New Bedford Harbor Superfund Site

U.S. Army Corps of Engineers New England District

Draft Final Intertidal Work Plan for East Zone 4

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September 2019

New Bedford Harbor Superfund Site

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Document history and status

Revision	Date	Description	By	Review	Approved

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Appendix

Acronyms and Abbreviations

cy	cubic yards
EPA	U.S. Environmental Protection Agency
ft	foot/feet
Generic Work Plan	Draft Final Generic Upper Harbor Intertidal Work Plan Revision 1
GPS	global positioning system
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
RTK	real time kinematic
sf	square feet
TCL	target cleanup level
TSCA	Toxic Substances Control Act

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1.0 Introduction

This work plan for East Zone 4 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 parcel-specific work plan provides additional detail and describes 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 TCL for sediment and soil in saltmarshes and shoreline areas with little or no public access is 50 milligrams per kilogram (mg/kg), which is a not-to-exceed value. The TCL for Upper Harbor mudflats and subtidal areas is 10 mg/kg, which must be attained as an average on an Upper Harbor-wide basis. Sediment and soil with PCB concentrations exceeding the TCLs will be removed and disposed 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 4 is located on the eastern shore of the Upper New Bedford Harbor in Fairhaven, MA. East Zone 4 consists of seven parcels (20-001, 20-323, 20-002, 20-324, 20-003, 20-325, and 20-004); portions of six of the parcels will be remediated. A site location map showing the East Zone 4 parcels and the limits of the planned excavations is provided in Figure 2-1.

The East Zone 4 parcels are comprised of undeveloped land vegetated with saltmarsh. Nine tidal channels that flow east to west with fringing low marsh are located in the western portions of the parcels. A major tidal channel runs north to south through parcels 20-324, 20-003, and 20-325 as shown on Figure 2-2. The parcels are bounded to the north and east by Parcel 20-005, and to the west and south by Upper New Bedford Harbor.

The existing wetland vegetation was surveyed by Jacobs in 2017. The mapped survey results and the outlines of the excavation areas are shown in Figure 2-2. The excavation areas include tidal channels, low marsh, and high marsh. Sediment and soil samples collected during the site investigation/characterization phase were analyzed for total PCBs. The analytical results summarized in Table 2-1 were used to support remediation planning. The sample locations used to delineate the extent of PCB contamination within East Zone 2 are shown in Figures 2-3a and 2-3b.

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 an access agreement 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/containment cell areas, and temporary access roads is provided as Figure 3-1. The dimensions and final locations of the staging area and access roads may be altered based on field conditions to minimize potential impacts to the saltmarsh and upland areas. If possible, the finger roads shown bordering each excavation area will be eliminated. As described in the Generic Work Plan, the access road will be constructed using a layer of geotextile fabric covered by either 12 inches of dense-grade aggregate or construction mats.

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 when possible during construction. A native tree and shrub inventory for East Zone 4 is included as 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.

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 3-2c. The cut depth, areal extent of contamination and pre-excavation surface elevations for contaminant removal areas are shown in Figure 3-2a for the northern portion, Figure 3-2b for the central portion, and Figure 3-2c for the southern portion of East Zone 4. The total area to be excavated is approximately 92,322 square feet (sf) and has a corresponding volume of 3,489 cubic yards (cy). All excavation areas are in low and high marsh with no planned removal of mudflat sediments.[1] The amphibious excavator will remove contaminated sediment in the saltmarsh areas. Following excavation, the area will be smoothed with the excavator as needed to create an even surface prior to placement of backfill.

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.

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 excavations achieved the horizontal and vertical design limits. The PECC sample locations shown in Figures 2-3a and 2-3b include excavation sidewall and floor locations where PCB congener concentrations were previously determined to be below the TCL. PECC sample results are highlighted in Table 2-1.

[1] Mudflat sediments requiring removal in East Zone 4 have been incorporated into the subtidal dredge prism design for Veranda Inlet.

Compliance survey locations are spaced at approximate 100-foot (ft) intervals along the excavation sidewalls and in an approximate 100-ft grid pattern on the excavation floors as shown in Figures 3-3a and 3-3b. 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. Table 3-1 provides a survey control table 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 excavations will not be backfilled until they are confirmed as being below TCLs. Confirmatory samples will be analyzed for PCB congeners with a 5-day turnaround time for the analysis.

4.0 Backfill

Upon verification that compliance with the TCL 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 2019b). 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 areas. 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	2 months
Restoration	2.5 months
After Action Report	3 months

6.0 Air Monitoring

The evaluation of existing PCB congener data (Table 2-1) indicates that the maximum concentration at East Zone 4 is 2,444 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 and discourage the re-establishment of invasive species. A pre-construction tree and shrub inventory of plants within the excavation and access road areas is included in Appendix A. Restored vegetation types within the remediation area are shown in plan view in Figure 7-1. 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 acreage of each cover type is provided in Table 7-1. Plantings notes are included in Figure 7-1.

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. Salt grass plants will be obtained from a nursery that can provide plugs grown from a Northeastern U.S. genotype seed stock.

The temporary access roads (i.e., geotextile and dense-grade aggregate or construction mats) will be removed and the underlying areas will be restored to pre-existing conditions. The access roads are expected to compact saltmarsh soils to some degree. Details regarding access road restoration measures will be determined in the field based on the amount of soil compaction and vegetation impacts observed. Areas with relatively minor impacts (i.e., no more than about 4 inches of soil compaction) may be allowed to recover naturally or may require only localized spot restoration. Areas with more significant impacts (i.e., more than about 4 inches of soil compaction) may require backfilling to grade with topsoil and replanting with appropriate saltmarsh species. Access road restoration may lag behind access road removal by several days to allow for rebound prior to restoration. Restored access roads will be included in the saltmarsh restoration monitoring program described in Section 8.1 of the Generic Work Plan. Figure 7-3 is a conceptual drawing of potential access road restoration measures.

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.

At the conclusion of all restoration activities, final vegetation and topographic surveys will be conducted to document the as-built elevation and vegetative cover conditions. The After Action Report for this parcel will include these surveys, including the cross-section drawings in Appendix B with updated elevations. In addition, Table 3-1 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 (May). *Draft Final Generic Upper Harbor Intertidal Work Plan Revision 1*. ACE J23 35BG2000 M1-0109.

——— 2019b (January). *Draft Final Topsoil Acceptance Plan*. ACE J23 35BG2000 M1-0076.

——— 2018a (April). *New Bedford Harbor Superfund Site 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

20-001

20-323

20-002

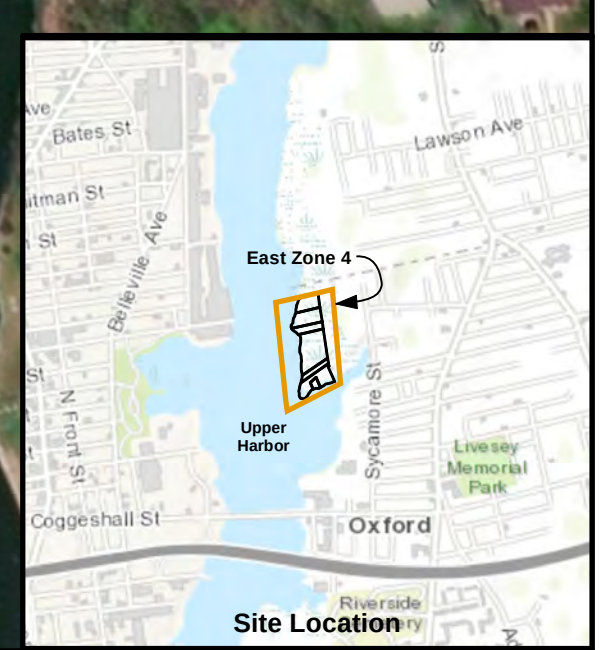
20-324

20-003

20-325

20-004

New Bedford Harbor



Legend

- Proposed Limits of Excavation
- Parcel Boundary
- East Zone 4 Management Area

Basemap Data Source: MassGIS, ESRI

Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

0 150 300 Feet

Sources: Esri, HERE, DeLorme, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo,

Intertidal East Zone 4
Site Location and Features

New Bedford Harbor Superfund Site

August 2019 **Figure 2-1**

Path: C:\Users\scottga\Documents\NBH\35BG100120180901_Intertidal\EZ4\ArcGIS\WP_Figures\Fig 2-1 EZ4_WP_Site_Location_20190813.mxd

Notes:

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

20-001

20-323

20-002

20-324

20-003

20-004

20-325

0

0

0

Legend

- 0-1' Excavation Depth
- 1-2' Excavation Depth
- 1-foot Contour
- Mean Lower Low Water
- Mean Higher High Water
- Parcel Boundary
- High Marsh
- Low Marsh

0 50 100 Feet

August 2019

Basemap Data Source:
Nearview, LLC, MassGIS

Vertical Datum:
NAVD88

Intertidal East Zone 4
Existing Vegetation, Topography, and Excavation Areas

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Figure 2-2

20-005
20-001
20-323
20-002
20-324
INT104
ES401
ES466
INT506
ES402
ES467
ES469
ES403
S-3743
ES470
ES468
S-3744
ES471
S-109
ES404
ES472
S-107
INT507
ES405
INT105
ES406
INT508
INT509
ES407
S-3736
ES409
ES408
S-L-23
INT510
INT513
ES411
INT511
INT512
S-3737
ES410
ES473
ES474
ES412
ES413
ES475
ES415
S-3739
S-3740
ES476
ES414
S-112
ES416
INT514
S-3741
ES417
INT107
ES477
ES478
INT515
INT516
ES418
INT106
INT517
S-3745
ES419
S-3746
INT519
ES420
ES423
ES422
ES421
ES481
ES480
ES479
INT518
S-204516
ES482
ES499
ES498
ES424
ES426
S-3528
ES483
ES425
ES483B
ES428
S-796
INT521
S-797
SSS0
INT520
ES427
-114
ES429
S-3534
ES484
ES430
20-324
ES431
ES432
S-3535
ES485
INT522
ES488
S-3527
ES486
INT524
ES487
S-3748
SSS4
INT523
ES433
ES489

Legend

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

Basemap Source: MassGIS 2014 and Nearview 2018

0 50 100 Feet

MHHW Elevations NAVD88 ft. (Nearview, 2018);
MLLW Elevations NADV88 ft. (USACE, Battelle, 2016)

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USGS, MassGIS

Intertidal East Zone 4 North Sampling Locations with Excavation Footprint (0-1 ft Depth Interval)

New Bedford Harbor Superfund Site

August 2019 **Figure 2-3a**

Path: C:\Users\scottga\Documents\NBH\35BG1001\20180901_Intertidal\EZ4\ArcGIS\WP_Figures\Fig 2-3a EZ4_North_WP_Sampling_Locations_with_Excavation_Footprint_20190813.mxd

ES484
S-3534
ES430
ES431
ES432
S-1535
ES485
INT522
ES433
INT524
ES486
S-1527
ES489
SSS4
S-748
ES488
S-115
INT523
ES434
S-749
ES487
INT525
ES435
INT109
INT108
S-L - 25
ES490
ES436
ES437
S-127
20-324
S-3750
ES438
INT526
ES439
ES440
20-005
ES441
ES4100
INT527
INT528
INT111
ES442
S-128
INT110
ES443
S-3753
ES444
ES491
INT529
ES445
S-754
ES492
ES493
ES446
S-3755
ES4101
INT530
S-129
ES4102
INT531
INT113
INT533
20-003
INT532
INT112
ES447
ES447B
S-3756
S-3767
S-3769
ES448
INT534
S-3757
S-3768
ES494
ES450
ES495
S-3758
20-325
S-145
S-149
ES449
S-3773
ES497
INT535
S-3762
INT537
INT114
INT117
INT543
S-879
ES496
S-3770
INT542
INT540
S-880
ES452
S-3760
S-3764
S-3772
INT541
ES451
S-144
S-3766
INT538
S-148
ES453
S-3577
S-3759
S-L - 27
S-3763
ES454
INT342
INT539
S-3761
S-3771
INT536
20-004
S-M - 27
ES455
S-3765
ES457
ES456
INT343
S-3583
INT115
ES458
ES459
S-147
ES461
ES460
ES460B
INT116
ES463
ES464
ES462
ES462B
Fairhaven ROW
S-146
ES465
19-1
19-1

Basemap Source: MassGIS 2014 and Nearview 2018

USGS, MassGIS

Legend

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

0 60 120 Feet

MHHW Elevations NAVD88 ft. (Nearview, 2018);
MLLW Elevations NADV88 ft. (USACE, Battelle, 2016)

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Intertidal East Zone 4 South Sampling Locations with Excavation Footprint (0-1 ft Depth Interval)

New Bedford Harbor Superfund Site

June 2019 **Figure 2-3b**

Path: C:\Users\scottgal\Documents\NBH\35BG1001\20180901_IntertidalEZ4\ArcGIS\WP_Figures\Fig 2-3b EZ4_South_WP_Sampling_Locations_with Excavation_Footprint_20190601.mxd

Legend

- Proposed Limits of Excavation
- Temporary Gravel Access Road
- Proposed Staging Area / Containment Cell
- MHHW (1.99ft)
- MLLW (-1.97ft)
- Parcel Boundary

MHHW Elevations NAVD88 ft. (Nearview, 2018);
MLLW Elevations NADV88 ft. (USACE, Battelle, 2016)

N

Aerial Photography Nearview 2018 and MassGIS 2014

0 50 100 Feet

1:1,200

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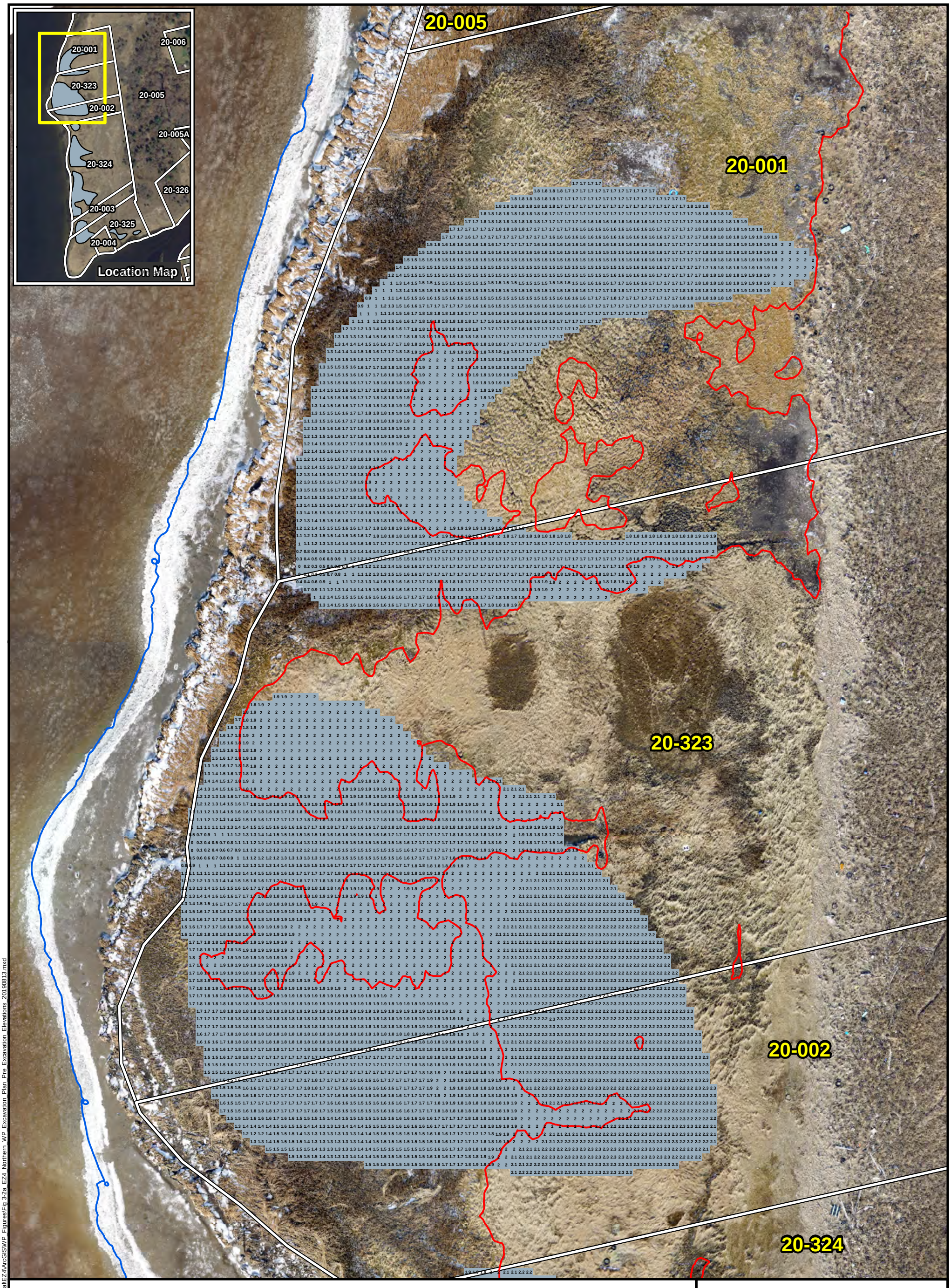
Intertidal East Zone 4 Construction Site Plan

New Bedford Harbor Superfund Site

August 2019 | Figure 3-1

Path: C:\Users\scottpa\Documents\NBH\35BG1001\20180901_Intertidal\EZ4\ArcGIS\WP_Figures\Fig 3-1 EZ4_WP_Construction_Site_Plan_20190813.mxd



Legend

- MHHW (1.99ft)
- MLLW (-1.97ft)
- Parcel Boundary

Feet of Sediment To Remove

1

2.1 Pre-Excavation Elevations NAVD88 ft. (Nearview 2018)

Basemap Source: MassGIS 2014 and Nearview 2018

0 5 10 20 30 40 Feet

MHHW Elevations NAVD88 ft. (Nearview, 2018);
MLLW Elevations NADV88 ft. (USACE, Battelle, 2016)

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Intertidal East Zone 4 Northern Portion Excavation Plan Showing Cut Depths and Pre-Excavation Elevations

New Bedford Harbor Superfund Site

August 2019 **Figure 3-2a**

Path: C:\Users\scottga1\Documents\NBH\35BG10011\20180901_IntertidalEZ4\ArcGIS\WP_Figures\Fig_3-2a_EZ4_Northern_WP_Excavation_Plan_Pre_Excavation_Elevations_20190813.mxd

Legend

- MHHW (1.99ft)
- MLLW (-1.97ft)
- Parcel Boundary

Feet of Sediment To Remove

- 2
- 1

2.1 Pre-Excavation Elevations NAVD88 ft. (Nearview 2018)

Basemap Source: MassGIS 2014 and Nearview 2018

0 5 10 20 30 40 Feet

MHHW Elevations NAVD88 ft. (Nearview, 2018);
MLLW Elevations NADV88 ft. (USACE, Battelle, 2016)

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Intertidal East Zone 4 Central Portion Excavation Plan Showing Cut Depths and Pre-Excavation Elevations

New Bedford Harbor Superfund Site

June 2019 **Figure 3-2b**

Path: C:\Users\scottga\Documents\NBH35\BG100\20180901_Intertidal\EZ4\ArcGIS\WP_Figures\Fig 3-2b_EZ4_Central_WP_Excavation_Plan_Pre_Excavation_Elevations_20190601.mxd

Basemap Source: MassGIS 2014 and Nearview 2018

Legend

- MHHW (1.99ft)
- MLLW (-1.97ft)
- Parcel Boundary

Feet of Sediment To Remove

- 2
- 1

2.1 Pre-Excavation Elevations NAVD88 ft. (Nearview 2018)

MHHW Elevations NAVD88 ft. (Nearview, 2018);
MLLW Elevations NADV88 ft. (USACE, Battelle, 2016)

0 30 60 Feet

June 2019

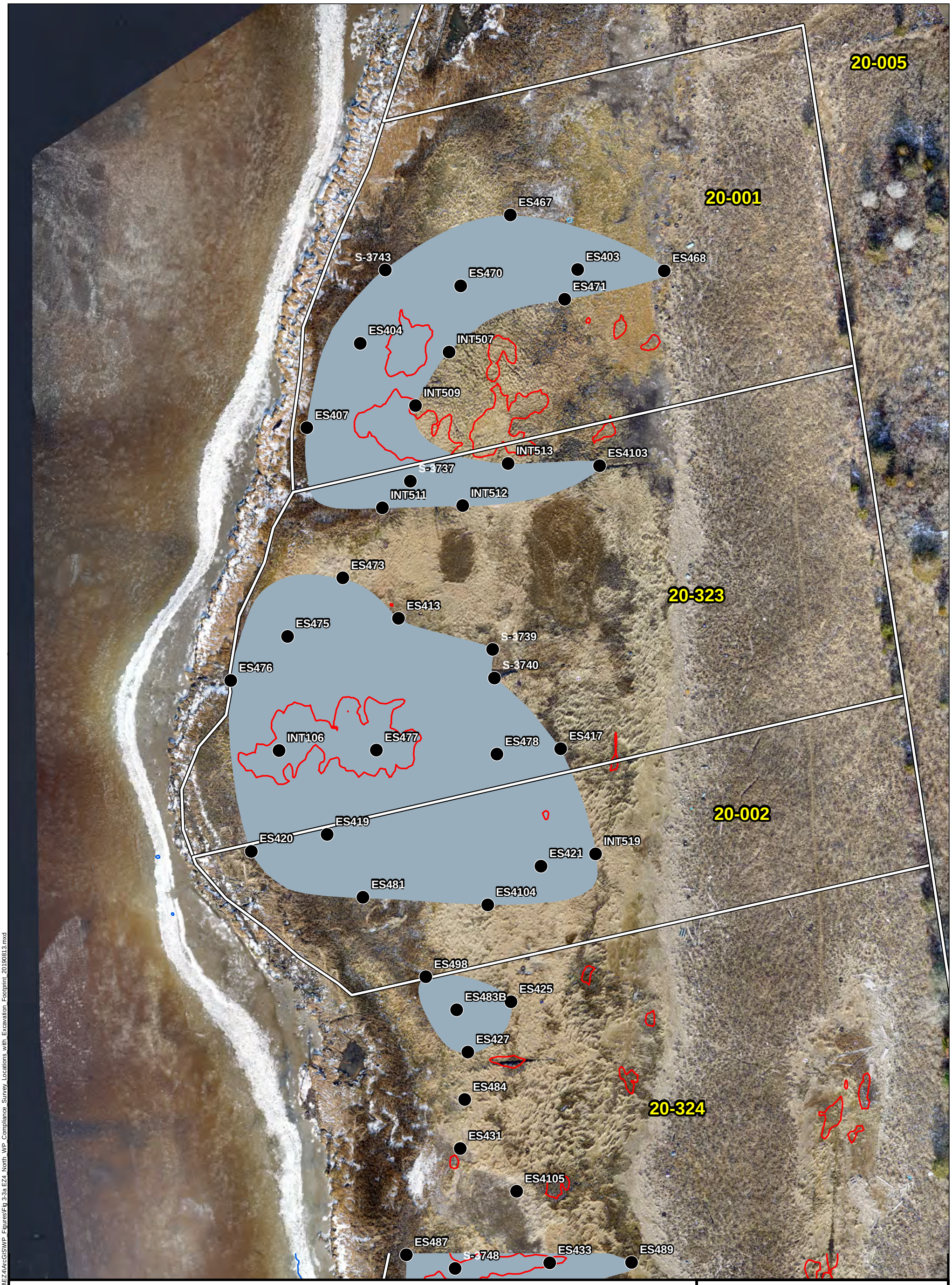
Intertidal East Zone 4 Southern Portion Excavation Plan Showing Cut Depths and Pre-Excavation Elevations

New Bedford Harbor Superfund Site

JACOBS

Figure 3-2c

Path: C:\Users\scottga\Documents\NBH\35BG\100120180901_IntertidalEZ4\ArcGIS\WP_Figures\Fig 3-2c EZ4_Southern_WP_Excavation_Plan_Pre_Excavation_



Basemap Source: MassGIS 2014 and Nearview 2018

Legend

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

0 50 100 Feet

MHHW Elevations NAVD88 ft. (Nearview, 2018);
MLLW Elevations NADV88 ft. (USACE, Battelle, 2016)

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Intertidal East Zone 4 North Compliance Survey Locations with Excavation Footprint (0-1 ft Depth Interval)

New Bedford Harbor Superfund Site

August 2019 **Figure 3-3a**

Path: C:\Users\scottga\Documents\NBH\35BG1001\20180901_IntertidalEZ4\ArcGIS\WP_FiguresIFig 3-3a EZ4_North_WP_Compliance_Survey_Locations_with_Excavation_Footprint_20190813.mxd

ES484
ES431
ES4105
ES487
S-3748
ES433
ES489
ES4106
ES490
S-127
ES436
20-324
20-005
ES4100
ES439
ES441
ES443
ES445
S-3754
ES444
ES492
ES4101
ES4107
20-003
ES447B
ES495
S-3758
ES449
20-325
ES497
S-879
S-880
INT540
S-3762
S-3772
S-3766
S-144
ES453
S-148
S-3763
S-3761
INT536
20-004

Legend

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

Basemap Source: MassGIS 2014 and Nearview 2018

0 50 100 Feet

MHHW Elevations NAVD88 ft. (Nearview, 2018);
MLLW Elevations NADV88 ft. (USACE, Battelle, 2016)

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Intertidal East Zone 4 South Compliance Survey Locations with Excavation Footprint (0-1 ft Depth Interval)

New Bedford Harbor Superfund Site

June 2019 **Figure 3-3b**

Path: C:\Users\scottgal\Documents\NBH35\BG100\120180901_Intertidal\EZ4\ArcGIS\WP_Figures\Fig_3-3b EZ4_South_WP_Compliance_Survey_Locations_with

Notes:

No areas of proposed shrub restoration.

Scrub-shrub marsh within areas disturbed by access road construction shall be planted with Iva frutescens, 1-gallon containers, 36" on-center spacing requirements.

Proposed High Marsh plantings to include 50/50 mix of Spartina patens and Distichlis spicata, plugs, 12" on-center spacing requirements.

Proposed Low Marsh plantings to include Spartina alterniflora, plugs, 12" on-center spacing requirements.

Any native trees removed as part of access road construction or excavation will be replaced in-kind (1-gallon containers). Any invasive trees removed will be replaced on a one-to-one basis with native tree species constituting similar growth form, habit, and size (1-gallon containers).

Areas of proposed restoration surface shall be uniformly graded with a smooth finished surface and will transition back to match existing grades upon completion of construction. Slight differences between depicted and constructed surfaces may occur due to microtopographic variations across the site.

Final restored elevations will be documented in the After Action Report.

MHHW and MLLW lines are approximate.

Legend

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

0 50 100 Feet

August 2019

Basemap Data Source:
Nearview, LLC, MassGIS

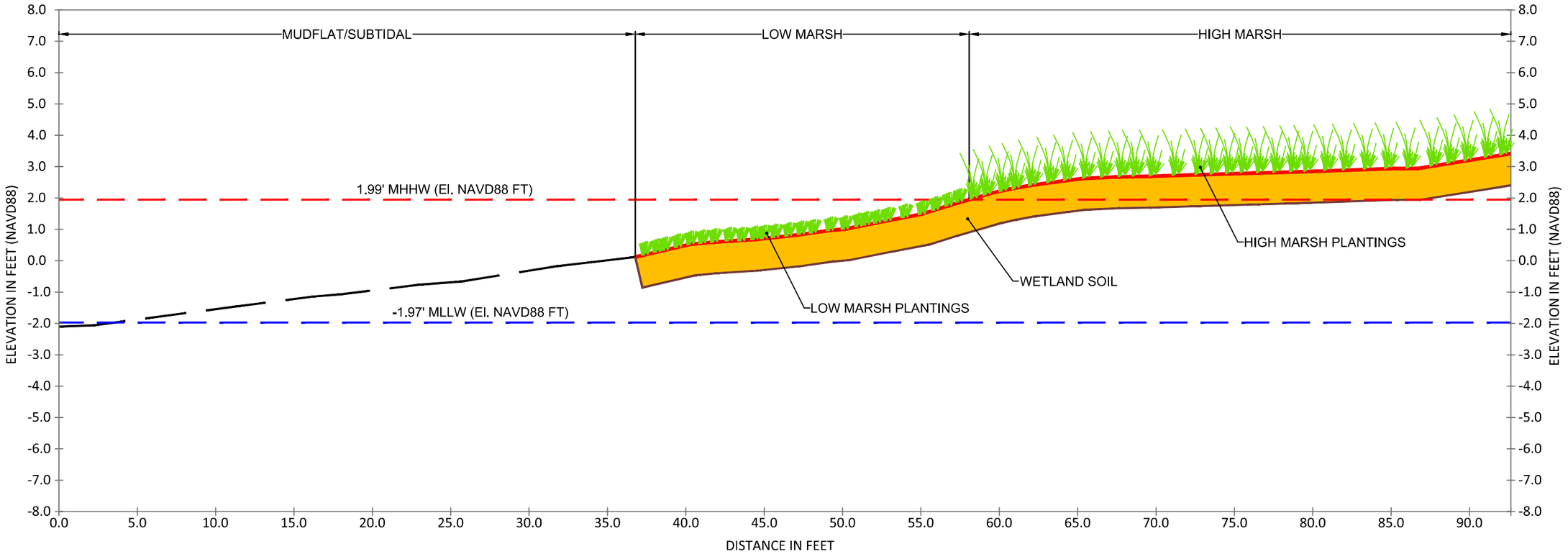
Vertical Datum:
NAVD88

Intertidal East Zone 4
Proposed Wetland Cover Types and Topography

New Bedford Harbor Superfund Site

JACOBS

Figure 7-1



Legend

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

Not To Scale

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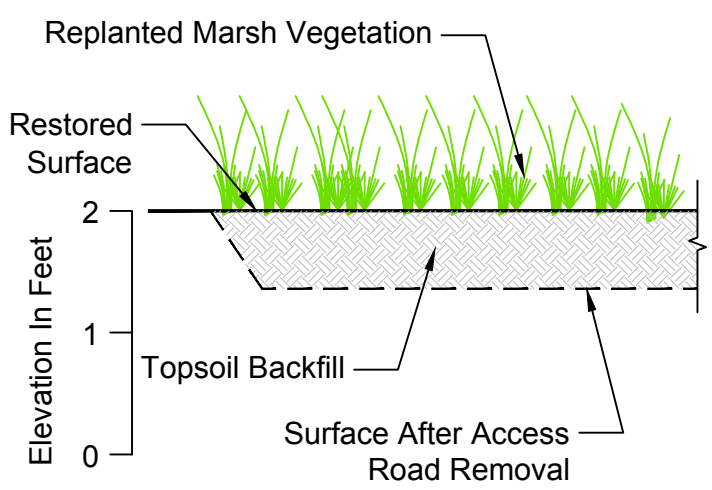
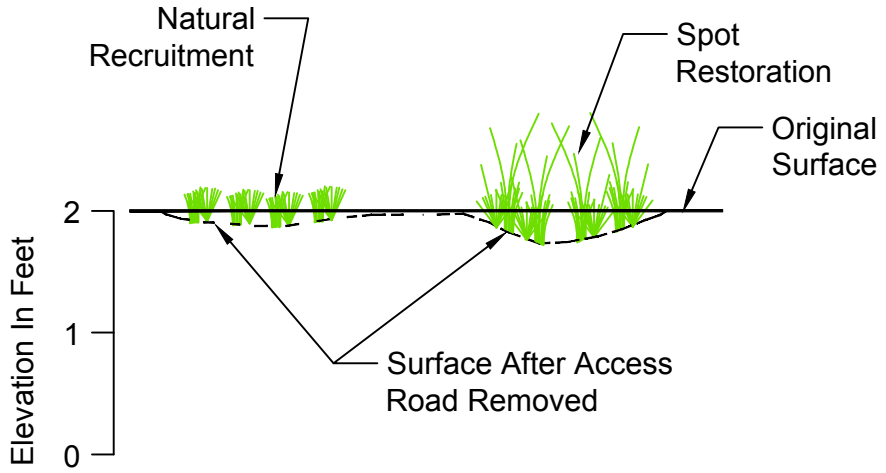
East Zone 4
Conceptual Cross Section

New Bedford Harbor Superfund Site

June 2019 | Figure 7-2



A. Greater Than About 4 inches Soil Compaction



B. Less Than About 4 inches Soil Compaction

NOT TO SCALE

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Conceptual Cross Sections of Access Road Restoration Approach

New Bedford Harbor Superfund Site

August 2019 | Figure 7-3

Tables

Table 2-1
Pre-Excavation PCB Characterization Sample Results for East Zone 4

Parcel	Sample ID	Station ID	Sample Depth Top (ft)	Sample Depth Bottom (ft)	Sample Date	Description	Total PCB (mg/kg)	Final Qualifier
20-001	S-ES401-18FSP14-00-10	ES401	0.0	1.0	11/15/2018	Aroclor 1254 - Immunoassay	5.8	J
20-001	S-ES402-18FSP14-00-10	ES402	0.0	1.0	11/14/2018	Aroclor 1254 - Immunoassay	1	J
20-001	S-ES403-18FSP14-00-10	ES403	0.0	1.0	11/15/2018	Aroclor 1254 - Immunoassay	97	JD
20-001	S-ES403-18FSP14-10-20	ES403	1.0	2.0	11/15/2018	Total 209 PCB cong (excl non-detects)	18.7	
20-001	S-ES404-18FSP14-00-10	ES404	0.0	1.0	11/16/2018	Total 209 PCB cong (excl non-detects)	105	
20-001	S-ES404-18FSP14-10-20	ES404	1.0	2.0	11/16/2018	Total 209 PCB cong (excl non-detects)	4.52	
20-001	S-ES405-18FSP14-00-10	ES405	0.0	1.0	11/14/2018	Aroclor 1254 - Immunoassay	0.96	J
20-001	S-ES406-18FSP14-00-10	ES406	0.0	1.0	11/16/2018	Aroclor 1254 - Immunoassay	22	JD
20-001	S-ES407-18FSP14-00-10	ES407	0.0	1.0	11/28/2018	Total 209 PCB cong (excl non-detects)	19.7	
20-001	S-ES408-18FSP14-00-10	ES408	0.0	1.0	11/16/2018	Total 209 PCB cong (excl non-detects)	86.9	
20-001	S-ES408-18FSP14-10-20	ES408	1.0	2.0	11/16/2018	Aroclor 1254 - Immunoassay	5.6	
20-001	S-ES466-18FSP14-00-10	ES466	0.0	1.0	1/10/2019	Aroclor 1254 - Immunoassay	9.7	J
20-001	S-ES467-18FSP14-00-10	ES467	0.0	1.0	1/10/2019	Total 209 PCB cong (excl non-detects)	36.6	
20-001	S-ES468-18FSP14-00-10	ES468	0.0	1.0	1/10/2019	Total 209 PCB cong (excl non-detects)	6.76	
20-001	S-ES469-18FSP14-00-10	ES469	0.0	1.0	1/10/2019	Total 209 PCB cong (excl non-detects)	162	
20-001	S-ES470-18FSP14-10-20	ES470	1.0	2.0	1/31/2019	Total 209 PCB cong (excl non-detects)	7.28	
20-001	S-ES471-18FSP14-00-10	ES471	0.0	1.0	1/10/2019	Total 209 PCB cong (excl non-detects)	41	
20-001	S-ES472-18FSP14-00-10	ES472	0.0	1.0	1/10/2019	Aroclor 1254 - Immunoassay	2.8	J
20-001	S-15Y-INT104-00-10	INT104	0.0	1.0	5/1/2015	Aroclor 1254 - Immunoassay	6.50	D
20-001	S-15Y-INT104-10-20	INT104	1.0	2.0	5/1/2015	Aroclor 1254 - Immunoassay	0.50	U
20-001	S-15Y-INT105-00-10	INT105	0.0	1.0	5/1/2015	Aroclor 1254 - Immunoassay	81.7	D
20-001	S-15Y-INT105-10-20	INT105	1.0	2.0	5/1/2015	Aroclor 1254 - Immunoassay	0.50	U
20-001	S-17Y-INT506-10-20	INT506	1.0	2.0	5/12/2017	Aroclor 1254 - Immunoassay	0.5	U
20-001	S-17Y-INT507-00-10	INT507	0.0	1.0	5/12/2017	Total 139 PCB cong (excl non-detects)	37	
20-001	S-17Y-INT507-10-20	INT507	1.0	2.0	5/12/2017	Aroclor 1254 - Immunoassay	0.5	U
20-001	S-17Y-INT508-00-10	INT508	0.0	1.0	5/12/2017	Aroclor 1254 - Immunoassay	327	D
20-001	S-17Y-INT508-10-20	INT508	1.0	2.0	5/12/2017	Aroclor 1254 - Immunoassay	0.5	U
20-001	S-17Y-INT509-00-10	INT509	0.0	1.0	5/12/2017	Total 139 PCB cong (excl non-detects)	44	
20-001	S-17Y-INT509-10-20	INT509	1.0	2.0	5/12/2017	Aroclor 1254 - Immunoassay	0.5	U
20-001	S-17Y-INT510-00-10	INT510	0.0	1.0	5/12/2017	Aroclor 1254 - Immunoassay	129	D
20-001	S-17Y-INT510-10-20	INT510	1.0	2.0	5/12/2017	Aroclor 1254 - Immunoassay	0.7	
20-001	S-0107-1	S-107	0.0	1.0	9/22/1999	Total 18 NOAA PCB cong (excl non-detects)	0.068	
20-001	S-0107-2	S-107	1.0	2.0	9/22/1999	Total 18 NOAA PCB cong (excl non-detects)	0	U
20-001	S-0109-1	S-109	0.0	1.0	9/22/1999	Total 18 NOAA PCB cong (excl non-detects)	0.78	
20-001	S-0109-2	S-109	1.0	2.0	9/22/1999	Total 18 NOAA PCB cong (excl non-detects)	0.39	
20-001	S-0109-3	S-109	2.0	3.0	9/22/1999	Total 18 NOAA PCB cong (excl non-detects)	0.22	
20-001	S-3736-1.0-1.5	S-3736	1.0	1.5	11/8/2001	Total 18 NOAA PCB cong (excl non-detects)	1.53	
20-001	S-3743-0.0-.5	S-3743	0.0	0.5	11/8/2001	Total 18 NOAA PCB cong (excl non-detects)	10.4	
20-001	S-3743-.5-1.0	S-3743	0.5	1.0	11/8/2001	Total 18 NOAA PCB cong (excl non-detects)	6.50	
20-001	S-3744-1.0-1.5	S-3744	1.0	1.5	11/8/2001	Total 18 NOAA PCB cong (excl non-detects)	11.7	

Table 2-1
Pre-Excavation PCB Characterization Sample Results for East Zone 4

Parcel	Sample ID	Station ID	Sample Depth Top (ft)	Sample Depth Bottom (ft)	Sample Date	Description	Total PCB (mg/kg)	Final Qualifier
20-002	S-ES419-18FSP14-00-10	ES419	0.0	1.0	12/4/2018	Total 209 PCB cong (excl non-detects)	58.7	
20-002	S-ES419-18FSP14-10-20	ES419	1.0	2.0	12/4/2018	Total 209 PCB cong (excl non-detects)	2.21	
20-002	S-ES419-18FSP14-20-30	ES419	2.0	3.0	12/4/2018	Aroclor 1254 - Immunoassay	0.6	JB
20-002	S-ES420-18FSP14-00-10	ES420	0.0	1.0	12/4/2018	Total 209 PCB cong (excl non-detects)	15.8	
20-002	S-ES421-18FSP14-00-10	ES421	0.0	1.0	11/28/2018	Total 209 PCB cong (excl non-detects)	186	
20-002	S-ES421-18FSP14-10-20	ES421	1.0	2.0	11/28/2018	Total 209 PCB cong (excl non-detects)	31.1	
20-002	S-ES421-18FSP14-20-30	ES421	2.0	3.0	11/28/2018	Aroclor 1254 - Immunoassay	0.84	J
20-002	S-ES422-18FSP14-00-10	ES422	0.0	1.0	11/29/2018	Aroclor 1254 - Immunoassay	100	JD
20-002	S-ES422-18FSP14-10-20	ES422	1.0	2.0	11/29/2018	Aroclor 1254 - Immunoassay	5.6	J
20-002	S-ES422-18FSP14-20-30	ES422	2.0	3.0	11/29/2018	Aroclor 1254 - Immunoassay	1.5	J
20-002	S-ES423-18FSP14-00-10	ES423	0.0	1.0	12/4/2018	Aroclor 1254 - Immunoassay	0.82	J
20-002	S-ES426-18FSP14-00-10	ES426	0.0	1.0	11/14/2018	Aroclor 1254 - Immunoassay	0.64	J
20-002	S-ES479-18FSP14-00-10	ES479	0.0	1.0	1/31/2019	Total 209 PCB cong (excl non-detects)	13.4	
20-002	S-ES479R-18FSP14-00-10-REP	ES479	0.0	1.0	1/31/2019	Total 209 PCB cong (excl non-detects)	14.6	
20-002	S-ES480-18FSP14-00-10	ES480	0.0	1.0	1/16/2019	Total 209 PCB cong (excl non-detects)	107	
20-002	S-ES481-18FSP14-00-10	ES481	0.0	1.0	1/16/2019	Total 209 PCB cong (excl non-detects)	7.76	
20-002	S-ES482-18FSP14-00-10	ES482	0.0	1.0	1/16/2019	Aroclor 1254 - Immunoassay	7.4	J
20-002	S-ES498-18FSP14-00-10	ES498	0.0	1.0	3/19/2019	Total 209 PCB cong (excl non-detects)	6.24	
20-002	S-ES499-18FSP14-00-10	ES499	0.0	1.0	3/19/2019	Total 209 PCB cong (excl non-detects)	4.88	
20-002	S-17Y-INT518-00-10	INT518	0.0	1.0	5/11/2017	Aroclor 1254 - Immunoassay	2.18	
20-002	S-17Y-INT518-10-20	INT518	1.0	2.0	5/11/2017	Aroclor 1254 - Immunoassay	0.5	U
20-002	S-17Y-INT519-00-10	INT519	0.0	1.0	5/11/2017	Total 139 PCB cong (excl non-detects)	38	
20-002	S-17Y-INT519-10-20	INT519	1.0	2.0	5/11/2017	Aroclor 1254 - Immunoassay	0.5	U
20-002	S-204516	S-204516	0.0	1.0	pre-ROD	Total PCB Congeners (sum CONG x factor)[1]	3.00	
20-002	S-3745-0.0-1.0	S-3745	0.0	1.0	11/12/2001	Total 18 NOAA PCB cong (excl non-detects)	442	
20-002	S-3745-1.0-2.0	S-3745	1.0	2.0	11/9/2001	Total 18 NOAA PCB cong (excl non-detects)	1.20	
20-002	S-3746-1.5-2.0	S-3746	1.5	2.0	11/9/2001	Total 18 NOAA PCB cong (excl non-detects)	4.42	
20-003	S-ES449-18FSP14-00-10	ES449	0.0	1.0	11/30/2018	Total 209 PCB cong (excl non-detects)	58.7	
20-003	S-ES449-18FSP14-10-20	ES449	1.0	2.0	11/30/2018	Total 209 PCB cong (excl non-detects)	6.07	
20-003	S-ES452-18FSP14-00-10	ES452	0.0	1.0	11/14/2018	Aroclor 1254 - Immunoassay	0.3	J
20-003	S-ES496-18FSP14-00-10	ES496	0.0	1.0	1/31/2019	Total 209 PCB cong (excl non-detects)	1.51	
20-003	S-ES497-18FSP14-00-10	ES497	0.0	1.0	1/24/2019	Total 209 PCB cong (excl non-detects)	19.2	
20-003	S-17Y-INT534-00-10	INT534	0.0	1.0	5/10/2017	Aroclor 1254 - Immunoassay	9.80	
20-003	S-17Y-INT534-10-20	INT534	1.0	2.0	5/10/2017	Aroclor 1254 - Immunoassay	0.5	U
20-003	S-17Y-INT535-00-10	INT535	0.0	1.0	5/10/2017	Total 139 PCB cong (excl non-detects)	160	
20-003	S-17Y-INT535-10-20	INT535	1.0	2.0	5/10/2017	Aroclor 1254 - Immunoassay	0.5	U
20-003	S-3756-0.0-1.0	S-3756	0.0	1.0	10/15/2001	Total 18 NOAA PCB cong (excl non-detects)	13.8	
20-003	S-3757-1.0-1.5	S-3757	1.0	1.5	10/15/2001	Total 18 NOAA PCB cong (excl non-detects)	6.24	
20-003	S-3758-0.0-1.0	S-3758	0.0	1.0	10/15/2001	Total 18 NOAA PCB cong (excl non-detects)	24.7	
20-003	S-3758-1.0-2.0	S-3758	1.0	2.0	10/15/2001	Total 18 NOAA PCB cong (excl non-detects)	0.36	

Table 2-1
Pre-Excavation PCB Characterization Sample Results for East Zone 4

Parcel	Sample ID	Station ID	Sample Depth Top (ft)	Sample Depth Bottom (ft)	Sample Date	Description	Total PCB (mg/kg)	Final Qualifier
20-003	S-3758-2.0-2.3	S-3758	2.0	2.3	10/15/2001	Total 18 NOAA PCB cong (excl non-detects)	0.06	
20-004	S-ES456-18FSP14-00-10	ES456	0.0	1.0	12/6/2018	Total 209 PCB cong (excl non-detects)	28.8	
20-004	S-ES456-18FSP14-10-20	ES456	1.0	2.0	12/6/2018	Aroclor 1254 - Immunoassay	1.52	
20-004	S-ES460-18FSP14-00-10	ES460	0.0	1.0	11/15/2018	Aroclor 1254 - Immunoassay	0.82	J
20-004	S-ES460B-18FSP14-00-10	ES460B	0.0	1.0	12/11/2018	Aroclor 1254 - Immunoassay	0.79	JB
20-004	S-ES460B-18FSP14-10-20	ES460B	1.0	2.0	12/11/2018	Aroclor 1254 - Immunoassay	0.5	JB
20-004	S-ES460B-18FSP14-20-30	ES460B	2.0	3.0	12/11/2018	Aroclor 1254 - Immunoassay	0.41	J
20-004	S-ES460B-18FSP14-30-31	ES460B	3.0	3.1	12/11/2018	Aroclor 1254 - Immunoassay	0.51	JB
20-004	S-17Y-INT537-00-10	INT537	0.0	1.0	5/10/2017	Aroclor 1254 - Immunoassay	18.9	D
20-004	S-17Y-INT537-10-20	INT537	1.0	2.0	5/10/2017	Aroclor 1254 - Immunoassay	0.5	U
20-004	S-0147-1	S-147	0.0	1.0	9/23/1999	Total 18 NOAA PCB cong (excl non-detects)	0.416	
20-004	S-0147-2	S-147	1.0	2.0	9/23/1999	Total 18 NOAA PCB cong (excl non-detects)	0	U
20-004	S-0147-3	S-147	2.0	3.0	9/23/1999	Total 18 NOAA PCB cong (excl non-detects)	0	U
20-004	S-L - 27	S-L - 27	0.0	1.0	pre-ROD	Total PCB Congeners (sum CONG x factor)[1]	26.0	
20-005	S-ES450-18FSP14-00-10	ES450	0.0	1.0	12/6/2018	Total 209 PCB cong (excl non-detects)	10.8	
20-005	S-ES451-18FSP14-00-10	ES451	0.0	1.0	12/4/2018	Aroclor 1254 - Immunoassay	9.4	J
20-005	S-ES454-18FSP14-00-10	ES454	0.0	1.0	12/4/2018	Aroclor 1254 - Immunoassay	4.2	J
20-005	S-15Y-INT117-00-10	INT117	0.0	1.0	5/4/2015	Total 139 PCB cong (excl non-detects)	18	
20-005	S-15Y-INT117-10-20	INT117	1.0	2.0	5/4/2015	Aroclor 1254 - Immunoassay	0.50	U
20-005	S-16U-INT342-00-10	INT342	0.0	1.0	6/2/2016	Aroclor 1254 - Immunoassay	8.20	D
20-005	S-16U-INT342-10-20	INT342	1.0	2.0	6/2/2016	Aroclor 1254 - Immunoassay	0.50	U
20-005	S-17Y-INT542-00-10	INT542	0.0	1.0	5/9/2017	Aroclor 1254 - Immunoassay	3.10	
20-005	S-17Y-INT542-10-20	INT542	1.0	2.0	5/9/2017	Aroclor 1254 - Immunoassay	0.5	U
20-005	S-17Y-INT543-00-10	INT543	0.0	1.0	5/9/2017	Total 139 PCB cong (excl non-detects)	38	
20-005	S-17Y-INT543-10-20	INT543	1.0	2.0	5/9/2017	Aroclor 1254 - Immunoassay	0.5	U
20-005	S-0149-1	S-149	0.0	1.0	9/10/1999	Total 18 NOAA PCB cong (excl non-detects)	2.50	
20-005	S-0149-2	S-149	1.0	2.0	9/10/1999	Total 18 NOAA PCB cong (excl non-detects)	0	U
20-323	S-ES409-18FSP14-00-10	ES409	0.0	1.0	11/30/2018	Total 209 PCB cong (excl non-detects)	57.8	J+
20-323	S-ES409-18FSP14-10-18	ES409	1.0	1.8	11/30/2018	Aroclor 1254 - Immunoassay	0.5	U
20-323	S-ES410-18FSP14-00-10	ES410	0.0	1.0	11/14/2018	Aroclor 1254 - Immunoassay	1.9	J
20-323	S-ES411-18FSP14-00-10	ES411	0.0	1.0	11/28/2018	Total 209 PCB cong (excl non-detects)	12.4	
20-323	S-ES412-18FSP14-00-10	ES412	0.0	1.0	11/16/2018	Aroclor 1254 - Immunoassay	6.5	J
20-323	S-ES413-18FSP14-00-10	ES413	0.0	1.0	11/16/2018	Total 209 PCB cong (excl non-detects)	36.8	
20-323	S-ES413-18FSP14-10-20	ES413	1.0	2.0	11/16/2018	Total 209 PCB cong (excl non-detects)	1.34	
20-323	S-ES414-18FSP14-00-10	ES414	0.0	1.0	11/30/2018	Total 209 PCB cong (excl non-detects)	424	J+
20-323	S-ES414-18FSP14-10-18	ES414	1.0	1.8	11/30/2018	Aroclor 1254 - Immunoassay	1.4	
20-323	S-ES415-18FSP14-00-10	ES415	0.0	1.0	11/30/2018	Total 209 PCB cong (excl non-detects)	100	J+
20-323	S-ES415-18FSP14-10-20	ES415	1.0	2.0	11/30/2018	Aroclor 1254 - Immunoassay	0.5	U
20-323	S-ES416-18FSP14-00-10	ES416	0.0	1.0	11/14/2018	Aroclor 1254 - Immunoassay	1.4	J
20-323	S-ES417-18FSP14-00-10	ES417	0.0	1.0	11/16/2018	Total 209 PCB cong (excl non-detects)	16.6	

Table 2-1
Pre-Excavation PCB Characterization Sample Results for East Zone 4

Parcel	Sample ID	Station ID	Sample Depth Top (ft)	Sample Depth Bottom (ft)	Sample Date	Description	Total PCB (mg/kg)	Final Qualifier
20-323	S-ES418-18FSP14-00-10	ES418	0.0	1.0	11/16/2018	Total 209 PCB cong (excl non-detects)	64.1	
20-323	S-ES418-18FSP14-10-20	ES418	1.0	2.0	11/16/2018	Aroclor 1254 - Immunoassay	0.75	
20-323	S-ES473-18FSP14-00-10	ES473	0.0	1.0	1/10/2019	Total 209 PCB cong (excl non-detects)	25	
20-323	S-ES474-18FSP14-00-10	ES474	0.0	1.0	1/10/2019	Aroclor 1254 - Immunoassay	9.7	J
20-323	S-ES475-18FSP14-10-20	ES475	1.0	2.0	1/31/2019	Total 209 PCB cong (excl non-detects)	13.1	
20-323	S-ES476-18FSP14-00-10	ES476	0.0	1.0	1/31/2019	Total 209 PCB cong (excl non-detects)	7.16	
20-323	S-ES477-18FSP14-10-20	ES477	1.0	2.0	1/31/2019	Total 209 PCB cong (excl non-detects)	1.78	
20-323	S-ES478-18FSP14-00-10	ES478	0.0	1.0	1/16/2019	Total 209 PCB cong (excl non-detects)	75.2	J+
20-323	S-15Y-INT106-00-10	INT106	0.0	1.0	5/1/2015	Aroclor 1254 - Immunoassay	79.6	D
20-323	S-15Y-INT106-10-20	INT106	1.0	2.0	5/1/2015	Aroclor 1254 - Immunoassay	0.50	U
20-323	S-15Y-INT107-10-20	INT107	1.0	2.0	5/1/2015	Aroclor 1254 - Immunoassay	0.50	U
20-323	S-17Y-INT511-00-10	INT511	0.0	1.0	5/12/2017	Total 139 PCB cong (excl non-detects)	36	
20-323	S-17Y-INT511-10-20	INT511	1.0	2.0	5/12/2017	Aroclor 1254 - Immunoassay	0.5	U
20-323	S-17Y-INT512-00-10	INT512	0.0	1.0	5/12/2017	Total 139 PCB cong (excl non-detects)	18	
20-323	S-17Y-INT512-10-20	INT512	1.0	2.0	5/12/2017	Aroclor 1254 - Immunoassay	0.6	
20-323	S-17Y-INT513-00-10	INT513	0.0	1.0	5/12/2017	Total 139 PCB cong (excl non-detects)	27	
20-323	S-17Y-INT513-10-20	INT513	1.0	2.0	5/12/2017	Aroclor 1254 - Immunoassay	0.5	U
20-323	S-17Y-INT514-00-10	INT514	0.0	1.0	5/12/2017	Aroclor 1254 - Immunoassay	221	D
20-323	S-17Y-INT514-10-20	INT514	1.0	2.0	5/12/2017	Aroclor 1254 - Immunoassay	1.12	
20-323	S-17Y-INT515-00-10	INT515	0.0	1.0	5/11/2017	Aroclor 1254 - Immunoassay	3.00	J
20-323	S-17Y-INT515-00-10-REP	INT515	0.0	1.0	5/11/2017	Aroclor 1254 - Immunoassay	9.68	J
20-323	S-17Y-INT515-10-20	INT515	1.0	2.0	5/11/2017	Aroclor 1254 - Immunoassay	0.5	U
20-323	S-17Y-INT515-10-20-REP	INT515	1.0	2.0	5/11/2017	Aroclor 1254 - Immunoassay	0.5	U
20-323	S-17Y-INT516-00-10	INT516	0.0	1.0	5/11/2017	Aroclor 1254 - Immunoassay	126	D
20-323	S-17Y-INT517-00-10	INT517	0.0	1.0	5/11/2017	Total 139 PCB cong (excl non-detects)	74	
20-323	S-17Y-INT517-10-20	INT517	1.0	2.0	5/11/2017	Aroclor 1254 - Immunoassay	0.5	U
20-323	S-0112-1	S-112	0.0	1.0	9/22/1999	Total 18 NOAA PCB cong (excl non-detects)	0.088	
20-323	S-0112-2	S-112	1.0	2.0	9/22/1999	Total 18 NOAA PCB cong (excl non-detects)	0	U
20-323	S-3737-0.0-1.0	S-3737	0.0	1.0	11/15/2001	Total 18 NOAA PCB cong (excl non-detects)	624	
20-323	S-3737-1.0-2.0	S-3737	1.0	2.0	11/15/2001	Total 18 NOAA PCB cong (excl non-detects)	12.7	
20-323	S-3737-2.0-3.0	S-3737	2.0	3.0	11/15/2001	Total 18 NOAA PCB cong (excl non-detects)	0	U
20-323	S-3739-0.0-1.0	S-3739	0.0	1.0	11/12/2001	Total 18 NOAA PCB cong (excl non-detects)	49.4	
20-323	S-3739-1.0-2.0	S-3739	1.0	2.0	11/9/2001	Total 18 NOAA PCB cong (excl non-detects)	2.44	
20-323	S-3740-0.0-1.0	S-3740	0.0	1.0	11/16/2001	Total 18 NOAA PCB cong (excl non-detects)	8.84	
20-323	S-3740-1.0-2.0	S-3740	1.0	2.0	11/15/2001	Total 18 NOAA PCB cong (excl non-detects)	2.24	
20-323	S-3740-2.0-3.0	S-3740	2.0	3.0	11/15/2001	Total 18 NOAA PCB cong (excl non-detects)	0	U
20-323	S-3741-1.5-2.0	S-3741	1.5	2.0	11/9/2001	Total 18 NOAA PCB cong (excl non-detects)	2.86	
20-323	S-3741-2.0-2.5	S-3741	2.0	2.5	11/9/2001	Total 18 NOAA PCB cong (excl non-detects)	0.86	
20-323	S-L - 23	S-L - 23	0.0	1.0	pre-ROD	Total PCB Congeners (sum CONG x factor)[1]	18.0	
20-324	S-ES4100-18FSP14-10-20	ES4100	1.0	2.0	3/19/2019	Total 209 PCB cong (excl non-detects)	3.05	

Table 2-1
Pre-Excavation PCB Characterization Sample Results for East Zone 4

Parcel	Sample ID	Station ID	Sample Depth Top (ft)	Sample Depth Bottom (ft)	Sample Date	Description	Total PCB (mg/kg)	Final Qualifier
20-324	S-ES4101-18FSP14-00-10	ES4101	0.0	1.0	3/19/2019	Total 209 PCB cong (excl non-detects)	12.3	
20-324	S-ES4102-18FSP14-00-10	ES4102	0.0	1.0	3/19/2019	Total 209 PCB cong (excl non-detects)	76	
20-324	S-ES424-18FSP14-00-10	ES424	0.0	1.0	11/30/2018	Total 209 PCB cong (excl non-detects)	46	J+
20-324	S-ES424-18FSP14-10-20	ES424	1.0	2.0	11/30/2018	Aroclor 1254 - Immunoassay	2.7	J
20-324	S-ES424-18FSP14-20-30	ES424	2.0	3.0	11/30/2018	Aroclor 1254 - Immunoassay	0.52	J
20-324	S-ES425-18FSP14-00-10	ES425	0.0	1.0	11/29/2018	Total 209 PCB cong (excl non-detects)	29.5	
20-324	S-ES425-18FSP14-10-20	ES425	1.0	2.0	11/29/2018	Total 209 PCB cong (excl non-detects)	3.13	
20-324	S-ES425-18FSP14-20-30	ES425	2.0	3.0	11/29/2018	Aroclor 1254 - Immunoassay	0.78	J
20-324	S-ES427-18FSP14-00-10	ES427	0.0	1.0	11/30/2018	Total 209 PCB cong (excl non-detects)	33.7	J+
20-324	S-ES427-18FSP14-10-20	ES427	1.0	2.0	11/30/2018	Aroclor 1254 - Immunoassay	6.7	J
20-324	S-ES427-18FSP14-20-30	ES427	2.0	3.0	11/30/2018	Aroclor 1254 - Immunoassay	0.92	J
20-324	S-ES428-18FSP14-00-10	ES428	0.0	1.0	11/28/2018	Total 209 PCB cong (excl non-detects)	49.6	
20-324	S-ES429-18FSP14-00-10	ES429	0.0	1.0	11/28/2018	Total 209 PCB cong (excl non-detects)	0.391	
20-324	S-ES430-18FSP14-00-10	ES430	0.0	1.0	12/6/2018	Aroclor 1254 - Immunoassay	24	JD
20-324	S-ES431-18FSP14-00-10	ES431	0.0	1.0	11/28/2018	Total 209 PCB cong (excl non-detects)	73.6	
20-324	S-ES431-18FSP14-10-20	ES431	1.0	2.0	11/28/2018	Total 209 PCB cong (excl non-detects)	3.27	
20-324	S-ES432-18FSP14-00-10	ES432	0.0	1.0	11/14/2018	Aroclor 1254 - Immunoassay	0.34	J
20-324	S-ES433-18FSP14-00-10	ES433	0.0	1.0	11/30/2018	Total 209 PCB cong (excl non-detects)	208	J+
20-324	S-ES433-18FSP14-10-20	ES433	1.0	2.0	11/30/2018	Total 209 PCB cong (excl non-detects)	13.1	
20-324	S-ES433-18FSP14-20-30	ES433	2.0	3.0	11/30/2018	Aroclor 1254 - Immunoassay	0.7	J
20-324	S-ES434-18FSP14-10-20	ES434	1.0	2.0	11/30/2018	Total 209 PCB cong (excl non-detects)	7.01	
20-324	S-ES434-18FSP14-20-30	ES434	2.0	3.0	11/30/2018	Total 209 PCB cong (excl non-detects)	37.4	
20-324	S-ES434-18FSP14-30-40	ES434	3.0	4.0	11/30/2018	Aroclor 1254 - Immunoassay	0.5	U
20-324	S-ES435-18FSP14-00-10	ES435	0.0	1.0	12/6/2018	Total 209 PCB cong (excl non-detects)	68.8	
20-324	S-ES435-18FSP14-10-20	ES435	1.0	2.0	12/6/2018	Aroclor 1254 - Immunoassay	2.1	J
20-324	S-ES435-18FSP14-20-30	ES435	2.0	3.0	12/6/2018	Aroclor 1254 - Immunoassay	3.5	J
20-324	S-ES436-18FSP14-00-10	ES436	0.0	1.0	11/28/2018	Total 209 PCB cong (excl non-detects)	23	
20-324	S-ES437-18FSP14-00-10	ES437	0.0	1.0	12/11/2018	Aroclor 1254 - Immunoassay	0.56	JB
20-324	S-ES438-18FSP14-00-10	ES438	0.0	1.0	12/5/2018	Aroclor 1254 - Immunoassay	13	J
20-324	S-ES438-18FSP14-10-20	ES438	1.0	2.0	12/5/2018	Aroclor 1254 - Immunoassay	3.5	J
20-324	S-ES438-18FSP14-20-30	ES438	2.0	3.0	12/5/2018	Aroclor 1254 - Immunoassay	0.82	J
20-324	S-ES439-18FSP14-00-10	ES439	0.0	1.0	12/5/2018	Total 209 PCB cong (excl non-detects)	32.6	
20-324	S-ES439-18FSP14-10-20	ES439	1.0	2.0	12/5/2018	Total 209 PCB cong (excl non-detects)	6.62	
20-324	S-ES439-18FSP14-20-30	ES439	2.0	3.0	12/5/2018	Aroclor 1254 - Immunoassay	0.82	J
20-324	S-ES440-18FSP14-00-10	ES440	0.0	1.0	11/30/2018	Total 209 PCB cong (excl non-detects)	13.3	J+
20-324	S-ES440-18FSP14-10-20	ES440	1.0	2.0	11/30/2018	Aroclor 1254 - Immunoassay	2.7	J
20-324	S-ES440-18FSP14-20-30	ES440	2.0	3.0	11/30/2018	Aroclor 1254 - Immunoassay	0.6	JB
20-324	S-ES441-18FSP14-00-10	ES441	0.0	1.0	11/30/2018	Total 209 PCB cong (excl non-detects)	15	
20-324	S-ES442-18FSP14-00-10	ES442	0.0	1.0	12/4/2018	Aroclor 1254 - Immunoassay	0.86	J
20-324	S-ES443-18FSP14-00-10	ES443	0.0	1.0	11/28/2018	Total 209 PCB cong (excl non-detects)	35.4	

Table 2-1
Pre-Excavation PCB Characterization Sample Results for East Zone 4

Parcel	Sample ID	Station ID	Sample Depth Top (ft)	Sample Depth Bottom (ft)	Sample Date	Description	Total PCB (mg/kg)	Final Qualifier
20-324	S-ES444-18FSP14-00-10	ES444	0.0	1.0	11/29/2018	Total 209 PCB cong (excl non-detects)	152	J+
20-324	S-ES444-18FSP14-10-20	ES444	1.0	2.0	11/29/2018	Total 209 PCB cong (excl non-detects)	15.2	
20-324	S-ES444-18FSP14-20-30	ES444	2.0	3.0	11/29/2018	Aroclor 1254 - Immunoassay	0.98	J
20-324	S-ES445-18FSP14-00-10	ES445	0.0	1.0	12/6/2018	Total 209 PCB cong (excl non-detects)	39.9	
20-324	S-ES446-18FSP14-00-10	ES446	0.0	1.0	12/11/2018	Aroclor 1254 - Immunoassay	0.26	J
20-324	S-ES447-18FSP14-00-10	ES447	0.0	1.0	11/29/2018	Total 209 PCB cong (excl non-detects)	175	J+
20-324	S-ES447-18FSP14-10-20	ES447	1.0	2.0	11/29/2018	Total 209 PCB cong (excl non-detects)	59.6	
20-324	S-ES447B-18FSP14-20-30	ES447B	2.0	3.0	3/19/2019	Total 209 PCB cong (excl non-detects)	0.0801	
20-324	S-ES448-18FSP14-00-10	ES448	0.0	1.0	12/11/2018	Aroclor 1254 - Immunoassay	0.64	JB
20-324	S-ES483-18FSP14-00-10	ES483	0.0	1.0	1/16/2019	Total 209 PCB cong (excl non-detects)	58	J+
20-324	S-ES483B-18FSP14-10-20	ES483B	1.0	2.0	3/19/2019	Total 209 PCB cong (excl non-detects)	1.92	
20-324	S-ES484-18FSP14-00-10	ES484	0.0	1.0	1/16/2019	Total 209 PCB cong (excl non-detects)	47.4	J+
20-324	S-ES485-18FSP14-10-20	ES485	1.0	2.0	1/31/2019	Total 209 PCB cong (excl non-detects)	1.35	
20-324	S-ES485-18FSP14-20-30	ES485	2.0	3.0	1/31/2019	Total 209 PCB cong (excl non-detects)	0.124	
20-324	S-ES485-18FSP14-30-40	ES485	3.0	4.0	1/31/2019	Total 209 PCB cong (excl non-detects)	0.022	
20-324	S-ES486-18FSP14-00-10	ES486	0.0	1.0	1/31/2019	Aroclor 1254 - Immunoassay	5.8	J
20-324	S-ES487-18FSP14-00-10	ES487	0.0	1.0	1/16/2019	Total 209 PCB cong (excl non-detects)	4.74	
20-324	S-ES488-18FSP14-00-10	ES488	0.0	1.0	1/16/2019	Total 209 PCB cong (excl non-detects)	139	
20-324	S-ES489-18FSP14-00-10	ES489	0.0	1.0	1/16/2019	Total 209 PCB cong (excl non-detects)	11.9	
20-324	S-ES490-18FSP14-10-20	ES490	1.0	2.0	1/31/2019	Total 209 PCB cong (excl non-detects)	0.66	
20-324	S-ES491-18FSP14-00-10	ES491	0.0	1.0	1/16/2019	Total 209 PCB cong (excl non-detects)	109	
20-324	S-ES492-18FSP14-00-10	ES492	0.0	1.0	1/16/2019	Total 209 PCB cong (excl non-detects)	2.94	
20-324	S-ES493-18FSP14-00-10	ES493	0.0	1.0	1/16/2019	Total 209 PCB cong (excl non-detects)	53.2	
20-324	S-ES494-18FSP14-00-10	ES494	0.0	1.0	1/31/2019	Aroclor 1254 - Immunoassay	0.93	JB
20-324	S-ES495-18FSP14-00-10	ES495	0.0	1.0	1/31/2019	Total 209 PCB cong (excl non-detects)	11.9	
20-324	S-15Y-INT108-00-10	INT108	0.0	1.0	5/13/2015	Aroclor 1254 - Immunoassay	62.0	D
20-324	S-15Y-INT108-10-20	INT108	1.0	2.0	5/13/2015	Aroclor 1254 - Immunoassay	0.90	
20-324	S-15Y-INT109-00-10	INT109	0.0	1.0	5/13/2015	Aroclor 1254 - Immunoassay	5.50	D
20-324	S-15Y-INT109-10-20	INT109	1.0	2.0	5/13/2015	Aroclor 1254 - Immunoassay	0.70	
20-324	S-15Y-INT110-00-10	INT110	0.0	1.0	5/13/2015	Aroclor 1254 - Immunoassay	97.8	D
20-324	S-15Y-INT110-10-20	INT110	1.0	2.0	5/13/2015	Aroclor 1254 - Immunoassay	0.50	U
20-324	S-15Y-INT111-00-10	INT111	0.0	1.0	5/13/2015	Total 139 PCB cong (excl non-detects)	3.6	
20-324	S-15Y-INT111-10-20	INT111	1.0	2.0	5/13/2015	Aroclor 1254 - Immunoassay	0.60	
20-324	S-15Y-INT112-00-10	INT112	0.0	1.0	5/13/2015	Aroclor 1254 - Immunoassay	70.3	D
20-324	S-15Y-INT112-10-20	INT112	1.0	2.0	5/13/2015	Aroclor 1254 - Immunoassay	0.50	U
20-324	S-15Y-INT113-00-10	INT113	0.0	1.0	5/13/2015	Aroclor 1254 - Immunoassay	1.30	
20-324	S-15Y-INT113-10-20	INT113	1.0	2.0	5/13/2015	Aroclor 1254 - Immunoassay	0.50	U
20-324	S-17Y-INT520-00-10	INT520	0.0	1.0	5/11/2017	Aroclor 1254 - Immunoassay	14.1	D
20-324	S-17Y-INT520-10-20	INT520	1.0	2.0	5/11/2017	Aroclor 1254 - Immunoassay	0.8	
20-324	S-17Y-INT521-00-10	INT521	0.0	1.0	5/11/2017	Aroclor 1254 - Immunoassay	7.07	

Table 2-1
Pre-Excavation PCB Characterization Sample Results for East Zone 4

Parcel	Sample ID	Station ID	Sample Depth Top (ft)	Sample Depth Bottom (ft)	Sample Date	Description	Total PCB (mg/kg)	Final Qualifier
20-324	S-17Y-INT521-10-20	INT521	1.0	2.0	5/11/2017	Aroclor 1254 - Immunoassay	0.5	U
20-324	S-17Y-INT522-00-10	INT522	0.0	1.0	5/11/2017	Aroclor 1254 - Immunoassay	51.9	D
20-324	S-17Y-INT522-00-10-REP	INT522	0.0	1.0	5/11/2017	Aroclor 1254 - Immunoassay	81.5	D
20-324	S-17Y-INT522-10-20	INT522	1.0	2.0	5/11/2017	Aroclor 1254 - Immunoassay	0.5	U
20-324	S-17Y-INT522-10-20-REP	INT522	1.0	2.0	5/11/2017	Aroclor 1254 - Immunoassay	0.8	
20-324	S-17Y-INT523-00-10	INT523	0.0	1.0	5/11/2017	Aroclor 1254 - Immunoassay	3.37	
20-324	S-17Y-INT523-10-20	INT523	1.0	2.0	5/11/2017	Aroclor 1254 - Immunoassay	0.5	U
20-324	S-17Y-INT524-00-10	INT524	0.0	1.0	5/10/2017	Aroclor 1254 - Immunoassay	18.1	D
20-324	S-17Y-INT524-10-20	INT524	1.0	2.0	5/10/2017	Aroclor 1254 - Immunoassay	0.5	U
20-324	S-17Y-INT525-00-10	INT525	0.0	1.0	5/10/2017	Aroclor 1254 - Immunoassay	4.02	
20-324	S-17Y-INT525-10-20	INT525	1.0	2.0	5/10/2017	Aroclor 1254 - Immunoassay	0.5	U
20-324	S-17Y-INT526-00-10	INT526	0.0	1.0	5/10/2017	Total 139 PCB cong (excl non-detects)	240	
20-324	S-17Y-INT526-10-20	INT526	1.0	2.0	5/10/2017	Aroclor 1254 - Immunoassay	0.5	U
20-324	S-17Y-INT527-00-10	INT527	0.0	1.0	5/10/2017	Total 139 PCB cong (excl non-detects)	140	
20-324	S-17Y-INT527-00-10-REP	INT527	0.0	1.0	5/10/2017	Total 139 PCB cong (excl non-detects)	170	
20-324	S-17Y-INT527-10-20	INT527	1.0	2.0	5/10/2017	Aroclor 1254 - Immunoassay	0.5	U
20-324	S-17Y-INT527-10-20-REP	INT527	1.0	2.0	5/10/2017	Aroclor 1254 - Immunoassay	0.5	U
20-324	S-17Y-INT528-00-10	INT528	0.0	1.0	5/10/2017	Aroclor 1254 - Immunoassay	7.34	
20-324	S-17Y-INT528-10-20	INT528	1.0	2.0	5/10/2017	Aroclor 1254 - Immunoassay	0.7	
20-324	S-17Y-INT529-00-10	INT529	0.0	1.0	5/10/2017	Aroclor 1254 - Immunoassay	7.43	
20-324	S-17Y-INT529-10-20	INT529	1.0	2.0	5/10/2017	Aroclor 1254 - Immunoassay	0.5	U
20-324	S-17Y-INT530-10-20	INT530	1.0	2.0	5/10/2017	Aroclor 1254 - Immunoassay	0.5	U
20-324	S-17Y-INT531-00-10	INT531	0.0	1.0	5/10/2017	Aroclor 1254 - Immunoassay	22.7	D
20-324	S-17Y-INT531-10-20	INT531	1.0	2.0	5/10/2017	Aroclor 1254 - Immunoassay	0.5	U
20-324	S-17Y-INT532-00-10	INT532	0.0	1.0	5/10/2017	Total 139 PCB cong (excl non-detects)	250	
20-324	S-17Y-INT532-10-20	INT532	1.0	2.0	5/10/2017	Aroclor 1254 - Immunoassay	0.5	U
20-324	S-17Y-INT533-00-10	INT533	0.0	1.0	5/10/2017	Aroclor 1254 - Immunoassay	9.91	
20-324	S-17Y-INT533-10-20	INT533	1.0	2.0	5/10/2017	Aroclor 1254 - Immunoassay	0.5	U
20-324	S-0114-1	S-114	0.0	1.0	9/23/1999	Total 18 NOAA PCB cong (excl non-detects)	0.231	
20-324	S-0114-2	S-114	1.0	2.0	9/23/1999	Total 18 NOAA PCB cong (excl non-detects)	0	U
20-324	S-0114-3	S-114	2.0	3.0	9/23/1999	Total 18 NOAA PCB cong (excl non-detects)	0.023	
20-324	S-0115-1	S-115	0.0	1.0	9/10/1999	Total 18 NOAA PCB cong (excl non-detects)	0	U
20-324	S-0115-2	S-115	1.0	2.0	9/10/1999	Total 18 NOAA PCB cong (excl non-detects)	0	U
20-324	S-0127-1	S-127	0.0	1.0	9/23/1999	Total 18 NOAA PCB cong (excl non-detects)	3.12	
20-324	S-0127-2	S-127	1.0	2.0	9/23/1999	Total 18 NOAA PCB cong (excl non-detects)	0.34	
20-324	S-0128-1	S-128	0.0	1.0	9/10/1999	Total 18 NOAA PCB cong (excl non-detects)	0.24	
20-324	S-0128-2	S-128	1.0	2.0	9/10/1999	Total 18 NOAA PCB cong (excl non-detects)	0.73	
20-324	S-0129-1	S-129	0.0	1.0	9/23/1999	Total 18 NOAA PCB cong (excl non-detects)	0.14	
20-324	S-0129-2	S-129	1.0	2.0	9/23/1999	Total 18 NOAA PCB cong (excl non-detects)	0.006	
20-324	S-0129-3	S-129	2.0	3.0	9/23/1999	Total 18 NOAA PCB cong (excl non-detects)	0	U

Table 2-1
Pre-Excavation PCB Characterization Sample Results for East Zone 4

Parcel	Sample ID	Station ID	Sample Depth Top (ft)	Sample Depth Bottom (ft)	Sample Date	Description	Total PCB (mg/kg)	Final Qualifier
20-324	S-3527-0.0-1.0	S-3527	0.0	1.0	11/15/2001	Total 18 NOAA PCB cong (excl non-detects)	148	
20-324	S-3527-1.0-2.0	S-3527	1.0	2.0	11/15/2001	Total 18 NOAA PCB cong (excl non-detects)	22.4	
20-324	S-3527-2.0-3.0	S-3527	2.0	3.0	11/15/2001	Total 18 NOAA PCB cong (excl non-detects)	0.62	
20-324	S-3528-0.0-1.0	S-3528	0.0	1.0	11/12/2001	Total 18 NOAA PCB cong (excl non-detects)	5.20	
20-324	S-3534-0.0-1.0	S-3534	0.0	1.0	11/9/2001	Total 18 NOAA PCB cong (excl non-detects)	16.4	
20-324	S-3535-0.0-.5	S-3535	0.0	0.5	11/12/2001	Total 18 NOAA PCB cong (excl non-detects)	3.38	
20-324	S-3535-.5-1.0	S-3535	0.5	1.0	11/9/2001	Total 18 NOAA PCB cong (excl non-detects)	0.25	
20-324	S-3748-0.0-1.0	S-3748	0.0	1.0	10/16/2001	Total 18 NOAA PCB cong (excl non-detects)	218	
20-324	S-3748-1.0-2.0	S-3748	1.0	2.0	10/16/2001	Total 18 NOAA PCB cong (excl non-detects)	1.72	
20-324	S-3748-2.0-3.0	S-3748	2.0	3.0	10/16/2001	Total 18 NOAA PCB cong (excl non-detects)	4.42	
20-324	S-3749-0.0-1.0	S-3749	0.0	1.0	10/16/2001	Total 18 NOAA PCB cong (excl non-detects)	143	
20-324	S-3750-0.0-1.0	S-3750	0.0	1.0	10/16/2001	Total 18 NOAA PCB cong (excl non-detects)	0.22	
20-324	S-3750-1.0-2.0	S-3750	1.0	2.0	10/16/2001	Total 18 NOAA PCB cong (excl non-detects)	11.2	
20-324	S-3753-0.0-1.0	S-3753	0.0	1.0	10/16/2001	Total 18 NOAA PCB cong (excl non-detects)	52.0	
20-324	S-3753-1.0-2.0	S-3753	1.0	2.0	10/16/2001	Total 18 NOAA PCB cong (excl non-detects)	3.12	
20-324	S-3753-2.5-3.0	S-3753	2.5	3.0	10/16/2001	Total 18 NOAA PCB cong (excl non-detects)	0	U
20-324	S-3754-0.0-1.0	S-3754	0.0	1.0	10/16/2001	Total 18 NOAA PCB cong (excl non-detects)	0.65	
20-324	S-3754-1.0-2.0	S-3754	1.0	2.0	10/16/2001	Total 18 NOAA PCB cong (excl non-detects)	2444	
20-324	S-3754-2.0-3.0	S-3754	2.0	3.0	10/16/2001	Total 18 NOAA PCB cong (excl non-detects)	4.42	
20-324	S-3755-0.0-1.0	S-3755	0.0	1.0	11/15/2001	Total 18 NOAA PCB cong (excl non-detects)	70.2	
20-324	S-3755-1.0-2.0	S-3755	1.0	2.0	11/15/2001	Total 18 NOAA PCB cong (excl non-detects)	3.64	
20-324	S-3755-2.0-3.0	S-3755	2.0	3.0	11/15/2001	Total 18 NOAA PCB cong (excl non-detects)	0	U
20-324	S-0796-2	S-796	1.0	2.0	10/20/2000	Total 18 NOAA PCB cong (excl non-detects)	0.11	
20-324	S-0797-1	S-797	0.0	1.0	10/20/2000	Total 18 NOAA PCB cong (excl non-detects)	0.26	
20-324	S-0797-2	S-797	1.0	2.0	10/20/2000	Total 18 NOAA PCB cong (excl non-detects)	0	U
20-324	S-L - 25	S-L - 25	0.0	1.0	pre-ROD	Total PCB Congeners (sum CONG x factor)[1]	2.00	
20-324	S-15L-SSS0-00-05	SSS0	0.0	0.5	7/20/2015	Aroclor 1254 - Immunoassay	1.30	
20-324	S-15L-SSS4-00-05	SSS4	0.0	0.5	7/20/2015	Aroclor 1254 - Immunoassay	0.84	
20-325	S-ES453-18FSP14-00-10	ES453	0.0	1.0	12/6/2018	Total 209 PCB cong (excl non-detects)	1.26	
20-325	S-ES455-18FSP14-00-10	ES455	0.0	1.0	12/4/2018	Aroclor 1254 - Immunoassay	3.9	J
20-325	S-ES457-18FSP14-00-10	ES457	0.0	1.0	11/14/2018	Aroclor 1254 - Immunoassay	0.56	J
20-325	S-ES458-18FSP14-00-10	ES458	0.0	1.0	11/15/2018	Aroclor 1254 - Immunoassay	4.1	J
20-325	S-ES459-18FSP14-00-10	ES459	0.0	1.0	11/15/2018	Aroclor 1254 - Immunoassay	4.6	J
20-325	S-ES461-18FSP14-00-10	ES461	0.0	1.0	12/4/2018	Aroclor 1254 - Immunoassay	17	J
20-325	S-ES462-18FSP14-00-10	ES462	0.0	1.0	11/15/2018	Aroclor 1254 - Immunoassay	0.56	J
20-325	S-ES462B-18FSP14-00-10	ES462B	0.0	1.0	12/11/2018	Aroclor 1254 - Immunoassay	0.5	JB
20-325	S-ES462B-18FSP14-10-20	ES462B	1.0	2.0	12/11/2018	Aroclor 1254 - Immunoassay	0.26	J
20-325	S-ES462B-18FSP14-20-29	ES462B	2.0	2.9	12/11/2018	Aroclor 1254 - Immunoassay	0.5	JB
20-325	S-ES463-18FSP14-00-10	ES463	0.0	1.0	12/4/2018	Total 209 PCB cong (excl non-detects)	38.3	
20-325	S-ES464-18FSP14-00-10	ES464	0.0	1.0	11/15/2018	Aroclor 1254 - Immunoassay	2.9	J

Table 2-1
Pre-Excavation PCB Characterization Sample Results for East Zone 4

Parcel	Sample ID	Station ID	Sample Depth Top (ft)	Sample Depth Bottom (ft)	Sample Date	Description	Total PCB (mg/kg)	Final Qualifier
20-325	S-ES465-18FSP14-00-10	ES465	0.0	1.0	12/4/2018	Aroclor 1254 - Immunoassay	1.2	J
20-325	S-15Y-INT114-00-10	INT114	0.0	1.0	5/4/2015	Total 139 PCB cong (excl non-detects)	12	
20-325	S-15Y-INT114-10-20	INT114	1.0	2.0	5/4/2015	Aroclor 1254 - Immunoassay	0.50	U
20-325	S-15Y-INT115-00-10	INT115	0.0	1.0	5/4/2015	Aroclor 1254 - Immunoassay	9.50	D
20-325	S-15Y-INT115-10-20	INT115	1.0	2.0	5/4/2015	Aroclor 1254 - Immunoassay	0.50	U
20-325	S-15Y-INT116-10-20	INT116	1.0	2.0	5/4/2015	Aroclor 1254 - Immunoassay	0.50	U
20-325	S-16U-INT343-00-10	INT343	0.0	1.0	6/2/2016	Aroclor 1254 - Immunoassay	34.7	D
20-325	S-16U-INT343-10-20	INT343	1.0	2.0	6/2/2016	Aroclor 1254 - Immunoassay	0.54	
20-325	S-17Y-INT536-00-10	INT536	0.0	1.0	5/10/2017	Total 139 PCB cong (excl non-detects)	50	
20-325	S-17Y-INT536-10-20	INT536	1.0	2.0	5/10/2017	Aroclor 1254 - Immunoassay	0.5	U
20-325	S-17Y-INT538-00-10	INT538	0.0	1.0	5/10/2017	Aroclor 1254 - Immunoassay	11.2	JD
20-325	S-17Y-INT538-00-10-REP	INT538	0.0	1.0	5/10/2017	Aroclor 1254 - Immunoassay	21.1	JD
20-325	S-17Y-INT538-10-20	INT538	1.0	2.0	5/10/2017	Aroclor 1254 - Immunoassay	0.5	U
20-325	S-17Y-INT538-10-20-REP	INT538	1.0	2.0	5/10/2017	Aroclor 1254 - Immunoassay	0.5	U
20-325	S-17Y-INT539-00-10	INT539	0.0	1.0	5/10/2017	Aroclor 1254 - Immunoassay	9.79	
20-325	S-17Y-INT539-10-20	INT539	1.0	2.0	5/10/2017	Aroclor 1254 - Immunoassay	0.5	U
20-325	S-17Y-INT540-00-10	INT540	0.0	1.0	5/10/2017	Aroclor 1254 - Immunoassay	189	D
20-325	S-17Y-INT540-10-20	INT540	1.0	2.0	5/10/2017	Aroclor 1254 - Immunoassay	0.5	U
20-325	S-17Y-INT541-00-10	INT541	0.0	1.0	5/9/2017	Aroclor 1254 - Immunoassay	4.09	
20-325	S-17Y-INT541-10-20	INT541	1.0	2.0	5/9/2017	Aroclor 1254 - Immunoassay	0.5	U
20-325	S-0144-1	S-144	0.0	1.0	9/23/1999	Total 18 NOAA PCB cong (excl non-detects)	1014	
20-325	S-0144-2	S-144	1.0	2.0	9/23/1999	Total 18 NOAA PCB cong (excl non-detects)	15.1	
20-325	S-0145-1	S-145	0.0	1.0	9/10/1999	Total 18 NOAA PCB cong (excl non-detects)	3.38	
20-325	S-0145-2	S-145	1.0	2.0	9/10/1999	Total 18 NOAA PCB cong (excl non-detects)	0.86	
20-325	S-0146-1	S-146	0.0	1.0	9/23/1999	Total 18 NOAA PCB cong (excl non-detects)	4.42	
20-325	S-0146-2	S-146	1.0	2.0	9/23/1999	Total 18 NOAA PCB cong (excl non-detects)	0.099	
20-325	S-0146-3	S-146	2.0	3.0	9/23/1999	Total 18 NOAA PCB cong (excl non-detects)	0.416	
20-325	S-0148-1	S-148	0.0	1.0	9/10/1999	Total 18 NOAA PCB cong (excl non-detects)	156	
20-325	S-0148-2	S-148	1.0	2.0	9/10/1999	Total 18 NOAA PCB cong (excl non-detects)	1.40	
20-325	S-3577-1.5-2.0	S-3577	1.5	2.0	9/17/2001	Total 18 NOAA PCB cong (excl non-detects)	0	U
20-325	S-3583-1.6-2.1	S-3583	1.6	2.1	9/17/2001	Total 18 NOAA PCB cong (excl non-detects)	2.34	
20-325	S-3759-0.0-1.0	S-3759	0.0	1.0	10/15/2001	Total 18 NOAA PCB cong (excl non-detects)	0.88	
20-325	S-3759-0.0-1.0REP	S-3759	0.0	1.0	10/15/2001	Total 18 NOAA PCB cong (excl non-detects)	1.27	
20-325	S-3760-0.0-1.0	S-3760	0.0	1.0	10/15/2001	Total 18 NOAA PCB cong (excl non-detects)	143	
20-325	S-3760-1.0-2.0	S-3760	1.0	2.0	10/15/2001	Total 18 NOAA PCB cong (excl non-detects)	1.14	
20-325	S-3761-0.0-1.0	S-3761	0.0	1.0	10/15/2001	Total 18 NOAA PCB cong (excl non-detects)	54.6	
20-325	S-3761-1.0-2.0	S-3761	1.0	2.0	10/15/2001	Total 18 NOAA PCB cong (excl non-detects)	3.12	
20-325	S-3761-2.0-3.0	S-3761	2.0	3.0	10/15/2001	Total 18 NOAA PCB cong (excl non-detects)	1.85	
20-325	S-3762-.0-1.0	S-3762	0.0	1.0	10/15/2001	Total 18 NOAA PCB cong (excl non-detects)	44.2	
20-325	S-3762-1.0-2.0	S-3762	1.0	2.0	10/15/2001	Total 18 NOAA PCB cong (excl non-detects)	0.65	

Table 2-1
Pre-Excavation PCB Characterization Sample Results for East Zone 4

Parcel	Sample ID	Station ID	Sample Depth Top (ft)	Sample Depth Bottom (ft)	Sample Date	Description	Total PCB (mg/kg)	Final Qualifier
20-325	S-3763-0.0-1.0	S-3763	0.0	1.0	10/15/2001	Total 18 NOAA PCB cong (excl non-detects)	41.6	
20-325	S-3763-1.0-2.0	S-3763	1.0	2.0	10/15/2001	Total 18 NOAA PCB cong (excl non-detects)	0.13	
20-325	S-3764-0.0-.5	S-3764	0.0	0.5	10/16/2001	Total 18 NOAA PCB cong (excl non-detects)	286	
20-325	S-3764-2.5-3.0	S-3764	2.5	3.0	10/16/2001	Total 18 NOAA PCB cong (excl non-detects)	14.8	
20-325	S-3765-0.0-1.0	S-3765	0.0	1.0	10/11/2001	Total 18 NOAA PCB cong (excl non-detects)	4.68	
20-325	S-3765-1.0-2.0	S-3765	1.0	2.0	10/11/2001	Total 18 NOAA PCB cong (excl non-detects)	5.98	
20-325	S-3766-0.0-1.0	S-3766	0.0	1.0	10/11/2001	Total 18 NOAA PCB cong (excl non-detects)	31.2	
20-325	S-3766-1.0-2.0	S-3766	1.0	2.0	10/11/2001	Total 18 NOAA PCB cong (excl non-detects)	7.80	
20-325	S-3767-0.0-1.0	S-3767	0.0	1.0	10/11/2001	Total 18 NOAA PCB cong (excl non-detects)	0.34	
20-325	S-3768-0.0-1.0	S-3768	0.0	1.0	10/11/2001	Total 18 NOAA PCB cong (excl non-detects)	5.46	
20-325	S-3769-0.0-1.0	S-3769	0.0	1.0	10/11/2001	Total 18 NOAA PCB cong (excl non-detects)	0.06	
20-325	S-3770-0.0-1.0	S-3770	0.0	1.0	10/11/2001	Total 18 NOAA PCB cong (excl non-detects)	0.42	
20-325	S-3771-0.0-1.0	S-3771	0.0	1.0	10/11/2001	Total 18 NOAA PCB cong (excl non-detects)	1.64	
20-325	S-3771-2.0-3.0	S-3771	2.0	3.0	10/11/2001	Total 18 NOAA PCB cong (excl non-detects)	0.20	
20-325	S-3772-0.0-1.0	S-3772	0.0	1.0	10/11/2001	Total 18 NOAA PCB cong (excl non-detects)	6.24	
20-325	S-3773-0.0-1.0	S-3773	0.0	1.0	10/11/2001	Total 18 NOAA PCB cong (excl non-detects)	19.8	
20-325	S-0879-1	S-879	0.0	1.0	10/25/2000	Total 18 NOAA PCB cong (excl non-detects)	96.2	
20-325	S-0879-2	S-879	1.0	2.0	10/25/2000	Total 18 NOAA PCB cong (excl non-detects)	0	U
20-325	S-0880-1	S-880	0.0	1.0	10/25/2000	Total 18 NOAA PCB cong (excl non-detects)	28.6	
20-325	S-0880-2	S-880	1.0	2.0	10/25/2000	Total 18 NOAA PCB cong (excl non-detects)	0.14	
20-325	S-M - 27 - 1	S-M - 27	0.0	1.0	pre-ROD	Total PCB Congeners (sum CONG x factor)[1]	52.0	
20-325	S-M - 27 - 2	S-M - 27	1.0	2.0	pre-ROD	Total PCB Congeners (sum CONG x factor)[1]	0	U

Notes:
Pre-excavation confirmatory congener (PECC) samples are highlighted green.
D - reported value is from a dilution; J - estimated value; U - not detected; J+ - high bias estimate; B - contaminant detected in blank.
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 3-1
Compliance Survey Control Table for East Zone 4

Parcel	Station ID	Location	Easting	Northing	Design Elevation	Post-Excavation Elevation	Δ (ft)
			MA State Plane ft, NAD83		NAVD88 ft		
20-001	ES407	Sidewall	815952.2	2702945.8	0.3	TBD	TBD
20-001	ES467	Sidewall	816065.9	2703064.7	0.7	TBD	TBD
20-001	ES468	Sidewall	816151.9	2703033.5	1.0	TBD	TBD
20-001	ES471	Sidewall	816096.3	2703017.6	0.7	TBD	TBD
20-001	INT507	Sidewall	816031.7	2702988.1	0.9	TBD	TBD
20-001	INT509	Sidewall	816012.9	2702958.2	1.0	TBD	TBD
20-001	S-3743	Sidewall	815996.0	2703034.0	0.5	TBD	TBD
20-001	ES403	Floor	816103.5	2703034.2	0.7	TBD	TBD
20-001	ES404	Floor	815982.1	2702993.0	0.7	TBD	TBD
20-001	ES470	Floor	816038.2	2703025.1	0.5	TBD	TBD
20-002	ES420	Sidewall	815921.2	2702709.1	0.5	TBD	TBD
20-002	ES481	Sidewall	815983.6	2702683.5	0.5	TBD	TBD
20-002	ES498	Sidewall	816018.7	2702639.0	0.9	TBD	TBD
20-002	ES4104	Sidewall	816053.3	2702679.2	1.3	TBD	TBD
20-002	INT519	Sidewall	816113.6	2702707.7	1.3	TBD	TBD
20-002	ES419	Floor	815963.6	2702718.6	0.7	TBD	TBD
20-002	ES421	Floor	816083.1	2702700.8	1.1	TBD	TBD
20-003	ES497	Sidewall	816040.1	2702055.4	0.7	TBD	TBD
20-003	S-3758	Sidewall	816100.0	2702097.0	1.3	TBD	TBD
20-003	ES449	Floor	816068.1	2702089.7	1.1	TBD	TBD
20-323	ES413	Sidewall	816003.4	2702839.3	1.0	TBD	TBD
20-323	ES417	Sidewall	816094.1	2702766.5	1.2	TBD	TBD
20-323	ES473	Sidewall	815972.3	2702861.9	1.0	TBD	TBD
20-323	ES476	Sidewall	815909.7	2702804.6	-1.0	TBD	TBD
20-323	ES4103	Sidewall	816115.8	2702924.6	0.9	TBD	TBD
20-323	INT511	Sidewall	815994.4	2702901.1	0.7	TBD	TBD
20-323	INT512	Sidewall	816039.3	2702902.3	0.9	TBD	TBD
20-323	INT513	Sidewall	816064.7	2702925.8	0.7	TBD	TBD
20-323	S-3739	Sidewall	816056.0	2702822.0	1.1	TBD	TBD
20-323	S-3740	Sidewall	816057.0	2702806.0	0.9	TBD	TBD
20-323	ES475	Floor	815941.4	2702829.2	1.0	TBD	TBD
20-323	ES477	Floor	815991.1	2702765.7	1.0	TBD	TBD
20-323	ES478	Floor	816058.4	2702763.4	1.2	TBD	TBD
20-323	INT106	Floor	815936.7	2702765.5	0.9	TBD	TBD
20-323	S-3737	Floor	816010.0	2702916.0	0.7	TBD	TBD
20-324	ES4101	Sidewall	816084.1	2702218.2	1.3	TBD	TBD
20-324	ES425	Sidewall	816066.3	2702625.1	1.3	TBD	TBD
20-324	ES427	Sidewall	816042.2	2702596.9	1.1	TBD	TBD
20-324	ES436	Sidewall	816085.5	2702400.8	1.3	TBD	TBD
20-324	ES439	Sidewall	816076.7	2702349.8	1.3	TBD	TBD
20-324	ES441	Sidewall	816032.1	2702333.7	0.8	TBD	TBD
20-324	ES443	Sidewall	816078.4	2702282.6	1.3	TBD	TBD
20-324	ES445	Sidewall	816016.9	2702242.9	-1.0	TBD	TBD
20-324	ES484	Sidewall	816040.4	2702570.4	1.1	TBD	TBD
20-324	ES487	Sidewall	816007.8	2702483.7	0.5	TBD	TBD
20-324	ES489	Sidewall	816133.7	2702479.4	1.2	TBD	TBD
20-324	ES492	Sidewall	816160.8	2702245.7	1.3	TBD	TBD
20-324	ES495	Sidewall	816023.9	2702127.5	0.5	TBD	TBD
20-324	ES4105	Sidewall	816069.4	2702519.1	1.2	TBD	TBD
20-324	ES4106	Sidewall	816068.1	2702448.8	1.2	TBD	TBD
20-324	ES4107	Sidewall	816052.6	2702179.3	1.3	TBD	TBD
20-324	S-127	Sidewall	816020.0	2702400.0	1.0	TBD	TBD
20-324	ES4100	Floor	816054.4	2702348.4	1.1	TBD	TBD
20-324	ES431	Floor	816037.9	2702543.0	1.1	TBD	TBD
20-324	ES433	Floor	816087.9	2702479.2	1.1	TBD	TBD
20-324	ES444	Floor	816110.5	2702245.3	1.1	TBD	TBD
20-324	ES447B	Floor	816046.2	2702141.5	0.3	TBD	TBD
20-324	ES483B	Floor	816035.9	2702620.6	1.1	TBD	TBD
20-324	ES490	Floor	816056.3	2702415.7	1.3	TBD	TBD
20-324	S-3748	Floor	816035.0	2702476.0	1.0	TBD	TBD
20-324	S-3754	Floor	816049.0	2702243.0	-0.3	TBD	TBD
20-325	ES453	Sidewall	816370.3	2702026.1	-0.3	TBD	TBD

Table 3-1
Compliance Survey Control Table for East Zone 4

Parcel	Station ID	Location	Easting	Northing	Design Elevation	Post-Excavation Elevation	Δ (ft)
			MA State Plane ft, NAD83		NAVD88 ft		
20-325	INT536	Sidewall	816048.7	2701986.1	1.3	TBD	TBD
20-325	S-3762	Sidewall	816126.0	2702040.0	1.3	TBD	TBD
20-325	S-3763	Sidewall	816131.0	2702015.0	1.3	TBD	TBD
20-325	S-3766	Sidewall	816223.0	2702040.0	1.2	TBD	TBD
20-325	S-3772	Sidewall	816322.0	2702033.0	1.1	TBD	TBD
20-325	S-880	Sidewall	816400.0	2702048.0	1.0	TBD	TBD
20-325	INT540	Floor	816373.2	2702042.2	1.3	TBD	TBD
20-325	S-144	Floor	816100.0	2702020.0	1.0	TBD	TBD
20-325	S-148	Floor	816300.0	2702015.0	0.9	TBD	TBD
20-325	S-3761	Floor	816076.0	2701993.0	1.4	TBD	TBD
20-325	S-879	Floor	816239.0	2702051.0	1.1	TBD	TBD

Notes:
Elevation measurements at sidewall locations will be taken at the base of the sidewall (bottom of the excavation).
Locations ES4103 through ES4107 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 7-1
Proposed Restoration Acreages by Cover Type for Intertidal East Zone 4

Habitat Type	Existing Pre-Construction Area [acres]	Proposed Area of Restoration [acres]
Low Marsh	0.719	0.605
High Marsh	1.265	1.312
Stream	See Note 1	0.067
TOTAL	**1.984**	**1.984**

Notes:
1. Existing mosquito ditches were classified as low marsh in the 2017 vegetation survey.

Appendix A

East Zone 4

Pre-Excavation Tree and Shrub Inventories

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Memorandum

Subject	Intertidal East Zone 4 Pre-Excavation Native Tree and Shrub Inventory	**Project Name**	New Bedford Harbor Superfund Site
Attention	Marie Esten USACE	**Project No.**	35BG2000
From	Jonathan Heiss/Kim Degutis	**Document Control No.**	ACE-J23-35BG6000-M1-0039
Date	4 June 2019		

Attachments: Figure 1 Intertidal East Zone 4 Pre-Excavation Tree and Shrub Inventory, Tables 3-1 through 3-3 (inventory results)

1.0 Background

Jacobs conducted an inventory of existing trees and shrubs on parcels 20-001 through 20-004 and 20-323 through 20-325 in the East Zone 4 intertidal remediation area (Figure 1) on 14 November 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 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 the Intertidal East Zone 4 parcels 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. For purposes of documentation and reference, the results of the tree and shrub inventories are recorded by sub-area in separate tables included in Section 3 below.

3.0 Results

Eastern red cedar (*Juniperus virginiana*) is the dominant tree type within the Intertidal East Zone 4 parcels. All 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 11 trees were identified.

Two shrub areas were inventoried within the Intertidal East Zone 4 parcels. High-tide bush (*Iva frutescens*) was found to be present in both areas, therefore making it the dominant shrub type. High-tide bush is a native, non-invasive upper saltmarsh plant typically found in wetlands. All of the shrubs identified are considered native and non-invasive (Tables 3-2 and 3-3).

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

4.0 Conclusion

The species makeup of the Intertidal East Zone 4 parcels is comprised entirely of native, non-invasive trees and shrubs, with high-tide bush (*Iva frutescens*) being the dominant shrub and eastern red cedar (*Juniperus virginiana*) being the dominant tree.

Legend

- Eastern red cedar
- MHHW
- MLLW
- 0-1' Excavation Depth
- Parcel Boundary
- Inventoried Shrub Areas
- Proposed Access Road

0 50 100 Feet

August 2019

Basemap Data Source:
Nearview, LLC, MassGIS

Vertical Datum:
NAVD88

Intertidal East Zone 4
Pre-Excavation Tree and Shrub Inventory

New Bedford Harbor Superfund Site

JACOBS

Figure 1

Table 3-1
Existing Tree Inventory for Intertidal East Zone 4

Scientific Name	Common Name	Tree Count (≥3" DBH)	Invasive[1]	Native/Non-Native[2]
Juniperus virginiana	eastern red cedar	11	no	native, county documented
	Total	**11**		

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

[2]PLANTS Database | USDA PLANTS, USDA-NRCS, plants.sc.egov.usda.gov/java/.

Table 3-2
Existing Shrub Cover for Intertidal East Zone 4, Area 1

Scientific Name	Common Name	Area 1 Percent Areal Cover	Invasive[1]	Native/Non-Native[2]	Upland/Wetland
Iva frutescens	high-tide bush	100%	no	native, county documented	wetland

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

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

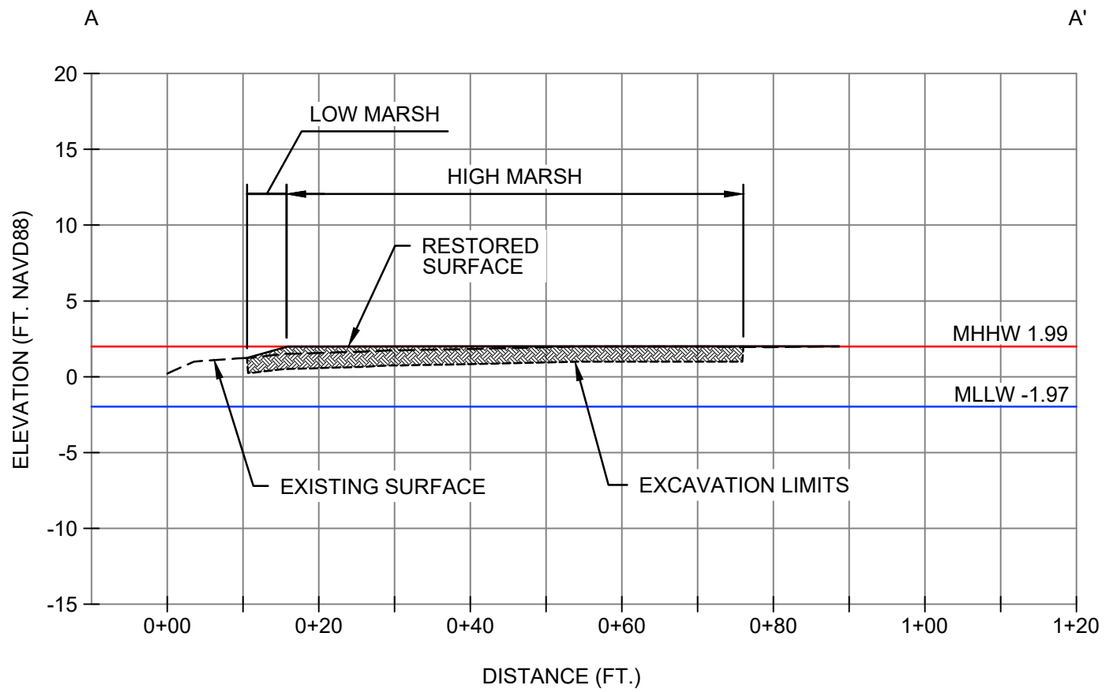
Table 3-3
Existing Shrub Cover for Intertidal East Zone 4, Area 2

Scientific Name	Common Name	Area 2 Percent Areal Cover	Invasive[1]	Native/Non-Native[2]	Upland/Wetland
Iva frutescens	high-tide bush	100%	no	native, county documented	wetland

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

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

Appendix B
Cross Sections



LEGEND:

- MHHW 1.99
- MLLW -1.97
- TOPSOIL BACKFILL

BY:ENGLANLL

LAST SAVED:6/25/2019

CREATED:6/21/2019

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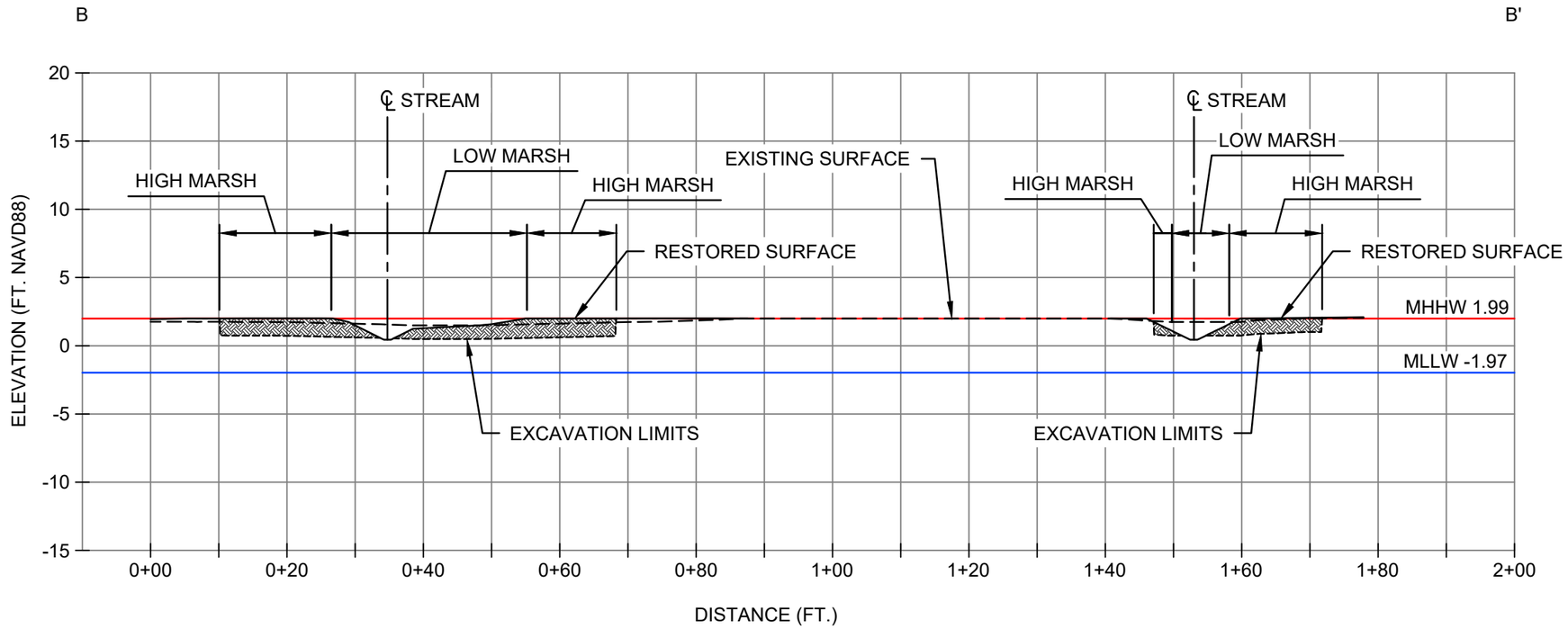
EAST ZONE 4
SECTION A-A'

NEW BEDFORD HARBOR

JUNE 2019 | FIGURE 1



LEGEND:

- MHHW 1.99
- MLLW -1.97
- TOPSOIL BACKFILL

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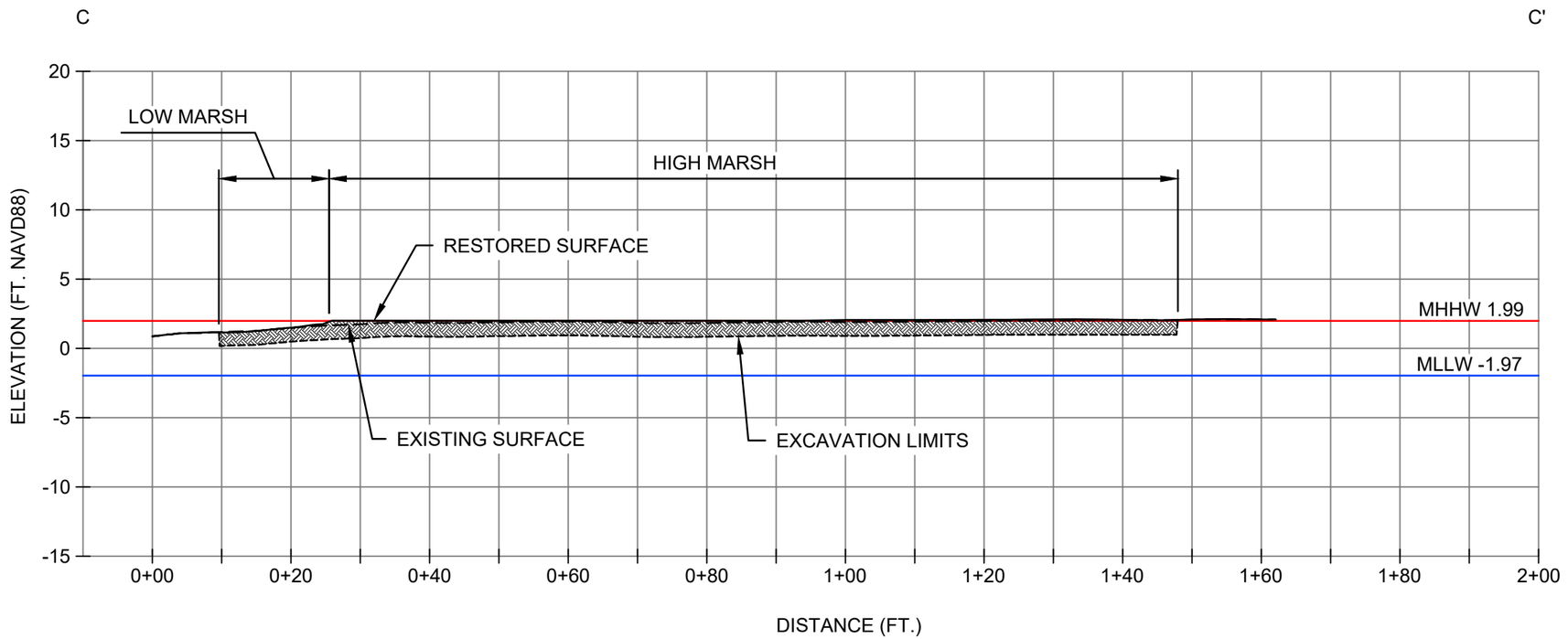
EAST ZONE 4
SECTION B-B'

NEW BEDFORD HARBOR

JUNE 2019 | FIGURE 2

BY:ENGLANLL
LAST SAVED:8/15/2019
CREATED:6/21/2019



LEGEND:

- MHHW 1.99
- MLLW -1.97
- TOPSOIL BACKFILL

BY:ENGLANLL

LAST SAVED:8/15/2019

CREATED:6/21/2019

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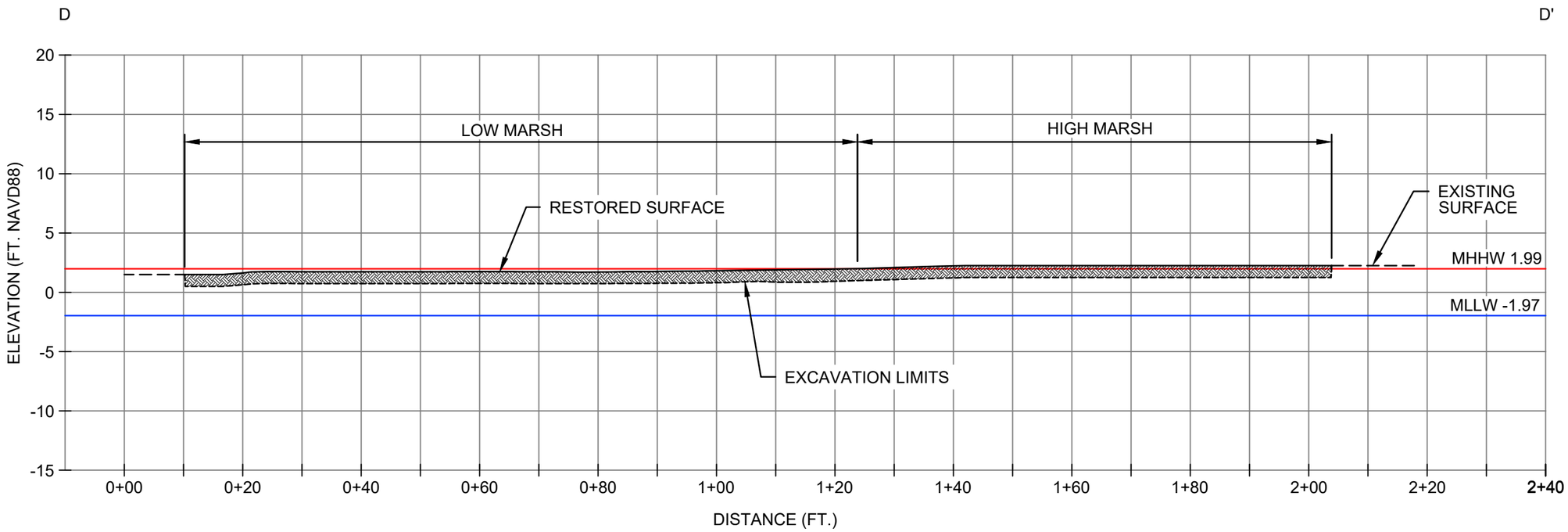
EAST ZONE 4
SECTION C-C'

NEW BEDFORD HARBOR

JUNE 2019 | FIGURE 3



LEGEND:

- MHHW 1.99
- MLLW -1.97
- TOPSOIL BACKFILL

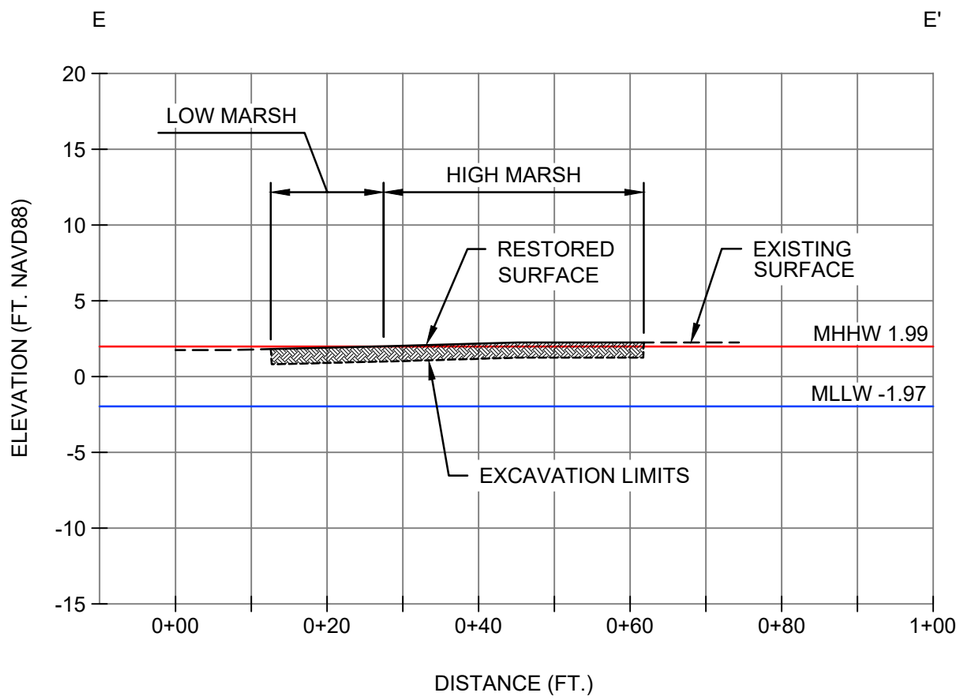
CREATED:6/21/2019 LAST SAVED:6/24/2019 BY:ENGLANLL

JACOBS®

EAST ZONE 4
SECTION D-D'

NEW BEDFORD HARBOR

JUNE 2019 | FIGURE 4



LEGEND:

- MHHW 1.99
- MLLW -1.97
- TOPSOIL BACKFILL

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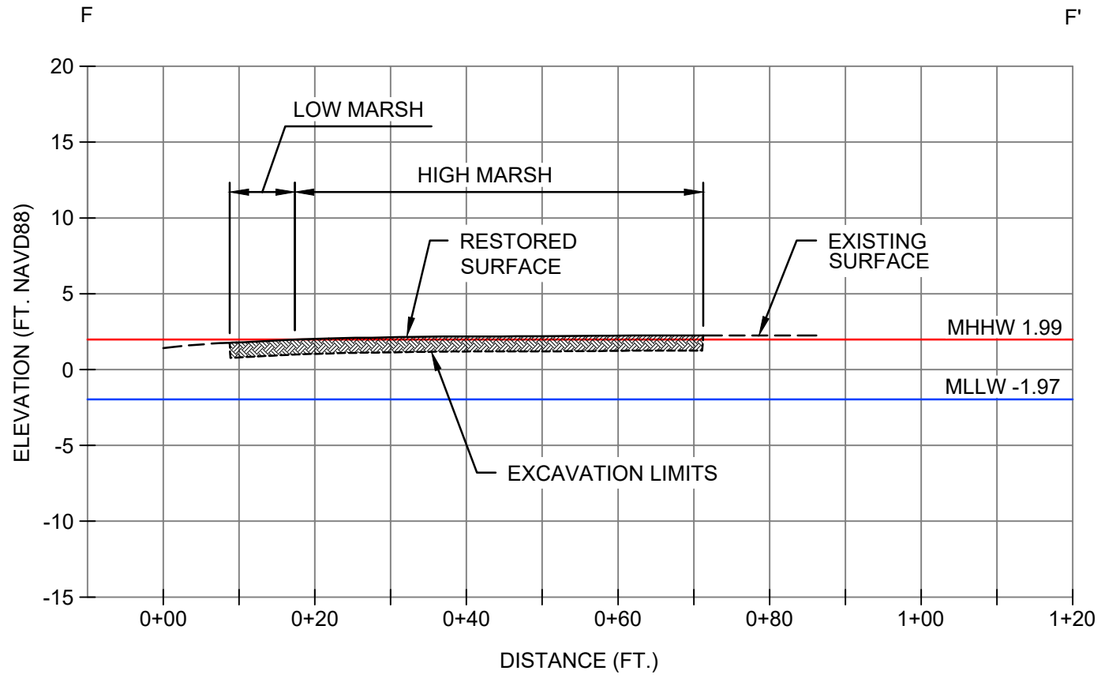
EAST ZONE 4
SECTION E-E'

NEW BEDFORD HARBOR

JUNE 2019 | FIGURE 5

BY:ENGLANLL
LAST SAVED:6/24/2019
CREATED:6/21/2019



LEGEND:

- MHHW 1.99
- MLLW -1.97
- TOPSOIL BACKFILL

BY:ENGLANLL

LAST SAVED:6/24/2019

CREATED:6/21/2019

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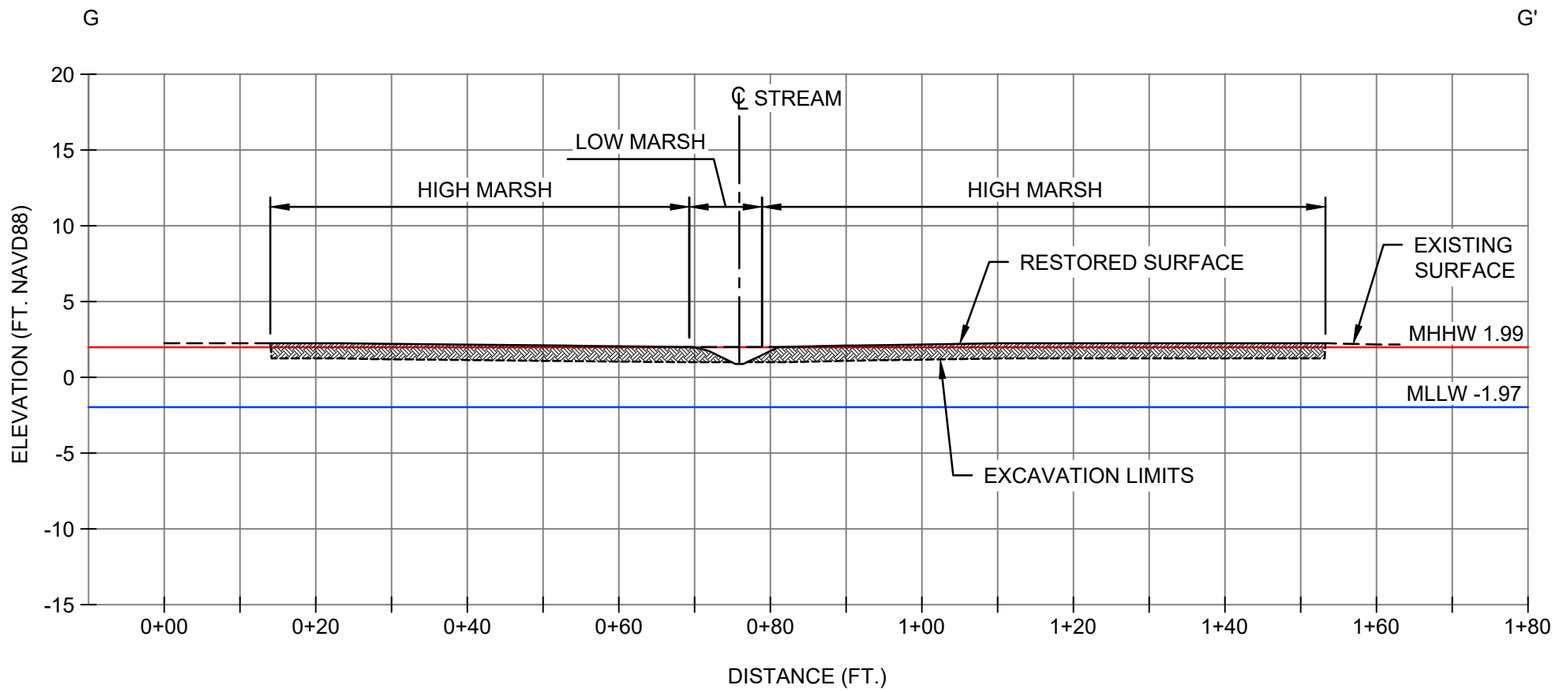
EAST ZONE 4
SECTION F-F'

NEW BEDFORD HARBOR

JUNE 2019 | FIGURE 6



LEGEND:

- MHHW 1.99
- MLLW -1.97
- TOPSOIL BACKFILL

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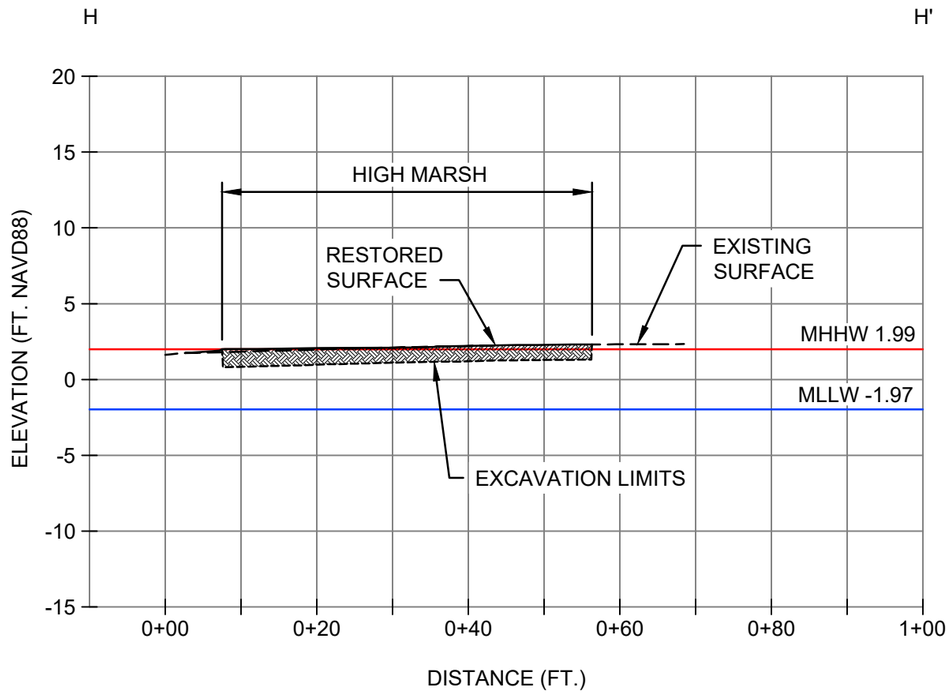
EAST ZONE 4
SECTION G-G'

NEW BEDFORD HARBOR

JUNE 2019 | FIGURE 7

BY:ENGLANLL
LAST SAVED:6/25/2019
CREATED:6/21/2019



LEGEND:

- MHHW 1.99
- MLLW -1.97
- TOPSOIL BACKFILL

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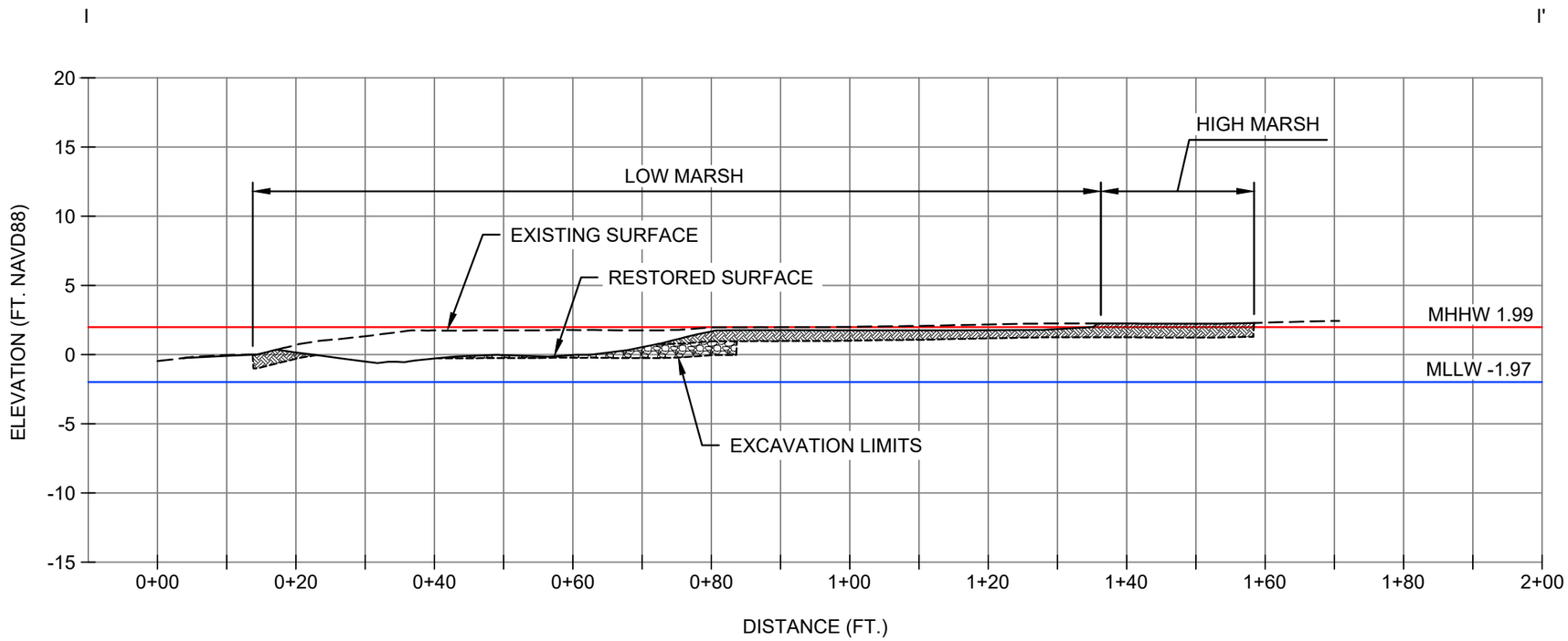
EAST ZONE 4
SECTION H-H'

NEW BEDFORD HARBOR

JUNE 2019 | FIGURE 8

BY:ENGLANLL
LAST SAVED:6/24/2019
CREATED:6/21/2019



LEGEND:

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

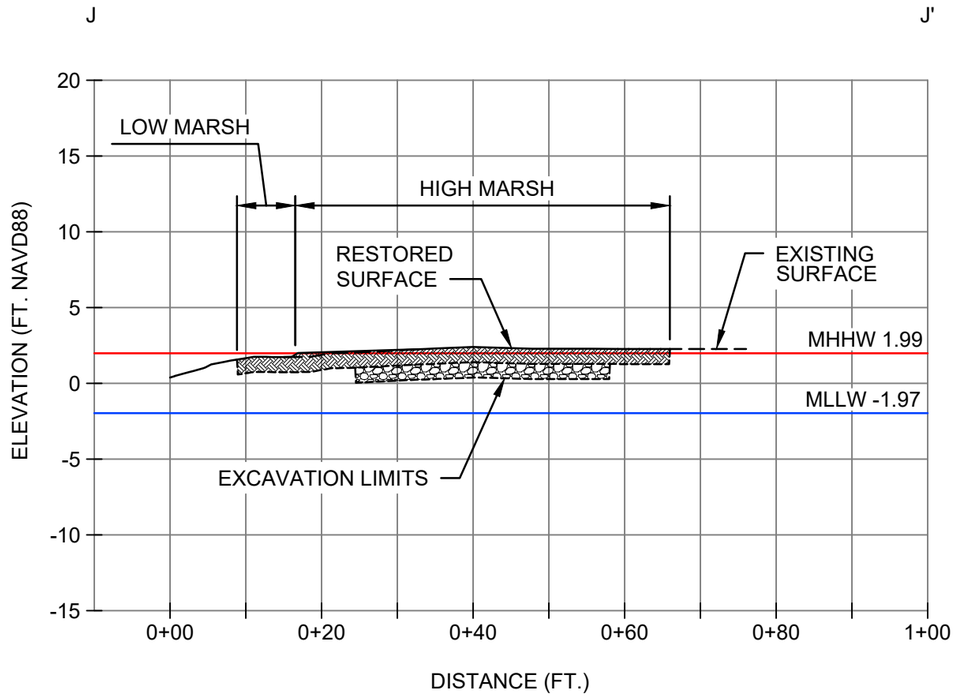
JACOBS®

EAST ZONE 4
SECTION I-I'

NEW BEDFORD HARBOR

JUNE 2019 | FIGURE 9

BY:ENGLANLL
LAST SAVED:6/25/2019
CREATED:6/21/2019



LEGEND:

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

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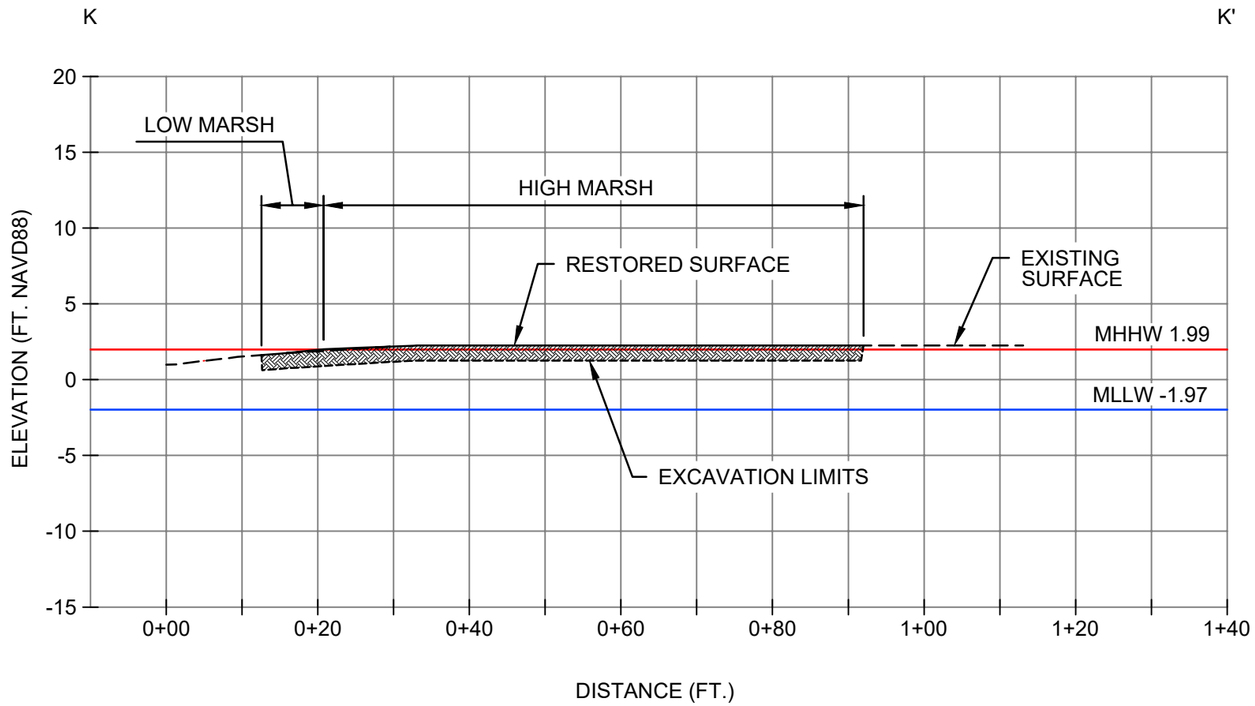
EAST ZONE 4
SECTION J-J'

NEW BEDFORD HARBOR

JUNE 2019 | FIGURE 10

BY:ENGLANLL
LAST SAVED:6/25/2019
CREATED:6/21/2019



LEGEND:

- MHHW 1.99
- MLLW -1.97
- TOPSOIL BACKFILL

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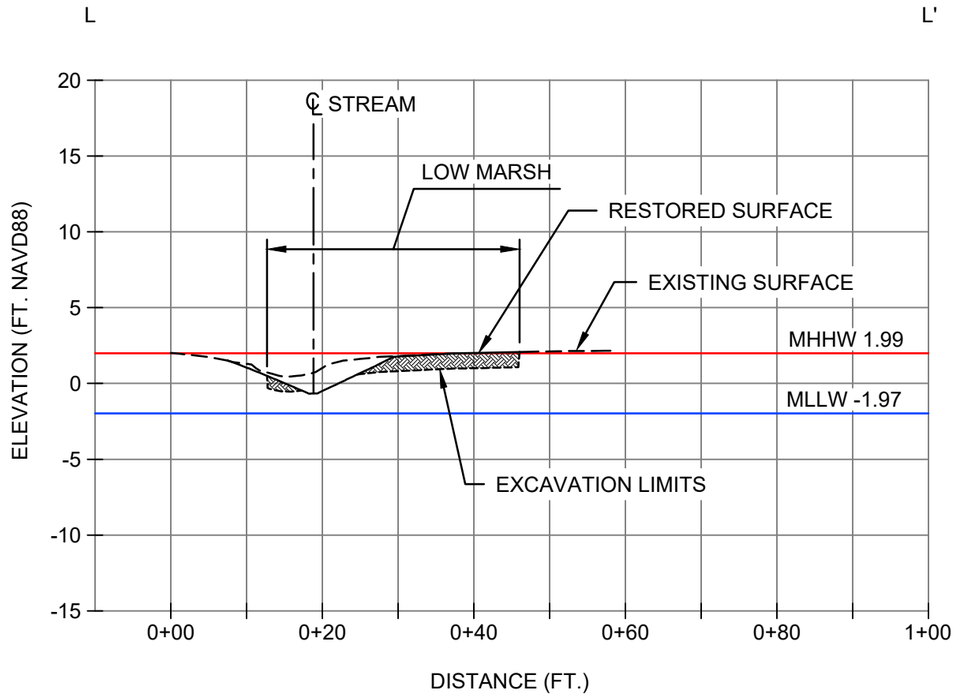
EAST ZONE 4
SECTION K-K'

NEW BEDFORD HARBOR

JUNE 2019 | FIGURE 11

BY:ENGLANLL
LAST SAVED:6/24/2019
CREATED:6/21/2019



LEGEND:

- MHHW 1.99
- MLLW -1.97
- TOPSOIL BACKFILL

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EAST ZONE 4
SECTION L-L'

NEW BEDFORD HARBOR

JUNE 2019 | FIGURE 12

BY:ENGLANLL
LAST SAVED:6/25/2019
CREATED:6/21/2019

Legend

- 1-foot Contour
- Mean Higher High Water
- Mean Lower Low Water
- Cross Section Locations
- 0-1' Excavation Depth
- 1-2' Excavation Depth
- Parcel Boundary
- Proposed Access Road
- Proposed High Marsh
- Proposed Low Marsh
- Proposed Stream

0 50 100 Feet

August 2019

Basemap Data Source:
Nearview, LLC, MassGIS

Vertical Datum:
NAVD88

Intertidal East Zone 4
Cross Section Locations
New Bedford Harbor Superfund Site

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Figure 13

Appendix C

Remediation and Restoration Schedule

(to be added at a later date)