New Bedford Harbor Superfund Site

U.S. Army Corps of Engineers New England District

Draft Final Ambient Air Monitoring Plan for Remediation Activities Revision 5

ACE-J23-35BG7000-M1-0002

October 2022

New Bedford Harbor Superfund Site

Project no:	35BG7000
Document title:	Draft Final Ambient Air Monitoring Plan for Remediation Activities Revision 5
Document No.:	ACE-J23-35BG7000-M1-0002
Date:	October 2022
Client name:	U.S. Army Corps of Engineers New England District
Project manager:	Lonnie Fallin
Author:	Patrick Curran

Jacobs
103 Sawyer Street
New Bedford, MA 02746
508-996-5462
508-996-6742
www.jacobs.com

Document history and status

Revision	Date	Description	By	Review	Approved
2	4/25/2018	2018 Ambient Air Monitoring Plan incorporates edits made by EPA to update the plan to replace the Public Exposure Tracking System (PETS) with the Risk Tracking System (RTS) for tracking carcinogenic and non-carcinogenic risk.	Jacobs; EPA		
3	10/30/2019	2019 Ambient Air Monitoring Plan incorporates edits to document based on USACE and EPA comments on monitoring of the Cell #1 sediment remedial activities. This Revision 3 also adds a section on the ambient air monitoring of the Upper Harbor after Superfund dredging and limited duration post Superfund dredging ambient air monitoring of the Lower Harbor.	Jacobs, USACE		
4	3/31/2021	Revisions made to reflect the completion of the subtidal dredging program and the elimination of particulate monitoring for intertidal remediation.	Jacobs EPA		

Revision	Date	Description	By	Review	Approved
5	10/3/2022	• A Project Note was added to Appendix A to address site specific air monitoring stations for EZ2, EZ3, and WZ2-3 work zones. • New stations #83-Beech and #84-Riverbank Lofts added to station list in Section 2.1 • Text was removed from section 1.2 and revised in section 2.2.1 to clarify VOC sampling vs screening. • Stations 55, 47, and 84 were changed to from 'Commercial' to 'Residential' in Section 2.1 • Stations 83 and 84 added to list in Section 3.1 • Tables 2-1 and 2-2 updated to include Stations 83 and 84.	Jacobs EPA USACE		

Table of Contents

Acronyms and Abbreviations iii
1.0 Introduction 1-1
1.1 Objectives 1-1
1.2 Plan Development History 1-2
2.0 PCB Sampling Network 2-1
2.1 Intertidal PCB Ambient Air Sampling 2-1
2.2 Summary of Ambient Air Sampling Activities 2-2
2.2.1 Shoreline and Intertidal Remediation 2-2
2.2.2 Cell 1 Excavation 2-3
3.0 Reporting 3-1
3.1 Integrated PCB Results 3-1
3.2 Volatile Organic Compounds 3-3
3.3 Respirable Particulate Matter Sampling 3-3
4.0 References 4-4

Figures

Figure 2-1 Available Ambient Air Sampling Station Locations
Figure 2-2 Sampling Logic for Intertidal and Shoreline Excavation
Figure 2-3 Sampling Logic for Cell 1 Excavations

Tables

Table 2-1 Available Ambient Air Sampling Stations New Bedford Harbor Superfund Site
Table 2-2 Remedial Action Sampling Schemes
Table 2-3 Results and Associated Action Limits for Remedial Action (Excavation) of Cell 1

Appendices

Appendix A Site Specific Sampling Locations Project Notes

(intentionally blank)

Acronyms and Abbreviations

BMP	Best Management Practices
ELCR	excess lifetime cancer risk
EPA	U.S. Environmental Protection Agency
eV	electron volt
GE	General Electric
HQ	hazard quotient
Jacobs	Jacobs Engineering Group, Inc.
mg/m^3	milligrams per cubic meter of air
NAE	U.S. Army Corps of Engineers – New England District
NBHSS	New Bedford Harbor Superfund Site
ng/m^3	nanograms per cubic meter of air
PAL	perimeter action limit
PAV	perimeter assessment value
PCB	polychlorinated biphenyl
PID	photoionization detector
PM	particulate matter
PUF	polyurethane foam
RAM	respirable aerosol monitor
RBG	risk-based goal
RTS	risk tracking system
TAT	turn-around time
VOC	volatile organic compound

(intentionally blank)

1.0 Introduction

This *Revised Draft Final Ambient Air Monitoring Plan for Remedial Activities, Revision 5* (Air Monitoring Plan 2022) supersedes all previous versions and sets the actions necessary to match the remedial activities forthcoming for the New Bedford Harbor Superfund Site (NBHSS). The knowledge and experience gathered over the past 17-plus years of harbor remediation and air monitoring have enabled refinements to the air monitoring program that are incorporated in this Air Monitoring Plan 2022 update to further ensure that public health will continue to be protected as the project moves forward. History of the NBHSS air monitoring program and background on the development of the sampling and reporting methodologies can be found in historical documents, namely the *Final Plan for the Sampling of Ambient Air PCB Concentrations to Support Decisions to Ensure the Protection of the Public During Remediation Activities, Revision No. 3* (Jacobs 2006) and the *Draft Final Air Monitoring Plan for Remediation Activities Revision 3* (Jacobs 2020).

Forthcoming remedial activities at NBHSS include intertidal and shoreline remediation and remediation of Cell 1. In the process of intertidal and shoreline remedial operations, vapor phase polychlorinated biphenyls (PCBs) above background concentrations could be released into the atmosphere and transported to neighboring communities. In the process of Cell 1 remediation, there is a limited potential to release volatile organic compounds (VOCs) and respirable particulate matter (PM) into the atmosphere. Actions to monitor and control releases of PCBs as well as any VOCs or PM that may be released during remedial operations are discussed within this plan.

1.1 Objectives

This Air Monitoring Plan update presents the monitoring and reporting program that will be implemented to protect public health from chronic exposure to PCBs and acute exposure to VOCs and PM during the next phase of remediation activities.

Air Monitoring Plan 2021 Rev 4 addressed two changes to the NBHSS air monitoring program and has been preserved in Rev 5 for reference. These two changes were:

1) the subtidal dredging air monitoring procedures were removed due to the completion of subtidal dredging activities in the Upper Harbor and Lower Harbor.

2) the air monitoring during intertidal operations were modified to monitor ambient air only during excavation and eliminates monitoring of PM.

Details of the intertidal modifications are provided in the next section.

Going forward, mechanical excavation will be used to remove PCB contaminated sediments in the intertidal shoreline areas within the Upper Harbor. These intertidal and shoreline sediments will be ultimately transported to a licensed off-site facility for disposal. Highly contaminated material that resides within Cell 1 of Area C will also be removed and transported offsite for disposal as funding allows.

1.2 Plan Development History

Development of previous air monitoring plans as well as risk calculations, previous sampling locations, and background information can be found in the *Draft Final Ambient Air Monitoring Plan for Remedial Activities*, *Revision 4* (Jacobs 2021).

The revised approach to monitor only during excavation activities provides a level of conservatism to the risk-based goal (RGB) calculation. To date, the RGBs averaged over a 6-year period from 2004 to the present has never been exceeded for any air monitoring location. Consistent with risk management guidance for Comprehensive Environmental Response, Compensation, and Liability Act sites (EPA 1990), the risk management criteria for intertidal activities will be hazard quotient (HQ) values approaching HQ=1 and an excess lifetime cancer risk (ELCR) values of 1E-05. The first RBG trigger for PCBs is 110 nanograms per cubic meter of air (ng/m^3) based on non-cancer hazards for a child resident. The 110 ng/m^3 level was approved by U.S Environmental Protection Agency (EPA) for the Hudson River PCBs Superfund Site. The second trigger for non-cancer hazards to a child resident has been set at 330 ng/m^3 (HQ=3). The RBG for long-term workers in industrial settings is based on a cancer risk of 1E-05 over the working lifetime of the worker. All of the triggers presented are to maintain exposures below a chronic non-cancer risk limit of HQ = 1 and a cancer risk limit of 1E-05. The risks will continue to be calculated using the risk tracking system (RTS) for a 1-6-year old residential child for stations in residential areas and for an adult worker exposed for up to 25 years to the 6-year rolling average air concentration for stations in commercial areas.

The revised approach to remove PM during intertidal remediation activities is warranted due to lessons learned during remediation of East Zone 1 in 2020. Specifically, during the EZ1 cleanup it was observed that it was the (clean) temporary shoreline gravel access roads that were generating dust/particulates during heavy equipment usage, and to a lesser extent, the opening/placement of Portland cement super sacks, as opposed to stockpiled contaminated sediments generating dust (these stockpiles remained damp/moist and thus did not generate dust). The previous approach assumed that all measured particulates were PCB-contaminated and used an equation (see Section 3.3.1, *Draft Final Ambient Air Monitoring Plan for Remedial Activities*, *Revision 3,* Jacobs 2020) to estimate the level of airborne PCBs attached to this dust. Given that this assumption has been observed to not reflect actual conditions observed in the field, a change to the monitoring approach was warranted. The revisions described below have been implemented at other similar Superfund sites (e.g., General Electric [GE] Pittsfield/Housatonic River) and utilize fast turn-around times (TATs) at the onset of excavation at each intertidal zone.

2.0 PCB Sampling Network

A network of sampling station locations have been used and will be used that are consistent in providing data for risk tracking relative to potential public exposure points around NBHSS. Monitoring schemes for the intertidal excavation scenarios that may release airborne contaminants are identified and includes the rationale for responding to contaminant levels that exceed prescribed RBGs.

The site monitoring locations have been selected previously based on three criteria, (1) a receptor's proximity to remedial activity, (2) site accessibility, and (3) meteorological patterns.

2.1 Intertidal PCB Ambient Air Sampling

Table 2-1 identifies the ambient air sampling stations for PCBs. Figure 2-1 shows the density of the available sampling network for ambient PCBs based on previous remedial activities. Each future remedial activity is listed on Table 2-2 along with the sampling stations anticipated for sample collection during that action. There are any number of combinations of stations for use depending on the remedial action and their locations. Not all sample stations will be used for every remedial action, but the intent is to collect samples that are representative of possible exposures to residential and commercial receptors in the vicinity of active remedial activities.

Stations that may be used to monitor airborne contamination from remediation of PCB contaminated sediments include (Figure 2-1, Table 2-1):

Station 24—Aerovox—Commercial—located along the western shoreline of Upper NBHSS.

Station 25—Manomet/Cliftex—Residential—located off of Manomet Street on west side of harbor adjacent to two condominium complexes.

Station 27—Porter—Residential—located in open field on east side of harbor.

Station 30—Fibre Leather—Commercial—located on west side of harbor in open area adjacent to industrial complex.

Station 42—NSTAR North—Commercial--located in open field adjacent to NSTAR substation.

Station 43—Veranda—Residential--located in residential neighborhood at end of Veranda Avenue on east side of harbor.

Station 46—Coffin—Residential—located on west side of harbor near cove and adjacent to residential neighborhood and Riverside park.

Station 47—Area C—Residential--located at Area C.

Station 55—Aerovox West—Residential—located on west side of former Aerovox building adjacent to residential neighborhood on Belleville Avenue.

Station 56—Acushnet Park—Residential—located north of Wood Street on east bank of the Acushnet River in Acushnet Park.

Station 62—Century House—Residential—located on east bank of the harbor in parking lot of Century House Restaurant.

Station 75—Lecuyer—Residential—located on the east side of the upper harbor to monitor East Zone 1 intertidal activities.

Station 76—Lecuyer North—Residential—located on the east side of the upper harbor to monitor East Zone 1 intertidal activities.

Station 77—Lecuyer South—Residential—located on the east side of the upper harbor to monitor East Zone 1 intertidal activities.

Station 78—Howard—Residential—located on the west side of the upper harbor to monitor West Zone 1 intertidal activities.

Station 79—Ball Plant—Commercial—located on the east side of the upper harbor to monitor West Zone 1 intertidal activities.

Station 80—Sycamore—Residential—located on the right-of-way at the end of Sycamore Street to monitor East Zone 4 intertidal activities.

Station 81—Belleville—Residential—located at the south end of parking area across the street from the former Cliftex plant to monitor West Zone 4 intertidal activities.

Station 83—Beech—Residential—located at 35 Beech St in Acushnet, near the entrance to Eversource substation. (See Appendix A)

Station 84—Riverbank Lofts—Residential—located in the upper parking lot of the Riverbank Lofts apartment complex off Belleville Ave. (See Appendix A).

Site-specific locations may be added to this list as needed for coverage and as property access allows. Additional site-specific locations will be documented in project notes (Appendix A).

2.2 Summary of Ambient Air Sampling Activities

Ambient air samples for PCB analyses will be collected using sample methods as specified in EPA Method TO-10A [using low volume polyurethane foam (PUF)]. Portable air monitoring devices will be deployed to pre-selected locations based on the activity and the aerial coverage needed to assess the release of airborne contamination. Concentrations of VOCs will be monitored at the perimeter of the Sawyer Street site during removal of Cell 1 material using a MultiRAE multi-gas meter or equivalent with a photoionization detector (PID) at 10.6 electron volts (eV). During Cell 1 material removal, particulates will be monitored at the site perimeter using a respirable aerosol monitor (RAM), a two-wavelength nephelometric monitor with a light scattering sensing configuration optimized for the measurement of the fine particle fraction (10 micron or less) of airborne dust under ambient conditions. The procedures for these sample collection activities are described in the *Draft Final Air Monitoring Plan for Remediation Activities Revision 3* (Jacobs 2020).

2.2.1 Shoreline and Intertidal Remediation

PCB contaminated sediments were transported to low-lying mudflat and saltmarsh areas where contaminants were deposited as a result of alluvial and tidal influences. Disturbance of these wetlands during excavation can disturb these sediments potentially liberating airborne contaminants. Numerous wetland sediment core samples have been collected over the years to characterize the vertical and lateral extent of contamination along the shorelines of the City of New Bedford and Towns of Acushnet and Fairhaven.

Monitoring for airborne PCBs at each intertidal zone will follow the process described below (also depicted in Figure 2-2):

1 – prior to active remedial operations at a particular intertidal zone, a network of three or four sampling locations (Figure 2-1, Table 2-1) surrounding each intertidal zone will be identified as those that will best capture potential emissions during operations from that zone.

2 – during the first day of active excavation at each intertidal zone, airborne PCB samples will be collected at these three or four stations for full PCB congener analyses with a fast TAT (5 days). If raining/snowing on this first day, this initial sampling will take place as soon as weather allows, but within the first five days of excavation.

3 – provided that the results from this initial round of sampling at each zone are below RBGs, the sampling frequency for these zone-specific stations will revert to monthly with normal TAT (2 weeks). This takes into account the long history and understanding of airborne PCB sampling at NBHSS.

4 – should any of these samples exceed their RBGs, additional fast-TAT sampling will be performed, and potentially additional air monitoring locations will be added to the monitoring program. The site team will also discuss potential corrective actions that would be appropriate given the sample results.

5 – once all excavation and load-out tasks have been completed at a given intertidal zone, no further airborne PCB sampling will be required at that zone.

There is no indication that VOCs are contaminants of concern for the community along the shoreline and mudflats of New Bedford Harbor. Only VOC screening for worker safety, as outlined in the *Accident Prevention Plan* (Jacobs 2017), will be conducted during excavation of these areas. Air sampling will follow the criteria summarized in Table 2-3 and Figure 2-2.

2.2.2 Cell 1 Excavation

In 2008, remedial operations along the former Aerovox shoreline were monitored for airborne PCBs, VOCs and respirable PM. Since the sediment removed from the Aerovox shoreline was placed in Cell 1, future excavation operations at Cell 1, if implemented, may potentially release similar constituents thus potentially impacting air quality in the surrounding community. Airborne PCBs will be monitored using the existing monitoring network and follow procedures as outlined in Section 3.3.1 of the *Draft Final Air Monitoring Plan for Remediation Activities Revision 3* (Jacobs 2020) for intertidal operations, and in Table 2-2 of this plan. PCB sampling with fast TAT will be bi-weekly initially and, pending no exceedances of levels of concern, the sampling frequency for PCBs can be adjusted to monthly sample collection. The flow diagram of PCB air monitoring activities for remedial excavation is presented in Figure 2-3.

The monitoring of VOCs and hydrogen sulfide will be performed using real time instrumentation or gas collection and analysis as necessary. There are three methods that may be used for the measurement and detection of VOCs and hydrogen sulfide; PIDs, colorimetric tubes, and gas collection devices. The measured values from one of these three methods are compared to their perimeter assessment values (PAVs) and perimeter action levels (PALs) (Table 2-3) as defined in Section 3.3.2 of the *Draft Final Air Monitoring Plan for Remediation Activities Revision 3* (Jacobs 2020). The flow diagram of air monitoring for VOCs at Cell 1 is presented in Figure 2-3.

Respirable aerosol monitors (RAMs) will be used to collect particulate data on a daily basis to measure potential operational impacts to air quality. The RAMs will be placed around the site on stationary fixtures to monitor the particulate air quality in the breathing zone in proximity to the excavation activities. The procedure for particulate monitoring is outlined in Section 3.3.3 of the *Draft Final Air Monitoring Plan for Remediation Activities Revision 3* (Jacobs 2020). A flow diagram for particulate monitoring of Cell 1 excavations is provided in Figure 2-3.

Monitoring for VOCs, hydrogen sulfide, and particulates will be conducted every day during active excavation. Particulate monitoring will follow the protocol for shoreline and intertidal remediation as outlined in Section 3.3.3 of the *Draft Final Air Monitoring Plan for Remediation Activities Revision 3* (Jacobs 2020). A particulate concentration of 0.102 milligrams per cubic meter of air (mg/m^3) above background will be used to determine an exceedance from Cell 1 based on an average PCB concentration of 976 mg/kg (Jacobs 2019).

3.0 Reporting

Data generated during monitoring activities will be reported as part of the overall remediation process. Reporting considerations will vary according to the remedial action taken (intertidal and Cell 1 excavation), the constituents monitored, and any action taken to mitigate risk due to airborne contamination. This reporting process is based on the contaminant of concern, its potential for impacting air quality, and the air sampling and analytical method used.

3.1 Integrated PCB Results

There are two means by which the total PCB concentration for each air station is evaluated during intertidal remediation. One means is against a set of trigger levels and the other means is evaluating the PCB concentration against the RBGs. The trigger levels and RBG values are presented in the *Draft Final Air Monitoring Plan for Remediation Activities Revision 3* (Jacobs 2020).

When an ambient air result is less than the first trigger level for the applicable receptor, the result will be entered into the RTS and reported monthly. If an ambient air result is greater than the first applicable trigger level, but less than the second applicable trigger level, an update of the RTS and a report on the operational and meteorological conditions for the day of sampling will be generated to evaluate contributing factors. If the second trigger level is exceeded, in addition to the first trigger level, the station will be resampled. Should a third consecutive sample result exceed the second trigger, controls and meteorological conditions will be evaluated to determine if the exceedances can be mitigated by implementing best management practices (BMPs). These BMPs may entail modifying excavation/load-out activities or performing operations under more amenable meteorological conditions. A technical memorandum will be prepared detailing BMPs and/or operational changes implemented.

All ambient air results will be entered into the RTS. However, whenever an ambient air result is greater than an applicable trigger level, the RTS will be used to calculate the updated cancer and non-cancer cumulative risks to demonstrate the cumulative exposure remains below the RBGs. This information will be reported immediately after the RTS is updated. When the RTS risk remains below the first trigger risk limit (HQ = 1; ELCR = 1E-05) or the sampling period, no further action .is necessary. Should the risk exceed two times the risk limit (i.e. HQ = 2; ELCR=2E-05) for the sampling period, available operational changes or BMPs will be implemented. A technical memorandum will be prepared detailing BMPs and/or operation changes that were implemented. If the second trigger risk limits are exceeded for the sampling period and if conditions cannot be met to lower the incidence of airborne PCBs due to dredging and related activities, then work will be temporarily suspended in the vicinity of the station of concern and further options will be evaluated. This information is summarized in Table 2-3.

If any RBGs or trigger levels are exceeded during the course of PCB monitoring, the NAE and EPA will be notified immediately about the concentrations and the actions that will be used to further assess the airborne risk at those stations. For more immediate reporting, Jacobs will have two business days to review the preliminary data received from the laboratory and report the preliminary analytical results to the U.S. Army Corps of Engineers—New England District (NAE) and EPA. The preliminary data will be posted by the EPA on the New Bedford Harbor Superfund website at http://www2.epa.gov/new-bedford-harbor/new-bedford-harbor-cleanup-plans-technical-documents-and-environmental-data. Likewise, once data are validated (approximately 6 weeks after the release of preliminary tabulated data) the validated tabulated data will be released to the EPA, who will in turn post the

validated results on the New Bedford Harbor Superfund website at http://www2.epa.gov/new-bedford-harbor/new-bedford-harbor-cleanup-plans-technical-documents-and-environmental-data.

Stations that will be used to construct RTS graphs for commercial worker cancer risk include:

- Station 24—Aerovox
- Station 30—Fibre Leather
- Station 42—NSTAR
- Station 47—Area C
- Station 79—Ball Plant

Stations that will be used to construct RTS graph for child resident cancer risk and non-cancer hazard include:

- Station 25—Manomet
- Station 27—Porter
- Station 43—Veranda
- Station 44—Taber
- Station 46—Coffin
- Station 55—Aerovox West
- Station 56—Acushnet Park
- Station 62—Century House
- Station 75—Lecuyer
- Station 76--Lecuyer North
- Station 77—Lecuyer South
- Station 78—Howard
- Station 80—Sycamore
- Station 81—Belleville
- Station 83—Beech
- Station 84—Riverbank Lofts

Data collected from the various air monitoring stations will be used to construct the RTS graphs to determine when cumulative risks may be approaching RBGs. The validated data will be uploaded into the RTS. The RTS graphs represent the risk to either a commercial worker or a child/adult resident versus the 6-year rolling average air concentration. Separate RTS graphs will be developed for each receptor to track cumulative cancer risk and non-cancer hazard. All PCB monitoring results will be compiled in an air monitoring report when directed by the EPA.

3.2 Volatile Organic Compounds

The monitoring of VOCs will occur only during the excavation of Cell 1. The readings for total VOCs, determined by the PID, will be tabulated daily and reported to the EPA and NAE similarly as the integrated PCB results are reported. The key difference for VOC reporting is the reporting of any exceedances of the limits discussed in Section 2.2 of the *Draft Final Air Monitoring Plan for Remediation Activities Revision 3* (Jacobs 2020). Once the laboratory results are obtained, the results will be placed in the tabulated data sheet for the sample collection day and reported to the NAE and EPA. This approach has been used satisfactorily since 2008 for similar operations. At the end of the remedial activity, the results will be tabulated and distributed to the NAE and EPA.

3.3 Respirable Particulate Matter Sampling

PM sampling is expected to be used during the excavation of Cell 1, around the periphery of the site. These operations have the potential to generate PM that can locally impact air quality due to their proximity to receptors. These PM data will be collected daily by a RAM and results reported to the EPA and NAE. The key difference for PM reporting is the reporting of any exceedances above background of the limits discussed in Section 3.3.3 of the *Draft Final Air Monitoring Plan for Remediation Activities Revision 3* (Jacobs 2020). The results will be presented in tabular format at the end of the day.

4.0 References

Jacobs Engineering Group, Inc. (Jacobs). 2020 (February). *Draft Final Air Monitoring Plan for Remediation Activities Revision 3*. ACE-J23-35BG2000-M17-0069.

———. 2019 (May). *Cell 1 Disposition Memo Draft Rev 1*. ACE-J23-35BG2000-M17-0058.

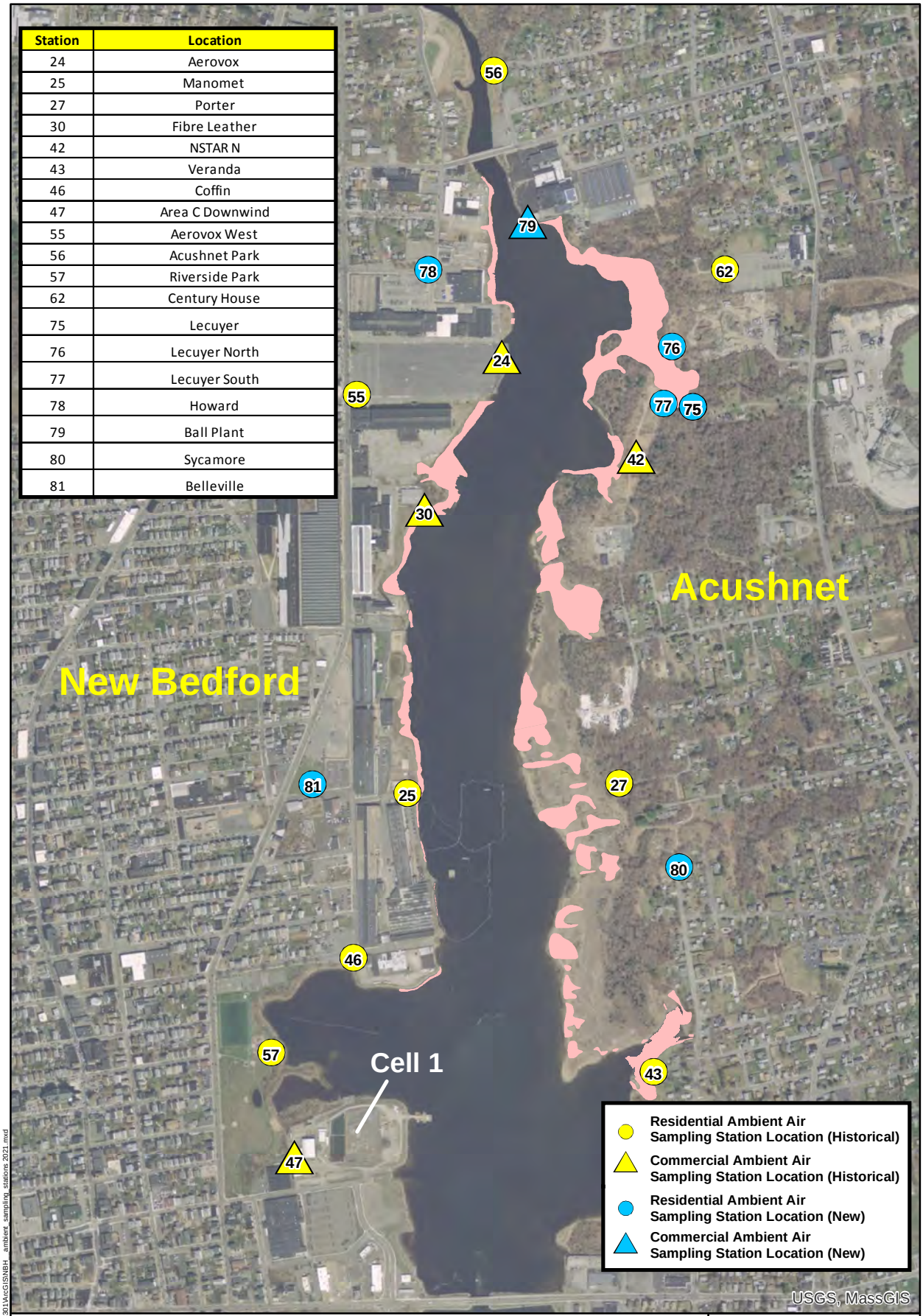
———. 2017 (September). *Accident Prevention Plan, New Bedford Harbor Superfund Site, New Bedford, Massachusetts*. ACE-J23-35BG2000-M3-0012.

———. 2006 (November). *Final Plan for the Sampling of Ambient Air PCB Concentrations to Support Decisions to Ensure the Protection of the Public during Remediation Activities. Revision No. 3.* ACE-J23-35BG0107-M17-0003.

U.S. Environmental Protection Agency (EPA). 1990. *National Oil and Hazardous Substances Pollution Contingency Plan. Final Rule. Federal Register 55* (46): 86668865. 40 CFR Part 300.

(Intentionally Blank)

Figures



Station	Location
24	Aerovox
25	Manomet
27	Porter
30	Fibre Leather
42	NSTAR N
43	Veranda
46	Coffin
47	Area C Downwind
55	Aerovox West
56	Acushnet Park
57	Riverside Park
62	Century House
75	Lecuyer
76	Lecuyer North
77	Lecuyer South
78	Howard
79	Ball Plant
80	Sycamore
81	Belleville

Legend

INTERTIDAL REMEDIATION AREA

Aerial Photography MASSGIS 2014

N

0 500 1,000 Feet

1:12,000

JACOBS

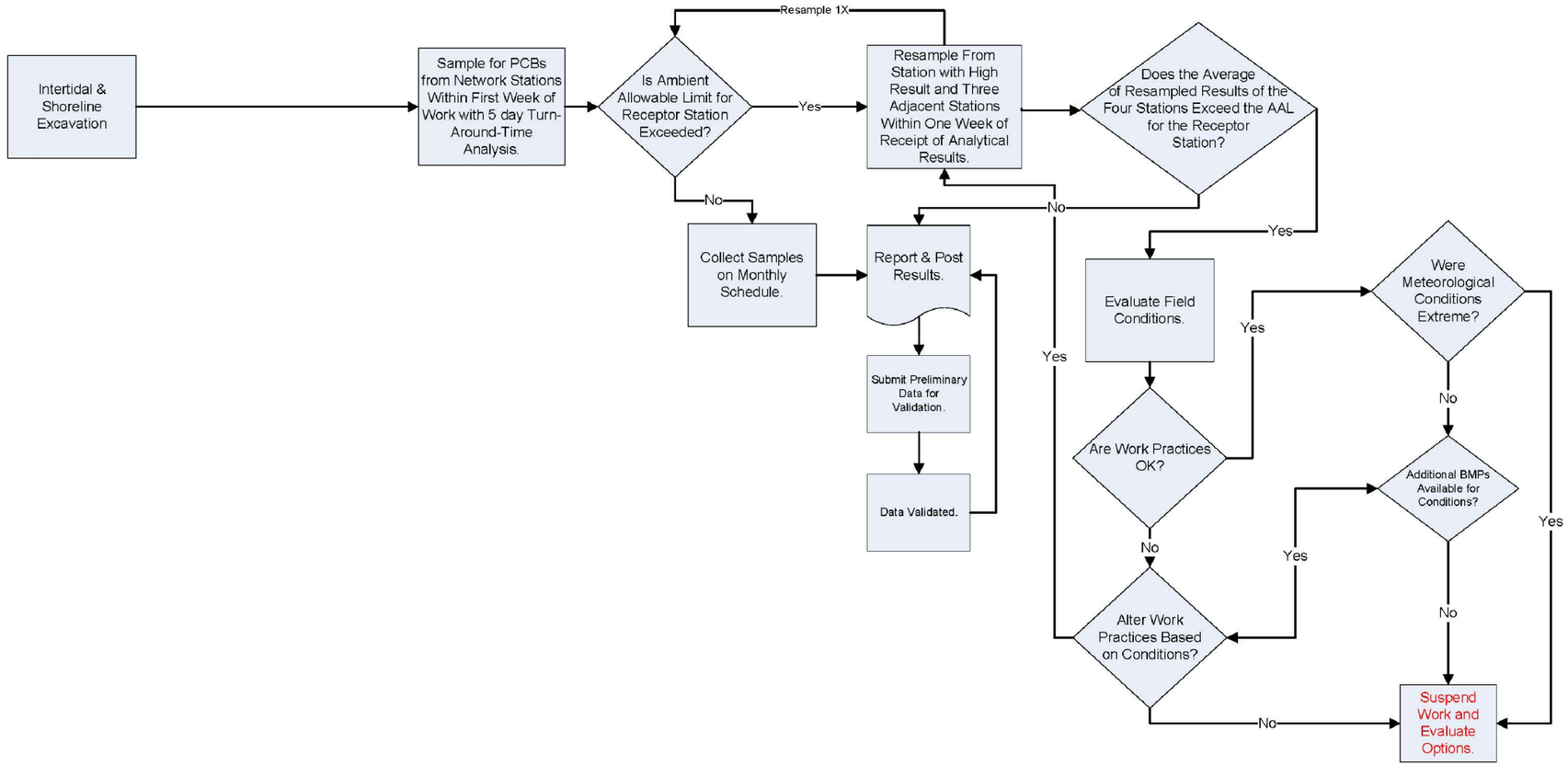
Available Ambient Air Sampling Station Locations

New Bedford Harbor Superfund Site

NAME: jpiccuito Date: 3/10/2021

Figure 2-1

Path: Y:\NBH\Projects\336EG1001\c2021020\1\ArcGIS\NBH_ambient_sampling_stations_2021.mxd



Legend

JACOBS®

Sampling Logic for Intertidal and Shoreline Excavation

New Bedford Harbor Superfund Site

NAME: jpiccuito Date: 2/5/2021

Figure 2-2

Path: Y:\NBH\Projects\35BG1001\20210128\ArcGIS\Sampling Logic for Intertidal Shoreline Excavation.mxd

Cell #1 & Aerovox Shoreline Excavation

What are the Chemicals Of Concern (COC)?

COC 1

PCBs?

Yes

Collect Operational Samples in 1st Week of Beginning Excavation.

Submit Samples for 5 day Turn-Around-Time Analysis.

Is Ambient Allowable Limit for Receptor Station Exceeded?

Yes

Follow Dredging Logic Diagram Figure 3-5.

No

Report and Post Results.

Submit Preliminary Data for Validation.

Data Validated.

COC 2

Total Volatile Organic Compounds (VOCs)?

No

Yes

COC 3

Particulate Matter (PM)?

Yes

No

Consider Initial Trigger for Additional Air Monitoring.

VOCs	1 ppm
H2S	1 ppm
PM	0.75 mg/m3
PCBs	N/A

Monitor Operator Breathing Zone (OBZ) with Multigas Detector and Respirable Aerosol Monitor (RAM)

Any OBZ Triggers Exceeded?

Yes

No

Continue Multigas Detector for Hydrogen Sulfide. Use Colorimetric Tubes for Vinyl Chloride, Perchloroethene (PCE) & Trichloroethene (TCE); Use RAM for PM.

Record readings

Consider 15 Minute Ceiling Limit Exceedences.

Vinyl Chloride	5.0 ppm
H2S	10 ppm
PM	150 ug/m3
PCE	75 ppm
TCE	25 ppm

Are There Any Compound Specific Ceiling Exceedences?

Yes

Evaluate Field Conditions

Are Work Practices OK?

Yes

Are Meteorological Conditions Extreme?

No

No

Were Work Practices Changed?

Yes

Additional BMPs Available for Conditions?

Yes

No

No

Yes

Suspend Work and Evaluate Options.

After 1st Work Correction Collect Organic Vapor Monitors (OVM) for Laboratory Analysis with 1 Week Turn-Around-Time.

Legend

JACOBS

Sampling Logic for Cell 1 Excavations

New Bedford Harbor Superfund Site

NAME: jpiccuito Date: 2/10/2021

Figure 2-3

Path: Y:\NBH\Projects\35BG10012021012B\ArcGIS\Sampling Logic for Cell 1 Excavations.mxd

Tables

Table 2-1

Available Ambient Air Sampling Stations New Bedford Harbor Superfund Site

Location	Name	Description	Easting	Northing
21	New Bedford Welding	Original background station	814013.00	2696913.00
24	Aerovox	Riverside NE corner	815574.00	2706941.00
25	Manomet	Also has been used as Cliftex	814907.00	2703854.00
27	Porter	On Francis Street	816405.00	2703925.00
30	Fibre Leather	Shoreline at boulder	815029.00	2705861.00
40	Titleist	Wood Street	815827.10	2707958.83
41	NSTAR Substation	East side	816074.00	2705524.00
42	NSTAR N	North of substation on road	816524.00	2706236.00
43	Veranda (Bus Terminal)	Parking Lot	816482.00	2701377.00
44	Taber	Taber Street Pumping Station	816299.14	2697997.14
45	Cozy Cove	Discontinued. Replaced by station 64	817660.46	2696229.34
46	Coffin	Coffin Ave	814526.25	2702691.52
47	Area C Downwind	Area C	814106.50	2701284.13
48	Area C Crosswind	Area C	813935.15	2701567.19
49	Area C Upwind	Area C	814279.00	2701564.00
50	Area D Downwind	Area D	814190.12	2696462.84
51	Area D Crosswind	Area D	813858.00	2696500.00
52	Area D Upwind	Area D	813994.44	2696189.80
53	Dredge	Upper Harbor	Varies by year	Varies by year
55	Aerovox West	Hadley & Belleville	814540.00	2706728.00
56	Acushnet Park	By shower on fenceline	815519.00	2708962.00
57	Riverside Park	At Park bench	813944.73	2702070.81
58	Pearl	NB Career Center	813157.94	2695954.03
59	Popes	Popes Island (north side)	815507.09	2695226.63
60	Washburn	I-195 easement	814710.07	2699497.33
61	South Fence	For mechanical dredge at Aerovox	815347.24	2706523.80
62	Century House	At parking lot/field	817152.98	2707558.15
63	Boat House	Area Q mech dredge	814733.64	2701176.71
64	Pilgrim	Pilgrim Street Pumping Station	817354.78	2696724.25
65	LHCC Dredge	Dredging by others	Varies by year	Varies by year
66	Huttleston	Parkway before Fairhaven H.S.	817964.46	2695208.57
67	Revere	Located on West Side Lower Harbor	814050.95	2697979.06
68	Marsh Island	East side of Marsh Island Excavations	816311.04	2699137.28
69	North Street	South side of North Street Excavations	816975.72	2697558.70
74	Beach Street	East side of Beach Street Excavaton	816096.341	2700041.7
75	Lecuyer	Between inlet and Lecuyer	816926.06	2706584.12
76	Lecuyer North	100 feet north of Lecuyer	816779.52	2707012.64
77	Lecuyer South	100 feet southwest of Lecuyer	816716.68	2706607.19
78	Howard	End of Howard Street	815055.46	2707555.51
79	Ball Plant	Southwest end of parking area	815756.54	2707895.56
80	Sycamore	End of Sycamore Street	816827.55	2703330.59
81	Belleville	South end of parking lot	814235.08	2703916.43
83	Beech	35 Beech St in Acushnet	816442.43	2705060.26
84	Riverbank Lofts	Upper parking lot of Riverbank Lofts	814791.10	2705089.77

Table 2-2
Remedial Action Sampling Schemes

Remedial Action	Location	Sampling Stations Available for Use	Contaminant of Concern	Sampling Method	Sampling Frequency	Resampling Criteria
Cell 1 Excavation	Upper Harbor	25,27,43,46,47	PCBs	TO 10A	Biweekly/Monthly	Any one station with result greater than RBG will be resampled.
			VOCs	PID/OVM	Daily/Weekly	Refer to Table 3-3
			PM_{10}	Nephelometer	Daily	
Shoreline Remediation	Upper Harbor	24,25,27,30,42,43,46,47, 55,56,57,62,75,76,77,78, 79, 80, 81, 83, 84	PCBs	TO 10A	Monthly	Any one station with result greater than RBG will be resampled.

Notes:

PCBs - polychlorinated biphenyls

TO 10A - EPA Compendium of Methods for the Determination of Toxic Organic Compounds in Air

mg/kg - milligrams per kilogram

PID - photoionization detector with a 10.6 eV lamp

PM_{10} - particulate matter 10 microns or less in diameter

OVM - organic vapor monitor (3M 3500 or equivalent)

Table 2-3
Results and Associated Action Limits for Remedial Action (Excavation) of Cell 1

Contaminants	Greatest Observed Concentration in Sediment	Exposure Limits[1]		
		Total VOCs	PAV	PAL
	ppm			
Tetrachloroethene (PCE)	240	1.0	20	30
Trichloroethene (TCE)	22,000	1.0	50	150
Hydrogen sulfide (H_2S)	Not Measured	1.0	0.2	0.5
Vinyl Chloride	320	1.0	50	300
cis-1,2-Dichloroethene (cis-1,2-DCE)	2,200	1.0	50	100

[1] The first threshold for Total VOCs is one part per million sustained for 15 minutes on the PID (10.6eV). If this threshold is achieved, colorimetric tubes for specific chemicals of concern (VOCs) will be used to determine the PAV. If the PAV is achieved, operations will be reviewed for sources of VOCs. At the same time, the PAL will be measured. If the PAL is achieved, work will be suspended until corrective action has brought the PAL to or below the PAV.

PAV = perimeter assessment value; evaluate and observe conditions.

PAL = perimeter action limit; suspend operations and mitigate to PAV or less.

ppm = parts per million by volume

Appendix A

Site Specific Sampling Locations
Project Notes

Jacobs

Project Notes

103 Sawyer Street
New Bedford, MA 02746
www.jacobs.com

Client	USACE	**Date**	February 05, 2021
Project	New Bedford Harbor Superfund Site	**Project No.**	35BG8000-P1-0003
Prepared By	Anita Rigassio Smith	**Note No.**	001
Issued By	Elizabeth Anderson		
Subject	Site Specific Ambient Air Sampling Locations for EZ3/4/5 and WZ4/5 Work		
Figures	Figure 1 - Site-Specific Ambient Air Sampling Locations for EZ3/4/5 Work Figure 2 - Site-Specific Ambient Air Sampling Locations for WZ4/5 Work		

Distribution				
Client	**EPA**	**MassDEP**	**Jacobs**	**SES**
Marie Esten	Dave Dickerson	Paul Craffey	Beth Anderson	Joe Mahoney
Tim Rezendes	Natalie McClaine		Mike Morris	
			Steve Sills	
			Mark Gouveia	
			Bill Sturm	

1	**PURPOSE**
	On January 29, 2021, members of the New Bedford Harbor (NBH) Air Sampling Team held a virtual meeting to decide on the site-specific ambient air monitoring locations for the upcoming intertidal remediation. Two remediation efforts are planned and budgeted to start in Winter 2021: East Side and West Side. The East Side remediation effort will consist of East Zone (EZ) 4, EZ5, and a small southern portion of EZ3. The West Side remediation effort will consist of West Zone (WZ) 4 and WZ5. See Figures 1 and 2 for the delineation of the intertidal zones.
2	**BACKGROUND**
	The Ambient Air Monitoring Plan (Plan) for the NBH Site is in the process of being updated to Revision 4 after the conclusion of the subtidal remedial action. Ambient air monitoring will continue at the intertidal remediation sites according to the Plan. The Plan calls for site-specific locations for residential exposure monitoring near the intertidal excavation areas.
3	**DISCUSSION**
	East Side The air monitoring array around the East Side work zones will consist of existing Stations #27-Porter, #43-Veranda, #46-Coffin, #47-Area C, and one additional location at the north end of Sycamore Street. See Figure 1. The EPA will talk to residents in the vicinity of the north end of Sycamore Street to determine the exact location for Station #80-Sycamore. West Side The air monitoring array around the West Side work zones will consist of existing Stations #25-Manomet, #27-Porter, #30-Fibre Leather, #46-Coffin, #47-Area C, and one additional location west of Station #25, along Belleville Avenue. See Figure 2. The additional location, Station #81-Belleville, will be used only if results from Station #25 are elevated and there is concern for the residents along Belleville Avenue. The EPA will talk to property owners in to determine an exact location for Station #81.

4	**CONCLUSION**
	The stations shown on Figures 1 and 2 will be monitored according to the frequencies and turn-around-times prescribed in the Plan, except for Station #81. Station #81 is a contingency location and will be sampled only if there are exceedances at sampling Station #25.
5	**ACTION ITEMS**
	1) EPA to identify access with property owners for Stations #80 and #81.

Legend

EPA CAD CELL

PROPOSED ACCESS ROAD

EXCAVATION AREA

Aerial Photography MASSGIS 2014

N

0 500 1,000 Feet

1:12,000

JACOBS

Site-Specific Ambient Air Sampling Locations for EZ3/4/5 Work

New Bedford Harbor Superfund Site

NAME: jpiccuito Date: 2/4/2021

Figure 1

Path: Y:\NBH\Projects\35BEG1001\2021\02\03\ArcGIS\NBH_ambient_sampling_stations_20210203_EZ345.mxd

Legend

EPA CAD CELL

PROPOSED ACCESS ROAD

EXCAVATION AREA

*Note: Station #81 is a contingency location and will be sampled only if there are exceedances at sampling Station #25.

Aerial Photography MASSGIS 2014

N

0 500 1,000 Feet

1:12,000

JACOBS

Site-Specific Ambient Air Sampling Locations for WZ4/5 Work

New Bedford Harbor Superfund Site

NAME: jpiccurib Date: 3/5/2021

Figure 2

Path: Y:\NBH\Projects\35BG1001\0021\0003\ArcGIS NBH_ambient_sampling_stations 20210203_WZ45.mxd

Project Notes

103 Sawyer Street
New Bedford, MA 02746
www.jacobs.com

Client	USACE	**Date**	29 Sept 2022
Project	New Bedford Harbor Superfund Site	**Project No.**	ACE-J23-35BG7000
Prepared By	Patrick Curran	**Note No.**	0028
Issued By	Lonnie Fallin		
Subject	Site Specific Ambient Air Sampling Locations for East Zone 2, East Zone 3, and West Zone 2-3 Intertidal Remediation		
Figures	Figure 1 - Site-Specific Ambient Air Sampling Locations for EZ2 Intertidal Remediation Figure 2 - Site-Specific Ambient Air Sampling Locations for EZ3 Intertidal Remediation Figure 3 - Site-Specific Ambient Air Sampling Locations for WZ2-3 Intertidal Remediation		

Distribution				
Client	**EPA**	**MassDEP**	**Jacobs**	**SES**
Marie Esten	Dave Dickerson	Paul Craffey	Lonnie Fallin	Joe Mahoney
Kerwin Donato	Natalie Burgo		Josh Cummings	
Mike Degrazia			Patrick Curran	
			Sawyer Fallin-Hornsberger	

1	**PURPOSE**
	On September 20, 2022, members of the New Bedford Harbor Superfund Site (NBHSS) Project Team determined the site-specific ambient air monitoring locations for the upcoming intertidal remediation at East Zone 2 (EZ2), East Zone 3 (EZ3), and West Zone 2-3 (WZ2-3).
2	**BACKGROUND**
	The Ambient Air Monitoring Plan (Plan) for the NBHSS was updated to Revision 4 after the conclusion of the subtidal remedial action. Ambient air monitoring will continue at the intertidal remediation sites according to the Plan. The Plan calls for site-specific locations for residential exposure monitoring near the intertidal excavation areas.
3	**DISCUSSION**
	East Zone 2 The air monitoring array for EZ2 remediation work zones will consist of existing Stations #30-Fibre Leather, #42-NSTAR N, #47-Area C, and one additional location at 35 Beech Street, in Acushnet (#83-Beech). See Figure 1. USEPA confirmed with the property owner of 35 Beech Street on September 20th, 2022, the placement of air monitoring equipment. East Zone 3 The air monitoring array around EZ3 remediation work zones will consist of existing Stations #25-Manomet, #27-Porter, #47-Area C, #80-Sycamore, and #83-Beech. See Figure 2. West Zone 2-3 The air monitoring array around the WZ2-3 work zones will consist of existing Stations #24-Aerovox, #42-NSTAR N, #47-Area C, #55-Aerovox West, and one additional location in the parking lot of the Riverbank Lofts (#84-Riverbank

	Lofts). See Figure 3. USEPA will coordinate with management staff at Riverbank Lofts to determine an exact location for #84-Riverbank Lofts.
4	**CONCLUSION**
	The stations shown on Figures 1, 2, and 3 will be monitored according to the frequencies and turn-around-times prescribed in the Plan.
5	**ACTION ITEMS**
	1) EPA to confirm access with management staff at Riverbank Lofts for Station #84.
6	**REFERNCE**
	Jacobs. 2021 (April). *Draft Final Ambient Air Monitoring Plan for Remediation Activities Revision 4.* ACE-J23-35BG2000-M17-0083.

Legend

PROPOSED ACCESS ROAD

EXCAVATION AREA

Aerial Photography MASSGIS 2014

N

0 500 1,000 Feet

1:12,000

JACOBS

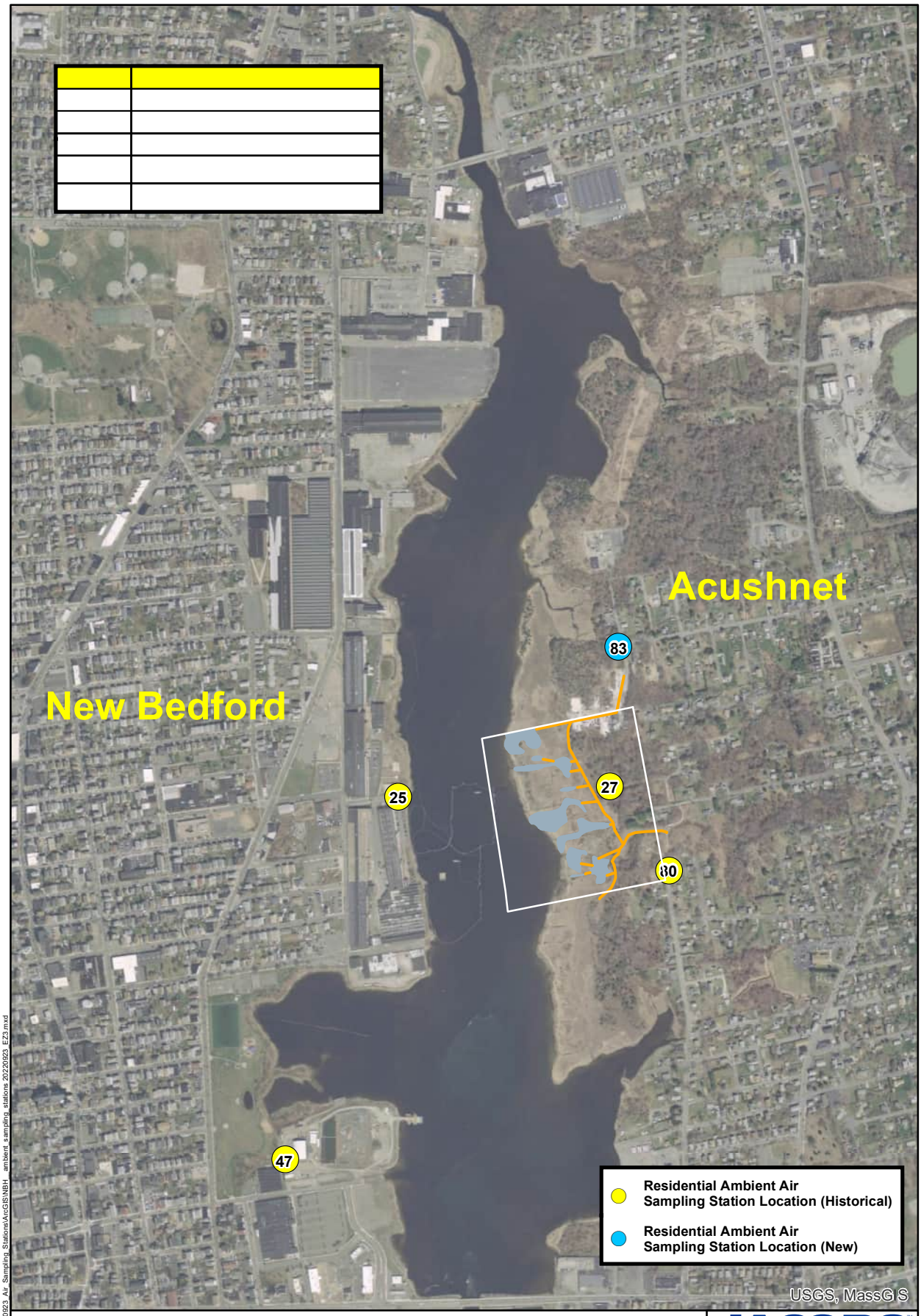
Site-Specific Ambient Air Sampling Locations for EZ2 Work

New Bedford Harbor Superfund Site

NAME: jpiccuito Date: 9/29/2022

Figure 1

Path: Y:\NBH\Projects\35EG10011\20220923_Air_Sampling_Stations\ArcGIS\NBH_ambient_sampling_stations_20220923_EZ2.mxd



Legend

PROPOSED ACCESS ROAD

EXCAVATION AREA

Aerial Photography MASSGIS 2014

N

0 500 1,000 Feet

1:12,000

JACOBS

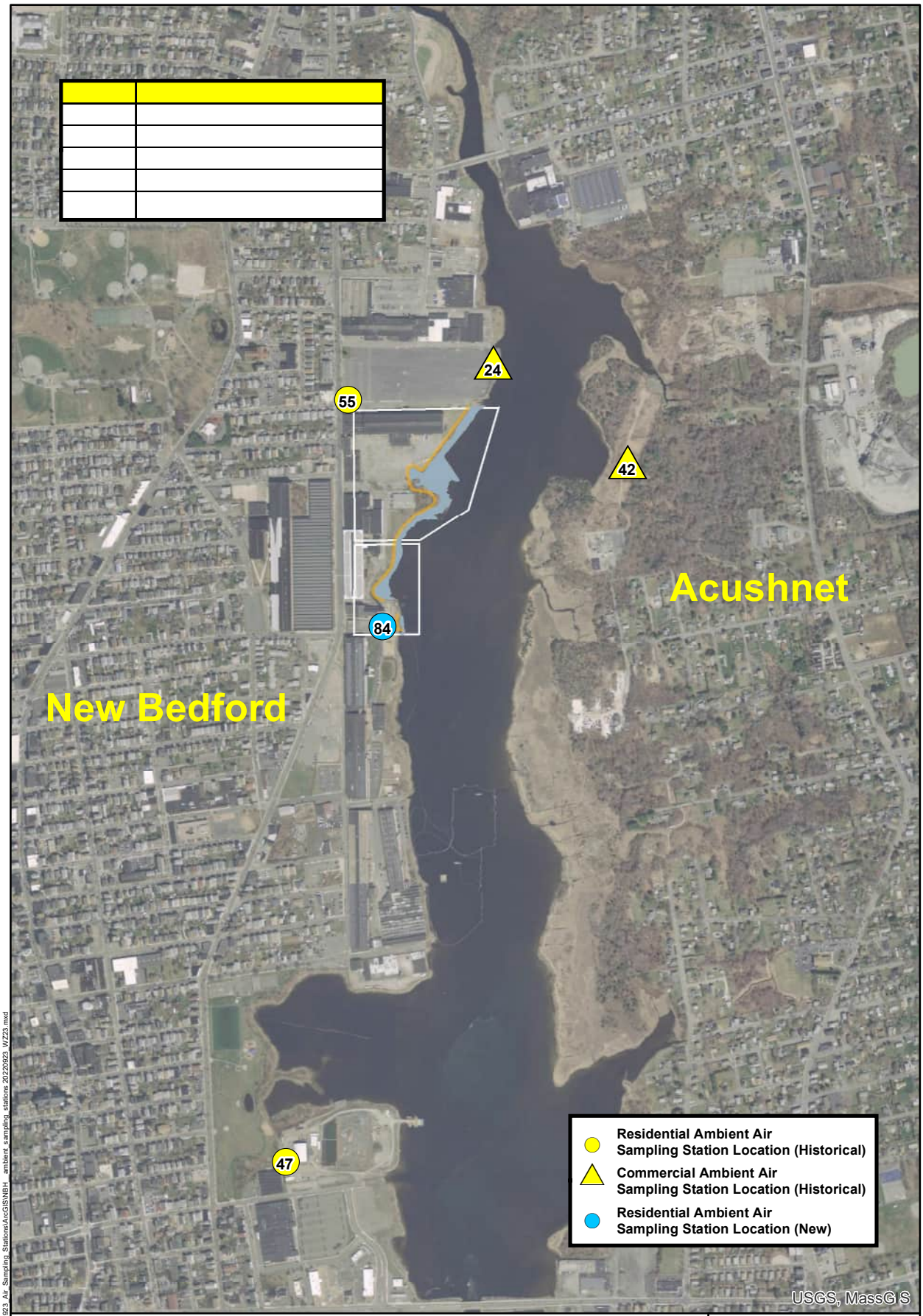
Site-Specific Ambient Air Sampling Locations for EZ3 Work

New Bedford Harbor Superfund Site

NAME: jpicciuto Date: 9/29/2022

Figure 2

Path: Y:\NBH\Projects\35BEG10011\20220923_Air_Sampling_Stations\ArcGIS\NBH_ambient_sampling_stations_20220923_EZ3.mxd



Legend

PROPOSED ACCESS ROAD

EXCAVATION AREA

Aerial Photography MASSGIS 2014

N

0 500 1,000 Feet

1:12,000

JACOBS

Site-Specific Ambient Air Sampling Locations for WZ2-3 Work

New Bedford Harbor Superfund Site

NAME: jpiccuito Date: 9/29/2022

Figure 3

Path: Y:\NBH\Projects\35BG100\1\20220923_Air_Sampling_Stations\ArcGIS\NBH_ambient_sampling_stations_20220923_WZ23.mxd