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New Bedford Harbor Superfund Site

U.S. Army Corps of Engineers New England District

Draft Final Intertidal Work Plan for East Zone 5

ACE-J23-35BG6000-M1-0056|0

March 2020



**New Bedford Harbor Superfund Site
Draft Final Intertidal Work Plan for East Zone 5**

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New Bedford Harbor Superfund Site

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Table of Contents

Acronyms and Abbreviations	v
1.0 Introduction	1
2.0 Parcel Description.....	1
3.0 Excavation	3
3.1 Site Preparation.....	3
3.2 Excavation Plan.....	3
3.3 Post Excavation Compliance	4
4.0 Backfill.....	4
5.0 Schedule	5
6.0 Air Monitoring.....	5
7.0 Restoration.....	5
8.0 References.....	6

Figures

- [Figure 1-1](#) Intertidal East Zone 5 Target Cleanup Levels
- [Figure 2-1](#) Intertidal East Zone 5 Site Location and Features
- [Figure 2-2a](#) Intertidal East Zone 5 Parcel 20-326 Existing Vegetation, Topography, and Excavation Areas
- [Figure 2-2b](#) Intertidal East Zone 5 Parcel 20-23 Existing Vegetation, Topography, and Excavation Areas
- [Figure 2-2c](#) Intertidal East Zone 5 Parcel 20-24 Existing Vegetation, Topography, and Excavation Areas
- [Figure 2-2d](#) Intertidal East Zone 5 Parcel 20-33 Existing Vegetation, Topography, and Excavation Areas
- [Figure 2-2e](#) Intertidal East Zone 5 Parcel 20-30 Existing Vegetation, Topography, and Excavation Areas
- [Figure 2-2f](#) Intertidal East Zone 5 Parcel 20-29 Existing Vegetation, Topography, and Excavation Areas
- [Figure 2-2g](#) Intertidal East Zone 5 Parcel 19-1 and ROW Existing Vegetation, Topography, and Excavation Areas
- [Figure 2-3a](#) Intertidal East Zone 5 Parcel 20-326 Sampling Locations with Excavation Footprint (0-1 ft Depth Interval)
- [Figure 2-3b](#) Intertidal East Zone 5 Parcel 20-23 Sampling Locations with Excavation Footprint (0-1 ft Depth Interval)
- [Figure 2-3c](#) Intertidal East Zone 5 Parcel 20-24 Sampling Locations with Excavation Footprint (0-1 ft Depth Interval)
- [Figure 2-3d](#) Intertidal East Zone 5 Parcel 20-33 Sampling Locations with Excavation Footprint (0-1 ft Depth Interval)
- [Figure 2-3e](#) Intertidal East Zone 5 Parcel 20-30 Sampling Locations with Excavation Footprint (0-1 ft Depth Interval)
- [Figure 2-3f](#) Intertidal East Zone 5 Parcel 20-29 Sampling Locations with Excavation Footprint (0-1 ft Depth Interval)

- Figure 2-3g Intertidal East Zone 5 Parcel 19-1 and ROW Sampling Locations with Excavation Footprint (0-1 ft Depth Interval)
- Figure 3-1 Intertidal East Zone 5 Construction Site Plan
- Figure 3-2a Intertidal East Zone 5 Parcel 20-326 Excavation Plan Showing Cut Depths and Pre-Excavation Elevations
- Figure 3-2b Intertidal East Zone 5 Parcel 20-23 Excavation Plan Showing Cut Depths and Pre-Excavation Elevations
- Figure 3-2c Intertidal East Zone 5 Parcel 20-24 Excavation Plan Showing Cut Depths and Pre-Excavation Elevations
- Figure 3-2d Intertidal East Zone 5 Parcel 20-33 Excavation Plan Showing Cut Depths and Pre-Excavation Elevations
- Figure 3-2e Intertidal East Zone 5 Parcel 20-30 Excavation Plan Showing Cut Depths and Pre-Excavation Elevations
- Figure 3-2f Intertidal East Zone 5 Parcel 20-29 Excavation Plan Showing Cut Depths and Pre-Excavation Elevations
- Figure 3-2g Intertidal East Zone 5 Parcel 19-1 and ROW Excavation Plan Showing Cut Depths and Pre-Excavation Elevations
- Figure 3-3a Intertidal East Zone 5 Parcel 20-326 Compliance Survey Locations with Excavation Footprint (0-1 ft Depth Interval)
- Figure 3-3b Intertidal East Zone 5 Parcel 20-23 Compliance Survey Locations with Excavation Footprint (0-1 ft Depth Interval)
- Figure 3-3c Intertidal East Zone 5 Parcel 20-24 Compliance Survey Locations with Excavation Footprint (0-1 ft Depth Interval)
- Figure 3-3d Intertidal East Zone 5 Parcel 20-33 Compliance Survey Locations with Excavation Footprint (0-1 ft Depth Interval)
- Figure 3-3e Intertidal East Zone 5 Parcel 20-30 Compliance Survey Locations with Excavation Footprint (0-1 ft Depth Interval)
- Figure 3-3f Intertidal East Zone 5 Parcel 20-29 Compliance Survey Locations with Excavation Footprint (0-1 ft Depth Interval)
- Figure 3-3g Intertidal East Zone 5 Parcel 19-1 and ROW Compliance Survey Locations with Excavation Footprint (0-1 ft Depth Interval)
- Figure 7-1a Intertidal East Zone 5 Parcel 20-326 Proposed Wetland Cover Types and Topography
- Figure 7-1b Intertidal East Zone 5 Parcel 20-23 Proposed Wetland Cover Types and Topography
- Figure 7-1c Intertidal East Zone 5 Parcel 20-24 Proposed Wetland Cover Types and Topography
- Figure 7-1d Intertidal East Zone 5 Parcel 20-33 Proposed Wetland Cover Types and Topography
- Figure 7-1e Intertidal East Zone 5 Parcel 20-30 Proposed Wetland Cover Types and Topography
- Figure 7-1f Intertidal East Zone 5 Parcel 20-29 Proposed Wetland Cover Types and Topography
- Figure 7-1g Intertidal East Zone 5 Parcel 19-1 and ROW Existing Vegetation, Topography, and Excavation Areas
- Figure 7-2 Upper Harbor East Zone 5 Conceptual Cross Section

Tables

Table 2-1a	Pre-Excavation PCB Characterization Sample Results for East Zone 5 Parcel 20-326
Table 2-1b	Pre-Excavation PCB Characterization Sample Results for East Zone 5 Parcel 20-23
Table 2-1c	Pre-Excavation PCB Characterization Sample Results for East Zone 5 Parcel 20-24
Table 2-1d	Pre-Excavation PCB Characterization Sample Results for East Zone 5 Parcel 20-33
Table 2-1e	Pre-Excavation PCB Characterization Sample Results for East Zone 5 Parcel 20-30
Table 2-1f	Pre-Excavation PCB Characterization Sample Results for East Zone 5 Parcel 20-29
Table 2-1g	Pre-Excavation PCB Characterization Sample Results for East Zone 5 Parcel 19-1 and ROW
Table 3-1a	Compliance Survey Control Table for East Zone 5 Parcel 20-326
Table 3-1b	Compliance Survey Control Table for East Zone 5 Parcel 20-23
Table 3-1c	Compliance Survey Control Table for East Zone 5 Parcel 20-24
Table 3-1d	Compliance Survey Control Table for East Zone 5 Parcel 20-33
Table 3-1e	Compliance Survey Control Table for East Zone 5 Parcel 20-30
Table 3-1f	Compliance Survey Control Table for East Zone 5 Parcel 20-29
Table 3-1g	Compliance Survey Control Table for East Zone 5 Parcel 19-1 and ROW
Table 7-1a	Proposed Restoration Acreages by Cover Type for Parcel 20-326
Table 7-1b	Proposed Restoration Acreages by Cover Type for Parcel 20-23
Table 7-1c	Proposed Restoration Acreages by Cover Type for Parcel 20-24
Table 7-1d	Proposed Restoration Acreages by Cover Type for Parcel 20-33
Table 7-1e	Proposed Restoration Acreages by Cover Type for Parcel 20-30
Table 7-1f	Proposed Restoration Acreages by Cover Type for Parcel 20-29
Table 7-1g	Proposed Restoration Acreages by Cover Type for Parcel 19-1 and ROW
Table 7-2	Parcel 20-29 Shrub Restoration Summary

Appendix

Appendix A	East Zone 5 Pre-Excavation Tree and Shrub Inventory
Appendix B	Cross Sections
Appendix C	Schedule (to be added at a later date)

**New Bedford Harbor Superfund Site
Draft Final Intertidal Work Plan for East Zone 5**

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Acronyms and Abbreviations

cy	cubic yards
EPA	U.S. Environmental Protection Agency
ft	foot/feet
Generic Work Plan	<i>Draft Final Generic Upper Harbor Intertidal Work Plan Revision 1</i>
GPS	global positioning system
IA	Immunoassay
mg/kg	milligrams per kilogram
NAE	U.S. Army Corps of Engineers, New England District
NBHSS	New Bedford Harbor Superfund Site
PCB	polychlorinated biphenyl
PECC	pre-excavation confirmatory congener
ROD	Record of Decision
ROW	right of way
RTK	real time kinematic
sf	square feet
SWAC	surface weighted average concentration
TCL	target cleanup level
TSCA	Toxic Substances Control Act
UCL	upper confidence limit

**New Bedford Harbor Superfund Site
Draft Final Intertidal Work Plan for East Zone 5**

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1.0 Introduction

This Work Plan for Intertidal East Zone 5 provides information concerning shoreline remediation and restoration pursuant to the New Bedford Harbor Superfund Site (NBHSS), including maps and figures of the excavation areas, equipment access plans, sample locations, and existing and proposed wetland cover and topography. The *Draft Final Generic Upper Harbor Intertidal Work Plan Revision 1* (Generic Work Plan; Jacobs 2019a) describes the means and methods for intertidal excavation, material stabilization, drainage water management, transport and disposal of polychlorinated biphenyl (PCB)-contaminated intertidal sediments, restoration of excavated areas and post-remediation monitoring and maintenance. This zone-specific Work Plan provides additional detail and documents any deviations from the procedures in the Generic Work Plan.

As described herein, certain areas of the sediment and soil on the parcels contain PCB contamination that exceeds the established target cleanup levels (TCLs) for intertidal sediment. The PCB TCLs are provided in the 1998 U.S. Environmental Protection Agency (EPA) Record of Decision (ROD) for the NBHSS (EPA 1998). The TCLs for the top 1 foot (ft) of intertidal sediment in East Zone 5 are as follows ([Figure 1-1](#)):

- 1 milligram per kilogram (mg/kg) PCB in residential areas, including fringe saltmarshes bordering homes in Veranda inlet in Fairhaven (95% upper confidence limit (UCL) of the average).
- 10 mg/kg in intertidal mudflats (average).
- 25 mg/kg in intertidal areas prone to recreation/beach combing (95% UCL of the average).

For PCB-contaminated intertidal sediments below 1 foot, the following TCLs apply:

- Residential parcels
 - Easy-to-access areas (e.g., areas landward of low marsh/high marsh or retaining walls; backyards): 1 mg/kg (average).
 - Hard-to-access areas (e.g., saltmarsh, mudflats, areas seaward of retaining walls): 25 mg/kg (average).
- Recreational/beach combing parcels: 50 mg/kg (not-to-exceed).

Sediment and soil with PCB concentrations in exceedance of the TCLs will be removed and disposed of in an off-site Toxic Substances Control Act (TSCA) permitted landfill. Following contaminated sediment removal, areas that originally supported vegetative cover will be backfilled with clean topsoil to the approximate original elevation and restored with a similar vegetation type. Unvegetated areas (i.e., mudflats) will be backfilled as needed to stabilize the shoreline.

2.0 Parcel Description

The intertidal management area referred to as East Zone 5 is located on the eastern shore of the Upper New Bedford Harbor in Fairhaven, MA. East Zone 5 consists of two parcels (20-326 and 20-23) and five groups of parcels that were each assigned a single parcel number for reference in this work plan (20-24, 20-33, 20-30, 20-29, and 19-1). Portions of each parcel or group of parcels will be remediated. A site location map showing the East Zone 5 parcels and the limits of the planned excavations is provided in [Figure 2-1](#).

Parcel 20-326 is comprised of undeveloped land consisting of vegetative cover, primarily saltmarsh with scattered trees and shrubs, and the invasive grass, *Phragmites australis* in the northeastern portion of the parcel. The parcel is relatively level with a drainage swale running southeast through the eastern portion of the parcel. Parcel 20-326 is bounded to the north by Parcel 20-005A, to the west by Parcel 20-005, to the south by the Veranda Inlet of New Bedford Harbor, and to the east by Parcel 20-23. Parcel 20-326 is considered a potential recreational/beach combing area because of its proximity to residential areas.

Parcel 20-23 is a residential parcel with some undeveloped land consisting of vegetative cover, primarily saltmarsh with a few scattered trees and shrubs in the southern portion of the parcel. The invasive grass, *Phragmites australis*, and a narrow band of mudflat are present in the western portions of the parcel. Parcel 20-23 is bounded to the north by Parcel 20-005A, to the east by Sycamore Street, to the south by Parcel 20-24, and the west by the Veranda Inlet of New Bedford Harbor.

Parcel 20-24, (which also includes Parcels 20-25 and 20-26), is comprised of undeveloped land consisting of vegetative cover, primarily saltmarsh with scattered trees and shrubs and the invasive grass, *Phragmites australis* in the eastern portion of the parcel. There is a narrow band of mudflat on the southwestern corner of the parcel. The parcel is bounded to the north by Parcel 20-23, to the east by Sycamore Street, to the south by a drainage channel associated with a culvert under Sycamore Street, and to the west by the Veranda Inlet of New Bedford Harbor.

Parcel 20-33, (which also includes Parcels 20-34 and 20-35), is comprised of a developed residential plot with a fringe saltmarsh that follows the shoreline. The parcel is bounded to the north by a drainage channel associated with a culvert under Sycamore Street, to the east by Sycamore Street, to the south by other residential parcels, and to the west by Parcel 20-30.

Parcel 20-30, (which also includes Parcels 20-31, 20-32, 20-41 and 20-42), is comprised of a developed residential plot with a fringe saltmarsh following the shoreline. A stone wall separates the saltmarsh from the developed portion of the parcel. The parcel is bounded to the north by the Veranda Inlet of New Bedford Harbor, to the east by Parcel 20-33, to the south by Veranda Avenue, and to the west by Parcel 20-29.

Parcel 20-29, (which also includes Parcels 20-27, 20-28, and 20-36 through 20-40) is comprised of a developed residential plot with a fringing saltmarsh following the shoreline. The parcel is bounded to the north and west by the Veranda Inlet of New Bedford Harbor, to the east by Parcel 20-30, and to the south by Veranda Avenue.

Parcel 19-1 (which includes Parcels 19-2 through 19-15, 19-17, and 19-18), and the adjacent right-of-way (ROW) are comprised of undeveloped land consisting of vegetative cover, primarily saltmarsh with scattered trees and shrubs and the invasive grass, *Phragmites australis* in the eastern portion of the parcel. The parcel and ROW are bounded to the north and west by the Veranda Inlet of New Bedford Harbor, to the east and south by other residential parcels.

Veranda inlet, comprised of subtidal and mudflat sediments, was previously identified for remediation as part of the Upper Harbor mechanical dredging and CAD cell disposal as presented in the *Draft Work Plan for Mechanical Dredging with CAD Cell Disposal for Areas L, P, R, S, PMC, and Veranda Inlet* (Jacobs 2019a). The inlet is flanked by Parcels 20-326 to the north; Parcels 20-23, 20-24 to the east; and Parcels 20-33, 20-30, 20-29, and 19-1 to the south.

The existing wetland vegetation was surveyed by Jacobs in 2017. The mapped survey results and the outlines of the excavation areas are provided in [Figures 2-2a](#) through [2-2g](#). The excavation areas include low marsh, high marsh, upland, a few small areas of mudflat, and the invasive grass, *Phragmites australis*. Sediment and soil samples collected during the site investigation/characterization phase were analyzed for total PCBs by both immunoassay (IA) and congener methods. The analytical results summarized in [Tables 2-1a](#) through [2-1g](#) were used to support remediation planning. The sample locations used to delineate the extent of PCB contamination within East Zone 5 are shown in [Figures 2-3a](#) through [2-3g](#). A subset of these locations was also designated as confirmatory sample locations, which are described further in Section 3.3.

3.0 Excavation

3.1 Site Preparation

Access to the portions of the parcels requiring remediation will be through private property that is currently under access agreements obtained by EPA. Temporary roads will be built to create equipment access to the remediation areas. A construction site plan showing the excavation areas, staging and containment areas and temporary access roads is provided as [Figure 3-1](#). The dimensions and final locations of the staging areas may be altered based on field conditions. A small excavation area in the southwest corner of Parcel 20-326 will be accessed from the extension of a temporary access road to be constructed during the remediation of East Zone 4.

Prior to any site clearing or grubbing necessary to build the access roads to the excavation areas, mature, non-invasive tree and shrub species will be marked in the field and preserved wherever possible during construction. A native tree and shrub inventory is included in [Appendix A](#). Other vegetation will be cleared from the site as necessary to permit access road construction and remedial excavation. Disturbance of the property will be minimized, and all impacted areas will be restored upon completion of remedial activities.

Sections 4.3.2 and 4.3.3 of the Generic Work Plan describe on-site materials management procedures for the east side of the Upper Harbor, including collection, treatment and discharge of wastewater from the containment cell in the staging area to the Upper Harbor. Alternatively, wastewater may be containerized and transported to Area C for treatment and disposal as described in the Generic Work Plan for the west side of the Upper Harbor.

Site Preparation for removal of sediments from the Veranda Inlet will be addressed in a separate addendum to this work plan.

3.2 Excavation Plan

Using PCB data collected through multiple rounds of sampling, a 3-dimensional excavation model was developed as depicted in the excavation plans shown in [Figures 3-2a](#) through [3-2g](#). The cut depth, areal extent of contamination and pre-excavation surface elevations for the excavation areas are shown in [Figure 3-2a](#) for Parcel 20-236; [Figure 3-2b](#) for Parcel 20-23¹; [Figure 3-2c](#) for Parcel 20-24; [Figure 3-2d](#) for Parcel 20-33; [Figure 3-2e](#) for Parcel 20-30; [Figure 3-2f](#) for Parcel 20-29; and [Figure 3-2g](#) for Parcel 19-1 and the ROW. On Parcel 20-33, where a storm drain crosses under Sycamore Street and discharges near the excavation area,

¹The 1-2 ft excavation on Parcel 20-23 was extended to include location INT121 because the PCB concentration in the 1-2 ft interval was 16 mg/kg and this location is adjacent to the easy-to-access portion of the parcel.

excavation will be conducted from east to west so that if heavy flow is encountered during remediation, flow will be from remediated to un-remediated sediment. The total area to be excavated including the Veranda Inlet sediment is approximately 117,638 square feet (sf) and has a corresponding volume of 5,019 cubic yards (cy).

The excavator will remove contaminated sediment in the saltmarsh and mudflat areas. If *Phragmites* roots come up as a single mass that is thicker than the cut depth, the entire mass will be removed. Following excavation, the area will be smoothed with the excavator as needed to create an even surface prior to placement of backfill.

Excavation and removal of sediments from the Veranda Inlet will be addressed in a separate addendum to this work plan.

3.3 Post Excavation Compliance

Confirmation of compliance with the TCLs will be based on pre-excavation confirmatory congener (PECC) sampling and collection of post-excavation survey data to demonstrate that the excavation achieved the horizontal and vertical design limits. The PECC sample locations shown in [Figures 3-3a](#) through [3-3g](#) include sample locations where PCB congener concentrations were previously determined to be below the TCL. PECC sample results are shown in [Tables 2-1a](#) through [2-1g](#). The After-Action Report for East Zone 5 will include the applicable calculated 95 UCL and average PCB concentrations for these parcels to document compliance with the ROD's TCLs.

Compliance survey locations are spaced at approximate 100-ft intervals along the excavation sidewalls and in an approximate 100-ft grid pattern on the excavation floors as shown in [Figures 3-3a](#) through [3-3g](#). Design elevation compliance measurements at the compliance survey locations will be made using a real-time kinematic (RTK) global positioning system (GPS) with vertical and horizontal accuracies of less than 0.1 ft. Compaction by heavy equipment after excavation will be avoided until target elevations are confirmed by RTK survey. [Tables 3-1a](#) through [3-1g](#) provide survey control tables to document the pre- and post-excavation compliance measurements. Additional removal will be performed if a post-excavation elevation survey indicates that a compliance survey location was not excavated to the target elevation or horizontal extent. Any additional removal will be performed as described in Section 4.5 of the Generic Work Plan.

If the PECC approach is proven to be ineffective in the pre-confirmatory pilot test, then post-excavation confirmatory samples will be collected at the PECC locations, and the excavation will not be backfilled until it is confirmed to be clean. Confirmatory samples will be analyzed for PCB congeners with a 5-day turnaround time for the analysis.

Post-excavation compliance of sediment removal from Veranda Inlet will be within the purview of the subtidal surface weighted average concentration (SWAC) approach for Upper Harbor subtidal confirmatory sampling and will be addressed in an addendum to this work plan.

4.0 Backfill

Upon verification that compliance with the TCLs has been met, the excavations will be backfilled with clean manufactured topsoil. The topsoil will meet the quality requirements identified in the *Draft Final Topsoil Acceptance Plan* (Jacobs 2019c). Backfill will consist of 12 inches of topsoil to support vegetation regrowth and

achieve the restoration design provided in Section 7.0. Where excavation depth exceeds 1 ft, a 3-inch minus clean gravel substrate will be placed to within 1 ft of the target grade and topsoil will be placed on top of the substrate to bring the surface to the target elevation. A specification for the gravel backfill is provided in the Generic Work Plan. The gravel substrate and topsoil will be delivered to the restoration areas by over-the-road dump trucks and offloaded into stockpiles near the excavation area. A clean, decontaminated all-terrain dump truck or tracked excavator will transport the topsoil for spreading. Post-backfill saltmarsh topography will match the restoration surface described in Section 7.0 with a tolerance of +/- 0.3 ft. The surface may be restored to an elevation of 0.1 to 0.2 ft above the planned grade to allow for natural soil compaction. During the restoration process, the elevation of the placed topsoil will be checked periodically with the GPS Rover and with the excavator bucket. Elevation measurements will be taken after each area is backfilled, prior to relocating the excavator.

5.0 Schedule

The durations of the remedial activities included in this Work Plan are listed below. A more detailed construction planning schedule will be developed prior to field activities and will be attached to this Work Plan as [Appendix C](#).

Activity	Anticipated Duration
Excavation	1.5 months
Restoration	1.5 months
After Action Report	2 months

6.0 Air Monitoring

The evaluation of existing PCB congener data ([Tables 2-1a](#) through [2-1g](#)) indicates that the maximum concentration at East Zone 5 is 832 mg/kg. Particulate and airborne PCB monitoring will be conducted in accordance with the guidelines provided in the *NBHSS Draft Final Ambient Air Monitoring Plan for Remediation Activities Revision 2* (Ambient Air Monitoring Plan; Jacobs 2018a).

7.0 Restoration

All excavated areas will be backfilled, regraded, and revegetated to best replicate the pre-remediation conditions. A pre-construction tree and shrub inventory of plants within the excavation and access road areas are included in [Appendix A](#). The pre-construction wetland cover conditions shown on [Figures 2-2a, 2-2b, 2-2c, and 2-2g](#) include several stands of the non-native invasive grass *Phragmites*. *Phragmites* that occurs within the excavation areas will be removed and disposed of with the excavated sediment and replaced with the appropriate wetland species. Restored vegetation types within the remediation area are shown in plan view in [Figures 7-1a through 7-1g](#). A rip rap apron will be installed adjacent to Parcel 20-33 to slow storm water flow from the culvert under Sycamore Street ([Figure 7-1d](#)). The estimated volume of material to be removed to construct this apron (about 4 cy) is included in the total volume of sediment to be removed as presented in Section 3.2. A conceptual as-built cross section is provided in [Figure 7-2](#) and construction cross sections are provided in [Appendix B](#). The existing and proposed post-restoration acreages of each cover type are provided in [Tables 7-1a through 7-1g](#). Shrub species identified for restoration on Parcel 20-29 are included in [Table 7-2](#). Plantings notes are included in [Figures 7-1a through 7-1g](#).

Planting of trees, shrubs, and 2-inch bare-root salt grass plugs will be conducted after excavation and backfill in accordance with favorable weather conditions and within the planting season from approximately April 15 to June 30, or in the early fall as described in the Generic Work Plan (Jacobs 2019b). Salt grass plants will be obtained from a nursery that can provide plugs grown from a Northeastern U.S. genotype seed stock.

Herbivory deterrents will be used to protect the seedlings during the establishment period. A combination fence and rope grid system similar to the one installed at the Pierce Mill Cove intertidal restoration area will be constructed (Jacobs 2018b). If unforeseen conditions are identified that could affect the ability of the restoration to achieve the success standards adopted for the program, appropriate adaptive management measures will be developed and implemented in coordination with the U.S. Army Corps of Engineers, New England District (NAE) and EPA.

No mechanical removal of *Phragmites* is proposed outside of excavation boundaries. All remaining areas of *Phragmites* within 30 ft of the restored marsh will be treated with herbicide in accordance with the guidelines in the Generic Work Plan to promote a *Phragmites* free buffer. At the conclusion of all restoration activities, final vegetation and topographic surveys will be conducted to document the as-built elevations and vegetative cover conditions. The After-Action Report will include these surveys, including the cross-section drawings in Appendix B with updated elevations. In addition, Tables 3-1a through 3-1g will be updated with the post-excavation compliance survey elevations, as well as the differences between the post-excavation and design elevations.

8.0 References

- U.S. Environmental Protection Agency (EPA). 1998 (September). *Record of Decision for the Upper and Lower Harbor Operable Unit, New Bedford Harbor Superfund Site*. USEPA Region 1 – New England.
- Jacobs. 2019a (June). *Draft Work Plan for Mechanical Dredging with CAD Cell Disposal for Areas L, P, R, S, PMC, and Veranda Inlet*. ACE-J23-35BG6000-M1-0015.
- 2019b (May). *Draft Final Generic Upper Harbor Intertidal Work Plan Revision 1*. ACE J23 35BG2000 M1-0109.
- 2019c (January). *Draft Final Topsoil Acceptance Plan*. ACE J23 35BG2000 M1-0076.
- 2018a (April). *Draft Final Ambient Air Monitoring Plan for Remediation Activities Revision 2*. ACE-J23-35BG2000-M17-0016.
- 2018b (November). *NBHSS Draft Final Pierce Mill Cove Herbivory Control Plan*. ACE-J23-35BG2000-M17-0040.

Figures



Legend

Depth Interval	PCB TCL (mg/kg)	
0-1 ft	25 (95 UCL)	
>1 ft	50 (NTE)	Veranda Inlet - Part of Upper Harbor Subtidal Compliance
0-1 ft	1 (95 UCL)	Parcel Boundary
>1 ft	1 (Average)	
>1 ft	25 (Average)	

N

Aerial Photography CEI 2019 and ESRI 2017
0 40 80 Feet

1:960

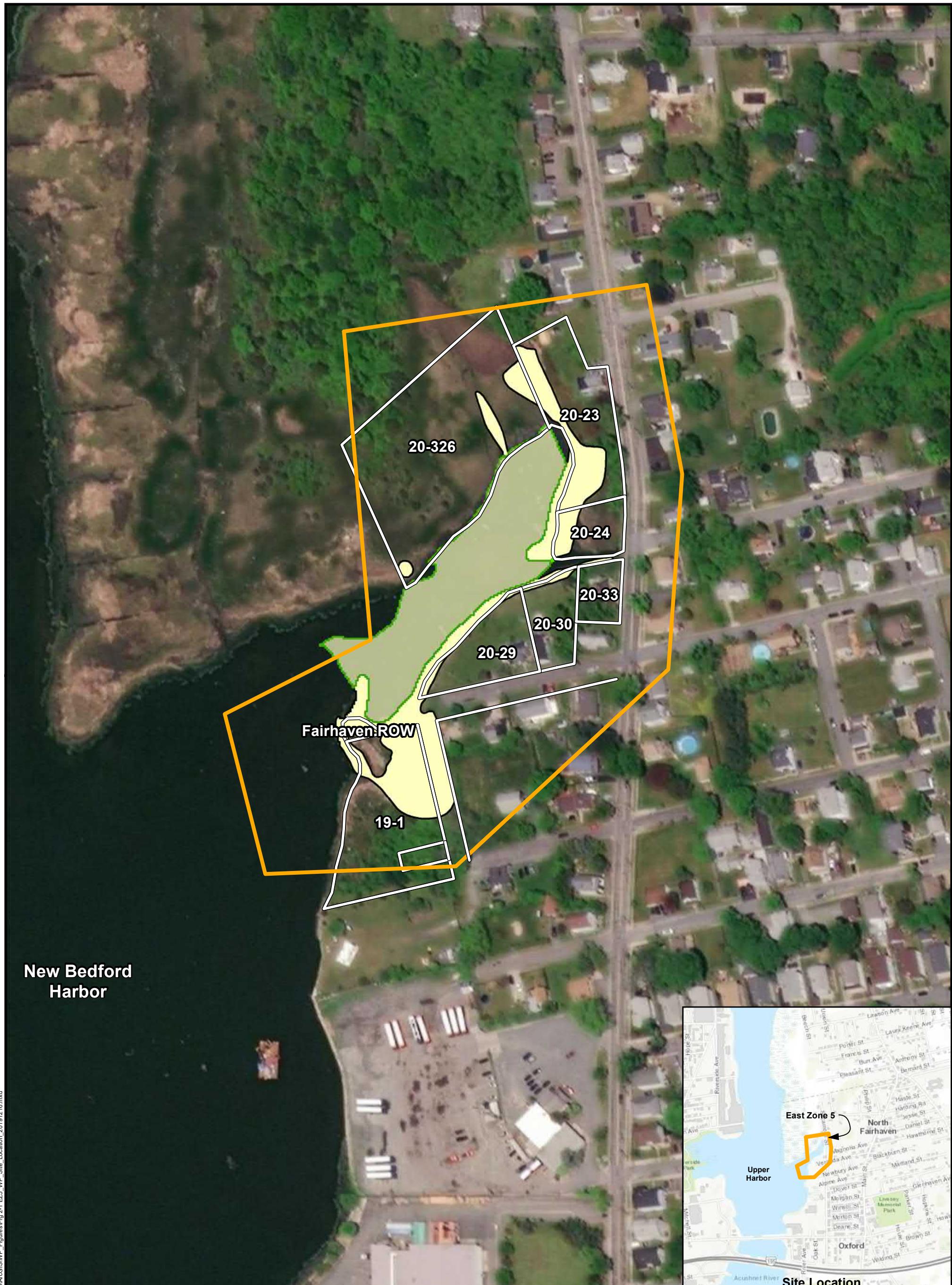
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Intertidal East Zone 5
Target Cleanup Levels

New Bedford Harbor Superfund Site

December 2019

Figure 1-1



Legend

- [Yellow Box] Proposed Limits of Excavation
- [Green Box] Veranda Inlet
- [Orange Box] East Zone 5 Management Area
- [White Box] Parcel Boundary

Basemap Data Source:
MassGIS, ESRI
Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, SAO/NASA, IGN, and the GIS User Community

Sources: Esri, HERE, Garmin, Intermap, Increment P Corp., DeLorme, ESRI, USGS, SAO/NASA, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), (c) OpenStreetMap contributors, Jacobs

0 150 300
Feet



New Bedford Harbor Superfund Site

December 2019

Figure 2-1

Intertidal East Zone 5 Site Location and Features



Legend

1-foot Contour	1-2' Excavation Depth	High Marsh
Mean Lower Low Water	2-3' Excavation Depth	Low Marsh
Mean Higher High Water	3-4' Excavation Depth	Phragmites
0-1' Excavation Depth	Parcel Boundary	Veranda Inlet

0 50 100
Feet
December 2019

Basemap Data Source:
CEI, MassGIS



Intertidal East Zone 5
Parcel 20-326
Existing Vegetation, Topography, and Excavation Areas
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Vertical Datum:
NAVD88

Figure 2-2a



Legend

- 0-1' Excavation Depth
- 1-foot Contour
- Mean Higher High Water
- Parcel Boundary
- 1-2' Excavation Depth
- 2-3' Excavation Depth
- 3-4' Excavation Depth
- Veranda Inlet
- Upland
- Low Marsh
- High Marsh
- Phragmites
- Mudflat

Basemap Data Source:
CEI, MassGIS

0 50 100
Feet
December 2019



Vertical Datum:
NAVD88

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**Intertidal East Zone 5
Parcel 20-23**
Existing Vegetation, Topography, and Excavation Areas
New Bedford Harbor Superfund Site

Figure 2-2b



Legend

1-foot Contour

Mean Higher High Water

Veranda Inlet

0-1' Excavation Depth

Parcel Boundary

High Marsh

Low Marsh

Mudflat

0 25 50
Feet
December 2019

Basemap Data Source:
CEI, MassGIS



Vertical Datum:
NAVD88

**Intertidal East Zone 5
Parcel 20-24**
Existing Vegetation, Topography, and Excavation Areas
New Bedford Harbor Superfund Site

Figure 2-2c



Legend

1-foot Contour

Mean Higher High Water

Veranda Inlet

0-1' Excavation Depth

Parcel Boundary

Mudflat

Low Marsh

0 25 50
Feet

January 2020

Basemap Data Source:
CEI, MassGIS



Vertical Datum:
NAVD88

JACOBS

Intertidal East Zone 5
Parcel 20-33

Existing Vegetation, Topography, and Excavation Areas
New Bedford Harbor Superfund Site

Figure 2-2d

Notes:

Existing vegetative cover was surveyed by Nearview, LLC (October 2017).



Legend

1-foot Contour

0-1' Excavation Depth

Mudflat

Mean Higher High Water

1-2' Excavation Depth

Low Marsh

Veranda Inlet

Parcel Boundary

0 25 50
Feet

December 2019

Basemap Data Source:
CEI, MassGIS



Intertidal East Zone 5
Parcel 20-30
Existing Vegetation, Topography, and Excavation Areas

New Bedford Harbor Superfund Site

JACOBS

Figure 2-2e



Legend

1-foot Contour

0-1' Excavation Depth

Parcel Boundary

Mean Higher High Water

1-2' Excavation Depth

Low Marsh

Veranda Inlet

2-3' Excavation Depth

0 50 100
Feet

Basemap Data Source:
CEI, MassGIS

December 2019



Vertical Datum:
NAVD88

JACOBS

Intertidal East Zone 5
Parcel 20-29

Existing Vegetation, Topography, and Excavation Areas
New Bedford Harbor Superfund Site

Figure 2-2f



Legend

1-foot Contour	0-1' Excavation Depth	Low Marsh	High Marsh
Mean Lower Low Water	1-2' Excavation Depth	Mudflat	Parcel Boundary
Mean Higher High Water	2-3' Excavation Depth	Phragmites	Veranda Inlet

Basemap Data Source:
CEI, MassGIS

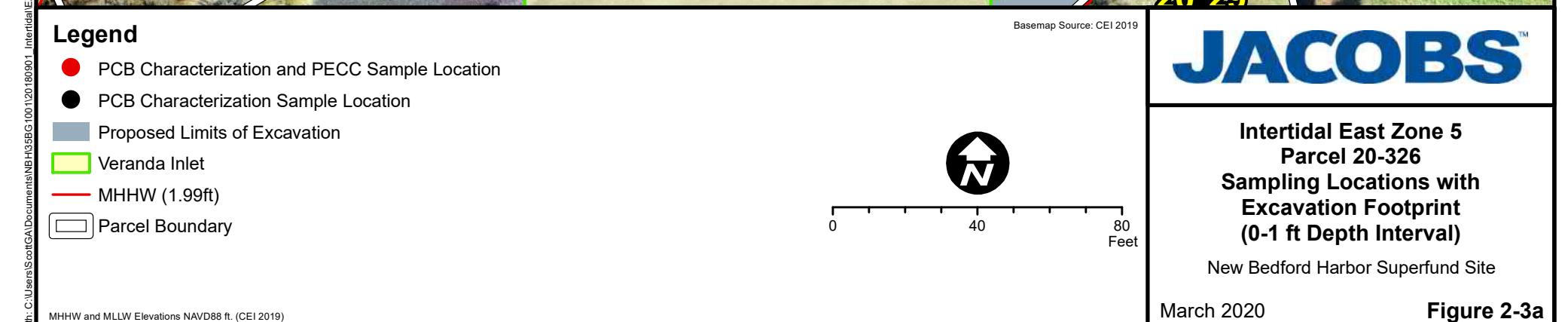
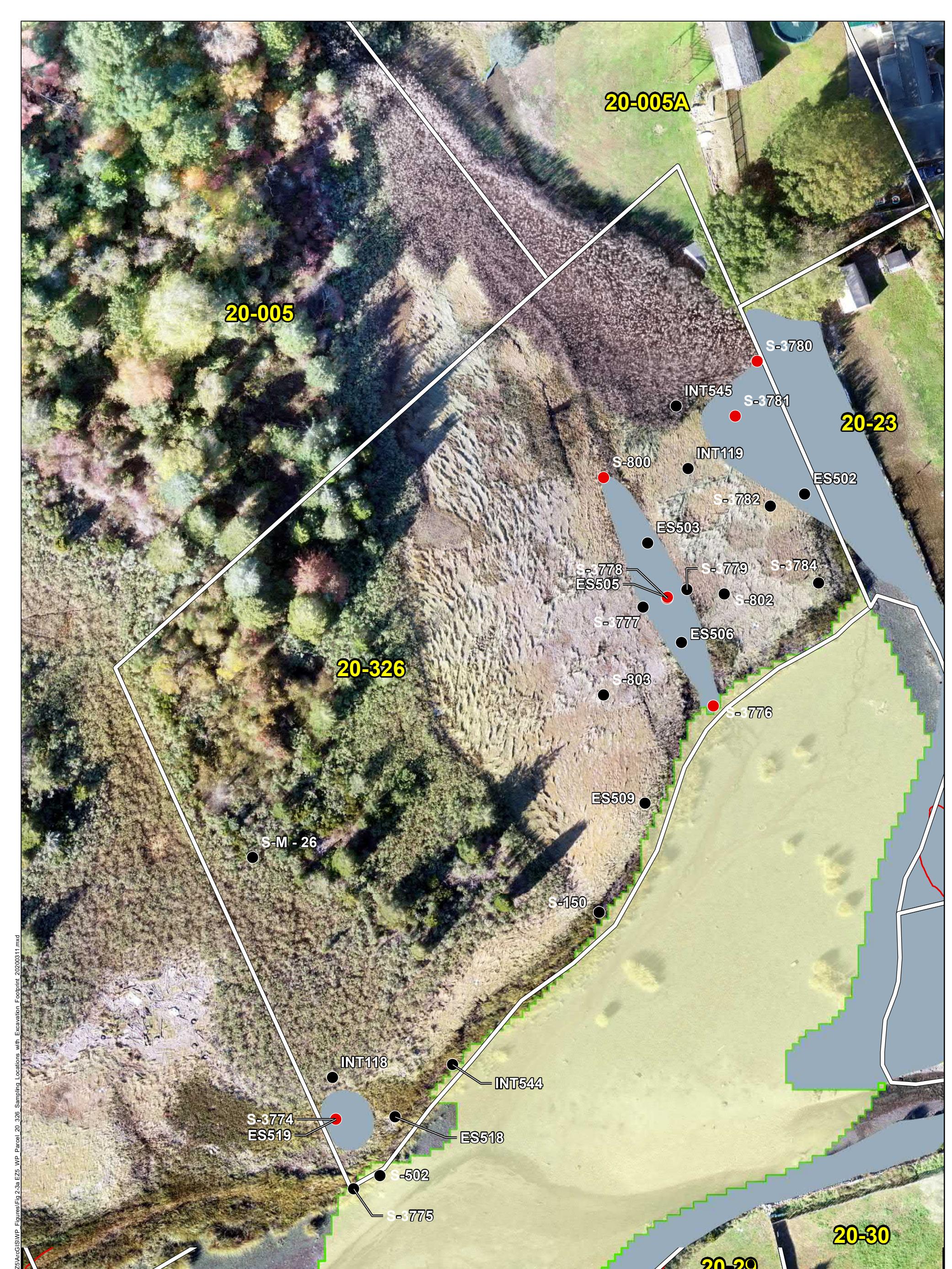
0 50 100
March 2020
Feet

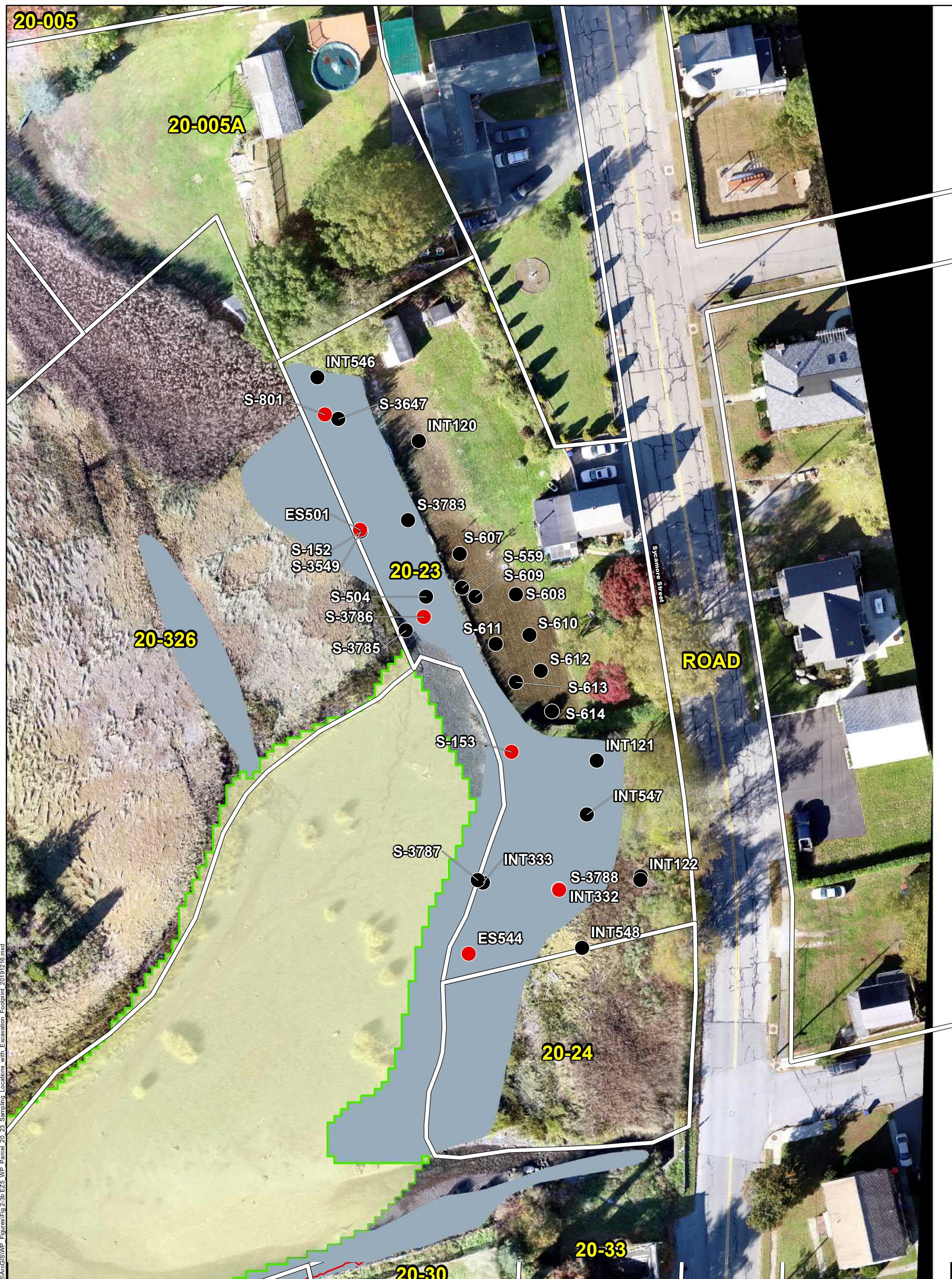


Vertical Datum:
NAVD88
JACOBS

Intertidal East Zone 5
Parcel 19-1 and ROW
Existing Vegetation, Topography, and Excavation Areas
New Bedford Harbor Superfund Site

Figure 2-2g





Legend

- PCB Characterization and PECC Sample Location
- PCB Characterization Sample Location
- Proposed Limits of Excavation
- Veranda Inlet
- MHHW (1.99ft)
- Parcel Boundary

Basemap Source: CEI 2019



0 40 80
Feet

JACOBS™

Intertidal East Zone 5
Parcel 20-23
Sampling Locations with
Excavation Footprint
(0-1 ft Depth Interval)

New Bedford Harbor Superfund Site

December 2019

Figure 2-3b



Legend

- PCB Characterization and PECC Sample Location
- PCB Characterization Sample Location
- Proposed Limits of Excavation
- Veranda Inlet
- MHHW (1.99ft)
- Parcel Boundary

Basemap Source: CEI 2019



0 35 70
Feet

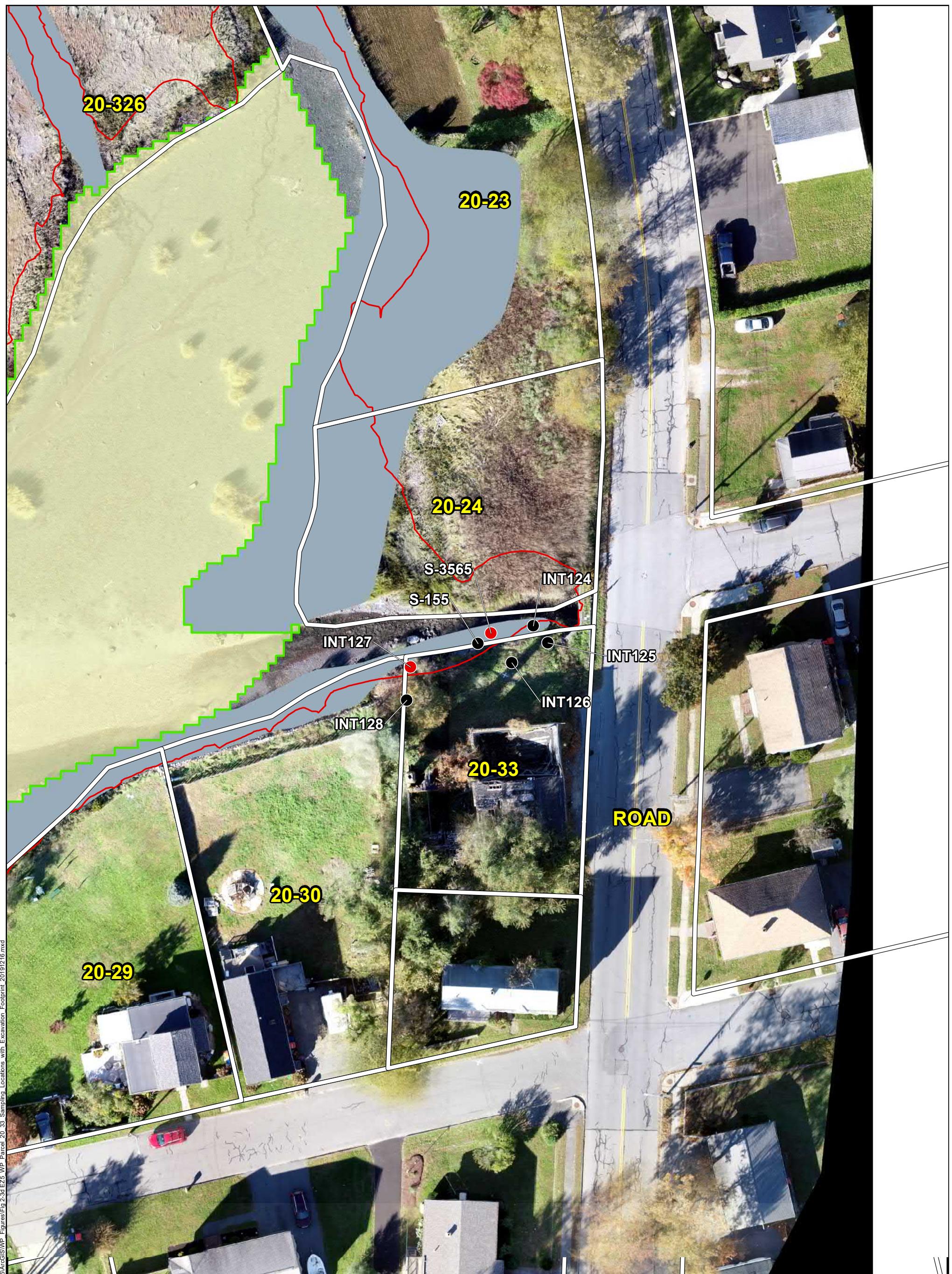
JACOBS™

Intertidal East Zone 5
Parcel 20-24
Sampling Locations with
Excavation Footprint
(0-1 ft Depth Interval)

New Bedford Harbor Superfund Site

March 2020

Figure 2-3c



Legend

- PCB Characterization and PECC Sample Location
- PCB Characterization Sample Location
- Proposed Limits of Excavation
- Veranda Inlet
- MHHW (1.99ft)
- Parcel Boundary

Basemap Source: CEI 2019



0 35 70
Feet

JACOBS™

Intertidal East Zone 5
Parcel 20-33
Sampling Locations with
Excavation Footprint
(0-1 ft Depth Interval)

New Bedford Harbor Superfund Site

December 2019

Figure 2-3d



Legend

- PCB Characterization and PECC Sample Location
- PCB Characterization Sample Location
- Proposed Limits of Excavation
- Veranda Inlet
- MHHW (1.99ft)
- Parcel Boundary

Basemap Source: CEI 2019



0 35 70
Feet

JACOBS™

Intertidal East Zone 5
Parcel 20-30
Sampling Locations with
Excavation Footprint
(0-1 ft Depth Interval)

New Bedford Harbor Superfund Site

December 2019

Figure 2-3e



Legend

- PCB Characterization and PECC Sample Location
- PCB Characterization Sample Location
- Proposed Limits of Excavation
- Veranda Inlet
- MHHW (1.99ft)
- Parcel Boundary

Basemap Source: CEI 2019



0 35 70
Feet

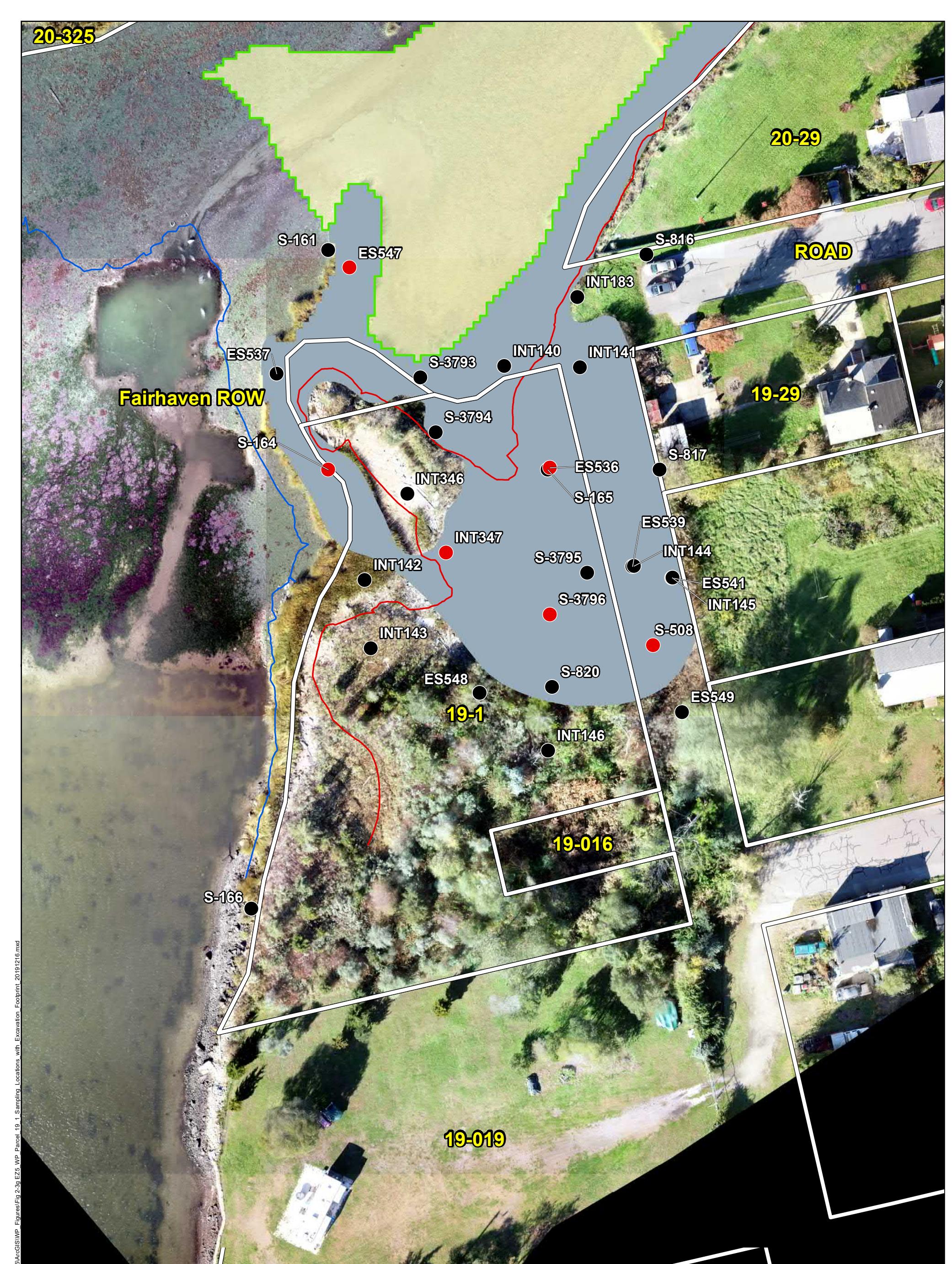
JACOBS™

Intertidal East Zone 5
Parcel 20-29
Sampling Locations with
Excavation Footprint
(0-1 ft Depth Interval)

New Bedford Harbor Superfund Site

March 2020

Figure 2-3f



Legend

- PCB Characterization and PECC Sample Location
- PCB Characterization Sample Location
- Proposed Limits of Excavation
- Veranda Inlet
- MHHW (1.99ft)
- MLLW (-1.97ft)
- Parcel Boundary

Basemap Source: CEI 2019



0 40 80
Feet

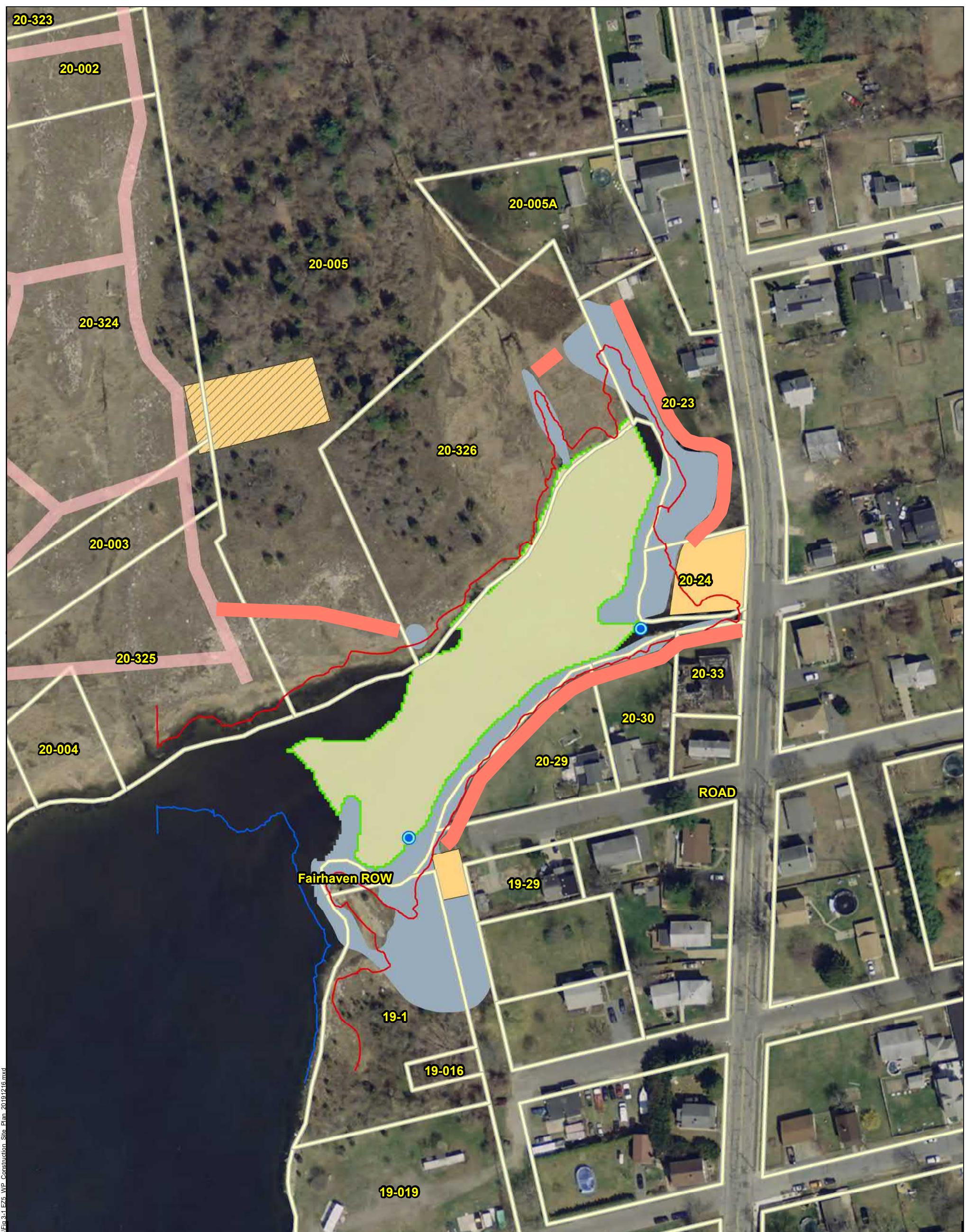
JACOBS™

Intertidal East Zone 5
Parcel 19-1 and ROW
Sampling Locations with
Excavation Footprint
(0-1 ft Depth Interval)

New Bedford Harbor Superfund Site

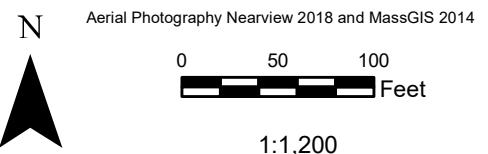
December 2019

Figure 2-3g



Legend

- EZ5 Temporary Gravel Access Road
- EZ4 Temporary Gravel Access Road
- Proposed Limits of Excavation
- Veranda Inlet
- MHHW (1.99ft)
- MLLW (-1.97ft)
- Approximate Treated Wastewater Discharge Point
- EZ5 Proposed Staging Area / Containment Cell
- EZ4 Proposed Staging Area / Containment Cell
- Parcel Boundary



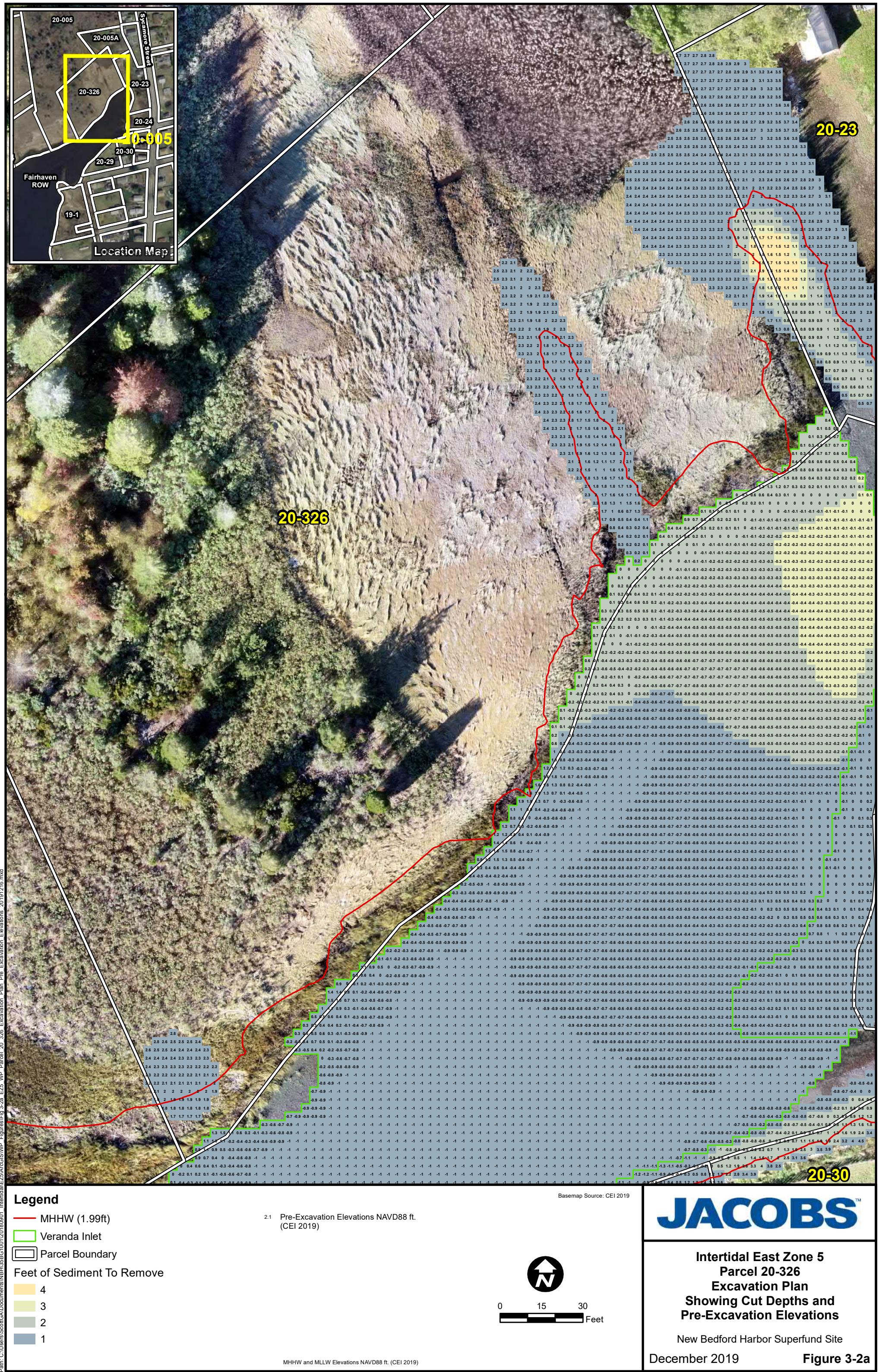
JACOBS

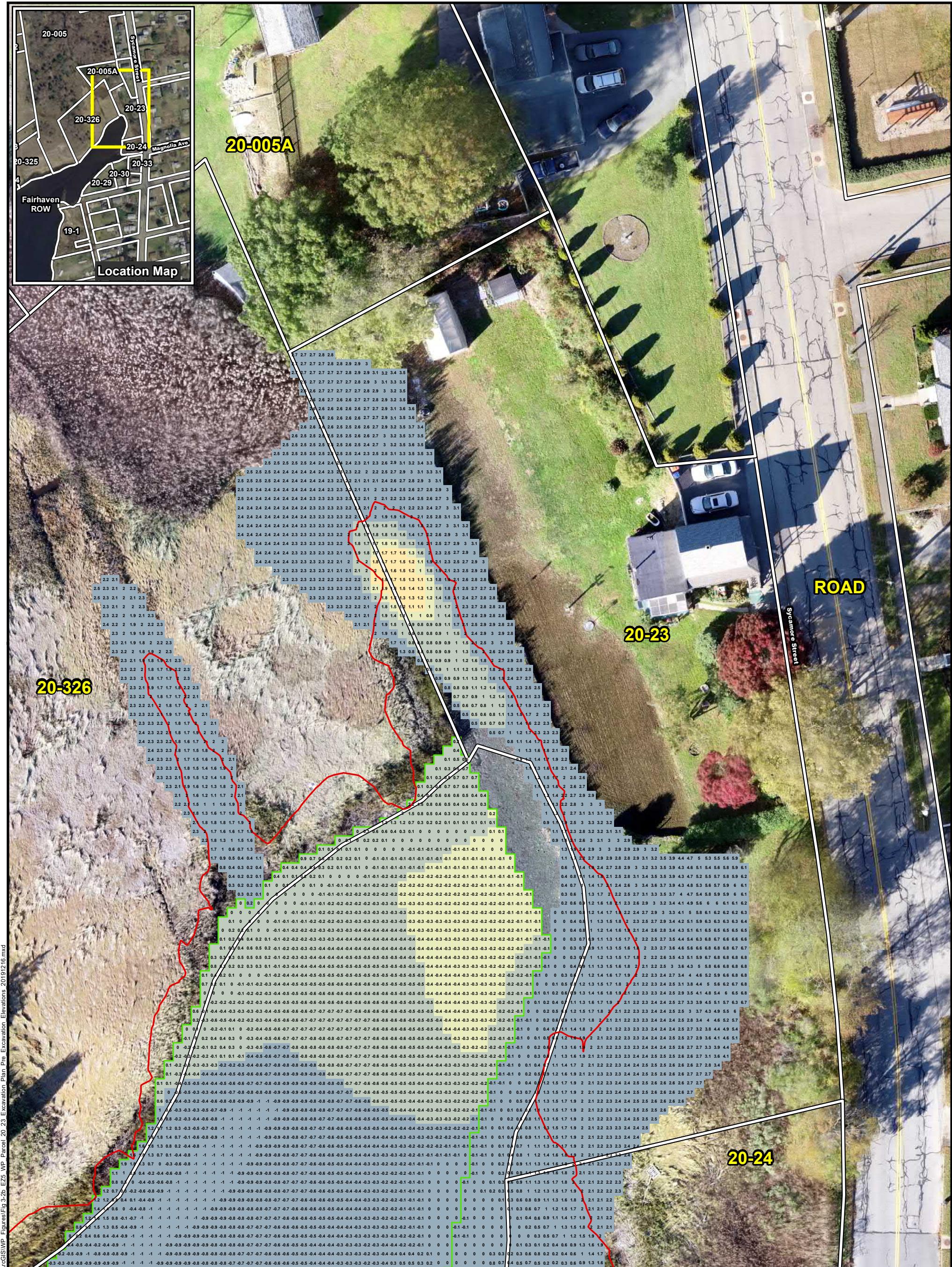
Intertidal East Zone 5
Construction Site Plan

New Bedford Harbor Superfund Site

December 2019

Figure 3-1





Legend

- MHHW (1.99ft)

- ## Veranda Inlet

Parcel Boundary

Feet of
4
3
2

2.1 Pre-Excavation Elevations NAVD88 ft. (CEI 2019)

Basemap Source: CEI 2019



A horizontal scale bar with tick marks at 0, 15, and 30.

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**Intertidal East Zone 5
Parcel 20-23
Excavation Plan
Showing Cut Depths and
Pre-Excavation Elevations**

New Bedford Harbor Superfund Site

December 2019

Figure 3-2b



Legend

- MHHW (1.99ft)

Veranda Inlet

Parcel Boundary

Feet of
3

2.1 Pre-Excavation Elevations NAVD88 ft. (CEI 2019)

Basemap Source: CEI 2019



0 15 30

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**Intertidal East Zone 5
Parcel 20-33
Excavation Plan
Showing Cut Depths and**

Pre-Excavation Elevations

New Bedford

rfund Site



Legend

— MHHW (1.99ft)

■ Veranda Inlet

□ Parcel Boundary

Feet of Sediment To Remove

3

2

1

2.1 Pre-Excavation Elevations NAVD88 ft.
(CEI 2019)

Basemap Source: CEI 2019



0 15 30

Feet

MHHW and MLLW Elevations NAVD88 ft. (CEI 2019)

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Intertidal East Zone 5
Parcel 20-30
Excavation Plan
Showing Cut Depths and
Pre-Excavation Elevations

New Bedford Harbor Superfund Site

December 2019

Figure 3-2e



Legend

- Legend**

 - MHHW (1.99ft)
 - Veranda Inlet
 - Parcel Boundary

Feet of Sediment To Remove

Sediment Level	Color
3	Light Green
2	Medium Green
1	Dark Blue

2.1 Pre-Excavation Elevations NAVD88 ft. (CEI 2019)

Basemap Source: CEI 2019



0 15 30

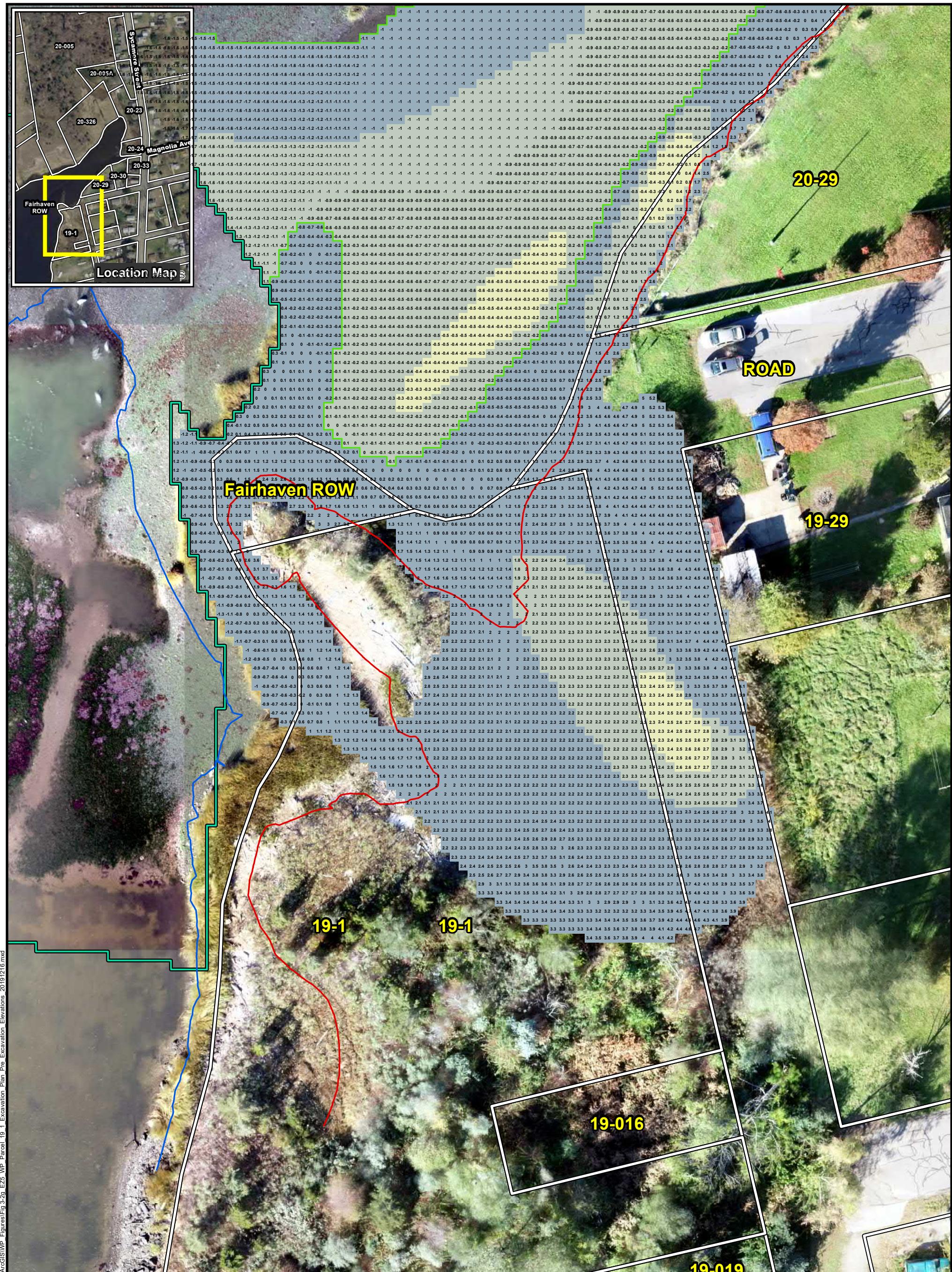
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**Intertidal East Zone 5
Parcel 20-29
Excavation Plan
Showing Cut Depths and
Pre-Excavation Elevations**

New Bedford Harbor Superfund Site

December 2019

Figure 3-2f



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Intertidal East Zone 5
Parcel 19-1 and ROW
Excavation Plan
Showing Cut Depths and
Pre-Excavation Elevations

New Bedford Harbor Superfund Site

December 2019

Figure 3-2g



Legend

- Compliance Survey Location
- Veranda Inlet
- Proposed Limits of Excavation
- MHHW (1.99ft)
- Parcel Boundary

Basemap Source: CEI 2019

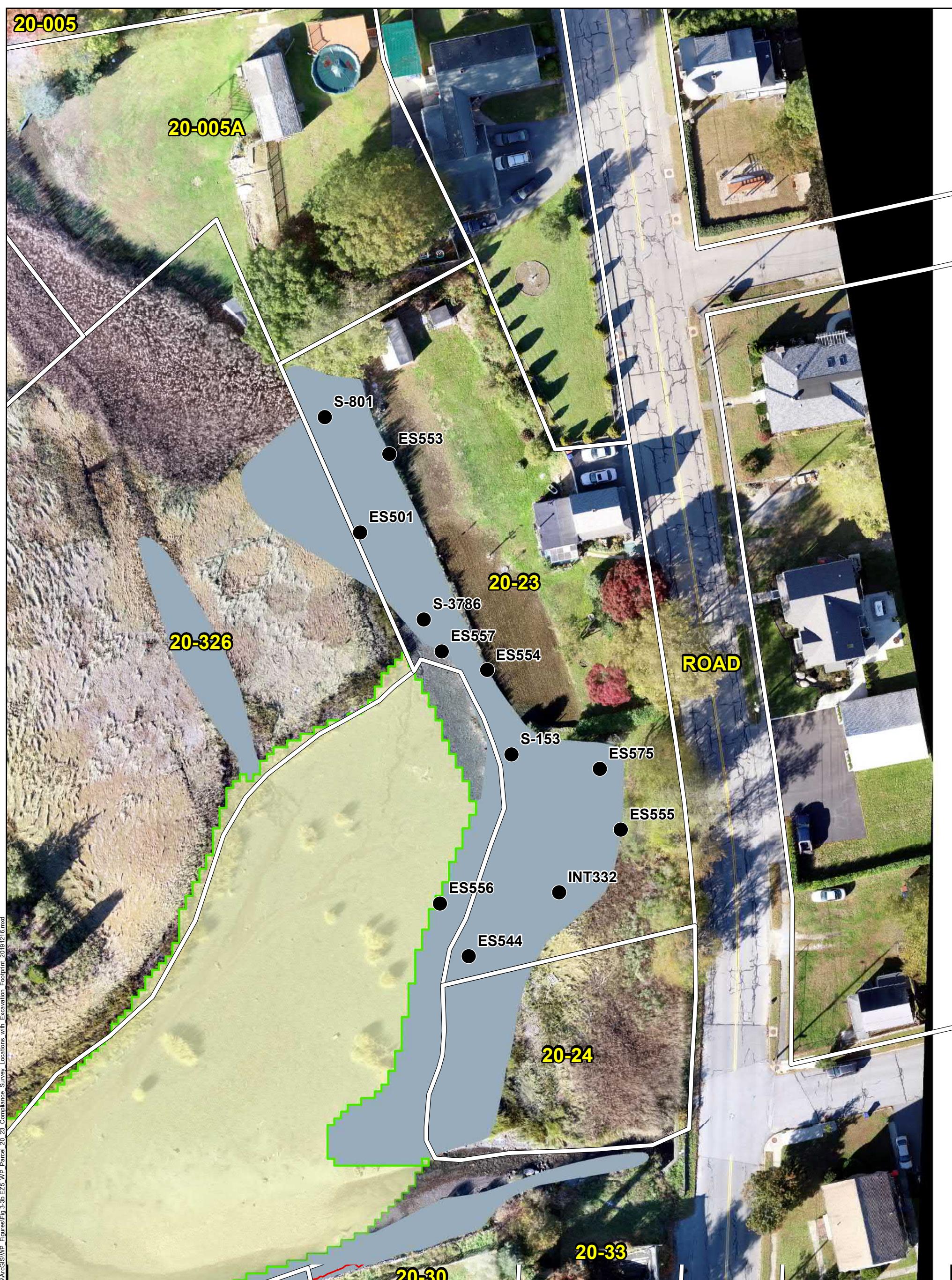


0 40 80
Feet

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Intertidal East Zone 5
Parcel 20-326
Compliance Survey Locations with
Excavation Footprint
(0-1 ft Depth Interval)
New Bedford Harbor Superfund Site
December 2019

Figure 3-3a



Legend

- Compliance Survey Location
- Veranda Inlet
- Proposed Limits of Excavation
- MHHW (1.99ft)
- Parcel Boundary

Basemap Source: CEI 2019



0 40 80
Feet

JACOBS™

Intertidal East Zone 5
Parcel 20-23
Compliance Survey Locations with
Excavation Footprint
(0-1 ft Depth Interval)
New Bedford Harbor Superfund Site
December 2019

Figure 3-3b



Legend

- Compliance Survey Location
- Veranda Inlet
- Proposed Limits of Excavation
- MHHW (1.99ft)
- Parcel Boundary

Basemap Source: CEI 2019



0 35 70
Feet

JACOBS™

**Intertidal East Zone 5
Parcel 20-24
Compliance Survey Locations with
Excavation Footprint
(0-1 ft Depth Interval)**

New Bedford Harbor Superfund Site

December 2019

Figure 3-3c



Legend

- Compliance Survey Location
- Veranda Inlet
- Proposed Limits of Excavation
- MHHW (1.99ft)
- Parcel Boundary

Basemap Source: CEI 2019



0 35 70
Feet

JACOBS™

Intertidal East Zone 5
Parcel 20-33
Compliance Survey Locations with
Excavation Footprint
(0-1 ft Depth Interval)

New Bedford Harbor Superfund Site

December 2019

Figure 3-3d



Legend

- Compliance Survey Location
- Veranda Inlet
- Proposed Limits of Excavation
- MHHW (1.99ft)
- Parcel Boundary

Basemap Source: CEI 2019



0 35 70
Feet

JACOBS™

Intertidal East Zone 5
Parcel 20-30
Compliance Survey Locations with
Excavation Footprint
(0-1 ft Depth Interval)
New Bedford Harbor Superfund Site
December 2019

Figure 3-3e



- Legend**
- Compliance Survey Location
 - Veranda Inlet
 - Proposed Limits of Excavation
 - MHHW (1.99ft)
 - Parcel Boundary

Basemap Source: CEI 2019



0 35 70
Feet

JACOBS™

Intertidal East Zone 5
Parcel 20-29
Compliance Survey Locations with
Excavation Footprint
(0-1 ft Depth Interval)

New Bedford Harbor Superfund Site

December 2019

Figure 3-3f



Legend

- Compliance Survey Location
- Veranda Inlet
- Proposed Limits of Excavation
- MHHW (1.99ft)
- MLLW (-1.97ft)
- Parcel Boundary

Basemap Source: CEI 2019



0 40 80
Feet

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Intertidal East Zone 5
Parcel 19-1 and ROW
Compliance Survey Locations with
Excavation Footprint
(0-1 ft Depth Interval)

New Bedford Harbor Superfund Site

December 2019

Figure 3-3g



Legend

- The legend includes the following entries:

 - Proposed Access Road
 - Proposed Coir Log
 - Mean Higher High Water
 - 1-foot Contour
 - 0-1' Excavation Depth
 - 1-2' Excavation Depth
 - 2-3' Excavation Depth
 - 3-4' Excavation Depth
 - Proposed Stream
 - Proposed High Marsh
 - Proposed Low Marsh
 - Parcel Boundary

Basemap Data Source:
CEI, MassGIS

September 2019
0 40 80 Feet



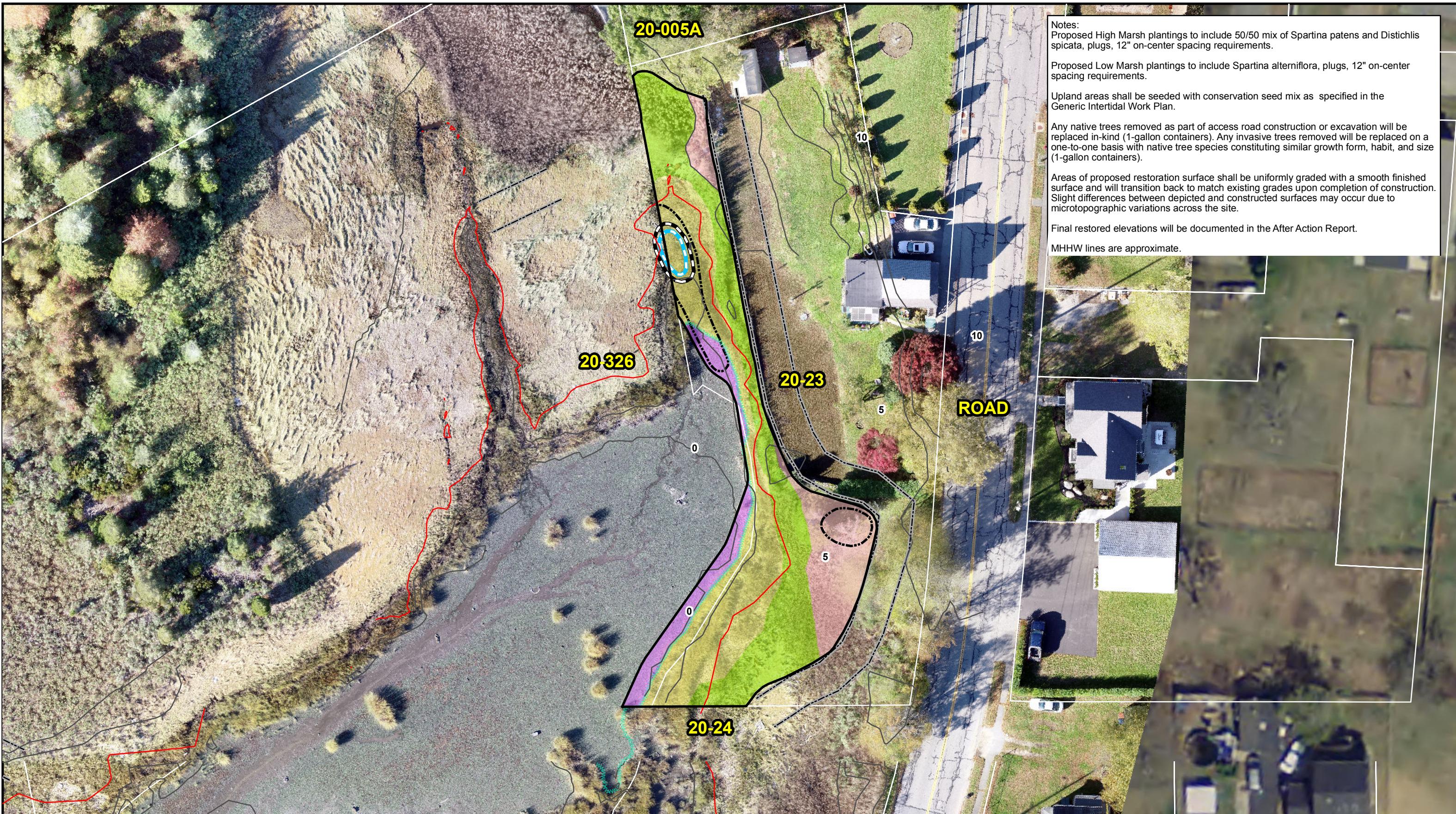
Intertidal East Zone 5
Report 2022

Parcel 20-326

New Bedford Harbor Superfund Site

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Figure 7-1a



Legend

	Proposed Access Road		Proposed Coir Log
	Mean Higher High Water		0-1' Excavation Depth
	1-foot Contour		1-2' Excavation Depth
	Parcel Boundary		2-3' Excavation Depth
	3-4' Excavation Depth		Proposed High Marsh
			Proposed Low Marsh
			Minimal Backfill as Needed for Drainage and Slope Stability
			Proposed Upland

Basemap Data Source:
CEI, MassGIS

0 50 100
Feet
October 2019



Vertical Datum:
NAVD88

Intertidal East Zone 5
Parcel 20-23
Proposed Wetland Cover Types and Topography
New Bedford Harbor Superfund Site

Figure 7-1b



Legend

- Proposed Access Road
- 1-foot Contour
- Mean Higher High Water
- 0-1' Excavation Depth
- Parcel Boundary
- Proposed Coir Log

Proposed Low Marsh
Minimal Backfill as Needed for Drainage or Slope Stability

0 25 50
Feet

September 2019

Basemap Data Source:
CEI, MassGIS



Intertidal East Zone 5
Parcel 20-24
Proposed Wetland Cover Types and Topography

New Bedford Harbor Superfund Site

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Figure 7-1c



**Intertidal East Zone 5
Parcel 20-33
Proposed Wetland Cover Types and Topography**
New Bedford Harbor Superfund Site

Figure 7-1d



Legend

- 1-foot Contour
- Mean Higher High Water
- Proposed Access Road
- Proposed Coir Log
- 0-1' Excavation Depth
- 1-2' Excavation Depth
- Parcel Boundary

Proposed Low Marsh
Minimal Backfill as
Needed for
Drainage or Slope
Stability

0 25 50
Feet
September 2019

Basemap Data Source:
CEI, MassGIS

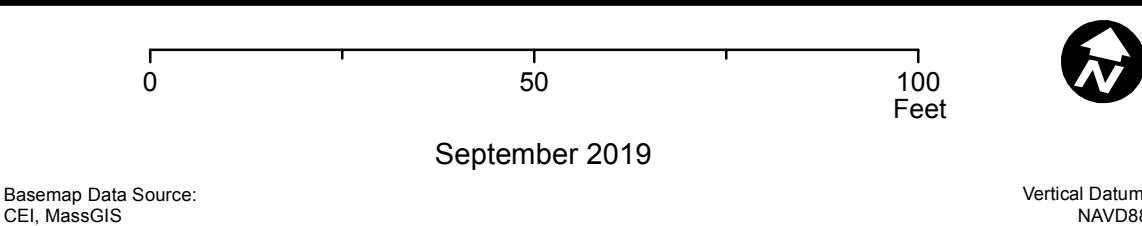
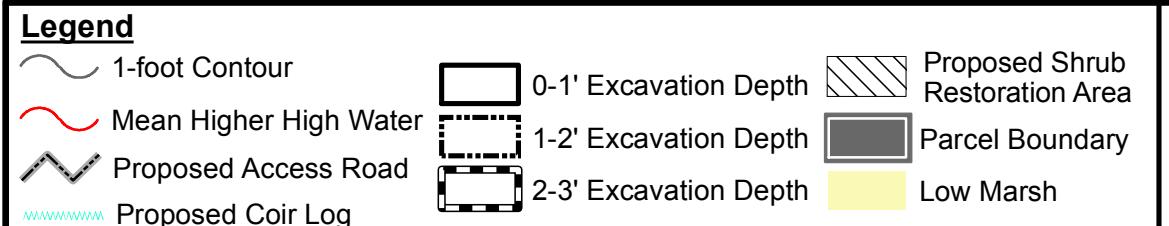


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Intertidal East Zone 5
Parcel 20-30

Proposed Wetland Cover Types and Topography
New Bedford Harbor Superfund Site

Figure 7-1e



**Intertidal East Zone 5
Parcel 20-29**

Proposed Wetland Cover Types and Topography

New Bedford Harbor Superfund Site

Figure 7-1f



Legend	
	Proposed Coir Log
	Proposed Access Road
	1-foot Contour
	Mean Lower Low Water
	Mean Higher High Water
	Parcel Boundary
	0-1' Excavation Depth
	1-2' Excavation Depth
	2-3' Excavation Depth
	Minimal Backfill as Needed for Drainage or Slope Stability
	Proposed Upland
	Proposed High Marsh
	Proposed Low Marsh

0 50 100
Feet
March 2020

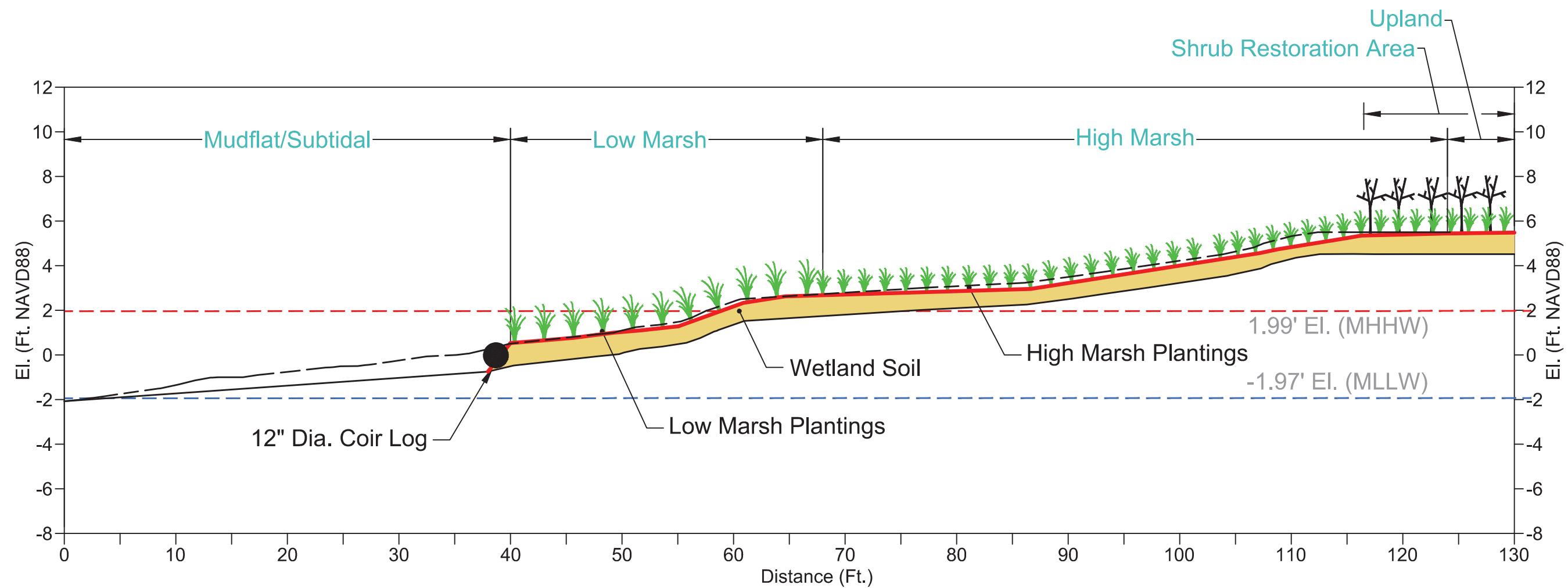
Basemap Data Source:
CEI, MassGIS



JACOBS

Intertidal East Zone 5
Parcel 19-1 and ROW
Existing Vegetation, Topography, and Excavation Areas
New Bedford Harbor Superfund Site

Figure 7-1g



Legend

- Pre-Construction Surface
 - Bottom of Excavation
 - Post-Construction Surface
 - - - (MHHW) Mean Higher High Water
 - - - (MLLW) Mean Lower Low Water

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Upper Harbor East Zone 5 Conceptual Cross Section New Bedford Harbor Superfund Site

11/02/18 25-24 & 24-31 dwg

Figure 7-2

Tables

Table 2-1a
Pre-Excavation PCB Characterization Sample Results for East Zone 5 Parcel 20-326

Parcel	Sample ID	Station ID	Sample Depth Top (ft)	Sample Depth Bottom (ft)	Sample Date	Description	Total PCB (mg/kg)	Final Qualifier
20-326	S-ES502-18FSP16-00-10	ES502	0.0	1.0	12/21/2018	Total 209 PCB cong (excl non-detects)	57.3	
20-326	S-ES502-18FSP16-10-20	ES502	1.0	2.0	12/21/2018	PCB from Immunoassay (Aroclor 1254)	13.9	
20-326	S-ES503-18FSP16-00-10	ES503	0.0	1.0	1/2/2019	Total 209 PCB cong (excl non-detects)	80.7	
20-326	S-ES503-18FSP16-10-20	ES503	1.0	2.0	1/2/2019	PCB from Immunoassay (Aroclor 1254)	8.30	J
20-326	S-ES505-18FSP16-20-30	ES505	2.0	3.0	1/2/2019	PCB from Immunoassay (Aroclor 1254)	5.60	J
20-326	S-ES505-18FSP16-30-40	ES505	3.0	4.0	1/2/2019	PCB from Immunoassay (Aroclor 1254)	1.70	J
20-326	S-ES505-18FSP16-40-50	ES505	4.0	5.0	1/2/2019	PCB from Immunoassay (Aroclor 1254)	1.90	J
20-326	S-ES505-18FSP16-50-56	ES505	5.0	5.6	1/2/2019	PCB from Immunoassay (Aroclor 1254)	1.70	J
20-326	S-ES506-18FSP16-00-10	ES506	0.0	1.0	1/2/2019	Total 209 PCB cong (excl non-detects)	137	
20-326	S-ES506R-18FSP16-00-10-REP	ES506	0.0	1.0	1/2/2019	Total 209 PCB cong (excl non-detects)	84.6	
20-326	S-ES506-18FSP16-10-20	ES506	1.0	2.0	1/2/2019	PCB from Immunoassay (Aroclor 1254)	6.00	J
20-326	S-ES506R-18FSP16-10-20-REP	ES506	1.0	2.0	1/2/2019	PCB from Immunoassay (Aroclor 1254)	9.80	J
20-326	S-ES509-18FSP16-00-10	ES509	0.0	1.0	1/3/2019	Total 209 PCB cong (excl non-detects)	15.0	
20-326	S-ES518-18FSP16-00-10	ES518	0.0	1.0	12/21/2018	Total 209 PCB cong (excl non-detects)	2.19	
20-326	S-ES519-18FSP16-10-20	ES519	1.0	2.0	12/21/2018	Total 209 PCB cong (excl non-detects)	0.45	
20-326	S-15Y-INT118-00-10	INT118	0.0	1.0	5/4/2015	Aroclor 1254 - Immunoassay	6.50	D
20-326	S-15Y-INT119-00-10	INT119	0.0	1.0	5/4/2015	Total 139 PCB cong (excl non-detects)	6.20	
20-326	S-17Y-INT544-00-10	INT544	0.0	1.0	5/9/2017	PCB from Immunoassay (Aroclor 1254)	8.90	
20-326	S-17Y-INT544-10-20	INT544	1.0	2.0	5/9/2017	PCB from Immunoassay (Aroclor 1254)	1.13	
20-326	S-17Y-INT545-00-10	INT545	0.0	1.0	5/9/2017	Total 139 PCB cong (excl non-detects)	13.7	
20-326	S-17Y-INT545-10-20	INT545	1.0	2.0	5/9/2017	PCB from Immunoassay (Aroclor 1254)	0.50	U
20-326	S-0150-1	S-150	0.0	1.0	9/13/1999	Total 18 NOAA PCB cong (excl non-detects)	8.58	
20-326	S-0150-2	S-150	1.0	2.0	9/13/1999	Total 18 NOAA PCB cong (excl non-detects)	0.44	
20-326	S-3774-0.0-1.0	S-3774	0.0	1.0	10/11/2001	Total 18 NOAA PCB cong (excl non-detects)	93.6	
20-326	S-3775-3.0-3.5	S-3775	3.0	3.5	10/3/2001	Total 18 NOAA PCB cong (excl non-detects)	0.12	
20-326	S-3776-0.0-1.0	S-3776	0.0	1.0	10/10/2001	Total 18 NOAA PCB cong (excl non-detects)	5.20	
20-326	S-3776-1.0-2.0	S-3776	1.0	2.0	10/10/2001	Total 18 NOAA PCB cong (excl non-detects)	8.32	
20-326	S-3776-2.0-3.0	S-3776	2.0	3.0	10/10/2001	Total 18 NOAA PCB cong (excl non-detects)	2.11	
20-326	S-3777-0.0-1.0	S-3777	0.0	1.0	10/10/2001	Total 18 NOAA PCB cong (excl non-detects)	12.5	
20-326	S-3777-1.0-2.0	S-3777	1.0	2.0	10/10/2001	Total 18 NOAA PCB cong (excl non-detects)	1.48	
20-326	S-3777-2.0-3.0	S-3777	2.0	3.0	10/10/2001	Total 18 NOAA PCB cong (excl non-detects)	0.00	U
20-326	S-3778-0.0-1.0	S-3778	0.0	1.0	10/10/2001	Total 18 NOAA PCB cong (excl non-detects)	242	
20-326	S-3778-1.0-2.0	S-3778	1.0	2.0	10/10/2001	Total 18 NOAA PCB cong (excl non-detects)	36.4	
20-326	S-3779-0.0-1.0	S-3779	0.0	1.0	10/10/2001	Total 18 NOAA PCB cong (excl non-detects)	10.1	
20-326	S-3779-1.0-2.0	S-3779	1.0	2.0	10/10/2001	Total 18 NOAA PCB cong (excl non-detects)	2.16	
20-326	S-3780-0.0-1.0	S-3780	0.0	1.0	10/10/2001	Total 18 NOAA PCB cong (excl non-detects)	1.22	

Table 2-1a
Pre-Excavation PCB Characterization Sample Results for East Zone 5 Parcel 20-326

Parcel	Sample ID	Station ID	Sample Depth Top (ft)	Sample Depth Bottom (ft)	Sample Date	Description	Total PCB (mg/kg)	Final Qualifier
20-326	S-3780-1.5-2.0	S-3780	1.5	2.0	10/10/2001	Total 18 NOAA PCB cong (excl non-detects)	0.00	U
20-326	S-3781-0.0-1.0	S-3781	0.0	1.0	10/10/2001	Total 18 NOAA PCB cong (excl non-detects)	59.8	
20-326	S-3781-1.0-2.0	S-3781	1.0	2.0	10/10/2001	Total 18 NOAA PCB cong (excl non-detects)	0.99	
20-326	S-3781-2.0-2.5	S-3781	2.0	2.5	10/10/2001	Total 18 NOAA PCB cong (excl non-detects)	0.00	U
20-326	S-3782-0.0-1.0	S-3782	0.0	1.0	10/10/2001	Total 18 NOAA PCB cong (excl non-detects)	15.1	
20-326	S-3782-1.0-2.0	S-3782	1.0	2.0	10/10/2001	Total 18 NOAA PCB cong (excl non-detects)	0.00	U
20-326	S-3784-0.0-1.0	S-3784	0.0	1.0	10/10/2001	Total 18 NOAA PCB cong (excl non-detects)	23.1	
20-326	S-3784-1.0-2.0	S-3784	1.0	2.0	10/10/2001	Total 18 NOAA PCB cong (excl non-detects)	3.64	
20-326	S-3784-2.0-3.0	S-3784	2.0	3.0	10/10/2001	Total 18 NOAA PCB cong (excl non-detects)	0.62	
20-326	S-0502-1	S-502	0.0	1.0	9/21/1999	Total 18 NOAA PCB cong (excl non-detects)	19.5	
20-326	S-0502-2	S-502	1.0	2.0	9/21/1999	Total 18 NOAA PCB cong (excl non-detects)	2.86	
20-326	S-0800-1	S-800	0.0	1.0	10/30/2000	Total 18 NOAA PCB cong (excl non-detects)	26.0	
20-326	S-0800-2	S-800	1.0	2.0	10/30/2000	Total 18 NOAA PCB cong (excl non-detects)	1.20	
20-326	S-0802-1	S-802	0.0	1.0	10/30/2000	Total 18 NOAA PCB cong (excl non-detects)	31.2	
20-326	S-0802-2	S-802	1.0	2.0	10/30/2000	Total 18 NOAA PCB cong (excl non-detects)	0.60	
20-326	S-0803-1	S-803	0.0	1.0	10/30/2000	Total 18 NOAA PCB cong (excl non-detects)	2.24	
20-326	S-0803-2	S-803	1.0	2.0	10/30/2000	Total 18 NOAA PCB cong (excl non-detects)	0.00	U
20-326	S-M - 26	S-M - 26	0.0	1.0	Pre-ROD	Total 18 NOAA PCB cong (excl non-detects) ¹	0.00	U

Notes:

Pre-excavation confirmatory congener samples are highlighted green.

D - reported value is from a dilution; J - estimated value; U - not detected.

Total 18 NOAA PCB congeners multiplied by a factor of 2.6.

1. Pre-ROD sample result is most likely a total Aroclor value although it is reported in the project database as Sum 18 NOAA PCB congeners X factor.

Table 2-1b
Pre-Excavation PCB Characterization Sample Results for East Zone 5 Parcel 20-23

Parcel	Sample ID	Station ID	Sample Depth Top (ft)	Sample Depth Bottom (ft)	Sample Date	Description	Total PCB (mg/kg)	Final Qualifier
20-23	S-ES501-18FSP16-20-30	ES501	2.0	3.0	12/21/2018	Total 209 PCB cong (excl non-detects)	723	
20-23	S-ES501-18FSP16-30-40	ES501	3.0	4.0	12/21/2018	Total 209 PCB cong (excl non-detects)	84.4	
20-23	S-ES501-18FSP16-40-50	ES501	4.0	5.0	12/21/2018	Total 209 PCB cong (excl non-detects)	0.22	
20-23	S-ES544-18FSP16-00-10	ES544	0.0	1.0	12/21/2018	Total 209 PCB cong (excl non-detects)	13.7	
20-23	S-ES544-18FSP16-10-20	ES544	1.0	2.0	12/21/2018	Total 209 PCB cong (excl non-detects)	0.28	
20-23	S-15Y-INT120-00-10	INT120	0.0	1.0	5/1/2015	Aroclor 1254 - Immunoassay	0.50	U
20-23	S-15Y-INT120-10-20	INT120	1.0	2.0	5/1/2015	Aroclor 1254 - Immunoassay	0.70	
20-23	S-15Y-INT121-00-10	INT121	0.0	1.0	5/1/2015	Total 139 PCB cong (excl non-detects)	0.29	
20-23	S-15Y-INT121-10-20	INT121	1.0	2.0	5/1/2015	Total 139 PCB cong (excl non-detects)	16.0	
20-23	S-15A-INT122-00-10	INT122	0.0	1.0	4/30/2015	Total 139 PCB cong (excl non-detects)	1.10	
20-23	S-15A-INT122-00-10-REP	INT122	0.0	1.0	4/30/2015	Total 139 PCB cong (excl non-detects)	0.95	
20-23	S-15A-INT122-10-20	INT122	1.0	2.0	4/30/2015	Aroclor 1254 - Immunoassay	0.80	
20-23	S-15A-INT122-10-20-REP	INT122	1.0	2.0	4/30/2015	Aroclor 1254 - Immunoassay	0.50	U
20-23	S-16U-INT332-00-10	INT332	0.0	1.0	6/6/2016	Total 139 PCB cong (excl non-detects)	63.0	
20-23	S-16U-INT332-10-20	INT332	1.0	2.0	6/6/2016	Total 139 PCB cong (excl non-detects)	0.027	
20-23	S-16U-INT333-00-10	INT333	0.0	1.0	6/6/2016	Total 139 PCB cong (excl non-detects)	41.0	
20-23	S-16U-INT333-00-10-REP	INT333	0.0	1.0	6/6/2016	Total 139 PCB cong (excl non-detects)	37.0	
20-23	S-16U-INT333-10-20	INT333	1.0	2.0	6/6/2016	Total 139 PCB cong (excl non-detects)	0.14	
20-23	S-16U-INT333-10-20-REP	INT333	1.0	2.0	6/6/2016	Total 139 PCB cong (excl non-detects)	0.11	
20-23	S-17Y-INT546-00-10	INT546	0.0	1.0	5/9/2017	PCB from Immunoassay (Aroclor 1254)	11.0	
20-23	S-17Y-INT546-10-20	INT546	1.0	2.0	5/9/2017	PCB from Immunoassay (Aroclor 1254)	0.50	U
20-23	S-17Y-INT547-00-10	INT547	0.0	1.0	5/9/2017	PCB from Immunoassay (Aroclor 1254)	48.5	
20-23	S-17Y-INT547-10-20	INT547	1.0	2.0	5/9/2017	PCB from Immunoassay (Aroclor 1254)	0.50	U
20-23	S-17Y-INT548-00-10	INT548	0.0	1.0	5/9/2017	PCB from Immunoassay (Aroclor 1254)	4.55	
20-23	S-17Y-INT548-10-20	INT548	1.0	2.0	5/9/2017	PCB from Immunoassay (Aroclor 1254)	0.50	U
20-23	S-0152-1	S-152	0.0	1.0	9/13/1999	Total 18 NOAA PCB cong (excl non-detects)	286	
20-23	S-0152-2	S-152	1.0	2.0	9/13/1999	Total 18 NOAA PCB cong (excl non-detects)	416	
20-23	S-0153-1	S-153	0.0	1.0	9/13/1999	Total 18 NOAA PCB cong (excl non-detects)	49.4	
20-23	S-0153-2	S-153	1.0	2.0	9/13/1999	Total 18 NOAA PCB cong (excl non-detects)	23.4	
20-23	S-3549-0.0-1.0	S-3549	0.0	1.0	10/10/2001	Total 18 NOAA PCB cong (excl non-detects)	286	
20-23	S-3549-1.0-2.0	S-3549	1.0	2.0	10/10/2001	Total 18 NOAA PCB cong (excl non-detects)	832	
20-23	S-3647-0.0-1.0	S-3647	0.0	1.0	10/10/2001	Total 18 NOAA PCB cong (excl non-detects)	49.4	
20-23	S-3647-1.5-2.0	S-3647	1.5	2.0	10/10/2001	Total 18 NOAA PCB cong (excl non-detects)	1.82	
20-23	S-3647-3.0-3.5	S-3647	3.0	3.5	10/10/2001	Total 18 NOAA PCB cong (excl non-detects)	3.38	
20-23	S-3647-3.5-4.0	S-3647	3.5	4.0	10/10/2001	Total 18 NOAA PCB cong (excl non-detects)	0.26	
20-23	S-3647-3.5-4.0REP	S-3647	3.5	4.0	10/10/2001	Total 18 NOAA PCB cong (excl non-detects)	0.62	
20-23	S-3783-0.0-1.0	S-3783	0.0	1.0	10/10/2001	Total 18 NOAA PCB cong (excl non-detects)	14.6	

Table 2-1b
Pre-Excavation PCB Characterization Sample Results for East Zone 5 Parcel 20-23

Parcel	Sample ID	Station ID	Sample Depth Top (ft)	Sample Depth Bottom (ft)	Sample Date	Description	Total PCB (mg/kg)	Final Qualifier
20-23	S-3785-2.4-2.9	S-3785	2.4	2.9	10/3/2001	Total 18 NOAA PCB cong (excl non-detects)	4.16	
20-23	S-3786-1.5-2.0	S-3786	1.5	2.0	10/3/2001	Total 18 NOAA PCB cong (excl non-detects)	104	
20-23	S-3786-2.0-2.5	S-3786	2.0	2.5	10/3/2001	Total 18 NOAA PCB cong (excl non-detects)	7.80	
20-23	S-3786-2.5-3.0	S-3786	2.5	3.0	10/3/2001	Total 18 NOAA PCB cong (excl non-detects)	8.32	
20-23	S-3787-1.8-2.3	S-3787	1.8	2.3	10/3/2001	Total 18 NOAA PCB cong (excl non-detects)	3.12	
20-23	S-3788-2.0-3.0	S-3788	2.0	3.0	10/12/2001	Total 18 NOAA PCB cong (excl non-detects)	0.00	U
20-23	S-0504-1	S-504	0.0	1.0	9/21/1999	Total 18 NOAA PCB cong (excl non-detects)	338	
20-23	S-0504-2	S-504	1.0	2.0	9/21/1999	Total 18 NOAA PCB cong (excl non-detects)	10.7	
20-23	S-0559-1	S-559	0.0	1.0	10/4/1999	Total 18 NOAA PCB cong (excl non-detects)	0.00	U
20-23	S-0559-2	S-559	1.0	2.0	10/4/1999	Total 18 NOAA PCB cong (excl non-detects)	0.00	U
20-23	S-0607-1	S-607	0.0	1.0	5/4/2000	Total 18 NOAA PCB cong (excl non-detects)	0.14	
20-23	S-0607-2	S-607	1.0	2.0	5/4/2000	Total PCB Congeners (sum CONG x factor)	0.00	U
20-23	S-0608-1	S-608	0.0	1.0	5/4/2000	Total PCB Congeners (sum CONG x factor)	0.44	
20-23	S-0608-2	S-608	1.0	2.0	5/4/2000	Total PCB Congeners (sum CONG x factor)	0.00	U
20-23	S-0609-1	S-609	0.0	1.0	5/4/2000	Total PCB Congeners (sum CONG x factor)	1.70	
20-23	S-0609-2	S-609	1.0	2.0	5/4/2000	Total PCB Congeners (sum CONG x factor)	0.088	
20-23	S-0610-1	S-610	0.0	1.0	5/4/2000	Total PCB Congeners (sum CONG x factor)	0.1	
20-23	S-0610-2	S-610	1.0	2.0	5/4/2000	Total PCB Congeners (sum CONG x factor)	0.00	U
20-23	S-0611-1	S-611	0.0	1.0	5/4/2000	Total PCB Congeners (sum CONG x factor)	0.00	U
20-23	S-0611-2	S-611	1.0	2.0	5/4/2000	Total PCB Congeners (sum CONG x factor)	0.00	U
20-23	S-0612-1	S-612	0.0	1.0	5/4/2000	Total PCB Congeners (sum CONG x factor)	0.069	
20-23	S-0612-2	S-612	1.0	2.0	5/4/2000	Total PCB Congeners (sum CONG x factor)	0.00	U
20-23	S-0613-1	S-613	0.0	1.0	5/4/2000	Total PCB Congeners (sum CONG x factor)	0.35	
20-23	S-0613-2	S-613	1.0	2.0	5/4/2000	Total PCB Congeners (sum CONG x factor)	0.00	U
20-23	S-0614-1	S-614	0.0	1.0	5/4/2000	Total PCB Congeners (sum CONG x factor)	0.00	U
20-23	S-0614-2	S-614	1.0	2.0	5/4/2000	Total PCB Congeners (sum CONG x factor)	0.00	U
20-23	S-0801-1	S-801	0.0	1.0	10/30/2000	Total 18 NOAA PCB cong (excl non-detects)	174	
20-23	S-0801-2	S-801	1.0	2.0	10/30/2000	Total 18 NOAA PCB cong (excl non-detects)	0.62	

Notes:

Pre-excavation confirmatory congener samples are highlighted green.

U - not detected.

Total 18 NOAA PCB congeners multiplied by a factor of 2.6.

Table 2-1c
Pre-Excavation PCB Characterization Sample Results for East Zone 5 Parcel 20-24

Parcel	Sample ID	Station ID	Sample Depth Top (ft)	Sample Depth Bottom (ft)	Sample Date	Description	Total PCB (mg/kg)	Final Qualifier
20-24	S-ES513-18FSP16-00-10	ES513	0.0	1.0	12/21/2018	PCB from Immunoassay (Aroclor 1254)	94.0	JD
20-24	S-ES514-18FSP16-10-20	ES514	1.0	2.0	1/3/2019	Total 209 PCB cong (excl non-detects)	44.3	
20-24	S-ES516-18FSP16-00-10	ES516	0.0	1.0	1/3/2019	PCB from Immunoassay (Aroclor 1254)	93.0	JD
20-24	S-ES516R-18FSP16-00-10-REP	ES516	0.0	1.0	1/3/2019	PCB from Immunoassay (Aroclor 1254)	62.0	JD
20-24	S-ES545-18FSP16-00-10	ES545	0.0	1.0	12/21/2018	Total 209 PCB cong (excl non-detects)	10.4	
20-24	S-ES545R-18FSP16-00-10-REP	ES545	0.0	1.0	12/21/2018	Total 209 PCB cong (excl non-detects)	29.7	
20-24	S-ES546-18FSP16-00-10	ES546	0.0	1.0	12/21/2018	Total 209 PCB cong (excl non-detects)	4.06	
20-24	S-15A-INT123-00-10	INT123	0.0	1.0	4/30/2015	Total 139 PCB cong (excl non-detects)	12.0	
20-24	S-15A-INT123-10-20	INT123	1.0	2.0	4/30/2015	Aroclor 1254 - Immunoassay	0.50	U
20-24	S-16Y-INT337-00-10	INT337	0.0	1.0	5/27/2016	Aroclor 1254 - Immunoassay	1.70	
20-24	S-16Y-INT337-20-30	INT337	2.0	3.0	5/27/2016	Aroclor 1254 - Immunoassay	0.67	
20-24	S-16Y-INT338-00-10	INT338	0.0	1.0	5/27/2016	Aroclor 1254 - Immunoassay	5.20	
20-24	S-16Y-INT338-10-20	INT338	1.0	2.0	5/27/2016	Aroclor 1254 - Immunoassay	0.18	J
20-24	S-3789-1.0-2.0	S-3789	1.0	2.0	10/12/2001	Total 18 NOAA PCB cong (excl non-detects)	3.38	
20-24	S-3790-1.0-2.0	S-3790	1.0	2.0	10/12/2001	Total 18 NOAA PCB cong (excl non-detects)	0.086	

Notes:

Pre-excavation confirmatory congener samples are highlighted green.

D - reported value is from a dilution; J - estimated value; U - not detected.

Total 18 NOAA PCB congeners multiplied by a factor of 2.6.

Table 2-1d
Pre-Excavation PCB Characterization Sample Results for East Zone 5 Parcel 20-33

Parcel	Sample ID	Station ID	Sample Depth Top (ft)	Sample Depth Bottom (ft)	Sample Date	Description	Total PCB (mg/kg)	Final Qualifier
20-33	S-15A-INT124-00-10	INT124	0.0	1.0	4/30/2015	Aroclor 1254 - Immunoassay	3.60	
20-33	S-15A-INT124-10-20	INT124	1.0	2.0	4/30/2015	Aroclor 1254 - Immunoassay	1.10	
20-33	S-15A-INT125-00-10	INT125	0.0	1.0	4/30/2015	Aroclor 1254 - Immunoassay	0.60	
20-33	S-15A-INT125-10-20	INT125	1.0	2.0	4/30/2015	Aroclor 1254 - Immunoassay	0.60	
20-33	S-15A-INT126-00-10	INT126	0.0	1.0	4/30/2015	Aroclor 1254 - Immunoassay	0.70	
20-33	S-15A-INT126-10-18	INT126	1.0	1.8	4/30/2015	Aroclor 1254 - Immunoassay	0.60	
20-33	S-15A-INT127-00-10	INT127	0.0	1.0	4/30/2015	Total 139 PCB cong (excl non-detects)	0.013	
20-33	S-15A-INT127-10-20	INT127	1.0	2.0	4/30/2015	Aroclor 1254 - Immunoassay	8.70	
20-33	S-15A-INT128-00-10	INT128	0.0	1.0	4/30/2015	Aroclor 1254 - Immunoassay	0.50	U
20-33	S-15A-INT128-10-18	INT128	1.0	1.8	4/30/2015	Aroclor 1254 - Immunoassay	0.50	
20-33	S-0155-1	S-155	0.0	1.0	9/21/1999	Total 18 NOAA PCB cong (excl non-detects)	2.18	
20-33	S-0155-2	S-155	1.0	2.0	9/21/1999	Total 18 NOAA PCB cong (excl non-detects)	6.24	
20-33	S-3565-1.0-2.0	S-3565	1.0	2.0	10/12/2001	Total 18 NOAA PCB cong (excl non-detects)	5.46	
20-33	S-3565-1.0-2.0REP	S-3565	1.0	2.0	10/12/2001	Total 18 NOAA PCB cong (excl non-detects)	3.38	

Notes:

Pre-excavation confirmatory congener samples are highlighted green.

U - not detected.

Total 18 NOAA PCB congeners multiplied by a factor of 2.6.

Table 2-1e
Pre-Excavation PCB Characterization Sample Results for East Zone 5 Parcel 20-30

Parcel	Sample ID	Station ID	Sample Depth Top (ft)	Sample Depth Bottom (ft)	Sample Date	Description	Total PCB (mg/kg)	Final Qualifier
20-30	S-ES521-18FSP16-20-30	ES521	2.0	3.0	1/3/2019	Total 209 PCB cong (excl non-detects)	0.33	
20-30	S-ES521-18FSP16-30-40	ES521	3.0	4.0	1/3/2019	Total 209 PCB cong (excl non-detects)	18.5	
20-30	S-ES523-18FSP16-20-30	ES523	2.0	3.0	1/10/2019	Total 209 PCB cong (excl non-detects)	1.09	
20-30	S-ES523-18FSP16-30-40	ES523	3.0	4.0	1/10/2019	Total 209 PCB cong (excl non-detects)	0.82	
20-30	S-15A-INT129-00-10	INT129	0.0	1.0	4/30/2015	Aroclor 1254 - Immunoassay	53.0	D
20-30	S-15A-INT129-10-20	INT129	1.0	2.0	4/30/2015	Aroclor 1254 - Immunoassay	182	D
20-30	S-15Y-INT130-00-10	INT130	0.0	1.0	5/1/2015	Aroclor 1254 - Immunoassay	0.50	U
20-30	S-15Y-INT130-10-20	INT130	1.0	2.0	5/1/2015	Aroclor 1254 - Immunoassay	0.70	
20-30	S-15A-INT131-00-10	INT131	0.0	1.0	4/30/2015	Aroclor 1254 - Immunoassay	59.2	D
20-30	S-15A-INT131-10-20	INT131	1.0	2.0	4/30/2015	Aroclor 1254 - Immunoassay	83.7	D
20-30	S-15Y-INT132-00-10	INT132	0.0	1.0	5/1/2015	Total 139 PCB cong (excl non-detects)	0.28	
20-30	S-15Y-INT132-10-20	INT132	1.0	2.0	5/1/2015	Aroclor 1254 - Immunoassay	0.70	
20-30	S-0815-1	S-815	0.0	1.0	10/6/2000	Total 18 NOAA PCB cong (excl non-detects)	0.25	
20-30	S-0815-1DUP	S-815	0.0	1.0	10/6/2000	Total 18 NOAA PCB cong (excl non-detects)	0.24	
20-30	S-0815-2	S-815	1.0	2.0	10/6/2000	Total 18 NOAA PCB cong (excl non-detects)	1.38	

Notes:

Pre-excavation confirmatory congener samples are highlighted green.

D - reported value is from a dilution; U - not detected.

Total 18 NOAA PCB congeners multiplied by a factor of 2.6.

Table 2-1f
Pre-Excavation PCB Characterization Sample Results for East Zone 5 Parcel 20-29

Parcel	Sample ID	Station ID	Sample Depth Top (ft)	Sample Depth Bottom (ft)	Sample Date	Description	Total PCB (mg/kg)	Final Qualifier
20-29	S-ES529-18FSP16-20-30	ES529	2.0	3.0	1/10/2019	Total 209 PCB cong (excl non-detects)	120	
20-29	S-ES529-18FSP16-30-40	ES529	3.0	4.0	1/10/2019	Total 209 PCB cong (excl non-detects)	44.7	
20-29	S-15Y-INT133-00-10	INT133	0.0	1.0	5/1/2015	Aroclor 1254 - Immunoassay	47.1	D
20-29	S-15Y-INT133-10-20	INT133	1.0	2.0	5/1/2015	Aroclor 1254 - Immunoassay	0.50	U
20-29	S-15Y-INT134-00-10	INT134	0.0	1.0	5/1/2015	Aroclor 1254 - Immunoassay	0.50	U
20-29	S-15Y-INT134-10-20	INT134	1.0	2.0	5/1/2015	Aroclor 1254 - Immunoassay	0.50	U
20-29	S-0158-1	S-158	0.0	1.0	9/13/1999	Total 18 NOAA PCB cong (excl non-detects)	218	
20-29	S-0158-2	S-158	1.0	2.0	9/13/1999	Total 18 NOAA PCB cong (excl non-detects)	17.2	
20-29	S-0158-3	S-158	2.0	3.0	9/13/1999	Total 18 NOAA PCB cong (excl non-detects)	0.86	
20-29	S-0162-1	S-162	0.0	1.0	9/13/1999	Total 18 NOAA PCB cong (excl non-detects)	26.0	
20-29	S-0162-2	S-162	1.0	2.0	9/13/1999	Total 18 NOAA PCB cong (excl non-detects)	67.6	
20-29	S-0162-3	S-162	2.0	3.0	9/13/1999	Total 18 NOAA PCB cong (excl non-detects)	10.1	
20-29	S-3588-3.0-4.0	S-3588	3.0	4.0	10/12/2001	Total 18 NOAA PCB cong (excl non-detects)	0.75	
20-29	S-3791-1.7-2.2	S-3791	1.7	2.2	10/3/2001	Total 18 NOAA PCB cong (excl non-detects)	0.94	
20-29	S-3792-1.0-1.5	S-3792	1.0	1.5	10/3/2001	Total 18 NOAA PCB cong (excl non-detects)	0.39	
20-29	S-0814-1	S-814	0.0	1.0	10/16/2000	Total 18 NOAA PCB cong (excl non-detects)	0.31	
20-29	S-0814-2	S-814	1.0	2.0	10/16/2000	Total 18 NOAA PCB cong (excl non-detects)	0.44	

Notes:

Pre-excavation confirmatory congener samples are highlighted green.

D - reported value is from a dilution; U - not detected.

Total 18 NOAA PCB congeners multiplied by a factor of 2.6.

1. Pre-ROD sample result is most likely a total Aroclor value although it is reported in the project database as Sum 18 NOAA PCB congeners X factor.

Table 2-1g
Pre-Excavation PCB Characterization Sample Results for East Zone 5 Parcel 19-1 and ROW

Parcel	Sample ID	Station ID	Sample Depth Top (ft)	Sample Depth Bottom (ft)	Sample Date	Description	Total PCB (mg/kg)	Final Qualifier
ROW	S-ES537-18FSP16-00-10	ES537	0.0	1.0	1/10/2019	Total 209 PCB cong (excl non-detects)	26.9	
ROW	S-ES537-18FSP16-10-20	ES537	1.0	2.0	1/10/2019	Total 209 PCB cong (excl non-detects)	4.86	
ROW	S-ES539-18FSP16-20-30	ES539	2.0	3.0	12/10/2018	PCB from Immunoassay (Aroclor 1254)	82.0	JD
ROW	S-ES539-18FSP16-30-38	ES539	3.0	3.8	12/10/2018	PCB from Immunoassay (Aroclor 1254)	3.10	J
ROW	S-ES541-18FSP16-20-30	ES541	2.0	3.0	12/19/2018	PCB from Immunoassay (Aroclor 1254)	5.10	J
ROW	S-ES541-18FSP16-30-40	ES541	3.0	4.0	12/19/2018	PCB from Immunoassay (Aroclor 1254)	1.90	J
ROW	S-ES547-18FSP16-00-10	ES547	0.0	1.0	1/4/2019	Total 209 PCB cong (excl non-detects)	41.2	
ROW	S-ES547-18FSP16-10-20	ES547	1.0	2.0	1/4/2019	Total 209 PCB cong (excl non-detects)	4.65	
ROW	S-ES549-18FSP16-00-10	ES549	0.0	1.0	12/21/2018	Total 209 PCB cong (excl non-detects)	0.12	
ROW	S-ES549-18FSP16-10-20	ES549	1.0	2.0	12/21/2018	Total 209 PCB cong (excl non-detects)	1.43	
ROW	S-15Y-INT140-00-10	INT140	0.0	1.0	5/15/2015	Total 139 PCB cong (excl non-detects)	15.0	
ROW	S-15Y-INT140-10-20	INT140	1.0	2.0	5/15/2015	Aroclor 1254 - Immunoassay	0.50	U
ROW	S-15Y-INT141-00-10	INT141	0.0	1.0	5/14/2015	Aroclor 1254 - Immunoassay	2.20	
ROW	S-15Y-INT144-00-10	INT144	0.0	1.0	5/14/2015	Aroclor 1254 - Immunoassay	20.3	D
ROW	S-15Y-INT144-10-20	INT144	1.0	2.0	5/14/2015	Aroclor 1254 - Immunoassay	381	D
ROW	S-15Y-INT145-00-10	INT145	0.0	1.0	5/22/2015	Aroclor 1254 - Immunoassay	4.60	D
ROW	S-15Y-INT145-10-20	INT145	1.0	2.0	5/22/2015	Aroclor 1254 - Immunoassay	92.8	D
ROW	S-15Y-INT183-00-10	INT183	0.0	1.0	5/22/2015	Aroclor 1254 - Immunoassay	0.50	
ROW	S-15Y-INT183-10-20	INT183	1.0	2.0	5/22/2015	Total 139 PCB cong (excl non-detects)	1.60	
ROW	S-0161-1	S-161	0.0	1.0	10/22/1999	Total 18 NOAA PCB cong (excl non-detects)	0.96	
ROW	S-0161-2	S-161	1.0	2.0	10/22/1999	Total 18 NOAA PCB cong (excl non-detects)	0.00	U
ROW	S-0161-3	S-161	2.0	3.0	10/22/1999	Total 18 NOAA PCB cong (excl non-detects)	0.00	U
ROW	S-3793-5-1.0	S-3793	0.5	1.0	10/3/2001	Total 18 NOAA PCB cong (excl non-detects)	1.72	
ROW	S-0508-1	S-508	0.0	1.0	9/28/1999	Total 18 NOAA PCB cong (excl non-detects)	18.2	
ROW	S-0508-2	S-508	1.0	2.0	9/28/1999	Total 18 NOAA PCB cong (excl non-detects)	0.24	
ROW	S-0816-1	S-816	0.0	1.0	9/29/2000	Total 18 NOAA PCB cong (excl non-detects)	0.049	
ROW	S-0816-2	S-816	1.0	2.0	9/29/2000	Total 18 NOAA PCB cong (excl non-detects)	0.60	
ROW	S-0817-1	S-817	0.0	1.0	9/29/2000	Total 18 NOAA PCB cong (excl non-detects)	3.38	
ROW	S-0817-2	S-817	1.0	2.0	9/29/2000	Total 18 NOAA PCB cong (excl non-detects)	15.3	
19-1	S-ES536-18FSP16-20-30	ES536	2.0	3.0	1/4/2019	Total 209 PCB cong (excl non-detects)	0.81	
19-1	S-ES536-18FSP16-30-40	ES536	3.0	4.0	1/4/2019	Total 209 PCB cong (excl non-detects)	0.18	
19-1	S-ES548-18FSP16-00-10	ES548	0.0	1.0	12/21/2018	Total 209 PCB cong (excl non-detects)	0.83	
19-1	S-ES548-18FSP16-10-20	ES548	1.0	2.0	12/21/2018	Total 209 PCB cong (excl non-detects)	1.45	
19-1	S-15Y-INT142-00-10	INT142	0.0	1.0	5/15/2015	Total 139 PCB cong (excl non-detects)	0.81	
19-1	S-15Y-INT142-10-20	INT142	1.0	2.0	5/15/2015	Aroclor 1254 - Immunoassay	0.60	
19-1	S-15Y-INT143-00-10	INT143	0.0	1.0	5/15/2015	Aroclor 1254 - Immunoassay	0.50	U

Table 2-1g
Pre-Excavation PCB Characterization Sample Results for East Zone 5 Parcel 19-1 and ROW

Parcel	Sample ID	Station ID	Sample Depth Top (ft)	Sample Depth Bottom (ft)	Sample Date	Description	Total PCB (mg/kg)	Final Qualifier
19-1	S-15Y-INT143-10-20	INT143	1.0	2.0	5/15/2015	Aroclor 1254 - Immunoassay	0.50	U
19-1	S-15Y-INT146-00-10	INT146	0.0	1.0	5/15/2015	Aroclor 1254 - Immunoassay	0.60	
19-1	S-15Y-INT146-10-20	INT146	1.0	2.0	5/15/2015	Aroclor 1254 - Immunoassay	0.50	U
19-1	S-16U-INT346-00-10	INT346	0.0	1.0	6/6/2016	Total 139 PCB cong (excl non-detects)	1.00	
19-1	S-16U-INT346-00-10-REP	INT346	0.0	1.0	6/6/2016	Total 139 PCB cong (excl non-detects)	1.40	
19-1	S-16U-INT346-10-20	INT346	1.0	2.0	6/6/2016	Total 139 PCB cong (excl non-detects)	0.051	
19-1	S-16U-INT346-10-20-REP	INT346	1.0	2.0	6/6/2016	Total 139 PCB cong (excl non-detects)	0.011	
19-1	S-16U-INT347-00-10	INT347	0.0	1.0	6/6/2016	Total 139 PCB cong (excl non-detects)	3.00	
19-1	S-16U-INT347-10-20	INT347	1.0	2.0	6/6/2016	Total 139 PCB cong (excl non-detects)	0.008	
19-1	S-0164-1	S-164	0.0	1.0	9/13/1999	Total 18 NOAA PCB cong (excl non-detects)	17.2	
19-1	S-0164-2	S-164	1.0	2.0	9/13/1999	Total 18 NOAA PCB cong (excl non-detects)	1.27	
19-1	S-0164-2DUP	S-164	1.0	2.0	9/13/1999	Total PCB Congeners (sum CONG x factor)	2.20	
19-1	S-0165-1	S-165	0.0	1.0	9/13/1999	Total 18 NOAA PCB cong (excl non-detects)	231	
19-1	S-0165-2	S-165	1.0	2.0	9/13/1999	Total 18 NOAA PCB cong (excl non-detects)	62.4	
19-1	S-0166-1	S-166	0.0	1.0	9/13/1999	Total 18 NOAA PCB cong (excl non-detects)	0.065	
19-1	S-0166-2	S-166	1.0	2.0	9/13/1999	Total 18 NOAA PCB cong (excl non-detects)	0.044	
19-1	S-3794-0.0-1.0	S-3794	0.0	1.0	10/12/2001	Total 18 NOAA PCB cong (excl non-detects)	4.68	
19-1	S-3795-3.0-4.0	S-3795	3.0	4.0	10/12/2001	Total 18 NOAA PCB cong (excl non-detects)	0.39	
19-1	S-3796-0.0-1.0	S-3796	0.0	1.0	10/12/2001	Total 18 NOAA PCB cong (excl non-detects)	67.6	
19-1	S-3796-1.0-2.0	S-3796	1.0	2.0	10/12/2001	Total 18 NOAA PCB cong (excl non-detects)	0.81	
19-1	S-0820-1	S-820	0.0	1.0	10/6/2000	Total 18 NOAA PCB cong (excl non-detects)	3.90	
19-1	S-0820-2	S-820	1.0	2.0	10/6/2000	Total 18 NOAA PCB cong (excl non-detects)	0.00	U

Notes:

Pre-excavation confirmatory congener samples are highlighted green.

D - reported value is from a dilution; J - estimated value; U - not detected.

Total 18 NOAA PCB congeners multiplied by a factor of 2.6.

Table 3-1a
Compliance Survey Control Table for East Zone 5 Parcel 20-326

Parcel	Station ID	Location	Easting	Northing	Design Elevation	Post-Excavation Elevation	Δ (ft)
			MA State Plane ft, NAD83		NAVD88 ft		
20-326	ES502	Floor	816793.6	2702390.5	1.0	TBD	TBD
20-326	ES519	Floor	816579.9	2702105.7	1.2	TBD	TBD
20-326	S-3778	Floor	816731.0	2702343.0	0.7	TBD	TBD
20-326	S-3781	Floor	816762.0	2702426.0	1.4	TBD	TBD
20-326	ES550	Sidewall	816596.7	2702099.6	0.9	TBD	TBD
20-326	ES551	Sidewall	816777.1	2702392.1	1.3	TBD	TBD
20-326	S-3776	Sidewall	816752.0	2702294.0	-0.8	TBD	TBD
20-326	S-3780	Sidewall	816772.0	2702451.0	1.6	TBD	TBD
20-326	S-800	Sidewall	816702.0	2702398.0	1.3	TBD	TBD

Notes:

Elevation measurements at sidewall locations will be taken at the base of the sidewall (bottom of the excavation).

Locations ES550 and ES551 are compliance survey locations only (no associated PCB sample data).

MA - Massachusetts; NAD83 - North American Datum 1983; NAVD88 - North American Vertical Datum 1988; ft - feet; TBD - to be determined.

Δ - difference between post-excavation elevation and design elevation.

Table 3-1b
Compliance Survey Control Table for East Zone 5 Parcel 20-23

Parcel	Station ID	Location	Easting	Northing	Design Elevation	Post-Excavation Elevation	Δ (ft)
			MA State Plane ft, NAD83	NAVD88 ft			
20-23	ES501	Floor	816799.7	2702400.7	-2.3	TBD	TBD
20-23	ES544	Floor	816848.0	2702212.3	0.1	TBD	TBD
20-23	INT332	Floor	816888.2	2702240.7	1.5	TBD	TBD
20-23	S-153	Floor	816867.0	2702302.0	0.8	TBD	TBD
20-23	S-3786	Floor	816828.0	2702362.0	-1.0	TBD	TBD
20-23	S-801	Floor	816784.0	2702452.0	1.5	TBD	TBD
20-23	ES575	Floor	816906.3	2702295.6	4.9	TBD	TBD
20-23	ES553	Sidewall	816812.7	2702435.6	2.1	TBD	TBD
20-23	ES554	Sidewall	816856.1	2702339.6	1.2	TBD	TBD
20-23	ES555	Sidewall	816915.6	2702268.6	5.8	TBD	TBD
20-23	ES556	Sidewall	816835.2	2702235.7	-1.1	TBD	TBD
20-23	ES557	Sidewall	816836.0	2702347.8	-0.3	TBD	TBD

Notes:

Elevation measurements at sidewall locations will be taken at the base of the sidewall (bottom of the excavation).

Locations ES553 through ES557 are compliance survey locations only (no associated PCB sample data).

MA - Massachusetts; NAD83 - North American Datum 1983; NAVD88 - North American Vertical Datum 1988; ft - feet; TBD - to be determined.

Δ - difference between post-excavation elevation and design elevation.

Table 3-1c
Compliance Survey Control Table for East Zone 5 Parcel 20-24

Parcel	Station ID	Location	Easting	Northing	Design Elevation	Post-Excavation Elevation	Δ (ft)
			MA State Plane ft, NAD83		NAVD88 ft		
20-24	ES513	Floor	816837.0	2702174.4	-0.8	TBD	TBD
20-24	ES516	Floor	816812.9	2702135.0	-0.6	TBD	TBD
20-24	ES545	Sidewall	816867.2	2702173.4	0.7	TBD	TBD
20-24	ES558	Sidewall	816819.2	2702121.5	-1.2	TBD	TBD
20-24	ES559	Sidewall	816820.0	2702178.2	-1.0	TBD	TBD

Notes:

Elevation measurements at sidewall locations will be taken at the base of the sidewall (bottom of the excavation).

Locations ES558 and ES559 are compliance survey locations only (no associated PCB sample data).

MA - Massachusetts; NAD83 - North American Datum 1983; NAVD88 - North American Vertical Datum 1988; ft - feet; TBD - to be determined.

Δ - difference between post-excavation elevation and design elevation.

Table 3-1d
Compliance Survey Control Table for East Zone 5 Parcel 20-33

Parcel	Station ID	Location	Easting	Northing	Design Elevation	Post-Excavation Elevation	Δ (ft)
			MA State Plane ft, NAD83		NAVD88 ft		
20-33	S-3565	Floor	816905.0	2702119.0	-0.9	TBD	TBD
20-33	ES560	Sidewall	816927.9	2702123.2	1.2	TBD	TBD
20-33	ES561	Sidewall	816879.1	2702116.5	-1.8	TBD	TBD

Notes:

Elevation measurements at sidewall locations will be taken at the base of the sidewall (bottom of the excavation).

Locations ES560 and ES561 are compliance survey locations only (no associated PCB sample data).

MA - Massachusetts; NAD83 - North American Datum 1983; NAVD88 - North American Vertical Datum 1988; ft - feet; TBD - to be determined.

Δ - difference between post-excavation elevation and design elevation.

Table 3-1e
Compliance Survey Control Table for East Zone 5 Parcel 20-30

Parcel	Station ID	Location	Easting	Northing	Design Elevation	Post-Excavation Elevation	Δ (ft)
			MA State Plane ft, NAD83		NAVD88 ft		
20-30	ES521	Floor	816828.1	2702086.9	-0.7	TBD	TBD
20-30	ES523	Floor	816790.0	2702075.7	-1.0	TBD	TBD
20-30	ES562	Sidewall	816814.4	2702094.0	-1.8	TBD	TBD

Notes:

Elevation measurements at sidewall locations will be taken at the base of the sidewall (bottom of the excavation).

Location ES562 is a compliance survey location only (no associated PCB sample data).

MA - Massachusetts; NAD83 - North American Datum 1983; NAVD88 - North American Vertical Datum 1988; ft - feet; TBD - to be determined.

Δ - difference between post-excavation elevation and design elevation.

Table 3-1f
Compliance Survey Control Table for East Zone 5 Parcel 20-29

Parcel	Station ID	Location	Easting	Northing	Design Elevation	Post-Excavation Elevation	Δ (ft)
			MA State Plane ft, NAD83	NAVD88 ft			
20-29	INT133	Floor	816746.2	2702061.6	-1.3	TBD	TBD
20-29	S-158	Floor	816680.0	2702000.0	-1.1	TBD	TBD
20-29	S-162	Floor	816615.0	2701904.0	-1.4	TBD	TBD
20-29	ES576	Floor	816634.8	2701950.3	-3.4	TBD	TBD
20-29	ES564	Sidewall	816724.7	2702055.1	-1.7	TBD	TBD
20-29	ES565	Sidewall	816661.1	2701997.4	-1.8	TBD	TBD
20-29	ES566	Sidewall	816614.7	2701935.4	-1.4	TBD	TBD

Notes:

Elevation measurements at sidewall locations will be taken at the base of the sidewall (bottom of the excavation).

Locations ES564 through ES566 are compliance survey locations only (no associated PCB sample data).

MA - Massachusetts; NAD83 - North American Datum 1983; NAVD88 - North American Vertical Datum 1988; ft - feet; TBD - to be determined.

Δ - difference between post-excavation elevation and design elevation.

Table 3-1g
Compliance Survey Control Table for East Zone 5 Parcel 19-1 and ROW

Parcel	Station ID	Location	Easting	Northing	Design Elevation	Post-Excavation Elevation	Δ (ft)
			MA State Plane ft, NAD83		NAVD88 ft		
ROW	ES547	Floor	816509.7	2701892.1	-1.1	TBD	TBD
ROW	INT140	Floor	816580.2	2701847.2	-0.1	TBD	TBD
ROW	S-508	Floor	816648.0	2701720.0	1.7	TBD	TBD
ROW	ES577	Floor	816636.0	2701752.7	-0.5	TBD	TBD
ROW	ES567	Sidewall	816496.6	2701887.1	-1.6	TBD	TBD
ROW	ES568	Sidewall	816521.6	2701889.3	-1.2	TBD	TBD
ROW	ES569	Sidewall	816573.6	2701872.1	-1.5	TBD	TBD
ROW	ES570	Sidewall	816628.6	2701869.9	4.2	TBD	TBD
ROW	ES573	Sidewall	816654.4	2701780.4	3.4	TBD	TBD
19-1	ES536	Floor	816601.0	2701800.9	0.3	TBD	TBD
19-1	INT347	Floor	816553.7	2701762.2	1.4	TBD	TBD
19-1	S-164	Floor	816500.0	2701800.0	-0.3	TBD	TBD
19-1	S-3796	Floor	816601.0	2701734.0	1.2	TBD	TBD
19-1	ES571	Sidewall	816480.5	2701806.0	-2.1	TBD	TBD
19-1	ES572	Sidewall	816545.5	2701739.6	1.0	TBD	TBD
19-1	ES574	Sidewall	816633.9	2701693.5	3.2	TBD	TBD

Notes:

Elevation measurements at sidewall locations will be taken at the base of the sidewall (bottom of the excavation).

Locations ES567 through ES574 are compliance survey locations only (no associated PCB sample data).

MA - Massachusetts; NAD83 - North American Datum 1983; NAVD88 - North American Vertical Datum 1988; ft - feet; TBD - to be determined.

Δ - difference between post-excavation elevation and design elevation.

Table 7-1a
Proposed Restoration Acreages by Cover Type for Parcel 20-326

Habitat Type	Existing Pre-Construction Area [acres]	Proposed Area of Restoration [acres]
Phragmites	0.004	0.000
High Marsh	0.045	0.049
Low Marsh	0.049	0.045
Stream	0.000	0.004
TOTAL	0.099	0.099

Table 7-1b
Proposed Restoration Acreages by Cover Type for Parcel 20-23

Habitat Type	Existing Pre-Construction Area [acres]	Proposed Area of Restoration [acres]
Phragmites	0.102	0.000
High Marsh	0.022	0.091
Low Marsh	0.094	0.094
Minimal Backfill as Needed for Drainage or Slope Stability	0.024	0.024
Upland	0.011	0.045
TOTAL	0.255	0.255

Table 7-1c
Proposed Restoration Acreages by Cover Type for Parcel 20-24

Habitat Type	Existing Pre-Construction Area [acres]	Proposed Area of Restoration [acres]
Low Marsh	0.081	0.091
High Marsh	0.010	0.000
Minimal Backfill as Needed for Drainage or Slope Stability	0.008	0.008
TOTAL	0.100	0.099

Table 7-1d
Proposed Restoration Acreages by Cover Type for Parcel 20-33

Habitat Type	Existing Pre-Construction Area [acres]	Proposed Area of Restoration [acres]
Low Marsh	0.004	0.004
Minimal Backfill as Needed for Drainage or Slope Stability	0.004	0.004
TOTAL	0.008	0.008

Table 7-1e
Proposed Restoration Acreages by Cover Type for Parcel 20-30

Habitat Type	Existing Pre-Construction Area [acres]	Proposed Area of Restoration [acres]
Low Marsh	0.029	0.029
Mudflat/subtidal	0.001	0.001
TOTAL	0.030	0.030

Table 7-1f
Proposed Restoration Acreages by Cover Type for Parcel 20-29

Habitat Type	Existing Pre-Construction Area [acres]	Proposed Area of Restoration [acres]
Low Marsh	0.096	0.096
TOTAL	0.096	0.096

Table 7-1g
Proposed Restoration Acreages by Cover Type for Parcel 19-1 and ROW

Habitat Type	Existing Pre-Construction Area [acres]	Proposed Area of Restoration [acres]
Phragmites	0.125	0.000
High Marsh	0.216	0.253
Low Marsh	0.182	0.169
Minimal Backfill as Needed for Drainage or Slope Stability	0.009	0.009
Upland	0.000	0.101
TOTAL	0.532	0.532

Table 7-2
Parcel 20-29 Shrub Restoration Summary

Scientific Name	Common Name	On-Center Spacing Requirements (inches)	Number of Proposed Plants	Shrub Restoration Area
<i>Juniperus virginiana</i>	eastern red cedar	36"	3	Area 1
Total Proposed Trees/Shrubs for Parcel 20-29			3	

Appendix A

East Zone 5 Pre-Excavation Tree and Shrub Inventories

Subject	East Zone 5 Native Tree and Shrub Inventory	Project Name	New Bedford Harbor Superfund Site
Attention	Marie Esten USACE	Project No.	35BG2000
From	Jessica Rebholz/Kim Degutis	Document Control No.	ACE-J23-35BG6000-M1-0056
Date	1 September 2019		

Attachments: Figure 1 East Zone 5 Pre-Excavation Tree and Shrub Inventory, Tables 3-1 and 3-2 (inventory results)

1.0 Background

Jacobs conducted an inventory of existing trees and shrubs on East Zone 5 in the intertidal remediation area (Figure 1) on 12 December 2018. The purpose of the inventory was to identify existing trees and shrubs that would be removed in association with site remediation activities, including construction of the gravel access road, laydown area, and areas of excavation associated with contaminated sediment and soil removal. The information collected from this inventory is intended to be used to inform selection of proposed native woody species for future restoration plantings.

2.0 Methods

For the purposes of the inventory, trees were defined as any nonclimbing, woody plant that had at least one erect perennial stem (trunk) with a diameter at breast height (DBH) of 3.0 inches or greater, regardless of height. Jacobs' wetland biologists walked the planned remediation portions of East Zone 5 and identified all trees within the proposed excavation area and proposed access road. Tree locations were recorded using a Trimble Geo 7X GPS, capable of sub-meter accuracy.

For the purposes of the inventory, shrubs were defined as any nonclimbing, woody plant with a DBH less than 3.0 inches. Shrubs were inventoried according to dominant shrub types that appeared to constitute similar species diversity and percent areal cover.

3.0 Results

Eastern red cedar (*Juniperus virginiana*) is the dominant tree within East Zone 5. The majority of the trees identified on-site are considered native and non-invasive. A list of the trees identified is provided in Table 3-1. For each species, the number of individual trees noted was calculated as an indication of the relative dominance of the species on-site. A total of 6 trees were identified.

One shrub area was inventoried within East Zone 5 (Table 3-2) and was comprised of eastern red cedar, a native, non-invasive species.

The area where shrubs were identified and inventoried is identified on Figure 1. Shrubs were classified by genus and species. Table 3-2 also identifies whether the shrub occurred in upland or wetland, as well as any notes regarding specific species.

4.0 Conclusion

The species makeup of East Zone 5 is comprised almost entirely of native, non-invasive trees and shrubs, with eastern red cedar (*Juniperus virginiana*) being the dominant tree and shrub.



Legend

- Eastern red cedar
- 0-1' Excavation Depth
- ▲ Cultivated apple
- Parcel Boundary
- MLLW
- MHHW
- ~~~~ Proposed Access Road

0 50 100
Feet

September 2019



Basemap Data Source:
CEI, MassGIS

Vertical Datum:
NAVD88

East Zone 5
Pre-Excavation Tree and Shrub Inventory
New Bedford Harbor Superfund Site

JACOBS

Figure 1

Table 3-1
Existing Tree Inventory for East Zone 5

Scientific Name	Common Name	Tree Count (≥3" DBH)	Invasive ¹	Native/Non-Native ²
<i>Juniperus virginiana</i>	eastern red cedar	5	no	native, county documented
<i>Malus pumila</i>	cultivated apple	1	yes	non-native, state documented
	Total	6		

¹According to “The Evaluation of Non-Native Plant Species for Invasiveness in Massachusetts”:

<https://www.mass.gov/files/documents/2016/08/tm/invasive-plantlist.pdf>

²New England Wildflower Society. 2011. Go Botany, 12 April 2018 (<https://gobotany.newenglandwild.org/>). New England Wildflower Society, Framingham, MA

Table 3-2
Existing Shrub Cover for East Zone 5

Scientific Name	Common Name	Percent Areal Cover	Invasive ¹	Native/Non-Native ²	Upland/Wetland
<i>Juniperus virginiana</i>	eastern red cedar	10%	no	native, county documented	upland

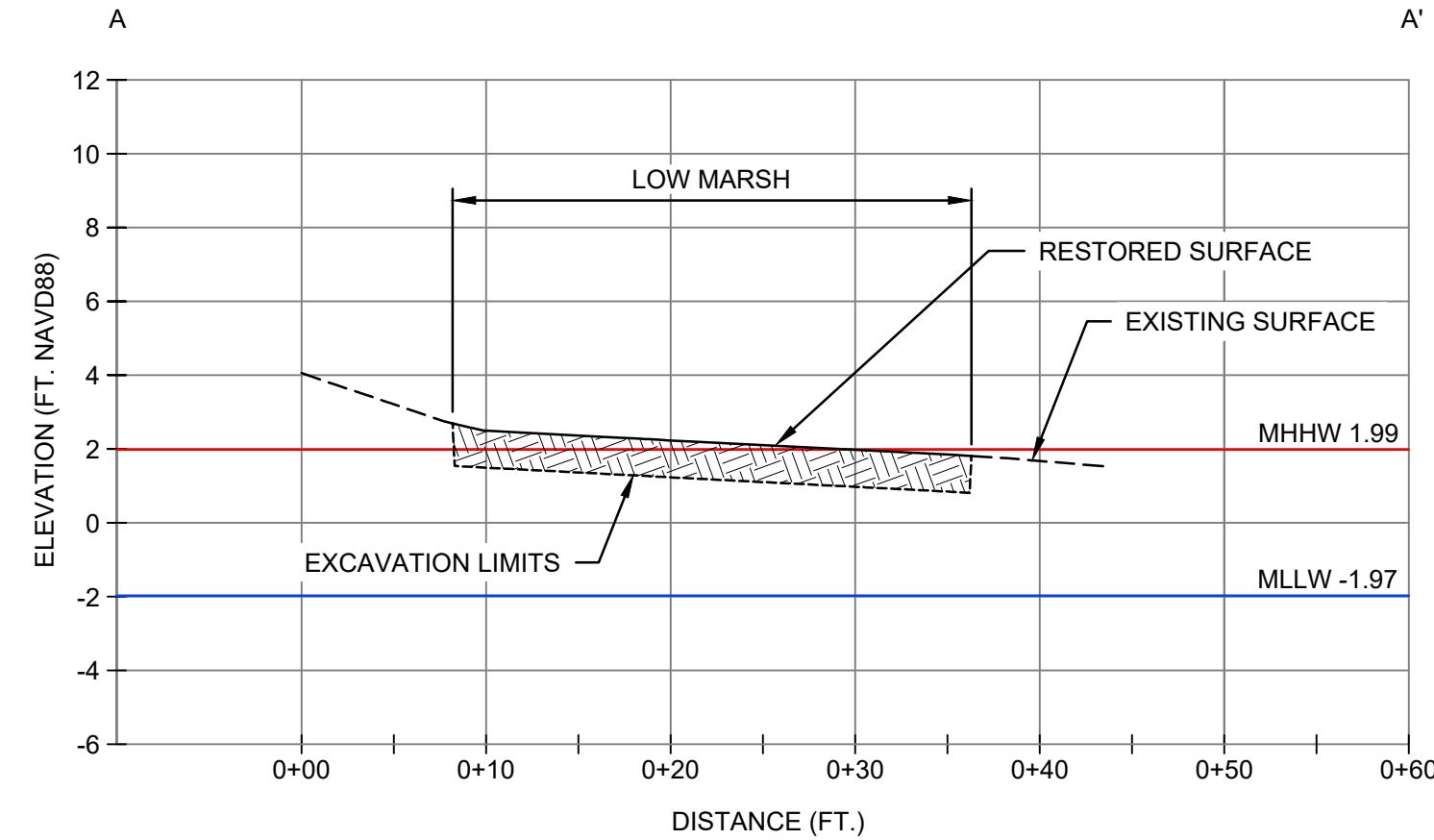
¹According to "The Evaluation of Non-Native Plant Species for Invasiveness in Massachusetts": <https://www.mass.gov/files/documents/2016/08/tm/invasive-plantlist.pdf>

²New England Wildflower Society. 2011. Go Botany, 12 April 2018 (<https://gobotany.newenglandwild.org/>). New England Wildflower Society, Framingham, MA

Appendix B

Cross Sections

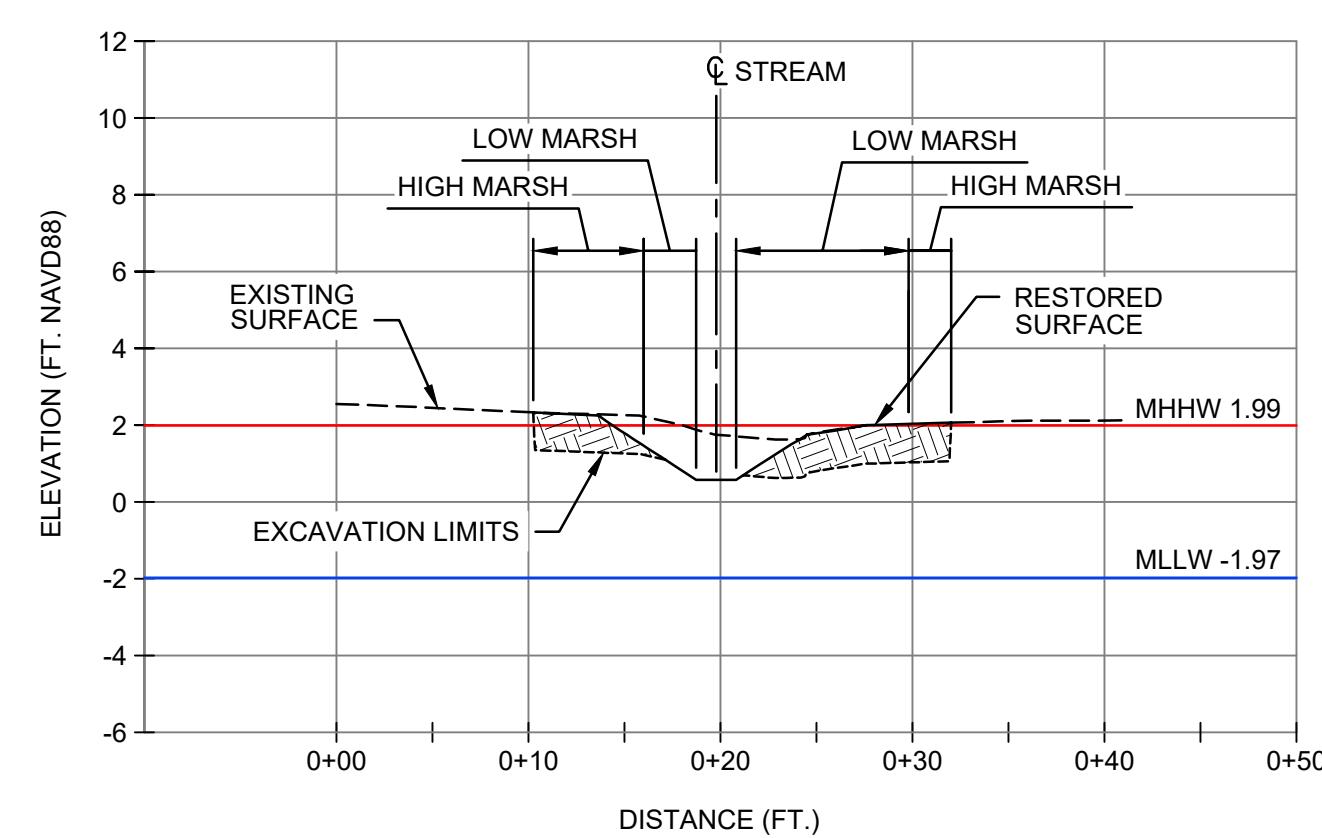
CREATED: 9/8/2019 LAST SAVED: 9/8/2019 BY: ENGLANLL



LEGEND:

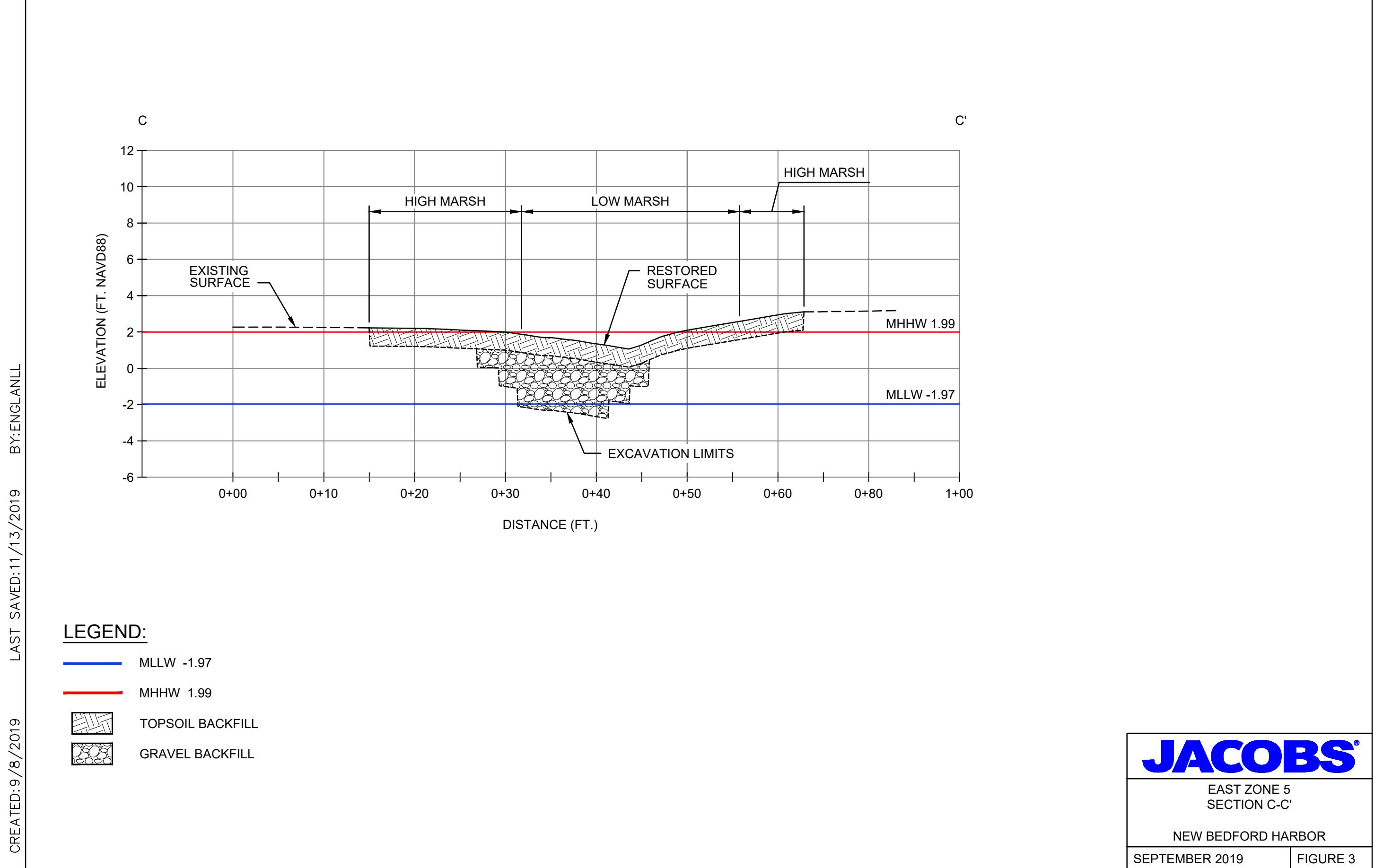
- MLLW -1.97 (Blue line)
- MHHW 1.99 (Red line)
- TOPSOIL BACKFILL (Hatched pattern)

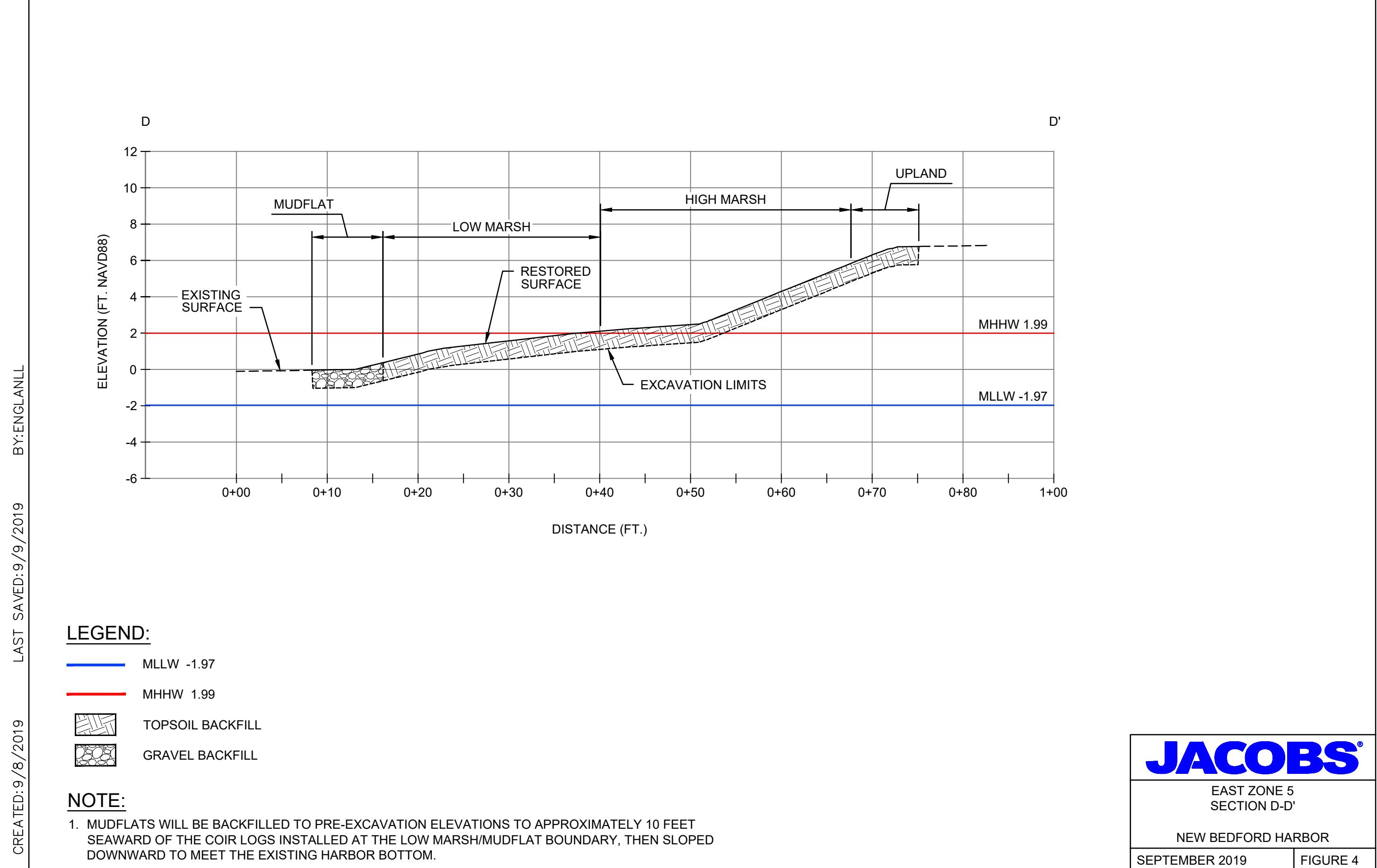
CREATED: 9/8/2019 LAST SAVED: 9/9/2019 BY: ENGLANLL

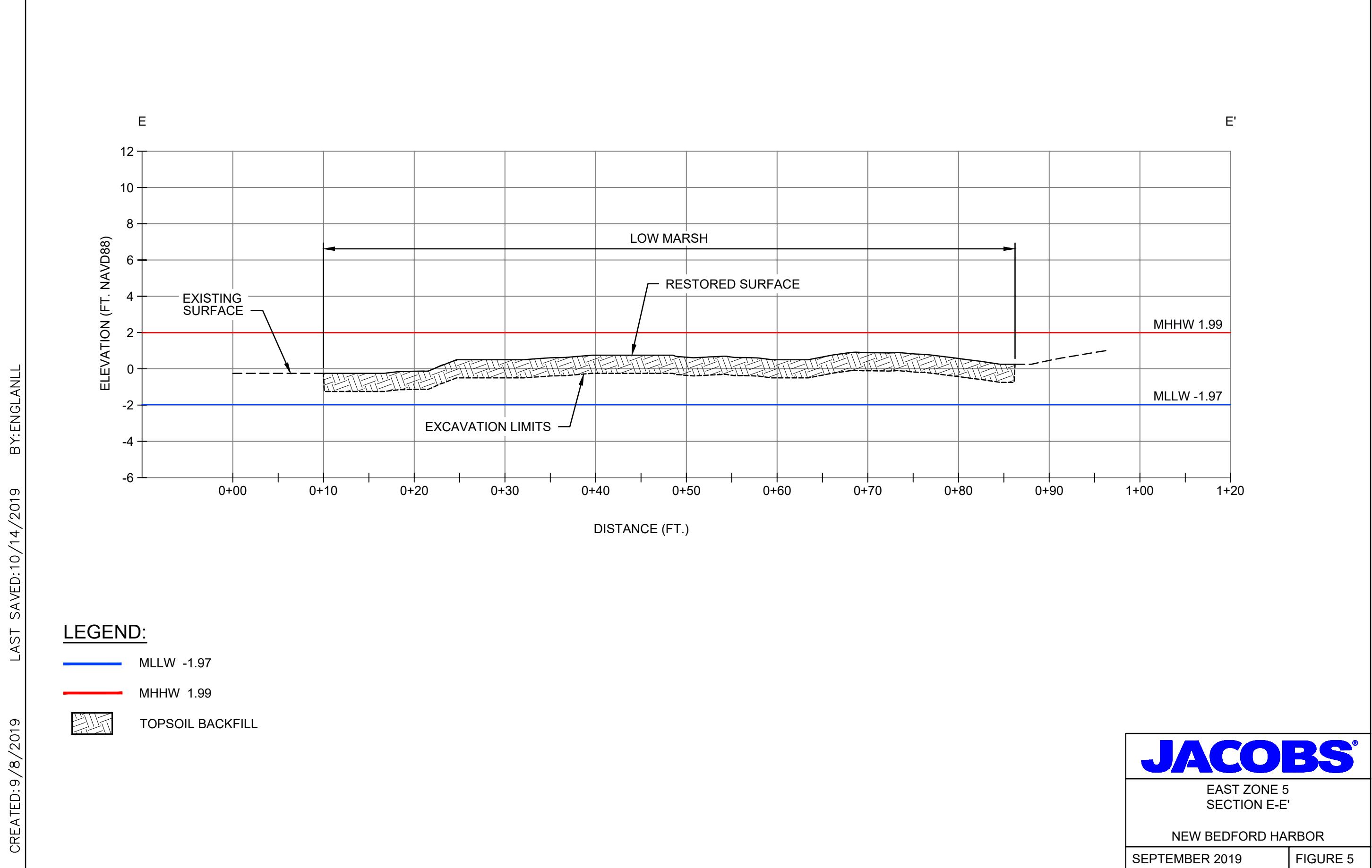


LEGEND:

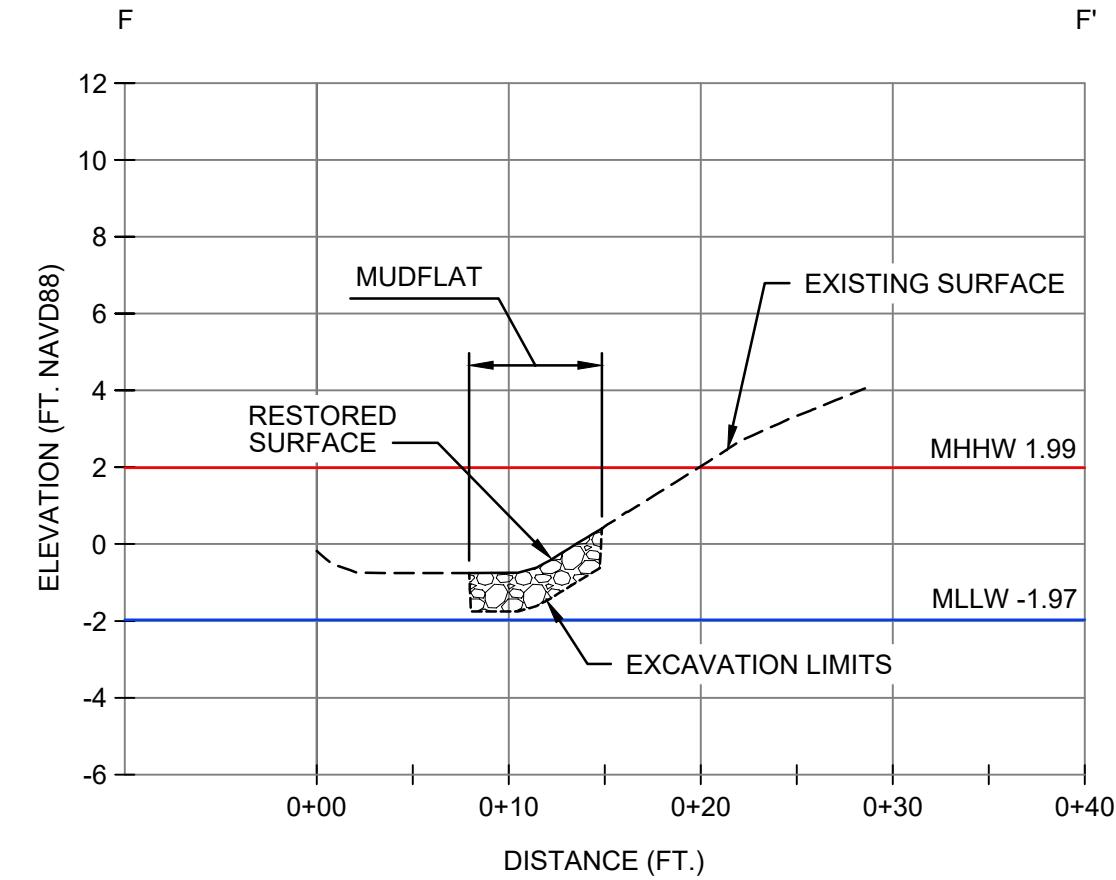
- MLLW -1.97
- MHHW 1.99
- TOPSOIL BACKFILL







CREATED: 9/8/2019 LAST SAVED: 9/9/2019 BY: ENGLANL



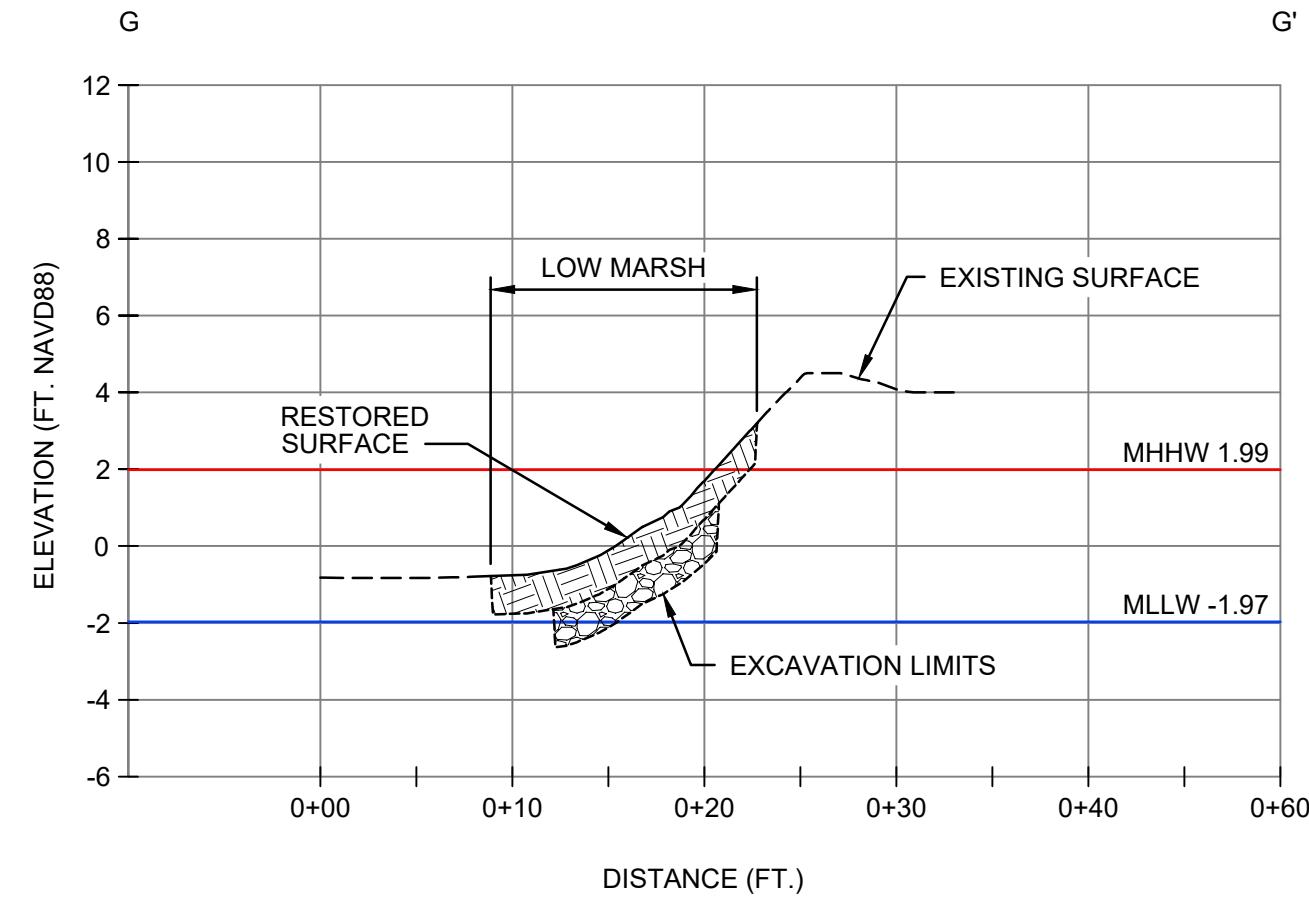
LEGEND:

- MLLW -1.97 (blue line)
- MHHW 1.99 (red line)
- GRAVEL BACKFILL (hatched square)

NOTE:

1. MUDFLATS WILL BE BACKFILLED TO PRE-EXCAVATION ELEVATIONS.

CREATED: 9/8/2019 LAST SAVED: 9/10/2019 BY: ENGLANLL



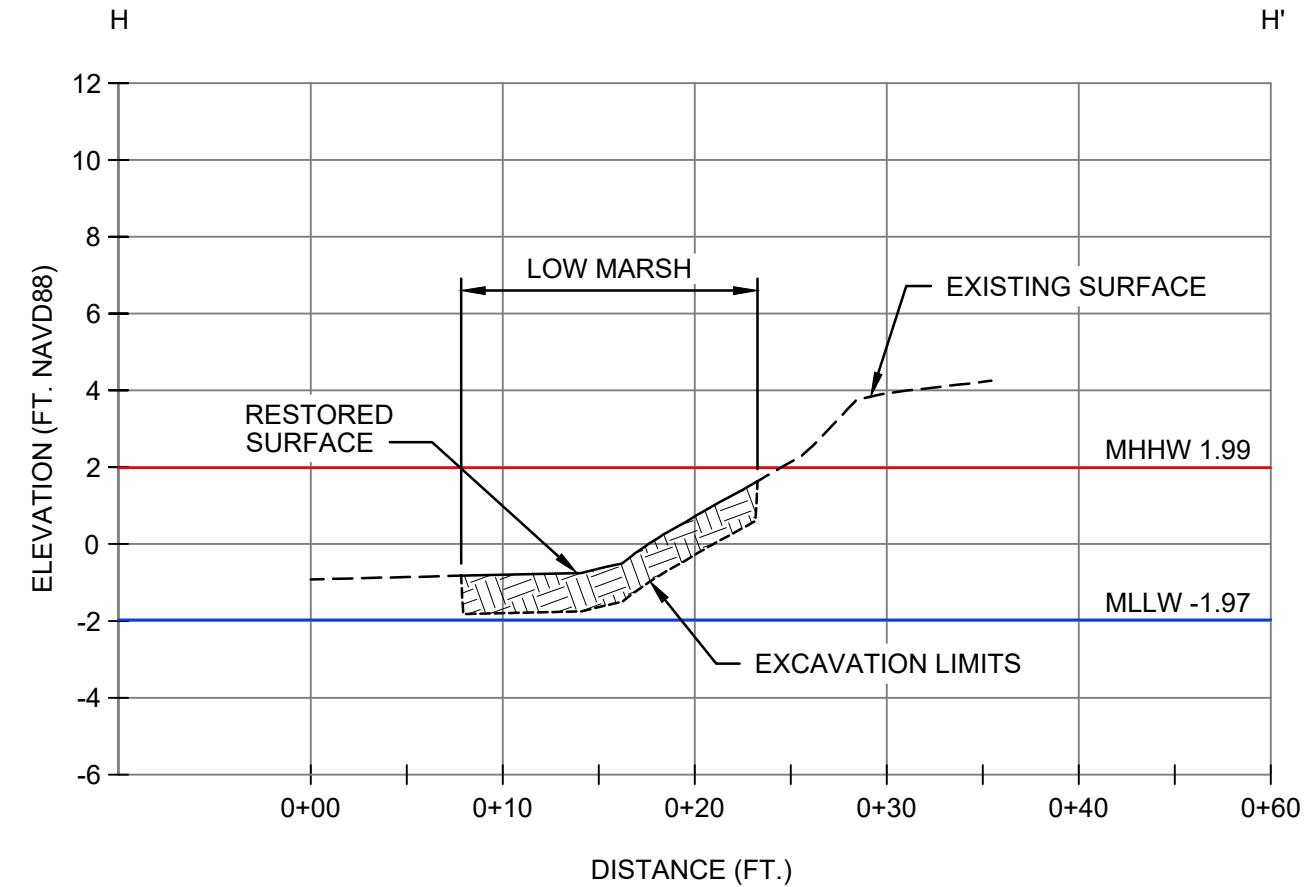
LEGEND:

- MLLW -1.97
- MHHW 1.99
- TOPSOIL BACKFILL
- GRAVEL BACKFILL

NOTE:

- COIR LOG WILL BE INSTALLED AT THE SEAWARD EDGE OF THE RESTORED LOW MARSH.

CREATED: 9/8/2019 LAST SAVED: 9/10/2019 BY: ENGLANLL

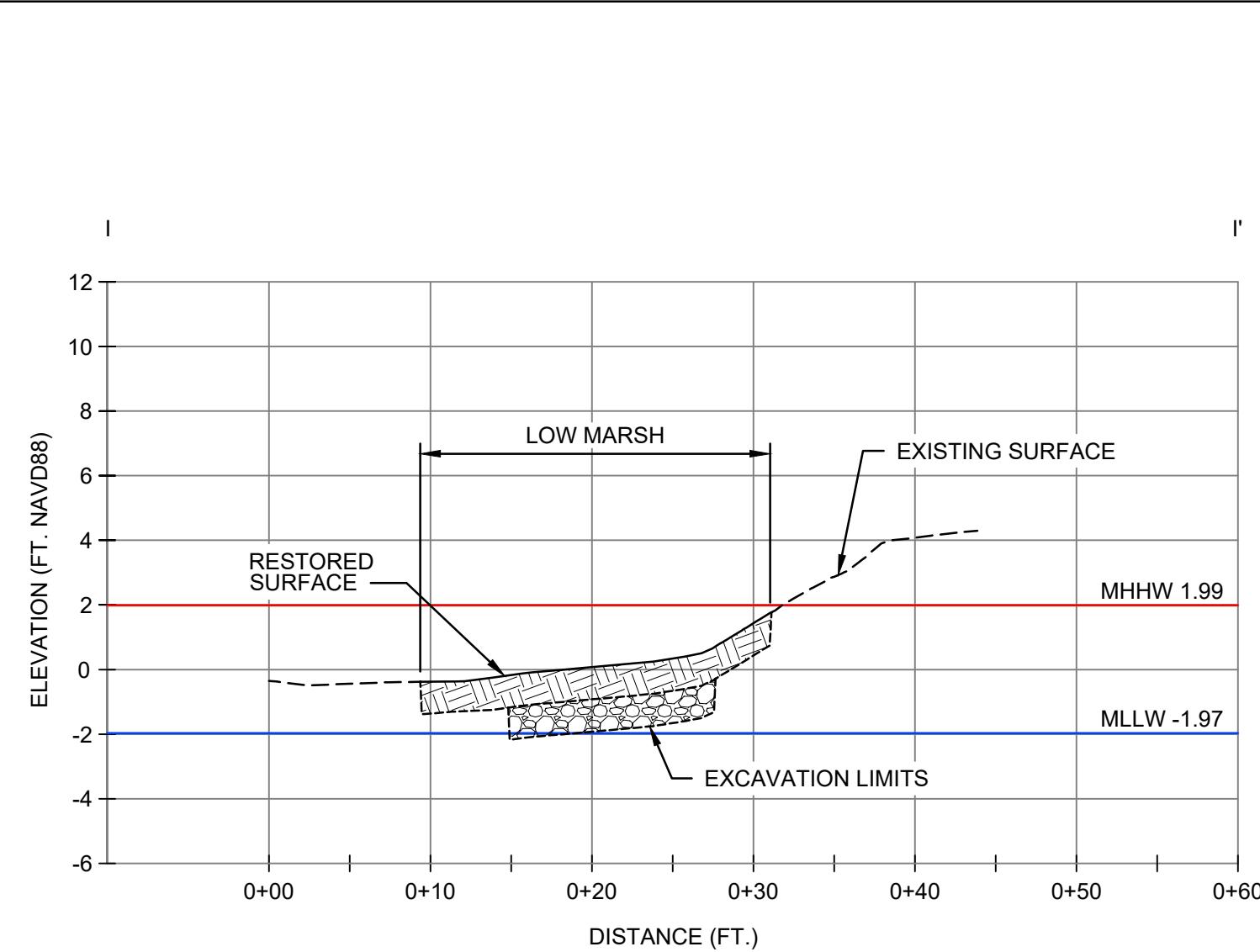


LEGEND:

- MLLW -1.97
- MHHW 1.99
- ▨ TOPSOIL BACKFILL

NOTE:

1. COIR LOG WILL BE INSTALLED AT THE SEAWARD EDGE OF THE RESTORED LOW MARSH.

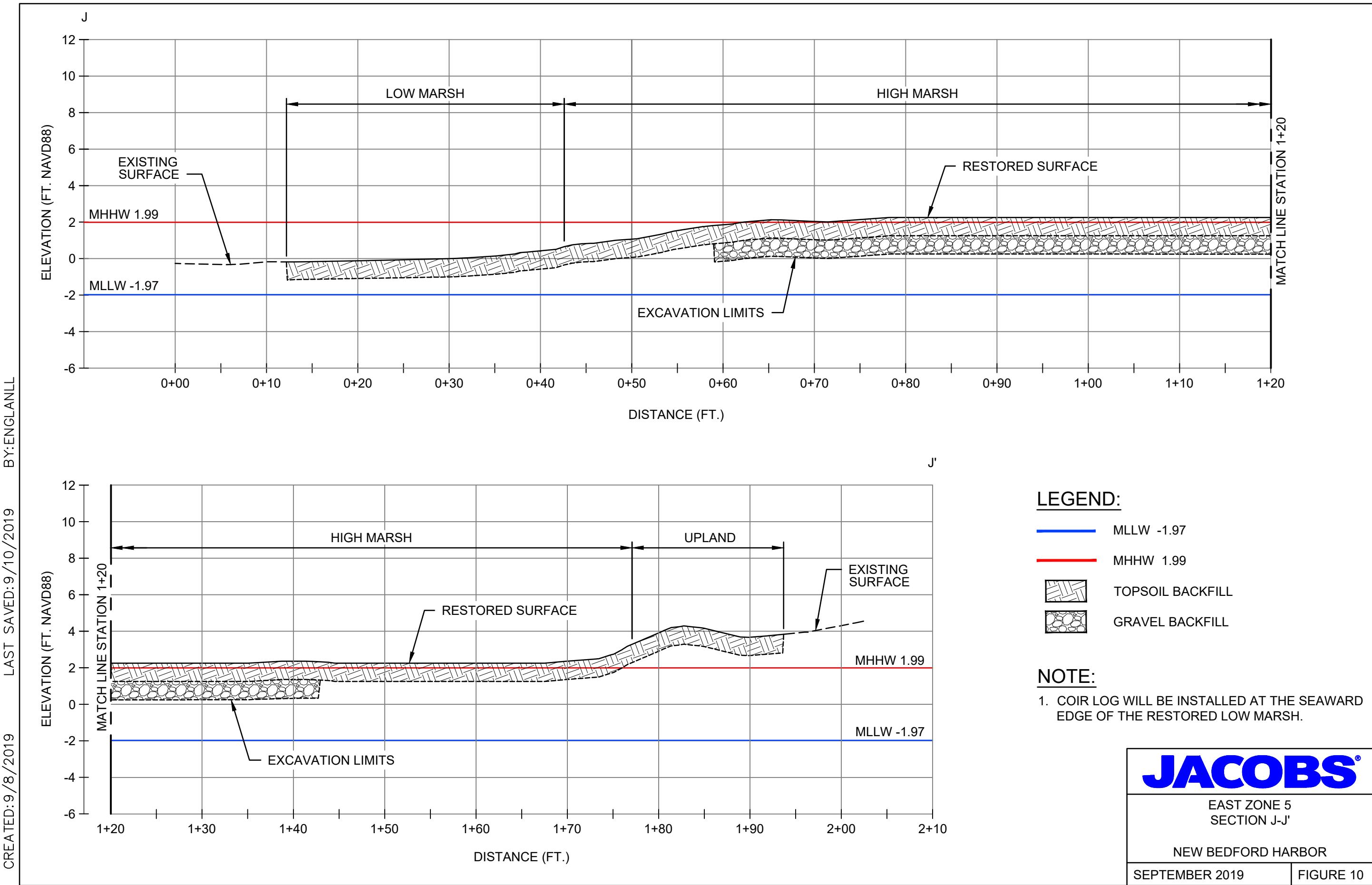


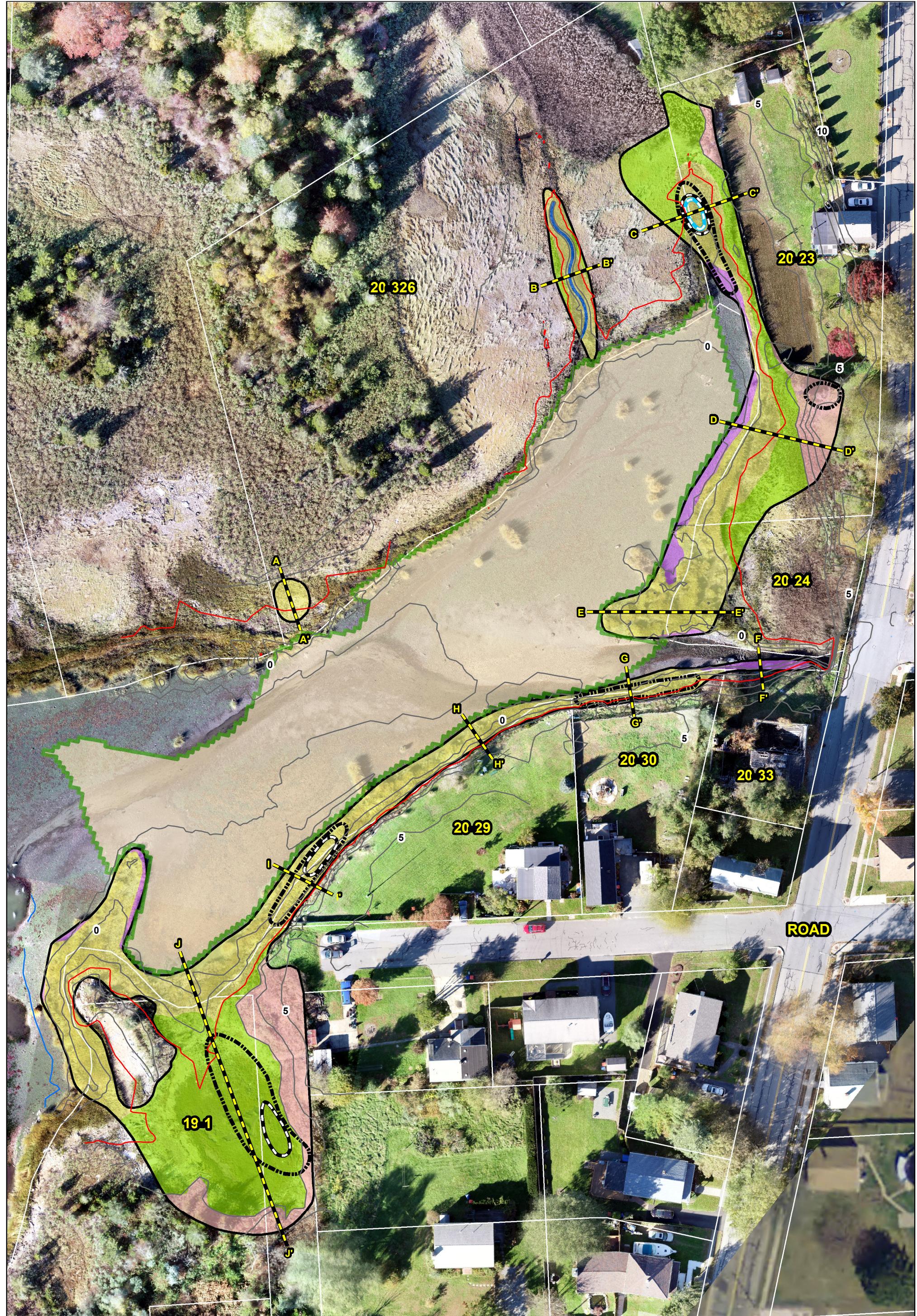
LEGEND:

- MLLW -1.97
- MHHW 1.99
- TOPSOIL BACKFILL
- GRAVEL BACKFILL

NOTE:

- COIR LOG WILL BE INSTALLED AT THE SEAWARD EDGE OF THE RESTORED LOW MARSH.





Legend

Mean Lower Low Water	1-2' Excavation Depth
1-foot Contour	2-3' Excavation Depth
Mean Higher High Water	3-4' Excavation Depth
Cross Section Locations	Parcel Boundary
0-1' Excavation Depth	Minimal Backfill as Needed for Drainage or Slope Stability

Proposed Stream
Proposed Upland
Proposed High Marsh
Proposed Low Marsh
Veranda Inlet

0 50 100
December 2019
Feet

Basemap Data Source:
CEI, MassGIS

Vertical Datum:
NAVD88

JACOBS

East Zone 5
Cross Section Locations
New Bedford Harbor Superfund Site

Figure 11

Appendix C

Schedule

(to be added at a later date)