



**DRAFT Environmental Assessment  
Jeffrey's Neck Road Flood Protection Project  
Ipswich, Essex, MA**

**4110-DR-MA**

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**FEMA**

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**LIST OF ACRONYMS**

AASHTO	American Association of State Highway and Transportation Officials
ACEC	Area of Critical Environmental Concern
APE	Area of Potential Effect
ASL	Above Sea Level
BMP	Best Management Practice
CEQ	Council on Environmental Quality
C.F.R.	Code of Federal Regulations
CMR	Code of Massachusetts Regulations
CWA	Clean Water Act
DPW	Department of Public Works
EEA	Executive Office of Energy and Environmental Affairs
ENF	Environmental Notification Form
EPA	United States Environmental Protection Agency
ESA	Endangered Species Act
FEMA	Federal Emergency Management Agency
FIRM	Flood Insurance Rate Map
FONSI	Finding of No Significant Impact
HMGP	Hazard Mitigation Grant Program
IEMA	Ipswich Emergency Management Agency
MACRIS	Massachusetts Cultural Resource Information System
MassDEP	Massachusetts Department of Environmental Protection
MassDOT	Massachusetts Department of Transportation
MEPA	Massachusetts Environmental Policy Act
NEPA	National Environmental Policy Act
NHPA	National Historic Preservation Act
NMFS	National Marine Fisheries Service
NPDES	National Pollutant Discharge Elimination System
NRHP	National Register of Historic Places
NRHP NRIS	National Register of Historic Places Nation Resources Information Service
SHPO	State Historic Preservation Officer
USACE	United States Army Corps of Engineers
USC	United States Code

## **1.0 INTRODUCTION**

A severe winter storm from February 8-19, 2013, caused snow and flood damage in several areas across the Commonwealth of Massachusetts. On April 19, 2013, the President declared the winter storm a major disaster (FEMA 2013). The declaration authorized the Federal Emergency Management Agency (FEMA) to provide assistance to the Commonwealth per federal disaster declaration DR-4110-MA, in accordance with Section 404 of the Robert T. Stafford Disaster Relief and Emergency Assistance Act of 1974 (42 United States Code [USC] 5172). The Town of Ipswich (Town) has applied to FEMA's Hazard Mitigation Grant Program (HMGP) for financial assistance to fund planning, design, and construction of recommended improvements to a 3,800-foot section of Jeffrey's Neck Road and Island Park Road in Ipswich, Massachusetts (Proposed Action). The Massachusetts Emergency Management Agency is the State agency sponsor for the project.

The National Environmental Policy Act (NEPA) requires FEMA to follow a specific planning process to ensure that it has considered, and the public is fully informed about the consequences of a proposed federal action, such as the approval of a mitigation project under the HMGP grant for a Stafford Act major disaster declaration. To meet its NEPA requirements, FEMA has prepared this Environmental Assessment to analyze potential effects of the Proposed Action and alternatives on the human environment and to determine whether the project warrants preparation of an Environmental Impact Statement or a Finding of No Significant Impact (FONSI).

FEMA has prepared this Environmental Assessment in accordance with NEPA, its implementing regulations, and FEMA and Department of Homeland Security policy.

## **2.0 PURPOSE AND NEED**

FEMA's HMGP fosters the protection of health, safety, and welfare of citizens, and assists communities in mitigating damages caused by disasters and reduces future losses resulting from natural disasters. The purpose of the project is to mitigate flooding on sections of Jeffrey's Neck Road and Island Park Road. The Proposed Action is needed because flooding on Jeffrey's Neck Road and Island Park Road causes the roadway to become impassable for both residents and emergency personnel and equipment and is the only means of egress for the Great Neck neighborhood (Town of Ipswich 2013a).

## **3.0 PROJECT LOCATION AND BACKGROUND**

The project area is along a 3,900-foot stretch of Jeffrey's Neck Road and 375-foot stretch of Island Park Road in the northeastern portion of the Town, for a total project length of 4,275 feet (Appendix A, Documents 1 & 2). Jeffrey's Neck Road is the sole access road for the Great Neck, Little Neck, Eagle Hill, and Island Park neighborhoods, which include approximately 750 residences. Jeffrey's Neck Road is bordered by salt marsh and single-family residential buildings. West of the wetlands is the Eagle Hill River, and to the east, the Ipswich River. Roadway elevations vary from a low of approximately 7.0 feet above sea level (ASL) near the intersection with Island Park Road to approximately 10.0 feet ASL near the intersection with Northridge Road, the northern terminus of the project area. In addition, the westernmost segments of Island Park Road are included as part of the project area.

Jeffrey's Neck Road and Island Park Road have experienced repeated flooding when storm surge occurs during some high tides, nor'easter storms, or a combination of those factors. Flooding from the western salt marsh has led to periodic road closures along Jeffrey's Neck Road and Island Park Road, particularly in areas adjacent to the salt marsh that are at 7.0 to 10.0 feet ASL. The Ipswich Chief of Police reported that road closures occurred during major storms in 2003 (5 hours), 2007 (36 hours), and 2013 (103 hours) (MEMA 2013). Jeffrey's Neck Road was shut down 11 times between 2003 and 2013 (Town of Ipswich 2013b). Information was not available for closures that were less than 4 hours in duration (MEMA 2013).

## 4.0 ALTERNATIVES

NEPA regulations state that an agency must explore and objectively evaluate all reasonable alternatives, including the No Action Alternative, and for alternatives that were eliminated from detailed study, briefly discuss the reasons for their elimination (40 C.F.R. 1502.14). This section discusses the feasible alternatives that would meet the Purpose and Need, and alternatives eliminated from full analysis for the Jeffrey's Neck Road Flood Protection Project. Alternatives were evaluated based upon engineering and budgetary constraints, environmental effects, and available property.

### 4.1 Alternative 1: No Action Alternative

Under the No Action Alternative, no federal funding would be made available to reduce flooding along Jeffrey's Neck Road. Jeffrey's Neck Road would remain at elevations from a low of approximately 7 feet near Island Park Road to approximately 10 feet near the intersection with Northridge Road. The existing paved roadway and shoulder widths would vary throughout the length of the road between 24 feet and 26 feet. No additional safety features, such as guardrails and pedestrian crossings, would be added to Jeffrey's Neck Road.

### 4.2 Alternative 2: Proposed Action - Road Elevation, Expansion, and Safety Features

Under the Proposed Action, the Town would raise the elevation of portions of Jeffrey's Neck Road and Island Park Road to better accommodate elevated sea levels due to high tides, potential future sea level rise, and storm surge. The Town of Ipswich would complete improvements along a 375-foot section of Island Park Road at the intersection with Jeffrey's Neck Road and a 3,900-foot section of Jeffrey's Neck Road from Island Park Road on the south to Northridge Road on the north (Appendix A, Document 2; Appendix B, Document 1). Specific elements include:

- Elevate all sections of the road that are currently below 9 feet above sea level (ASL) to at least 9 feet ASL,
- Widen all sections of the road that are currently less than 26 feet wide to 26 feet,
- Install safety features (e.g., guard rails, signage, reflectors, flood gauge, etc.),
- Complete all work within the existing established roadway shoulders to avoid filling within the salt marsh, and
- Roadway shoulders would be stabilized with coir logs and native plantings except along the northernmost area on the west side of the road which would replace existing rip rap with appropriately sized riprap.

Elevating the existing roadway may require the construction of a new subbase to improve roadway stability. This would require that portions of the existing roadway subbase be removed, and that new subbase gravel be placed to improve the structural integrity of the roadway. Completing the roadway elevation to 9 feet ASL would provide mitigation to the roadway with minimal modifications to the driveways of five homes along the project area. At sections that are under 26.0 feet in width, the road would be widened, using existing shoulders, to reach a width of 26.0 feet. Construction would remain within the same footprint as the existing road and shoulder with no ground disturbance required beyond the existing shoulder. Under the Proposed Action, existing utility poles and water lines would remain and would not require relocation.

### 4.3 Alternative(s) Considered and Dismissed

In its 2013 application for HMGP funding, the Town considered and dismissed the project alternatives discussed below (Town of Ipswich 2013a). These alternatives were considered prior to the release of the current Flood Insurance Rate Map (FIRM) for the project area in July 2014.

#### 4.3.1 Alternative 3: Safety Features and Roadway Expansion

Under Alternative 3, Jeffrey's Neck Road would not be elevated to mitigate against flooding. Alternative 3 would include the installation of safety features described in the Proposed Action (i.e., guardrails, signage, and reflectors) to improve driver safety during periods of heavy fog or significant snow cover. Alternative 3 would also incorporate a flood gauge to display how much flooding has occurred and whether safe passage is possible. Under Alternative 3, Jeffrey's Neck Road would be expanded to a 30-foot shared roadway that would better accommodate pedestrian and bicycle traffic. This would occur by widening paved surfaces by 4 to 6 feet beyond existing conditions, resulting in two 11-foot travel lanes for vehicular traffic and 4-foot paved shoulders for pedestrians and bicyclists.

Given that Alternative 3 would not mitigate against continued flooding along Jeffrey's Road Neck, Alternative 3 does not meet purpose and need and has been dismissed from further consideration. Construction activities would also encroach in wetlands and, therefore, could require extensive environmental permitting and other agency reviews with the potential for non-compliance with State and Federal environmental regulations.

#### **4.3.2 Alternative 4 – Storm Wall Construction**

Under Alternative 4 storm walls would be constructed along both sides of Jeffrey's Neck Road between Island Park Road and Eagle Hill Road, and then from the eastern end of Eagle Hill Road to the area of Northridge Road. The storm walls would be constructed to 2.0-feet above Base Flood Elevation to 15.0 feet ASL. Alternative 4 would provide protection for the road surface from splash-over due to wave action during storms with high winds.

Alternative 4 was dismissed because it would not be suitable to mitigate the effects from flooding due to elevated tides. Installation of weep holes would be required along the bottom of the storm walls to drain collected water from the road surface. During high tides, the weep holes would allow sea water to pass through and defeat the intent to keep the road from flooding.

Alternative 4 was dismissed for the following additional reasons:

- Construction of the storm walls would require significant excavation to form footings to support the storm walls and would require complex permitting due to potential effects to biological resources.
- It is also expected that public support would not exist for this alternative since the storm walls would restrict views of the resource areas from the roadway and nearby residences.
- Construction activities would encroach in wetlands and, therefore, could require extensive environmental permitting and other agency reviews with the potential for non-compliance with State and Federal environmental regulations.
- It would not meet purpose and need because the weep holes would allow roadway flooding during high tides.

#### **4.3.3 Alternative 5 – Elevation of Jeffrey's Neck Road to 13.0 feet (i.e., 100-year Floodplain)**

Alternative 5 would elevate the road 6.0 feet (or more) above current conditions to accommodate projected sea level rise and increased storm surge. Designed to protect Jeffrey's Neck Road from the 100-year flood event, the roadway would need to be elevated to 13.0 feet ASL. Although Alternative 5 would improve the level of protection above the 100-year storm level and would better accommodate pedestrian and bicycle traffic, numerous concerns exist. Alternative 5 was dismissed from further consideration for the following reasons:

- Elevation of Jeffrey's Neck Road by 6 feet ASL (or more) would cut off access to existing driveways along Jeffrey's Neck Road and Eagle Hill Road from the main roadway.
- The level of construction and permitting required would be extensive and cost prohibitive (estimated at more than \$20 million) (Town of Ipswich 2013a).
- Construction activities would likely require complete closure of Jeffrey's Neck Road during construction, thereby prohibiting access to residents in the approximately 750 homes located in the Great Neck, Little Neck, Eagle Hill, and Island Park areas of Ipswich.
- Construction activities would encroach in wetlands and would require extensive environmental permitting and other agency reviews with the potential for non-compliance with state and federal environmental regulations.



**5.0 AFFECTED ENVIRONMENT AND POTENTIAL EFFECTS**

This section discusses the affected environment and potential effects of the three Alternatives on environmental and cultural resources in the project area. Potential cumulative effects are discussed in Section 5.7. When possible, quantitative information is provided to establish potential effects. Potential effects are evaluated based on the criteria listed in Table 5-1 for both beneficial and negative effects.

**Table 5-1. Effect Significance and Context Evaluation Criteria for Potential Effects**

Effect Scale	Criteria
Negligible	The resource would not be affected. There would be no effect or the changes would either be non-detectable or, if detected, would have effects that would be slight and local. Effects would be well below regulatory standards, as applicable.
Minor	Changes to the resource would be measurable, but the changes would be small and localized. Effects would be within or below regulatory standards, as applicable. Mitigation measures would reduce any potential adverse effects.
Moderate	Changes to the resource would be measurable and have either localized or regional scale effects. Effects would be within or below regulatory standards, but historical conditions would be altered on a short-term basis. Mitigation measures would be necessary, and the measures would reduce any potential adverse effects.
Major	Changes to the resource would be readily measurable and would have substantial consequences on regional levels. Effects would exceed regulatory standards. Mitigation measures to offset adverse effects would be required to reduce effects, though long-term changes to the resource would be expected.

Eight environmental resource topics were excluded from analysis because they do not apply to the project as covered by this Environmental Assessment (Table 5-2).

**Table 5-2. Resources Excluded from Analysis**

Resource Area	Rationale for Exclusion
Air Quality	Construction equipment would cause temporary air emissions and the area is in attainment for all six criteria pollutants.
Bedrock	The extent of ground disturbance would not alter the underlying bedrock within the project area, as the extent of ground disturbance would be limited to subsurface areas above the bedrock.
Drinking Water	There are no sole source aquifers in or near the project area.
Farmland	Project areas is in an existing right-of-way and the soils are not classified for farmland and would therefore not effect Prime or Unique Farmland (NRCS 2017).
Land Use and Planning	Neither alternative under consideration would affect or change current land use.
Seismic Safety	Project area is not in a seismic active area nor would it affect seismic activity.
Climate Change	The release of greenhouse gasses from construction activities would be negligible and not result in a measurable effect on climate.
Wild and Scenic Rivers	There are no classified Wild and Scenic Rivers in the project area.

## **5.1 PHYSICAL RESOURCES**

### **5.1.1 Topography and Soils**

#### **5.1.1.1 Existing Conditions**

The topography of the project area is flat, and the roadway elevations gradually rise from a low of approximately 7.0 feet ASL near the intersection with Island Park Road to approximately 10.0 feet ASL near the intersection with Northridge Road (MEMA 2013).

The U.S. Department of Agriculture's Natural Resources Conservation Service Web Soil Survey for Essex County show soils within the project area as being composed of two major soil types: Ipswich and Westbrook mucky peats (about 52 percent) and Boxford silt loam (about 47 percent) (USDA 2017). At this location, the Ipswich and Westbrook soils are predominantly comprised of the marsh on either side of Jeffrey's Neck Road.

#### **5.1.1.2 Potential Effects and Proposed Mitigation**

##### **Alternative 1: No Action**

The No Action Alternative would have no effect on topography or soils from construction activities because no work beyond usual maintenance would be conducted in the project area. The project area would remain susceptible to flooding during storm events, elevated tides, or the combination of both. Flooding could contribute to erosion along Jeffrey's Neck Road and Island Park Road which could result in soil loss and change in topography. Therefore, the No Action Alternative could have a minor negative effect, on soils and topography in areas where flooding contributes to erosion.

##### **Alternative 2: Proposed Action - Road Elevation, Expansion, and Safety Features**

Under the Proposed Action, construction activities would adhere to Federal, State, and local regulations to control erosion and sedimentation and would apply current best management practices (BMP), such as silt fences or fiber logs, to limit construction-related short-term erosion. The increase in local topography to 9.0 feet ASL would constitute a moderate beneficial effect because the increased road elevation would decrease flooding and erosion frequency along the roads, particularly on the over wash side of Jeffrey's Neck Rd. The proposed 3,350 cubic yards of ground disturbance would result in negligible effects on soils due to much of the soil being fill from the original road construction and temporary erosion resulting from project activities (Coneco 2017).

## **5.2 WATER RESOURCES**

### **5.2.1 Water Quality**

The Clean Water Act (CWA) regulates the discharge of pollutants into water and is administered by the U.S. Army Corps of Engineers (USACE) and the U.S. Environmental Protection Agency (EPA). Section 404 of the CWA establishes the permit requirements for the discharge of dredged or fill materials into Waters of the United States and traditional navigable waterways. USACE regulation of activities within navigable waters is also authorized under Section 10 of the Rivers and Harbors Act. Section 402 of the CWA establishes the National Pollutant Discharge Elimination System (NPDES) authorizing the EPA to regulate both point and non-point pollutant sources, including stormwater and stormwater runoff. Activities that disturb one acre of ground or more are required to apply for an NPDES permit; in Massachusetts the NPDES permits is issued by the EPA. A CWA Section 401 Water Quality Certification, from MassDEP, is required when obtaining a CWA Section 402 or 404 permit.

MassDEP administers the regulatory provisions of the Massachusetts Public Waterfront Act, commonly called "Chapter 91." The program issues licenses for projects in waterways and ensures that projects meet public-access requirements (310 Code of Massachusetts Regulations [CMR] 9.01(2)).

### 5.2.1.1 Existing Conditions

The project area lies within the Parker River watershed which includes Eagle Hill River to the west, and Ipswich River watershed to the east. Stormwater runoff significantly affects surface water quality within the Parker River watershed (Commonwealth of Massachusetts 2002). Eagle Hill River is on the EPA's list of impaired waters due to fecal coliform; this impairment includes portions of the river adjacent to the project area (Massachusetts Division of Watershed Management 2015). Ipswich River is on the list of impaired waters for low flow alterations, high mercury levels in fish tissue, low dissolved oxygen, and pathogens, particularly fecal coliform (Massachusetts Division of Watershed Management 2015).

### 5.2.1.2 Potential Effects and Proposed Mitigation

#### **Alternative 1: No Action**

Under the No Action Alternative, the project area would remain susceptible to flooding during storm events, elevated tides, or the combination of both. Erosion (Section 5.1) along the edge of Jeffrey's Neck Road and Island Park Road could result in minor effects to water quality from soil and nonpoint source pollution contamination. There would be minor effects to floodplains and wetlands during flood events, as the project area would remain susceptible to flooding during storm events, elevated tides, or the combination of both. Under the No Action Alternative, there would be no changes to groundwater flow patterns or quality. The No Action Alternative could have **minor** negative effects on surface water quality, floodplains, and wetlands, during flood events.

#### **Alternative 2: Proposed Action - Road Elevation, Expansion, and Safety Features**

Under the Proposed Action, grading activities, work, and the placement of 2,054 square feet of fill below the high tide line would trigger the need for several permits. A Clean Water Act Section 404 Pre-Construction Notice application was filed with the U.S. Army Corps of Engineers New England Division on January 13, 2021, and the permit, numbered NAE-2021-00175, was issued November 23, 2021. MassDEP has confirmed that an individual Clean Water Act Section 401 Water Quality Certification would not be required; and the Wetland Protections Act Order of Conditions would stand as the 401 Water Quality Certification. The Order of Conditions was issued by the MassDEP on March 25, 2020. The Massachusetts General Law Chapter 91 application was filed with MassDEP on March 23, 2021, and the application is currently under review at MassDEP. A NPDES Construction General Permit Notice of Intent would need to be filed, as required by the EPA, upon the Town's selection of a contractor (Coneco 2021a; 2021b). No construction activities would occur before all necessary permits are secured by the Town.

Under the Proposed Action, all construction activities would need to adhere to federal, state, and local regulations and associated permits and permit conditions. Through adherence to the terms and conditions of these permits, effects to water quality would be avoided and minimized. No fill would be placed in the salt marsh, no equipment would enter the salt marsh, and all work would occur from the road. Construction BMPs including, but not limited to, the installation and maintenance of silt fence or straw bales would be in place to ensure stormwater runoff would not affect the adjacent salt marsh and the contractor would be required to have a spill prevention and control plan on-site (MassDEP 2020). All disturbed soils would be stabilized both in the interim while the living/bioengineered shoreline matures and long-term through the living shoreline itself. Once established, the living shoreline could reduce long-term soil erosion and aid in the removal of pollutants from stormwater runoff and flood waters (City of Portland, Oregon 2017).

Adverse effects to water quality would be mitigated and deemed **minor**.

## **5.2.2 Floodplains and Wetlands**

Executive Order 11988 Floodplain Management requires federal agencies to avoid to the extent possible the long- and short-term adverse effects associated with the occupancy and modification of floodplains and to avoid direct or indirect support of floodplain development wherever there is a practicable alternative. Each federal agency must provide leadership and must take action to reduce the risk of flood loss, to minimize the effect of floods on human safety, health, and welfare, and to restore and preserve the natural and beneficial values served by floodplains in carrying out its responsibilities. Executive Order 11990 Protection of Wetlands requires federal agencies to avoid to the extent possible the long- and short-term adverse effects associated with the destruction or modification of wetlands and to avoid direct or indirect support of new construction in wetlands wherever there is a practicable alternative. Again, each federal agency must provide leadership and must take action to minimize the destruction, loss, or degradation of wetlands, and to preserve and enhance the natural and beneficial values of wetlands in carrying out the agency's responsibilities.

FEMA uses an 8-Step analysis to evaluate potential effects on and mitigate effects to floodplains and wetlands in compliance with both Executive Orders 11988 and 11990 and 44 CFR Part 9 (Appendix C, Document 1). The Massachusetts Department of Conservation and Recreation Flood Hazard Management Program administers and regulates floodplains in the Commonwealth of Massachusetts and is the State Coordinating Office for the implementation of the National Flood Insurance Act and the National Flood Insurance Program; the City of Ipswich participates in the National Flood Insurance Program. Massachusetts Department of Environmental Protection Wetlands Program administers and regulates wetlands in the Commonwealth.

The Massachusetts Wetlands Protection Act (Massachusetts General Laws Chapter 131, Section 40) protects wetlands and the public interests they provide, including flood control, prevention of pollution and storm damage, and protection of public and private water supplies, groundwater supply, fisheries, land containing shellfish, and wildlife habitat. In addition to wetlands, the law protects other resource areas, such as 100-year floodplains, riverfront areas, and land under water bodies, waterways, salt ponds, fish runs, and the ocean. MassDEP oversees administration of the law, and the Ipswich Conservation Commission administers the law for the City of Ipswich. The Conservation Commission is responsible for reviewing projects on a case-by-case basis according to 310 CMR 10.00; these regulations describe how each type of resource area provides one or more of the public interests and the type and extent of work allowed in resource areas (MassDEP 2021).

### **5.2.2.1 Existing Conditions**

Based on FIRM Panel 25009C0279G (effective date July 16, 2014), Jeffrey's Neck Road is in Special Flood Hazard Area Zone AE, which is subject to inundation by the 1 percent annual chance flood (i.e., 100-year flood). The base flood elevation along Jeffrey's Neck Road and the entire project area is 13.0 feet ASL. The areas along the northernmost section of Jeffrey's Neck Road are also subject to moderate wave action associated with Eagle Hill River to the west (Appendix A, Document 3).

From 2003 to 2013, flooding occurred along Jeffrey's Neck Road during recorded tides ranging from 7.32 to 8.25 feet. According to the National Oceanic and Atmospheric Administration, the high-water elevation along the Massachusetts coast (based on elevations recorded at Station No. 8443970) has steadily risen approximately 0.5 feet over the last 37 years. The higher elevated portions of Jeffrey's Neck Road act as a dam preventing the flow of water between the surrounding wetlands. The lowest section of the road near the intersection with Island Park Road acts as a flow pathway enabling connectivity between the wetlands on either side of the road. On average, Jeffrey's Neck Road experiences this spillway effect approximately twice a year.

Based on a review of the U.S. Fish and Wildlife Service (USFWS) National Wetlands Inventory database, estuarine and marine wetlands (designated as E2EM1Pd and E2US3N) are mapped along both sides of Jeffrey's Neck Road within the project area (Appendix A, Document 4). Additionally, MassDEP has identified a combination of salt marsh, shallow marsh, meadow, and fens in the project area (MassDEP 2017b). This wetland system is designated as the Great Marsh Area of Critical Environmental Concern (ACEC) by the Massachusetts Executive Office of Environmental Affairs and is managed by the Massachusetts Department of Environmental Management who coordinates closely with the Massachusetts Office of Coastal Zone Management (Appendix A, Document 5) (See section 5.3.1 below). The Great Marsh includes both the Eagle Hill and Ipswich

Rivers and extends along coastal areas of the Town including approximately 25,500 acres of barrier beach, dunes, saltmarsh, wetlands, and water. The Wetlands Protection Act regulates all activities within 150 feet of the Great Marsh ACEC (Commonwealth of Massachusetts 2017b).

### 5.2.2.2 Potential Effects and Proposed Mitigation

#### **Alternative 1: No Action**

Under the No Action Alternative Jeffrey's Neck Road would not be elevated and would maintain the status quo. Jeffrey's Neck Road would remain susceptible to the current level of flooding during storm events, elevated tides, or the combination of both. There would be no adverse effects to the floodplain and/or wetlands beyond the current amount of historic fill in the floodplain and wetlands, which is Jeffrey's Neck Road. Sea level rise and the increased magnitude and frequency of severe weather events could present more frequent and longer effects, such as road closures, in the project area. Flood damages or road closures could be more frequent and/or greater in magnitude which would continue to get worse with future sea level rise. Effects would be **moderate**.

#### **Alternative 2: Proposed Action - Road Elevation, Expansion, and Safety Features**

Under the Proposed Action, the road improvements would be considered placement of fill within in a Special Flood Hazard Area. The Town would need to would need to secure local floodplain administrator approval for the proposed design. While the Proposed Action would provide an immediate moderate beneficial effect to the project area by reducing flooding effects to the low-lying areas and reduce the amount of road closures from future flood events, it would not eliminate all flooding and flood-related road closures in the project area. By design the road would only be elevated to 9.0 feet above sea level instead of the 100-year flood elevation of 13.0 feet above sea level. Future sea level rise could increase sea levels toward the proposed 9.0 foot elevation of the roadway and could decrease the benefits of the Proposed Action over time. In addition to sea level rise, an increased magnitude and frequency of severe weather events could present a growing risk to the project area. Effects to the floodplain would be **moderate**.

The Proposed Action is designed to avoid adverse impacts on the natural and beneficial functions of the wetland by limiting road improvements to the existing footprint of disturbed areas. Although the wetlands adjacent to the project area would not be directly affected, construction activities would occur within the 150-foot buffer zone to the Great Marsh ACEC; see Coastal Resources section immediately below. A Massachusetts Wetlands Protection Act, Notice of Intent for the Proposed Action was filed on September 3, 2019, with the Ipswich Conservation Commission and MassDEP Northeast Regional Office. An Order of Conditions was issued by the MassDEP approving the project as designed on March 25, 2020 (MassDEP 2020). Additionally, a Massachusetts Environmental Policy Act (MEPA) Environmental Notification Form (ENF) was filed on June 1, 2019, with the MEPA Unit. After public and agency review and comment, the Secretary of the Executive Office of Energy and Environmental Affairs issued a Secretary's Certificate stating that the ENF properly complied with MEPA and that no further MEPA review was required. This Certificate was issued on July 26, 2019.

Under the Proposed Action, all construction activities would need to adhere to federal, state, and local regulations and associated permits and permit conditions. Per the Order of Conditions, wetlands must be flagged, and all wetland flagging must remain visible and enumerated per the approved plans throughout the life of the project and until a Certificate of Compliance is issued so that erosion control measures can be properly placed, and wetland impacts can be monitored. The proposed limit of work shall be clearly marked with erosion controls or temporary fencing and shall be confirmed by the Ipswich Conservation Commission. Flags and barriers must be checked and replaced as necessary and must be maintained until all construction is complete. Workers should be informed that no use of machinery, storage of machinery or materials, stockpiling of soil, or construction activity is to occur beyond this line at any time (MassDEP 2020). Through adherence to the terms and conditions of these permits, effects to water quality would be avoided and minimized. No fill would be placed in the salt marsh, no equipment would enter the salt marsh, and all work would occur from the road. Effects to wetlands would be **negligible**.

## 5.3 COASTAL RESOURCES

### 5.3.1 Coastal Zone Management Act (CZMA) and Coastal Barrier Resources Act (CBRA)

The Coastal Zone Management Act, enacted in 1972, was established to preserve, protect, develop, and, where possible, restore or enhance the resources of the nation's coastal zone. The act requires federal financial assistance, within (or outside of, but with the potential to affect) the coastal zone, to be fully consistent with the enforceable policies of a state's federally approved coastal management program (15 C.F.R. 930 Subpart F). The Massachusetts Office of Coastal Zone Management is responsible for managing the state's coastal program, which includes four main objectives, as described in the Massachusetts Coastal Management Policy Guide: (1) prevent, eliminate, or significantly reduce threats to public safety, property, and environmental resources resulting from hazards such as erosion, flooding, and storm damage; (2) allow natural physical coastal processes to continue while allowing appropriately sited coastal development and economic growth and promote the use of nonstructural alternatives for shore protection, where appropriate and to the extent feasible; (3) limit, prohibit, or condition public expenditures in coastal high-hazard areas to ensure that increased exposure to coastal hazards is not encouraged; and (4) prioritize public expenditures for acquisition and relocation of structures out of hazardous coastal areas (MA CZM 2011).

The Coastal Barrier Resources Act of 1982 protects coastal areas serving as barriers against wind and tidal forces and that provide habitats for fish and wildlife species. The Act created and designated areas under the jurisdiction of the U.S. Fish and Wildlife Service that are ineligible for both direct and indirect federal expenditures; these designated areas are called Coastal Barrier Resource System Units. This act was amended by the Coastal Barrier Improvement Act of 1990, which added a new category of designation called Otherwise Protected Areas.

#### 5.3.1.1 Existing Conditions

The entire project area is within the Massachusetts Coastal Zone and a coastal zone consistency determination from the Massachusetts Office of Coastal Zone Management agency is required. The project site is within the Parker River/Essex Bay Region which is an Area of Critical Environmental Concern management by the MA Department of Environmental Management. Areas of Critical Environmental Concern (ACECs) are places in Massachusetts that receive special recognition because of the quality, uniqueness, and significance of their natural and cultural resources. These areas are identified and nominated at the community level and are reviewed and designated by the state's Secretary of Energy and Environmental Affairs. Designation of an ACEC increases environmental oversight by increasing state permitting standards through elevated performance standards and lowering thresholds for review (Appendix A, Document 5).

The project area is adjacent to inland and coastal wetland resource areas, including Isolated Vegetated Wetland, Salt Marsh, Coastal Bank, Land Subject to Coastal Storm Flowage, Coastal Beach, and Land Subject to Tidal Action (as defined in the Wetlands Protection Act [310 CMR 10.00]). There is a 100-foot buffer zone to Coastal Bank features which extends onto the project area (Coneco 2016).

The project site is located adjacent to (west of) a Coastal Barrier Resource Act unit designated on November 16, 1990, as Coastal Barrier Resource System Clark Pond Unit (C00). The entire project area is outside the Clark Pond Unit and buffer zone.

#### 5.3.1.2 Potential Effects and Proposed Mitigation

##### Alternative 1: No Action

Under the No Action Alternative, there would be no federal expenditures within or affecting the Coastal Barrier Resource System unit C00 or the buffer zone and no prohibitions under the Coastal Barrier Resource Act. Flood events could cause erosion along the coastal banks of Jeffrey's Neck Road and Island Park Road which could have short-term and minor effects on coastal resources from erosion and runoff.

## **Alternative 2: Proposed Action - Road Elevation, Expansion, and Safety Features**

Under the Proposed Action, the Town worked with the Massachusetts Office of Coastal Zone Management to create a design that would comply with regulations and includes a living shoreline for protection of the road shoulder except in a few places where hardscape materials/riprap would be needed to protect against wave action. The areas that would include additional riprap protection already feature riprap. The Coastal Zone Management Consistency Determination review process is underway and is a part of the Clean Water Act Section 404 permitting process. Although the 404 permit has been issued by USACE, it has been issued conditionally upon the receipt of a favorable coastal consistency determination (USACE 2021). With a favorable Coastal Consistency Determination, the Proposed Action would meet the objectives of the Massachusetts Coastal Zone Management Policy Guide and avoid adverse effects to the Parker River/Essex Bay Region Area of Critical Environmental Concern. FEMA would also condition the project for the Town to secure a favorable Coastal Zone Consistency Determination from the Massachusetts Office of Coastal Zone Management and provide and provide FEMA and USACE with a copy of the Determination prior to the beginning of construction. Effects to the coastal zone would be **minor**.

Under the Proposed Action, there would be no work within or affecting the Coastal Barrier Resource System unit C00 zone or the buffer zone. Therefore, the Proposed Action, effects to designated coastal barrier resources would be **none**.

### **5.4 BIOLOGICAL RESOURCES**

#### **5.4.1 Fish and Wildlife**

The Migratory Bird Treaty Act of 1918 provides a program for the conservation of migratory birds that fly through lands of the United States. The lead Federal agency responsible for implementing the Migratory Bird Treaty Act is the U.S. Fish and Wildlife Service. The law makes it unlawful at any time, by any means or in any manner to take any part, nest, or egg of migratory birds. "Take" is defined in regulation (50 C.F.R. 10.12) as "to pursue, hunt, shoot, wound, kill, trap, capture, or collect, or any attempt to carry out these activities."

The Bald and Golden Eagle Protection Act, enacted in 1940, prohibits anyone, without a permit issued by the Secretary of the Interior, from "taking" Bald and Golden Eagles, including their parts, nests, or eggs. Like the Migratory Bird Treaty Act, the law makes it illegal for anyone to "take," possess, import, export, transport, sell, purchase, barter, or offer for sale, purchase, or barter, any migratory bird, or their parts, feathers, nests, or eggs. Golden eagles are not found in Massachusetts, and therefore are not included in the analysis of effects (USFWS Undated(a)).

##### **5.4.1.1 Existing Conditions**

Typical wildlife in Essex County includes Virginia opossum (*Didelphis virginiana*), rodents such as tree squirrels (*Sciuridae spp.*) and the American beaver (*Castor canadensis*), hares and rabbits (*Leporidae spp.*), shrews (*Soricidae spp.*), mole (*Talpidae spp.*), bats (*Vespertilionidae spp.*), coyotes (*Canis latrans*), foxes (*Urocyon cinereoargenteus* and *Vulpes vulpes*), and raccoons (*Procyon lotor*) (MassWildlife, 2017). Common salt marsh species found near the project area include the coffee bean snail (*Melampus coffeus*), salt marsh skimmer dragonfly (*Erythrodiplax berenice*), grass shrimp (*Palaemonetes spp.*), and fish including the mummichog (*Fundulus heteroclitus*), and nine-spined stickleback (*Pungitius pungitius*) (MA CZM 2000). Wildlife in the area may cross Jeffrey's Neck Road.

The project area is within the Great Salt Marsh Important Bird Area. The Great Salt Marsh Important Bird Area has significant concentrations of waterfowl, seabirds, shorebirds, wading birds, raptors, and landbirds (National Audubon Society, Undated; Mass Audubon, 2017). U.S. Fish and Wildlife Services Information for Planning and Consultation website reports that there are 34 migratory bird species, including the Bald Eagle (*Haliaeetus leucocephalus*) (see section 5.4.1.5), that could occur in the area. Although the project area does not contain appropriate nesting habitat, these species may feed or forage near the project area (USFWS 2017b).

There is a concentration of eagles on the Merrimack River approximately 7.5 miles north of the project area, Essex County does not have any documented Bald Eagle nesting sites (Mass Audubon Undated). Bald Eagles have been sighted within the project area, with the most recent sighting along Jeffrey's Neck Road in 2011, and likely use the project area and the

surrounding marsh habitat for fishing and scavenging. Bald Eagles are more commonly sighted at nearby birding hotspots including Clark Pond, Strawberry Pond, and Sandy Point Reservation (eBird 2017).

#### 5.4.1.2 Potential Effects and Proposed Mitigation

##### **Alternative 1: No Action**

Increased stormwater runoff from Jeffrey's Neck and Island Park Roads, during flood events, could lead to increased pollutant levels in the marshes, which may have minor effects to vegetation and habitat for wildlife and fish, migratory birds, and Bald Eagles. Pollutants may affect habitat of prey species for Bald Eagles, resulting in a minor effect to Bald Eagles during and after any such flooding events (Commonwealth of Massachusetts 2002).

##### **Alternative 2: Proposed Action - Road Elevation, Expansion, and Safety Features**

Construction activities associated with Alternative 2 would have a short-term and temporary minor adverse effect on fish and wildlife species, including migratory birds and Bald Eagles because of construction activity and the removal of existing, though limited, vegetation. There are no known migratory bird nest structures, including Bald Eagles, present within the project area, due to the proximity to the existing road and the current state of maintained, landscaped vegetation within the project area. Construction BMPs (e.g., silt fence or straw bales) would be in place to ensure stormwater runoff would not contaminate the salt marsh and associated wetland and aquatic habitats for wildlife and fish. It is anticipated that wildlife, migratory birds, and Bald Eagles adjacent to the project area could temporarily leave the area due to noise and disturbance resulting from the construction activities. There would be minor short-term effects to fish, wildlife, migratory birds, and Bald Eagles and negligible long-term effects resulting from the implementation of Alternative 2.

#### 5.4.2 Vegetation and Invasive Species

Executive Order 13112, Invasive Species, requires federal agencies, to the extent practicable, to prevent the introduction of invasive species and provide for their control and to minimize the economic, ecological, and human health effects that invasive species cause. Invasive species prefer disturbed habitats and generally possess high dispersal abilities, enabling them to out-compete native species.

##### 5.4.2.1 Existing Conditions

Trees are not present within the project area, but limbs from roadside trees overhang Jeffrey's Neck Road. The vegetation adjacent to driveways consists of landscaped lawns. The project area is within the Northeastern Coastal Zone ecoregion, which is vegetated by hardwood and mixed forests and limited coastal and inland wetlands (USGS 2016). The project area is surrounded by salt marsh and coastal wetlands that are dependent on seasonal saltwater inundation, including the Great Marsh ACEC. Vegetation in salt marshes varies depending on the regularity of inundation, and species such as salt marsh hay (*Spartina patens*), black grass (*Juncus gerardii*), and spike grass (*Distichlis spicata*) are common in the project area (Massachusetts Bay Program 2012).

The project area floods at various times during the year; therefore, the project area is most at risk to aquatic invasive species rather than terrestrial-based invasive species, which are intolerant of seasonal inundation. The most managed invasive species in Massachusetts is the common reed (*Phragmites australis*); Massachusetts has implemented the Massachusetts Aquatic Invasive Species Management Plan to slow or stop the spread of aquatic invasive species and lays out a methodology for the prevention, monitoring, early detection, and control of invasive aquatic species (MA EEA 2002).

The common reed is currently being managed within the Great Salt Marsh ACEC near the project area (Mass Audubon 2016). Bare soils resulting from fill, erosion, or excavation are particularly susceptible to common reed colonization. Minor filling and sedimentation are two of the basic disturbances that creates prime habitat for the common reed. The increased elevation, reduction in soil moisture, and decreased flooding resulting from fill placement promotes the spread of the common reed (USFWS 1998a).



#### 5.4.2.2 Potential Effects and Proposed Mitigation

##### **Alternative 1: No Action**

Increased stormwater runoff from Jeffrey's Neck and Island Park Roads, during flood events, could lead to increased pollutant levels in the marshes, which may have **minor** effects to vegetation (Commonwealth of Massachusetts 2002).

There is potential for invasive plants seeds to travel to the project area via floodwaters and would continue to be present in the marsh seed bank. Implementation of the No Action Alternative would have **negligible** effects on invasive species.

##### **Alternative 2: Proposed Action - Road Elevation, Expansion, and Safety Features**

Implementation of the Proposed Action would permanently remove limited vegetation within the existing landscaped areas and alongside the roads. Per the Order of Conditions, construction BMPs (e.g., silt fence or straw bales) would be in place to ensure stormwater runoff would not affect salt marsh and wetland vegetation. Native, salt-tolerant shrubs and grasses would be planted to further stabilize the slopes against erosion. A planting report must be submitted within 30-days of completion of plantings. There would also be two-years of monitoring to ensure plant survival. A monitoring report would need to be submitted by November 15th at end of each growing season. Any plants that die within the first two-years must be replaced in kind (MassDEP 2020).

The Proposed Action would be required to follow the Massachusetts Aquatic Invasive Species Management Plan to prevent the introduction of invasive species. As part of the living shoreline design and for soil stabilization following construction, native vegetation would be planted to reduce the potential for invasive species, including the common reed, to colonize within the disturbed area. Additionally, an Invasive Species Control Plan would be in place as part of Essential Fish Habitat compliance (see section 5.4.4 below). The potential for a localized effect is minimized by revegetation and project conditions.

The Proposed Action would have long term **minor** effects to vegetation and **negligible** effects on invasive species.

#### 5.4.3 Threatened and Endangered Species

The Endangered Species Act (ESA) provides for the conservation of threatened and endangered plants and animals and the habitats in which they are found. The lead federal agencies for implementing the ESA are the U.S. Fish and Wildlife Service and the National Marine Fisheries Service (NMFS). The law requires federal agencies to ensure that actions they authorize, fund, or carry out are not likely to jeopardize the continued existence of any listed species or result in the destruction or adverse modification of designated critical habitat of such species. The law also prohibits any action that causes a "taking" of any listed species of endangered fish or wildlife. "Take" is defined in regulation (50 C.F.R. 10.12) as "to pursue, hunt, shoot, wound, kill, trap, capture, or collect, or any attempt to carry out these activities."

##### 5.4.3.1 Existing Conditions

In accordance with Section 7 of the ESA, the project area was evaluated for the potential occurrences of federally listed threatened and endangered species. Using the U.S. Fish and Wildlife Service's Information for Planning and Consultation database and the National Marine Fisheries Services' Greater Atlantic Region's ESA Section 7 Mapper, 11 federally protected species have the potential to be present in the project area: northern long-eared bat (*Myotis septentrionalis*), Red Knot (*Calidris canutus rufa*), Roseate Tern (*Sterna dougallii*), shortnose sturgeon (*Acipenser brevirostrum*), Atlantic sturgeon (*Acipenser oxyrinchus*), green sea turtle (*Chelonia mydas*), Kemp's ridley sea turtle (*Lepidochelys kempii*), leatherback sea turtle (*Dermochelys coriacea*), loggerhead sea turtle (*Caretta caretta*), North Atlantic right whale (*Eubalaena glacialis*) and fin whale (*Balaenoptera physalus*) (USFWS 2017b and NMFS 2022). There is no critical habitat designated in or adjacent to the project area (USFWS 2017b).

##### 5.4.3.2 Potential Effects and Proposed Mitigation

##### **Alternative 1: No Action**

There would be "No Effect" on federally listed threatened and endangered species, as current conditions would not change, and the project area does not contain suitable habitat for the federally listed species.

## **Alternative 2: Proposed Action - Road Elevation, Expansion, and Safety Features**

The project area does not contain suitable habitat for any federally listed threatened and endangered species (USFWS 2017c; NMFS 2022). Implementation of the Proposed Action would have “No Effect” on federally listed threatened and endangered species. The project was also reviewed under the Massachusetts Endangered Species Act by the Natural Heritage and Endangered Species Program who found that the Proposed Action would have no effect on state-listed species. The state-listed species review also included all federally listed species. Effects to threatened and endangered species would be **none**.

### **5.4.4 Essential Fish Habitat**

The Magnuson-Stevens Fishery Conservation and Management Act is the primary law governing marine fisheries management in U.S. federal waters and designates the National Marine Fisheries Service as the lead federal agency responsible for its implementation. First passed in 1976, the Magnuson-Stevens Act fosters long-term biological and economic sustainability of our nation’s marine fisheries. One primary provision of the Act is the designation of Essential Fish Habitat for all species managed under the Act. Essential Fish Habitat includes those waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity. All federal agencies are required to assess the potential effects that proposed actions and alternatives may have on Essential Fish Habitat and consult on any actions that would adversely affect Essential Fish Habitat.

#### **5.4.4.1 Existing Conditions**

Designated Essential Fish Habitat occurs in both Eagle Hill River and Plum Island Sound for the juvenile black sea bass (*Centropristis striata*) (NOAA 2017b). Essential Fish Habitat has been designated for juvenile black sea bass within inshore estuaries with populations identified by National Marine Fisheries Service as common, abundant, or highly abundant. In Massachusetts’s coastal areas, juvenile black sea bass are found during spring and summer, but they are offshore during winter. Habitat requirements include a rough substrate, shellfish, and eelgrass beds. Man-made structures may substitute in areas with a higher concentration of sand (NOAA Undated).

#### **5.4.4.2 Potential Effects and Proposed Mitigation**

### **Alternative 1: No Action**

Increased stormwater runoff from Jeffrey’s Neck and Island Park Roads, during flood events, could lead to increased pollutant levels in the marshes, which could have **minor** effects to Essential Fish Habitat (Commonwealth of Massachusetts 2002).

## **Alternative 2: Proposed Action - Road Elevation, Expansion, and Safety Features**

The salt marsh areas adjacent to Jeffrey’s Neck Road are designated as Essential Fish Habitat for black sea bass and serves as habitat for prey species. Construction activities associated with the Proposed Action would have adverse effects to 2,054 square feet of Essential Fish Habitat and Special Aquatic Sites.

USACE consulted with the National Marine Fisheries Service (NMFS) and NMFS responded with Conservation Recommendations on February 23, 2021 (USACE Undated; NMFS 2021). The Conservation Recommendations provided are:

1. Compensatory mitigation in the form of In Lieu Fee contributions should be provided for 2054 square feet of effects to tidal Special Aquatic Sites, and
2. Bioengineered slopes should be planted with native vegetation that has been acclimated to the site conditions. A maintenance and monitoring plan should be prepared and should include an Invasive Species Control Plan. Monitoring reports should be submitted annually to the Army Corps of Engineers and National Marine Fisheries Service staff to assess efficacy of habitat replication (NMFS 2021).

USACE accepted the Conservation Recommendations and made them conditions of their permit number NAE-2021-00175, issued on November 19, 2021 (USACE 2021). FEMA coordinated with NMFS on February 7, 2022, to notify them that FEMA would adopt the USACE consultation and include the Conservation Recommendations in this Environmental Assessment analysis (FEMA 2022).

The design does include installation of “living shoreline” along most areas of construction meeting the bioengineered requirement — the few exceptions being where significant wave action is predicted and a hardscape as currently exists) is proposed because of the wave action (Coneco 2021a). Additionally, construction BMPs (e.g., silt fence or straw bales) would be in place to ensure stormwater runoff would not contaminate the salt marsh and designated Essential Fish Habitat. The bioengineered shoreline could reduce long-term soil erosion and aid in the removal of pollutants from stormwater runoff and flood waters (City of Portland, Oregon 2017). The Ipswich Conservation Commission Order of Conditions also requires that slopes must be stabilized with coir fiber rolls and native, salt-tolerant shrubs and grasses would be planted to further stabilize the slopes against erosion. A planting report must be submitted within 30-days of completion of plantings. There would also be two-years of monitoring to ensure plant survival. A monitoring report would need to be submitted by November 15, at end of each growing season. Any plants that die within the first two-years must be replaced in kind (MassDEP 2020).

## **5.5 CULTURAL RESOURCES**

As a federal agency, FEMA must consider the potential effects of its actions upon cultural resources prior to engaging in any project. Cultural resources are defined as prehistoric and historic sites, structures, districts, buildings, objects, artifacts, or any other physical evidence of human activity considered important to a culture, subculture, or community for scientific, traditional, religious, or other reasons. There are several laws a federal agency must consider when working with and identifying cultural resources. For the Town of Ipswich Jeffrey's Neck Road Flood Protection Project, FEMA will meet this obligation through consultation under Section 106 of the National Historic Preservation Act of 1966 (NHPA). Section 106 of the NHPA, as amended and implemented by 36 CFR Part 800, outlines the required process for federal agencies to consider a project's effects to historic properties. The NHPA defines a historic property as “any prehistoric or historic district, site, building, structure, or object included in, or eligible for inclusion in, the National Register of Historic Places.” Eligibility criteria for listing a property in the National Register of Historic Places (NRHP) are found at 36 CFR Part 60. While the definition of a cultural resource under NEPA can be broader, FEMA uses Section 106 to meet its obligations to consider effects to cultural resources. For this project, FEMA determined that it was appropriate to use its NHPA review to fulfill its NEPA obligations.

Cultural resources determined to be potentially significant under the NHPA are subject to a higher level of review and federal agencies must consider the potential effects of their projects on those resources and consider steps to avoid, minimize, or mitigate those effects. Cultural resources considered significant, must meet one or more of the criteria established by the National Park Service that would make that resource eligible for inclusion in the NRHP. The term “eligible for inclusion in the NRHP” includes all properties that meet the NRHP listing criteria. Properties and sites not evaluated for formal inclusion in the NRHP at the time of the undertaking may still be considered potentially eligible for inclusion in the NRHP and, as such, are afforded the same regulatory consideration as nominated properties.

### **5.5.1 Identification of APE and Historic Context**

Pursuant to 36 CFR Part 800.16(d), the Area of Potential Effects (APE) is defined as the geographic area(s) within which the undertaking may directly or indirectly affect cultural resources. Within the APE, effects to cultural resources are evaluated prior to the undertaking for both Standing Structures (above ground resources) and Archaeology (below ground resources). For this project, FEMA considered both direct and indirect effects when developing the APE. The area of direct effects is the existing road and right-of-way (Jeffrey's Neck Road), including driveways and all areas of construction staging to include the Town of Ipswich's Department of Public Works (DPW) Yard. As the DPW Yard and the roadway are not adjacent to each other, the APE is divided into two non-adjointing sections. It is anticipated that within the areas of the undertaking, the depth of soil disturbance would likely be the extent of the existing road base or disturbed paved and compact dirt and gravel ground surfaces. In addition to these direct effects there is also a limited potential for indirect visual effects to the surrounding properties from the elevation of the roadway and the inclusion of safety devices such as guardrails.

The Massachusetts Historical Commission maintains a database of the Commonwealth of Massachusetts' historic properties: the Massachusetts Cultural Resource Information System (MACRIS), which is regularly updated. FEMA uses this database as part of its efforts to identify significant cultural resources that may be impacted by a project. A FEMA Secretary of the Interior-qualified Historic Preservation Specialist has conducted a search of MACRIS, the National Register of Historic Places National Resources Information Service (NRHP NRIS) database, reviewed historical aerial images and historic maps, written histories

of the project area and the Natural Resources Conservation Service's Web Soil Survey to assess the potential for eligible resources within the project APE.

### History of the Project Area

The first Europeans to obtain land rights in the Ipswich area (known historically as Agawam) were the owners of the Plymouth Company who established trading posts and fishing stations between the Charles and Merrimack rivers as early as 1619. In 1621, John Mason obtained land rights to the territory between the Namkeag and Merrimac rivers from the Plymouth Company. This grant included all the land along the coast and extended westward to the heads of the rivers. Mason was interested in fishing and fur trading and established only limited settlements to support these businesses. In 1623, William Jeffrey obtained title to Jeffrey's Neck in Ipswich from the Native Americans, probably through Masconomet, the chief of the Agawam territory. There is no evidence that Jeffrey ever lived in Ipswich, but his name became associated with the 1633 settlement of the area by John Winthrop Jr. and other men from the Plymouth Colony on the north side of the Ipswich River west of Jeffrey's Neck. In 1634, a second group of settlers arrived, and the General Court incorporated the Agawam area as Ipswich. At this time, the area was a centralized village around a meetinghouse, burial lot, and town green. Jeffrey may have had an early trading and fishing station on Jeffrey's Neck (called Great Neck by the mid-1800s) that was probably abandoned before 1650.

Agriculture, raising livestock, and fishing were important in the economic development of the early settlement in Ipswich during the Colonial Period. The sheltered coastlines on Jeffrey's Neck and Plum Island to the north provided good breakwater for harborage in the Ipswich and Eagle Hill rivers. By 1675, the south side of Jeffrey's Neck was the site of structures for drying fish and wharves operated by local fishing crews. By the early eighteenth century, most of the Ipswich workforce was engaged in various fishing activities and the common lands in the area were divided into large cow and sheep pastures, including at Jeffrey's Neck and Poines Hill. Numerous grist and sawmills were also constructed on local rivers, including several brickworks such as one constructed on Jeffrey's Neck in 1697.

By the late eighteenth and mid-nineteenth centuries, the town's transportation routes were fully developed, connecting Ipswich to surrounding towns. The local economy was focused on farming, fishing, coastal trading, shipbuilding, and small-scale manufacturing. The extensive coastal marsh surrounding the area prevented Ipswich from developing into an important port town and necessitated building the town center far inland. The winding Ipswich River made it difficult for ships to reach the town, although local merchants owned a small fleet of fishing and coasting trade vessels.

By the late nineteenth and early twentieth centuries, the number of farms and acres being tilled declined as farmers turned to the dairy industry. Manufacturing increased dramatically in Ipswich with the enlargement of several mills. Also, by the late 1800s summer tourists started coming to Great Neck and Plum Island beaches from Boston and other metropolitan areas. In the early twentieth century, Ipswich's population continued to increase due to job opportunities at the Ipswich Hosiery Mills. After World War I though, the demand for hosiery declined and the mill closed in 1929. A few other industries continued to operate in the mid-twentieth century, but by Ipswich was primarily a residential community by this time with a vibrant tourist industry. Along Jeffrey's Neck Road in the project area, many of the residential properties were constructed prior to the 1930s, with infill fully developing the area to its present state by the early 1970s.

## **5.5.2 Standing Structures**

### **5.5.2.1 Existing Conditions**

According to the NRHP NRIS, there are 31 NRHP-listed properties within the Town of Ipswich. The nearest listed property is the Paine-Dodge House, which is located 0.4 miles from the southern boundary of the project area and well outside the APE. The NRHP-listed Ross Tavern is located 0.5 miles from the southern project boundary, and well outside of the APE. There are no other NRHP-listed properties within the vicinity of the APE for this project. According to the Massachusetts Historical Commission MACRIS database, there are only 18 MACRIS inventoried properties located within one mile of the project location and none within the APE.

### **Alternative 1: No Action**

Under the No Action Alternative, there would be no direct effect on historic standing structures as none have been identified within the project area or the larger APE and the current conditions would not change.

### **Alternative 2: Proposed Action - Road Elevation, Expansion, and Safety Features**

No historic standing structures have been identified within the project area nor APE, and the closest historic standing structure being 0.4 miles away; therefore, the Proposed Action would have **no effect** on historic standing structures on or near the project area.

## **5.5.3 Archaeology**

### **5.5.3.1 Existing Conditions**

A review of MACRIS identified more than 12 previously recorded precontact and historic archaeological sites on Jeffrey's Neck Road, including three within 500 feet of the project area. Therefore, in November of 2017 FEMA recommended, and the State Historic Preservation Officer (SHPO) concurred, that the Town of Ipswich hire a consultant to conduct an archaeological reconnaissance survey report for the APE to assess the potential for impacting archaeological resources.

In July of 2019, an Archaeological Assessment was submitted to FEMA by the Town's consultant, which was revised in February of 2020 as the Town of Ipswich further developed and revised the scope of work for the project. FEMA reviewed the revised report and recommended a third supplemental review for the project to ensure that the full scope of work and APE were evaluated. In addition to minor adjustments to the length of the road work, the Town of Ipswich also added staging areas at Ipswich's DPW Yard. After reviewing MACRIS information for the DPW Yard, FEMA found that it also had the potential to be archaeologically sensitive and required further evaluation to determine if this area was archaeologically sensitive. As a result of the further evaluation, the consultant recommended no further archaeological investigations for the two proposed project staging areas and assigned low sensitivity within the DPW Yard itself. Avoidance and minimization measures, however, were recommended for work near archaeological sites at the DPW Yard and that construction crews conduct equipment access and staging in specific areas to avoid disturbances to archaeologically sensitive areas.

Based on recommendations from FEMA, the Town's consultant performed a supplemental review of documentation in 2021. Following the results of this review it was determined that because of the twentieth-century road improvements and realignments, the rights-of-way within the project area were assigned low sensitivity for intact, significant archaeological cultural deposits. No further archaeological investigations were recommended for the Jeffrey's Neck Portion of the project. FEMA sent the results of the supplemental report along with a finding of "No Adverse Effect on Historic Properties" with project conditions to the SHPO's office in January of 2022. FEMA received SHPO concurrence with this finding of effect on February 11, 2022.

### **5.5.3.1 Potential Effects and Proposed Mitigation**

#### **Alternative 1: No Action**

Under the No Action Alternative, there would be no direct effect on cultural resources, as current conditions would not change. If historic or cultural sites are present, continued flooding and erosion has the potential to wash away soils covering and protecting these resources that may result in the loss of archaeological resources.

#### **Alternative 2: Proposed Action - Road Elevation, Expansion, and Safety Features**

Based on the archaeologically sensitive nature of the project area, the potential for adverse effects to archaeological resources is unacceptably high without avoidance and minimization measures. Therefore, the following conditions have been included to protect known sites and avoid and minimize effects. The Town of Ipswich would need to work with its archaeological contractor to develop, in consultation with FEMA and the SHPO, and implement an Archaeological Site Avoidance and Protection Plan (ASAPP) for those portions of the APE that are deemed to be of moderate sensitivity or higher. The ASAPP would prevent inadvertent disturbances during construction and include the installation of orange temporary fencing (snow

fencing) and signage around the archaeologically sensitive area including work, staging and access near the archaeological sites at the DPW Yard. Additionally, FEMA would place conditions on the Proposed Action to address the potential for inadvertent archaeological discoveries during construction. The Proposed Action has **moderate** potential to affect archaeological resources.

## **5.6 SOCIOECONOMIC RESOURCES.**

### **5.6.1 Noise**

The EPA developed federal noise-emission standards in accordance with the Noise Control Act of 1972 identifying major sources of noise and determining appropriate noise levels for activities that would infringe on public health and welfare in accordance with the law. The EPA identifies a 24-hour exposure level of 70 decibels as the level of environmental noise which would prevent any measurable hearing loss over a lifetime. Likewise, levels of 55 decibels outdoors and 45 decibels indoors are identified as preventing activity interference and annoyance. The levels are not single event, or "peak" levels. Instead, they represent averages of acoustic energy over periods of time such as 8 hours or 24 hours, and over long periods of time such as years (EPA 1974). Additionally, the Federal Highway Administration established acceptable noise levels and ranges for construction equipment (FHWA 2006) and the Occupational Safety and Health Administration established thresholds for occupational noise exposure to protect the health and safety of workers (29 C.F.R. 1926.52). Land uses that are considered sensitive to noise effects are referred to as "sensitive receptors." Noise sensitive receptors consist of, but are not limited to, schools, residences, libraries, hospitals, and other care facilities.

#### **5.6.1.1 Existing Conditions**

The Town follows Commonwealth regulations for noise and only has its own specific laws for noise on farms, motorboats, and wind turbines. The Massachusetts noise regulation (310 CMR 7.10(1)) notes that noise "shall pertain to... construction and demolition equipment which characteristically emit sound, but which may be fitted and accommodated with equipment such as enclosures to suppress sound or may be operated in a manner so as to suppress sound, suppressible and preventable industrial and commercial sources of sound, and other man-made sounds that cause noise" (MassDEP 2017b).

Noise levels for residential neighborhoods, such as those adjacent to Jeffrey's Neck Road, are typically between 30 and 40 A-weighted decibels (decibels). Structures immediately adjacent to Jeffrey's Neck Road may experience noise levels that approach 60 decibels during periods of heavy traffic. Temporary noise from neighborhood lawn mowers could push noise levels in specific locations above 70 decibels at distances of about 100 feet (Sacramento County Airport System 2015).

#### **5.6.1.2 Potential Effects and Proposed Mitigation**

##### **Alternative 1: No Action**

Under the No Action Alternative, noise incidental to traffic patterns would remain consistent with existing conditions. There would be negligible effect from noise from the No Action Alternative.

##### **Alternative 2: Proposed Action - Road Elevation, Expansion, and Safety Features**

Under Alternative 2, construction activities would result in a temporary increase in noise levels in the project area. Heavy construction equipment produces sound levels from 80 to 120 decibels and power tools typically used in construction produce sound levels up to 115 decibels (NIOSH 2008). To minimize noise effects, construction activities would be restricted to normal business hours to the maximum extent possible. Heavy equipment, machinery, and vehicles utilized at the project area would meet all Federal, State, and local noise requirements. Any adverse effects to noise associated with the construction activities would be short-term and minimized by the measures described above; therefore, effects would be minor. Following construction, noise levels would be anticipated to return to pre-construction levels.

## 5.6.2 Transportation

### 5.6.2.1 Existing Conditions

Jeffrey's Neck Road is under the jurisdiction of the Town and has been classified as a Rural Major Collector. Jeffrey's Neck Road is 1.69 miles in length and links the coastal neighborhoods (including 750 residences) of Great Neck, Little Neck, Eagle Hill, and Island Park to downtown/mainland Ipswich (Town of Ipswich 2003). Island Park Road (southern part of the project area), Eagle Hill Road (west-central part of the project area), and Northridge Road (northern part of the project area) are local roads that intersect Jeffrey's Neck Road. At the northern terminus of the project area, Jeffrey's Neck Road leads into Little Neck Road.

### 5.6.2.2 Potential Effects and Proposed Mitigation

#### **Alternative 1: No Action**

Under the No Action Alternative, flooding during high tide, full moon tide, or nor'easter storms would continue to cause periodic road closures along Jeffrey's Neck Road and Island Park Road, particularly in those areas adjacent to the salt marsh that are 7.0 to 9.0 feet ASL. Transportation effects of the No Action Alternative would be **moderate** because of the high likelihood of continued flooding.

#### **Alternative 2: Proposed Action - Road Elevation, Expansion, and Safety Features**

Under the Proposed Action, Jeffrey's Neck Road and Island Park Road would no longer experience repeated flooding when surrounding water levels are between 7.0 and 9.0 feet ASL thereby reducing the frequency that motorists are exposed to dangerous flooded roadway conditions. The elevation design of the roadway to a maximum elevation of 9.0 feet ASL would not affect access to driveways adjacent to the project area but would require minor modifications to driveways at only four or five homes along this section of roadway. Modifications to the driveways within the project area would not affect access or use. Since Jeffrey's Neck Road is the only access to the Great Neck, Little Neck and Eagle Hill Sections of Ipswich, and Island Park Road is the only access for residents of that neighborhood, both Jeffrey's Neck and Island Park Road must remain open during construction. Therefore, the proposed construction approach is to close one lane at a time to always allow access. It is anticipated that construction would take place over a six-month period. Traffic delays would be expected and adverse effects to traffic would be moderate during the expected six-month construction period.

The installation of guard rails would improve driver safety during periods of heavy fog or significant snow cover which have previously resulted in drivers periodically exiting the road and entering the salt marsh. There is no current MassDOT requirement for guardrails because Jeffrey's Neck Road is a local road and there is no MassDOT funding associated with this project. However, FEMA would include a special condition on the project grant to require the Town to evaluate the proposed design and existing features of Jeffrey's Neck Road against the most recent edition of American Association of State Highway and Transportation Officials (AASHTO) standards for guardrails. If the AASHTO standards recommend guardrails for a proposed design and existing features like those found on Jeffrey's Neck Road, then guardrails would be a required component of the project. The evaluation must be conducted by a licensed Professional Highway Engineer and shared with FEMA prior to construction to document a determination as to whether AASHTO standards for guardrails would, or would not, recommend the installation of guardrails.

The Town and members of the public have discussed pedestrian and bicycle accommodations on several occasions and concerns have been raised in public meetings about the installation of the guardrails. The primary concern is that, due to the limited available horizontal space, the guardrails would be installed along the edge of the paved surface at the new top of the slope to the marsh. The Proposed Action would meet Exemption 4 under the Town's Complete Streets Policy that addresses limitations due to topography or other constraints (Coneco 2021b). Therefore, both pedestrians and bicyclists would have to travel along the edge of the paved roadway inside of the guardrail with limited ability to escape oncoming vehicles due to the barrier created by the guardrails. The current proposed approach for both pedestrian and bicycle access is to include "sharrows", i.e., shared lane pavement markings, along the length of the roadway. However, these pavement markings would not alleviate the concerns expressed about the barrier created by the presence of the guardrails. If a licensed Professional Highway Engineer determines that the guardrails are not recommended by AASHTO standards and the Town opts to not include them, in whole or in part, in

the final design, the lack of guardrails could reduce the possible danger to pedestrians and bicyclists but would increase the possible danger to motorists.

In summary, Alternative 2 would result in short-term **minor** effects and long-term **moderate** beneficial effects to transportation.

### **5.6.3 Public Services and Utilities**

#### **5.6.3.1 Existing Conditions**

Electricity: There are utility poles along the west side of Jeffrey's Neck Road and south side of Island Park Road.

Wastewater: Underground sanitary sewer and storm drain piping do not exist within the project area (Coneco 2017).

Water Treatment: There is an existing 12-inch diameter water line beneath Jeffrey's Neck Road and an 8-inch diameter water line beneath Island Park Road, both of which are below the limits of disturbance (generally 4 to 6 inches) (Coneco 2017).

#### **5.6.3.2 Potential Effects and Proposed Mitigation**

##### **Alternative 1: No Action**

Under the No Action Alternative, no effects to public services, including interruption or alteration of service would occur. Effects would be **none**.

##### **Alternative 2: Proposed Action - Road Elevation, Expansion, and Safety Features**

Under the Proposed Action, all existing utilities to include the utility poles along the west side of Jeffrey's Neck Road, the 12-inch diameter water line beneath Jeffrey's Neck Road, and the 8-inch diameter water line below Island Park Road would be protected during construction. No utility installations are proposed, and service would not be interrupted (Town of Ipswich 2013a). Effects to public services and utility systems would be **none**.

### **5.6.4 Public Health and Safety**

#### **5.6.4.1 Existing Conditions**

Ipswich Fire and Rescue provides fire emergency services to the Town with 18 full-time staff and an additional 19 on-call firefighters. The Ipswich Fire and Rescue Headquarters is at 55 Central Street; the Linebrook station at 330 Linebrook Road has no full-time staff (Town of Ipswich 2017g). At 2.1 miles away, the station at 55 Central Street is closest to, and services, the project area (Town of Ipswich 2017g).

Police: The Ipswich Police Department is headquartered at 15 Elm Street in downtown Ipswich, about 2.0 miles southwest of the southern extent of the project area. The Ipswich Police Department has 24 staff including 1 Chief, 1 Lieutenant, 4 Sergeants, 2 Detectives, and 16 Patrol Officers (Town of Ipswich 2017h).

Emergency Management: The Ipswich Emergency Management Agency (IEMA) organizes training and educational outreach programs to prepare the public and Town's government agencies for local emergencies and disasters. IEMA operates the Emergency Operations Center (15 Elm Street) during major emergency events and to engage emergency warning systems; during major disasters, the Emergency Operations Center serves as the focal point for all response activities. IEMA coordinates emergency response services with State, Federal, and private partners (Town of Ipswich 2017i).

When flooding of Jeffrey's Neck Road and Island Park Road occurs, the Town positions emergency equipment and personnel within the Great Neck and Little Neck neighborhoods. In addition, emergency management personnel are stationed near low-lying areas along the southern portion of the project area to notify the public of impending and ongoing road closures.



#### 5.6.4.2 Potential Effects and Proposed Mitigation

##### **Alternative 1: No Action**

Under the No Action Alternative, travelers on Jeffrey's Neck Road would continue to be at risk of encountering dangerous conditions during flood events. In addition, residents of the Great Neck and Little Neck neighborhoods would be at risk of becoming stranded inside or away from their homes during flood events. During flood events, the Town would continue to dedicate a disproportionate volume of emergency equipment and personnel to the Great Neck and Little Neck neighborhoods. The allocation of a portion of the Town's limited emergency equipment within these isolated areas would continue to place stress on other areas of the Town during dangerous weather periods. As such, there would be **moderate** effects throughout the Town from implementation of the No Action Alternative due to the continued stress that would be placed on the Town's limited emergency management resources and personnel.

##### **Alternative 2: Proposed Action - Road Elevation, Expansion, and Safety Features**

The Proposed Action is not designed to raise the road elevation above the 100-year flood elevation and eliminate all effects currently faced during storm events and road closures, need for staging personnel and equipment and lack of access to/from the mainland would still occur during the larger storm events. That said, travelers on Jeffrey's Neck Road would encounter dangerous flooding conditions on Jeffrey's Neck Road with reduced frequency. In addition, residents of the Great Neck and Little Neck neighborhoods would be at decreased risk of becoming stranded inside or away from their homes during flood events. Decreased flooding along Jeffrey's Neck Road and Island Park Road would reduce the need for emergency management personnel and equipment in these areas during storm events. Personnel and equipment that would otherwise be used in the project area would be available to assist with critical situations in other parts of the Town during storm events. Given the Town-wide emergency management benefits that would be experienced, implementation of the Proposed Action would result in **moderate** beneficial effects.

#### 5.6.5 Environmental Justice

Executive Order 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations, requires each federal agency to identify and address, as appropriate, "disproportionately high and adverse human health or environmental effects" its activities may have on minority or low-income populations. Guidance released by the Council on Environmental Quality following publication of the executive order makes clear that environmental effects include economic and social effects when considering Environmental Justice during the NEPA process (CEQ 1997).

The CEQ guidance also provides criteria for identifying minority and low-income populations. Specifically, low-income populations are identified based on the annual statistical poverty income thresholds of the U.S. Census Bureau, and minority populations are defined as persons in the following population groups: American Indian or Alaskan Native; Asian or Pacific Islander; Black, not of Hispanic origin; or Hispanic. Any area where the minority population exceeds 50 percent is considered to have an environmental justice population, based on the CEQ guidance. In Massachusetts, a community is recognized as an Environmental Justice community by the following criteria (MA EEA 2017d; 2021):

- Block group whose annual median household income is not more than 65% of the statewide annual median household income (\$54,432 in 2020),
- Minorities comprise 40% or more of the population,
- 25% or more of households lack English language proficiency, or
- Minorities comprise 25% or more of the population and the annual median household income of the municipality in which the neighborhood is located does not exceed 150% of the statewide annual median household income.

#### **5.6.5.1 Existing Conditions**

No environmental justice populations were identified in the project area (MA EEA 2017d; 2021). The closest population is to the east on the other side of the Ipswich River identified as Block Group 1, Census Tract 2231 – Income (MA EEA 2021). While no environmental justice populations have been identified in the project area, environmental justice populations can still occur in small areas within block groups. If any such pockets of environmental justice populations exist in the project area, effects on those populations would be as follows.

#### **5.6.5.2 Potential Effects and Proposed Mitigation**

##### **Alternative 1: No Action**

Under the No Action Alternative any pockets of environmental justice populations would continue to experience minor effects due to the lack of access on Jeffrey's Neck Road during flood events, including reduced emergency service provision during such events.

##### **Alternative 2: Proposed Action - Road Elevation, Expansion, and Safety Features**

Any pockets of environmental justice populations in the Project Area would experience some negative effects during construction (e.g., noise, traffic, lane closures and local access disruptions). These effects would fall equally on both environmental justice populations and the general population in the area and therefore would not disproportionately affect an environmental justice population.

#### **5.6.6 Hazardous Materials**

Hazardous materials and wastes are regulated under a variety of federal and state laws, including the Resource Conservation and Recovery Act (RCRA) (42 USC § 6901 et seq.); Comprehensive Environmental Response, Compensation, and Liability Act (42 USC § 9601 et seq.); Toxic Substances Control Act (15 USC § 2601 et seq.); Clean Air Act (42 USC § 7401 et seq.) and implementing regulations for the Hazardous Waste Management System (40 CFR Part 260). Evaluation must consider whether any hazardous material would be generated by the proposed activity and/or already exists at or in the general vicinity of the site (40 CFR Part 312.10). If hazardous materials are discovered, they must be handled by properly permitted entities. Solid waste management is regulated under Massachusetts 310 CMR 19.000 by MassDEP.

#### **5.6.6.1 Existing Conditions**

There are 18 active underground storage tanks in Ipswich. Two of these underground storage tanks are within 0.9 miles of the northern extent of the project area. There are no underground storage tanks within 1 mile of the southern extent of the project area (MassDEP 2017c). There are no Superfund or brownfield sites in the Town with contaminated soils (EPA 2017b and 2017c).

#### **5.6.6.2 Potential Effects and Proposed Mitigation**

##### **Alternative 1: No Action**

Under the No Action Alternative, there would be no effects from hazardous waste and materials, as there are no hazardous waste sites, producers or materials reported near the project area.

##### **Alternative 2: Proposed Action - Road Elevation, Expansion, and Safety Features**

Implementation of the Proposed Action has the potential to generate some hazardous materials using fuels and lubricants during construction activities. The contractor would be required to have a spill prevention and control plan on-site, and equipment would not be operated in the salt marsh.

While construction could uncover hazardous materials in excavated soils, the potential risk is very low given that the project area was previously disturbed during the initial road construction. During project implementation the contractor would be responsible for ensuring that all excavated material and soils are handled, transported, and disposed of in accordance with all applicable regulations. In the unlikely event that contaminated soils (or other materials) are encountered during excavation or

any construction activity, the contractor would be required to characterize the soil (and/or other material) to determine an appropriate upland disposal site. Any hazardous waste produced would be managed by MassDEP-permitted haulers and disposal sites.

The Proposed Action would result in **negligible** adverse effects related to hazardous materials given the minimal likelihood that hazardous materials would be released or encountered.

## **5.7 CUMULATIVE EFFECTS**

This Environmental Assessment considers the overall cumulative effect of the Proposed Alternative and other actions that are related in terms of time or proximity. Statutes require federal agencies to consider cumulative effects including the Clean Water Act § 404(b)(1) guidelines, regulations implementing the conformity provisions of the Clean Air Act, regulations implementing Section 106 of the National Historic Preservation Act and regulations for implementing Section 7 of the Endangered Species Act.

In addition to the Proposed Action, the following projects are ongoing in the Town (Town of Ipswich 2022):

- 214 High Street – proposed construction for a 10 unit for a multifamily dwelling.
- 240 County Road – New England Biolabs, Inc. construction of an expansion building near the main laboratory on the New England Biolabs campus (seven buildings total including new expansion).
- 50-56 Market Street – plan to build 5 new townhouse units at Market Street Station.
- 5 and 11 Washington Street – plan to demolish existing car wash structures and construct 16 new 2 to 3 bedroom town houses. Plan includes on-site parking, new sidewalk on Washington Street, all new utilities (water, fire, gas, sewer, cable, and telephone) and landscaping.
- 55 Waldingfield Road – The property is presently used for three residential structures – a single-family residence (the "mansion"), a multi-family residence (the "farmhouse"), and a cottage (the "pool house"). The property is also used for equestrian purposes with a barn and paddocks. There is an easement on a portion of the lot for the benefit of Essex County Trails Association, Inc., that is limited to equestrian use only, and a driveway right of way for the benefit of Essex County Greenbelt Association, Inc., that is used for access to the polo field on its adjacent land. The plan is to convert the property business purposes and renovate the mansion and connect it to the carriage house for business offices and a welcome center; rehabilitate, renovate, and expand the farmhouse for meeting rooms and lodging for business guests as well as rehabilitate and expand the barn for an equestrian center to be used by employees and business guests. Additional phases will include the construction of additional office space and a wellness center for employees and business guests.

These projects in Ipswich are all 1.9 to 4.0 miles south and southwest of the project area and are either in or on the other side of downtown Ipswich. These projects all reuse previously developed lands and while they will likely have a small increase in the number of cars on the road/traffic and increase the demand for public utilities and public services, these increases would be localized to the areas immediately in the areas of these projects and well away from the project area of the Proposed Action. There are no additional ongoing or planned State or Federal projects in the project area. Therefore, cumulative effects from projects either planned or in the foreseeable future associated with the implementation of the Proposed Action are **negligible**.

## 6.0 PERMITS AND PROJECT CONDITIONS

The Town, including their contractors, is responsible for obtaining and complying with all applicable Federal, State, and local permits and clearances for project implementation prior to construction. While a good faith effort was made to identify all necessary permits for the preparation of this Environmental Assessment, the following list may not include every approval or permit required for this project. Before, and no later than, submission of a project closeout package, the Town must provide FEMA with a copy of the required permits and clearances from all pertinent regulatory agencies. The Town must adhere to the following conditions during project implementation; failure to comply with grant conditions may jeopardize Federal funds. Any substantive change to the approved scope of work would require re-evaluations by FEMA for compliance with NEPA and other laws and executive orders.

1. Before construction begins, the Town must evaluate the proposed design and existing features of Jeffrey's Neck Road against the most recent edition of American Association of State Highway and Transportation Officials (AASHTO) standards for guardrails. If the AASHTO standards recommend guardrails for a proposed design and existing features like those found on Jeffrey's Neck Road, then guardrails would be a required component of the project. The written evaluation must be conducted by a licensed Professional Highway Engineer and shared with FEMA prior to construction to document the determination as to whether AASHTO standards for guardrails would, or would not, recommend the installation of guardrails for Alternative 2.
2. Before construction begins, the Town must submit copies of all permits and authorizations to FEMA as part of the Phase I Hazard Mitigation Grant deliverables. Contact Marcus Tate at [marcus.tate@fema.dhs.gov](mailto:marcus.tate@fema.dhs.gov) or (617) 784-4712 and Shelly O'Toole at 508-820-1443 and [michelle.otoole@mass.gov](mailto:michelle.otoole@mass.gov) with questions.
3. Before construction begins, the Town must secure a favorable Coastal Zone Consistency Determination from the Massachusetts Office of Coastal Zone Management and comply with all terms and conditions of the Consistency Determination. The Town must provide FEMA with a copy of the Determination, or documentation that states a Determination is not required, for inclusion of the administrative record prior to construction to complete the Phase I deliverable requirements. Contact Bob Boeri at [robert.boeri@mass.gov](mailto:robert.boeri@mass.gov) or (617) 626-1050.
4. Before Construction begins, the Town must obtain a Chapter 91 license from MassDEP and comply with all terms and conditions of the license. The Town must provide FEMA with a copy of the License, or documentation that states a License is not required, for inclusion of the administrative record prior to construction to complete the Phase I deliverable requirements. Contact the MassDEP Waterways Program at [DEP.Waterways@mass.gov](mailto:DEP.Waterways@mass.gov), (617) 292-5929 or 1 Winter Street, 5th floor, Boston, MA 02108
5. Before construction begins, the Town must obtain a Clean Water Act Section 402 permit from the U.S. Environmental Protection Agency and comply with all terms and conditions of the permit. The Town must provide FEMA with a copy of the Permit, or documentation that states a Permit is not required, for inclusion of the administrative record prior to construction to complete the Phase I deliverable requirements. Contact Damien Houlihan Chief, Stormwater and Construction Permits Section U.S. EPA Region 1 at [houlihan.damien@epa.gov](mailto:houlihan.damien@epa.gov) or 617-918-1586
6. Before construction, the Town must receive authorization from the Local Floodplain Administrator for the placement of fill within the Special Flood Hazard Area. The Town must provide FEMA with a copy of the Authorization, or documentation that states that authorization is not required, for inclusion of the administrative record prior to construction to complete the Phase I deliverable requirements. Contact Brendan Lynch, Conservation Agent Town of Ipswich at (978) 356-6661.
7. Before construction begins, the Town must develop and implement an Archaeological Site Avoidance and Protection Plan (ASAPP) for those portions of the Area of Potential Effect that are deemed to be of moderate sensitivity or higher. The Plan must be submitted to FEMA and the SHPO for approval prior to any construction activities.

Additionally, FEMA would require the Town, and their contractors, to adhere to the following conditions during project implementation. Failure to comply with grant conditions may jeopardize federal funds.

1. National Historic Preservation Act: In the event of the discovery of archaeological deposits (e.g., Indian pottery, stone tools, shell, old house foundations, old bottles) the Town and their contractor must immediately stop all work in the vicinity of the discovery and take reasonable measures to avoid or minimize harm to the finds. The Town and their contractor must secure all archaeological discoveries and restrict access to discovery sites. The Town must immediately report the archaeological discovery to the Massachusetts Emergency Management Agency Hazard Mitigation Grants Coordinator Shelly O'Toole at 508-820-1443 and [michelle.otoole@mass.gov](mailto:michelle.otoole@mass.gov) and the FEMA Deputy Regional Environmental Officer Mary Shanks, 617-901-2204; FEMA will determine the next steps.
2. National Historic Preservation Act: In the event of the discovery of human remains, the Town and their contractor must immediately stop all work in the vicinity of the discovery and take reasonable measures to avoid or minimize harm to the finds. The Town and their contractor must secure all human remains discoveries and restrict access to discovery sites. The Town and their contractor must follow the provisions of applicable state laws. Violation of state law will jeopardize FEMA funding for this project. The Town will inform the Office of the Chief Medical Examiner, the State Archaeologist, the Massachusetts Emergency Management Agency Hazard Mitigation Grants Coordinator Shelly O'Toole at 508-820-1443 and [michelle.otoole@mass.gov](mailto:michelle.otoole@mass.gov) and the FEMA Deputy Regional Environmental Officer Mary Shanks, 617-901-2204. FEMA will consult with the SHPO and Tribes, if remains are of tribal origin. Work in sensitive areas may not resume until consultation is completed and appropriate measures have been taken to ensure that the project is compliant with the National Historic Preservation Act.
3. National Historic Preservation Act: All borrow, or fill material must come from pre-existing stockpiles, material reclaimed from maintained roadside ditches (provided the designed width or depth of the ditch is not increased), or commercially procured material from preexisting sources. For any FEMA-funded project requiring the use of a non-commercial source or a commercial source that was not permitted to operate prior to the start of construction (e.g., a new pit, agricultural fields, road rights-of-way, etc.) in whole or in part, regardless of cost, the Town must notify FEMA and the Massachusetts Emergency Management Agency Hazard Mitigation Grants Coordinator Shelly O'Toole at 508-820-1443 and [michelle.otoole@mass.gov](mailto:michelle.otoole@mass.gov) prior to extracting material. FEMA must review the source for compliance with all applicable federal environmental planning and historic preservation laws and executive orders prior to a Subrecipient or their contractor commencing borrow extraction. Consultation and regulatory permitting may be required. Non-compliance with this requirement may jeopardize receipt of federal funding. Documentation of borrow sources utilized is required at closeout.
4. The Town must comply with all terms and conditions of the issued Clean Water Act Section 404 permit number NAE-2021-00175, dated November 19, 2021, from the U.S. Army Corps of Engineers.
5. The Town must comply with the Wetlands Protection Act Order of Conditions issued on March 25, 2020. The Order of Conditions also fulfills the Clean Water Act 401 Water Quality Certification requirement.
6. The Town must comply with all terms and conditions of the Massachusetts Environmental Policy Act Environmental Notification Form Certificate number 16055 issued by the Massachusetts Executive Office of Energy and Environmental Affairs dated July 26, 2019.

## 7.0 AGENCY COORDINATION AND PUBLIC INVOLVEMENT

The following is a good faith effort to capture all coordination and consultation with state and federal partners:

- Environmental Assessment "Scoping Document" distributed by FEMA to state and federal partner agencies on May 4, 2021. Comments were received from the Massachusetts Emergency Management Agency regarding outdated species information and incorrect lengths of the project; and from the U.S. Environmental Protection Agency regarding outdated flood elevation data and impacts to wetlands under both the Clean Water Act and the Massachusetts Wetlands Protection Act.
- Early Public Notice notifying the public of FEMA's decision to prepare an Environmental Assessment was published in the Ipswich Local News, at Town Hall, on the Town of Ipswich Facebook account, Twitter account and the news section of the Town of Ipswich homepage on May 5, 2021. Comments were received from the local bicycle community regarding pedestrian and biker safety and questions regarding the lack of a dedicated bike lane in the design. FEMA responded to all commenters thanking them for their comments, addressed the comments in the Environmental Assessment effect analysis and will directly contact the commentors about the availability of the draft Environmental Assessment for public comment and review.
- Coordination with the following state and federal partners:
  - Massachusetts Division of Marine Fisheries
  - Massachusetts Emergency Management Agency
  - Massachusetts Natural Heritage and Endangered Species Program
  - U.S. Army Corps of Engineers
  - National Marine Fisheries Service
  - U.S. Fish and Wildlife Service
  - Massachusetts Office of Coastal Zone Management
  - Federal Highways Administration
  - Massachusetts Department of Transportation
- Consultation with State Historic Preservation Office conducted between November 2017 and February 2022.
  - November of 2017: FEMA recommended, and the State Historic Preservation Officer (SHPO) concurred, that the Town of Ipswich hire a consultant to conduct an archaeological reconnaissance survey report for the APE to assess the potential for impacting archaeological resources.
  - July of 2019: an Archaeological Assessment was submitted to FEMA by the Town's consultant, which was revised in February of 2020 as the Town of Ipswich further developed and revised the scope of work (SOW) for the project.
  - 2021: Based on recommendations from FEMA, the Town's consultant performed a supplemental review of documentation.
  - January 2022: FEMA sent the results of the supplemental report along with a finding of "No Adverse Effect on Historic Properties" with project conditions to the SHPO's office.
  - February 11, 2022: SHPO's office concurs with FEMA's "No Adverse Effect on Historic Properties" finding of effect.

The following documents the opportunities for the public to comment on the decision-making process. These are placeholders in Draft EA and will be populated in the Final EA.

- Public Notice for availability of the Draft EA was posted on the [digital/electronic platforms].
- Public Notice for availability of the Draft EA was also published in the Ipswich Local News on mm/dd/yyyy.
- Public Notice for availability of the Draft EA was also sent directly to the EPA and to the individuals from the local biking community that commented on the early public notice.
- The Draft EA was made available electronically for public comment and was able to be viewed and downloaded at: [location needed] and FEMA's website at [Region 1 - Environmental Documents and Public Notices | FEMA.gov](#).
- The Draft EA was made available in hard copy at the following location: [location needed]

The comment period will end 15 days from the date of the legal notice publication. Written comments could be emailed to [david.robbs@fema.dhs.gov](mailto:david.robbs@fema.dhs.gov) and [eric.kuns@fema.dhs.gov](mailto:eric.kuns@fema.dhs.gov) or sent to FEMA Regional Environmental Officer, 99 High Street, Boston, MA 02110. If no substantive comments were received, the Environmental Assessment will become final and a Finding of No Significant Impact will be signed.

[placeholder to address public comments]

## 8.0 REFERENCES

- 40 CFR 230.3(o). 1993. Clean Water Act-Guidelines for Specification of Disposal Sites for Dredged or Fill Material. Retrieved April 6, 2017, from [eCFR :: 404](#).
- CDM Smith. 2013. Final Technical Memorandum: Town of Ipswich Jeffrey's Neck Road Flood Assessment. Retrieved from <http://ma-ipswich.civicplus.com/DocumentCenter/View/501>.
- CEQ (Council on Environmental Quality). 1997. Environmental Justice: Guidance Under the National Environmental Policy Act. Executive Office of the President dated December 10, 1997. Located at [https://www.epa.gov/sites/production/files/2015-02/documents/ej\\_guidance\\_nepa\\_ceq1297.pdf](https://www.epa.gov/sites/production/files/2015-02/documents/ej_guidance_nepa_ceq1297.pdf)
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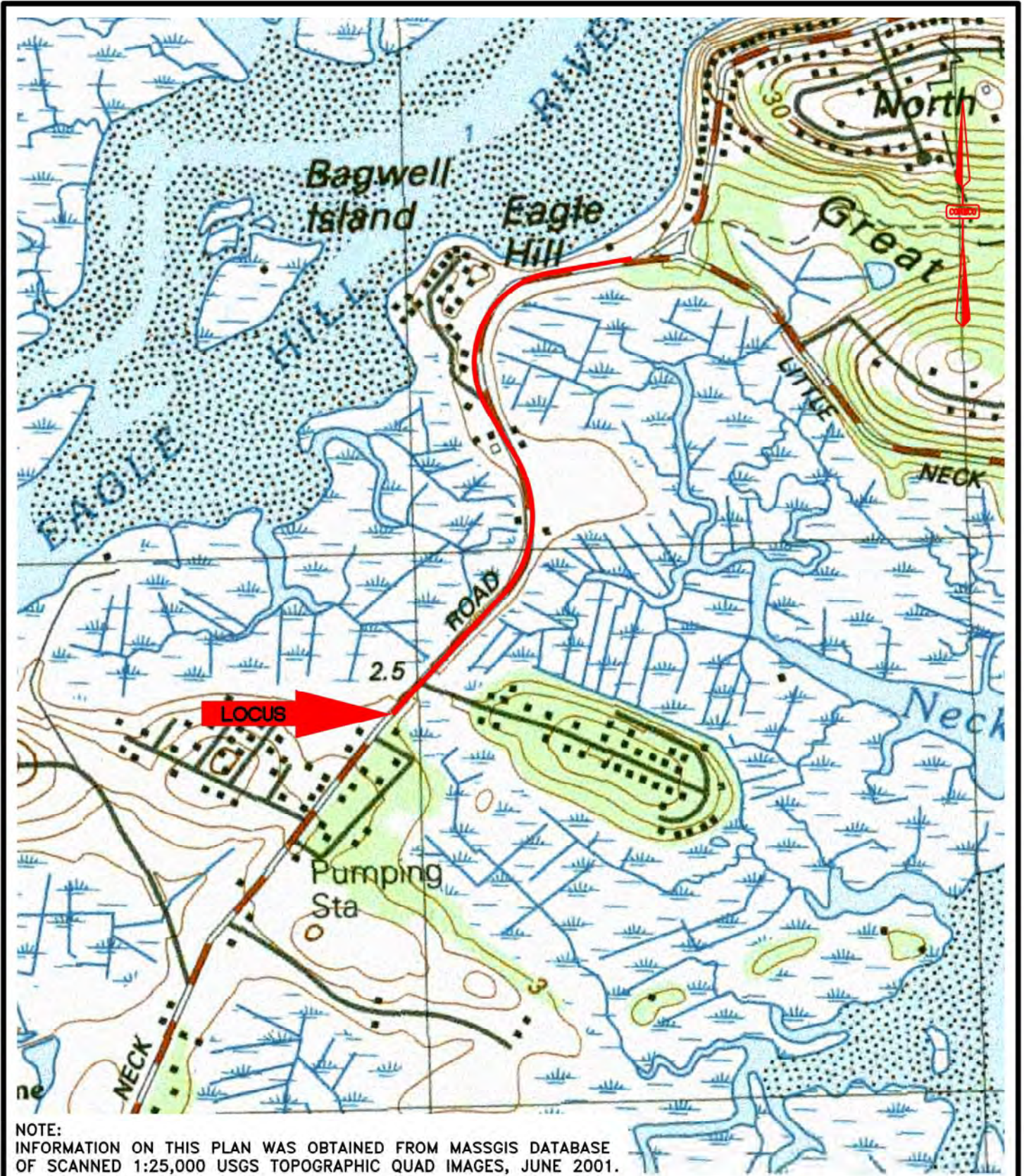
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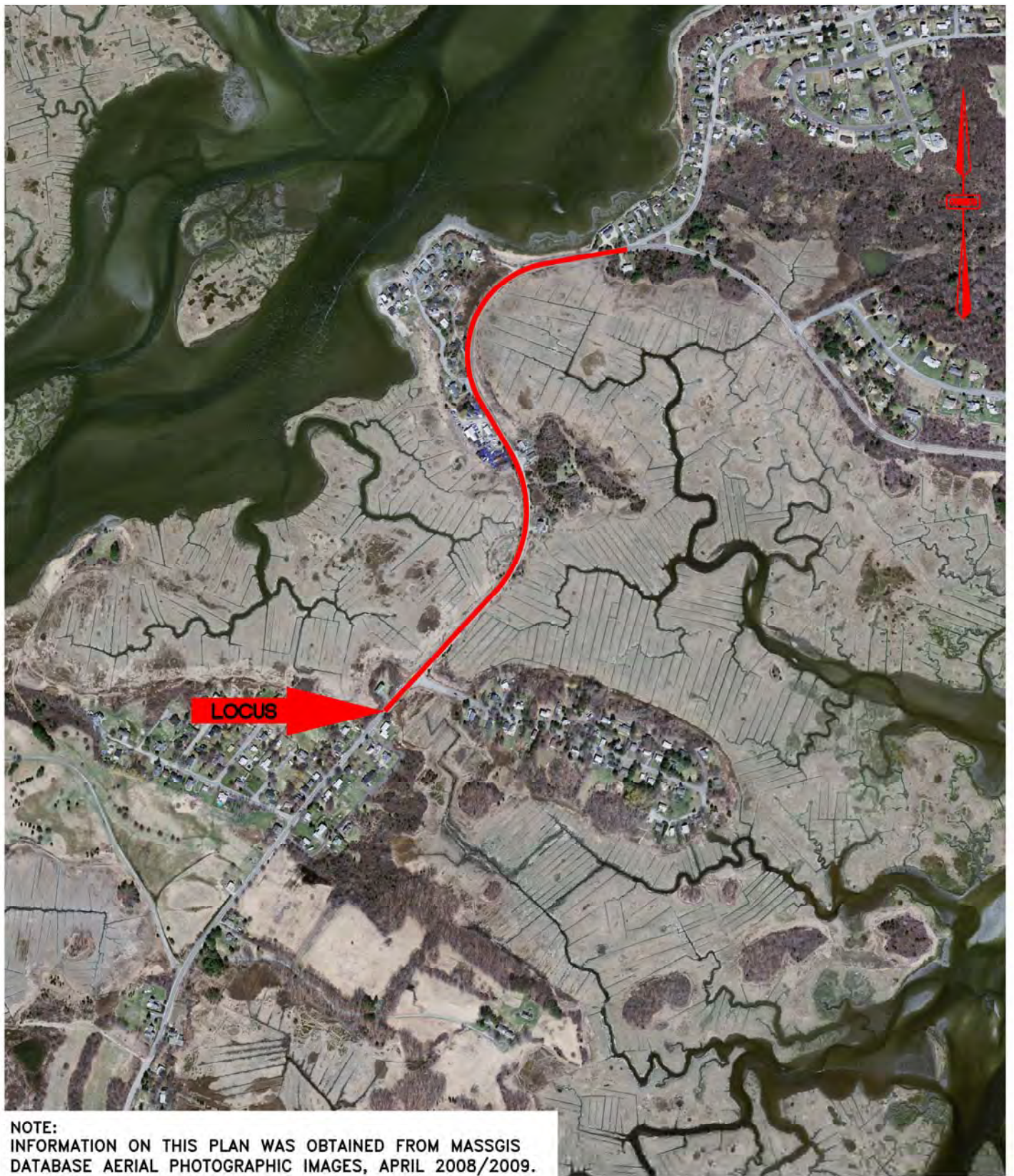
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**APPENDIX A:**  
**Maps and Figures**



JEFFREY'S NECK ROAD, IPSWICH, MASSACHUSETTS 01938

 <p>4 FIRST STREET, BRIDGEWATER, MASSACHUSETTS 02324          PHONE 508-697-3191 OR 800-548-3355; FAX 508-697-5996          WEBSITE: www.coneco.com</p>	PREPARED FOR: TOWN OF IPSWICH		PLAN SET: MEPA ENF	
	SCALE 1" = 800'	DATE 06/13/2019	PROJECT NO. 8932.0	TITLE: FIGURE 1 USGS TOPOGRAPHIC MAP



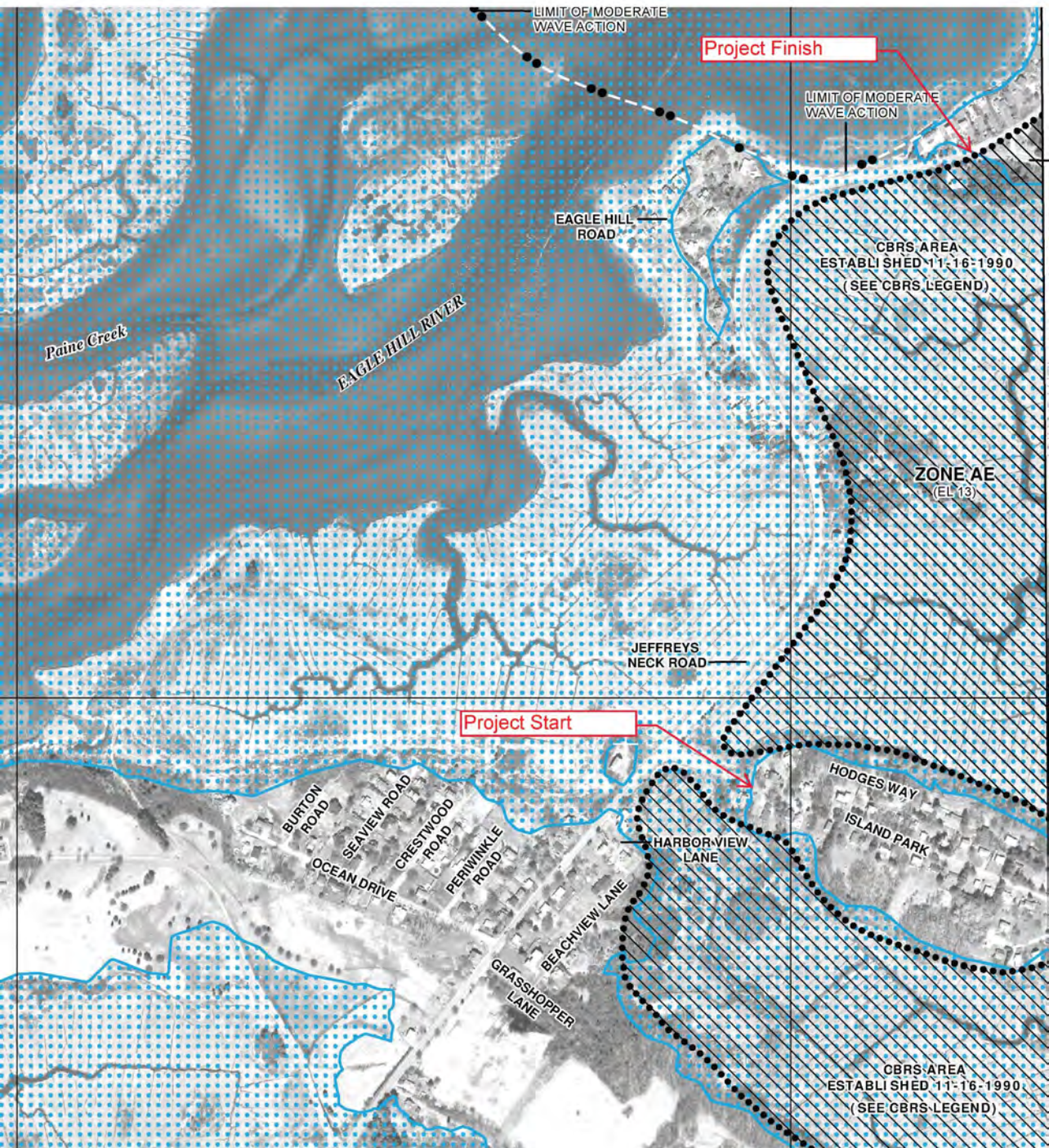
NOTE:  
 INFORMATION ON THIS PLAN WAS OBTAINED FROM MASSGIS  
 DATABASE AERIAL PHOTOGRAPHIC IMAGES, APRIL 2008/2009.

JEFFREY'S NECK ROAD, IPSWICH, MASSACHUSETTS 01938

**CONECO**  
*Engineers & Scientists*  
 4 FIRST STREET, BRIDGEWATER, MASSACHUSETTS 02324  
 PHONE 508-697-3191 OR 800-548-3355; FAX 508-697-5996  
 WEBSITE: [www.coneco.com](http://www.coneco.com)

PREPARED FOR: TOWN OF IPSWICH		PLAN SET: MEPA ENF	
SCALE 1" = 800'	DATE 06/13/2019	PROJECT NO. 8932.0	TITLE: FIGURE 2 AERIAL MAP





LIMIT OF MODERATE WAVE ACTION

Project Finish

LIMIT OF MODERATE WAVE ACTION

EAGLE HILL ROAD

CBRS AREA ESTABLISHED 11-16-1990 (SEE CBRS LEGEND)

Paine Creek

EAGLE HILL RIVER

ZONE AE (EL 13)

JEFFREYS NECK ROAD

Project Start

BURTON ROAD

SEAVIEW ROAD

OCEAN DRIVE

CRESTWOOD ROAD

PERIWINKLE ROAD

GRASSHOPPER LANE

BEACHVIEW LANE

HARBOR VIEW LANE

HODGES WAY

ISLAND PARK

CBRS AREA ESTABLISHED 11-16-1990 (SEE CBRS LEGEND)

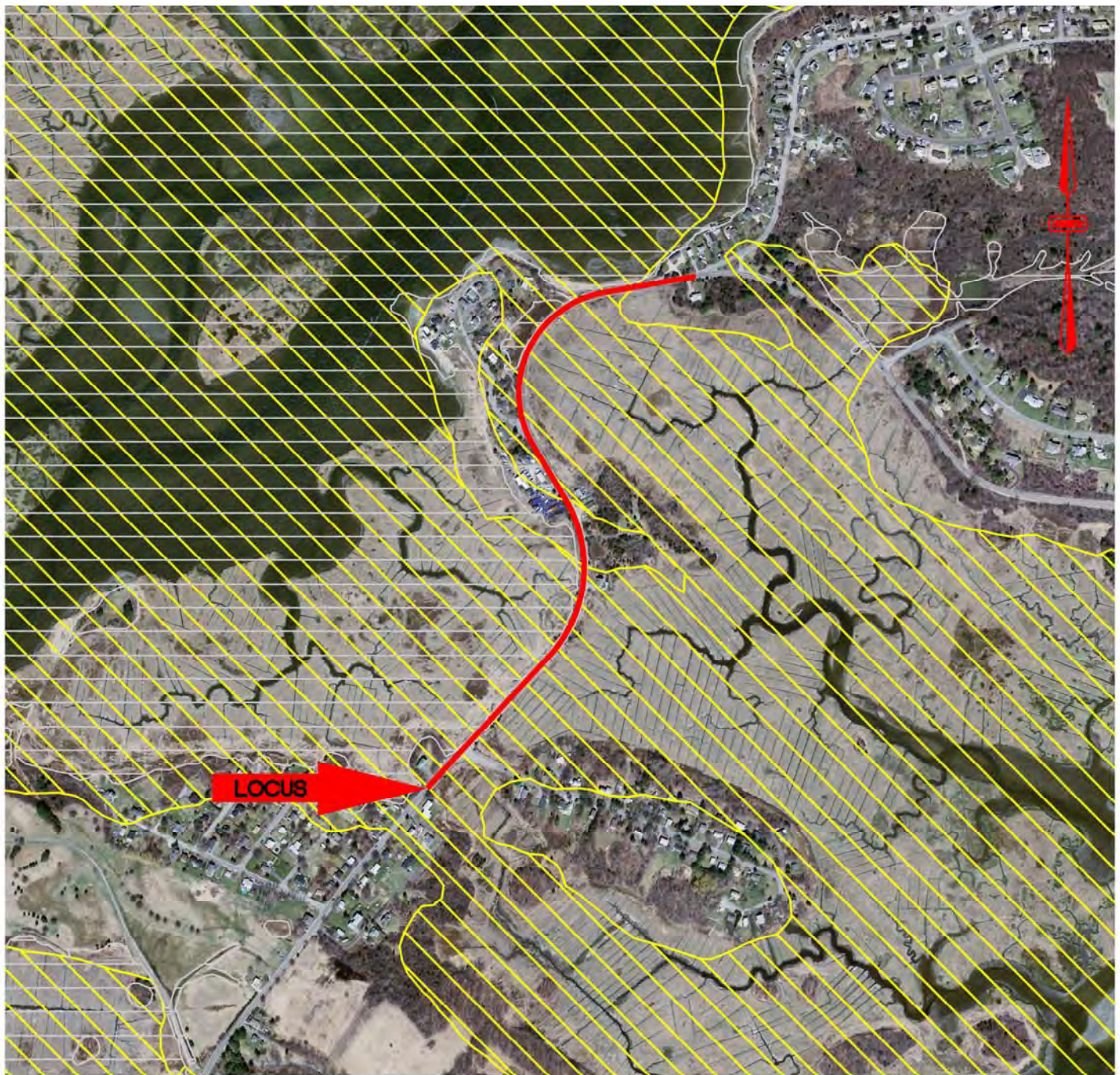


September 20, 2021

### Wetlands

- |  |   |  |
|--|---|--|
|  Estuarine and Marine Deepwater |  Freshwater Emergent Wetland       |  Lake     |
|  Estuarine and Marine Wetland   |  Freshwater Forested/Shrub Wetland |  Other    |
|  |  Freshwater Pond                   |  Riverine |

This map is for general reference only. The US Fish and Wildlife Service is not responsible for the accuracy or currentness of the base data shown on this map. All wetlands related data should be used in accordance with the layer metadata found on the Wetlands Mapper web site.



OUTSTANDING RESOURCE WATERS



AREAS OF CRITICAL ENVIRONMENTAL CONCERN

**NOTES:**

1. AREAS OF CRITICAL ENVIRONMENTAL CONCERN WERE TAKEN FROM MASSGIS DATABASE, LAST UPDATED APRIL 2009.
2. WELLHEAD PROTECTION AREAS WERE TAKEN FROM MASSGIS DATABASE, LAST UPDATED OCTOBER 2017.
3. OUTSTANDING RESOURCE WATERS WERE TAKEN FROM MASSGIS DATABASE, LAST UPDATED MARCH 2010.
4. SURFACE WATER SUPPLY PROTECTION AREAS WERE TAKEN FROM MASSGIS DATABASE, LAST UPDATED APRIL 2017
5. THERE ARE NO WELLHEAD PROTECTION AREAS OR SURFACE WATER SUPPLY PROTECTION AREAS ON THIS PROJECT SITE.

JEFFREY'S NECK ROAD, IPSWICH, MASSACHUSETTS 01938

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 WEBSITE: www.coneco.com

PREPARED FOR:

TOWN OF IPSWICH

PLAN SET:

MEPA ENF

SCALE

1" = 800'

DATE

06/13/2019

PROJECT NO.

8932.0

TITLE:

FIGURE 5  
 AREAS OF CRITICAL  
 ENVIRONMENTAL  
 CONCERN

**APPENDIX B:**  
**Project Design Plans**

# JEFFREY'S NECK ROAD RECONSTRUCTION

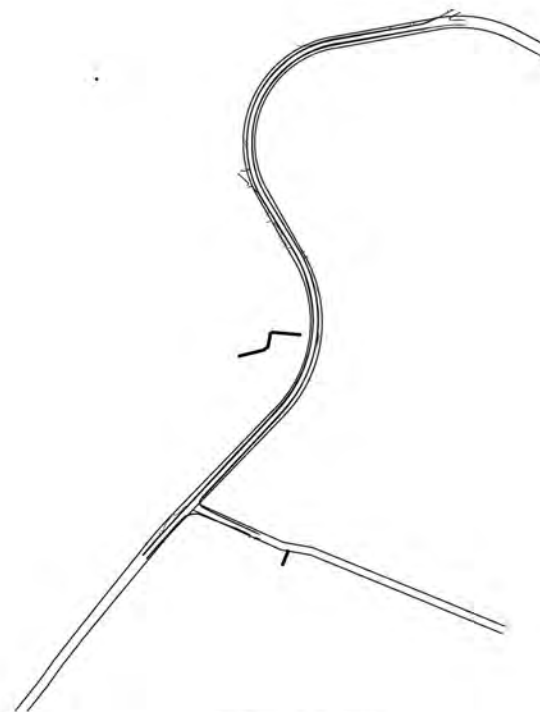
## SITE PLANS

### JEFFREY'S NECK ROAD

### IPSWICH, MA 01938



MASS GIS 2008 AERIAL PHOTO  
SCALE: 1" = 1000'



SCALE: 1" = 500'

DESCRIPTION

COVER SHEET  
NOTES & LEGEND  
GRADING & DRAINAGE  
ROADWAY PLAN & PROFILE  
ROADWAY CROSS SECTIONS  
DETAIL SHEET

SHEET

1  
2  
3-11  
12-18  
19-20  
21-22

PREPARED FOR:

TOWN OF IPSWICH  
25 GREEN STREET  
IPSWICH, MASSACHUSETTS 01938

PREPARED ON:  
AUGUST 28, 2019



4 FIRST STREET, BRIDGEWATER, MASSACHUSETTS 02324  
PHONE: 508.697.3191, FAX: 508.697.5996  
WEBSITE: www.coneco.com

ENGINEER:  
KEVIN E. MCHUGH, P.E.  
CONECO ENGINEERS & SCIENTISTS, INC.  
BRIDGEWATER, MA 02324

MASSACHUSETTS REGISTERED PROFESSIONAL ENGINEER #45196

DATE: \_\_\_\_\_

SURVEYOR:  
TIMOTHY S. BODAH, P.L.S.  
CONECO ENGINEERS & SCIENTISTS, INC.  
BRIDGEWATER, MA 02324

MASSACHUSETTS REGISTERED PROFESSIONAL LAND SURVEYOR #46110

DATE: \_\_\_\_\_

JEFFREY'S NECK ROAD RECONSTRUCTION				
JEFFREY'S NECK ROAD, IPSWICH, MA 01938				
REVISIONS				
NO.	DATE	DESCRIPTION	DR/CK	

**LEGEND**

EXISTING	PROPOSED	DESCRIPTION
		PROPERTY LINE
		BORDERING VEGETATED WETLAND
		SALT MARSH
		LAND SUBJECT TO TIDAL ACTION
		TIDAL CREEK
		COASTAL BANK
		25' RESOURCE AREA BUFFER
		40' RESOURCE AREA BUFFER
		100' RESOURCE AREA BUFFER
		ROAD ALIGNMENT
		MAJOR GROUND CONTOUR
		MINOR GROUND CONTOUR
		EDGE OF PAVEMENT
		EDGE OF GRAVEL
		BUILDING
		GUARD RAIL
		WATER LINE
		DRAIN LINE
		OVERHEAD WIRE
		UTILITY POLE
		WATER GATE
		HYDRANT
		CATCH BASIN
		SIGN
		BORING LOCATION

**ABBREVIATIONS**

ABBREV.	DESCRIPTION
BIT.	BITUMINOUS
BIT. CONC.	BITUMINOUS CONCRETE
BVW	BORDERING VEGETATED WETLAND
CF	CUBIC FEET
CLDI	CEMENT LINED DUCTILE IRON PIPE
CU	CONTAMINATION UNKNOWN
EOP	EDGE OF PAVEMENT
EX.	EXISTING
FT	FOOT OR FEET
INV., I	INVERT
L	LENGTH
MAX	MAXIMUM
MIN	MINIMUM
N	NORTH
NAVD	NORTH AMERICAN VERTICAL DATUM
NTS	NOT TO SCALE
N/F	NOW OR FORMERLY
OHW	OVERHEAD WIRE
P.	PROPOSED
S	SLOPE
SF	SQUARE FEET
TYP.	TYPICAL
UP	UTILITY POLE
WG/V	WATER GATE/VALVE

**NOTES**

**GENERAL:**

1. THE CONTRACTOR SHALL NOTIFY "DIGSAFE" (1-888-DIGSAFE) AT LEAST 72 HOURS (3 BUSINESS DAYS) BEFORE EXCAVATING.
2. CONTRACTOR SHALL BE RESPONSIBLE FOR SITE SECURITY AND JOB SAFETY. CONSTRUCTION ACTIVITIES SHALL BE IN ACCORDANCE WITH OSHA STANDARDS AND LOCAL REQUIREMENTS.
3. UPON AWARD OF CONTRACT, CONTRACTOR SHALL MAKE NECESSARY CONSTRUCTION NOTIFICATIONS AND APPLY FOR AND OBTAIN NECESSARY PERMITS, PAY FEES, AND POST BONDS ASSOCIATED WITH THE WORK INDICATED ON THE DRAWINGS, IN THE SPECIFICATIONS, AND IN THE CONTRACT DOCUMENTS.
4. SITE SIGNAGE AND PAVEMENT MARKINGS SHALL CONFORM TO THE MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES.
5. AREAS OUTSIDE THE LIMITS OF PROPOSED WORK DISTURBED BY THE CONTRACTOR'S OPERATIONS SHALL BE RESTORED BY THE CONTRACTOR TO THEIR ORIGINAL CONDITION AT THE CONTRACTOR'S EXPENSE.
6. IN THE EVENT THAT SUSPECTED CONTAMINATED SOIL, GROUNDWATER OR OTHER MEDIA ARE ENCOUNTERED DURING EXCAVATION AND CONSTRUCTION ACTIVITIES BASED ON VISUAL, OLFACTORY, OR OTHER EVIDENCE, THE CONTRACTOR SHALL STOP WORK IN THE VICINITY OF THE SUSPECT MATERIAL TO AVOID FURTHER SPREADING OF THE MATERIAL, AND SHALL NOTIFY THE OWNER IMMEDIATELY SO THAT THE APPROPRIATE TESTING AND SUBSEQUENT ACTION CAN BE TAKEN.
7. SITE CLEARING SHALL BE LIMITED TO THE EROSION CONTROL LINE AND/OR THE LIMIT OF GRADING IN AREAS WHERE EROSION CONTROL LINE IS NOT REQUIRED. CARE SHOULD BE TAKEN TO PROTECT EXISTING TREES OUTSIDE OF THIS LINE, THEREBY MAINTAINING A NATURAL BUFFER TO THE GREATEST EXTENT POSSIBLE.

**LAYOUT & MATERIALS:**

1. DIMENSIONS ARE FROM THE FACE OF CURB, FACE OF BUILDING, FACE OF WALL AND CENTER LINE OF PAVEMENT MARKINGS, UNLESS OTHERWISE NOTED.
2. CONCRETE BOUNDS AND ANY EXISTING PROPERTY LINE MONUMENTATION DISTURBED DURING CONSTRUCTION SHALL BE SET OR RESET BY A PROFESSIONAL LAND SURVEYOR.

**EXISTING CONDITIONS INFORMATION:**

1. ELEVATIONS REFER TO NAVD88.
2. WETLANDS DELINEATED BY LEC ENVIRONMENTAL CONSULTANTS, INC. ON OCTOBER 13, 2015.
3. TOPOGRAPHIC INFORMATION AND EXISTING SITE FEATURES WERE OBTAINED FROM A FIELD SURVEY PERFORMED BY EAGLEBROOK ENGINEERING & SURVEY, LLC.
4. THE PROJECT IS LOCATED PARTIALLY IN ZONE AE, AREAS WITHIN THE 0.2% ANNUAL CHANCE FLOODPLAIN, AS SHOWN ON THE FEMA FLOOD INSURANCE RATE MAP COMMUNITY PANEL NO. 25009C0279G DATED JULY 16, 2014.
5. UNDERGROUND UTILITY LOCATION AS SHOWN HEREON ARE TAKEN FROM AVAILABLE RECORD AND FIELD INFORMATION AND ARE APPROXIMATE ONLY. BEFORE PLANNING ANY CONSTRUCTION, DIGSAFE AND THE VARIOUS UTILITY COMPANY ENGINEERING DEPARTMENTS SHOULD BE CONSULTED.
6. TREE SYMBOLS ARE FOR GRAPHIC PURPOSES ONLY AND DO NOT REPRESENT ACTUAL CANOPY LINES.

**LANDSCAPING:**

1. ALL AREAS CLEARED AND/OR DISTURBED SHALL BE BROUGHT TO WITHIN 4 INCHES OF FINAL GRADE AND FINISHED WITH 4 INCHES OF LOAM AND SEED EXCEPT WHERE OTHER FINISHES ARE PROPOSED (REFER TO PLANS).
2. CONTRACTOR IS RESPONSIBLE FOR REPLACING (IN KIND) ALL DEAD OR DYING PLANT MATERIAL FOR A PERIOD OF 2 YEARS AFTER INITIAL PLANTING.

**UTILITIES:**

1. THE LOCATIONS OF EXISTING UNDERGROUND UTILITIES ARE SHOWN IN AN APPROXIMATE WAY ONLY AND HAVE NOT BEEN INDEPENDENTLY VERIFIED BY THE OWNER OR ITS REPRESENTATIVES. THE CONTRACTOR SHALL VERIFY AND DETERMINE THE EXACT LOCATION, SIZE, AND ELEVATION OF ALL EXISTING UTILITIES PRIOR TO CONSTRUCTION.
2. WHERE AN EXISTING UTILITY IS FOUND TO CONFLICT WITH THE PROPOSED WORK, OR EXISTING CONDITIONS DIFFER FROM THOSE SHOWN SUCH THAT THE WORK CANNOT BE COMPLETED AS INTENDED, THE LOCATION, ELEVATION, AND SIZE OF THE UTILITY SHALL BE ACCURATELY DETERMINED WITHOUT DELAY BY THE CONTRACTOR, AND THE INFORMATION FURNISHED IN WRITING TO THE OWNER'S REPRESENTATIVE FOR THE RESOLUTION OF THE CONFLICT. FAILURE TO PROVIDE OR PERFORM THE ABOVE PRIOR TO PERFORMING ANY WORK SHALL NOT BE GROUNDS FOR EXTRA PAYMENTS TO THE CONTRACTOR.
3. SET CATCH BASIN RIMS, AND INVERTS OF DRAINS AND DITCHES IN ACCORDANCE WITH ELEVATIONS ON THE GRADING AND DRAINAGE PLAN.
4. RIM ELEVATIONS FOR DRAIN MANHOLES AND OTHER SUCH ITEMS ARE APPROXIMATE AND SHALL BE ADJUSTED AS FOLLOWS:
  - PAVEMENTS, CONCRETE SURFACES, AND ALL SURFACE TYPES ALONG ACCESSIBLE ROUTES- SET FLUSH WITH FINISH GRADES.
  - LANDSCAPE, LOAM AND SEED, AND OTHER EARTH SURFACE AREAS- SET 1 INCH ABOVE SURROUNDING AREA AND TAPER EARTH TO THE RIM ELEVATION.
5. THE LOCATION, SIZE, DEPTH, AND SPECIFICATIONS FOR CONSTRUCTION OF PROPOSED PRIVATE UTILITY SERVICES SHALL BE INSTALLED ACCORDING TO THE REQUIREMENTS PROVIDED BY, AND APPROVED BY, THE RESPECTIVE UTILITY COMPANY (GAS, TELEPHONE, ELECTRIC, FIRE ALARM, ETC.). FINAL DESIGN LOADS AND LOCATIONS TO BE COORDINATED WITH OWNER AND ARCHITECT.
6. THE CONTRACTOR SHALL MAKE ARRANGEMENTS FOR AND SHALL BE RESPONSIBLE FOR PAYING FEES FOR POLE RELOCATION AND FOR THE ALTERATION AND ADJUSTMENT OF GAS, ELECTRIC, TELEPHONE, FIRE ALARM, AND ANY OTHER PRIVATE UTILITIES, WHETHER WORK IS PERFORMED BY CONTRACTOR OR BY THE UTILITY COMPANY.
7. UTILITY PIPE MATERIALS SHALL BE AS FOLLOWS, UNLESS OTHERWISE NOTED ON THE PLAN:
  - STORM DRAINAGE PIPES SHALL BE DOUBLE WALL, SMOOTH INTERIOR HIGH DENSITY POLYETHYLENE (HDPE)



NO.	DATE	DESCRIPTION	DR/CHK

PROJECT: JEFFREY'S NECK ROAD RECONSTRUCTION  
JEFFREY'S NECK ROAD  
IPSWICH, MASSACHUSETTS 01938

PREPARED FOR: TOWN OF IPSWICH  
25 GREEN STREET  
IPSWICH, MASSACHUSETTS 01938

PLANNED BY: JEFFREY'S NECK ROAD RECONSTRUCTION  
JEFFREY'S NECK ROAD  
IPSWICH, MASSACHUSETTS 01938

DATE: 08/28/2019

SCALE: AS SHOWN

PROJECT NO.: 8932.0

SHEET NO. 2

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Engineers & Scientists

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WWW.CONECO.COM

DATE: 08/28/2019

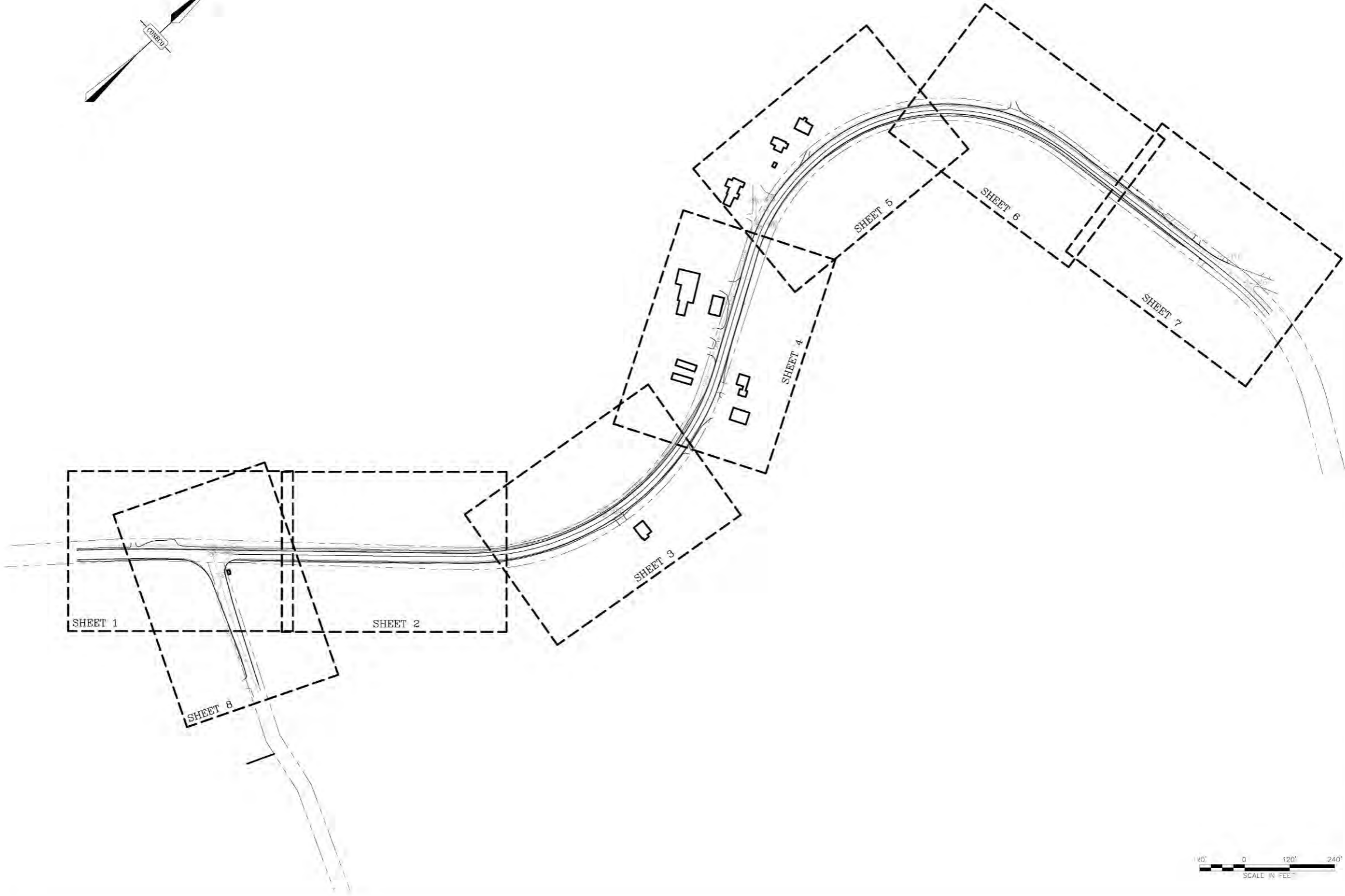
DESIGNED: MSD CHECKED: JEN

DRAFTED: MSD IN CHARGE: KEM

SCALE: AS SHOWN

PROJECT NO.: 8932.0

SHEET NO. 2



REVISIONS		DR/CK
NO.	DATE	DESCRIPTION

TOWN OF IPSWICH  
 25 GREEN STREET  
 IPSWICH, MASSACHUSETTS 01938  
 ROADWAY PLAN & PROFILE  
 KEY SHEET

JEFFREY'S NECK ROAD RECONSTRUCTION  
 JEFFREY'S NECK ROAD  
 IPSWICH, MASSACHUSETTS 01938  
 SITE PLANS

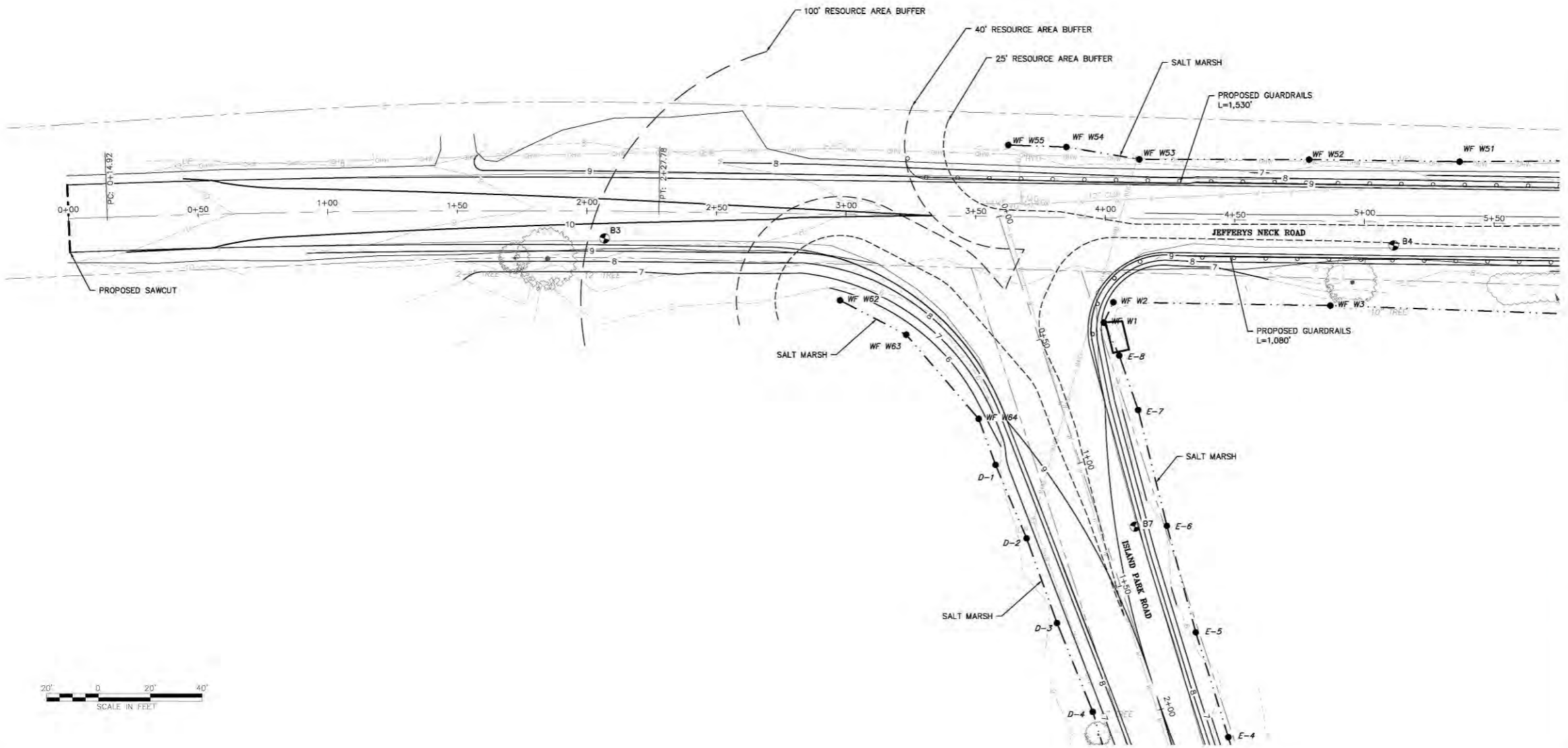
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 WEBSITE: www.coneco.com

DATE	08/28/2019
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SCALE:	1" = 120'
PROJECT NO.	8832.0
SHEET NO.	<b>3</b>



RESOURCE AREA LEGEND	
	SALT MARSH
	LAND SUBJECT TO TIDAL ACTION
	BORDERING VEGETATED WETLAND
	COASTAL BANK
	TIDAL CREEK
	25' RESOURCE AREA BUFFER
	40' RESOURCE AREA BUFFER
	100' RESOURCE AREA BUFFER

NOTE: ALL ROAD SIDE SLOPES TO USE COIR LOG OR DOUBLE COIR LOG UNLESS OTHERWISE SPECIFIED.



NO.	DATE	DESCRIPTION	DR/CK

PREPARED FOR:  
 TOWN OF IPSWICH  
 25 GREEN STREET  
 IPSWICH, MASSACHUSETTS 01938

PROJECT:  
 JEFFREY'S NECK ROAD RECONSTRUCTION  
 JEFFREY'S NECK ROAD  
 IPSWICH, MASSACHUSETTS 01938

PLAN NO:  
 GRADING & DRAINAGE  
 SHEET 1 OF 8

DATE: 08/28/2019

DESIGNED: MSD CHECKED: JEN

DRAFTED: MSD IN CHARGE: KEM

SCALE: 1" = 20'

PROJECT NO. 8932.0

SHEET NO. 4

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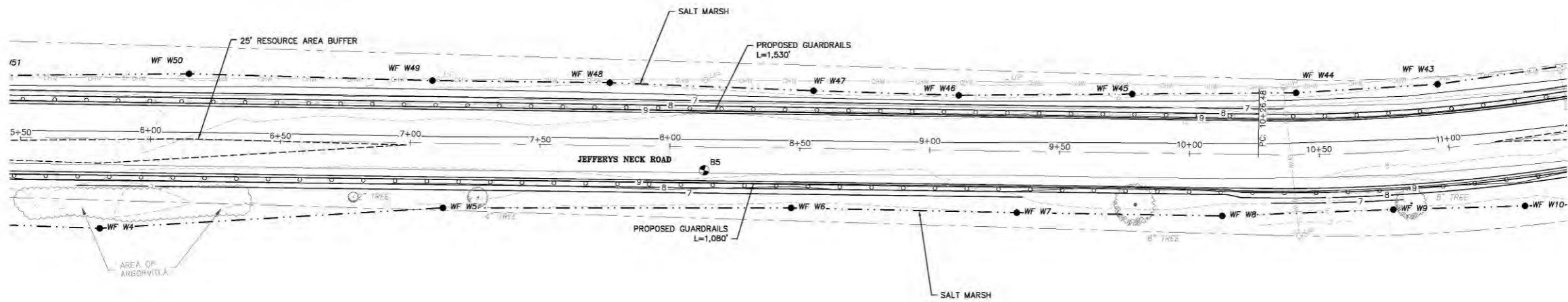
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RESOURCE AREA LEGEND	
	SALT MARSH
	LAND SUBJECT TO TIDAL ACTION
	BORDERING VEGETATED WETLAND
	COASTAL BANK
	TIDAL CREEK
	25' RESOURCE AREA BUFFER
	40' RESOURCE AREA BUFFER
	100' RESOURCE AREA BUFFER

NOTE: ALL ROAD SIDE SLOPES TO USE COIR LOG OR DOUBLE COIR LOG UNLESS OTHERWISE SPECIFIED.



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PREPARED FOR:  
TOWN OF IPSWICH  
25 GREEN STREET  
IPSWICH, MASSACHUSETTS 01938

PROJECT:  
JEFFREY'S NECK ROAD RECONSTRUCTION  
JEFFREY'S NECK ROAD  
IPSWICH, MASSACHUSETTS 01938

PLANNING:  
GRADING & DRAINAGE  
SHEET 2 OF 8

DATE: 08/28/2019

DESIGNED: MSD CHECKED: JEN

DRAFTED: MSD IN CHARGE: KEM

SCALE: 1" = 20'

PROJECT NO. 8832.0

SHEET NO.

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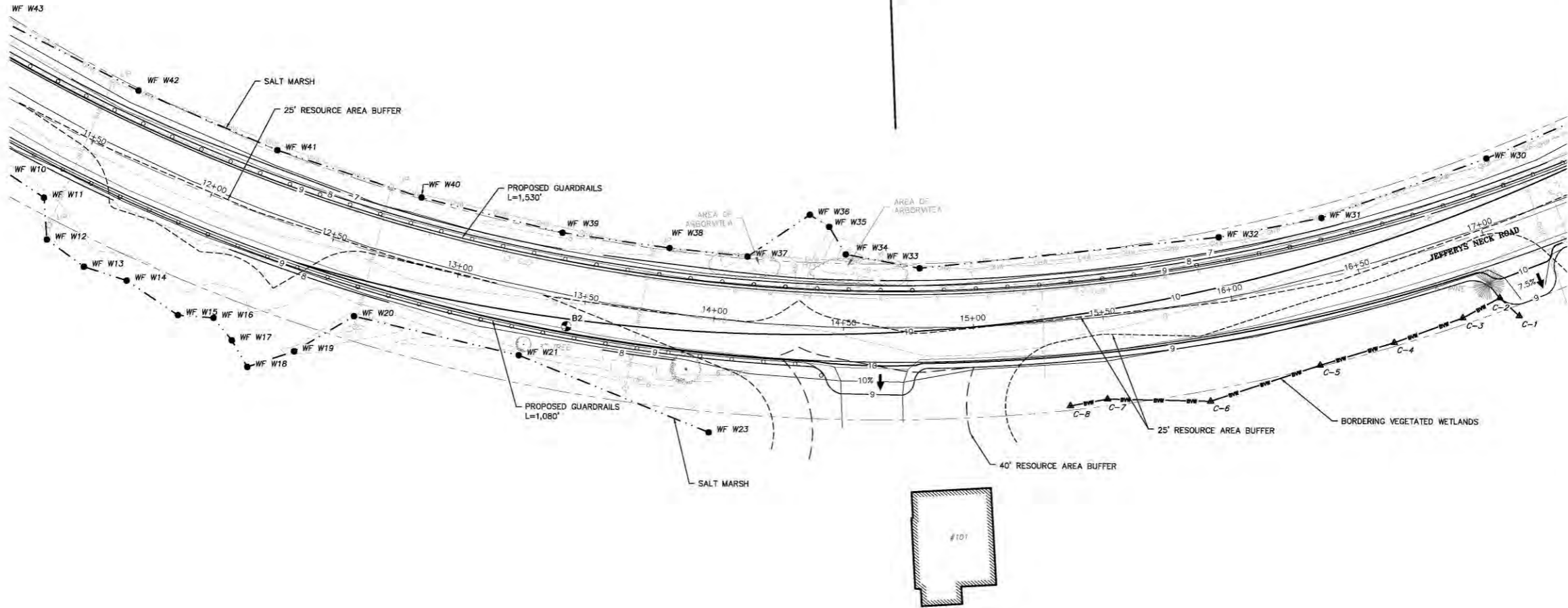
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TIDAL CREEK TO EAGLE HILL RIVER (FROM MASSGIS)

RESOURCE AREA LEGEND	
	SALT MARSH
	LAND SUBJECT TO TIDAL ACTION
	BORDERING VEGETATED WETLAND
	COASTAL BANK
	TIDAL CREEK
	25' RESOURCE AREA BUFFER
	40' RESOURCE AREA BUFFER
	100' RESOURCE AREA BUFFER

NOTE: ALL ROAD SIDE SLOPES TO USE COIR LOG OR DOUBLE COIR LOG UNLESS OTHERWISE SPECIFIED.



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PROJECT: TOWN OF IPSWICH  
25 GREEN STREET  
IPSWICH, MASSACHUSETTS 01938

PREPARED FOR: GRADING & DRAINAGE  
SHEET 3 OF 8

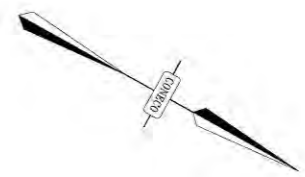
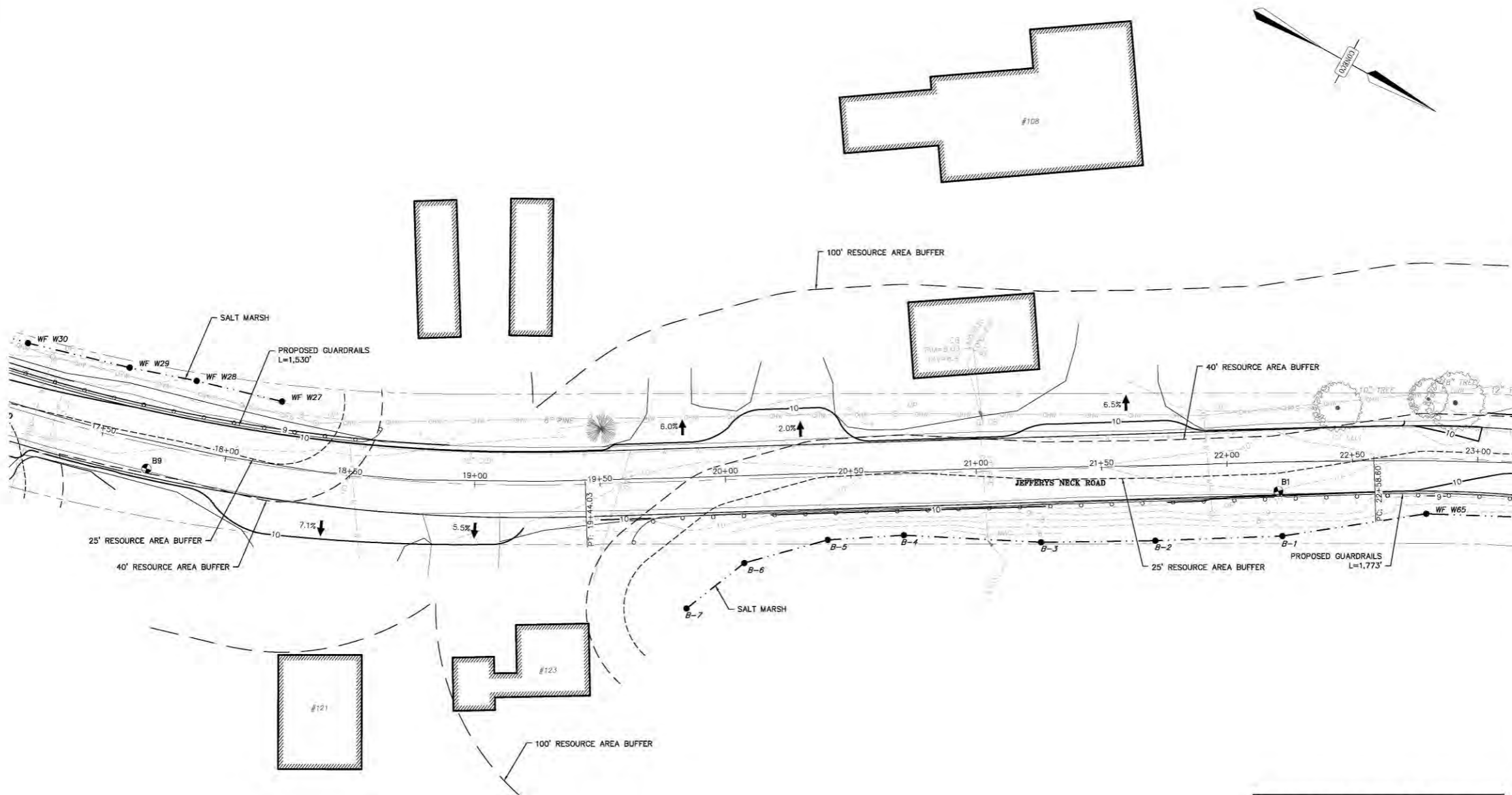
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DESIGNED: MSD	CHECKED: JEN
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SCALE:	1" = 20'
PROJECT NO.	8832.0
SHEET NO.	6



RESOURCE AREA LEGEND	
	SALT MARSH
	LAND SUBJECT TO TIDAL ACTION
	BORDERING VEGETATED WETLAND
	COASTAL BANK
	TIDAL CREEK
	25' RESOURCE AREA BUFFER
	40' RESOURCE AREA BUFFER
	100' RESOURCE AREA BUFFER

NOTE: ALL ROAD SIDE SLOPES TO USE COIR LOG OR DOUBLE COIR LOG UNLESS OTHERWISE SPECIFIED.

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TOWN OF IPSWICH  
25 GREEN STREET  
IPSWICH, MASSACHUSETTS 01938

GRADING & DRAINAGE  
SHEET 4 OF 8

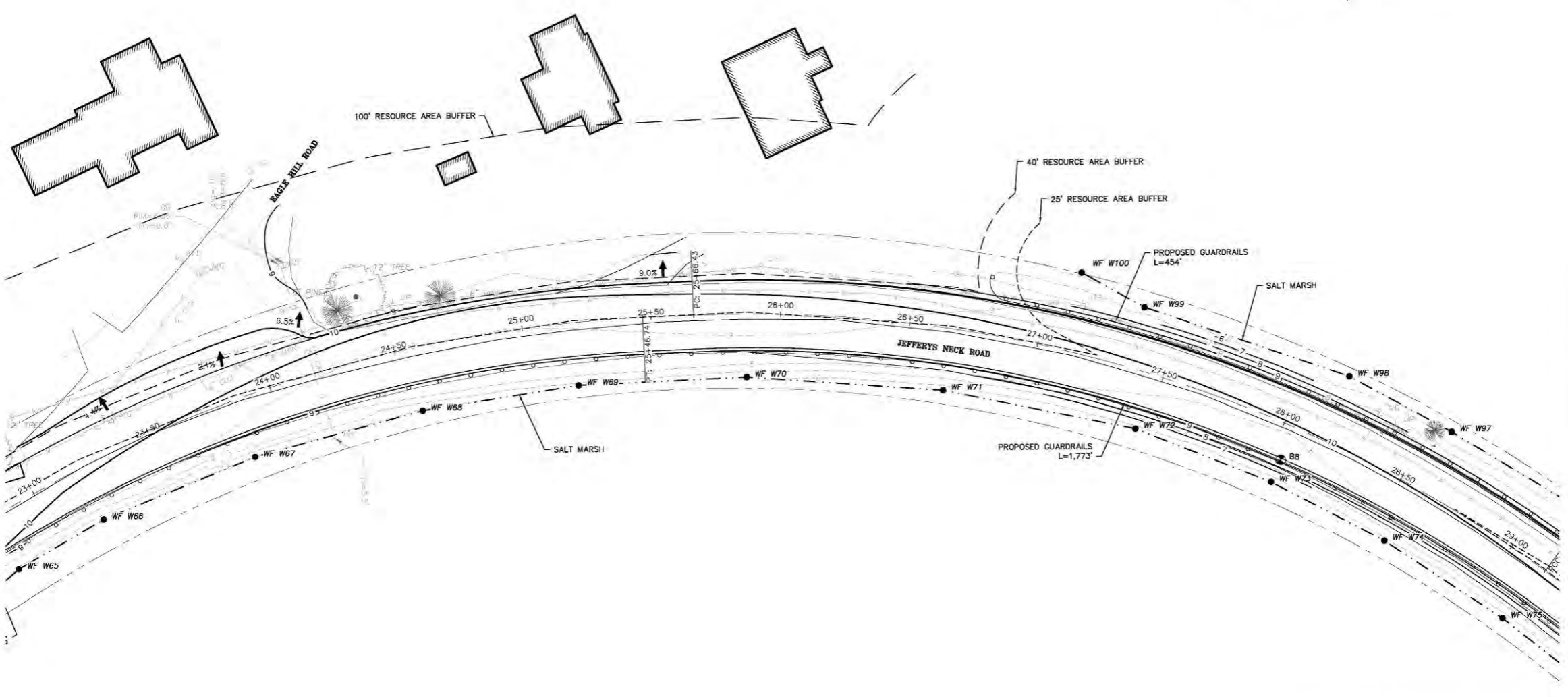
JEFFREY'S NECK ROAD RECONSTRUCTION  
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IPSWICH, MASSACHUSETTS 01938

SITE PLANS

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PROJECT NO.	8832.0
SHEET NO.	<b>7</b>



RESOURCE AREA LEGEND	
	SALT MARSH
	LAND SUBJECT TO TIDAL ACTION
	BORDERING VEGETATED WETLAND
	COASTAL BANK
	TIDAL CREEK
	25' RESOURCE AREA BUFFER
	40' RESOURCE AREA BUFFER
	100' RESOURCE AREA BUFFER

NOTE: ALL ROAD SIDE SLOPES TO USE COIR LOG OR DOUBLE COIR LOG UNLESS OTHERWISE SPECIFIED.

NO.	DATE	DESCRIPTION	DR/CK

PROJECT: TOWN OF IPSWICH  
25 GREEN STREET  
IPSWICH, MASSACHUSETTS 01938

PREPARED FOR: GRADING & DRAINAGE  
SHEET 5 OF 8

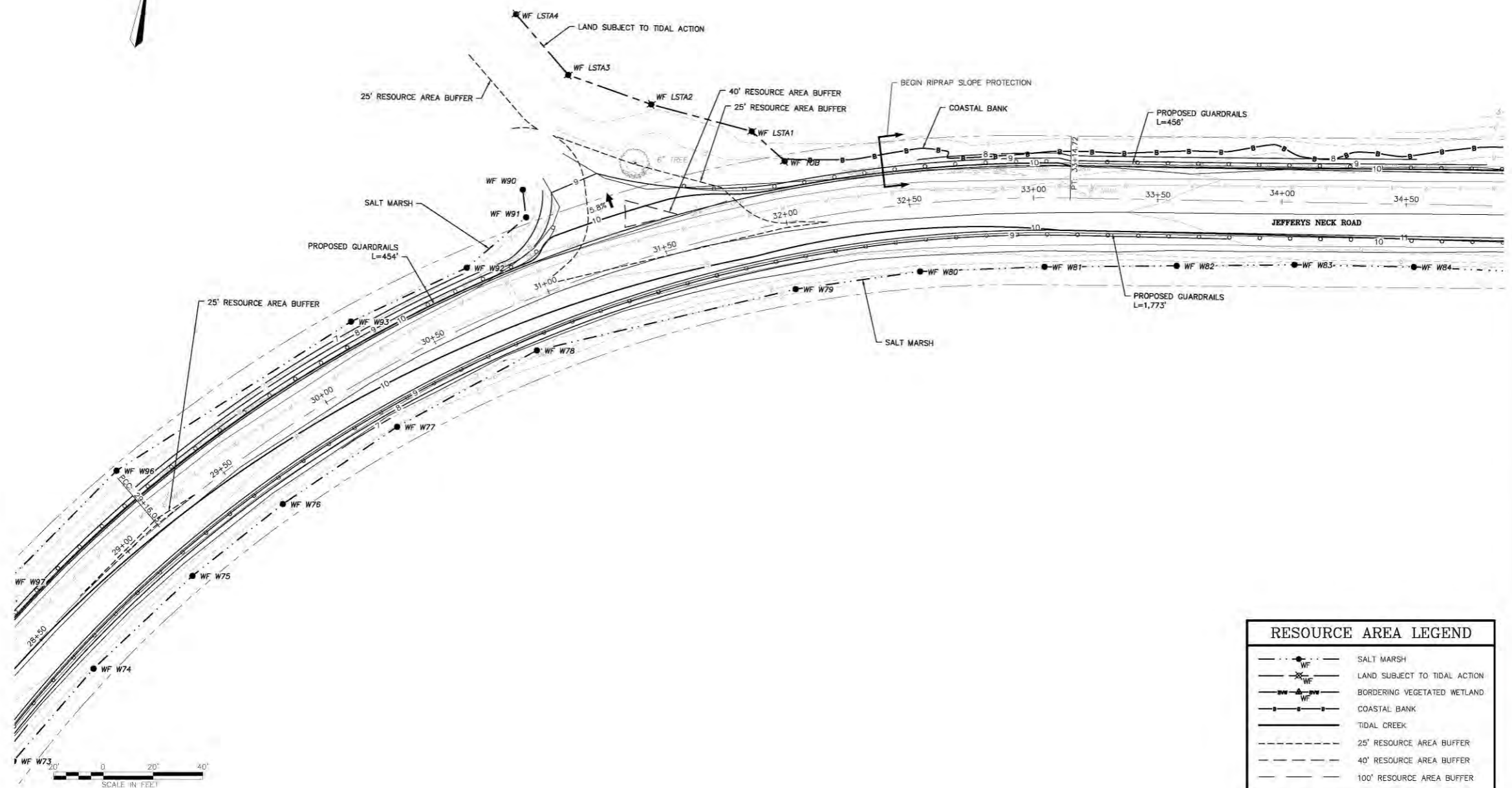
PROJECT: JEFFERY'S NECK ROAD RECONSTRUCTION  
JEFFERY'S NECK ROAD  
IPSWICH, MASSACHUSETTS 01938

PREPARED FOR: SITE PLANS

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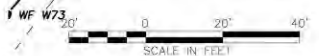
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PROJECT NO.	8932.0
SHEET NO.	8



RESOURCE AREA LEGEND	
	SALT MARSH
	LAND SUBJECT TO TIDAL ACTION
	BORDERING VEGETATED WETLAND
	COASTAL BANK
	TIDAL CREEK
	25' RESOURCE AREA BUFFER
	40' RESOURCE AREA BUFFER
	100' RESOURCE AREA BUFFER

NOTE: ALL ROAD SIDE SLOPES TO USE COIR LOG OR DOUBLE COIR LOG UNLESS OTHERWISE SPECIFIED.



NO.	DATE	DESCRIPTION	DR/CK

PROJECT: TOWN OF IPSWICH  
25 GREEN STREET  
IPSWICH, MASSACHUSETTS 01938

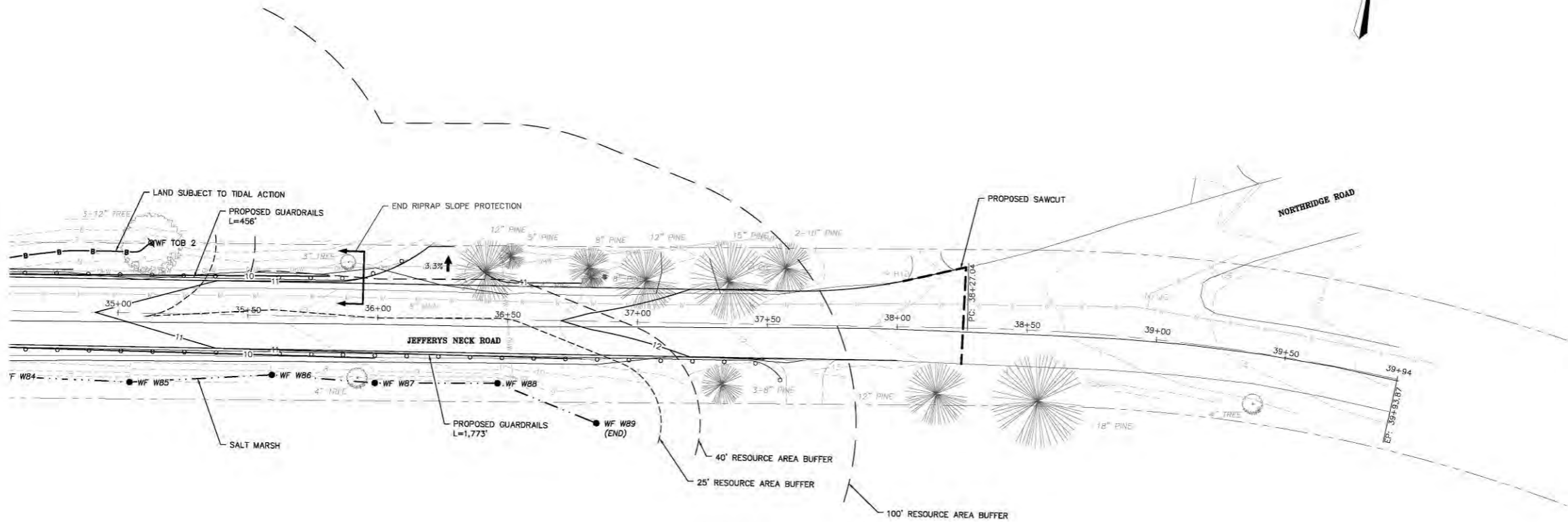
PREPARED FOR: GRADING & DRAINAGE  
SHEET 6 OF 8

PROJECT: JEFFREY'S NECK ROAD RECONSTRUCTION  
JEFFREY'S NECK ROAD  
IPSWICH, MASSACHUSETTS 01938

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PROJECT NO.	8932.0
SHEET NO.	9



RESOURCE AREA LEGEND	
	SALT MARSH
	LAND SUBJECT TO TIDAL ACTION
	BORDERING VEGETATED WETLAND
	COASTAL BANK
	TIDAL CREEK
	25' RESOURCE AREA BUFFER
	40' RESOURCE AREA BUFFER
	100' RESOURCE AREA BUFFER

NOTE: ALL ROAD SIDE SLOPES TO USE COIR LOG OR DOUBLE COIR LOG UNLESS OTHERWISE SPECIFIED.



REVISIONS	
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TOWN OF IPSWICH  
25 GREEN STREET  
IPSWICH, MASSACHUSETTS 01938

GRADING & DRAINAGE  
SHEET 7 OF 8

JEFFREY'S NECK ROAD RECONSTRUCTION  
JEFFREY'S NECK ROAD  
IPSWICH, MASSACHUSETTS 01938

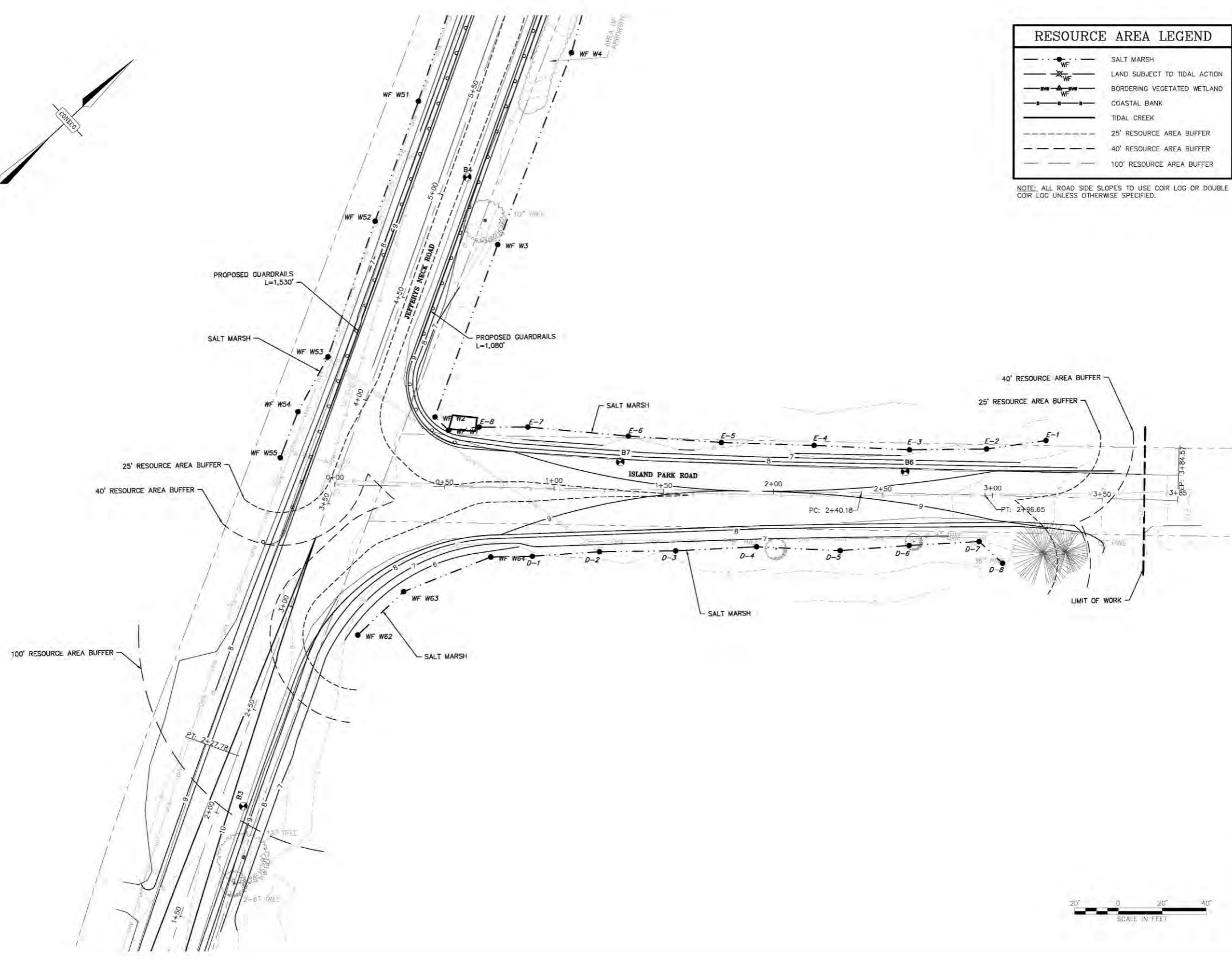
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SCALE:	1" = 20'
PROJECT NO.	8932.0

SHEET NO. **10**  
OF 22



RESOURCE AREA LEGEND	
	SALT MARSH
	LAND SUBJECT TO TIDAL ACTION
	BORDERING VEGETATED WETLAND
	COASTAL BANK
	TIDAL CREEK
	25' RESOURCE AREA BUFFER
	40' RESOURCE AREA BUFFER
	100' RESOURCE AREA BUFFER

NOTE: ALL ROAD SIDE SLOPES TO USE COIR LOG OR DOUBLE COIR LOG UNLESS OTHERWISE SPECIFIED.

NO.	DATE	REVISIONS	DESCRIPTION	DR/CK

PROJECT: TOWN OF IPSWICH  
25 GREEN STREET  
IPSWICH, MASSACHUSETTS 01938

PREPARED FOR: GRADING & DRAINAGE  
SHEET B OF 8

PROJECT: JEFFREY'S NECK ROAD RECONSTRUCTION  
JEFFREY'S NECK ROAD  
IPSWICH, MASSACHUSETTS 01938

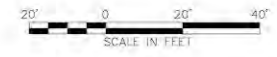
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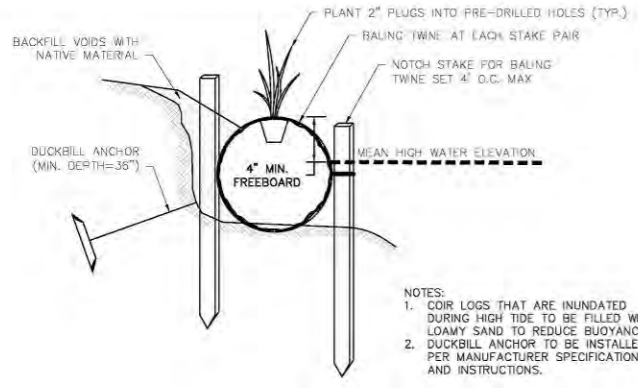
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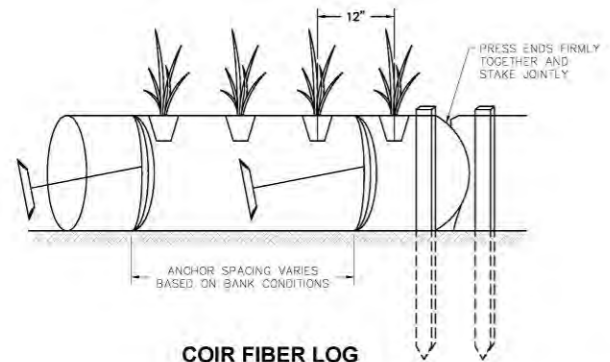
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SCALE: 1" = 20'

PROJECT NO. 8932.0  
SHEET NO. 11 OF 22

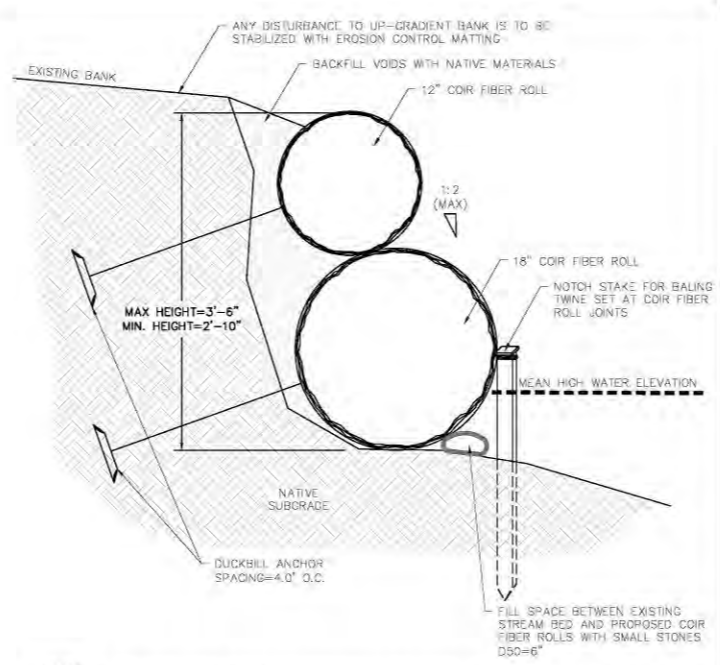




- NOTES:
1. COIR LOGS THAT ARE INUNDATED DURING HIGH TIDE TO BE FILLED WITH LOAMY SAND TO REDUCE BUOYANCY. DUCKBILL ANCHOR TO BE INSTALLED PER MANUFACTURER SPECIFICATIONS AND INSTRUCTIONS.

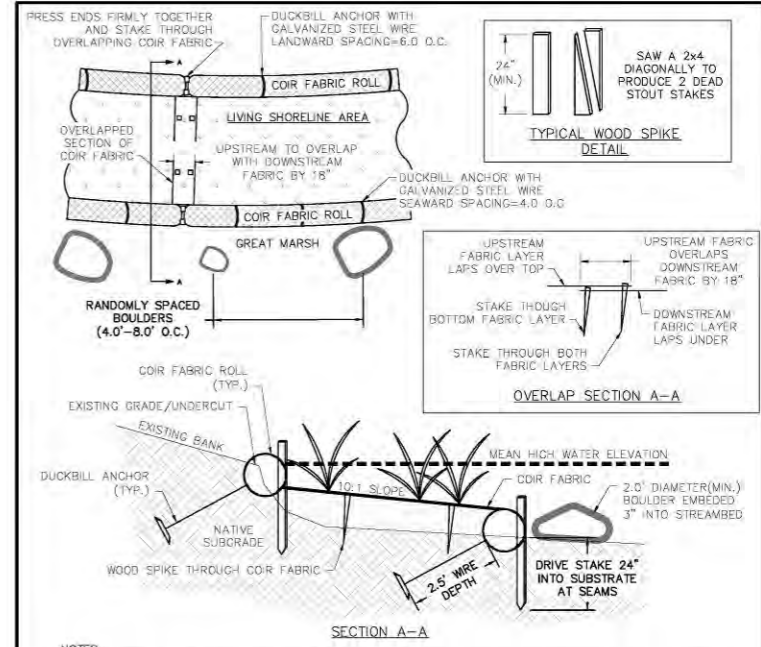


**COIR FIBER LOG**  
N.T.S.



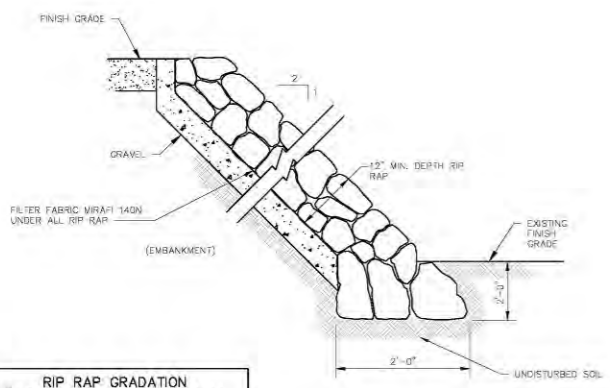
- NOTES:
1. FILL IN ADDITIONAL VOIDS BEHIND COIR FIBER ROLLS WITH NATIVE MATERIAL DEPENDING ON SITE CONDITIONS. VOID AREA TO BE GRADED UP TO EXISTING EDGE OF UNDERCUT AT 2:1 SLOPE MINIMUM.
  2. DUCKBILL ANCHOR MODEL TO BE EARTH ANCHOR 68-DB1 OR APPROVED EQUIVALENT.

**DOUBLE COIR FIBER LOG**  
N.T.S.



- NOTES:
1. BOULDERS SHALL BE FROM EXISTING STOCKPILED BOULDERS.
  2. DUCKBILL ANCHOR MODEL TO BE EARTH ANCHOR 68-DB1 OR APPROVED EQUIVALENT. ANCHOR CAPACITY TO BE 1,100 LBS ON NORMAL SOILS.
  3. INSTALLATION WIRE ROPE TO BE 1/8" GALVANIZED WITH A BREAKING STRENGTH OF 1,700 LBS.
  4. COIR FABRIC SHALL BE A WOVEN COCONUT EROSION CONTROL BLANKET ABLE TO WITHSTAND 10 FPS WATER VELOCITIES AND 4.5 PSF SHEAR STRESS. FABRIC SHALL BE GEOCOIR 700 OR APPROVED EQUIVALENT.

**LIVING SHORELINE TYPICAL SECTION**  
N.T.S.



RIP RAP GRADATION (MASSDOT STANDARD SPECIFICATION M2.02.2 DUMPED RIP RAP)	
SIZE OF STONE	MAXIMUM PERCENT OF TOTAL WEIGHT SMALLER THAN GIVEN SIZE
400 LB.	100
300 LB.	80
200 LB.	50
25 LB.*	10

\* NO MORE THAN 5% BY WEIGHT SHALL PASS A 2 IN. SIEVE  
THIS DETAIL SHALL BE USED IN AREAS WHERE THE SLOPE IS 2:1 OR LESS STEEP.

NOTE:  
EXTEND TOE OF RIP RAP SLOPE TO AN ELEVATION 2'-0" BELOW EXISTING GRADE OR TO SUITABLE SUBGRADE, WHICHEVER IS GREATER.

**ALTERNATIVE SLOPE PROTECTION: TYPICAL SECTION FOR 2:1 OR SHALLOWER RIP RAP SLOPE PROTECTION**  
N.T.S.

NO.	DATE	DESCRIPTION	DR/CHK

PREPARED FOR:  
TOWN OF IPSWICH  
25 GREEN STREET  
IPSWICH, MASSACHUSETTS 01938

PROJECT:  
JEFFREY'S NECK ROAD RECONSTRUCTION  
JEFFREY'S NECK ROAD  
IPSWICH, MASSACHUSETTS 01938

DATE: 08/28/2019

DESIGNED: MSD CHECKED: JEM

DRAWN: MSD IN CHARGE: KEM

SCALE: N.T.S.

PROJECT NO. 8832.0

SHEET NO. 22 OF 22

**CONECO**  
Engineers & Scientists

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**APPENDIX C:**  
**Supporting Documents**

**REGION 1**

**EXECUTIVE ORDER 11988 Floodplain Management**

**EXECUTIVE ORDER 11990 Protection of Wetlands**

**8-Step Analysis (44 C.F.R. Part 9)**

**TITLE:** Jeffrey's Neck Road Flood Protection Project Ipswich, Essex, MA, 4110-DR-MA

**LOCATION:** Island Park Road/Jeffery's Neck Rd intersection (42.698553, -70.817244) to North Ridge Rd/Little Neck Rd split (42.705827, -70.813840)

**BACKGROUND:** The project area is along a 3,900-foot stretch of Jeffrey's Neck Road and 375-foot stretch of Island Park Road in the northeastern portion of the Town, for a total project length of 4,275 feet. Jeffrey's Neck Road is the only access road for the Great Neck, Little Neck, Eagle Hill, and Island Park neighborhoods, which include approximately 750 residences. Jeffrey's Neck Road is bordered by salt marsh and single-family residential buildings. West of the wetlands is the Eagle Hill River, and to the east, the Ipswich River. Roadway elevations vary from a low of approximately 7.0 feet above sea level (ASL) near the intersection with Island Park Road to approximately 10.0 feet ASL near the intersection with Northridge Road, the northern terminus of the project area.

Jeffrey's Neck Road and Island Park Road have experienced repeated flooding when storm surge occurs during some high tides, nor'easter storms, or a combination of those factors. Flooding from the salt marsh to the west has led to periodic road closures along Jeffrey's Neck Road and Island Park Road, particularly in areas adjacent to the salt marsh that are at 7.0 to 10.0 feet ASL. The Ipswich Chief of Police reported that road closures occurred during major storms in 2003 (5 hours), 2007 (36 hours), and 2013 (103 hours). Jeffrey's Neck Road was shut down 11 times between 2003 and 2013 but information is not available for closures that were less than 4 hours in duration.

**DESCRIPTION OF PROJECT:** Under the Proposed Action (Alternative 2 in the EA), the Town would raise the elevation of portions of Jeffrey's Neck Road and Island Park Road to better accommodate elevated sea levels due to high tides, potential future sea level rise, and storm surge. The Town of Ipswich would complete improvements along a 375-foot section of Island Park Road at the intersection with Jeffrey's Neck Road and a 3,900-foot section of Jeffrey's Neck Road from Island Park Road on the south to Northridge Road on the north. Specific elements include:

- Elevate all sections of the road that are currently below 9 feet above sea level (ASL) to at least 9 feet ASL,
- Widen all sections of the road that are currently less than 26 feet wide to 26 feet,
- Install safety features (e.g., guard rails, signage, reflectors, flood gauge, etc.),
- Complete all work within the existing established roadway shoulders to avoid placing fill within the salt marsh, and
- Roadway shoulders would be stabilized with coir logs and native plantings except along the northernmost area on the west side of the road which will replace existing rip rap with appropriately sized riprap.

Elevating the existing roadway may require the construction of a new subbase to improve roadway stability. This would require that portions of the existing roadway subbase be removed, and that new subbase gravel be placed to improve the structural integrity of the roadway. Completing the roadway elevation to 9 feet ASL would provide mitigation to the roadway with minimal modifications to the driveways of five homes along the project area (Appendix C). At sections that are under 26.0 feet in width, the road would be widened, using existing shoulders, to reach a width of 26.0 feet. Construction would remain within the same footprint as the existing road and shoulder with no ground disturbance required beyond the existing shoulder. Under the Proposed Action, existing utility poles and water lines would remain and would not require relocation.

**STEP 1: Determine whether the proposed action is in the 100-year floodplain, which includes the Coastal High Hazard Area (500-year floodplain for critical actions).**

Based on FIRM Panel 25009C0279G (effective date July 16, 2014), Jeffrey's Neck Road is in a Special Flood Hazard Area Zone AE, which is subject to inundation by the 1 percent annual chance flood (i.e., 100-year flood). The base flood elevation along Jeffrey's Neck Road and the entire project area is 13.0 feet ASL. The areas along the northernmost section of Jeffrey's Neck Road are also subject to moderate wave action associated with Eagle Hill River to the west.

From 2003 to 2013, flooding occurred along Jeffrey's Neck Road during recorded tides ranging from 7.32 to 8.25 feet. According to the National Oceanic and Atmospheric Administration, the high-water elevation along the Massachusetts coast (based on elevations recorded at Station No. 8443970) has steadily risen approximately 0.5 feet over the last 37 years. The higher elevated portions of Jeffrey's Neck Road act as a dam preventing the flow of water between the surrounding wetlands. The lowest section of the road near the intersection with Island Park Road acts as a spillway enabling connectivity between the wetlands on either side of the road. On average, Jeffrey's Neck Road experiences this spillway impact approximately twice a year.

**Is the action a functional dependent use (cannot perform its intended purpose unless it is located or carried out in proximity to water) or a facility or structure that facilitates open space use?**

Jeffery's Neck Road is the only route connecting Great Neck and Little Neck with the mainland of Ipswich.

**Determine whether the proposed action is within a designated wetland.**

Based on a review of the U.S. Fish and Wildlife Service (USFWS) National Wetlands Inventory database, estuarine and marine wetlands (designated as E2EM1Pd and E2US3N) are mapped along both sides of Jeffrey's Neck Road within the project area. These designations are both estuarine and intertidal wetlands. Additionally, MassDEP has identified a combination of salt marsh, shallow marsh, meadow, and fens in the project area. This wetland system is designated as the Great Marsh Area of Critical Environmental Concern (ACEC) by the Massachusetts Executive Office of Environmental Affairs and is managed by the Massachusetts Department of Environmental Management which coordinates closely with Massachusetts Office of Coastal Zone Management. The Great Marsh includes both the Eagle Hill and Ipswich Rivers and extends along coastal areas of the Town including approximately 25,500 acres of barrier beach, dunes, saltmarsh, wetlands, and water. The Wetlands Protection Act regulates all activities within 150 feet of the Great Marsh ACEC.

**STEP 2 Notify the public at the earliest possible time of the intent to carry out an action in a floodplain and wetland. Involve the affected and interested public in the decision-making process.**

The Public Notice was published in the Ipswich Local News on 5/5/21. The notice was also published at Town Hall as well as on the Town of Ipswich Facebook account, Twitter account and the news section of the Town of Ipswich homepage. FEMA received multiple comments from the bicycling community regarding the lack of a dedicated bicycle lane being incorporated into the project design.

**STEP 3 Identify and evaluate practicable alternatives to locating the proposed action in a floodplain and wetland (including alternatives sites, actions and the "no action" option).**

**Alternative 1: No Action Alternative**

Under the No Action Alternative, no federal funding would be made available to reduce flooding along Jeffrey's Neck Road. Jeffrey's Neck Road would remain at elevations from a low of approximately 7 feet near Island Park Road to approximately 10 feet near the intersection with Northridge Road. A similar number of road closures per year would be expected.

**Alternative 3: Safety Features and Roadway Expansion (Considered and Dismissed)**

Under Alternative 3, Jeffrey's Neck Road would not be elevated to mitigate against flooding. Alternative 3 would include the installation of safety features described in the Proposed Action (i.e., guardrails, signage, and reflectors) to improve driver safety during periods of heavy fog or significant snow cover. Alternative 3 would also incorporate a flood gauge to display how much flooding has occurred and whether safe passage is possible. Under Alternative 3, Jeffrey's Neck Road would be expanded to a 30-foot shared roadway that would better accommodate pedestrian and bicycle traffic. This would occur by widening paved surfaces by 4 to 6 feet beyond existing conditions, resulting in two 11-foot travel lanes for vehicular traffic and 4-foot paved shoulders for pedestrians and bicyclists.

Given that Alternative 3 would not mitigate against continued flooding along Jeffrey's Road Neck, Alternative 3 does not meet purpose and need and has been dismissed from further consideration. Construction activities would also encroach in wetlands and, therefore, could require extensive environmental permitting and other agency reviews with the potential for non-compliance with State and Federal environmental regulations.

**8.1.1 Alternative 4: Storm Wall Construction (Considered and Dismissed)**

Under Alternative 4 storm walls would be constructed along both sides of Jeffrey's Neck Road between Island Park Road and Eagle Hill Road, and then from the eastern end of Eagle Hill Road to the area of Northridge Road. The storm walls would be constructed to 2.0-feet above Base Flood Elevation to 15.0 feet ASL. Alternative 4 would provide protection for the road surface from splash-over due to wave action during storms with high winds.

Alternative 4 was dismissed because it would not be suitable to mitigate the impacts from flooding due to elevated tides. Installation of weep holes would be required along the bottom of the storm walls to drain collected water from the road surface. During high tides, the weep holes would allow sea water to pass through and defeat the intent to keep the road from flooding.

Alternative 4 was dismissed for the following additional reasons:

- Construction of the storm walls would require significant excavation to form footings to support the storm walls and would require complex permitting due to potential impacts to biological resources.
- It is also expected that public support would not exist for this alternative since the storm walls would restrict views of the resource areas from the roadway and nearby residences.
- Construction activities would encroach in wetlands and, therefore, could require extensive environmental permitting and other agency reviews with the potential for non-compliance with State and Federal environmental regulations.
- It would not meet purpose and need because the weep holes would allow roadway flooding during high tides.

**8.1.2 Alternative 5: Elevation of Jeffrey's Neck Road to the 100-year Floodplain (Considered and Dismissed)**

Alternative 5 would elevate the road 6.0 feet (or more) above current conditions to accommodate projected SLR and increased storm surge. Designed to protect Jeffrey's Neck Road from the 100-year flood event, the roadway would need to be elevated to 13.0 feet ASL. Although Alternative 5 would improve the level of protection above the 100-year storm level, numerous construction concerns exist. Alternative 5 was dismissed from further consideration for the following reasons:

- Elevation of Jeffrey's Neck Road by 6 feet ASL (or more) would cut off access to existing driveways along Jeffrey's Neck Road and Eagle Hill Road from the main roadway.

- The level of construction and permitting required would be extensive and cost prohibitive (estimated at more than \$20 million).
- Construction activities would likely require complete closure of Jeffrey's Neck Road during construction, thereby prohibiting access to residents in the approximately 750 homes located in the Great Neck, Little Neck, Eagle Hill, and Island Park areas of Ipswich.  
Construction activities would encroach in wetlands and, therefore, could require extensive environmental permitting and other agency reviews with the potential for non-compliance with State and Federal environmental regulations.

**STEP 4 Identify the potential direct and indirect impacts associated with the occupancy or modification of floodplains and wetlands and the potential direct and indirect support of floodplain and wetland development that could result from the proposed action.**

Under the Proposed Action, the road improvements would be considered fill within in the Special Flood Hazard Area. The Town would need to secure local floodplain administrator approval for the proposed design. While the Proposed Action would provide an immediate moderate beneficial impact to the project area by reducing flooding impacts to the lowest-lying areas and reduce the amount of road closures from future flood events, it would not eliminate flooding and flood-related road closures in the project area. By design the road would only be elevated to 9.0 feet above sea level instead of the 100-year flood elevation of 13.0 feet above sea level. The impacts of potential sea level rise eventually could advance sea levels toward the elevation of the elevated roadway and could decrease the benefits of the Proposed Action over time from increased water levels. In addition to potential SLR, increased magnitude and frequency of severe weather events would present a growing risk to the project area.

The Proposed Action is designed to avoid adverse impacts on the natural and beneficial functions of the wetland by limiting road improvements to the existing footprint of disturbed areas. Although the wetlands adjacent to the project area would not be directly affected, construction activities would occur within the 150-foot buffer zone to the Great Marsh ACEC. Permitting from the Ipswich Conservation Commission, which administers the Massachusetts Wetlands Protection Act within the Town was required and an Order of Conditions was issued on March 25, 2020.

**STEP 5 Minimize the potential adverse impacts and support to or within floodplains and wetlands identified under Step 4, restore, and preserve the natural and beneficial values served by the floodplain and wetlands.**

Adverse impacts to the floodplain and wetlands would be avoided, minimized, and mitigated through the state and federal permitting process. The Proposed Action would require authorization/permit from the Regional Floodplain Administrator, an Order of Conditions (OOC) under the Wetlands Protection Act (which includes both floodplain and wetland review), and a Clean Water Act 404 permit for placement of fill within a wetland.

A selection of project conditions from the OOC include:

- A requirement for a bioengineered shoreline, consisting of coir fiber rolls and native vegetation that would be installed along the slopes of the roadway section between Island Park Road and Eagle Hill Road. This requirement was included as part of the design of the Proposed Action.
- During this project, there shall be no discharge or spillage of fuel, or other pollutants into any wetland resource area. If there is a spill or discharge of any pollutant during any phase of construction the ICC shall be notified by the applicant within one (1) business day. No vehicle refueling, equipment lubrication, or maintenance is to be done within 100 feet of a resource area. Storage of machinery and vehicles is to be at the Ipswich DPW yard on County Road.
- Wetland flagging shall be checked prior to start of construction and shall be re-established where missing. All wetland flagging shall remain visible and enumerated per the approved plan(s) throughout the life of the project and until a Certificate of Compliance is issued so that erosion control measures can be properly placed, and wetland impacts can be monitored. The proposed limit of work shall be clearly marked with erosion controls or temporary fencing and shall be confirmed by the ICC. Such barriers shall be checked and replaced as necessary and shall be maintained until

all construction is complete. Workers should be informed that no use of machinery, storage of machinery or materials, stockpiling of soil, or construction activity is to occur beyond this line at any time.

Additionally, through the USACE Clean Water Act permitting process, the Town would be required to pay an in lieu fee for adverse effects to the ACEC and wetland resources.

During the scoping processes FEMA received a comment from the EPA stating that "[t]he Proposed Alternative is based on 2012 100-year flood elevation data which does not take into consideration the most up-to-date climate science. Executive Order 11988 -- Floodplain Management as amended by the new EO on Climate-Related Financial Risk states that projects should consider the 500-yr floodplain (0.2 percent annual chance flood) instead of the 100-yr (base floodplain) [reinstatement of EO13690 FFRMS]." FEMA published the *Partial Implementation of the Federal Flood Risk Management Standard for Hazard Mitigation Assistance Programs (Interim) (FEMA Policy FP-206-21-0003)* to align with Executive Order 14030 Climate-Related Financial Risk to strengthen the state of resilience nationwide. The interim policy is effective on August 27, 2021 and applies to the Hazard Mitigation Grant Program (HMGP) for any major disaster declared on or after August 27, 2021. While the interim policy was in effect at the time of the EPA's review and comment, the policy does not apply to the Proposed Action for the following reasons:

- The interim policy only applies to structures, not facilities as defined by 44 C.F.R. Part 9.4,
- actions included under the interim policy are elevation, dry floodproofing, and mitigation reconstruction,
- and the interim policy only applies to HMGP projects that are related to a major disaster declaration on or after the August 27, 2021 effective date.

**STEP 6 Reevaluate the proposed action to determine first, if it is still practicable in light of its exposure to flood hazards or impacts on wetlands, the extent to which it will aggravate the hazards to others, and its potential to disrupt floodplain and wetland resources and second, if alternatives preliminarily rejected at Step 3 are practicable in light of the information gained in Steps 4 and 5. FEMA shall not act in a floodplain unless it is the only practicable location.**

The Proposed Action is functionally dependent on its location within the floodplain and proximate to wetlands and remains practicable because it meets the purpose and need of the project to reduce flooding along Jeffrey's Neck Road resulting in fewer road closures to the Great Neck, Little Neck, Eagle Hill, and Island Park Neck communities. Project and permitting conditions described in Step 5 would adequately avoid, minimize, and mitigate adverse impacts to the floodplain and wetland. The alternatives eliminated in Step 3 remain impracticable.

**STEP 7 Prepare and provide the public with a finding and public explanation of any final decision that the floodplain and wetland is the only practicable alternative.**

Public notice will be provided by FEMA and the Town as part of the Environmental Assessment public notice.

**STEP 8 Review the implementation and post - implementation phases of the proposed action to ensure that the requirements stated in Section 9.11 are fully implemented.**

The FEMA project grant will be conditioned for the Applicant to secure, before construction starts, federal, state, and local permitting for work in the floodplain and wetland: including a permit from the Regional Floodplain Administrator, an Order of Conditions under the Wetlands Protection Act (which includes both floodplain and wetland review), a Clean Water Act 404 permit for placement of fill within a wetland and pay an in lieu fee for adverse effects to the ACEC and wetland resources. Compliance with all federal, state, and local permits will determined as part of the grant close-out process.

**Prepared by:**

This 8-Step Analysis was prepared by Eric Kuns, Senior Environmental Protection Specialist, and Christian Paske, Environmental Protection Specialist, FEMA Region I.