste discharges conform to applicable standards.	The Project does not propose subsurface waste discharges.

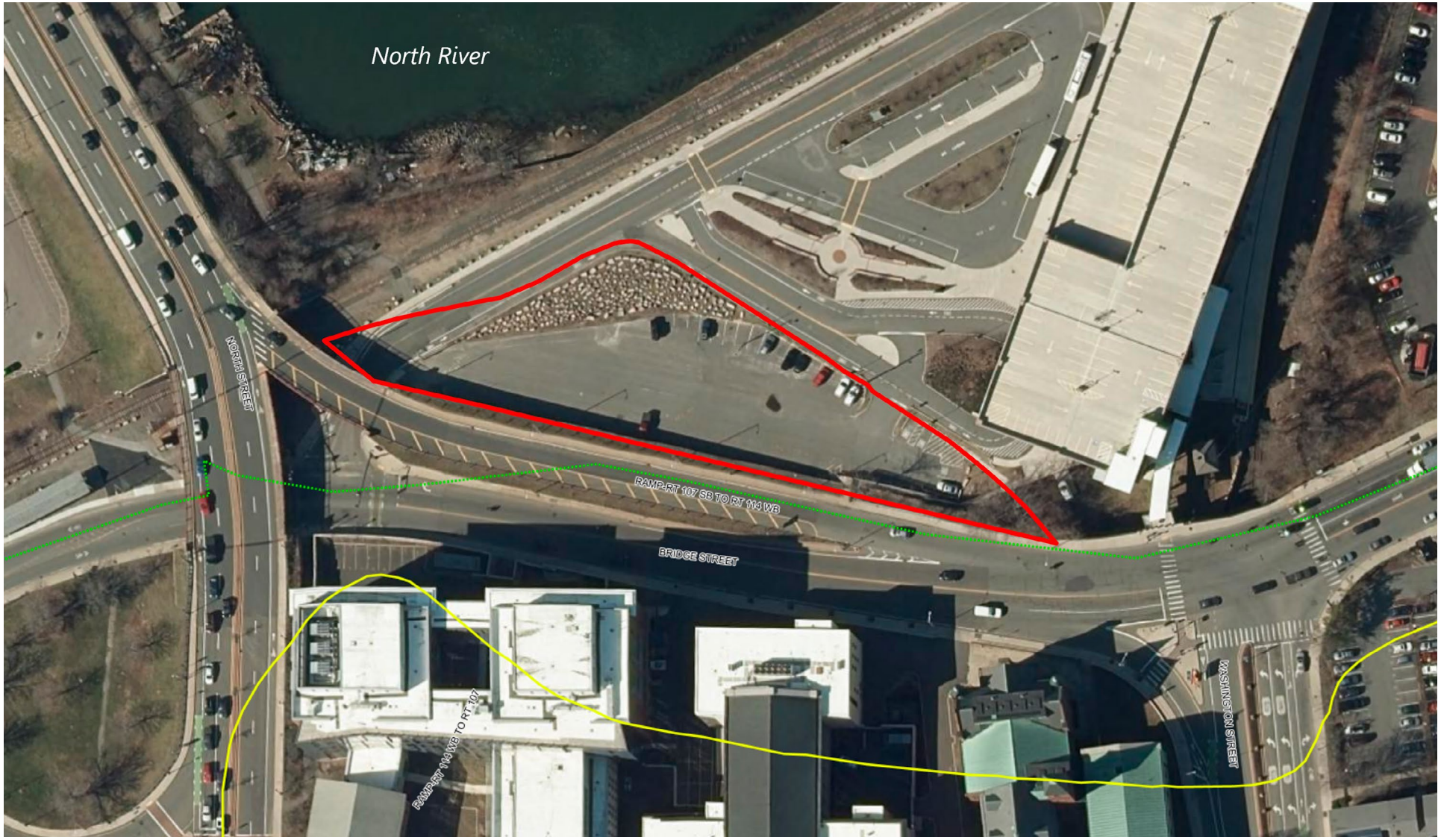


Source:

- Project Site
- LSCSF
- Coastal Bank
- 200' Riverfront Area

Figure 4.1
Wetland Resource Areas

The Exchange Salem
Salem, Massachusetts



Source:

Project Site

Chapter 91 Jurisdiction

Landlocked Tidelands

Figure 4.2

Chapter 91 Jurisdiction

The Exchange Salem
Salem, Massachusetts

5

Climate Change Preparedness and Resiliency

This chapter identifies the measures that the Project will incorporate to improve resiliency to future climate conditions.

5.1 Key Findings

Key findings related to climate change adaptation and resiliency include:

- The Project Site is vulnerable to future extreme heat and flooding conditions.
- The Project will include site- and building-level measures that will reduce the impact of extreme climate events, including:
  - Resilient grading
  - Resilient building elevations
  - Stormwater management enhancements

5.2 Regulatory Context

The Project is subject to State and Local regulations related to climate change adaptation and resiliency as described below.

5.2.1 MEPA Climate Change Adaptation and Resiliency Policy

The Project is subject to the MEPA Interim Protocol on Climate Change Adaptation and Resiliency (the "MEPA Interim Protocol"), effective October 1, 2021. The MEPA Interim Protocol is intended to gather project-level data in a standardized manner that will both inform the MEPA review process and assist the RMAT team in evaluating the accuracy and effectiveness of the RMAT Climate Resilience Design Standards Tool.

5.2.2 RMAT Climate Resilience Tool

The Interim Protocol incorporates the efforts of the Resilient Massachusetts Action Team (RMAT), including consideration of the "Climate Resilience Design Standards and Guidelines" and the output of the RMAT Climate Resilience Design Standards Tool (the "RMAT Tool")(included in Appendix B).

5.3 Projected Climate Conditions and Vulnerability Assessment

The RMAT Tool was used to identify the Project's vulnerability to the projected impacts of climate change. It was identified has having a high exposure to and high risk from sea level rise (SLR)/storm surge, extreme precipitation (urban flooding), and extreme heat.

5.3.1 Coastal Flooding

As sea level rises over the next century, the occurrence of both tidal flooding and coastal storm flooding will increase at the Project Site. The RMAT Tool applied a Moderate Exposure rating for sea level rise and storm surge because the Site is exposed to the 1% annual coastal flood event as early as 2030 and is located within the 0.1% annual coastal flood event within the project's useful life, but it is not located within the predicted mean high water shoreline by 2030. Table 5-1 identifies current and future water elevations within the Project's target planning horizon.

Table 5-1 Current and Future Water Elevations

Tidal & Storm Datums	Current (NAVD88)	2070 Projection (+50" SLR)(NAVD88)
Mean Higher High Water (MHHW)	4.8[a]	8.9
Highest Astronomical Tide (HAT)	7.0[a]	11.2
1% Annual Chance Flood	10.0[b]	Unknown
2% Annual Chance Flood	Unknown	13.3[c]
Wave Action Water Elevation	Unknown	14.4 [c]

a NOAA Tides & Currents 8443970 Boston, MA, Epoch 1983-2001
b FEMA FIRM Panel 25009C0419G, Effective 07/16/14
c RMAT Climate Resilience Design Standards Tool Report, generate 07-20-22

5.3.2 Extreme Precipitation Events

The Project Site received a rating of high exposure to extreme precipitation because the maximum annual daily rainfall exceeds 10 inches within the Project's useful life and the existing impervious area of the Project Site is greater than 50%, but there has been no historic flooding at the Site and there is no proposed increase in impervious area. The projected total precipitation depth for the 10-year 24-hour event in 2070 is 6.8 inches.

5.3.3 Extreme Heat

Like virtually all areas of Salem, the Project Site received a rating of high exposure because there are anticipated to a 30+ day increase in days over 90 deg. F within project's useful life, the existing impervious area of the Project Site is greater than 50%. However, it is located within 100 ft of existing water body (the North River),

there will be no increase to the impervious area of the Project Site, and there will be no tree removal (in fact approximately 18 trees will be added).

5.4 Adaptation and Resiliency Measures

This section describes how the Project will incorporate resilience to increased flooding and extreme heat at the site- and building-levels. Table 5-2 summarizes the various elevations of Project elements based on projected water elevations. Figure 5.1 illustrates these elevations.

Table 5-2 Recommended and Proposed Project Elevations

Project Elevations	Recommended (NAVD88)	Project Design (NAVD88)
Existing Average Site Elevation	6.0 – 10.0	
MBTA Driveway	8.0	
Off-Site Protection Elevation	11.2[a]	TBD
Lobby/Retail FFE	14.3[b]	19.2
Bridge Street Existing Elevation	18.0 – 28.0	
Residential Units	15.3[c]	30.0

a. 2070 HAT
b. 2070 2% ACF + 1' Freeboard
c. 2070 2% ACF + 2' Freeboard

5.4.1 Site Design Measures

To mitigate against potential future flooding, as well as higher temperatures and the increased likelihood of heatwave events, several features have been incorporated into the Site design. The Proponent is exploring the potential to create an off-site berm on MBTA-owned land adjacent to the freight rail tracks to protect against coastal flooding. To mitigate the impacts of projected increased rainfall, pervious coverage will be increased on the Project Site by replacing impervious parking areas with vegetated areas and an upgraded stormwater management system will be installed. An increase in tree canopy coverage, covered/shaded publicly accessible outdoor areas, and hardscape materials with a high Solar Reflective Index (SRI) will help reduce the impacts of extreme heat.

5.4.2 Building Design Measures

Under the Massachusetts State Building Code, new buildings within the FEMA Floodplain must be designed and constructed in compliance with the flood-related portions of the code. The Project will meet or exceed these regulations by designing to future rather than current design flood elevations. Solutions that do not require

human intervention will be prioritized. Building mechanicals and emergency equipment will be dry-floodproofed to elevations above future projected flood levels. Parking and other non-conditioned areas on the riverfront level will be wet-floodproofed in compliance with ASCE 24-14.

5.4.3 Potential Off-Site Impacts

No fill above the current BFE of 10 feet NAVD88 is currently proposed. The building will be constructed in compliance with the flood-related portions of the building code. It is generally accepted that building in LSCSF in compliance with the State Building Code at 780 CMR 3107 meets the interests of the WPA and does not negatively impact adjacent properties.

Source:

Figure 5.1

Resilient Elevations

The Exchange Salem
Salem, Massachusetts

6

Construction Impacts

This chapter provides information related to construction period impacts as requested in the EEA Secretary's Certificate on the ENF.

6.1 Key Findings

The following are key findings related to construction period impacts:

- The Proponent will develop and implement a plan to control construction-related impacts including dust, noise, erosion, sedimentation, transportation, and contamination impacts during construction and any land disturbance activities.
- Public Safety will be prioritized. All construction activity is expected to take place within the Project Site, and will not impact pedestrians, bicyclists, or transit riders in the vicinity of the Site.

6.2 Construction Management

The Proponent will employ a Construction Manager who will be responsible for developing a Construction Management Plan (CMP) coordinating construction activities with all appropriate utility companies and regulatory agencies. A plan to control construction-related impacts including erosion, sedimentation, and other pollutant sources during construction and any land disturbance activities will be developed and implemented.

6.3 Public Safety

The entire perimeter of the construction site limits will be protected with a 6-foot-high temporary chain link construction fence. A vehicular gate will be provided for construction traffic on the MBTA Driveway in an existing curb cut location to allow safe entrance and exiting for construction vehicles and personnel. Additionally, signage will be posted on fencing and construction trailers to alert all personnel to the safety requirements.

Larger deliveries of construction materials may require the use of police details to assist in managing vehicular and pedestrian traffic. Coordination with the Salem Police Department will be essential in providing safe travel routes for pedestrians during peak construction periods. Additional details will be provided in the CMP.

6.4 Air Quality

The Project will comply with air quality regulations at 310 CMR 7.01, 7.09-7.10. Retrofitted diesel construction vehicles, or vehicles that use alternate fuels, will be used. The Project will implement an outdoor construction management plan that includes provisions for wheel washing, site vacuuming, and truck covers. 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 aimed at reducing air emissions from diesel-powered construction equipment. Oxidation catalysts and catalyzed particulate filters will 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 will be retrofitted using retrofit technologies approved by the United States Environmental Protection Agency (EPA). Additionally, ultra-low-sulfur diesel (ULSD) fuel (15 parts per million) will be used for all off-road diesel equipment.

6.5 Noise

The construction activity associated with the Project may temporarily increase nearby sound levels due to the intermittent use of heavy machinery, typically during daytime periods. The construction phases that will generate the highest sound levels include site excavation and grading. The CMP will identify a path to compliance with any applicable noise regulations.

6.6 Stormwater Runoff/Erosion Control

The contractor will be required to construct all erosion and sedimentation (E&S) control measures in accordance with MassDEP's "Massachusetts Erosion and Sediment Control Guidelines for Urban and Suburban Areas." E&S measures will be in place prior to the commencement of any site work or earthwork operations and will be maintained during construction. They will remain in place until all site work is complete and groundcover is established.

- A limit of work will be established with construction fencing and straw wattles.
- Stockpiles will be surrounded on their perimeters with approved E&S control devices to prevent and/or control siltation and erosion. They will be covered to prevent stormwater infiltration.
- All disturbed or exposed area subject to erosion will be stabilized with mulch or seeded for temporary vegetative cover.
- Stabilized construction entrances/exists will be installed to prevent tracking or flowing of sediment into public rights-of-way.
- During construction, runoff will be directed to temporary drainage swales and sedimentation basins.

- On-site and nearby catch basins will be protected with straw wattles/haybales and siltsacks to prevent sediment from entering drainage structures.
- Throughout construction, all E&S measures will be inspected weekly and immediately after storm events to ensure that they are properly cleaned and repaired or replaced as needed. The contractor will keep addition E&S devices on-site for installation.

6.7 Flood Control

All equipment will be secured or removed and unconsolidated materials will be removed from the FEMA 1% annual chance floodplain in advance of any forecasted coastal flooding event.

6.8 Transportation

The CMP will identify the details of the construction schedule, working hours, number of construction workers, worker transportation and parking, number of construction vehicles, and routes.

Construction activity is expected to take place within the Site, and will not impact pedestrians, bicyclists, or transit riders in the vicinity of the Site. To minimize transportation impacts during construction, the following measures will be considered:

- Limiting construction worker parking on-site,
- Encouraging construction workers to carpool, and
- Providing areas on-site for construction worker supplies and tools.

6.9 Hazardous Materials and Solid Waste

Any solid waste generated will be recycled off-site or disposed of in accordance with federal, state, and city regulations. The Construction Manager will implement a waste management plan that seeks to divert at least 75 percent of construction and demolition waste material removed from the Project Site from landfills through recycling and salvaging. All demolition debris waste will be separated and legally disposed of in regional landfills. During construction, wood, metals, gypsum, cardboard and plastic will be sent to a solid waste sorting facility for separation of any recyclable materials.

Contaminated soil or groundwater encountered during construction will be managed in accordance with M.G.L. c. 21E and the Massachusetts Contingency Plan (MCP). If site contamination is found over the course of the Project, the Proponent will notify MassDEP in accordance with the Massachusetts Contingency Plan (310 CMR 40.00).

6.10 Dewatering

Should dewatering be required, it will be conducted in accordance with Massachusetts Water Resources Authority (MWRA) Sewer Use Regulations at 360 C.M.R. §§ 10.007, 10.052, 10.072, and 10.092 as applicable.

7

Mitigation and Draft Section 61 Findings

This chapter includes a summary of proposed mitigation measures to avoid, minimize and mitigate environmental impacts and Draft Section 61 Findings for all State Permits and Agency Actions.

7.1 Proposed Mitigation

The Project will avoid, minimize or mitigate damage to the environment to the maximum extent practicable. The Proponent commits to the measures summarized in Table 7-1 below. Implementation is the responsibility of the Proponent except where otherwise noted.

Table 7-1 Summary of Mitigation Measures

Mitigation Measure	Timing/ Schedule	Related Permit
Environmental Justice		
Continue community outreach efforts as the Project progresses.	During Design	None
Continue to offer to provide language translation and interpretation services upon request.	During Design & Construction	None
Certify the Project under the PHIUS, Energy Star Multifamily new construction, Zero Energy Ready Homes, and Indoor airPLUS programs, and build to Enterprise Green Communities standards, thereby making it an energy efficient, health place for occupancy by EJ populations.	During Design & Construction	None
Wetland Resource Areas		
Decrease impervious cover within the Riverfront Area.	During Design	OOC
Employ LID and BMP techniques including porous pavers and water quality units.	During Design & Construction	OOC
Design and construct a stormwater management system that recharges groundwater, attenuates peak flows, and provides water quality treatment.	During Design	OOC
Waterways		
Place and maintain adequate signage at all entryways and at other appropriate locations on the Project Site to in compliance with 310 CMR 9.35(5).	During Construction	c.91 License
Meets all applicable engineering and construction standards consistent with the Massachusetts State Building Code as per 310 CMR 9.37.	During Construction	c.91 License

Mitigation Measure	Timing/ Schedule	Related Permit
Reserve a minimum of one square foot of the Project Site as open space for every square foot of tideland area within the building footprint.	During Design	c.91 License
Provide public pedestrian access in compliance with 310 CMR 9.52.	During Construction	c.91 License
Improve the quantity and quality of benefits to the public and will promote the public use and enjoyment of Commonwealth tidelands in compliance with 310 CMR 9.53.	During Construction	c.91 License
Water Use		
Specify low-flow plumbing fixtures.	During Design	None
Specify native and drought-tolerant plantings.	During Design	OOC
Utilize low-water irrigation systems.	During Design	None
Wastewater Generation		
Work with the City of Salem to identify and execute the required I/I mitigation strategies.	During Design	None
Transportation		
Provide four (4) EVSE (electric vehicle supply equipment) installed parking spaces.	During Construction	None
Construct designated covered bicycle storage for residents.	During Construction	None
Enhance overall connectivity and safety for pedestrians and bicyclists by upgrading all sidewalks adjacent to the Site and constructing a new ramp connecting Bridge Street and the MBTA driveways.	During Construction	None
GHG Emissions		
Select stationary source GHG reduction measures in accordance with PHIUS, Energy Star Multifamily new construction, Zero Energy Ready Homes, Indoor airPLUS and Enterprise Green Communities program standards.	During Design	None
Construction Period Impacts		
Develop and implement a Construction Management Plan.	During Construction	None
Comply with air quality regulations at 310 CMR 7.01, 7.09-7.10.	During Construction	None
Enforce Commonwealth of Massachusetts' anti-idling law.	During Construction	None
Comply with the requirements of the Clean Construction Equipment Initiative.	During Construction	None
Comply with any applicable local noise regulations.	During Construction	None
Implement erosion and sedimentation control measures in accordance with MassDEP's "Massachusetts Erosion and Sediment	During Construction	None

Mitigation Measure	Timing/ Schedule	Related Permit
Control Guidelines for Urban and Suburban Areas" and the Order of Conditions for DEP File No. 051-1065.		
Comply with construction schedule, working hours, number of construction workers, worker transportation and parking, number of construction vehicles, and routes identified in the CMP.	During Construction	None
Dispose of any solid waste generated on-site in accordance with federal, state, and city regulations.	During Construction	None
Handle and dispose of any asbestos containing materials in compliance with the MassDEP Asbestos Regulations (310 CMR 7.15).	During Construction	None
Conduct any excavation activities that exceed the volumes stated in 310 CMR 40.1067(4)(a), or in excess of 20 cubic yards of Remediation Waste, under a RAM Plan.	During Construction	None
Manage any contaminated soil or groundwater encountered during construction in accordance with M.G.L. c. 21E and the Massachusetts Contingency Plan (MCP).	During Construction	None
Conduct any necessary dewatering in accordance with MWRA Sewer Use Regulations at 360 C.M.R. §§ 10.007, 10.052, 10.072, and 10.092 as applicable.	During Construction	None

7.2 Draft Section 61 Findings

7.2.1 DEP Waterways

D R A F T O N L Y

Findings Pursuant to

MGL Chapter 30, Section 61

PROJECT NAME: The Exchange Salem

PROJECT LOCATION: 252 Bridge Street, Salem, MA

PROJECT PROPONENT: WinnDevelopment Company Limited Partnership (all permits to be assigned to a Special Purpose Entity to be established for the project)

EEA NUMBER: TBD

Project Description

The purpose of the Project is to deliver much needed transit-oriented, mixed-income rental housing that reflects the City's goals to create more affordable and workforce apartments in this area, enhances the public realm and strengthens the connection between North Salem and the city's core.

The Project has the following public benefits:

- Activates an underutilized and high-potential waterfront parcel,
- Constructs new mixed-income, high quality, sustainable multifamily residential units,
- Provides improved physical access to and views of the North River,
- Creates new publicly accessible amenities, including landscaped open spaces, at the Bridge Street and riverfront levels, and
- Adds street-level retail to generate foot traffic and enhance vibrancy.

Project Impacts

The Project will permanently impact approximately 82 sf of Riverfront Area (resulting in a decrease in impervious cover) and 3,544 square feet Land Subject to Coastal Storm Flowage. These areas overlap, are comprised entirely of fill, and were previously developed.

Mitigation

A suite of mitigation measures is proposed to prevent short- and long-term impacts to wetland resource areas including Project phasing and an erosion and sedimentation control program, which will include structural and non-structural practices such as erosion control barriers, catch basin inlet protection, temporary stabilization and seeding, and dust control. Native and drought-tolerant plantings will be specified to improve the condition of resource areas.

Section 61 Findings

The potential environmental impacts of the Project quantified in the Proposed EIR are incorporated by reference into this Section 61 Finding. Throughout the planning and environmental review processes the Proponent has developed measures to mitigate impacts of the Project. With the mitigation proposed and carried out in cooperation with state agencies, the Department of Environmental Protection finds that there are no significant unmitigated impacts.

For the reasons stated above, the Department of Environmental Protection hereby finds that pursuant to MGL c. 30, § 61, the construction of the Project as described above, and with the implementation by the Proponent of the noted mitigation measures, all practicable means and measures will be taken to avoid or minimize adverse environmental impacts related to the Project.

Agency: _____

Commissioner: _____

Date: _____

7.2.2 Massachusetts Bay Transportation Authority

D R A F T O N L Y

Findings Pursuant to

MGL Chapter 30, Section 61

PROJECT NAME: The Exchange Salem

PROJECT LOCATION: 252 Bridge Street, Salem, MA

PROJECT PROPONENT: WinnDevelopment Company Limited Partnership (all permits to be assigned to a Special Purpose Entity to be established for the project)

EEA NUMBER: TBD

Project Description

The purpose of the Project is to deliver much needed transit-oriented, mixed-income rental housing that reflects the City's goals to create more affordable and workforce apartments in this area, enhances the public realm and strengthens the connection between North Salem and the city's core.

The Project has the following public benefits:

- Activates an underutilized and high-potential waterfront parcel,
- Constructs new mixed-income, high quality, sustainable multifamily residential units,
- Provides improved physical access to and views of the North River,
- Creates new publicly accessible amenities, including landscaped open spaces, at the Bridge Street and riverfront levels, and
- Adds street-level retail to generate foot traffic and enhance vibrancy.

Project Impacts

The Project will impact land adjacent to Salem station. These include permanent impacts to approximately 82 sf of Riverfront Area (resulting in a decrease in impervious cover) and 3,544 square feet Land Subject to Coastal Storm Flowage. These areas overlap, are comprised entirely of fill, and were previously developed. The Project will also generate net new average daily vehicle trips, use water, generate wastewater, and emit greenhouse gases at levels that are not likely to cause damage to the environment.

Mitigation

A suite of mitigation measures is proposed to prevent short- and long-term impacts to wetland resource areas including Project phasing and an erosion and

sedimentation control program, which will include structural and non-structural practices such as erosion control barriers, catch basin inlet protection, temporary stabilization and seeding, and dust control. Native and drought-tolerant plantings will be specified to improve the condition of resource areas.

Measures to reduce GHG emissions will be selected in accordance with PHIUS, Energy Star Multifamily new construction, Zero Energy Ready Homes, Indoor airPLUS and Enterprise Green Communities program standards. The Project will provide four electric vehicle charging stations, designated covered bicycle storage for residents, and enhanced overall connectivity and safety for pedestrians and bicyclists.

Temporary impacts to MBTA facility operations will be reviewed and mitigated through the MBTA Capital Delivery Transit-Oriented Development Group's *Design/Construction Review for Projects within the MBTA's Zone of Influence*. This process will ensure that MBTA customer safety is not compromised; MBTA operations are not impacted during and after the proposed project construction; MBTA facilities and operations are not damaged or affected by the proposed project; and facilities being built for MBTA to own, operate and maintain, comply with MBTA Design Standards and applicable codes.

Section 61 Findings

The potential environmental impacts of the Project quantified in the Proposed EIR are incorporated by reference into this Section 61 Finding. Throughout the planning and environmental review processes the Proponent has developed measures to mitigate impacts of the Project. With the mitigation proposed and carried out in cooperation with state agencies, the MBTA finds that there are no significant unmitigated impacts.

For the reasons stated above, the MBTA hereby finds that pursuant to MGL c. 30, § 61, the construction of the Project as described above, and with the implementation by the Proponent of the noted mitigation measures, all practicable means and measures will be taken to avoid or minimize adverse environmental impacts related to the Project.

Agency: _____

Commissioner: _____

Date: _____

7.2.3 Department of Housing and Community Development

D R A F T O N L Y

Findings Pursuant to

MGL Chapter 30, Section 61

PROJECT NAME: The Exchange Salem

PROJECT LOCATION: 252 Bridge Street, Salem, MA

PROJECT PROPONENT: WinnDevelopment Company Limited Partnership (all permits to be assigned to a Special Purpose Entity to be established for the project)

EEA NUMBER: TBD

Project Description

The purpose of the Project is to deliver much needed transit-oriented, mixed-income rental housing that reflects the City's goals to create more affordable and workforce apartments in this area, enhances the public realm and strengthens the connection between North Salem and the city's core.

The Project has the following public benefits:

- Activates an underutilized and high-potential waterfront parcel,
- Constructs new mixed-income, high quality, sustainable multifamily residential units,
- Provides improved physical access to and views of the North River,
- Creates new publicly accessible amenities, including landscaped open spaces, at the Bridge Street and riverfront levels, and
- Adds street-level retail to generate foot traffic and enhance vibrancy.

Project Impacts

The Project will have permanent impacts to approximately 82 sf of Riverfront Area (resulting in a decrease in impervious cover) and 3,544 square feet Land Subject to Coastal Storm Flowage. These areas overlap, are comprised entirely of fill, and were previously developed. The Project will also generate net new average daily vehicle trips, use water, generate wastewater, and emit greenhouse gases at levels that are not likely to cause damage to the environment.

Mitigation

A suite of mitigation measures is proposed to prevent short- and long-term impacts to wetland resource areas including Project phasing and an erosion and sedimentation control program, which will include structural and non-structural practices such as erosion control barriers, catch basin inlet protection, temporary stabilization and seeding, and dust control. Native and drought-tolerant plantings will be specified to improve the condition of resource areas. Measures to reduce GHG emissions will be selected in accordance with PHIUS, Energy Star Multifamily new construction, Zero Energy Ready Homes, Indoor airPLUS and Enterprise Green Communities program standards. The Project will provide four electric vehicle charging stations, designated covered bicycle storage for residents, and enhanced overall connectivity and safety for pedestrians and bicyclists.

Section 61 Findings

The potential environmental impacts of the Project quantified in the Proposed EIR are incorporated by reference into this Section 61 Finding. Throughout the planning and environmental review processes the Proponent has developed measures to mitigate impacts of the Project. With the mitigation proposed and carried out in cooperation with state agencies, the Department of Housing and Community Development (DHCD) finds that there are no significant unmitigated impacts.

For the reasons stated above, the DHCD hereby finds that pursuant to MGL c. 30, § 61, the construction of the Project as described above, and with the implementation by the Proponent of the noted mitigation measures, all practicable means and measures will be taken to avoid or minimize adverse environmental impacts related to the Project.

Agency: _____

Commissioner: _____

Date: _____

8

Circulation List

The Proposed EIR has been circulated and distributed in accordance with 301 CMR 11.16 (3). It has also been distributed to community-based organizations (CBOs) and tribes based on recommendations from the "EJ Reference List" maintained by the EEA EJ Director and referenced in the MEPA EJ Public Involvement Protocol. In addition, this filing is available at the Salem Public Library and on the Project website at: https://www.livetheexchangesalem.com/

8.1 State and Regional Agencies and Officials

Secretary Beth Card
Executive Office of Energy and Environmental Affairs
Attn: MEPA Office
100 Cambridge Street, Suite 900
Boston, MA 02114
MEPA@mass.gov

Massachusetts Department of Transportation
Public/Private Development Unit
Attn: MEPA Coordinator
10 Park Plaza
Boston, MA 02116
MassDOTPPDU@dot.state.ma.us

Department of Environmental Protection
Attn: Commissioner's Office
One Winter Street
Boston, MA 02108
helena.boccadoro@mass.gov

Coastal Zone Management
Attn: Project Review Coordinator
251 Causeway Street, Suite 800
Boston, MA 02114
Robert.boeri@mass.gov
Patrice.bordonaro@mass.gov

DEP/Northeast Regional Office
Attn: John D. Viola
205B Lowell Street
Wilmington, MA 01887
john.d.viola@mass.gov

MassDOT District #4
Attn: MEPA Coordinator
519 Appleton Street
Arlington, MA 02476
Timothy.paris@dot.state.ma.us

DMF – North Shore
Attn: Environmental Reviewer
30 Emerson Avenue
Gloucester, MA 01930
Dmf.envreview-north@mass.gov

Merrimack Valley Planning Commission
160 Main Street
Haverhill, MA 01830
info@mvpc.org
nlavalle@mvpc.org

MEPA Office
Attn: EEA EJ Director
100 Cambridge Street, Suite 900
Boston, MA 02144
MEPA-EJ@mass.gov

Massachusetts Bay Transit Authority
Attn: MEPA Coordinator
10 Park Plaza, 6th Fl.
Boston, MA 02116-3966
MEPAcoordinator@mbta.com

Massachusetts Historical Commission
Attn: Brona Simon
The MA Archives Building
220 Morrissey Boulevard
Boston, MA 02125

Massachusetts Water Resource Authority
Attn: MEPA Coordinator
100 First Avenue
Charlestown Navy Yard
Boston, MA 02129
katherine.ronan@mwra.com

8.2 City Agencies and Officials

City of Salem Mayor's Office
Salem City Hall
93 Washington Street
Salem, MA 01970
mayor@salem.com

City of Salem Office of Planning and Development
98 Washington Street
2nd Floor
Salem, MA 01970

Salem Conservation Commission
City Hall Annex
98 Washington Street, 2nd Floor
Department of Planning & Community Development
Salem, MA 01970

City of Salem Health Department
98 Washington Street
3rd Floor
Salem, MA 01970

8.3 Libraries

Salem Public Library
370 Essex Street
Salem, MA 01970

8.4 Environmental Justice Community Based Organizations

First Name	Last Name	Title	Affiliation	Email
Massachusetts Environmental Organizations				
Julia	Blatt	Executive Director	Mass Rivers Alliance	juliablatt@massriversalliance.org
Andrea	Nyamekye	Associate Director	Neighbor to Neighbor	Andrea@n2nma.org elvis@n2nma.org
Ben	Hellerstein	MA State Director	Environment Massachusetts	ben@environmentmassachusetts.org

First Name	Last Name	Title	Affiliation	Email
Claire	B.W. Muller	Movement Building Director	Unitarian Universalist Mass Action Network	claire@uumassaction.org
Cindy	Luppi	New England Director	Clean Water Action	cluppi@cleanwater.org
Deb	Pasternak	Director, MA Chapter	Sierra Club MA	deb.pasternak@sierraclub.org
Heather	Clish	Director of Conservation & Recreation Policy	Appalachian Mountain Club	hclish@outdoors.org
Heidi	Ricci	Director of Policy	Mass Audubon	hricci@massaudubon.org
Kelly	Boling	MA & RI State Director	The Trust for Public Land	kelly.boling@tpl.org
Kerry	Bowie	Board President	Browning the GreenSpace	kerry@msaadapartners.com
Nancy	Goodman	Vice President for Policy	Environmental League of MA	ngoodman@environmentalleague.org
Rob	Moir	Executive Director	Ocean River Institute	rob@oceanriver.org
Robb	Johnson	Executive Director	Mass Land Trust Coalition	robb@massland.org
Sarah	Dooling	Executive Director	Mass Climate Action Network (MCAN)	sarah@massclimateaction.net
Staci	Rubin	Senior Attorney	Conservation Law Foundation	srubin@clf.org
Sylvia	Broude	Executive Director	Community Action Works	sylvia@communityactionworks.org
Winston	Vaughan	Director of Climate Solutions	Healthcare without Harm	wvaughan@hcwh.org
Indigenous Organizations				
Alma	Gordon	President	Chappaquiddick Tribe of the Wampanoag Nation	tribalcouncil@chappaquiddick-wampanoag.org
Cheryll	Toney Holley	Chair	Nipmuc Nation (Hassanamisco Nipmucs)	crwritings@aol.com
John	Peters, Jr.	Executive Director	Massachusetts Commission on Indian Affairs (MCIA)	john.peters@mass.gov
Kenneth	White	Council Chairman	Chaubunagungamaug Nipmuck Indian Council	acw1213@verizon.net
Melissa	Ferretti	Chair	Herring Pond Wampanoag Tribe	melissa@herringpondtribe.org
Patricia	D. Rocker	Council Chair	Chappaquiddick Tribe of the Wampanoag Nation, Whale Clan	rockerpatriciad@verizon.net
Raquel	Halsey	Executive Director	North American Indian Center of Boston	rhalsey@naicob.org
Cora	Pierce	Not Provided	Pocassett Wampanoag Tribe	Coradot@yahoo.com
Elizabth	Soloman	Not Provided	Massachusetts Tribe at Ponkapoag	Solomon.Elizabeth.e@gmail.om

First Name	Last Name	Title	Affiliation	Email
Federal Tribes				
Bettina	Washington	Tribal Historic Preservation Officer	Wampanoag Tribe of Gay Head (Aquinnah)	thpo@wampanoagtribe-nsn.gov
Bonney	Hartley	Historic Preservation Manager	Stockbridge-Munsee Tribe	bonney.hartley@mohican-nsn.gov
Brian	Weeden	Chair	Mashpee Wampanoag Tribe	Brian.Weeden@mwtribe-nsn.gov
Additional Organizations				
Tonthat	Flora	Chair	Bridge Street Neighborhood Association	bridgestneck@gmail.com
Kennedy	Katherine	Conservation Agent	Conservation Commission	kkennedy@salem.com
Femino	Bob	Co-Chair	Endicott Street Neighborhood Association	gesna.salem@gmail.com
Mann	Barbara	Co-Chair	Endicott Street Neighborhood Association	gesna.salem@gmail.com
Lindeman	Richard		Federal Street Neighborhood Association	federalstreetsalem@gmail.com
Riggin	Mira		Historic Derby Street Neighborhood Association	mriggin@leap4ed.org
Duran	Grace	President	Latino Leadership Coalition	llcsalem.president@gmail.com
Saris	Linda	Executive Director	LEAP for Education	lsaris@leap4ed.org
Evans	Christy		Mack Park Neighborhood Association	mackparkorg@gmail.com
Sterlin	Anne		North Fields Neighborhood Association	leafpeeper98@yahoo.com
Bowers	Natalie	President	North Shore Branch, NAACP	info@northshorenaacp.org
Meisenhelter	Laura	Executive Director	North Shore Community Action Programs	info@nscap.org
Northcutt	Mickey	Executive Director	North Shore Community Development Coalition	info@northshorecdc.org
Brennan	Margaret	President and CEO	North Shore Community Health // Salem Family Health Center	info@nschi.org
			North Shore Latino Business Association	nslatinobusinessasso@comcast.net
Corchado	Lucy	Chair	Point Neighborhood	lucycorchado@yahoo.com
Newton	Shawn	Chair	Race Equity Task Force	raceequity@salem.com
Caffrey	Allison	Executive Director	ROOTS	acaffrey@rootns.org
Gozemba	Pat	Co-chair	Salem Alliance for the Environment	pgozemba@gmail.com
Keegan	Cindy	Co-chair	Salem Alliance for the Environment	ckeegan@analogic.com

First Name	Last Name	Title	Affiliation	Email
Moroney	Dennis		Salem Common Neighborhood Association	events@salemcommon.org
Rolke	Janelle		Salem Recycles	jrolke@salem.com
Warren	Barbara	Executive Director	Salem Sound Coastwatch	barbara.warren@salemsound.org
Jerzylo	Cynthia	Chair	Salem Willows Neighborhood Group	cynthia.jerzylo@gmail.com
Hayes	John	Chair	Sustainability, Energy, and Resiliency Committee	jhayes@salem.com
Bisono	Esmeralda	Sustainability & Resiliency Manager	Sustainability, Energy, and Resiliency Committee	Ebisono@salem.com
Liberti	Pat		Ward 4/Gallows Hill Neighborhood Group	gallowshillwardfourgroup@yahoo.com
Riccardi	Megan	Ward 6 City Councilor	City of Salem	MRiccardi@Salem.com
Watson-Felt	Caroline	Ward 2 City Councilor	City of Salem	cwatsonfelt@salem.com

Appendix A

Environmental Justice Documentation

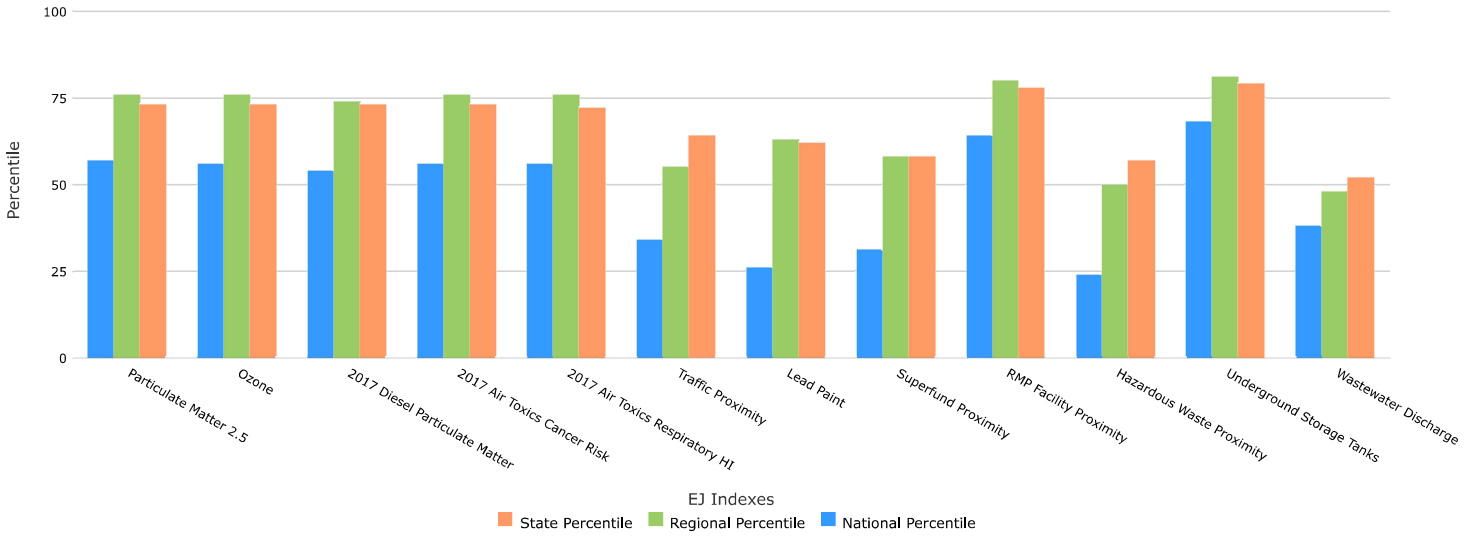
Save as PDF

EJScreen Report (Version 2.0)

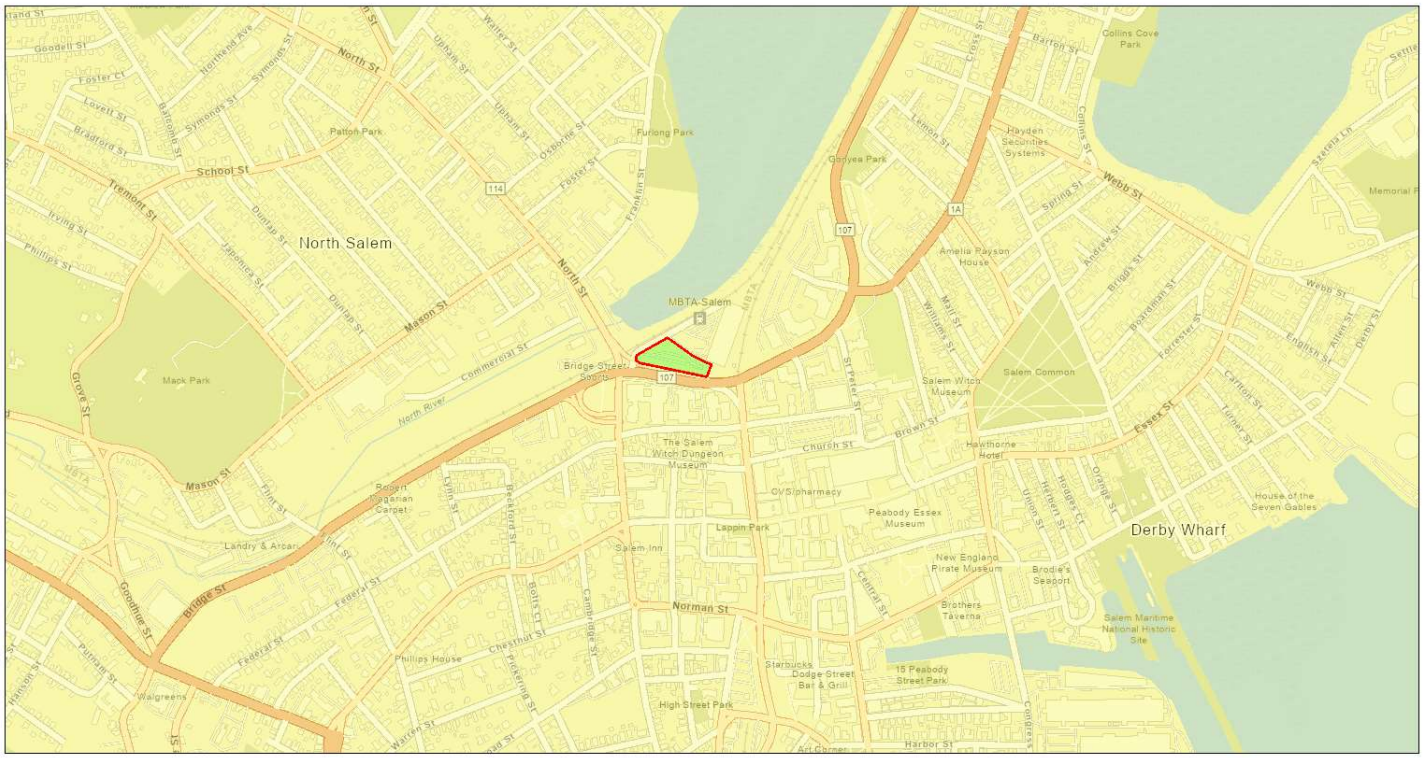
1 mile Ring around the Area
MASSACHUSETTS, EPA Region 1
Approximate Population: 26,684
Input Area (sq. miles): 3.35

Selected Variables	Percentile in State	Percentile in EPA Region	Percentile in USA
Environmental Justice Indexes			
EJ Index for Particulate Matter 2.5	73	76	57
EJ Index for Ozone	73	76	56
EJ Index for 2017 Diesel Particulate Matter*	73	74	54
EJ Index for 2017 Air Toxics Cancer Risk*	73	76	56
EJ Index for 2017 Air Toxics Respiratory HI*	72	76	56
EJ Index for Traffic Proximity	64	55	34
EJ Index for Lead Paint	62	63	26
EJ Index for Superfund Proximity	58	58	31
EJ Index for RMP Facility Proximity	78	80	64
EJ Index for Hazardous Waste Proximity	57	50	24
EJ Index for Underground Storage Tanks	79	81	68
EJ Index for Wastewater Discharge	52	48	38

EJ Index for the Selected Area Compared to All People's Blockgroups in the State/Region/US



This report shows the values for environmental and demographic indicators and EJScreen indexes. It shows environmental and demographic raw data (e.g., the estimated concentration of ozone in the air), and also shows what percentile each raw data value represents. These percentiles provide perspective on how the selected block group or buffer area compares to the entire state, EPA region, or nation. For example, if a given location is at the 95th percentile nationwide, this means that only 5 percent of the US population has a higher block group value than the average person in the location being analyzed. The years for which the data are available, and the methods used, vary across these indicators. Important caveats and uncertainties apply to this screening-level information, so it is essential to understand the limitations on appropriate interpretations and applications of these indicators. Please see EJScreen documentation for discussion of these issues before using reports.



August 17, 2022

Project 1

1:9,028

0 0.07 0.15 0.3 mi

0 0.13 0.25 0.5 km

Esri Community Maps Contributors, MassGIS, © OpenStreetMap, Microsoft, Esri, HERE, Garmin, SafeGraph, GeoTechnologies, Inc, METI/NASA, USGS, EPA, NPS, US Census Bureau, USDA

Sites reporting to EPA	
Superfund NPL	0
Hazardous Waste Treatment, Storage, and Disposal Facilities (TSDF)	2

Selected Variables	Value	State		EPA Region		USA	
		Avg.	%tile	Avg.	%tile	Avg.	%tile
Pollution and Sources							
Particulate Matter 2.5 ($\mu g/m^3$)	6.6	6.78	41	6.68	45	8.74	8
Ozone (ppb)	39.7	39.5	61	39.8	50	42.6	30
2017 Diesel Particulate Matter* ($\mu g/m^3$)	0.297	0.295	64	0.227	70-80th	0.295	60-70th
2017 Air Toxics Cancer Risk* (lifetime risk per million)	20	24	56	23	60-70th	29	<50th
2017 Air Toxics Respiratory HI*	0.3	0.3	81	0.28	90-95th	0.36	<50th
Traffic Proximity (daily traffic count/distance to road)	3200	2100	84	1300	90	710	95
Lead Paint (% Pre-1960 Housing)	0.77	0.49	80	0.44	86	0.28	91
Superfund Proximity (site count/km distance)	0.24	0.17	85	0.15	85	0.13	88
RMP Facility Proximity (facility count/km distance)	0.8	0.7	71	0.6	75	0.75	70
Hazardous Waste Proximity (facility count/km distance)	7	5.2	82	3.8	87	2.2	92
Underground Storage Tanks (count/km^2)	3.3	3.1	69	3	71	3.9	69
Wastewater Discharge (toxicity-weighted concentration/m distance)	0.00041	0.21	42	0.4	46	12	41
Socioeconomic Indicators							
Demographic Index	31%	25%	70	24%	74	36%	52
People of Color	30%	28%	63	25%	69	40%	47
Low Income	33%	22%	76	23%	74	31%	59
Unemployment Rate	4%	5%	55	5%	55	5%	51
Linguistically Isolated	7%	6%	72	5%	78	5%	76
Less Than High School Education	10%	9%	68	9%	69	12%	56
Under Age 5	5%	5%	57	5%	58	6%	46
Over Age 64	16%	16%	52	17%	47	16%	56

*Diesel particulate matter, air toxics cancer risk, and air toxics respiratory hazard index are from the EPA's 2017 Air Toxics Data Update, which is the Agency's ongoing, comprehensive evaluation of air toxics in the United States. This effort aims to prioritize air toxics, emission sources, and locations of interest for further study. It is important to remember that the air toxics data presented here provide broad estimates of health risks over geographic areas of the country, not definitive risks to specific individuals or locations. Cancer risks and hazard indices from the Air Toxics Data Update are reported to one significant figure and any additional significant figures here are due to rounding. More information on the Air Toxics Data Update can be found at: https://www.epa.gov/haps/air-toxics-data-update. (https://www.epa.gov/haps/air-toxics-data-update)

For additional information, see: www.epa.gov/environmentaljustice (https://www.epa.gov/environmentaljustice)

EJScreen is a screening tool for pre-decisional use only. It can help identify areas that may warrant additional consideration, analysis, or outreach. It does not provide a basis for decision-making, but it may help identify potential areas of EJ concern. Users should keep in mind that screening tools are subject to substantial uncertainty in their demographic and environmental data, particularly when looking at small geographic areas. Important caveats and uncertainties apply to this screening-level information, so it is essential to understand the limitations on appropriate interpretations and applications of these indicators. Please see EJScreen documentation for discussion of these issues before using reports. This screening tool does not provide data on every environmental impact and demographic factor that may be relevant to a particular location. EJScreen outputs should be supplemented with additional information and local knowledge before taking any action to address potential EJ concerns.

Appendix B

Climate Adaptation Documentation

RMAT Climate Resilience Design Standards Tool Project Report

Crescent Lot Salem
Date Created: 7/20/2022 11:31:10 AM Created By: skruel [Download]

Project Summary

Link to Project

Estimated Construction Cost: $6000000.00
End of Life Year: 2074
Project within mapped Environmental Justice neighborhood: No

Ecosystem Benefits	Scores
Project Score	Low
Exposure	**Scores**
Sea Level Rise/Storm Surge	Moderate Exposure
Extreme Precipitation - Urban Flooding	High Exposure
Extreme Precipitation - Riverine Flooding	High Exposure
Extreme Heat	High Exposure

Asset Summary

Number of Assets: 1

Asset Risk	Sea Level Rise/Storm Surge	Extreme Precipitation - Urban Flooding	Extreme Precipitation - Riverine Flooding	Extreme Heat
Residential Building	Moderate Risk	High Risk	High Risk	High Risk

Project Outputs

	Target Planning Horizon	Intermediate Planning Horizon	Percentile	Return Period	Tier
Sea Level Rise/Storm Surge					
Residential Building	2070	2050		50-yr (2%)	Tier 2
Extreme Precipitation					
Residential Building	2070			10-yr (10%)	Tier 2
Extreme Heat					
Residential Building	2070		50th		Tier 2

Scoring Rationale - Exposure

Sea Level Rise/Storm Surge

This project received a "Moderate Exposure" because of the following:

- Exposed to the 1% annual coastal flood event as early as 2030
- Located within the 0.1% annual coastal flood event within the project's useful life
- Not located within the predicted mean high water shoreline by 2030

Extreme Precipitation - Urban Flooding

This project received a "High Exposure" because of the following:

- Maximum annual daily rainfall exceeds 10 inches within the overall project's useful life
- Existing impervious area of the project site is greater than 50%
- No historic flooding at project site

- No increase to impervious area

Extreme Precipitation - Riverine Flooding

This project received a "High Exposure" because of the following:

- Part of the project is within a mapped FEMA floodplain, outside of the Massachusetts Coast Flood Risk Model (MC-FRM)
- No historic riverine flooding at project site
- Project is more than 500ft from a waterbody
- Project is not likely susceptible to riverine erosion

Extreme Heat

This project received a "High Exposure" because of the following:

- 30+ days increase in days over 90 deg. F within project's useful life
- Existing impervious area of the project site is greater than 50%
- Located within 100 ft of existing water body
- No increase to the impervious area of the project site
- No tree removal

Scoring Rationale - Asset Risk Scoring

Asset - Residential Building
Primary asset criticality factors influencing risk ratings for this asset:

- Asset may inaccessible/inoperable during natural hazard event, but must be accessible/operable within one day after natural hazard event
- Loss/inoperability of the asset would have impacts limited to the site only
- Inoperability of the asset would not be expected to result in injuries
- Cost to replace is less than $10 million
- There are no hazardous materials in the asset

Project Design Standards Output

Asset: Residential Building — Building/Facility

Sea Level Rise/Storm Surge — Moderate Risk

Target Planning Horizon: 2070
Intermediate Planning Horizon: 2050
Return Period: 50-yr (2%)

Applicable Design Criteria

Tiered Methodology: Tier 2

Projected Tidal Datums: Yes
Note: The site is exposed to Sea Level Rise/Storm Surge, but projected Tidal Datums are not available within the site. Additional site-specific analyses are recommended to identify projected Tidal Datums for the recommended planning horizon. Consult a professional coastal engineer or modeler to estimate projected Tidal Datums based on the recommended Standards and additional outputs provided through this Tool.

Limitations: Tidal datums are recommended based on the user drawn polygon, user responses to the useful life of the selected asset, and intersection of the project polygon with the mean high water (MHW) polygon for 2030. Tidal datum values provided are based on the MC-FRM, developed by Woods Hole Group in coordination with UMass Boston. For additional information on how these values were generated, review the link here. The values provided within should be used to inform design, but they do not provide guarantees for resilience. The guidance provided within is general and people are encouraged to do their own due diligence as part of planning and design.

Projected Water Surface Elevation: Yes

Asset Name	Recommmended Planning Horizon	Recommmended Return Period	Max	Min	Area Weighted Average
			(ft - NAVD88)		
Residential Building	2050	2% (50-Year)	11.5	11.5	11.5
	2070		13.3	13.3	13.3

Limitations: Projected water surface elevations are recommended based on the user drawn polygon, and user responses to the useful life of the selected asset. The projected water surface elevation values provided are based on the MC-FRM, developed by Woods Hole Group in coordination with UMass Boston. For additional information on how these values were generated, review the link here. The values provided within should be used to inform

design, but they do not provide guarantees for resilience. The guidance provided within is general and people are encouraged to do their own due diligence as part of planning and design.

Projected Wave Action Water Elevation: Yes

Asset Name	Recommmended Planning Horizon	Recommmended Return Period	Max	Min	Area Weighted Average
			(ft - NAVD88)		
Residential Building	2050	2% (50-Year)	13.4	11.5	12.5
	2070		15.2	13.3	14.4

Limitations: Projected dynamic flood elevations are recommended based on the user drawn polygon, and user responses to the useful life of the selected asset. The projected dynamic flood elevation values provided are based on the MC-FRM, developed by Woods Hole Group in coordination with UMass Boston. For additional information on how these values were generated, review the link here. The values provided within should be used to inform design, but they do not provide guarantees for resilience. The guidance provided within is general and people are encouraged to do their own due diligence as part of planning and design.

Projected Wave Heights: Yes

Asset Name	Recommmended Planning Horizon	Recommmended Return Period	Max	Min	Area Weighted Average
			(Feet)		
Residential Building	2050	2% (50-Year)	2.5	0	1.3
	2070		2.5	0	1.5

Limitations: Projected wave heights are recommended based on the user drawn polygon, and user responses to the useful life of the selected asset. The projected wave height values provided are based on the MC-FRM, developed by Woods Hole Group in coordination with UMass Boston. For additional information on how these values were generated, review the link here. The values provided within should be used to inform design, but they do not provide guarantees for resilience. The guidance provided within is general and people are encouraged to do their own due diligence as part of planning and design.

Projected Duration of Flooding: Yes
Projected Design Flood Velocity: Yes
Projected Scour & Erosion: No

Extreme Precipitation — High Risk

Target Planning Horizon: 2070
Return Period: 10-yr (10%)

Applicable Design Criteria

Tiered Methodology: Tier 2

Projected Total Precipitation Depth & Peak Intensity for 24-hr Design Storms: Yes

Asset Name	Recommended Planning Horizon	Recommended Return Period (Design Storm)	Projected 24-hr Total Precipitation Depth (inches)	Step-by-Step Methodology for Peak Intensity
Residential Building	2070	10-Year (10%)	6.8	Downloadable Methodology PDF

Limitations: While precipitation depth is useful for project planning and design, rainfall distribution and peak intensity of the design storm is recommended to also be considered. Lower-intensity, longer-duration storms allow time for infiltration and reduce the load on the infrastructure system over the duration of the storm. Higher-intensity, shorter-duration storms often have higher runoff volumes because the water does not have enough time to infiltrate and infrastructure systems (e.g., catch basins) and may overflow or back up during such storms. In the Northeast, short -duration high intensity rain events are becoming more frequent, and there is often little early warning for these events, making it difficult to plan operationally. These events can result in the rapid inundation of the asset project location. Design should consider both short- and long-duration precipitation events and how they may impact the asset.

The precipitation values provided by this Tool (version 1) are recommended to inform planning and design, but they do not guarantee that the asset will be protected from or be able to withstand an extreme precipitation event. The planning, design, and review guidance accompanying these values is general and projects are encouraged to do their own due diligence to understand the vulnerability of their asset.

Projected Riverine Peak Discharge & Peak Flood Elevation: Yes

Extreme Heat — High Risk

Target Planning Horizon: 2070
Percentile: 50th Percentile

Applicable Design Criteria

Tiered Methodology: Tier 2

Projected Annual/Summer/Winter Average Temperatures: Yes
Projected Heat Index: Yes
Projected Growing Degree Days: No
Projected Days Per Year With Max Temp > 95°F, >90°F, <32°F: Yes
Projected Number of Heat Waves Per Year & Average Heat Wave Duration: Yes

Projected Cooling Degree Days & Heating Degree Days (base = 65°F): Yes

Project Inputs

Core Project Information

Name:	Crescent Lot Salem
Given the expected useful life of the project, through what year do you estimate the project to last (i.e. before a major reconstruction/renovation)?	2074
Location of Project:	Salem
Estimated Capital Cost:	$6,000,000
Who is the Submitting Entity?	Private Other WinnProperties Stephanie Kruel (skruel@vhb.com)
Is this project being submitted as part of a state grant application?	No
Which grant program?	
What stage are you in your project lifecycle?	Design
Is climate resiliency a core objective of this project?	Yes
Is this project being submitted as part of the state capital planning process?	No
Is this project being submitted as part of a regulatory review process or permitting?	No
Brief Project Description:	New residential building on existing surface parking lot.
Project Submission Comments:	

Project Ecosystem Benefits

No Ecosystem Service Benefits are provided by this project

Factors to Improve Output

- ✓ Incorporate nature-based solutions that may provide flood protection
- ✓ Incorporate nature-based solutions that may reduce storm damage
- ✓ Protect public water supply by reducing the risk of contamination, pollution, and/or runoff of surface and groundwater sources used for human consumption
- ✓ Incorporate strategies that reduce carbon emissions
- ✓ Incorporate green infrastructure or nature-based solutions that recharge groundwater
- ✓ Incorporate green infrastructure to filter stormwater
- ✓ Incorporate nature-based solutions that improve water quality
- ✓ Incorporate nature-based solutions that sequester carbon carbon
- ✓ Increase biodiversity, protect critical habitat for species, manage invasive populations, and/or provide connectivity to other habitats
- ✓ Preserve, enhance, and/or restore coastal shellfish habitats
- ✓ Incorporate vegetation that provides pollinator habitat
- ✓ Identify opportunities to remediate existing sources of pollution
- ✓ Provide opportunities for passive and/or active recreation through open space
- ✓ Increase plants, trees, and/or other vegetation to provide oxygen production
- ✓ Mitigate atmospheric greenhouse gas concentrations and other toxic air pollutants through nature-based solutions
- ✓ Identify opportunities to prevent pollutants from impacting ecosystems
- ✓ Incorporate education and/or protect cultural resources as part of your project

Is the primary purpose of this project ecological restoration?

No

Project Benefits

Provides flood protection through nature-based solutions	No
Reduces storm damage	No
Recharges groundwater	No
Protects public water supply	No
Filters stormwater using green infrastructure	No
Improves water quality	No
Promotes decarbonization	No
Enables carbon sequestration	No
Provides oxygen production	No
Improves air quality	No
Prevents pollution	No
Remediates existing sources of pollution	No
Protects fisheries, wildlife, and plant habitat	No
Protects land containing shellfish	No
Provides pollinator habitat	No
Provides recreation	No
Provides cultural resources/education	No

Project Climate Exposure

Is the primary purpose of this project ecological restoration?	No
Does the project site have a history of coastal flooding?	No
Does the project site have a history of flooding during extreme precipitation events (unrelated to water/sewer damages)?	Unsure
Does the project site have a history of riverine flooding?	No
Does the project result in a net increase in impervious area of the site?	No

Are existing trees being removed as part of the proposed project?	No

Project Assets

Asset: Residential Building
Asset Type: Typically Occupied
Asset Sub-Type: Residential building - Private Housing
Construction Type: New Construction
Construction Year: 2024
Useful Life: 50

Identify the length of time the asset can be inaccessible/inoperable without significant consequences.
Building may be inaccessible/inoperable during natural hazard event, but must be accessible/operable within one day after natural hazard event

Identify the geographic area directly affected by permanent loss or significant inoperability of the building/facility.
Impacts limited to site only

Identify the population directly served that would be affected by the permanent loss of use or inoperability of the building/facility.
Less than 100 people

Identify if the building/facility provides services to populations that reside within Environmental Justice neighborhoods or climate vulnerable populations.
The building/facility does not provide services to populations that reside within Environmental Justice neighborhoods or climate vulnerable populations.

If the building/facility became inoperable for longer than acceptable in Question 1, how, if at all, would it be expected to impact people's health and safety?
Inoperability of the building/facility would not be expected to result in injuries

If there are hazardous materials in your building/facility, what are the extent of impacts related to spills/releases of these materials?
There are no hazardous materials in the building/facility

If the building/facility became inoperable for longer than acceptable in Question 1, what are the impacts on other facilities, assets, and/or infrastructure?
Minor – Inoperability will not likely affect other facilities, assets, or buildings

If this building/facility was damaged beyond repair, how much would it approximately cost to replace?
Less than $10 million

Is this a recreational facility which can be vacated during a natural hazard event?
No

If the building/facility became inoperable for longer than acceptable in Question 1, what are the public and/or social services impacts?
Many alternative programs and/or services are available to support the community

If the building/facility became inoperable for longer than acceptable in Question 1, what are the environmental impacts related to natural resources?
No impact on surrounding natural resources is expected

If the building/facility became inoperable for longer than acceptable in Question 1, what are the impacts to government services (i.e. the building is not able to serve or operate its intended users or function)?
Loss of building is not expected to reduce the ability to maintain government services.

If the building/facility became inoperable for longer than acceptable in Question 1, what are the impacts to loss of confidence in government (i.e. the building is not able to serve or operate its intended users or function)?
No Impact

Report Comments

N/A

Appendix C

Transportation Supporting Documentation

Memorandum

To: Ramie Schneider
Senior Project Director
WinnDevelopment Companies LLC
One Washington Mall, Suite 500
Boston, MA 02108

Date: May 3, 2022
Revised:
July 22, 2022

Project #: 15146.00

From: Vinod K. Kalikiri, PE, PTOE
Michael A. Santos, PE, PTOE

Re: Salem Crescent Lot
252 Bridge Street – Salem, MA
Transportation Evaluation

VHB has prepared this Transportation Evaluation (hereinafter referred to as "the Study") to summarize the transportation characteristics of Phase One of the proposed *Salem Courthouse and Crescent Lot Phase Planned Unit Development (PUD)* located between North Street, Bridge Street, and Salem Station (the "Project"). Phase One of the development plan is hereinafter referred to as the "Project" in the remainder of this document.

The Project site is bounded by Bridge Street on the south and by access driveways that serve the Massachusetts Bay Transportation Authority's (MBTA) Salem Commuter Rail station on the west, north, and east. The Project will consist of a six-story building with a total of 120 residential units in the upper five levels and commercial/amenity space on the first level. Surface parking will be provided for 60 residential spaces located at the MBTA driveway ground level in a surface parking lot underneath the first floor of the building. Four parking spaces will be designated for electric vehicles and will be equipped with charging stations. A designated bicycle storage room will be located within the garage for residents. Additional parking for residents will be provided off-site, through passes at the City-owned Museum Place garage, to provide a residential parking ratio of 1.0 space per unit. In addition to the residential units on the upper floors, 8,710± square feet (sf) of commercial and amenity space will also be located on the first level of the building and will have primary pedestrian access off the Bridge Street ramp to North Street. Structured parking will be provided on the ground level (MBTA driveway level). Vehicular access to the resident parking garage on the Site will be provided along the eastern side of the MBTA driveway that is accessed via Bridge Street. A dedicated residential loading and trash/recycling area will also be provided off the east side of the MBTA driveway.

The Project is a transit-oriented development ideally situated adjacent to the Salem Commuter Rail Station in Downtown Salem, which provides access to the Newbury/Rockport Commuter Rail line and several MBTA bus routes. The location of the Project will promote non-vehicular trips for both residents and patrons of the Site. The Project is well served by pedestrian and bicycle facilities that will provide future residents and patrons with connectivity to Downtown Salem, recreational trails, and bicycle lanes.

The Project proposes to upgrade all sidewalks adjacent to the Site including constructing a new 5.5-foot-wide sidewalk and landscape area along the Project's Bridge Street frontage to provide a vibrant gathering plaza for pedestrians. New sidewalks will be constructed along the MBTA driveways that are adjacent to the Project Site. A new 150-foot-long loading zone will be constructed along Bridge Street to accommodate deliveries and pick-up/drop-off operations for the Project. The loading zone will modify the existing curb line to narrow the width of the pavement on the ramp and will require adjustments to the pavement markings and signage along the Bridge Street ramp.

The Project will also include a new ramp on the north side of the Project that will create a pedestrian and bicycle connection between Bridge Street and the MBTA driveways. This new connection will enhance the overall connectivity

for pedestrians and bicyclists and will provide the surrounding area with safer access between Downtown Salem and the Commuter Rail Station.

The Project is expected to generate approximately 550 unadjusted trips on an average weekday, 42 unadjusted trips (10 entering and 32 exiting) during the weekday morning peak hour and 48 unadjusted trips (29 entering and 19 exiting) during the weekday evening peak hour. Due to the location of the Site and the limited amount of Parking on the Site, it is expected that many of the Project-generated trips will occur by non-vehicular modes, especially through transit usage and walking/bicycling. In addition, the existing 70-space public parking lot will be removed as part of the Project, further reducing the Project's vehicular impacts on the surrounding transportation network.

This Study presents an evaluation of the existing transportation network that serves the site, the expected trip generation and travel mode shares for the Project, and a presentation of the proposed site access, parking supply, vehicular circulation, and multi-modal connections to the existing transportation network.

Existing Conditions

The Project site is located within the existing "Crescent Lot" that is adjacent to the Salem Commuter Rail Station and Bridge Street in proximity to Downtown Salem. The location of the Site is shown in Figure 1. The existing Site contains approximately 70 surface parking spaces and is primarily used for daily public parking to serve commuters and employees that work in Downtown Salem. An inventory of the existing transportation infrastructure surrounding the Site was conducted through field visits, aerial imagery, and record data. The following describes the existing transportation characteristics of the facilities that serve the Project Site.

Roadway Characteristics

Bridge Street

The portion of Bridge Street adjacent to the Project Site is a principal arterial roadway under the City of Salem's jurisdiction. Bridge Street is designated as Massachusetts State Route 107 in the vicinity of the Site and provides connections to Boston Street and Highland Avenue to the south and west and to the Essex Bridge and the City of Beverly to the north. Bridge Street intersects Washington Street immediately east of the Site and the intersection is operated with a traffic signal. This intersection provides primary pedestrian routes between the Site and destinations throughout Downtown Salem. Bridge Street consists of a single lane in each direction west of the intersection with Washington Street and consists of two lanes in each direction with additional turn lanes east of Washington Street. The portion of Bridge Street that is adjacent to the site operates as a one-way, single-lane ramp that serves the westbound movements along Bridge Street destined

Bridge Street Ramp to North Street Looking East along Site Frontage

Memorandum

to North Street northbound. The ramp diverges from the mainline of Bridge Street approximately 175 west of the intersection with Washington Street and is approximately 28 feet wide between the two curb lines. However, existing gore pavement markings along the south side reduce the effective width of the travel lane to approximately 16 feet in width. The estimated average annual daily traffic (AADT) volumes along the ramp are approximately 12,450 vehicles per day (vpd) and the estimated AADT volumes along the Bridge Street mainline in the vicinity of the Site are approximately 27,310 vpd[1]. Sidewalks are generally provided along both sides of Bridge Street. However, a sidewalk is not provided along the south side of the ramp to North Street and a usable sidewalk is not provided along the north side of Bridge Street adjacent to the ramp.

MBTA Driveway

The Salem Commuter Rail Station driveway serves the existing Crescent Lot on the site and will continue to serve the ground level of the Project Site including the structured parking garage on the Site. The MBTA driveway intersects Bridge Street from the north immediately east of the North Street overpass. The intersection of Bridge Street at the MBTA driveway operates under traffic signal control and has full accommodations for pedestrians including crosswalks, sidewalks, and push buttons. The MBTA driveway serves the pick-up/drop-off area for the Commuter Rail station, the existing MBTA bus depot, and as the primary access for the structured MBTA parking garage. The MBTA driveway consists of a single travel lane in each direction with marked bicycle lanes provided in both directions. A sidewalk is provided along the north side of the MBTA driveway, providing pedestrian connectivity to the surrounding pedestrian network and to nearby recreational opportunities and local parkland.

MBTA Driveway Looking Northeast Along Site Frontage

Public Transportation

The Project is located adjacent to the Salem Commuter Rail Station that serves the Newbury/Rockport Commuter Rail line and several MBTA bus routes. The following sections describe the existing public transportation facilities that operate near the Site. The detailed route schedules and maps are provided in the Appendix.

[1] Traffic volumes are estimated for 2020 and were obtained from the MassDOT Road Inventory website.

Commuter Rail

The Newburyport/Rockport Commuter Rail line offers transit services to North Station in the City of Boston and many other communities throughout the North Shore. The Newburyport/Rockport line provides weekday service with approximately 30-minute headways in the inbound direction (toward Boston) during the morning commuter period and the outbound direction (toward Newburyport/Rockport) during the weekday evening commuter period. The Commuter Rail runs at headways of approximately 30 to 60 minutes during the off-peak periods. Service is currently provided at the Salem Commuter Rail Station between 5:19 AM and 11:31 PM on weekdays. Service is also provided on Saturdays and Sundays between 5:41 AM and 11:30 PM with 60-minute headways in both the inbound and outbound directions.

MBTA Bus Routes

Five MBTA bus routes travel through the bus depot at the Salem Commuter Rail Station. Salem Station serves as one terminus for all five MBTA bus routes. The following describes the bus routes that serve the Salem Commuter Rail Station and the Project Site.

- **Route 435** runs between Salem Depot and Central Square in Lynn, with stops at the Liberty Tree Mall in Danvers and North Shore Mall in Peabody. The route operates on weekdays between 6:00 AM and 11:50 PM with headways of approximately 50 to 60 minutes. The route operates on Saturdays between 6:20 AM and 11:56 PM with headways of approximately 45 to 55 minutes.
- **Route 450** runs between Salem Depot and Haymarket Station in Boston and Wonderland Station in Revere with connections to the Orange Line, Blue Line, and the D and E branches of the Green Line. The route operates on weekdays between 4:36 AM and 1:30 AM with headways of approximately 30 minutes throughout most of the day. The route operates on Saturdays between 6:00 AM and 12:50 AM with headways of approximately an hour and on Sundays between 7:45 AM and 12:05 AM with headways of approximately an hour.
- **Route 451** runs between Salem Depot and North Beverly, with a stop at the Cummings Center office and commercial area in Beverly. The route operates on weekdays only between 5:55 AM and 7:54 PM and is primarily used during the peak commuter periods with headways of approximately 80 to 90 minutes.
- **Route 455** runs between Salem Depot and Wonderland Station in Revere with stops at Vinnin Square in Swampscott and Central Square in Lynn and a connection to the Blue Line. The route operates on weekdays between 4:45 AM and 1:02 AM with headways of approximately 20 to 60 minutes. The route operates on Saturdays between 5:15 AM and 12:25 AM with headways of approximately 30 to 60 minutes and on Sundays between 5:33 AM to 12:18 AM with headways of approximately 60 to 70 minutes.
- **Route 456** runs between Salem Depot and Central Square in Lynn. The route operates only on weekdays between 9:55 AM and 4:24 PM with headways of approximately 75 minutes.

Trip Generation

Trip rates published in the Institute of Transportation Engineers (ITE) Trip Generation Manual[2] were used to estimate the expected trip generation characteristics of the Project. Based on available ITE Land Use Codes (LUCs) and an

[2] Institute of Transportation Engineers. Trip Generation Manual, 11th ed. Washington, DC, 2017.

Memorandum

understanding of the proposed usage of the Project, it was determined that ITE LUC 225 – Multifamily Housing (Mid-Rise) is an appropriate land use to estimate Project-generated trips. The 8,710 sf of commercial and amenity space to be located on the second level of the building was assumed to be ancillary to the residential uses, as well as a pedestrian amenity similar to most other downtown Salem businesses. Therefore, it is not expected that these uses will generate significant vehicular activity in the form of Primary/Destination oriented trips. Parking will not be provided on the Site for the commercial uses of the Project.

The trip-generation summary is presented in Table 2 and the corresponding calculations are provided in the Appendix. Based on the ITE trip generation guidelines for LUC 225, the Project is expected to generate 550 unadjusted trips over the course of an average weekday, with 42 unadjusted trips (10 entering and 32 exiting) during the weekday morning peak hour and 48 unadjusted trips (29 entering and 19 exiting) during the weekday evening peak hour.

Table 2 Trip Generation Summary (Unadjusted)

Time Period/Direction	Estimated Trips [a]
Weekday Daily	***550***
Weekday Morning Peak Hour	
Enter	10
Exit	32
Total	*42*
Weekday Evening Peak Hour	
Enter	29
Exit	19
Total	*48*

a Based on ITE LUC 225 - Multifamily Housing (Mid-Rise) for 120 units, unadjusted for mode of travel, constrained dedicated parking or to account for the replacement of 70 existing spaces with only 55 proposed spaces in the same location

The Site currently supports an existing 70-space public parking lot, which generates vehicular activity. The trips associated with the existing parking lot on the site will be removed as part of the Project. The removal of the existing public parking facility will reduce the Project's expected impacts on the immediate surrounding transportation network.

Mode Share

Due to the location of the Project, many of the trips are expected to be made by modes of transportation other than personal vehicles. As discussed earlier, the Project has convenient access to various multi-modal transportation facilities and within walking distance of Downtown Salem and will be promoted as a transit-oriented development. As such, it is expected that a portion of the trips generated by the Project will occur by modes other than motor vehicle.

A review of data provided by the United States Census Bureau indicates that approximately 67 percent of commuting trips within the census tracts that surround the site[3] are made by vehicle, with the remainder split between walking, transit, and other forms of transportation. Transit trips account for approximately 9 percent and walk/bicycle trips account for 11 percent of commuting trips within the census tracts evaluated in this study.

Due to the location and the way the Project will be marketed toward prospective tenants, the specific mode shares for the Project are expected to trend more heavily toward non-vehicular modes when compared to the nearby Census Tracts. Detailed information related to the mode share data is provided in the Appendix.

Site Access

The proposed Site Access and Circulation Plan is shown in Figures 2 and 3. Vehicular access to the 60-space parking garage and the ground level of the Site is provided via the MBTA driveway that intersects with Bridge Street. The Project will include a new curb cut along the east side of the MBTA driveway that will serve a full-access and egress driveway for the structured parking garage. Residential loading and trash and recycling operations will occur at the rear of the building along the MBTA driveway during off-peak hours to minimize the impacts to commuter traffic related to the MBTA parking garage.

The Project is also proposing to construct a new 150-foot-long short-term loading zone for deliveries and pick-up/drop-off operations along the Site's frontage on Bridge Street. The loading zone will require a modification to the existing curb line along the ramp from Bridge Street to North Street and will reduce the curb-to-curb width along a portion of the ramp. While specific regulations for the loading zone have not been determined, the Proponent expects that it will be signed for live parking only for passenger car pick-up/drop-off to prevent its use for extended parking, and a portion of the drop-off will be designated for commercial vehicle loading/unloading during specified hours. The details of the sign content and associated regulation will be developed in consultation with City staff. Associated with these changes related to the curbside usage, the ramp from Bridge Street to North Street will also require some modifications to the existing pavement markings and signage to provide appropriate travel lane widths.

Primary pedestrian access to the Project Site will be provided from the outdoor plaza. A pedestrian connection will be provided between the outdoor plaza space and the sidewalk in the eastern part of the site. The plaza entrances will serve the main lobby of the residential portion of the site and the commercial uses along the street frontage. The sidewalk along Bridge Street will be reconstructed and will be approximately 5.5-feet in width, with a landscaped area to provide a buffer between the sidewalk and Bridge Street. The sidewalk will connect to a proposed outdoor pedestrian plaza on the site that will promote and enhance pedestrian activity to complement both the Site and the adjacent Commuter Rail Station. Secondary pedestrian access will be provided at the ground level and will be accessed from the MBTA driveway in several locations. The sidewalks adjacent to the site along the MBTA driveway will also be upgraded as part of the Project. The Project will construct a new ramp in the northern portion of the Site that will allow both pedestrians and bicyclists to travel directly from the Bridge Street sidewalk to the lower level MBTA driveway. A new stairway feature will be constructed in the western portion of the site that will provide pedestrian access from the ground level along the MBTA driveway to the pedestrian plaza at the rear of the site, with a connection to the new ramp.

[3] Source: American Community Survey, US Census Bureau - Census Tracts 2042, 2043, 2045, and 2046

Memorandum

Project Summary

The Project will consist of 120 residential units, 8,710± sf of commercial and amenity space, and 60 residential parking spaces in a six-story building. The parking will be located at the ground level, the commercial and amenity space will be on the first level, and the residential units will be in the upper five levels of the building. Additional parking for residents will be provided off-site, through passes at the City owned Museum Place garage, to provide a residential parking ratio of 1.0 space per unit. The Project site will remove the existing 70-space public parking lot, which will reduce the Project's overall impacts to the immediate surrounding transportation network.

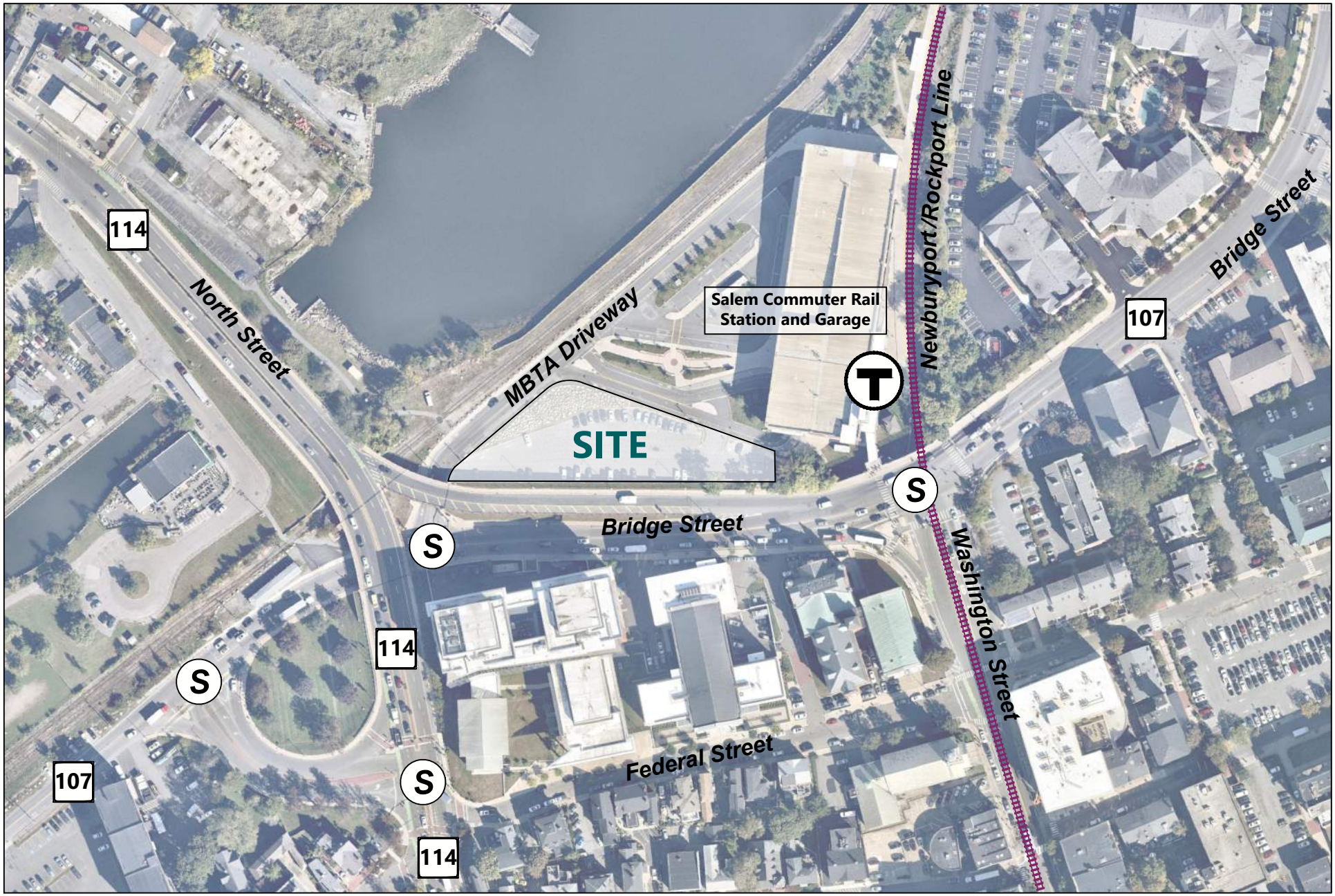
The expected trip generation characteristics for the Project were estimated using data provided in ITE's *Trip Generation Manual* using ITE LUC 225 – Multifamily Housing (Mid-Rise). Based on this data, the Project is expected to generate approximately 550 unadjusted trips on an average weekday, 42 unadjusted trips (10 entering and 32 exiting) during the weekday morning peak hour and 48 unadjusted trips (29 entering and 19 exiting) during the weekday evening peak hour. Due to the location of the Site and the limited amount of Parking on the Site, it is expected that many of the Project-generated trips will occur by non-vehicular modes, especially through transit usage and walking/bicycling. In addition, the existing 70-space public parking lot will be removed as part of the Project, further reducing the Project's vehicular impacts on the surrounding transportation network.

The Project is a transit-oriented development located adjacent to the Salem Commuter Rail Station, which serves the Newburyport/Rockport line of the Commuter Rail and five MBTA bus routes. Based on a review of US Census Data, it is expected that a portion of the expected trip generation will occur by non-vehicular modes. Approximately 67 percent of existing commuting trips in the Census Tracts surrounding the Site occur by personal vehicle, with 9 percent by transit, and 11 percent through walking or bicycling. The Project will be marketed as a transit-oriented development and will take advantage of the convenient access to the various public transportation facilities, the walkability of Downtown Salem, and connections to existing and future bicycle infrastructure.

The Project will include the following transportation-related features that will enhance and promote non-vehicular travel:

- Existing sidewalks along Bridge Street will be upgraded and new sidewalks will be constructed along the MBTA driveways adjacent to the Site
- The street level commercial and amenity space will be complemented by a generous plaza area and accompanying landscape/hardscape improvements to promote a vibrant gathering area for the Site and the adjacent MBTA Commuter Rail Station.
- A new ramp will be constructed along the northern edge of the site that will allow pedestrians and bicyclists to travel directly from the Bridge Street sidewalk to the lower level MBTA driveway. This upgrade will significantly upgrade the pedestrian connectivity between Downtown Salem and the MBTA Commuter Rail Station.
- Secure bicycle parking will be provided on the Site for residents of the Project.
- Minimal new parking is proposed as part of the Project to reduce vehicle usage and to promote walk, bicycle, and transit usage.
- Four electric vehicle parking spaces will be provided on the Site.

Overall, this Study indicates that the location of the Project and the proposed multimodal enhancements will result in a development that promotes non-vehicular travel such as transit, walking, and bicycling and that the Project will have minimal impacts to the surrounding transportation system.

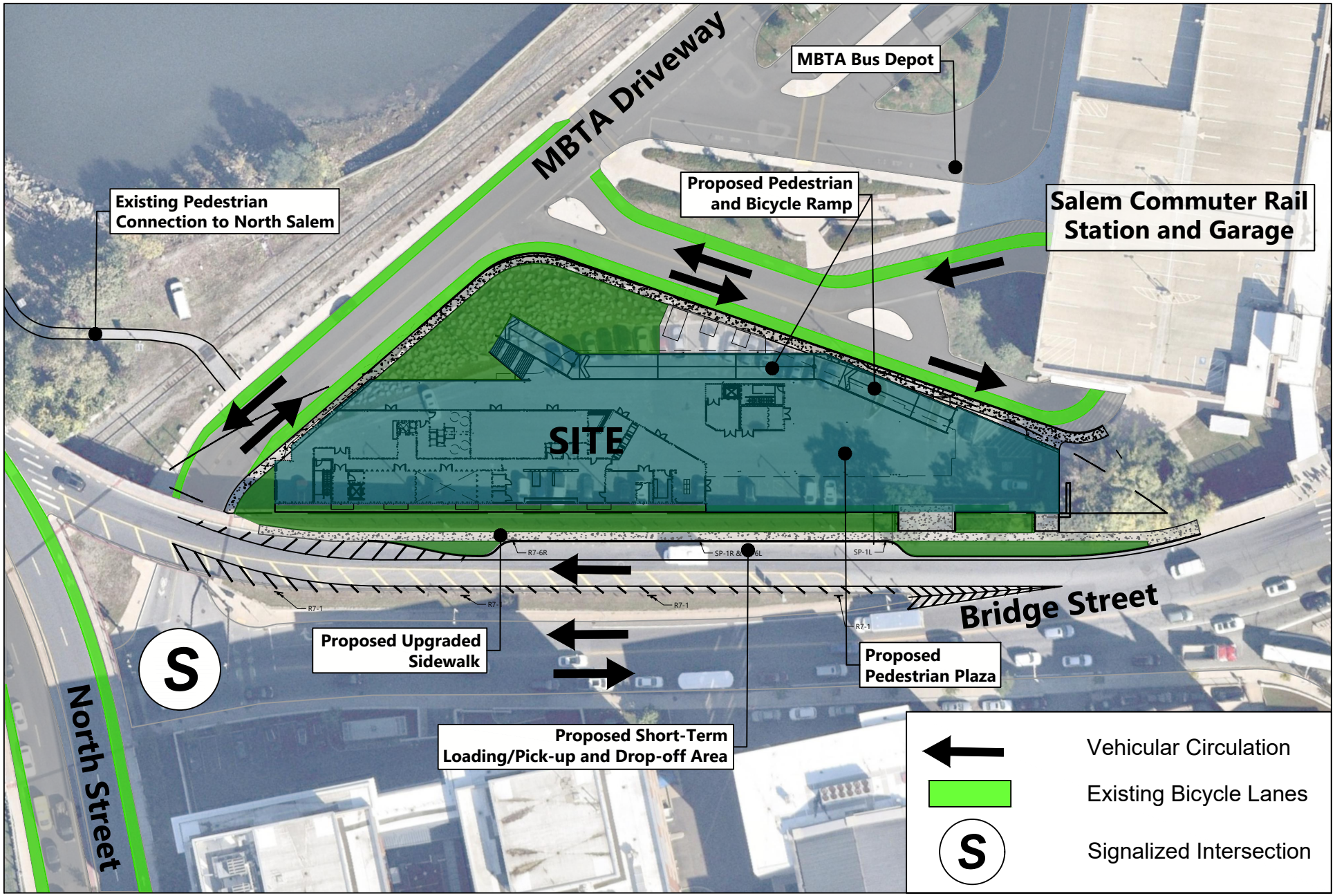


Site Location Map

Figure 1

Not to Scale

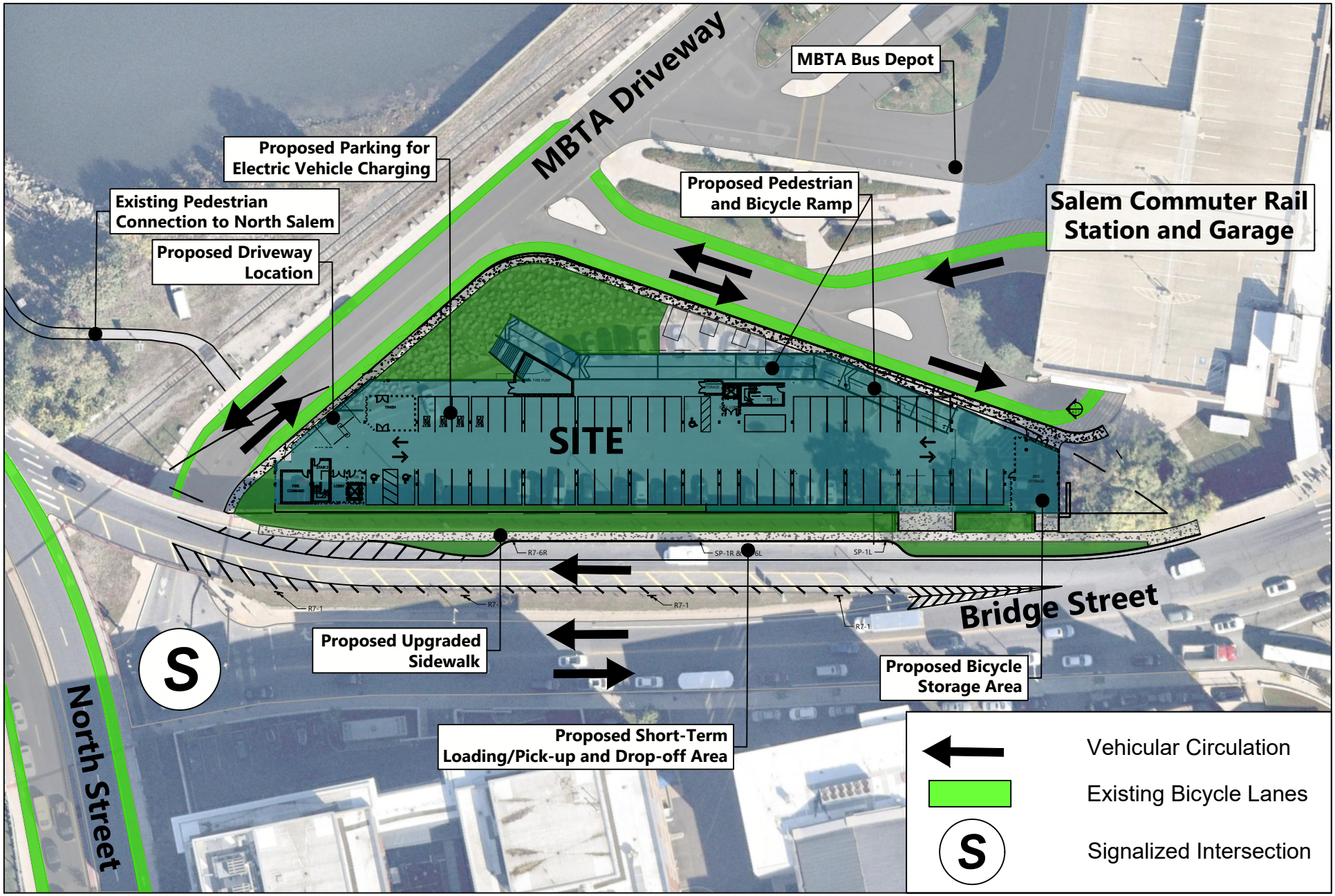
Transportation Evaluation
Salem, Massachusetts



Not to Scale

Site Access Plan
Bridge Street Level
Transportation Evaluation
Salem, Massachusetts

Figure 2



Not to Scale

Site Access Plan
MBTA Driveway Level
Transportation Evaluation
Salem, Massachusetts

Figure 3

Appendix

- Public Transportation Information
- Trip Generation Calculations
- Mode Share Data

Public Transportation Information

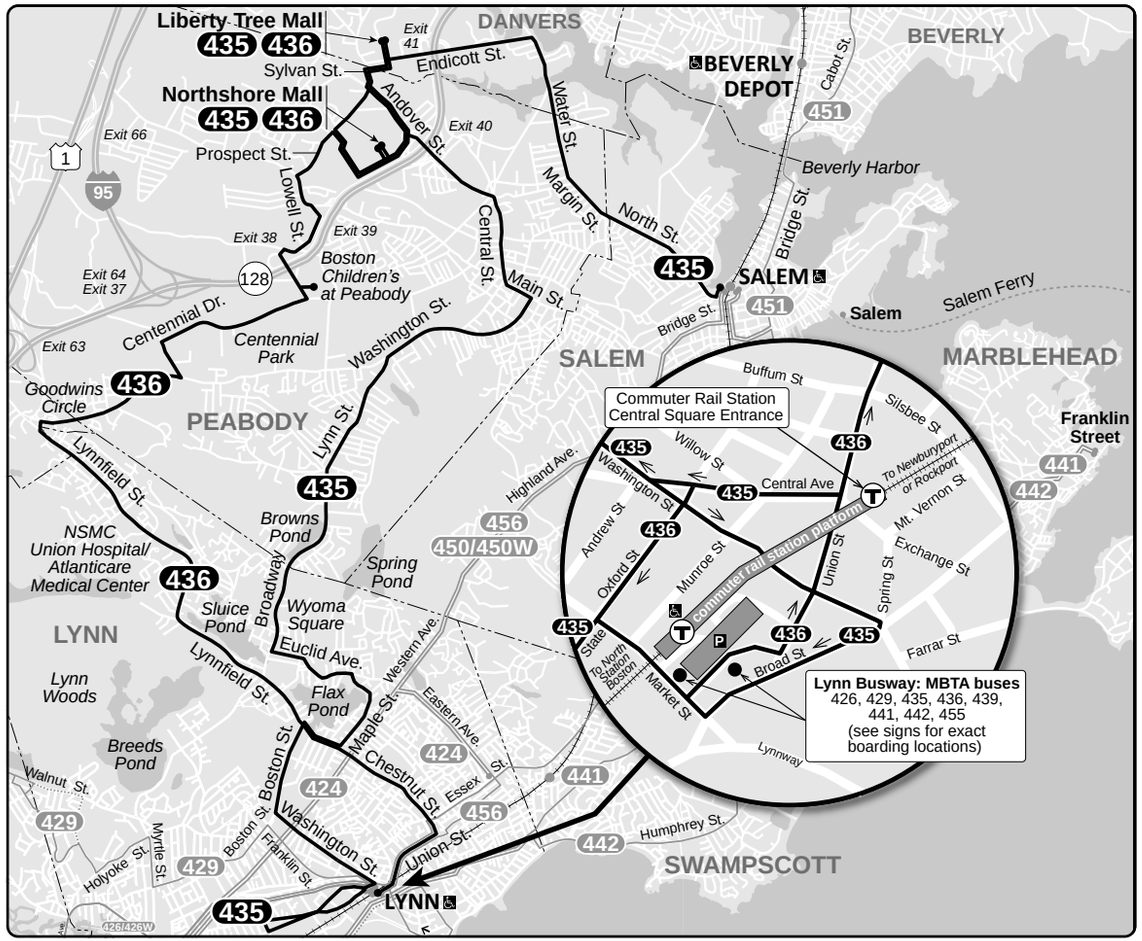
Sunday 435

Inbound

Liberty Tree Mall	North Shore Mall	Central Sq, Lynn	Neptune Towers
11:10	11:20	11:52	11:59
1:30	**1:40**	**2:14**	**2:21**
3:55	**4:07**	**4:46**	**4:53**
6:20	**6:32**	**7:11**	**-**
7:05	**7:16**	**7:53**	**-**
8:00	**8:11**	**8:48**	**-**

Outbound

Neptune Towers	Central Sq, Lynn	North Shore Mall	Liberty Tree Mall
-	9:30	10:02	10:16
10:07	10:12	10:44	10:55
12:20	**12:25**	**12:59**	**1:14**
2:45	**2:49**	**3:22**	**3:37**
5:05	**5:09**	**5:43**	**5:58**
-	**6:10**	**6:44**	**7:00**



- Transfer to bus/subway available on CharlieCard—good for 2 hours, pay fare difference.
- Children 11 & under ride free with a paying customer.

All MBTA buses are accessible to people with disabilities.

	CharlieCard	Cash on board	Reduced fare
Bus	**$1.70**	**$1.70**	**$0.85**
Bus + Subway	**$2.40**	**$4.10**	**$1.10**

Complete fare/pass rules and free/reduced fare eligibility:
mbta.com/fares or call **617-222-3200**

E□ective **March 13, 2022**

435 Salme Depot – Central Sq, Lynn or Neptune Tws

436 Liberty Tree Mall – Central Sq, Lynn

Connections

NEWBURYPORT/ROCKPORT LINE

Information **617-222-3200**
Lost and Found **617-222-5263**
TTY **617-222-5146**

Realtime arrival information, maps, and more
mbta.com

A129-4-22.0

Weekday 435 436

Inbound

	Salem Depot	Liberty Tree Mall	North Shore Mall	Main Street, Peabody	Centennial Park	Goodwins Circle	Central Sq, Lynn	Neptune Towers
A	-	-	-	-	-	6:40	7:03	7:17
	6:30	6:43	6:52	6:57	-	-	7:30	7:41
A	-	-	6:54	-	7:06	7:14	7:40	-
A	-	-	7:11	-	7:23	7:31	7:57	-
	7:30	7:43	7:52	7:57	-	-	8:30	8:41
A	-	-	7:55	-	8:07	8:14	8:38	-
	8:25	8:38	8:47	8:52	-	-	9:24	9:35
A	-	-	8:45	-	8:57	9:03	9:25	-
	9:20	9:33	9:42	9:47	-	-	10:18	10:29
A	-	9:49	9:55	-	10:08	10:14	10:37	-
	10:15	10:28	10:38	10:44	-	-	11:15	11:26
A	-	10:35	10:41	-	10:54	11:00	11:23	-
	11:10	11:23	11:33	11:39	-	-	**12:11**	**12:22**
A	-	11:55	**12:01**	-	**12:14**	**12:20**	**12:45**	-
	12:05	**12:18**	**12:29**	**12:36**	-	-	**1:08**	**1:19**
A	-	**12:40**	**12:46**	-	**12:59**	**1:05**	**1:30**	-
	1:00	**1:13**	**1:24**	**1:31**	-	-	**2:03**	**2:14**
T	-	-	-	-	-	-	**2:46**	-
A	-	**1:53**	**2:00**	-	**2:15**	**2:22**	**2:53**	-
	1:55	**2:08**	**2:19**	**2:26**	-	-	**3:00**	**3:11**
S	-	-	-	-	-	-	**3:04**	-
A	-	**2:47**	**2:57**	-	**3:12**	**3:19**	**3:50**	-
	2:50	**3:03**	**3:15**	**3:23**	-	-	**4:06**	**4:17**
	3:55	**4:08**	**4:20**	**4:28**	-	-	**5:12**	-
A	-	**4:23**	**4:33**	-	**4:48**	**4:55**	**5:27**	-
A	-	**5:05**	**5:15**	-	**5:30**	**5:38**	**6:08**	-
	5:00	**5:13**	**5:25**	**5:33**	-	-	**6:17**	-
A	-	**5:55**	**6:03**	-	**6:16**	**6:22**	**6:43**	-
	6:00	**6:13**	**6:25**	**6:33**	-	-	**7:07**	-
A	-	**6:40**	**6:46**	-	**6:59**	**7:05**	**7:26**	-
	6:50	**7:03**	**7:13**	**7:20**	-	-	**7:54**	-
	7:40	**7:53**	**8:03**	**8:08**	-	-	**8:35**	-
	8:30	**8:43**	**8:53**	**8:58**	-	-	**9:25**	-
	9:20	**9:33**	**9:43**	**9:48**	-	-	**10:12**	-
	10:10	**10:23**	**10:32**	**10:36**	-	-	**11:00**	-
	11:00	**11:13**	**11:22**	**11:26**	-	-	**11:50**	-

Outbound

	Neptune Towers	Central Sq, Lynn	Goodwins Circle	Centennial Park	Main Street, Peabody	North Shore Mall	Liberty Tree Mall	Salem Depot
	6:00	6:05	-	-	6:27	6:43	6:57	7:10
A	-	6:07	6:25	6:32	-	6:44	-	-
A	-	6:25	6:43	6:50	-	7:03	-	-
	6:50	6:55	-	-	7:26	7:42	7:56	8:09
A	-	7:00	7:27	7:33	-	7:47	-	-
A	-	7:50	8:17	8:23	-	8:37	-	-
	7:50	7:55	-	-	8:23	8:39	8:53	9:06
A	-	8:40	8:59	9:05	-	9:18	9:26	-
	8:50	8:55	-	-	9:19	9:31	9:44	9:57
A	-	9:35	9:54	10:00	-	10:13	10:22	-
	9:50	9:54	-	-	10:16	10:28	10:41	10:54
	10:40	10:44	-	-	11:06	11:18	11:31	11:44
A	-	11:00	11:19	11:25	-	11:38	11:47	-
A	-	11:33	11:52	11:58	-	**12:11**	**12:20**	-
	11:40	11:45	-	-	**12:07**	**12:19**	**12:32**	**12:45**
	12:30	**12:35**	-	-	**1:00**	**1:12**	**1:25**	**1:38**
A	-	**12:55**	**1:17**	**1:23**	-	**1:36**	**1:45**	-
	1:26	**1:31**	-	-	**1:58**	**2:13**	**2:27**	**2:40**
A	-	**1:46**	**2:11**	**2:17**	-	**2:30**	**2:39**	-
	2:25	**2:30**	-	-	**2:59**	**3:15**	**3:30**	**3:43**
U	**2:36**	**2:44**	**3:13**	-	-	-	-	-
A	-	**3:06**	**3:35**	**3:41**	-	**3:54**	**4:03**	-
	3:25	**3:31**	-	-	**4:04**	**4:20**	**4:35**	**4:48**
A	-	**4:00**	**4:26**	**4:32**	-	**4:44**	**4:53**	-
	-	**4:30**	-	-	**5:03**	**5:15**	**5:32**	**5:45**
A	-	**4:54**	**5:20**	**5:26**	-	**5:38**	**5:47**	-
	-	**5:30**	-	-	**5:59**	**6:08**	**6:24**	**6:37**
A	-	**5:40**	**6:05**	**6:11**	-	**6:23**	**6:32**	-
	-	**6:30**	-	-	**6:52**	**7:01**	**7:14**	**7:27**
A	-	**6:35**	**6:54**	-	-	-	-	-
	-	**7:20**	-	-	**7:42**	**7:51**	**8:03**	**8:16**
A	-	**7:30**	**7:49**	-	-	-	-	-
	-	**8:10**	-	-	**8:29**	**8:36**	**8:47**	**9:00**
	-	**9:00**	-	-	**9:19**	**9:26**	**9:37**	**9:50**
	-	**9:50**	-	-	**10:09**	**10:16**	**10:27**	**10:40**

Saturday 435 436

Inbound

	Salem Depot	Liberty Tree Mall	North Shore Mall	Main Street, Peabody	Centennial Park	Goodwins Circle	Central Sq, Lynn	Neptune Towers
A	-	-	-	-	-	6:47	7:06	-
A	-	-	-	-	-	8:27	8:46	-
	9:20	9:33	9:41	9:47	-	-	10:10	10:22
A	-	10:05	10:12	-	10:24	10:30	10:49	-
	10:10	10:23	10:32	10:40	-	-	11:16	11:28
A	-	11:15	11:23	-	11:35	11:41	**12:00**	-
	11:05	11:18	11:29	11:37	-	-	**12:10**	**12:22**
	12:05	**12:18**	**12:29**	**12:36**	-	-	**1:09**	**1:21**
A	-	**12:30**	**12:38**	-	**12:50**	**12:56**	**1:15**	-
	1:05	**1:18**	**1:29**	**1:36**	-	-	**2:09**	**2:21**
A	-	**1:40**	**1:48**	-	**2:00**	**2:06**	**2:25**	-
	2:05	**2:18**	**2:29**	**2:37**	-	-	**3:16**	**3:28**
A	-	**2:50**	**2:58**	-	**3:10**	**3:16**	**3:35**	-
	3:05	**3:18**	**3:33**	**3:40**	-	-	**4:09**	**4:21**
A	-	**3:50**	**3:58**	-	**4:10**	**4:16**	**4:35**	-
	4:00	**4:13**	**4:25**	**4:32**	-	-	**5:01**	**5:15**
A	-	**5:00**	**5:08**	-	**5:20**	**5:26**	**5:45**	-
	4:55	**5:08**	**5:20**	**5:27**	-	-	**5:56**	**6:07**
A	-	**6:00**	**6:08**	-	**6:20**	**6:26**	**6:45**	-
	5:50	**6:03**	**6:14**	**6:19**	-	-	**6:49**	-
	6:45	**6:58**	**7:09**	**7:14**	-	-	**7:43**	-
	7:35	**7:48**	**7:58**	**8:02**	-	-	**8:30**	-
	8:20	**8:33**	**8:43**	**8:47**	-	-	**9:15**	-
	9:00	**9:13**	**9:23**	**9:27**	-	-	**9:52**	-
	9:45	**9:58**	**10:07**	**10:11**	-	-	**10:36**	-
	10:30	**10:43**	**10:52**	**10:56**	-	-	**11:21**	-
	11:05	**11:18**	**11:27**	**11:31**	-	-	**11:56**	-

Outbound

	Neptune Towers	Central Sq, Lynn	Goodwins Circle	Centennial Park	Main Street, Peabody	North Shore Mall	Liberty Tree Mall	Salem Depot
A	-	6:20	6:40	-	-	-	-	-
A	-	8:00	8:20	-	-	-	-	-
	8:00	8:05	-	-	8:29	8:41	8:54	9:07
	8:50	8:55	-	-	9:19	9:31	9:44	9:57
A	-	9:00	9:19	9:23	-	9:36	9:45	-
	9:40	9:45	-	-	10:09	10:21	10:34	10:47
A	-	10:10	10:32	10:36	-	10:50	10:59	-
	10:40	10:45	-	-	11:09	11:21	11:35	11:48
A	-	11:15	11:36	11:40	-	11:54	**12:03**	-
	11:40	11:45	-	-	**12:11**	**12:23**	**12:38**	**12:51**
A	-	**12:35**	**12:56**	**1:01**	-	**1:15**	**1:24**	-
	12:40	**12:45**	-	-	**1:11**	**1:23**	**1:38**	**1:51**
	1:40	**1:45**	-	-	**2:10**	**2:22**	**2:37**	**2:50**
A	-	**1:50**	**2:10**	**2:15**	-	**2:28**	**2:37**	-
	2:40	**2:44**	-	-	**3:08**	**3:20**	**3:35**	**3:48**
A	-	**2:50**	**3:11**	**3:16**	-	**3:29**	**3:37**	-
	3:40	**3:44**	-	-	**4:08**	**4:20**	**4:34**	**4:47**
A	-	**4:00**	**4:18**	**4:23**	-	**4:35**	**4:43**	-
	4:35	**4:39**	-	-	**5:03**	**5:15**	**5:29**	**5:42**
A	-	**5:00**	**5:17**	**5:21**	-	**5:33**	**5:41**	-
	5:25	**5:29**	-	-	**5:53**	**6:05**	**6:19**	**6:32**
	6:15	**6:19**	-	-	**6:43**	**6:55**	**7:09**	**7:22**
	-	**7:10**	-	-	**7:32**	**7:40**	**7:54**	**8:07**
	-	**7:55**	-	-	**8:15**	**8:22**	**8:33**	**8:46**
	-	**8:40**	-	-	**9:00**	**9:07**	**9:18**	**9:31**
	-	**9:25**	-	-	**9:45**	**9:52**	**10:03**	**10:16**
	-	**10:00**	-	-	**10:20**	**10:27**	**10:38**	**10:51**

A S and shaded trips are Route 436

S T U only runs on school days

S from Broadway & Conomo Ave to West Lynn Garage at this time

T from Goodridge St & Memorial Park Ave at this time

PM times are **bold**

Information in this timetable is subject to change without notice. Traffic and weather may affect running times.

Always check bus destination signs before boarding. Some buses may only serve a part, or skip portions of this route.

2022 Holidays

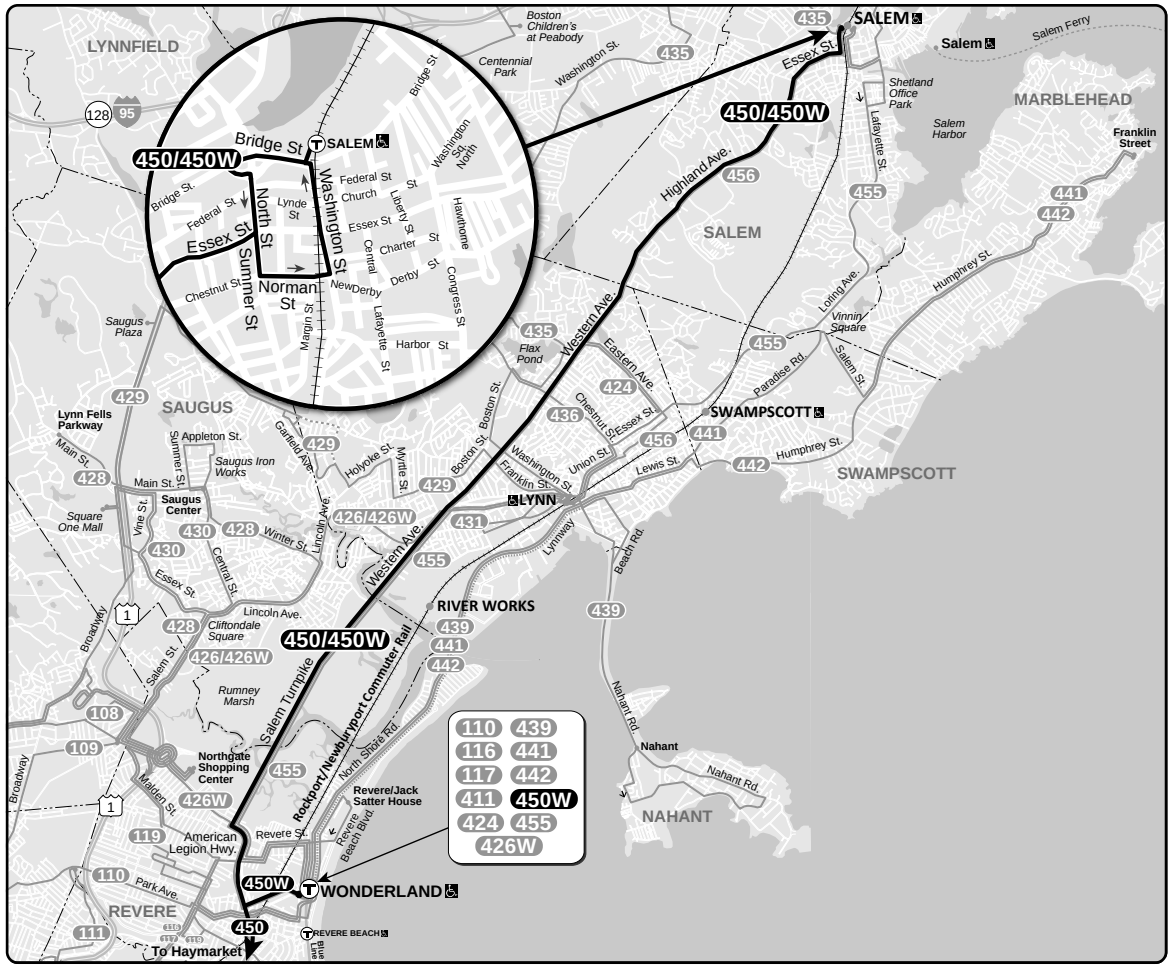
- SUN Memorial Day
- SUN Independence Day
- SUN Labor Day
- SUN Thanksgiving Day
- SUN Christmas Day
- SUN Christmas Day Observed
- SAT New Year's Eve
- SUN New Year's Day

→ Flip over for Sunday service

Effective **March 13, 2022**

450 Salem Depot – Haymarket or Wonderland Sta

Schedule Change



- Transfer to bus/subway available on CharlieCard—good for 2 hours, pay fare difference.
- Children 11 & under ride free with a paying customer.

All MBTA buses are accessible to people with disabilities.

	CharlieCard	Cash on board	Reduced fare
Local Bus	**$1.70**	**$1.70**	**$0.85**
Express Bus	**$4.25**	**$4.25**	**$2.10**
Local + Subway	**$2.40**	**$4.10**	**$1.10**
Exp + Subway	**$4.25**	**$6.65**	**$2.10**

Fare/pass rules on **mbta.com/fares** or call **617-222-3200**

Connections

ORANGE LINE · BLUE LINE · GREEN LINE D E · NEWBURYPORT/ROCKPORT LINE

Information **617-222-3200**
Lost and Found **617-222-5263**
TTY **617-222-5146**

Realtime arrival information, maps, and more
mbta.com

A129-X-3-22.0

Weekday 450

Inbound			Outbound		
Salem Depot	West Lynn Garage	Haymarket Station	Haymarket Station	West Lynn Garage	Salem Depot
5:31	5:57	6:18	-	4:36	5:08
6:10	6:36	6:59	-	4:57	5:29
6:40	7:07	7:30	-	5:36	6:08
7:10	7:37	8:00	-	6:05	6:37
7:40	8:07	8:30	-	6:28	7:00
8:10	8:37	9:00	6:40	6:58	7:30
8:40	9:07	9:30	7:10	7:28	8:01
9:10	9:37	10:00	7:40	7:59	8:33
9:40	10:08	10:31	8:10	8:29	9:04
10:10	10:38	11:01	8:40	8:59	9:35
10:40	11:08	11:31	9:10	9:29	10:05
11:10	11:38	**12:02**	9:40	9:59	10:35
11:40	**12:08**	**12:32**	10:10	10:29	11:05
12:10	**12:38**	**1:02**	10:40	10:59	11:35
12:40	**1:08**	**1:33**	11:10	11:29	**12:05**
1:40	**2:12**	**2:37**	11:40	11:59	**12:35**
2:10	**2:42**	**3:07**	**12:35**	**12:54**	**1:32**
2:40	**3:12**	**3:39**	**1:05**	**1:27**	**2:06**
3:40	**4:13**	**4:40**	**1:35**	**1:57**	**2:36**
4:10	**4:43**	**-**	**2:45**	**3:10**	**3:50**
4:40	**5:13**	**5:40**	**3:15**	**3:40**	**4:19**
5:10	**5:43**	**6:10**	**3:45**	**4:11**	**4:50**
5:40	**6:12**	**6:38**	**4:15**	**4:42**	**5:21**
6:10	**6:41**	**7:07**	**4:45**	**5:12**	**5:50**
6:40	**7:11**	**7:37**	**5:15**	**5:41**	**6:19**
7:10	**7:39**	**8:05**	**5:45**	**6:11**	**6:46**
8:15	**8:44**	**9:06**	**6:15**	**6:41**	**7:13**
9:15	**9:42**	**10:04**	**6:45**	**7:09**	**7:41**
10:15	**10:42**	**11:04**	**7:15**	**7:39**	**8:09**
11:10	**11:30**	**11:50**	**8:15**	**8:36**	**9:02**
12:23	12:43	-	**9:15**	**9:36**	**10:02**
1:10	1:30	-	**10:15**	**10:36**	**11:02**
			11:30	**11:49**	12:11

Saturday 450W

Inbound			Outbound		
Salem Depot	West Lynn Garage	Wonderland Station	Wonderland Station	West Lynn Garage	Salem Depot
6:30	6:52	7:04	-	6:00	6:24
7:40	8:06	8:19	6:45	6:55	7:24
8:45	9:13	9:26	-	7:30	7:59
9:55	10:23	10:37	7:55	8:05	8:34
11:06	11:37	11:51	9:00	9:11	9:45
12:05	**12:36**	**12:53**	10:10	10:21	10:58
1:05	**1:35**	**1:52**	11:00	11:12	11:53
2:05	**2:35**	**2:52**	**12:00**	**12:12**	**12:53**
3:05	**3:33**	**3:50**	**1:00**	**1:12**	**1:53**
4:05	**4:33**	**4:50**	**2:00**	**2:12**	**2:53**
5:15	**5:43**	**6:00**	**3:00**	**3:12**	**3:53**
6:25	**6:49**	**7:04**	**4:10**	**4:22**	**5:03**
7:36	**8:00**	**8:15**	**5:25**	**5:37**	**6:17**
8:37	**9:01**	**9:16**	**6:40**	**6:50**	**7:29**
9:34	**9:58**	**10:13**	**7:45**	**7:55**	**8:30**
10:32	**10:56**	**11:09**	**8:44**	**8:52**	**9:27**
11:32	**11:50**	12:03	**9:50**	**9:57**	**10:27**
12:32	12:50	-	**10:50**	**10:57**	**11:27**

Sunday 450W

Inbound			Outbound		
Salem Depot	West Lynn Garage	Wonderland Station	Wonderland Station	West Lynn Garage	Salem Depot
8:35	8:58	9:11	7:45	7:53	8:24
9:20	9:46	9:59	8:35	8:43	9:14
10:05	10:32	10:45	9:20	9:28	9:59
11:00	11:27	11:40	10:10	10:18	10:50
11:50	**12:17**	**12:31**	10:55	11:05	11:37
1:00	**1:30**	**1:47**	11:50	**12:00**	**12:40**
1:55	**2:22**	**2:39**	**12:55**	**1:05**	**1:44**
3:00	**3:27**	**3:44**	**2:05**	**2:14**	**2:51**
4:15	**4:42**	**4:59**	**3:10**	**3:19**	**3:56**
5:15	**5:42**	**5:59**	**4:21**	**4:33**	**5:08**
6:20	**6:45**	**6:58**	**5:25**	**5:36**	**6:09**
7:25	**7:50**	**8:03**	**6:35**	**6:44**	**7:16**
8:30	**8:55**	**9:08**	**7:40**	**7:49**	**8:20**
9:30	**9:49**	**10:02**	**8:40**	**8:48**	**9:18**
10:35	**10:53**	**11:05**	**9:40**	**9:47**	**10:14**
11:50	12:05	-	**10:45**	**10:52**	**11:19**

All Route Haymarket-bound 450 trips travel via the Callahan or Sumner Tunnel.

Local bus fare applies only if your trip does not cross the Callahan or Sumner Tunnel.

PM times are **bold**

Information in this timetable is subject to change without notice. Traffic and weather may affect running times.

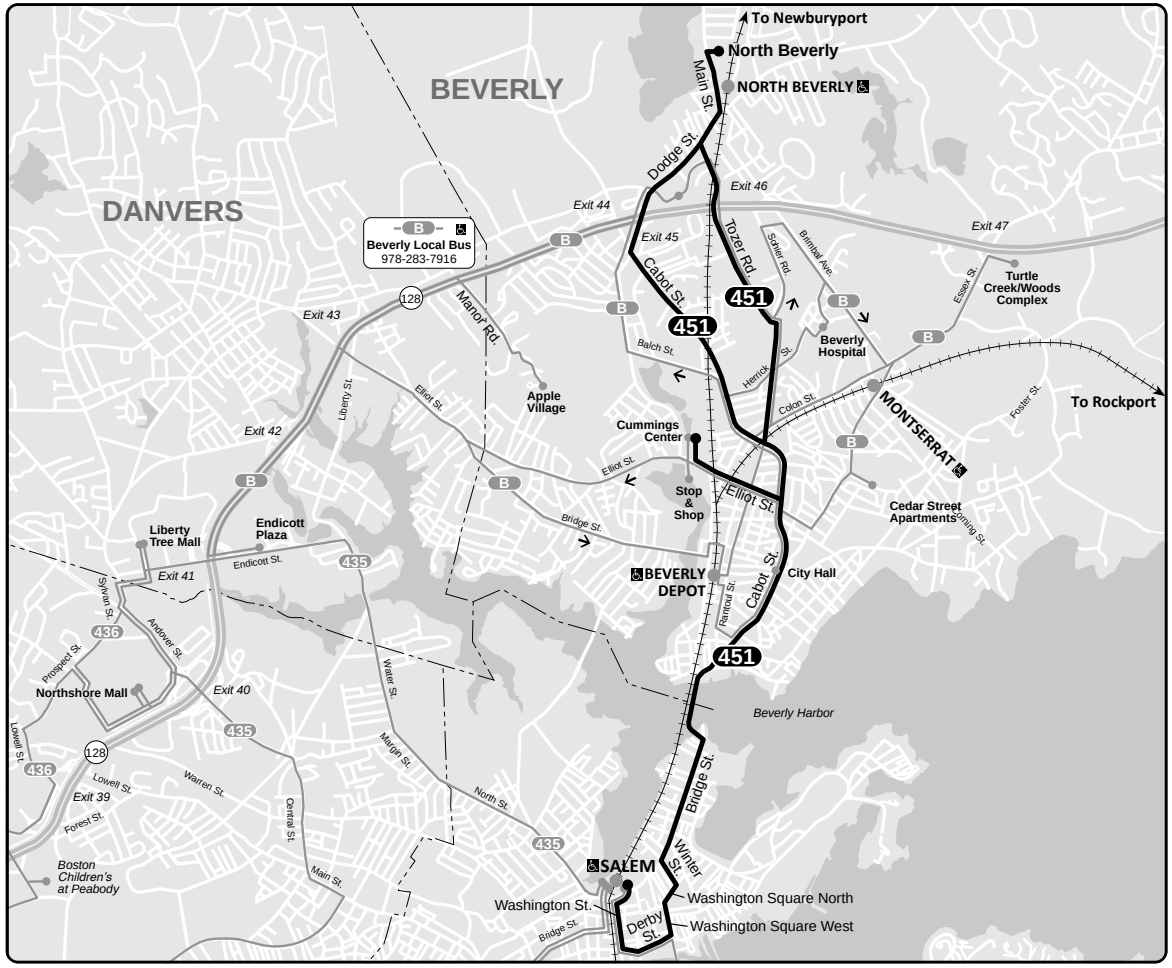
Always check bus destination signs before boarding. Some buses may only serve a part, or skip portions of this route.

2022 Holidays

- SUN Memorial Day
- SUN Independence Day
- SUN Labor Day
- SUN Thanksgiving Day
- SUN Christmas Day
- SUN Christmas Day Observed
- SAT New Year's Eve
- SUN New Year's Day

Effective **March 13, 2022**

451 North Beverly – Salem Depot



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	CharlieCard	Cash on board	Reduced fare
Bus	**$1.70**	**$1.70**	**$0.85**
Bus + Subway	**$2.40**	**$4.10**	**$1.10**

Complete fare/pass rules and free/reduced fare eligibility:
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Connections

NEWBURYPORT/ROCKPORT LINE

Information **617-222-3200**
Lost and Found **617-222-5263**
TTY **617-222-5146**

Realtime arrival information, maps, and more
mbta.com

A129-3-22.0

Weekday 451

Inbound

North Beverly	Tozer Road	Dodge St & Cabot St	Cummings Center	Salem Depot
6:42	-	6:44	6:51	7:11
8:04	-	8:08	8:16	8:39
9:30	-	9:33	9:41	10:02
4:37	**4:40**	**-**	**4:47**	**5:11**
6:08	**6:11**	**-**	**6:18**	**6:36**
7:25	**7:28**	**-**	**7:33**	**7:54**

Outbound

Salem Depot	Cummings Center	Dodge St & Cabot St	Tozer Road	North Beverly
5:55	6:15	-	6:26	6:35
7:17	7:38	-	7:47	7:56
8:45	9:05	-	9:14	9:23
3:45	**4:08**	**4:15**	**-**	**4:30**
5:20	**5:42**	**5:53**	**-**	**6:00**
6:45	**7:03**	**7:11**	**-**	**7:20**

No Saturday service

No Sunday service

PM times are **bold**

Information in this timetable is subject to change without notice. Traffic and weather may affect running times.

Always check bus destination signs before boarding. Some buses may only serve a part, or skip portions of this route.

2022 Holidays

SUN Memorial Day

SUN Independence Day

SUN Labor Day

SUN Thanksgiving Day

SUN Christmas Day

SUN Christmas Day Observed

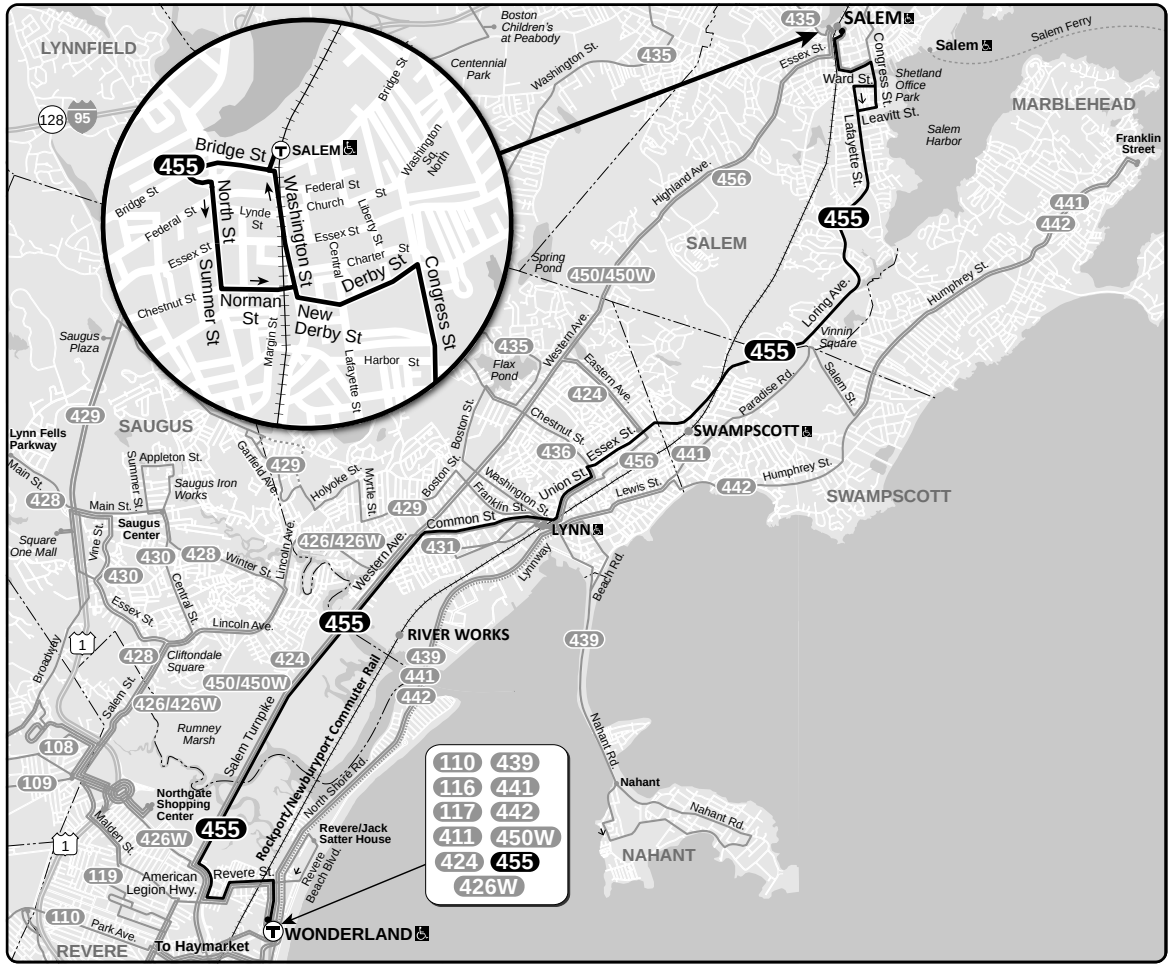
SAT New Year's Eve

SUN New Year's Day

Effective **March 13, 2022**

455 Salem Depot – Wonderland Sta

Schedule Change



- Transfer to bus/subway available on CharlieCard—good for 2 hours, pay fare difference.
- Children 11 & under ride free with a paying customer.

All MBTA buses are accessible to people with disabilities.

	CharlieCard	Cash on board	Reduced fare
Bus	**$1.70**	**$1.70**	**$0.85**
Bus + Subway	**$2.40**	**$4.10**	**$1.10**

Complete fare/pass rules and free/reduced fare eligibility:
mbta.com/fares or call **617-222-3200**

Connections

BLUE LINE

NEWBURYPORT/ROCKPORT LINE

Information **617-222-3200**
Lost and Found **617-222-5263**
TTY **617-222-5146**

Realtime arrival information, maps, and more
mbta.com

A129-3-22.0

Weekday 455

Inbound

Salem Depot	Vinnin Square	Central Sq, Lynn	Wonderland Station
-	-	4:45	5:08
-	-	5:00	5:23
-	-	5:20	5:43
-	-	5:33	5:56
5:10	5:23	5:37	6:02
5:40	5:53	6:07	6:33
6:00	6:13	6:27	6:57
6:25	6:43	6:59	7:31
6:55	7:14	7:30	8:02
7:25	7:44	8:00	8:32
7:55	8:14	8:30	9:02
8:25	8:44	9:00	9:32
9:00	9:19	9:35	10:07
9:35	9:54	10:10	10:42
10:10	10:29	10:45	11:17
10:40	10:59	11:15	11:47
11:15	11:34	11:50	**12:22**
11:45	**12:04**	**12:20**	**12:51**
12:15	**12:36**	**12:53**	**1:24**
12:50	**1:16**	**1:33**	**2:04**
1:20	**1:46**	**2:03**	**2:34**
1:55	**2:21**	**2:38**	**3:09**
S -	-	**2:49**	-
2:30	**2:56**	**3:13**	**3:44**
3:10	**3:36**	**3:53**	**4:24**
3:50	**4:16**	**4:33**	**5:04**
4:20	**4:46**	**5:02**	**5:32**
4:55	**5:20**	**5:34**	**6:04**
5:30	**5:55**	**6:09**	**6:38**
6:00	**6:20**	**6:33**	**7:02**
6:25	**6:45**	**6:58**	**7:23**
7:20	**7:39**	**7:52**	**8:16**
8:30	**8:45**	**8:56**	**9:19**
9:30	**9:45**	**9:56**	**10:19**
10:30	**10:45**	**10:56**	**11:19**
11:30	**11:41**	**11:50**	12:07
12:27	12:38	12:47	1:04

Outbound

Wonderland Station	Central Sq, Lynn	Vinnin Square	Salem Depot
D -	5:26	5:35	5:50
D -	6:04	6:18	6:34
6:15	6:37	6:53	7:15
6:45	7:07	7:23	7:45
7:10	7:35	7:51	8:13
7:35	8:00	8:16	8:38
8:15	8:40	8:56	9:18
8:35	9:00	9:16	9:38
8:55	9:20	9:36	9:58
9:20	9:45	10:01	10:23
9:45	10:10	10:26	10:48
10:20	10:45	11:01	11:23
10:55	11:20	11:36	11:58
11:30	11:55	**12:11**	**12:33**
12:00	**12:25**	**12:41**	**1:03**
12:35	**1:00**	**1:16**	**1:40**
1:05	**1:30**	**1:47**	**2:12**
1:40	**2:14**	**2:31**	**2:56**
2:20	**2:54**	**3:11**	**3:36**
2:50	**3:24**	**3:41**	**4:06**
3:25	**3:59**	**4:16**	**4:41**
4:00	**4:34**	**4:51**	**5:16**
4:30	**5:06**	**5:23**	**5:48**
4:55	**5:31**	**5:48**	**6:12**
5:25	**6:00**	**6:15**	**6:38**
5:55	**6:25**	**6:40**	**7:03**
6:25	**6:55**	**7:09**	**7:29**
6:55	**7:17**	**7:30**	**7:50**
7:25	**7:46**	**7:59**	**8:19**
8:28	**8:49**	**9:02**	**9:22**
9:30	**9:50**	**10:01**	**10:21**
10:30	**10:50**	**11:01**	**11:19**
11:30	**11:48**	**11:59**	12:14
12:21	12:38	12:47	1:02

Saturday 455

Inbound

Salem Depot	Vinnin Square	Central Sq, Lynn	Wonderland Station
-	-	5:15	5:39
-	-	5:55	6:19
6:05	6:16	6:32	6:53
6:40	6:51	7:07	7:28
7:05	7:16	7:32	7:53
7:25	7:36	7:52	8:13
8:05	8:16	8:32	8:53
8:32	8:43	8:59	9:20
9:05	9:16	9:32	10:01
9:35	9:47	10:03	10:32
10:08	10:20	10:36	11:05
10:35	10:47	11:03	11:32
11:14	11:30	11:46	**12:14**
11:51	**12:07**	**12:24**	**12:52**
12:26	**12:43**	**1:00**	**1:27**
12:55	**1:11**	**1:26**	**1:53**
1:35	**1:51**	**2:06**	**2:33**
2:11	**2:27**	**2:42**	**3:09**
2:47	**3:03**	**3:18**	**3:45**
3:16	**3:32**	**3:47**	**4:14**
3:55	**4:11**	**4:26**	**4:53**
4:31	**4:47**	**5:02**	**5:29**
5:07	**5:23**	**5:38**	**6:05**
5:36	**5:52**	**6:07**	**6:33**
6:15	**6:31**	**6:44**	**7:07**
6:45	**6:58**	**7:11**	**7:34**
D **7:20**	**7:33**	**7:46**	-
7:47	**8:00**	**8:13**	**8:36**
8:45	**8:58**	**9:11**	**9:32**
9:47	**10:00**	**10:13**	**10:34**
10:45	**10:58**	**11:10**	**11:28**
11:45	**11:55**	12:07	12:25

Outbound

Wonderland Station	Central Sq, Lynn	Vinnin Square	Salem Depot
D -	5:26	5:36	5:49
D -	5:56	6:06	6:19
6:25	6:47	6:59	7:15
6:36	6:59	7:11	7:27
7:05	7:28	7:40	7:56
7:35	7:58	8:10	8:26
8:05	8:28	8:40	8:56
8:35	8:59	9:11	9:27
9:08	9:32	9:44	10:00
9:35	9:59	10:11	10:27
10:07	10:31	10:45	11:07
10:38	11:03	11:17	11:39
11:13	11:38	11:52	**12:14**
11:40	**12:05**	**12:19**	**12:41**
12:22	**12:47**	**1:01**	**1:23**
1:00	**1:25**	**1:39**	**2:01**
1:36	**2:01**	**2:15**	**2:37**
2:05	**2:30**	**2:44**	**3:06**
2:41	**3:06**	**3:20**	**3:42**
3:20	**3:45**	**3:59**	**4:21**
3:56	**4:21**	**4:35**	**4:57**
4:25	**4:50**	**5:04**	**5:26**
5:05	**5:30**	**5:43**	**6:03**
5:40	**6:01**	**6:14**	**6:34**
6:15	**6:36**	**6:49**	**7:09**
6:43	**7:04**	**7:17**	**7:36**
7:20	**7:41**	**7:54**	**8:12**
8:50	**9:11**	**9:24**	**9:40**
9:40	**9:58**	**10:10**	**10:26**
10:42	**11:00**	**11:12**	**11:28**
11:40	**11:58**	12:07	12:19

Sunday 455

Inbound

Salem Depot	Vinnin Square	Central Sq, Lynn	Wonderland Station
-	-	5:40	6:03
6:05	6:16	6:33	6:56
7:10	7:21	7:38	8:01
8:05	8:16	8:33	8:56
9:03	9:14	9:31	9:54
10:10	10:21	10:38	11:04
11:15	11:29	11:46	**12:14**
12:21	**12:35**	**12:52**	**1:20**
1:30	**1:44**	**2:01**	**2:29**
2:40	**2:54**	**3:11**	**3:39**
3:50	**4:04**	**4:21**	**4:49**
4:52	**5:06**	**5:23**	**5:51**
6:00	**6:11**	**6:28**	**6:52**
7:00	**7:11**	**7:28**	**7:51**
8:00	**8:11**	**8:25**	**8:48**
9:05	**9:16**	**9:30**	**9:53**
10:03	**10:14**	**10:28**	**10:51**
D **11:05**	**11:15**	**11:28**	-
11:35	**11:45**	**11:58**	12:18

Outbound

Wonderland Station	Central Sq, Lynn	Vinnin Square	Salem Depot
D -	5:33	5:43	5:55
6:15	6:37	6:52	7:05
7:05	7:27	7:42	7:55
8:05	8:27	8:42	8:55
9:05	9:27	9:42	9:55
10:02	10:26	10:41	10:58
11:15	11:39	11:54	**12:11**
12:25	**12:49**	**1:04**	**1:19**
1:35	**2:01**	**2:16**	**2:31**
2:45	**3:11**	**3:26**	**3:41**
3:47	**4:13**	**4:28**	**4:43**
5:00	**5:22**	**5:37**	**5:53**
6:00	**6:22**	**6:37**	**6:53**
7:00	**7:20**	**7:34**	**7:49**
8:00	**8:20**	**8:34**	**8:49**
9:00	**9:20**	**9:34**	**9:49**
10:00	**10:20**	**10:34**	**10:49**
10:56	**11:16**	**11:30**	**11:45**

This route does not serve Shetland Office Park on weekends

D to/from West Lynn Garage

S from Thurgood Marshall School to West Lynn Garage at this time only on school days

PM times are **bold**

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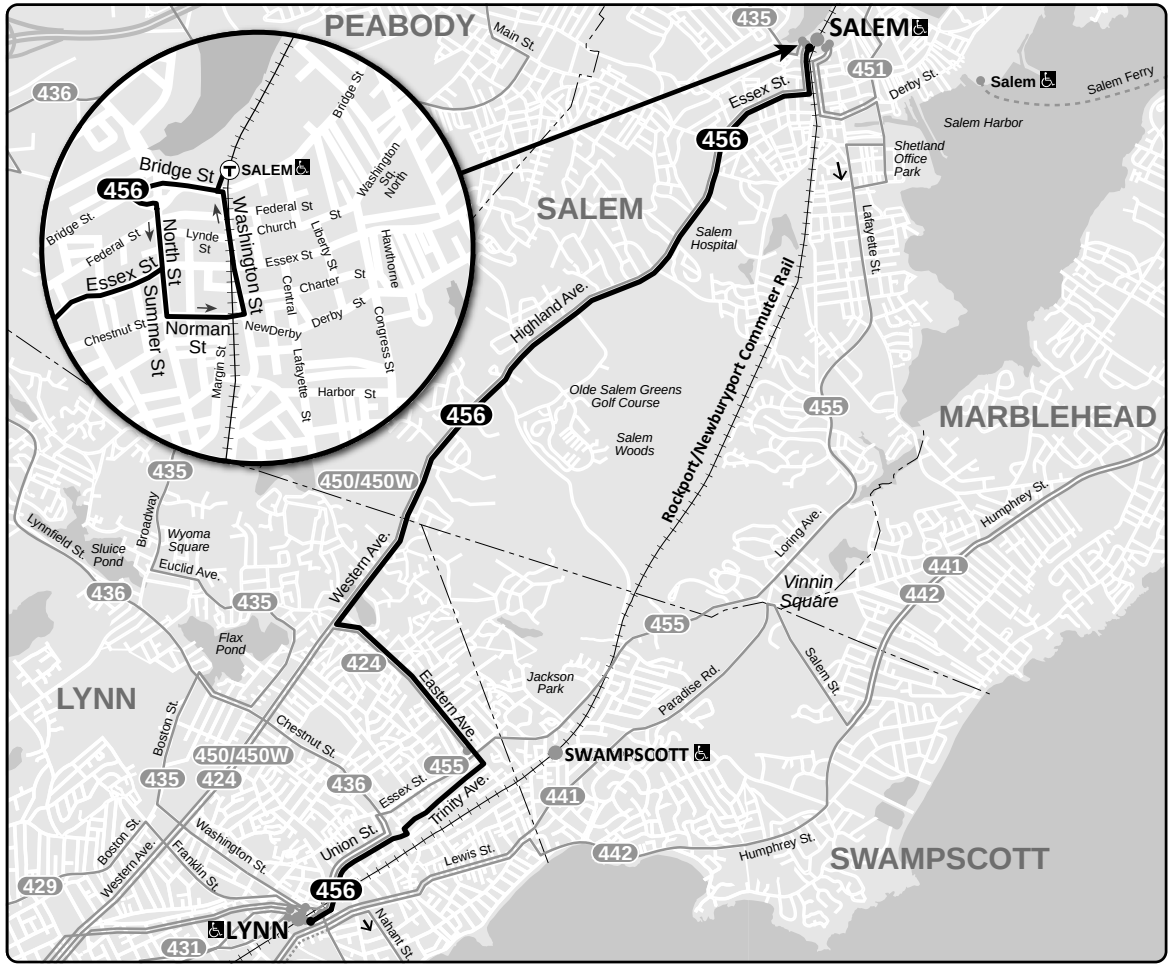
Always check bus destination signs before boarding. Some buses may only serve a part, or skip portions of this route.

2022 Holidays

- SUN Memorial Day
- SUN Independence Day
- SUN Labor Day
- SUN Thanksgiving Day
- SUN Christmas Day
- SUN Christmas Day Observed
- SAT New Year's Eve
- SUN New Year's Day

Effective **March 13, 2022**

456 Salem Depot – Central Sq, Lynn



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	CharlieCard	Cash on board	Reduced fare
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Bus + Subway	**$2.40**	**$4.10**	**$1.10**

Complete fare/pass rules and free/reduced fare eligibility:
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Connections

NEWBURYPORT/ROCKPORT LINE

Information **617-222-3200**
Lost and Found **617-222-5263**
TTY **617-222-5146**

Realtime arrival information, maps, and more
mbta.com

A129-3-22.0

Weekday 456

Inbound

Salem Depot	Salem Hospital	Buchanan Circle	Central Sq, Lynn
9:55	10:01	10:08	10:21
11:10	11:16	11:23	11:36
12:25	**12:32**	**12:39**	**12:53**
1:40	**1:47**	**1:55**	**2:09**
3:05	**3:14**	**3:23**	**3:39**

Outbound

Central Sq, Lynn	Buchanan Circle	Salem Hospital	Salem Depot
10:30	10:43	10:51	11:03
11:45	11:57	**12:05**	**12:17**
1:00	**1:12**	**1:20**	**1:32**
2:15	**2:30**	**2:39**	**2:51**
3:45	**4:01**	**4:11**	**4:24**

No Saturday service

No Sunday service

PM times are **bold**

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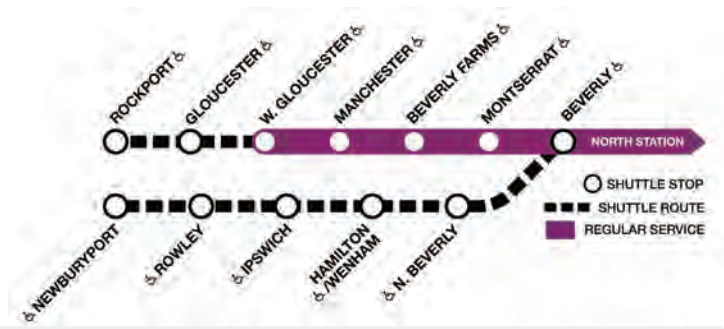
2022 Holidays

- SUN Memorial Day
- SUN Independence Day
- SUN Labor Day
- SUN Thanksgiving Day
- SUN Christmas Day
- SUN Christmas Day Observed
- SAT New Year's Eve
- SUN New Year's Day

NEWBURYPORT/ROCKPORT LINE Diversion Schedule
Effective Saturday, March 5th

Shuttle buses replace train service between Newburyport and Beverly on weekdays and weekends while the signal system is updated.



Monday to Friday — Inbound to Boston

ZONE	STATION	TRAIN #	140L	140X	100	142L	142X	102	144L	144X	104	146L	146X	106	148L	148X	108	150L	192	150X	110	152L	152X	112	154L	154X	114	156L	198	156X	116	158L	118	160L	160X	120	162L	162X	122	164X	124	164L
	Bikes Allowed																																										
8	Rockport		-	-	B 4:58	-	-	B 6:03	-	-	B 7:03	-	-	B 8:03	-	-	B 9:03	-	-	-	B 10:33	-	-	B 12:03	-	-	B 1:33	-	-	-	B 3:03	-	-	-	-	B 5:36	-	-	B 7:36	-	B 8:40	-
7	Gloucester		-	-	B 5:05	-	-	B 6:10	-	-	B 7:10	-	-	B 8:10	-	-	B 9:10	-	-	-	B 10:40	-	-	B 12:10	-	-	B 1:40	-	-	-	B 3:10	-	-	-	-	B 5:43	-	-	B 7:43	-	B 8:47	-
7	West Gloucester		-	-	5:21	-	-	6:26	-	-	7:26	-	-	8:26	-	-	9:26	-	-	-	10:56	-	-	12:26	-	-	1:56	-	-	-	3:26	-	-	-	-	5:59	-	-	7:59	-	9:03	-
6	Manchester		-	-	5:28	-	-	6:33	-	-	7:33	-	-	8:33	-	-	9:33	-	-	-	11:03	-	-	12:33	-	-	2:03	-	-	-	3:33	-	-	-	-	6:06	-	-	8:06	-	9:10	-
5	Beverly Farms		-	-	5:34	-	-	6:39	-	-	7:39	-	-	8:39	-	-	f 9:39	-	-	-	f 11:09	-	-	f 12:39	-	-	f 2:09	-	-	-	f 3:39	-	-	-	-	f 6:12	-	-	f 8:12	-	f 9:16	-
4	Montserrat		-	-	5:40	-	-	6:45	-	-	7:45	-	-	8:45	-	-	f 9:45	-	-	-	f 11:15	-	-	f 12:45	-	-	f 2:15	-	-	-	f 3:45	-	-	-	-	f 6:18	-	-	f 8:18	-	f 9:22	-
8	Newburyport		B 3:50	B 4:50	-	B 4:51	B 5:56	-	B 5:42	B 6:50	-	B 6:45	B 7:43	-	B 7:45	B 8:46	-	B 8:45	B 9:46	B 10:16	-	B 10:45	B 11:46	-	B 12:09	B 1:16	-	B 1:09	-	B 2:46	-	B 3:09	-	B 4:15	B 5:04	B 5:30	B 6:13	-	B 7:20	B 8:10	-	B 9:17	-	B 9:02
7	Rowley		B 4:14	-	-	B 5:17	-	-	B 6:11	-	-	B 7:13	-	-	B 8:13	-	-	B 9:13	-	-	-	B 11:13	-	-	-	B 12:39	-	-	B 1:39	-	-	-	-	B 3:14	-	B 4:35	-	-	B 6:27	-	-	-	-	B 9:26
6	Ipswich		B 4:30	-	-	B 5:33	-	-	B 6:29	-	-	B 7:31	-	-	B 8:31	-	-	B 9:31	-	-	-	B 11:31	-	-	-	B 12:58	-	-	B 1:58	-	-	-	-	B 3:33	-	B 4:52	-	-	B 6:43	-	-	-	-	B 9:42
5	Hamilton/Wenham		B 4:48	-	-	B 5:52	-	-	B 6:50	-	-	B 7:51	-	-	B 8:51	-	-	B 9:51	-	-	-	B 11:51	-	-	-	B 1:19	-	-	B 2:19	-	-	-	-	B 3:54	-	B 5:12	-	-	B 7:02	-	-	-	-	B 10:00
5	North Beverly		B 4:56	-	-	B 6:01	-	-	B 7:00	-	-	B 8:00	-	-	B 9:00	-	-	B 10:00	-	-	-	B 12:00	-	-	-	B 1:29	-	-	B 2:29	-	-	-	-	B 4:04	-	B 5:20	-	-	B 7:11	-	-	-	-	B 10:08
4	Beverly (bus arrival)		B 5:05	B 5:34	-	B 6:10	B 6:40	-	B 7:10	B 7:40	-	B 8:10	B 8:40	-	B 9:10	B 9:40	-	B 10:10	B 10:40	B 11:10	-	B 12:10	B 12:40	-	B 1:40	B 2:10	-	B 2:40	-	B 3:40	-	B 4:15	B 5:04	B 5:30	B 6:13	-	B 7:20	B 8:10	-	B 9:17	-	B 10:17
4	Beverly (train departure)		5:15	→	5:45	6:20	→	6:50	7:20	→	7:50	8:20	→	8:50	9:20	→	9:50	10:20	10:50	→	11:20	12:20	→	12:50	1:50	→	2:20	2:50	3:20	→	3:50	4:25	5:14	5:40	→	6:23	7:30	→	8:23	→	9:27	10:27
3	Salem		5:19	Board Rockport Train 100 at Beverly for service to Boston	5:49	6:24	-	6:54	7:24	-	7:54	8:24	-	8:54	9:24	-	9:54	10:24	10:54	-	11:24	12:24	-	12:54	1:54	-	2:24	2:54	3:24	-	3:54	4:29	5:18	5:44	-	6:27	7:34	-	8:27	-	9:31	10:31
3	Swampscott		5:26		5:56	6:31	-	7:01	7:31	-	8:01	8:31	-	9:01	9:31	-	10:01	10:31	11:01	-	11:31	12:31	-	1:01	2:01	-	2:31	3:01	3:31	-	4:01	4:36	5:25	5:51	-	6:34	7:41	-	8:34	-	9:38	10:38
2	Lynn		5:29		5:59	6:34	-	7:04	7:34	-	8:04	8:34	-	9:04	9:34	-	10:04	10:34	11:04	-	11:34	12:34	-	1:04	2:04	-	2:34	3:04	3:34	-	4:04	4:39	5:28	5:54	-	6:37	7:44	-	8:37	-	9:41	10:41
2	River Works		f 5:32		f 6:02	f 6:37	-	f 7:07	-	-	f 8:07	f 8:37	-	-	-	-	-	-	-	-	-	-	-	-	-	-	f 2:37	f 3:07	f 3:37	-	f 4:07	f 4:42	f 5:31	f 5:57	-	f 6:40	f 7:47	-	-	-	-	f 10:44
1A	Chelsea		5:39		6:09	6:45	-	7:15	7:44	-	8:15	8:45	-	9:14	f 9:43	-	f 10:13	f 10:43	f 11:13	-	f 11:43	F 12:43	-	f 1:13	f 2:13	-	f 2:44	f 3:14	f 3:44	-	f 4:14	f 4:49	f 5:38	f 6:04	-	f 6:47	f 7:54	-	f 8:46	-	f 9:50	f 10:51
1A	North Station		5:53		6:24	7:00	-	7:31	7:59	-	8:31	9:00	-	9:29	9:58	-	10:28	10:57	11:26	-	11:58	12:57	-	1:28	2:27	-	2:59	3:28	3:57	-	4:29	5:03	5:53	6:19	-	7:02	8:08	-	9:01	-	10:05	11:05

Monday to Friday — Outbound from Boston

ZONE	STATION	TRAIN #	141L	101	141X	143L	103	145L	105	145X	191	147L	107	147X	149L	109	149X	151L	111	151X	197	153L	113	153X	155L	115	155X	157L	117	157X	159L	119	159X	161L	121	161X	163L	123	163X	165L	125	165
	Bikes Allowed																																										
1A	North Station		5:30	6:35	Board Rockport Train 101 and change at Beverly for bus service to Newburyport	7:30	7:50	8:30	9:05	-	9:30	10:00	10:35	-	11:30	12:05	-	1:00	1:35	-	2:00	2:30	3:05	-	3:35	4:05	-	4:35	5:05	-	5:35	6:05	-	6:40	7:20	-	8:05	8:50	-	9:35	11:00	-
1A	Chelsea		f 5:41	f 6:46		f 7:41	-	f 8:41	f 9:16	-	f 9:41	f 10:11	f 10:46	-	f 11:41	f 12:16	-	f 1:11	f 1:46	-	f 2:11	f 2:41	f 3:16	-	3:46	4:16	-	4:46	5:16	-	5:46	6:16	-	6:51	f 7:31	-	f 8:16	f 9:01	-	f 9:46	f 11:11	-
2	River Works		f 5:48	f 6:53		f 7:48	-	-	-	-	-	-	-	-	-	-	-	-	f 1:54	-	-	f 2:49	f 3:24	-	f 3:54	f 4:24	-	-	f 5:24	-	f 5:54	-	-	f 6:59	f 7:39	-	-	-	-	-	f 11:19	-
2	Lynn		5:51	6:56		7:51	-	8:50	9:25	-	9:50	10:20	10:55	-	11:50	12:25	-	1:20	1:56	-	2:20	2:51	3:26	-	3:56	4:26	-	4:55	5:26	-	5:56	6:25	-	7:01	7:41	-	8:25	9:10	-	9:55	11:21	-
3	Swampscott		5:54	6:59		7:54	-	8:53	9:28	-	9:53	10:23	10:58	-	11:53	12:28	-	1:23	1:59	-	2:23	2:54	3:29	-	3:59	4:29	-	4:58	5:29	-	5:59	6:28	-	7:04	7:44	-	8:28	9:13	-	9:58	11:24	-
3	Salem		6:01	7:06		8:01	8:16	9:01	9:35	-	10:01	10:31	11:05	-	12:01	12:35	-	1:31	2:06	-	2:31	3:01	3:36	-	4:06	4:36	-	5:05	5:36	-	6:06	6:35	-	7:11	7:51	-	8:35	9:20	-	10:05	11:31	-
4	Beverly (Train departure)		6:05	7:10	→	8:05	8:20	9:05	9:39	→	10:05	10:35	11:09	→	12:05	12:39	→	1:35	2:10	→	2:35	3:05	3:40	→	4:10	4:40	→	5:09	5:40	→	6:10	6:39	→	7:15	7:55	→	8:39	9:24	→	10:09	11:35	→
4	Beverly (Bus departure)		B 6:10	-	B 7:15	B 8:10	-	B 9:10	-	B 9:44	-	B 10:40	-	B 11:14	B 12:10	-	B 12:44	B 1:40	-	B 2:15	-	B 3:10	-	B 3:45	B 4:15	-	B 4:45	B 5:14	-	B 5:45	B 6:15	-	B 6:44	B 7:20	-	B 8:00	B 8:44	-	B 9:29	B 10:14		B 11:40
5	North Beverly		B 6:19	-	-	B 8:21	-	B 9:21	-	-	-	B 10:51	-	-	B 12:21	-	-	B 1:51	-	-	-	B 3:21	-	-	B 4:26	-	-	B 5:24	-	-	B 6:25	-	-	B 7:30	-	-	B 8:53	-	-	B 10:23	-	B 11:49
5	Hamilton/Wenham		B 6:26	-	-	B 8:29	-	B 9:29	-	-	-	B 10:59	-	-	B 12:29	-	-	B 1:59	-	-	-	B 3:29	-	-	B 4:34	-	-	B 5:32	-	-	B 6:33	-	-	B 7:37	-	-	B 9:00	-	-	B 10:30	-	B 11:56
6	Ipswich		B 6:43	-	-	B 8:50	-	B 9:51	-	-	-	B 11:21	-	-	B 12:51	-	-	B 2:21	-	-	-	B 3:51	-	-	B 4:55	-	-	B 5:53	-	-	B 6:53	-	-	B 7:57	-	-	B 9:19	-	-	B 10:49	-	B 12:15
7	Rowley		B 6:58	-	-	B 9:09	-	B 10:09	-	-	-	B 11:39	-	-	B 1:09	-	-	B 2:39	-	-	-	B 4:09	-	-	B 5:14	-	-	B 6:11	-	-	B 7:10	-	-	B 8:13	-	-	B 9:34	-	-	B 11:04	-	B 12:30
8	Newburyport		B 7:21	-	B 8:02	B 9:37	-	B 10:38	-	B 10:34	-	B 12:08	-	B 12:04	B 1:38	-	B 1:34	B 3:08	-	B 3:09	-	B 4:38	-	B 4:42	B 5:42	-	B 5:42	B 6:38	-	B 6:39	B 7:36	-	B 7:31	B 8:39	-	B 8:47	B 9:58	-	B 10:16	B 11:28	-	B 12:54
4	Montserrat		-	f 7:14	-	-	-	-	f 9:43	-	-	-	f 11:13	-	-	f 12:43	-	-	f 2:14	-	-	-	f 3:44	-	-	4:44	-	-	5:44	-	-	6:43	-	-	f 7:59	-	-	f 9:28	-	-	f 11:39	-	
5	Beverly Farms		-	f 7:20	-	-	-	-	f 9:49	-	-	-	f 11:19	-	-	f 12:49	-	-	f 2:20	-	-	-	f 3:50	-	-	4:51	-	-	5:51	-	-	6:50	-	-	f 8:05	-	-	f 9:34	-	-	f 11:45	-	
6	Manchester		-	B 7:26	-	-	-	-	B 9:55	-	-	-	B 11:25	-	-	B 12:55	-	-	B 2:26	-	-	-	B 3:56	-	-	B 4:57	-	-	5:57	-	-	B 6:56	-	-	B 8:12	-	-	B 9:40	-	-	B 11:51	-	
7	West Gloucester		-	B 7:46	-	-	-	-	B 10:15	-	-	-	B 11:45	-	-	B 1:15	-	-	B 2:46	-	-	-	B 4:16	-	-	B 5:17	-	-	B 6:03	-	-	B 7:16	-	-	B 8:32	-	-	B 10:00	-	-	B 12:11	-	
7	Gloucester		-	B 7:54	-	-	-	-	B 10:23	-	-	-	B 11:53	-	-	B 1:23	-	-	B 2:54	-	-	-	B 4:24	-	-	B 5:25	-	-	B 6:16	-	-	B 7:24	-	-	B 8:40	-	-	B 10:08	-	-	B 12:11	-	
8	Rockport		-	B 7:54	-	-	-	-	B 10:23	-	-	-	B 11:53	-	-	B 1:23	-	-	B 2:54	-	-	-	B 4:24	-	-	B 5:25	-	-	B 6:23	-	-	B 7:24	-	-	B 8:40	-	-	B 10:08	-	-	B 12:19	-	

Saturday & Sunday — Inbound to Boston

ZONE	STATION	SATURDAY TRAIN # / SUNDAY TRAIN #	1150L / 2150L	1150X / 2150X	1100 / 2100	1152L / 2152L	1152X / 2152X	1102 / 2102	1154L / 2154L	1154X / 2154X	1104 / 2104	1156L / 2156L	1156X / 2156X	1106 / 2106	1158L / 2158L	1158X / 2158X	1108 / 2108	1160L / 2160L	1160X / 2160X	1110 / 2110	1162L / 2162L	1162X / 2162X	1112 / 2112	1164L / 2164L	1164X / 2164X	1114 / 2114	1166L / 2166L	1166X / 2166L	1116 / 2116
	Bikes Allowed																												
8	Rockport		-	-	B 5:50	-	-	B 7:50	-	-	B 9:50	-	-	B 11:50	-	-	B 1:50	-	-	B 3:50	-	-	B 5:50	-	-	B 7:50	-	-	B 9:50
7	Gloucester		-	-	B 5:57	-	-	B 7:57	-	-	B 9:57	-	-	B 11:57	-	-	B 1:57	-	-	B 3:57	-	-	B 5:57	-	-	B 7:57	-	-	B 9:57
7	West Gloucester		-	-	6:13	-	-	8:13	-	-	10:13	-	-	12:13	-	-	2:13	-	-	4:13	-	-	6:13	-	-	8:13	-	-	10:13
6	Manchester		-	-	6:20	-	-	8:20	-	-	10:20	-	-	12:20	-	-	2:20	-	-	4:20	-	-	6:20	-	-	8:20	-	-	10:20
5	Beverly Farms		-	-	f 6:26	-	-	f 8:26	-	-	f 10:26	-	-	f 12:26	-	-	f 2:26	-	-	f 4:26	-	-	f 6:26	-	-	f 8:26	-	-	f 10:26
4	Montserrat		-	-	f 6:32	-	-	f 8:32	-	-	f 10:32	-	-	f 12:32	-	-	f 2:32	-	-	f 4:32	-	-	f 6:32	-	-	f 8:32	-	-	f 10:32
8	Newburyport		B 4:12	B 5:43	-	B 6:08	B 7:37	-	B 8:02	B 9:33	-	B 10:02	B 11:30	-	B 12:02	B 1:33	-	B 2:02	B 3:33	-	B 4:05	B 5:33	-	B 6:12	B 7:37	-	B 8:12	B 9:43	-
7	Rowley		B 4:36	-	-	B 6:34	-	-	B 8:30	-	-	B 10:30	-	-	B 12:30	-	-	B 2:30	-	-	B 4:32	-	-	B 6:36	-	-	B 8:36	-	-	
6	Ipswich		B 4:52	-	-	B 6:50	-	-	B 8:48	-	-	B 10:48	-	-	B 12:48	-	-	B 2:48	-	-	B 4:49	-	-	B 6:52	-	-	B 8:52	-	-	
5	Hamilton/Wenham		B 5:10	-	-	B 7:09	-	-	B 9:08	-	-	B 11:08	-	-	B 1:08	-	-	B 3:08	-	-	B 5:09	-	-	B 7:10	-	-	B 9:10	-	-	
5	North Beverly		B 5:18	-	-	B 7:18	-	-	B 9:17	-	-	B 11:17	-	-	B 1:17	-	-	B 3:17	-	-	B 5:17	-	-	B 7:18	-	-	B 9:18	-	-	
4	Beverly (Bus arrival)		B 5:27	B 6:27	-	B 7:27	B 8:27	-	B 9:27	B 10:27	-	B 11:27	B 12:27	-	B 1:27	B 2:27	-	B 3:27	B 4:27	-	B 5:27	B 6:27	-	B 7:27	B 8:27	-	B 9:27	B 10:27	-
4	Beverly (Train departure)		5:37	→	6:37	7:37	→	8:37	9:37	→	10:37	11:37	→	12:37	1:37	→	2:37	3:37	→	4:37	5:37	→	6:37	7:37	→	8:37	9:37	→	10:37
3	Salem		5:41	Board Rockport	6:41	7:41	-	8:41	9:41	-	10:41	11:41	-	12:41	1:41	-	2:41	3:41	-	4:41	5:41	-	6:41	7:41	-	8:41	9:41	-	10:41
3	Swampscott		5:48	Train 1100/2100	6:48	7:48	-	8:48	9:48	-	10:48	11:48	-	12:48	1:48	-	2:48	3:48	-	4:48	5:48	-	6:48	7:48	-	8:48	9:48	-	10:48
2	Lynn		5:51	at Beverly	6:51	7:51	-	8:51	9:51	-	10:51	11:51	-	12:51	1:51	-	2:51	3:51	-	4:51	5:51	-	6:51	7:51	-	8:51	9:51	-	10:51
1A	Chelsea		f 6:00	for service to	f 7:00	f 8:00	-	f 9:00	f 10:00	-	f 11:00	f 12:00	-	f 1:00	f 2:00	-	f 3:00	f 4:00	-	f 5:00	f 6:00	-	f 7:00	f 8:00	-	f 9:00	f 10:00	-	f 11:00
1A	North Station		6:14	Boston	7:15	8:14	-	9:15	10:14	-	11:15	12:14	-	1:15	2:14	-	3:15	4:14	-	5:15	6:14	-	7:15	8:14	-	9:15	10:14	-	11:15

Saturday & Sunday — Outbound from Boston

ZONE	STATION	SATURDAY TRAIN # / SUNDAY TRAIN #	1151L / 2151L	1101 / 2101	1151X / 2151X	1153L / 2153L	1103 / 2103	1153X / 2153X	1155L / 2155L	1105 / 2105	1155X / 2155X	1157L / 2157L	1107 / 2107	1157X / 2157X	1159L / 2159L	1109 / 2109	1159X / 2159X	1161L / 2161L	1111 / 2111	1161X / 2161X	1163L / 2163L	1113 / 2113	1163X / 2163X	1165L / 2165L	1115 / 2115	1165X / 2165X	1167L / 2167L	1117 / 2117	1167X / 2167X
	Bikes Allowed																												
1A	North Station		5:30	6:30	Board Rockport Train 1101/2101 & change at Beverly for bus service to Newburyport	7:30	8:30	-	9:30	10:30	-	11:30	12:30	-	1:30	2:30	-	3:30	4:30	-	5:30	6:30	-	7:30	8:30	-	10:00	11:00	-
1A	Chelsea		f 5:41	f 6:41		f 7:41	f 8:41	-	f 9:41	f 10:41	-	f 11:41	f 12:41	-	f 1:41	f 2:41	-	f 3:41	f 4:41	-	f 5:41	f 6:41	-	f 7:41	f 8:41	-	f 10:11	f 11:11	-
2	Lynn		5:50	6:50		7:50	8:50	-	9:50	10:50	-	11:50	12:50	-	1:50	2:50	-	3:50	4:50	-	5:50	6:50	-	7:50	8:50	-	10:20	11:20	-
3	Swampscott		5:53	6:53		7:53	8:53	-	9:53	10:53	-	11:53	12:53	-	1:53	2:53	-	3:53	4:53	-	5:53	6:53	-	7:53	8:53	-	10:23	11:23	-
3	Salem		6:00	7:00		8:00	9:00	-	10:00	11:00	-	12:00	1:00	-	2:00	3:00	-	4:00	5:00	-	6:00	7:00	-	8:00	9:00	-	10:30	11:30	-
4	Beverly (Train arrival)		6:04	7:04	→	8:04	9:04	→	10:04	11:04	→	12:04	1:04	→	2:04	3:04	→	4:04	5:04	→	6:04	7:04	→	8:04	9:04	→	10:34	11:34	→
4	Beverly (Bus departure)		B 6:09	-	B 7:09	B 8:09	-	B 9:09	B 10:09	-	B 11:09	B 12:09	-	B 1:09	B 2:09	-	B 3:09	B 4:09	-	B 5:09	B 6:09	-	B 7:09	B 8:09	-	B 9:09	B 10:39	-	B 11:39
5	North Beverly		B 6:17	-	-	B 8:18	-	-	B 10:19	-	-	B 12:19	-	-	B 2:19	-	-	B 4:19	-	-	B 6:19	-	-	B 8:18	-	-	B 10:47	-	-
5	Hamilton/Wenham		B 6:24	-	-	B 8:26	-	-	B 10:27	-	-	B 12:28	-	-	B 2:28	-	-	B 4:27	-	-	B 6:26	-	-	B 8:26	-	-	B 10:54	-	-
6	Ipswich		B 6:41	-	-	B 8:44	-	-	B 10:47	-	-	B 12:48	-	-	B 2:48	-	-	B 4:47	-	-	B 6:46	-	-	B 8:44	-	-	B 11:11	-	-
7	Rowley		B 6:55	-	-	B 9:00	-	-	B 11:04	-	-	B 1:06	-	-	B 3:06	-	-	B 5:04	-	-	B 7:02	-	-	B 9:00	-	-	B 11:25	-	-
8	Newburyport		B 7:18	-	B 7:53	B 9:24	-	B 9:56	B 11:31	-	B 12:03	B 1:34	-	B 2:03	B 3:34	-	B 4:03	B 5:31	-	B 5:59	B 7:28	-	B 7:59	B 9:24	-	B 9:53	B 11:48	-	B 12:23
4	Montserrat		-	f 7:08	-	-	f 9:08	-	-	f 11:08	-	-	f 1:08	-	-	f 3:08	-	-	f 5:08	-	-	f 7:08	-	-	f 9:08	-	-	f 11:38	-	
5	Beverly Farms		-	f 7:14	-	-	f 9:14	-	-	f 11:14	-	-	f 1:14	-	-	f 3:14	-	-	f 5:14	-	-	f 7:14	-	-	f 9:14	-	-	f 11:44	-	
6	Manchester		-	B 7:20	-	-	B 9:20	-	-	B 11:20	-	-	B 1:20	-	-	B 3:20	-	-	B 5:20	-	-	B 7:20	-	-	B 9:20	-	-	B 11:50	-	
7	West Gloucester		-	B 7:40	-	-	B 9:40	-	-	B 11:40	-	-	B 1:40	-	-	B 3:40	-	-	B 5:40	-	-	B 7:40	-	-	B 9:40	-	-	B 12:10	-	
7	Gloucester		-	B 7:48	-	-	B 9:48	-	-	B 11:48	-	-	B 1:48	-	-	B 3:48	-	-	B 5:48	-	-	B 7:48	-	-	B 9:48	-	-	B 12:18	-	
8	Rockport		-	B 7:48	-	-	B 9:48	-	-	B 11:48	-	-	B 1:48	-	-	B 3:48	-	-	B 5:48	-	-	B 7:48	-	-	B 9:48	-	-	B 12:18	-	

Times in purple with "f" indicate a flag stop: Passengers must tell the conductor that they wish to leave. Passengers waiting to board must be visible on the platform for the train to stop.

Bikes: Bicycles are allowed on all trains unless the designated areas are too crowded. Bicycles are not allowed on board buses.

Board the next Rockport Train at Beverly for continued service to Boston

Board a Rockport Train and change to the bus at Beverly for continued service to Newbruyport

High level platform and bridge plate available. Visit **mbta.com/accessibility** for more information.

140X: Service with an "X" operates express between Beverly and Newburyport and connects with a regular Rockport Train.

140L: Service with an "L" makes local stops between Newburyport and Beverly and connects with a regular Newburyport Train.

B: Bus departure times on the Newburyport and Rockport Line (Due to construction activities for the Gloucester Drawbridge Replacement project, bus shuttles also replace train service between Rockport, Gloucester, West Gloucester and Manchester on designated outbound trips).

Trip Generation Calculations

ITE TRIP GENERATION WORKSHEET
(11th Edition, Updated 2021)

LANDUSE: Multifamily Housing (Mid-Rise) - Not Close to Rail Transit: *4-10 stories*
LANDUSE CODE: 221 Independent Variable --- Number of Dwelling Units
SETTING/LOCATION: General Urban/Suburban
JOB NAME: **Crescent Parcel - Salem** 121 units
JOB NUMBER: **15146.00**

WEEKDAY

RATES:

	# Studies	R^2	Total Trip Ends Average	Total Trip Ends Low	Total Trip Ends High	Independent Variable Range Average	Independent Variable Range Low	Independent Variable Range High	Directional Distribution Enter	Directional Distribution Exit
DAILY	11	0.93	4.54	3.76	5.40	201	60	330	50%	50%
AM PEAK OF GENERATOR	23	0.89	0.35	0.13	0.53	226	21	1,168	26%	74%
PM PEAK OF GENERATOR	22	0.93	0.39	0.19	0.60	221	21	1,168	60%	40%
AM PEAK (ADJACENT ST)	30	0.91	0.37	0.15	0.53	173	26	490	23%	77%
PM PEAK (ADJACENT ST)	31	0.91	0.39	0.19	0.57	169	26	490	61%	39%

TRIPS:

	BY AVERAGE Total	BY AVERAGE Enter	BY AVERAGE Exit	BY REGRESSION Total	BY REGRESSION Enter	BY REGRESSION Exit
DAILY	**550**	**275**	**275**	532	266	266
AM PEAK OF GENERATOR	42	11	31	45	12	33
PM PEAK OF GENERATOR	47	28	19	54	33	22
AM PEAK (ADJACENT ST)	45	10	34	**42**	**10**	**32**
PM PEAK (ADJACENT ST)	47	29	18	**48**	**29**	**19**

SATURDAY

RATES:

	# Studies	R^2	Total Trip Ends Average	Total Trip Ends Low	Total Trip Ends High	Independent Variable Range Average	Independent Variable Range Low	Independent Variable Range High	Directional Distribution Enter	Directional Distribution Exit
DAILY	5	0.91	4.57	4.03	5.31	250	140	330	50%	50%
PEAK OF GENERATOR	5	0.92	0.39	0.34	0.43	250	140	330	51%	49%

TRIPS:

	BY AVERAGE Total	BY AVERAGE Enter	BY AVERAGE Exit	BY REGRESSION Total	BY REGRESSION Enter	BY REGRESSION Exit
DAILY	554	277	277	572	286	286
PEAK OF GENERATOR	47	24	23	49	25	24

SUNDAY

RATES:

	# Studies	R^2	Total Trip Ends Average	Total Trip Ends Low	Total Trip Ends High	Independent Variable Range Average	Independent Variable Range Low	Independent Variable Range High	Directional Distribution Enter	Directional Distribution Exit
DAILY	5	0.85	3.77	3.06	4.24	250	140	330	50%	50%
PEAK OF GENERATOR	5	0.79	0.32	0.26	0.42	250	140	330	55%	45%

TRIPS:

	BY AVERAGE Total	BY AVERAGE Enter	BY AVERAGE Exit	BY REGRESSION Total	BY REGRESSION Enter	BY REGRESSION Exit
DAILY	458	229	229	464	232	232
PEAK OF GENERATOR	39	21	17	51	28	23

Mode Share Data

COMMUTING CHARACTERISTICS BY SEX

United States Census Bureau

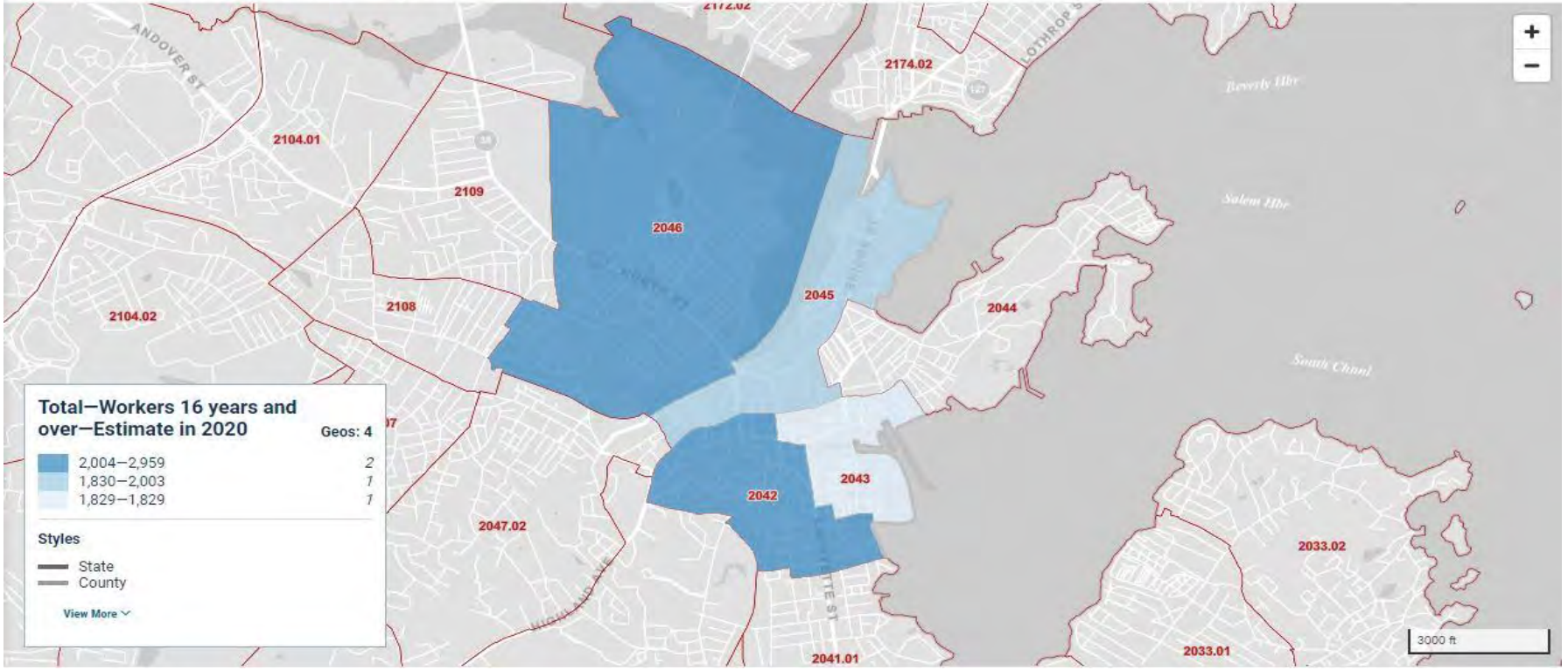
Note: The table shown may have been modified by user selections. Some information may be missing.

DATA NOTES	
TABLE ID:	S0801
SURVEY/PROGRAM:	American Community Survey
VINTAGE:	2020
DATASET:	ACSST5Y2020
PRODUCT:	ACS 5-Year Estimates Subject Tables
UNIVERSE:	None
FTP URL:	None
API URL:	https://api.census.gov/data/2020/acs/acs5/subject
USER SELECTIONS	
VINTAGES	2020
DATASETS	American Community Survey
TOPICS	Commuting
GEOS	Census Tract 2045, Essex County, Massachusetts; Census Tract 2043, Essex County, Massachusetts; Census Tract 2042, Essex County, Massachusetts; Census Tract 2046, Essex County, Massachusetts
EXCLUDED COLUMNS	None
APPLIED FILTERS	None
APPLIED SORTS	None
PIVOT & GROUPING	None
WEB ADDRESS	https://data.census.gov/cedsci/table?q=2020%20ACS&t=Commuting&g=1400000US25009204200,25009204300,25009204500,25009204600
TABLE NOTES	Although the American Community Survey (ACS) produces population, demographic and housing unit estimates, for 2020, the 2020 Census provides the official counts of the population and housing units for the nation, states, counties, cities, and towns. For 2016 to 2019, the Population Estimates Program provides estimates of the population for the nation, states, counties, cities, and towns and intercensal housing unit estimates for the nation, states, and counties.
	Supporting documentation on code lists, subject definitions, data accuracy, and statistical testing can be found on the American Community Survey website in the Technical Documentation section. Sample size and data quality measures (including coverage rates, allocation rates, and response rates) can be found on the American Community Survey website in the Methodology section.
	Source: U.S. Census Bureau, 2016-2020 American Community Survey 5-Year Estimates
	Data are based on a sample and are subject to sampling variability. The degree of uncertainty for an estimate arising from sampling variability is represented through the use of a margin of error. The value shown here is the 90 percent margin of error. The margin of error can be interpreted roughly as providing a 90 percent probability that the interval defined by the estimate minus the margin of error and the estimate plus the margin of error (the lower and upper confidence bounds) contains the true value. In addition to sampling variability, the ACS estimates are subject to nonsampling error (for a discussion of nonsampling variability, see ACS Technical Documentation). The effect of nonsampling error is not represented in these tables.
	The 12 selected states are Connecticut, Maine, Massachusetts, Michigan, Minnesota, New Hampshire, New Jersey, New York, Pennsylvania, Rhode Island, Vermont, and Wisconsin.
	Workers include members of the Armed Forces and civilians who were at work last week.
	When information is missing or inconsistent, the Census Bureau logically assigns an acceptable value using the response to a related question or questions. If a logical assignment is not possible, data are filled using a statistical process called allocation, which uses a similar individual or household to provide a donor value. The "Allocated" section is the number of respondents who received an allocated value for a particular subject.
	2019 ACS data products include updates to several categories of the existing means of transportation question. For more information, see: Change to Means of Transportation.
	The 2016-2020 American Community Survey (ACS) data generally reflect the September 2018 Office of Management and Budget (OMB) delineations of metropolitan and micropolitan statistical areas. In certain instances, the names, codes, and boundaries of the principal cities shown in ACS tables may differ from the OMB delineation lists due to differences in the effective dates of the geographic entities.
	Estimates of urban and rural populations, housing units, and characteristics reflect boundaries of urban areas defined based on Census 2010 data. As a result, data for urban and rural areas from the ACS do not necessarily reflect the results of ongoing urbanization.
	Explanation of Symbols:- The estimate could not be computed because there were an insufficient number of sample observations. For a ratio of medians estimate, one or both of the median estimates falls in the lowest interval or highest interval of an open-ended distribution.N The estimate or margin of error cannot be displayed because there were an insufficient number of sample cases in the selected geographic area. (X) The estimate or margin of error is not applicable or not available.median- The median falls in the lowest interval of an open-ended distribution (for example "2,500-")median+ The median falls in the highest interval of an open-ended distribution (for example "250,000+").** The margin of error could not be computed because there were an insufficient number of sample observations.*** The margin of error could not be computed because the median falls in the lowest interval or highest interval of an open-ended distribution.***** A margin of error is not appropriate because the corresponding estimate is controlled to an independent population or housing estimate. Effectively, the corresponding estimate has no sampling error and the margin of error may be treated as zero.
COLUMN NOTES	None

	Census Tract 2042, Essex County,	Census Tract 2043, Essex County,	Census Tract 2045, Essex County,	Census Tract 2046, Essex County,	Census Tracts
	Total	Total	Total	Total	TOTAL
Label	**Estimate**	**Estimate**	**Estimate**	**Estimate**	**ESTIMATE**
Workers 16 years and over	2,959	1,829	2,003	2,836	9627
MEANS OF TRANSPORTATION TO WORK					
Car, truck, or van	68.6%	63.5%	63.3%	67.8%	66%
Drove alone	55.2%	57.6%	60.5%	65.0%	60%
Carpooled	13.5%	6.0%	2.8%	2.8%	7%
In 2-person carpool	11.8%	4.0%	2.8%	1.8%	5%
In 3-person carpool	1.7%	0.0%	0.0%	1.0%	1%
In 4-or-more person carpool	0.0%	1.9%	0.0%	0.0%	0%
Workers per car, truck, or van	1.11	1.06	1.02	1.03	
Public transportation (excluding taxicab)	4.7%	8.6%	9.7%	14.6%	9%
Walked	12.7%	13.9%	13.9%	3.8%	11%
Bicycle	0.0%	0.0%	0.7%	2.6%	1%
Taxicab, motorcycle, or other means	6.5%	2.8%	4.0%	0.0%	3%
Worked from home	7.4%	11.2%	8.3%	11.3%	9%

American Community Survey

Total—Workers 16 years and over—Estimate in 4 Geos in 2020

2020 : ACS 5-Year Estimates Subject Tables

Variable(s) | Select | Clear Geos | Layer | Year | Basemap | Style | Colors | Classes | Identify | Table | Notes