SIXTH FIVE-YEAR REVIEW REPORT FOR
W.R. GRACE & CO., INC. (ACTON PLANT) SUPERFUND SITE
MIDDLESEX COUNTY, MASSACHUSETTS

Prepared by

U.S. Environmental Protection Agency
Region 1
Boston, Massachusetts

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Superfund and Emergency Management Division

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LIST OF ABBREVIATIONS & ACRONYMS

ARAR	Applicable or Relevant and Appropriate Requirement
ARS	Aquifer Restoration System
ATSDR	Agency for Toxic Substances and Disease Registry
CASRN	Chemical Abstracts Service Registry Number
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	Code of Federal Regulations
CIC	Community Involvement Coordinator
CMR	Code of Massachusetts Regulation
COC	Contaminant of Concern
1,1-DCE	1,1-Dichloroethylene (also referred to as vinylidene chloride)
EPA	United States Environmental Protection Agency
ESV	Ecological Screening Value
FYR	Five-Year Review
GWTP	Groundwater Treatment Plant
HFPO-DA	Hexafluoropropylene Oxide Dimer Acid (Gen-X)
HQ	Hazard Quotient
HQ-115	Lithium bis[(trifluoromethyl)sulfonyl]azanide
IC	Institutional Control
IGCL	Interim Groundwater Cleanup Level
IRIS	Integrated Risk Information System
LATS	Landfill Area Treatment System
MassDEP	Massachusetts Department of Environmental Protection
MBTA	Massachusetts Bay Transportation Authority
MCL	Maximum Contaminant Level
MCLG	Maximum Contaminant Level Goal
MCP	Massachusetts Contingency Plan
MMCL	Massachusetts Maximum Contaminant Level
MNA	Monitored Natural Attenuation
MRL	Minimal Risk Level
MTBE	Methyl Tert-butyl Ether
µg/kg	Micrograms per kilogram
µg/L	Micrograms per Liter
mg/kg	Milligrams per Kilogram
mg/kg-day	Milligrams per Kilogram per Day
NAAQS	National Ambient Air Quality Standards
NAUL	Notice of Activity and Use Limitation
NCP	National Oil and Hazardous Substances Pollution Contingency Plan
ng/L	Nanograms per Liter
NPL	National Priorities List
O&M	Operation and Maintenance
OLEM	Office of Land and Emergency Management
ORD	Office of Research and Development
OU	Operable Unit
PFAS	Per- and Polyfluoroalkyl Substances
PFBA	Perfluorobutanoic Acid
PFBS	Perfluorobutane Sulfonic Acid
PFDA	Perfluorodecanoic Acid
PFDoDA	Perfluorododecanoic Acid
PFHpA	Perfluoroheptanoic Acid
PFHxA	Perfluorohexanoic Acid
PFHxS	Perfluorohexane Sulfonate

PFNA	Perfluorononanoic Acid
PFOA	Perfluorooctanoic Acid
PFODA	Perfluorooctadecanoic Acid
PFOS	Perfluorooctane Sulfonate
PFPrA	Perfluoropropanoic Acid
PfTetA	Perfluorotetradecanoic Acid
PFUDA	Perfluoroundecanoic Acid
PQL	Practical Quantitation Limit
PPRTV	Provisional Peer Reviewed Toxicity Value
PRP	Potentially Responsible Party
ppb	Parts per Billion
ppm	Parts per Million
ppt	Parts per Trillion
RAO	Remedial Action Objective
RCRA	Resource Conservation and Recovery Act
RfC	Reference Concentration
RfD	Reference Dose
ROD	Record of Decision
RPM	Remedial Project Manager
RSL	Regional Screening Level
SVOC	Semi-volatile Organic Compound
TBC	To Be Considered
TCE	Trichloroethylene
TFSI	1,1,1-Trifluoro-N-(trifluoromethanesulfonyl)methanesulfonamide
UU/UE	Unlimited Use and Unrestricted Exposure
VDC	Vinylidene Chloride
VISL	Vapor Intrusion Screening Level
VOC	Volatile Organic Compound

I. INTRODUCTION

The purpose of a five-year review (FYR) is to evaluate the implementation and performance of a remedy in order to determine if the remedy is and will continue to be protective of human health and the environment. The methods, findings and conclusions of reviews are documented in FYR reports such as this one. In addition, FYR reports identify issues found during the review, if any, and document recommendations to address them.

The U.S. Environmental Protection Agency (EPA) is preparing this FYR pursuant to the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) Section 121, consistent with the National Oil and Hazardous Substances Pollution Contingency Plan (NCP) (40 Code of Federal Regulations (CFR) Section 300.430(f)(4)(ii)) and considering EPA policy.

This is the sixth FYR for the W.R. Grace & Co., Inc. (Acton Plant) Superfund site (the Site). The triggering action for this statutory review is the completion date of the previous FYR. The FYR has been prepared because hazardous substances, pollutants or contaminants remain at the Site above levels that allow for unlimited use and unrestricted exposure (UU/UE).

The Site consists of three operable units (OUs). This FYR addresses two of the OUs (OU-1 and OU-3). OU-1 addresses source area contamination. OU-3 addresses groundwater and sediment in Sinking Pond and the North Lagoon Wetland. The Site's 1989 Record of Decision (ROD) stated that a remedy for OU-2 would be necessary only if, following completion of the OU-1 remedy, residual contamination in soils under the source areas exceeded soil cleanup goals established for OU-1. Data collected during and after the completion of the OU-1 remedy indicated that the soil cleanup goals were met for each of the source areas. Therefore, no remedy for OU-2 was necessary.

EPA remedial project manager (RPM) Kara Nierenberg led the FYR. Participants from EPA included human health risk assessor Courtney Carroll, ecological risk assessors Valeria Paz and Bart Hoskins, attorney Maximilian Boal and community involvement coordinator (CIC) Brenda Murcia. Other participants included Jennifer McWeeney from the Massachusetts Department of Environmental Protection (MassDEP) and Alison Cattani and Kirby Webster from EPA support contractor Skeo. The potentially responsible party (PRP), W.R. Grace was notified of the initiation of the FYR. The review began on 12/12/2023.

Appendix A lists documents reviewed for this FYR. Appendix B provides a chronology of site events.

Site Background

The Site is located in the towns of Acton and Concord, Massachusetts (Figure 1). From 1945 to 1991, various chemical company manufacturers were active at the 260-acre area. W.R. Grace (Grace) acquired the property in 1954. Historical operations at the Grace facility included the production of materials used to make concrete and organic chemicals, container sealing compounds, latex products, and paper and plastic battery separators. Effluent wastes from these operations flowed into several unlined lagoons (the Primary Lagoon, Secondary Lagoon, North Lagoon and Emergency Lagoon) and were buried in or placed onto the on-site Industrial Landfill and several other waste sites (Figure E-1 in Appendix E). These site-related activities resulted in the contamination of soil, sediment and groundwater.

The property previously owned by Grace in Concord is now owned by the town of Concord. The remainder of the property is mostly owned by Grace (see Figure 1 and Figure E-1 in Appendix E). The remnants of the manufacturing facility are visible as paved roads, former parking areas and the concrete slabs of former buildings. The former pits and lagoons are now mostly grass-covered fields, interspersed with wooded areas. Features relevant to active remediation at the Site include the capped Industrial Landfill, the Landfill Area Treatment System (LATS), and Sinking Pond, the receiving waters for the LATS effluent (Figure 1). The Massachusetts Bay Transportation Authority (MBTA) Commuter Rail Fitchburg Line crosses the Grace property in an east-west direction. Within the site boundary but beyond the Grace property, surrounding land uses (moving counter-clockwise from the east) include a solar panel array (town of Concord) and wetlands to the east; residential, industrial (Linde LLC) and public water supply (Acton Water District School Street Wellfield) uses to the north; public water supply (Acton Water District Assabet Well Field) and strip mall uses to the south, and a large area of commercial and light industrial development (including the town of Concord school bus maintenance facility) to the southeast.

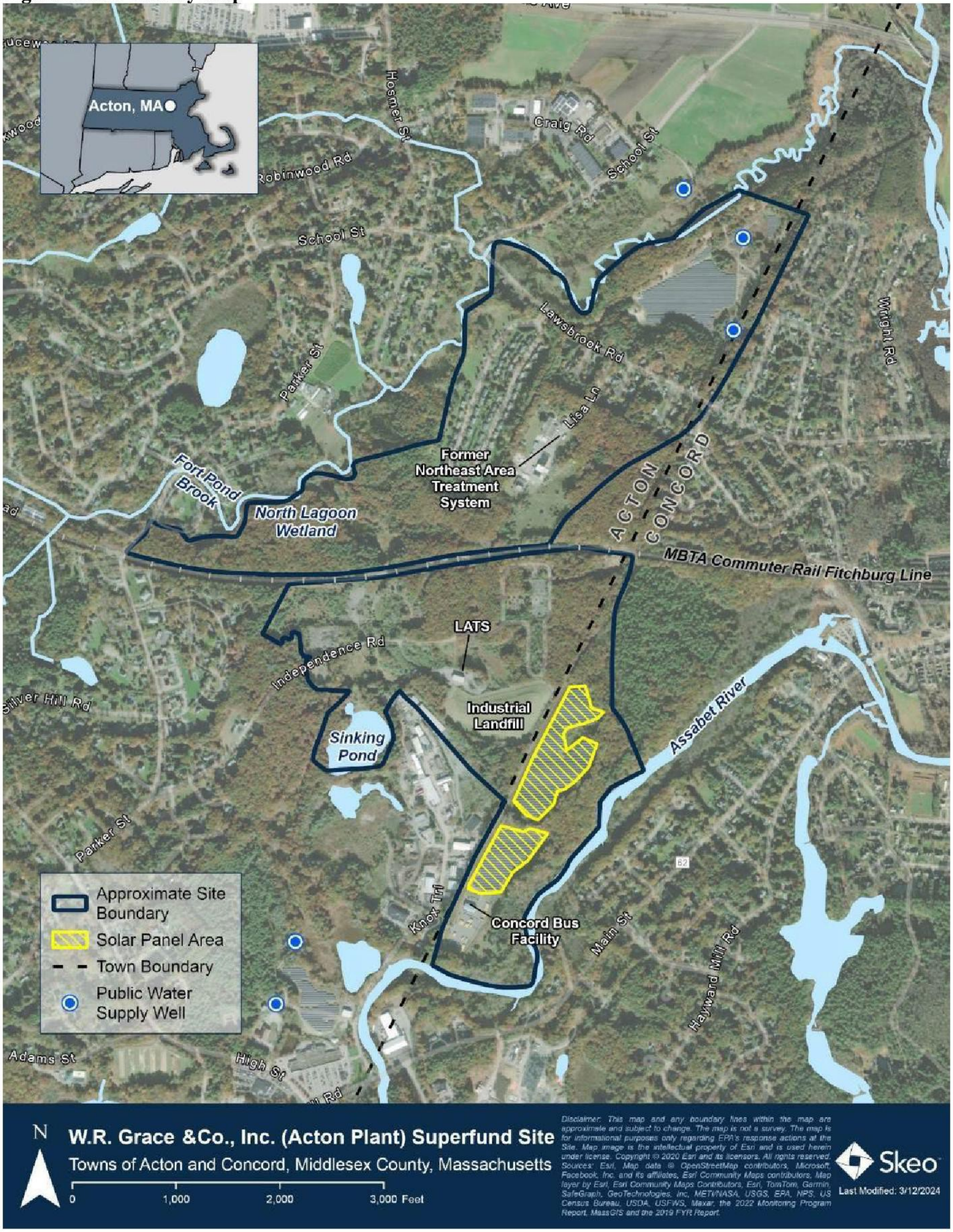
Multiple reuse options are being evaluated for the Site. A new 5-megawatt solar array is expected to be installed in 2024, south of the MBTA commuter rail line and north of the Industrial Landfill. The town of Acton is also actively looking into reuse opportunities for the Site, including the potential for residential use on parts of the Site.

Precipitation is the primary source of groundwater in the aquifers underlying the Site. As precipitation enters the ground, it moves downward through the unsaturated glacial deposits to the groundwater table. For most of the property, the groundwater lies from 20 to 50 feet below the ground surface. However, in the vicinity of the North Lagoon, the groundwater table is generally at the ground surface. Groundwater in the unconsolidated deposits flows from a groundwater divide located in the vicinity of the MBTA commuter rail line easement and Independence Road south and southeast toward the Assabet River as well as northwest and northeast toward Fort Pond Brook. Vertical hydraulic gradients between the unconsolidated deposits and the bedrock are generally downward, except near the Assabet River and Fort Pond Brook. Vertical hydraulic gradients in the vicinity of the Assabet River and Fort Pond Brook are upward from the bedrock to the unconsolidated deposits, indicating that groundwater discharges to the river and brook. Public water supply wells are present in the vicinity of the Site as shown in Figure 1.

FIVE-YEAR REVIEW SUMMARY FORM

SITE IDENTIFICATION		
Site Name: W.R. Grace & Co., Inc. (Acton Plant)		
EPA ID: MAD001002252		
Region: 1	**State:** MA	**City/County:** Acton and Concord/Middlesex
SITE STATUS		
NPL Status: Final		
Multiple OUs? Yes	**Has the site achieved construction completion?** Yes	
REVIEW STATUS		
Lead agency: EPA		
Author name: Kara Nierenberg		
Author affiliation: EPA		
Review period: 12/12/2023 - 6/17/2024		
Date of site inspection: 12/12/2023		
Type of review: Statutory		
Review number: 6		
Triggering action date: 6/17/2019		
Due date *(five years after triggering action date)*: 6/17/2024		

Figure 1: Site Vicinity Map



Disclaimer: This map and any boundary lines within the map are approximate and subject to change. The map is not a survey. The map is for informational purposes only regarding EPA's response actions at the Site. Map image is the intellectual property of Esri and is used herein under license. Copyright © 2020 Esri and its licensors. All rights reserved. Sources: Esri, Map data © OpenStreetMap contributors, Microsoft, Facebook, Inc. and its affiliates, Esri Community Maps contributors, Map layer by Esri, Esri Community Maps Contributors, Esri, TomTom, Garmin, SafeGraph, GeoTechnologies, Inc, METI/NASA, USGS, EPA, NPS, US Census Bureau, USDA, USFWS, Maxar, the 2022 Monitoring Program Report, MassGIS and the 2019 FYR Report.

II. RESPONSE ACTION SUMMARY

Basis for Taking Action

In 1973, residents in South Acton filed complaints about periodic odors and irritants in the air around the Grace plant. Sampling of two public supply wells by the town of Acton in 1978 indicated these two municipal wells contained detectable concentrations of 1,1-dichloroethylene (1,1-DCE) (also referred to as vinylidene chloride [VDC]). As a result, the town of Acton temporarily closed the two wells.

The primary resource affected by the Site is the underlying aquifer, from which groundwater is withdrawn at two wellfields: one (Acton Water District [AWD] Assabet Wellfield: Assabet–1A, Assabet–2, Assabet–2A, and Assabet–3 public water supply wells) at the southern end of the Site near the Assabet River, and another (AWD School Street Well Field: Christofferson, Lawsbrook and Scribner public water supply wells) at the northeastern end of the Site along Fort Pond Brook. Soils and sediment in the North Lagoon Wetland and in Sinking Pond were also contaminated.

EPA added the Site to the Superfund program's National Priorities List (NPL) in September 1983.

OU-1 and OU-2 - Source Area and Residual Contamination in Soils under the Source Areas

A risk assessment in 1989 evaluated future human health risks associated with sitewide exposure to surface materials and groundwater and specific source area exposures assuming residential use of the property. To evaluate the risk associated with individual source areas, an evaluation of exposures to surface materials was conducted for each source area independently. The OU-1 investigations specifically assessed the nature and extent of contamination resulting from previous disposal activities in the main source areas. These source areas are shown in Figure E-1 in Appendix E. A wider sampling was not conducted to determine if more contamination was present outside of these source areas.

The risk assessment concluded that the Grace property was likely to pose significant carcinogenic and non-carcinogenic risk to human health in the event the property was developed and used for residential purposes, in the absence of remediation. Significant groundwater risk contributors included VDC, vinyl chloride, arsenic, lead and zinc. Risks associated with exposure to surface material were primarily attributed to VDC, vinyl chloride and arsenic. These conclusions formed the basis of the selected remedy for OU-1 and OU-2, which addressed surface materials (soil and sludge) only.

OU-3 - Groundwater and Sediment in Sinking Pond and the North Lagoon Wetland

The objectives for the investigations associated with OU-3 were to define the extent of groundwater contamination and its impacts, if any, on surface water, sediments and air at the Site. Human health and ecological risk assessments finished in 2005.

The human health and ecological risk assessment identified future risks to receptors from exposure to:

- sediments in the North Lagoon Wetland (incidental, ingestion and dermal contact)
    - Unacceptable risks to potential future recreational receptors (waders) were identified in the North Lagoon Wetland due to elevated arsenic in sediments.
    - Unacceptable risks to ecological receptors in sediments of the North Lagoon Wetland were attributed to arsenic and manganese.
- sediments in Sinking Pond (ingestion and dermal contact).
    - Unacceptable risks to potential future recreational receptors (waders) were identified in Sinking Pond due to elevated arsenic in sediments.
    - Unacceptable risks to the environment were also identified and attributed to arsenic in portions of Sinking Pond (above the thermocline) in water less than 12 feet deep, and to exposure to elevated concentrations of other metals in sediments of Sinking Pond, including manganese, iron and copper. The band of shallow water around the pond posing a risk to ecological receptors overlapped with areas of potential human exposure and risk to human receptors from swimming/wading.

- residential household exposure to untreated groundwater via ingestion, dermal contact and inhalation
- residential irrigation water exposure (i.e., swimming pool exposure) to untreated groundwater
- residential household water exposure to untreated groundwater from the School Street Wellfield via ingestion, dermal contact and inhalation.

The primary chemicals that were identified as groundwater contaminants at the Site include VDC, vinyl chloride, benzene, 1,2-dichloropropane, 1,2-dichloroethane, methylene chloride, bis (2-ethylhexyl) phthalate, arsenic and manganese. These conclusions formed the basis of the selected remedy for OU-3.

Response Actions

When investigations in 1978 indicated that two municipal wells (Assabet–1, Assabet–2) were contaminated with VDC, vinyl chloride, ethylbenzene and benzene, Grace and EPA entered into a Consent Decree requiring cleanup of the Site in October 1980 (1980 Consent Decree) under the Resource Conservation and Recovery Act (RCRA). A similar settlement was reached between Grace and the commonwealth of Massachusetts.

The 1980 Consent Decree required cleanup and restoration of the drinking water in the aquifer, the source of water for Assabet–1 and Assabet–2 wells. In response, Grace developed a plan for a recovery well network to capture contaminated groundwater and pump it to a central facility for treatment. Following EPA and state approval of this cleanup plan, the Aquifer Restoration System (ARS) was constructed between December 1983 and March 1985. Parts of the ARS extraction well network were subsequently deactivated in 2002 and 2008, while other parts were integrated into the new groundwater remedy required by the 2005 ROD.

This section describes the selected remedies for the Site's three operable units (OU-1, OU-2 and OU-3).

OU-1 – Source Area

EPA signed the ROD for OU-1 in September 1989. This ROD addressed the first of three OUs planned for the Site. The remedial action objectives (RAOs) as presented in the ROD for the Site were to:

- Protect exposure points, where humans or wildlife may be exposed to contaminants in soil, groundwater, surface water and sediments, during and after site remediation.
- Prevent the migration of contaminants in groundwater from sources on-site to public drinking water supplies.
- Protect on- and off-site groundwater from contamination by site contaminants in excess of drinking water quality.
- Eliminate the potential for contact in the future with waste materials by the public and the environment.
- Protect on- and off-site surface water from contamination by site contaminants.
- Prevent the migration of contaminated run-off from the waste sites.
- Protect against direct contact with site contaminants and minimize environmental exposure during remedial activities.
- Reduce to the maximum extent practicable the number of source areas to eliminate long-term management and permit unrestricted use.

The selected remedy for OU-1 (source control), as identified in the ROD, consisted of the following components:

- Excavation and transportation off-site for incineration of highly contaminated material from the Blowdown Pit.
- Excavation and stabilization of the remaining contents of the Blowdown Pit, as well as the contaminated sludges and soils of the Primary Lagoon, Secondary Lagoon, North Lagoon and Emergency Lagoon.
- Excavation of contaminated soils from the Battery Separator Lagoons, Boiler Lagoon and Tank Car Area.
- Placement of both the stabilized and non-stabilized materials excavated from the Site on the existing Industrial Landfill, and covering these materials with an impermeable cap.
- Conducting of post-excavation sampling and analysis.
- Capping of the Battery Separator Chip Pile.
- Covering of any disposal area that attains the soil cleanup goals.

- Modification of the ARS to address air stripper emission controls.
- Establishment of long-term environmental monitoring at each disposal area designed to monitor the effectiveness of the proposed remedy.
- Institutional controls to regulate land use of the Industrial Landfill and Battery Separator Chip Pile, including activities that may compromise the integrity of the caps. These controls will supplement requirements of the existing Consent Decree, which required Grace to file a notice with the Registry of Deeds and to obtain the consent of the United States before transferring any property at the Site.

The goals of the selected remedy were to protect the drinking water aquifer by minimizing further contamination of the groundwater and surface water and to eliminate the threats posed by direct contact with or ingestion of contaminants in soil and waste sludges at the Site under a residential scenario. Table 1 lists site cleanup goals.

Table 1: OU-1 1989 Soil Cleanup Goals

Location	**VDC (µg/kg)**	**Vinyl Chloride (µg/kg)**	**Ethyl Benzene (µg/kg)**	**Benzene (µg/kg)**	**Bis-2-Ethylhexyl Phthalate (µg/kg)**
Primary Lagoon	17	19	1,277	2	128
Secondary Lagoon	65	75	4914	7	491
Emergency Lagoon	8	9	619	1	61
Blowdown Pit	15	17	1,122	2	112
Boiler Lagoon	23	26	1,741	3	174
Battery Separator Lagoons	15	18	1,161	2	116
Tank Car Area	17	19	1,277	2	128

Notes:
µg/kg = micrograms per kilogram
Source: Table 3 of the Site's 1989 OU-1 ROD (pdf page 34).

OU-2 – Residual Contamination in Soils under the Source Areas

The ROD for OU-1 stated that a remedy for OU-2 would be necessary only if, following completion of the OU-1 remedy, residual contamination in soils under the source areas exceeded soil cleanup goals established for OU-1. Data collected during and after the completion of the OU-1 remedy indicated that the soil cleanup goals were met for each of the source areas. Therefore, no remedy for OU-2 was necessary.

OU-3 – Groundwater and Sediment in Sinking Pond and the North Lagoon Wetland

EPA signed the ROD for OU-3 in September 2005. The RAOs as presented in the ROD are:

- Prevent potential exposure to concentrations of contaminated groundwater from the Site having carcinogens in excess of Applicable or Relevant and Appropriate Requirement (ARARs) (i.e., maximum contaminant levels [MCLs], non-zero maximum contaminant level goals [MCLGs]) and prevent exposure to groundwater that may pose a total excess cancer risk in groundwater in excess of EPA's cancer risk range of 10^{-4} to 10^{-6} and/or which exceed a target noncancer hazard index of 1.0.
- Restore groundwater quality consistent with ARARs and cleanup goals so that the aquifer is suitable as a public water supply and for irrigation purposes without pre-treatment for site-related contaminants.

The RAOs for sediment for the protection of human health and the environment are:

- Control discharge of treated effluent groundwater to prevent unacceptable impacts to sediment and surface water in Sinking Pond.
- Prevent a future resident from exposure to sediment in the North Lagoon Wetland and Sinking Pond that poses an excess cancer risk from 10^{-4} to 10^{-6} or a hazard index of 1.0.
- Prevent exposure to contaminants in sediment that presents an unacceptable risk to the environment.

The selected remedy for OU-3, as identified in the ROD, consists of the following components:

- Cleanup of contaminated sediments and soils posing an unacceptable risk to human health and/or the environment in Sinking Pond and the North Lagoon Wetlands.

  - Sinking Pond remediation includes excavation of about 4,533 cubic yards of sediments from the inlet as well as removal and/or covering of sediments from select portions of the Pond that are above the thermocline (12 feet of water or less) and considered to pose an unacceptable risk to either human health or to environmental receptors. The exposure area of greatest concern for ecological receptors in Sinking Pond is above the thermocline, since dissolved oxygen levels may be depleted below the thermocline in summer months, reducing the sustainability of fish and invertebrates. [A thermocline is a distinct temperature gradient, which prevents mixing between the surface waters and those beneath the thermocline]
- Extraction and treatment of groundwater contamination in the Southeast and Southwest Industrial Landfill Areas on the Grace property and at targeted areas in the Northeast Area (see Figure 3 for location of Northeast Area).
- A redesigned and/or modified ARS that will treat extracted groundwater for both metals and organic contaminants. Treatment processes for extracted groundwater would include air stripping, activated carbon (air treatment) and metals precipitation prior to surface water discharge to Sinking Pond.
- Monitored natural attenuation (MNA) of areas of groundwater contamination not captured by the extraction system.
- Institutional controls such as deed restrictions and/or local ordinances to prevent unacceptable exposures to contaminated groundwater until cleanup levels are met and to protect against unacceptable future exposures to any wastes left in place on-site.
- Long-term groundwater, surface water and sediment monitoring and periodic FYRs of the remedy.

The goals of the selected remedy are to restore the drinking water aquifer and to eliminate the threats posed by direct contact with or ingestion of contaminants in sediment in the North Lagoon Wetland and Sinking Pond. Table 2 lists the interim groundwater cleanup levels (IGCLs). At the time that IGCLs identified in the ROD (and all newly promulgated or modified ARARs) have been achieved and have not been exceeded for a period of three consecutive years, a risk assessment will be performed on all residual groundwater contamination to determine whether the remedial action is protective. The risk assessment will follow EPA procedures. It will assess the cumulative carcinogenic and non-carcinogenic risks posed by all contaminants of concern (COCs) (including, but not limited to, the COCs identified in the ROD) via ingestion, dermal contact and inhalation of volatile chemicals from domestic water use. Table 3 and Table 4 list the sediment cleanup goals for protection of human health and protection of ecological receptors, respectively.

Table 2: OU-3 2005 Interim Groundwater Cleanup Levels

Chemical	Interim Cleanup Level (µg/L)	Basis
Antimony	6	MCLG
Arsenic	10	MCL
Beryllium	4	MCLG
Benzene	5	MCL
Bis(2-chloroethyl)ether	5	PQL
Bis(2-ethylhexyl)phthalate	6	MCL
Chromium (Total)	100	MCLG
1,2-Dichloroethane	5	MCL
1,1-Dichloroethylene	7	MCLG
1,2-Dichloropropane	5	MCL
Lead	15	MCL[a]
Manganese	300[b]	Health Advisory
Methylene chloride	5	MCL
Methyl tert-butyl ether (MTBE)	16	Risk-based[c]
Nickel	100	Health Advisory
Trichloroethylene (TCE)	5	MCL
Vinyl chloride	2	MCL

Notes:

µg/L = micrograms per liter

PQL = practical quantitation limit

a) Remediation level for lead is based on the action level.

b) A background value, determined during remedial design, may be selected as the interim groundwater cleanup level for manganese.

c) Concentration corresponds to an excess cancer risk of 1 x 10^{-6}

Source: Table L-4 of the Site's 2005 OU-2 ROD (pdf page 256).

Table 3: OU-3 2005 Sediment Cleanup Levels for Protection of Human Health

Location	Arsenic Sediment Cleanup Level (mg/kg)	Basis
Sinking Pond	42	Maximum background – White Pond
North Lagoon Wetland	28	Maximum background – Reference Wetland 2

Notes:

mg/kg = milligrams per kilogram

Source: Table L-5 of the Site's 2005 OU-2 ROD (pdf page 257).

Table 4: OU-3 2005 Sediment Cleanup Levels for Protection of Ecological Receptors

Location	Chemical	Area	Sediment Cleanup Level (mg/kg)	Basis
Sinking Pond	Arsenic	Sediment with elevated arsenic, copper, iron and manganese concentrations in the inlet and within the pond where the ground slope is relatively shallow (defined as areas SPBK-1 through SPBK-4 on Figure 13) and that is consistently covered by less than 12 feet of water.	42	Maximum background – White Pond
Sinking Pond	Arsenic	Sediment with elevated arsenic, copper, iron and manganese concentrations within the pond but outside the areas specified above that is consistently covered by less than 12 feet of water.	42	Maximum background – White Pond
North Lagoon Wetland	Arsenic	Sediment from 0 to 12 inches in depth with elevated arsenic concentrations.	28	Maximum background – Reference Wetland 2
North Lagoon Wetland	Manganese	Sediment from 0 to 12 inches in depth with elevated arsenic concentrations.	2,030	Site-specific risk-based concentration for muskrat
Notes: *Source:* Table L-6 of the Site's 2005 OU-2 ROD (pdf page 257).				

<u>Status of Implementation</u>

OU-1 – Source Area

The remedial design/remedial action activities for OU-1 were performed by Grace under the 1980 Consent Decree. Consistent with the 1989 ROD, the following work has been conducted at the Site:

- Prior to implementation of the remediation work provided for in the ROD for OU-1, Grace constructed an ARS. This system began treating contaminated groundwater that was extracted from bedrock and overburden wells through an air stripping tower. The ARS began operation in March 1985 and continued, with modifications, to treat groundwater until April 2011. The air stripping tower component of the ARS required upgrading by installing carbon filters to control vapors and odors; these upgrades were completed in September 1992.
- The contents of the Battery Separator Lagoons, Boiler Lagoon and the Tank Car Area were excavated to a depth of at least 5 feet and deeper when necessary to reach soil cleanup goals. These materials were then placed in the Industrial Landfill. If unexpected levels of contaminants were detected that could present implementation problems or impact the effectiveness of the landfill remedy, those materials were stabilized prior to placement on the landfill or were taken off-site for disposal. Post-excavation sampling and analysis were conducted to ensure that soil cleanup goals were attained.
- Sludges and at least 2 feet of soil in each of the Primary, Secondary and Emergency Lagoons were excavated, stabilized and placed on the Industrial Landfill. Additional excavation greater than 2 feet in depth was performed until soil cleanup goals were met. Sediments from the North Lagoon were removed to a depth equivalent to the low groundwater level, stabilized and placed on the Industrial Landfill. Materials in the Blowdown Pit containing greater than 100 parts per million (ppm) of VDC were excavated and shipped to an off-site disposal facility. Remaining sludge and other contaminated materials and at least 2 feet of underlying soil were excavated, stabilized and placed on the Industrial Landfill. Post-excavation sampling was then conducted to ensure that soil cleanup goals were attained.
- The Industrial Landfill was covered with excavated soils and then with stabilized materials from the lagoons and Blowdown Pit. It was then graded using excavated materials from the other waste disposal areas. The landfill was sealed/closed with an impermeable cap designed and constructed in accordance with Massachusetts Hazardous Waste Regulations for landfills. The impermeable cap included a synthetic cover to prevent infiltration of surface water into the waste materials beneath the cap. The cap was also constructed with vents to allow gases generated from the existing and new material to vent to the surface

outside the landfill. Emissions from the Industrial Landfill were initially controlled using a thermal oxidation unit. After proper evaluation, they have since been allowed to vent passively to the atmosphere.
- Originally, the Battery Separator Chip Pile was to be capped in place, but the need to remove the underlying soils made in-place capping not feasible. Therefore, the battery separator chips were excavated and placed in the Industrial Landfill and were covered with non-solidified material excavated from the source areas.

OU-3 - Groundwater and Sediment in Sinking Pond and the North Lagoon Wetland
The remedial design/remedial action activities for OU-3 were performed by Grace under the 2006 Remedial Design/Remedial Action Statement of Work. Consistent with the 2005 ROD, the following work has been performed at the Site:

- The LATS began operating in May 2011. Groundwater was pumped from five extraction wells to achieve a capture zone defined in the ROD. (In 2021, with EPA's approval two of the low yielding extraction wells, SELF-1 and SELF-2, were shutdown. Currently the LATS is current pumping from 3 extraction wells). Beyond that zone, MNA is the remedy. The LATS initially consisted of a metals microfiltration unit to reduce concentrations of arsenic, iron, manganese, and phosphorus, and a photocatalytic oxidation system to destroy volatile organic compounds (VOCs) and 1,4-dioxane. The 1,4-dioxane was discovered post-ROD. Originally, the groundwater treatment system was intended to treat VOCs with an air stripper. In an effort to provide treatment for 1,4-dioxane, the photocatalytic oxidation system was installed in place of an air stripper. (In 2022, with EPA's approval the photocatalytic oxidation system was removed from the groundwater treatment system.) After a shakedown period of about one year, a liquid phase carbon unit was added to the system in May 2012 to remove residual chlorine from the effluent.
- A temporary groundwater extraction and treatment system operated from April 2010 through September 2013 in the Northeast Area. Its goal, which was accomplished, was to achieve mass removal from the most highly contaminated portion of the residual VDC plume that migrates through the bedrock aquifer to Fort Pond Brook and the School Street public water supply wells.
- The progress of the MNA component of the groundwater remedy has continued to be monitored. Sampling has shown that the MNA remedy has been largely successful in reducing the contaminant concentrations in the VOC plumes. The data review section discusses the status of groundwater and additional investigations that are ongoing in the area of the monitoring well cluster OSA-13.
- Sediment removal actions took place in the North Lagoon Wetland and in Sinking Pond between June and November 2011. Excavated areas in the North Lagoon Wetland were backfilled with a minimum of 12 inches of topsoil to pre-construction grades, seeded, and planted, to achieve the goal of the upper 1 foot of sediment having concentrations of arsenic and manganese at or below the target cleanup levels. Remedial activities in Sinking Pond included excavation of sediments in the inlet and between elevations of 144.5 feet and 128 feet around the border of the pond. A minimum of 6 inches of clean topsoil was then placed in the excavated portions of the pond between the water line and the historical high-water elevation (144.5 feet). Disturbed portions of the pond bank from the edge of water to 144.5 feet were seeded and planted. As documented in the Final Sediment Remedial Design Report, Grace developed a remedial design that was intended to achieve the long-term goal of 42 milligrams per kilogram (mg/kg) arsenic throughout the applicable portion of the pond such that subsequent monitoring for a reducing trend toward 42 mg/kg would not be necessary. Sediment remedial activities were determined to be complete. The final site inspection occurred on November 17, 2011.

The 2019 FYR identified an issue with the Sinking Pond thermocline. Specifically, the elevation of the thermocline in Sinking Pond had changed since the time of the 2014 FYR. The elevation of the thermocline controlled the scope of sediment excavation in Sinking Pond. With the thermocline at a lower elevation than at the time of the remedy, the 2019 FYR recommended a study to re-evaluate the ecological protectiveness of the remedy in Sinking Pond. This study is described in the data review section of this FYR.

Institutional Controls

OU-1 – Source Control

The 1989 OU-1 ROD required institutional controls to regulate land use of the Industrial Landfill and Battery Separator Chip Pile, including activities that may compromise the integrity of the caps. These controls will supplement requirements of the existing Consent Decree, which required Grace to file a notice with the Registry of Deeds and to obtain the consent of the United States before transferring any property at the Site. As indicated in the Status of Implementation sections of this FYR Report, a cap was not installed on the Battery Separator Chip Pile. The area was excavated, and cleanup levels were attained. Therefore, the only OU-1 institutional controls that are required by the ROD are to protect the Industrial Landfill cap. A deed notice was placed on the property in 1989, restricting use of the Disturbance Restriction Area where the Industrial Landfill is located (Figure 2).

In 2015, the town of Concord took ownership of the parcel of the Grace property in Concord by eminent domain. The 68-acre parcel is located between the Assabet River to the east and the Concord/Acton Town border to the west. Concord constructed a solar array on the northern part of this property and a bus maintenance facility on the southern part. Construction of the solar arrays resulted in thousands of dollars of damage to monitoring wells operated by Grace in that area of the Site.

Over the past 10 years, there has been an increased interest in redeveloping areas of the Site that are outside the Industrial Landfill. In September 2022, Grace issued a Notice of Intent to Sell a portion of the Grace owned property north of the MBTA commuter rail line in order to develop the parcels for multifamily housing. While some areas of the Site have been thoroughly investigated and remediated based on a potential future residential use (specifically the former source area soils), there are other areas of the Site where the current status of soil contaminant concentrations is unknown (adjacent to source area soils, under former buildings, parking areas, roadways, etc.). With the increased interest in redevelopment, an institutional control is necessary for OU-1 to ensure any future development will be protective of human health. Specifically, EPA is considering an institutional control to require soil characterization or a soil management plan prior to redevelopment to ensure site-related contamination is not present in soils. EPA and Grace are in the process of evaluating the options.

OU-3 - Groundwater and Sediment in Sinking Pond and the North Lagoon Wetland

The 2005 OU-3 ROD required institutional controls such as deed restrictions and/or local ordinances to prevent unacceptable exposures to contaminated groundwater until cleanup levels are met and to protect against unacceptable future exposures to any wastes left in place on-site. In 2002, the Acton Board of Health placed an administrative hold on all proposed wells within 500 feet of the mapped VOC plumes associated with the Site. The town of Concord recently approved new well regulations that prohibit wells within a 500-foot buffer zone of the groundwater plume and place an administrative hold on new wells within a one-half mile area of the existing groundwater plume. The Acton administrative hold and the Concord well regulations both reference the mapped VOC plume from 2023.

In 2017, without notifying or consulting either EPA or MassDEP, the town of Concord installed a groundwater extraction well intended to provide non-potable water to clean buses at the bus maintenance facility. This 8-inch diameter well was advanced to a depth of about 500 feet in bedrock. EPA became aware of the well after personnel repairing the monitoring wells damaged during construction of the solar array discovered it. EPA issued a letter on March 21, 2024 restricting the use of this well out of concern that it may draw contaminated groundwater from the Site, with potential to pose a risk to human health and adversely affect the groundwater remedy. Concord responded to EPA's letter on April 9, 2024 and stated that the well has never been used and will be decommissioned in Spring/Summer 2024.

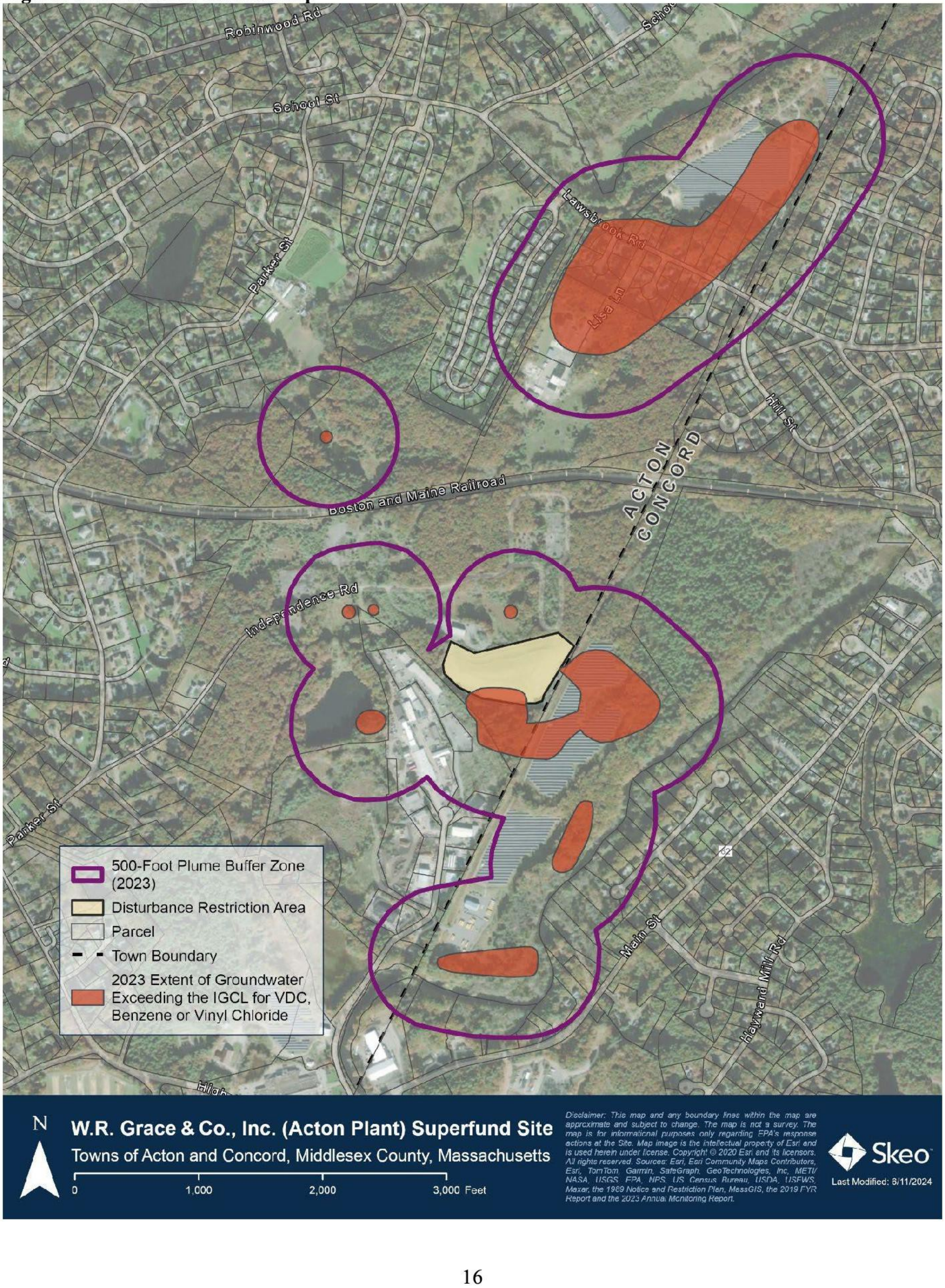
Grace and EPA are discussing the potential to implement institutional controls associated with Sinking Pond in order to ensure the remedy remains protective of human health and the environment if the thermocline changes.

Table 5 summarizes the status of the institutional controls for the Site.

Table 5: Summary of Planned and/or Implemented Institutional Controls (ICs)

Media, Engineered Controls, and Areas That Do Not Support UU/UE Based on Current Conditions	ICs Needed	ICs Called for in the Decision Documents	Impacted Parcel(s)	IC Objective	Title of IC Instrument Implemented and Date (or planned)
OU-1: Capped Industrial Landfill	Yes	Yes	Industrial Landfill and surrounding groundwater (landfill area plume)	Ensure continued maintenance and prevent disturbance of the Industrial Landfill cap	1989 Notice and Restriction Plan for the "Disturbance Restriction Area" Book 28309, Page 003
OU-1: Soils	Yes	No	Soils outside of source areas and the Industrial Landfill	Require soil characterization or soil management plan prior to redevelopment	Planned
OU-3: Groundwater	Yes	Yes	Properties within 500 feet of the mapped groundwater contaminant plume	Prevent installation of private wells near or within contaminant plume boundaries	Acton Board of Health Administrative Hold (implemented in 2002, updated in 2023) Concord Board of Health Well Regulations (approved April 2024)
OU-3: Sinking Pond Sediments	To be determined	No	Sinking Pond	Prevent human or ecological exposure to sediments below the historical thermocline	Planned

Figure 2: Institutional Control Map



W.R. Grace & Co., Inc. (Acton Plant) Superfund Site

Towns of Acton and Concord, Middlesex County, Massachusetts

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Last Modified: 6/11/2024

Systems Operations/Operation & Maintenance (O&M)

The Industrial Landfill is maintained and monitored in accordance with the Site's 1996 Draft Post-Closure Operation and Maintenance Plan. Drainage swales and culverts are checked twice per year and following large storm events. The landfill cover is inspected for evidence of erosion, vegetation (deterioration or excessive growth), ponded water, animal burrows, cracks, odors, and damage to site facilities. Grass on the landfill is mowed bi-annually down to 4 to 5 inches.

The LATS is maintained and monitored in accordance with the Site's 2012 O&M Plan. As part of the 2005 ROD for the Site, the ARS was replaced by the LATS in 2011. The LATS consisted of five extraction wells. In 2021, EPA approved shutting down two of the low yielding extraction wells (SELF-1 and SELF-2). Following the shutdown, Grace implemented the post-shutdown monitoring protocol and continues to maintain the SELF wells so they can be reactivated if deemed necessary.

The remaining operational extraction wells (MLF, WLF and SWLF-2) are located downgradient of the Industrial Landfill in the Southwest Landfill Area. They were pumping at a total rate of 40 to 50 gallons per minute. In 2022, EPA and MassDEP approved a LATS extraction rate reduction pilot test. In 2023, Grace submitted a technical memorandum to EPA and MassDEP summarizing the results. The technical memorandum concluded that a reduction of LATS flow rate from 41 to 22 gallons per minute had a negligible effect on the extent of the LATS capture zone and groundwater flow direction in the vicinity of the LATS capture zones. The memorandum states that there were no significant differences between the treatment system influent or extraction well concentrations in samples collected before and after the flow rate reduction. The 1,4-dioxane concentrations in the influent and effluent remained below 3 μg/L during and after the pilot test. The LATS extraction system is continuing to run at the reduced flow rates while EPA reviews the proposal for a permanent flowrate reduction.

The treatment system consists of a metals microfiltration system and liquid-phase carbon to remove arsenic, iron, manganese and phosphorus from the extracted groundwater prior to surface discharge to Sinking Pond. In August 2022, the Purifics photo catalytic oxidation system was bypassed (and subsequently removed) with EPA approval and is no longer part of the overall groundwater treatment train.

Treatment system discharge compliance is evaluated through the collection of monthly water quality samples analyzed for VOCs, semi-VOCs (SVOCs), 1,4-dioxane, total metals and phosphorus. Contaminants with discharge limits are: chromium, iron, nickel, arsenic, lead and phosphorus. During this review period, effluent concentrations were below discharge standards, with the exception of iron, phosphorus and lead, as follows:

- In 2023, phosphorous was above the average monthly discharge limit (18 μg/L) in May and November with concentrations of 52 μg/L and 38 μg/L, respectively.
- In 2023, lead was above the average monthly discharge limit (0.5 μg/L) in May and September with concentrations of 1.0 μg/L and 1.1 μg/L, respectively.
- In 2022, phosphorus concentrations were above the average monthly discharge limit (18 μg/L) in January, May and September, with concentrations of 22 μg/L, 400 μg/L and 60 μg/L, respectively. The 400 μg/L effluent concentration result was associated with an influent concentration of 100 μg/L; it is considered an anomaly.
- Iron was above the average monthly discharge limit (1,000 μg/L) in November 2022, with a concentration of 2,300 μg/L.
- In 2021, the phosphorus concentration in April 2021 was 22 μg/L, which is above the average monthly discharge limit of 18 μg/L.
- In 2020, the phosphorous concentration was 18 μg/L in March and 22 μg/L in April, which is equal to and above the average monthly discharge limit of 18 μg/L, respectively.
- In February 2019, phosphorus concentrations of 29 μg/L and 27 μg/L were above the average monthly discharge limit of 18 μg/L.
- In July 2019, the estimated lead concentration of 0.64 μg/L was above the average monthly discharge limit of 0.5 μg/L.

Routine and other maintenance activities performed on the LATS occurred during the review period.

As of December 2023, the total sitewide extraction is 5,158 million gallons of water and 6,015.4 pounds of total VOCs. This includes the Northeast Area system that operated from 2010 until 2013.

III. PROGRESS SINCE THE PREVIOUS REVIEW

Table 6 includes the protectiveness determinations and statements from the previous FYR Report. Table 7 includes the recommendations from the previous FYR Report and the current status of those recommendations.

Table 6: Protectiveness Determinations/Statements from the 2019 FYR Report

OU #	Protectiveness Determination	Protectiveness Statement
1	Short-term Protective	The remedy for OU-1 is protective of human health and the environment in the short-term. Soil in excess of cleanup levels has been excavated, stabilized, and either placed in the Industrial Landfill or shipped off-site for treatment and disposal. The Industrial Landfill was then closed with an impermeable cap to prevent potential exposure. The PRP maintains ownership of the landfill and has filed a deed notice with the Registry of Deeds to regulate land use on the landfill area. However, there is not a more formal restriction on this area of the property such as a NAUL [Notice of Activity and Use Limitation]. To be protective in the long term, a NAUL should be implemented on the landfill.
3	Short-term Protective	The remedy at OU-3 is protective in the short term, because there is no current exposure to contamination in groundwater or sediment. Groundwater in the vicinity of the Industrial Landfill is currently being extracted and treated. The Acton Water District provides treatment of groundwater from the five public water supply wells in the vicinity of the Site and a network of wells is regularly monitored for site contaminants. The Acton Board of Health has established an administrative hold on the installation of private wells within 500 feet of the current groundwater contaminant plume. For the groundwater remedy to be protective in the long-term, institutional controls may be required which (1) supplement the town of Acton's administrative hold on the installation of private wells, (2) limit the use of contaminated groundwater on the Grace property in Acton and Concord, (3) protect against future vapor intrusion risk for development on the Grace property, and (4) ensure the remedy is not adversely effected by future land use. Areas of contaminated sediment in the North Lagoon Wetland and in Sinking Pond were excavated and the cleanup levels established in the ROD were achieved; however, changes in the exposure assumptions in Sinking Pond call in to question whether the remedy remains ecologically protective in the long-term, and additional evaluation is needed.
Sitewide	Short-term Protective	The remedial actions taken are protective of human health and the environment in the short-term because there is no current exposure to contamination. Soil and sediment have been remediated and contaminated soil left on-site in the Industrial Landfill was capped. The Landfill Area groundwater remedy is operating and will reduce contaminant concentrations to cleanup levels over time through a combination of active extraction and treatment combined with monitored natural attenuation. Groundwater in the vicinity of town water supply wells is regularly monitored and the water district provides additional treatment. To be protective in the long-term, additional institutional controls may be needed across the property so that any potential exposure risks associated with redevelopment are managed and mitigated. Additional institutional controls may also be needed for groundwater within the vicinity of the contaminant plume to supplement the existing controls (the town of Acton's administrative hold) already in place.

Table 7: Status of Recommendations from the 2019 FYR Report

OU #	Issue	Recommendation	Current Status	Current Implementation Status Description	Completion Date (if applicable)
1	The Industrial Landfill contains solidified and capped wastes. The landfill is well maintained. A deed notice has been filed with the Registry of Deeds which alerts parties the landfill cannot be disturbed except by written permission of MassDEP. However, there is not a more formal restriction on the landfill such as a NAUL which would ensure the remedy remains protective in the long-term.	Enact a NAUL on the former Industrial Landfill that prevents disturbance of the landfill.	Ongoing	A NAUL has not been enacted on the former Industrial Landfill that prevents disturbance of the landfill. In light of increased interest in development of portions of the Site, EPA and MassDEP are considering options for recording institutional controls for other portions of the Site. This issue will carry forward in this FYR.	5/30/2029
3	The Acton Board of Health has established an administrative hold on the installation of private irrigation wells within 500 feet of the mapped region of contaminated groundwater that lies within the town. It may be necessary to establish additional institutional controls to prevent groundwater use within the contaminated plume area until cleanup goals are met. An Institutional Controls Plan was prepared in 2011 but action on it has stalled due to concerns raised by the Town of Acton. Additionally, since the time of the 2014 FYR, the town of Concord became the owner of a Site parcel of land formerly owned by W.R. Grace. While Concord has been made aware of the contaminated groundwater and the presence of remedy infrastructure on the parcel, the parcel does not include any institutional controls. The Site property still owned by Grace, within Acton, also lacks institutional controls to prevent use of groundwater or to ensure evaluation and mitigation of potential vapor intrusion exposure associated with any future redevelopment of Site property.	Make a determination as to whether additional institutional controls are needed in Acton, or if the administrative hold is sufficient to maintain protectiveness. If additional institutional controls are determined to be needed, work with the Town to establish them. Evaluate the need for institutional controls, such as NAULs across the Grace property and on the Site parcel owned by Concord, that are designed to restrict the use of contaminated groundwater, protect against future vapor intrusion risk, and ensure the remedy is not adversely affected.	Ongoing	In April 2024, the town of Concord adopted new well regulations that prohibit wells in the buffer zone of the Grace property. Acton Board of Health voted to indefinitely continue the administrative hold on private wells in the buffer zone in July 2023. NAULs are still needed across the Grace property and on the parcel owned by Concord in order to protect against future vapor intrusion risk and ensure the remedy is not adversely affected.	5/30/2029

OU #	Issue	Recommendation	Current Status	Current Implementation Status Description	Completion Date (if applicable)
3	Per- and polyfluoroalkyl substances (PFAS) are an emerging class of compounds commonly found in groundwater near former industrial sites. The W.R. Grace Site has never been sampled for PFAS.	Sample a subset of Site wells for PFAS to determine if the compounds are contaminants of potential concern associated with the Site.	Completed	Sampling for PFAS took place in October 2019, January 2020, and June 2021, and reported in September 2021. See the Data Review section of this FYR report for additional details.	3/16/2020
3	The elevation of the thermocline in Sinking Pond has changed since the time of the 2014 FYR. The elevation of the thermocline controlled the scope of sediment excavation in Sinking Pond; now that the thermocline is at a lower elevation than it was at the time the remedy was designed, it is uncertain if an unacceptable ecological risk is posed by remaining contaminated sediments.	Conduct a study to re-evaluate the ecological protectiveness of the remedy in Sinking Pond. If unacceptable environmental risks are found, propose and enact solutions to mitigate the risks.	Completed	Grace completed an evaluation of Sinking Pond sediments and the thermocline. Results are discussed in the Data Review section of this FYR Report.	4/10/2023

IV. FIVE-YEAR REVIEW PROCESS

Community Notification, Community Involvement and Site Interviews

EPA issued an online news release in February 2024 to announce that the FYR was underway. A copy of the news release is included in Appendix C. The results of the review and the completed FYR Report will be made available at EPA's site profile page at www.epa.gov/superfund/graceacton.

During the FYR process, interviews were conducted to document any perceived problems or successes with the remedy that has been implemented to date. The results of these interviews are summarized below. Appendix D includes the completed interview forms. EPA also reached out to the community group, Green Acton, but did not receive a response.

Jennifer McWeeney from MassDEP stated that the remedial components are performing as designed. She said that prior to implementing institutional controls, and prior to redevelopment, OU-1 soils should be better characterized (i.e., in areas outside of known release/discharge areas) both north and south of the MTBA commuter rail line. She also mentioned the need to have the town of Concord decommission its deep bedrock non-potable well in accordance with the town's forthcoming regulations.

Tony Penfold from Grace said that the project is going well overall. Grace will be providing a workplan to investigate the elevated VOC concentrations in the area of the monitoring well cluster OSA-13 in 2024. VOC concentrations in the Southwest Landfill and Southeast Landfill Area are substantially lower than those at the time the ROD was issued and are lower than concentrations for which the 2005 OU-3 ROD considered MNA an appropriate remedy. He said this is an appropriate time to consider transitioning from active groundwater extraction and treatment to MNA downgradient of the landfill. He said there are ongoing discussions with the town of Acton related to potential future use of the remaining Grace-owned land in Acton, including residential use on the parcels north of the MBTA commuter rail line.

Maryellen Johns, a PRP contractor, stated that OU-1 cleanup activities have significantly improved groundwater quality across the Site. OU-3 includes active extraction and treatment and monitored natural attenuation. For most of the Site, MNA is working. However, more investigation will be required for elevated contaminant concentrations in the vicinity of the OSA-13 well cluster. The sediment remedy reevaluation for Sinking Pond concluded that the remedy is protective of the environment. Continued periodic sampling of arsenic concentrations in sediment is required to establish a trend toward attaining the long-term goal of 42 mg/kg in Sinking Pond. Water levels of the pond are measured on a biweekly basis to determine long-term trends and if reevaluation of the thermocline depth is needed.

A representative from the Acton Health Department stated they are satisfied with the remedial activities. The community is affected by the Site because they are unable to install irrigation and drinking water wells within 500 feet of the plume. They stated that the community is requesting a strategy from EPA on how to tie the restricted areas to the current plume and when it will be safe for residents to resume use of private wells. The interviewee would like more information about the Site's activities and remedial progress provided via email.

Matthew Mostoller and Alexandra Wahlstrom from the Acton Water District believe remedial activities at the Site have been comprehensive, but they continue to be concerned about the Industrial Landfill since it will be forever present on the Site. The Site (as well as the neighboring Nuclear Metals Superfund Site) has heightened the surrounding community's awareness of concerns with their drinking water quality. Acton Water District reported concerns regarding 1,4-dioxane and its treatment at the Site. They would like to see improvements for treatment of 1,4-dioxane in the LATS. Acton Water District also has concerns with PFAS and requested additional characterization. Acton Water District would like the opportunity to perform peer review of groundwater modeling performed for the Site and thorough site characterization prior to site redevelopment (as needed). Acton Water District would like more regular communication with EPA and would like to see more community outreach about the Site. They also requested to receive raw water quality data on a more regular basis.

A representative from the Concord Public Schools stated that it is nice to see a Superfund site being used for the generation of power. The Site has had positive effects on the community in that the town is able to use the Site to store and repair the School District's buses and the solar array is on the Site. The interviewee is not aware of any complaints and did not have any suggestions, comments or recommendations about the Site.

Melanie Dineen from the Concord Health Department indicated the main concern with the Site is the migration of groundwater contaminants toward the Acton Public Drinking water supply wells. The largest impact to the community has been the inability to use the irrigation well at the Concord Bus Depot. Ms. Dineen indicated there were limited complaints about the Site and generally the Health Department feels well informed. There were no other suggestions, comments or recommendations about the Site.

Data Review

No sampling for OU-1 has been conducted during this FYR period. Sampling for OU-3 has included groundwater, sediment and water levels in Sinking Pond. Data indicate the remedy is generally functioning as intended. As of 2022, concentrations in OSA-13C are increasing. Grace plans to submit an investigation plan designed to identify the source of that contamination to EPA in 2024. Results from the field investigations of Sinking Pond found that the remedy continues to be protective of human and ecological health because of the current elevation of the thermocline. Grace plans to perform a sediment sampling event of Sinking Pond once every five years to support EPA's FYR process. Future reevaluation of the protectiveness of the remedy is possible with respect to human health if a sustained decline approaching 130 feet in surface elevation is observed. As of December 2023, biweekly measurements indicate the elevation of Sinking Pond is above 135 feet.

OU-3 - Groundwater

Groundwater sampling is conducted annually for VOCs, 1,4-dioxane, and inorganics, with some quarterly VOC analyses occurring. Monitoring is conducted based on the monitoring program defined in the Site's 2006 Groundwater Monitoring Plan, with subsequent changes as approved by EPA. After groundwater remedial action has been implemented and IGCLs have been attained, a risk assessment on all residual groundwater contamination will be performed according to EPA risk assessment procedures, for the purpose of evaluating cumulative risk. The post-remediation risk assessment will require three years of monitoring data for all IGCL contaminants, which includes all ROD-identified COCs. While SVOCs are not currently included in the EPA-approved site monitoring plan, SVOCs (specifically bis[2-chloroethyl]ether and bis[2-ethylhexyl]phthalate) have ROD cleanup levels and should be monitored and evaluated prior to a remedy change from pump and treat to MNA. Bis(2-chloroethyl)ether and bis(2-ethylhexyl)phthalate are currently monitored for in LATS influent and effluent. There were no detections of either contaminant in 2019, 2020 or 2022. In 2021, bis(2-ethylhexyl)phthalate was detected in April and May in the influent and effluent at an estimated concentration of 2.8 µg/L and was also identified in the blank so these sampling results are suspect and may represent false positive results Regardless, this value is below the IGCL of 6 µg/L for bis(2-ethylhexyl)phthalate.

The Site has been divided into six geographic areas based on groundwater flow directions and the nature and extent of historical groundwater contamination. The six geographic locations are shown in Figure 3, and include the Northeast Area, the Former Lagoon Area, the Southwest Area, the Assabet River Area, the Southwest Landfill Area and the Southeast Landfill Area. Active groundwater extraction is in the Southwest Landfill Area, where the extraction wells are downgradient of the Site. However, the capture zones from the extraction wells extend from the Southwest Landfill Area into part of the Southeast Landfill Area. MNA processes provide remediation of the areas beyond the capture zone and in the other four geographic areas.

The goals of the monitoring program as stated in the Annual Report are to:

- Confirm through groundwater level monitoring that the Southwest Landfill Area groundwater capture zone is continuing to be achieved.
- Assess through groundwater quality monitoring any changes in groundwater quality within the Southwest Landfill Area capture zone.
- Assess through groundwater quality monitoring the natural attenuation of contaminant concentrations in site groundwater not being actively captured and treated.

Groundwater monitoring data show that the plumes have decreased in size from remediation activities that have occurred thus far at the Site. Additional observations include:

- VOC plumes are contained. In 2022, the maximum concentrations of VDC and vinyl chloride were observed in the OSA-13 well cluster, located in the Former Lagoon Area. Due to variability observed at this well cluster (an anomalous spike in 2010 to 2012, when VDC was detected at a maximum concentration of 900 µg/L), Grace initiated quarterly sampling in 2016 for VOCs at OSA-13B and OSA-13C, along with annual sampling for VOCs at select nearby wells. For the past several years, Grace has been collecting more data and doing additional analysis to determine the source of contamination causing the increase in VOC concentrations in the OSA-13 well cluster. As of 2022, concentrations in OSA-13C are increasing. Grace plans to submit an investigation plan designed to identify the location of the source of that contamination to EPA in 2024.
- Metals (arsenic and manganese) are present above IGCLs.
- 1,4-Dioxane is not defined as a site COC in the 2005 ROD. However, concentrations above the Massachusetts Contingency Plan (MCP) GW-1 standard of 0.3 µg/L for 1,4-dioxane have been detected on-site and are detected in public water supply wells Assabet–1A, Assabet–2A, Lawsbrook, Christofferson, and Scribner. The public water is treated at the South Acton Water Treatment Plant prior to distribution, and results are less than 0.3 µg/L.[1]
- Grace sampled for per- and polyfluoroalkyl substances (PFAS) compounds in October 2019, January 2020 and June 2021. Twenty-two wells were sampled during the June 2021 event.

Water Level Monitoring

A groundwater mound extends in a generally northeasterly direction in both the shallow unconsolidated aquifer and the bedrock aquifer from the approximate area of the Former Primary Lagoon and Former Blowdown Pit. The mound causes the direction of groundwater flow to be generally toward the north and northwest toward Fort Pond Brook, northeast towards the Acton Water District School Street Wellfield, and south and southeast toward the Assabet River (see Figures E-2 and E-3).

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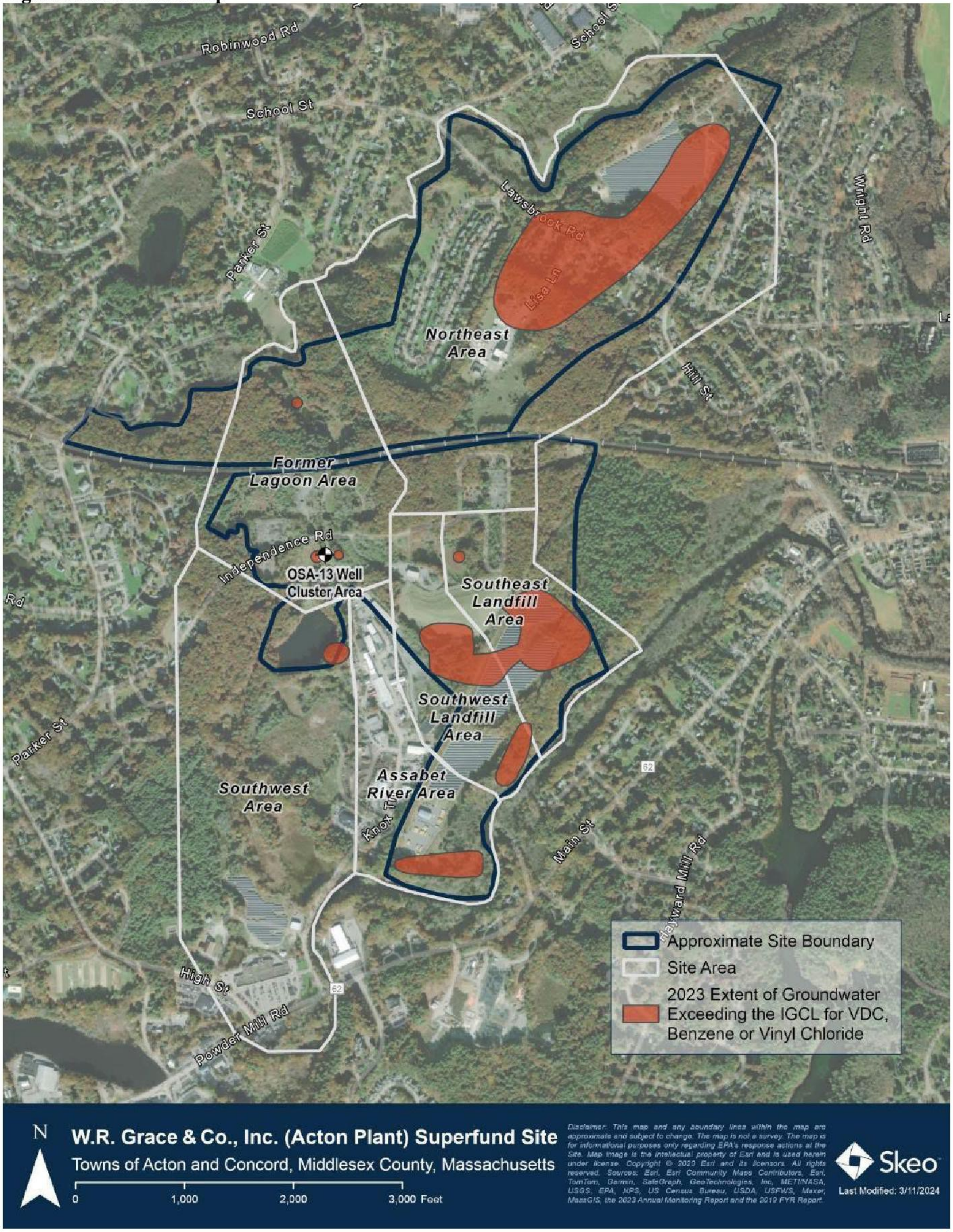
[1] https://www.actonwater.com/water-quality/14-dioxane (accessed 3/4/2024)

Vertical hydraulic gradients are downward between the unconsolidated deposits and bedrock across most of the Site. Near the Assabet River and Fort Pond Brook, however, vertical hydraulic gradients are generally upward, indicating that the river and brook are generally groundwater discharge locations for bedrock and unconsolidated deposits groundwater. In proximity to pumping wells, observed hydraulic gradients can be upward or downward depending upon the relative position of the monitoring well screened interval and the open interval of the pumping well.

Figure 3: Site Detail Map



W.R. Grace & Co., Inc. (Acton Plant) Superfund Site

Towns of Acton and Concord, Middlesex County, Massachusetts

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Last Modified: 3/11/2024

VOCs

The three compounds detected most frequently at concentrations greater than their IGCL were VDC, vinyl chloride and benzene. Four of the eight VOC COCs were detected at a concentration greater than their IGCL in at least one sample (VDC, vinyl chloride, benzene and 1,2-dichloropropane). Table 8 provides a summary of the current status of VOCs at the Site. Figures E-4 through E-6 show plume maps for VDC, vinyl chloride and benzene in 2019, 2020, 2021 and 2022. In general, plumes appear to be reducing in size, particularly since the start of remediation (Figure E-11). However, high concentrations of COCs remain, particularly of VDC and vinyl chloride. Table 8 shows that the trend for these contaminants is increasing or stable in some wells in multiple areas of the Site. The 2005 OU-3 remedial action continues to operate and function as designed. The ROD estimated the amount of time necessary to achieve the remedial goals consistent with potable/domestic use of the aquifer to be about 26 years. It is unclear if that is attainable.

Table 8: COC VOCs compared to IGCLs in 2022

COC	IGCL (µg/L)	2022 Maximum Detection[a] (µg/L)	Areas where concentrations are above IGCLs	Mann-Kendall Trends[b]
VDC	7	**3,100** (OSA-13C)	Former Lagoon Area	Increasing (OSA-13C) Probably Increasing (OSA-15B)
			Northeast Area	Stable (PS-22B)
			Southwest Area	Increasing (AR-03B1)
			Assabet River Area	--
			Southwest Landfill Area	--
			Southeast Landfill Area	Stable (AR-112B)
Vinyl Chloride	2	**89** (OSA-13B)	Former Lagoon Area	Stable (OSA-13B)
			Northeast Area	Stable (MW-04B)
			Assabet River Area	--
			Southwest Landfill Area	Stable (LF-13A) Stable (SWLF-2)
			Southeast Landfill Area	Stable (AR-11B2) Stable (LF-22D)
Benzene	5	**20** (LF-12 and OSA-13B)	Former Lagoon Area	--
			Southwest Landfill Area	--
			Southeast Landfill Area	--
1,2-dichloropropane	5	**17** (LF-22S)	Southeast Landfill Area	NA
1,2-dichloroethane (1,2-DCA)	5	4.5 (LF-22S)	NA	NA
Trichloroethylene (TCE)	5	1.3 (AR-19AB1)	NA	NA
MTBE	16	0.58 J (AR-31D)	NA	NA
Methylene chloride	5	4.5 (OSA-13C)	NA	NA

Notes:

a. Concentrations exceeding IGCLs are bolded.

b. Adapted from Table 3-2 of the Monitoring Program Report 2022. Trends shown are those with increasing, probably increasing or stable trends. Those with decreasing trend, probably decreasing trend and no trend are not shown in Table 8, but are included in Table F-1 of this FYR Report.

NA = not applicable; Mann-Kendall analyses were used to evaluate concentration data from locations where more than 50 percent of the samples had detectable VDC, vinyl chloride, benzene or 1-4 dioxane

-- = Trends are decreasing, probably decreasing or no trend

Source: Table 3-1; Table 3-2; Table 3-4; and Table A-1 of the 2022 Monitoring Program Report

Maximum concentrations of VDC and vinyl chloride were observed in the OSA-13 well cluster in 2022 with trends either increasing or stable. There has been variability in VDC concentrations detected in samples collected from OSA-13B and OSA-13C during the past 10 years. Quarterly sampling for VOCs at OSA-13B and OSA-13C, along with annual sampling for VOCs at select nearby wells was initiated in 2016. For the past several years

Grace has been collecting more data and doing additional analysis as part of their evaluation of the source of contamination causing the increase in VOC concentrations in the OSA-13 well cluster. In 2024, Grace plans to submit to EPA an investigation plan designed to improve the understanding of the nature and extent that the contamination that has resulted in elevated and variable concentrations in samples collected from the OSA-13 cluster.

1,4-Dioxane

1,4-Dioxane was not defined as a site COC in the 2005 ROD. At the request of EPA, groundwater monitoring for this compound has been conducted at some locations since 2011. Groundwater samples from 49 locations across the Site were collected for 1,4-dioxane analysis during the 2022 monitoring period. Table 3-3 of the 2022 Monitoring Program Report provides the current sampling frequencies which vary from annually to quarterly at select wells (included as Table F-2 in Appendix F).

There is currently no federal drinking water standard for 1,4-dioxane. EPA's carcinogenic risk range of 10^{-6} to 10^{-4} for 1,4-dioxane equates to a concentration range of 0.46 micrograms per liter (µg/L) to 46 µg/L (parts per billion [ppb]). Massachusetts has a public water supply drinking water guideline and an MCP GW-1 standard of 0.3 µg/L for 1,4-dioxane. There is no MMCL for 1,4-dioxane. The highest 1,4-dioxane concentrations at the Site in 2022 were found in the Southeast Landfill Area (10 µg/L [LF-22S] and 17 µg/L [AR-11B2]). Mann-Kendall trend analyses, shown in Table F-2, indicate concentrations are generally decreasing, stable or have no trends at most wells. However, in the Southwest Area of the Site, concentrations at R-2 are probably increasing (maximum concentration of 1.6 µg/L between 2013 and 2022). In the Northeast Area of the Site, AR-30SBR has increasing concentrations (maximum of 2.2 µg/L in 2022). Public water supply wells Assabet–1A and Assabet–2A have detectable concentrations of 1,4-dioxane (0.229 µg/L and 0.282 µg/L, respectively, in 2022). Mann-Kendall analysis indicated the concentrations are decreasing and stable in these two wells.

Inorganics

Of the inorganic compounds identified as COCs[2], manganese, arsenic and nickel are the only inorganics that exceeded IGCLs in 2022. Table 9 shows the current maximum concentrations compared to IGCLs. Nickel exceeded the IGCL at one well in 2022. The highest concentrations of manganese are generally detected in groundwater located downgradient of the Industrial Landfill, within the LATS capture zone. Manganese concentrations detected in 2022 were similar to concentrations detected in previous years. Figures E-7 through E-10 show the current locations of inorganic exceedances in groundwater.

Table 9: COC Inorganics maximum concentrations compared to IGCLs in 2022

COC	IGCL (µg/L)	2019 (µg/L)	2022 (µg/L)
Arsenic	10	130	290
Nickel	100	19	270
Manganese	300	4,300	4,200
Source: Table 3-2 of the *Monitoring Program Report 2019* and Table 3-8 of the *Monitoring Program Report 2022*			

PFAS

Grace sampled for PFAS compounds in October 2019, January 2020 and June 2021. Twenty-two wells were sampled during the June 2021 event.

On April 10, 2024 EPA issued new MCLs for multiple PFAS compounds including: perfluorooctanoic acid (PFOA), perfluorooctane sulfonate (PFOS), perfluorohexane sulfonate (PFHxS), perfluorononanoic acid (PFNA), hexafluoropropylene oxide dimer acid (HFPO-DA), also known as "Gen-X," and perfluorobutane sulfonic acid (PFBS). A comparison of groundwater concentrations of PFAS to the EPA maximum contaminant levels (MCLs) for the three rounds of sampling is presented below. Results for 2019 show that PFOA and PFOS exceed the MCLs. No other PFAS compounds exceeded MCLs for the 2019 sampling round. Results for 2020 show that

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[2] Inorganic COCs include: antimony, arsenic, beryllium, chromium, lead, manganese, nickel.

PFOA exceeds the MCL. No other PFAS compounds exceeded MCLs for the 2020 sampling round. Results for 2021 show that PFOA and PFOS were detected above the MCLs. No other PFAS compounds exceeded MCLs for the 2021 sampling round.

Table 10: Comparison of Maximum Groundwater Concentrations of PFAS to EPA MCLs

Compound	Final MCL (ng/L)	2019 Maximum Concentration in Groundwater (Location) (ng/L)	2020 Maximum Concentration in Groundwater (Location) (ng/L)	2021 Maximum Concentration in Groundwater (Location) (ng/L)
PFOA	4	**5.9** (B-08D)	**22** (LF-05C)	**5.4** (B-08D)
PFOS	4	**5.3** (OSA-23A)	3 J (LF-05C)	**4.2** (OSA-23A)
PFHxS	10	4.2 B (MW-13B)	1.1 J (LF-05C)	4.1 (MW-13B)
PFNA	10	0.67 J (LF-12)	1.3 J (LF-05C)	2.6 (MW-06B)
HFPO-DA (Gen-X)	10	Not analyzed	Not analyzed	Not analyzed
Mixtures containing two or more of PFHxS, PFNA, HFPO-DA, and PFBS*	Hazard Index = 1 (unitless)	HI = 0.42	N/A	HI = 0.41
Notes: Bold result exceeds MCL (April 2024) J = concentration is an approximate value B = Compound found in blank and sample N/A = not applicable because there were not two or more PFAS detected for assessing mixtures				

During the October 2019 and June 2021 sampling events, the sum of the six PFAS compounds regulated by the state MMCLs were not exceeded in any wells. During the January 2020 sampling events, the MMCL for the six PFAS compounds was exceeded in one well, LF-05C (44 nanograms per liter [ng/L]). The MMCL is 20 ng/L (ppt) for the sum of six PFAS compounds – PFOS, PFOA, PFHxS, PFNA, perfluoroheptanoic acid (PFHpA) and perfluorodecanoic acid (PFDA).

During the PFAS sampling events, PFOS and PFOA were the only PFAS detected above EPA's MCLs (Table F-3, Appendix F). Additional information about PFAS in groundwater is included in Question B of the Technical Assessment section of this FYR.

OU-3 - Sediment in Sinking Pond

Sediment removal in Sinking Pond was based on pond elevations and driven by the location of the thermocline. The original baseline ecological risk assessment identified the waters and associated benthic habitats in the epilimnion within the pond as the most ecologically significant habitats. The epilimnion was defined in the ROD by water depths of less than 12 feet (which represented the top of the thermocline). The top of the thermocline was determined to be at an elevation of 128 feet. Sinking Pond is a bowl-shaped kettle-hole pond. Water levels in the pond are affected by precipitation, evaporation, LATS discharge and stormwater runoff.

The 2019 FYR Report identified the issue that the elevation of the thermocline in Sinking Pond has changed since the 2014 FYR. Grace conducted a Sinking Pond Sediment Sampling and Thermocline Evaluation, summarized in a 2023 Technical Memorandum to address this issue. As part of the evaluation, Grace compiled a table of known pond surface elevations and thermocline depths from pond surface (Table F-4). Sediment core and sediment sampling results in 2022 showed that all samples exceeded the arsenic sediment cleanup goal of 42 mg/kg for human and ecological health. However, all samples were taken from depths greater than where remediation was required (Table F-5).

Results from the field investigations found that the remedy continues to be protective of human and ecological health because of the current location of the thermocline. Grace plans to perform a sediment sampling event of Sinking Pond once every five years to support EPA's FYR process. Future reevaluation of the protectiveness of the remedy is possible with respect to human health if a sustained decline approaching 130 feet in surface elevation is observed. As of December 2023, biweekly measurements indicate the elevation of Sinking Pond is above 135 feet (Figure E-13).

The technical memorandum recommends the continuation of biweekly measurements in the near term to develop detailed seasonal pond water level trends. The report recommends monitoring total arsenic concentrations in the 0-to-2-inch sediment interval for a trend toward attainment of the long-term remedial goal for arsenic of 42 mg/kg. Grace is considering implementing institutional controls associated with Sinking Pond, to ensure the remedy remains protective of human health and the environment.

Site Inspection

The site inspection took place on 12/12/2023. In attendance were Kara Nierenberg (EPA RPM), Jennifer McWeeney and Janet Waldron from MassDEP, Tony Penfold from Grace, Maryellen Johns from de maximis, inc. (Grace contractor), and Alison Cattani and Kirby Webster (EPA contractor Skeo). The purpose of the inspection was to assess the protectiveness of the remedy. Appendix G includes photographs from the site inspection. Appendix H includes the completed site inspection checklist.

Site inspection participants toured the LATS and the LATS building. The building and system were in excellent condition. Participants discussed the treatment process that currently targets metals removal as VOC concentrations in the influent are relatively low. The system no longer treats 1,4-dioxane because the influent is below 3 µg/L. Site inspection participants also viewed the Industrial Landfill cap and drainage. The cap had been recently mowed and was well vegetated. The drainages were mostly clear of vegetation. Along the northern boundary, the drainage has some standing water, which results in more vegetative growth. The growth did not appear to impede flow. From the top of the landfill, participants viewed the solar array on the Town of Concord owned parcel.

Site inspection participants proceeded to observe the Former Lagoon Area, several locked monitoring wells, the area with remaining building foundations and pavement and concrete slabs, and the MTBA commuter rail line. Across the rail line, participants observed the North Lagoon wetland area and the area being considered for future residential development. Lastly, participants observed Sinking Pond and the water treatment outfall. The pond water level was high due to recent precipitation. There was little evidence of trespassing. Overall, participants did not observe anything that calls into question the current protectiveness of the remedy.

V. TECHNICAL ASSESSMENT

QUESTION A: Is the remedy functioning as intended by the decision documents?

Question A Summary:

Yes. The remedy as described in the 1989 OU-1 ROD and the 2005 OU-3 ROD is functioning as intended by the decision documents. The remedy for OU-1 included excavation of source areas and consolidation of materials in the Industrial Landfill to protect the potential for humans and wildlife to be exposed to contaminants in source area soils, groundwater, surface water and sediments. These activities were accomplished, and no ongoing sampling is required in OU-1 source area soils. The remedy for OU-3 included cleanup of contaminated sediments in Sinking Pond and the North Lagoon Wetland, as well as groundwater active treatment and monitored natural attenuation. Cleanup of contaminated sediments has been accomplished. Groundwater treatment is ongoing.

Human health risks were addressed by remedies described in the 1989 OU-1 ROD and the 2005 OU-3 ROD. Ecological risks for Sinking Pond and the North Lagoon Wetland were described and addressed by the 2005 OU-3 ROD.

Remedial Action Performance

The OU-1 remedial action continues to operate and function as designed. The Industrial Landfill is owned and maintained by Grace. Wastes were solidified and capped, and access is restricted by a fence. There are no potentially completed exposure pathways. The passive venting of the landfill gas does not pose an unacceptable health risk or hazard.

The 2005 OU-3 remedial action continues to operate and function as designed. The ROD estimated the amount of time necessary to achieve the remedial goals consistent with potable/domestic use of the aquifer to be about 26 years. It is unclear if that is attainable. However, concentrations of contaminants are generally trending in a direction toward meeting cleanup goals, with the exception of the area around the Former Lagoon Area. Maximum concentrations of VDC and vinyl chloride were observed in the OSA-13 well cluster in 2022, with trends either increasing or stable. There has been variability in VDC concentrations detected in samples collected from OSA-13B and OSA-13C during the past 10 years. Quarterly sampling for VOCs at OSA-13B and OSA-13C, along with annual sampling for VOCs at select nearby wells, was started in 2016. For the past several years, Grace has been collecting more data and doing more analysis as part of its evaluation of the source of contamination causing the increase in VOC concentrations in the OSA-13 well cluster area. Grace plans to submit an investigation plan designed to identify the source of that contamination to EPA in 2024.

System Operations/O&M

Current O&M activities for the Site appear adequate in maintaining site safety as well as monitoring remaining groundwater contamination. Grace continues to identify opportunities for optimization. In 2021, EPA approved shutting down 2 of the low yielding extraction wells (SELF-1 and SELF-2). Following the shutdown, Grace implemented the post-shutdown monitoring protocol and continues to maintain the SELF wells so they can be reactivated if deemed necessary. In August 2022, the Purifics photo catalytic oxidation system was bypassed (and subsequently removed from the treatment train) with EPA approval and is no longer part of the overall groundwater treatment train.

Implementation of Institutional Controls and Other Measures

The OU-1 ROD required institutional controls for the Industrial Landfill and Battery Separator Chip Pile, and access is restricted by a fence. A Deed Notice is on file with the Registry of Deeds for the Industrial Landfill. Institutional controls are no longer needed for the Battery Separator Chip Pile because changes made during the remedial design resulted in the contamination being excavated instead of capped in this area. Investigations at OU-1 focused on the source areas where cleanup activities have occurred, and soil cleanup levels result in UU/UE for these specific areas. However, the presence of contamination in soil on the rest of the Site is currently unknown. Over the past 10 years, there has been an increased interest in redeveloping areas of the Site that are outside the Industrial Landfill. In September 2022, Grace issued a Notice of Intent to Sell a portion of the Grace owned property north of the MBTA commuter rail line in order to develop the parcels for multifamily housing. While some areas of the Site have been thoroughly investigated and remediated based on a potential future residential use (specifically the former source area soils), there are other areas of the Site where the current status of soil contaminant concentrations is unknown (adjacent to source area soils, under former buildings, parking areas, roadways, etc.). With the increased interest in redevelopment, an institutional control is necessary for OU-1 to ensure any future development will be protective of human health. Specifically, EPA is considering an institutional control to require soil characterization or soil management plan prior to redevelopment to ensure site-related contamination is not present in soils beyond the OU-1 remediated source areas.

The OU-3 ROD required institutional controls such as deed restrictions and/or local ordinances to prevent unacceptable exposures to contaminated groundwater until cleanup levels are met and to protect against unacceptable future exposures to any wastes. Acton and Concord are currently working with EPA and the PRP on more formal groundwater restrictions. The Acton Board of Health has an indefinite administrative hold on private well installations in effect. The town of Concord recently approved new well regulations that prohibit wells within a 500-foot buffer zone of the groundwater plume and place an administrative hold on new wells within a one-half mile area of the existing groundwater plume. The Acton administrative hold and the Concord well regulations both reference the mapped VOC plume from 2023.

In 2017, without notifying or consulting with either EPA or MassDEP, the town of Concord installed a groundwater extraction well intended to provide non-potable water to clean buses at the bus maintenance facility. This 8-inch diameter well was advanced to a depth of about 500 feet in bedrock. EPA became aware it was installed after personnel repairing the monitoring wells damaged during construction of the solar array discovered it. Subsequently, EPA issued a letter to the Town of Concord on March 21, 2024 restricting the use of this well out of concern that it may draw contaminated groundwater from the Site, with potential to pose a risk to human health and adversely affect the groundwater remedy. Concord responded to EPA's letter on April 9, 2024 and stated that the well has never been used and will be decommissioned in Spring/Summer 2024.

QUESTION B: Are the exposure assumptions, toxicity data, cleanup levels and RAOs used at the time of the remedy selection still valid?

Question B Summary

No. There have been changes in exposure pathways, standards and to-be-considered criteria (TBCs) since the 1989 OU-1 ROD and 2005 OU-3 ROD were issued, as discussed below. Since the last FYR, EPA has issued new MCLs for multiple PFAS compounds including: PFOA, PFOS, PFHxS, PFNA, HFPO-DA (Gen-X), and PFBS which are discussed below. The changes as described below are not expected to alter the protectiveness of the remedy because there are currently no completed exposure pathways to remaining contamination in groundwater or to wastes left in place in the Industrial Landfill (i.e. untreated contaminated groundwater is not used as a source of drinking water and wastes are capped to prevent exposure). The remedy at Sinking Pond continues to be evaluated as water levels have changed since the remedy was selected.

Changes in Standards and TBCs

New standards (federal or state statutes and/or regulations), as well as new TBC guidances, should be considered during the FYR process as part of the protectiveness determination. Under the NCP, if a new federal or state statute and/or regulation is promulgated or a new TBC guidance is issued after the ROD is signed, and, as part of the FYR process it is determined that the standard needs to be attained or new guidance procedures followed to ensure that the remedy is protective of human health and the environment, then the FYR should recommend that a future decision document be issued that adds the new standard as an ARAR or guidance as a TBC to the remedy.

EPA guidance states:

> "Subsequent to the initiation of the remedial action new standards based on new scientific information or awareness may be developed and these standards may differ from the cleanup standards on which the remedy was based. These new … [standards] should be considered as part of the review conducted at least every five years under CERCLA §121(c) for Sites where hazardous substances remain on-site. The review requires EPA to assure that human health and the environment are being protected by the remedial action. Therefore, the remedy should be examined in light of any new standards that would be applicable or relevant and appropriate to the circumstances at the Site or pertinent new [standards], in order to ensure that the remedy is still protective. In certain situations, new standards or the information on which they are based may indicate that the Site presents a significant threat to health or environment. If such information comes to light at times other than at the five-year reviews, the necessity of acting to modify the remedy should be considered at such times." (See CERCLA Compliance with Other Laws Manual: Interim Final (Part 1) EPA/540/G-89/006 August 1988, p. 1-56.)

Appendix I provides a review of soil, groundwater and sediment cleanup goals identified in the 1989 OU-1 ROD and the 2005 OU-3 ROD. This review shows that the cleanup goals remain valid. The presence of 1,4-dioxane and PFAS in groundwater at the Site is discussed in sections below.

PFAS Activities at the Site

The purpose of this section is to present current information related to PFAS activities at the Site and to evaluate whether there are any potential impacts to remedy protectiveness from PFAS. On April 10, 2024 EPA issued MCLs for six PFAS contaminants, including PFOA, PFOS, PFNA, HFPO-DA (Gen-X), PFHxS, and PFBS:

Table 11. EPA MCLs for PFAS

Compound	Final MCL
PFOA	4 ppt
PFOS	4 ppt
PFHxS	10 ppt
PFNA	10 ppt
HFPO-DA (Gen-X)	10 ppt
Mixtures containing two or more of PFHxS, PFNA, HFPO-DA, and PFBS	Hazard Index 1

Grace sampled for per- and polyfluoroalkyl substances (PFAS) compounds in October 2019, January 2020 and June 2021. Twenty-two wells were sampled during the June 2021 event. A comparison of groundwater concentrations of PFAS to the EPA maximum contaminant levels (MCLs) for the three rounds of sampling is presented in Table 10. Results for 2019 show that PFOA and PFOS exceed the MCLs. No other PFAS compounds exceeded MCLs for the 2019 sampling round. Results for 2020 show that PFOA exceeds the MCL. No other PFAS compounds exceeded MCLs for the 2020 sampling round. Results for 2021 show that PFOA and PFOS were detected above the MCLs. No other compounds exceeded MCLs for the 2021 sampling round.

The following subsections discuss the relevant PFAS toxicity values and state standards that are currently available, followed by a discussion of site activities related to PFAS and protectiveness conclusions.

PFAS ecological screening values (ESVs)[3] were considered in this FYR; however, there is currently no indication of a complete pathway and the PFAS MCLs presented below are more protective than the ESVs.

PFAS Toxicity Values

This section presents the toxicity values that EPA currently has available for PFAS compounds.

2023 Noncancer Toxicity Values for PFODA, PfTetA, PFDoDA, PFUDA, PFHxA, PFPrA, HQ-115

In November 2023, EPA released new noncancer oral reference dose (RfD) values for multiple PFAS compounds based on toxicity values developed by the Wisconsin Department of Health Services which include perfluorooctadecanoic acid (PFODA) (4E-02 milligrams per kilogram per day [mg/kg-day]), perfluorotetradecanoic acid (PfTetA) (1E-03 mg/kg-day), perfluorododecanoic acid (PFDoDA) (5E-05 mg/kg-day) and perfluoroundecanoic acid (PFUDA) (3E-04 mg/kg-day).

Additionally, new oral RfD values were released for two PFAS compounds based on toxicity values published by the EPA Office of Research and Development (ORD), which include perfluoropropanoic acid (PFPrA) (5E-04 mg/kg-day) and lithium bis[(trifluoromethyl)sulfonyl]azanide (HQ-115) (3E-04 mg/kg-day), also known as 1,1,1-trifluoro-N-(trifluoromethanesulfonyl)methanesulfonamide (TFSI).

These values were determined to be based on similar methods and procedures as those used for other Tier 3 toxicity values. It is noted that currently there are no analytical methods available for the two ORD compounds PFPrA and HQ-115/TFSI, or PFODA.

In April 2023, EPA released a new noncancer oral RfD of 5.0E-04 mg/kg-day for perfluorohexanoic acid (PFHxA) based on an Integrated Risk Information System (IRIS) value.

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[3] Ecological Screening Values can be found in: Derivation of PFAS Ecological Screening Values, M. Grippo, J. Hayse, I. Hlohowskyj, and K. Picel, Environmental Science Division, Argonne National Laboratory, September 2021

Table 12. PFODA, PfTetA, PFDoDA, PFUDA, PFHxA, PFPrA, HQ-115 Maximum Detections 2019 - 2021

PFAS compound	Maximum Detection in 2019	Maximum Detection in 2020	Maximum Detection in 2021
PFODA	Not sampled	Not sampled	Not sampled
PFTetA	Not detected (DL = 2.0 ng/L)	Not detected (DL = 2.0 ng/L)	Not detected (DL = 2.0 ng/L)
PFDoDA	Not detected (DL =2.0 ng/L)	Not detected (DL =2.0 ng/L)	Not detected (DL =2.1 ng/L)
PFUDA	Not detected (DL =2.0 ng/L)	Not detected (DL =2.0 ng/L)	Not detected (DL =2.1 ng/L)
PFHxA	12 ng/L (B-08D)	16 ng/L (LF-05C)	8.8 ng/L (MW-06B)
PFPrA	Not sampled	Not sampled	Not sampled
HQ-115/TFSI	Not sampled	Not sampled	Not sampled
Notes: DL = detection limit			

PFHxA was detected at a maximum concentration of 16 ng/L in LF-05C. PFTetA, PFDoDA, and PFUDA were not detected in any of the three sampling rounds. PFPrA and HQ-115/TFSI were not sampled for during the events. It is noted that currently there are no analytical methods available for the two ORD compounds PFPrA and HQ-115/TFSI, or PFODA. These results do not have an impact on the protectiveness of the remedy because there are currently no completed exposure pathways.

2022 Noncancer Toxicity Values for PFOA, PFOS, PFNA, PFHxS, HFPO-DA, PFBA
In May 2022, EPA issued new noncancer oral RfD values for multiple PFAS compounds based on Agency for Toxic Substances and Disease Registry (ATSDR) minimal risk levels for ingestion exposure which include PFOA (3.0E-06 mg/kg-day), PFOS (2.0E-06 mg/kg-day), PFNA (3.0E-06 mg/kg-day) and PFHxS (2.0E-05 mg/kg-day). Additionally, an RfD value for Hexafluoropropylene Oxide Dimer Acid (HFPO-DA), also known as "Gen-X," was released based on a chronic oral RfD published by EPA's Office of Water at 3E-06 mg/kg-day.

In December 2022, EPA released a new noncancer oral RfD of 1.0E-03 mg/kg-day for perfluorobutanoic acid (PFBA) based on a new IRIS value.

Table 13. PFAS Maximum Detections 2019-2021

PFAS compound	Maximum Detection in 2019	Maximum Detection in 2020	Maximum Detection in 2021
PFOA	5.9 ng/L (B-08D)	22 ng/L (LF-05C)	5.4 ng/L (B-08D)
PFOS	5.3 ng/L (OSA-23A)	3 ng/L estimated (LF-05C)	4.2 ng/L (OSA-23A)
PFNA	0.67 ng/L estimated (LF-12)	1.3 ng/L estimated (LF-05C)	2.6 ng/L (MW-06B)
PFHxS	4.2 ng/L[a] (MW-13B)	1.1 ng/L estimated[a] (LF-05C)	4.1 ng/L (MW-13B)
HFPO-DA (Gen-X)	Not sampled	Not sampled	Not sampled
PFBA	170 ng/L (OSA-13B)	8 ng/L estimated[a] (LF-05C)	47 ng/L (OSA-13B)
Notes: a. Compound found in blank and sample so these sampling results are suspect			

Of these compounds, PFOA and PFOS are the only PFAS detected above the EPA MCLs noted above. HFPO-DA (Gen-X) was not sampled for. There are currently no completed exposure pathways to the Site's groundwater. Therefore, these results do not impact the protectiveness of the remedy.

PFAS State Standards

On October 2, 2020, the state promulgated MMCLs for drinking water for the sum of six PFAS compounds into the state's drinking water regulations (310 CMR [Code of Massachusetts Regulation] 22.00). The MMCL is 20 ng/L (ppt) for the sum of six PFAS compounds:

- PFOS
- PFOA
- PFHxS
- PFNA
- PFHpA
- PFDA

During the October 2019 and June 2021 sampling events, the sum of the six PFAS compounds regulated by the state MMCLs were not exceeded in any wells. During the January 2020 sampling events, the MMCL for the six PFAS compounds was exceeded in one well, LF-05C (44 nanograms per liter [ng/L]). Well LF-05C concentrations for PFOS (3 ng/L), PFOA (22 ng/L), and PFHpA (19 ng/L) combine to 44 ng/L and exceed the state MMCL of 20 ng/L. None of the other sampling events included exceedances of the state MMCLs for PFAS (see Table 14 below and Appendix F, Table F-3). Although there are exceedances of the sum of the six compounds regulated by the Commonwealth, the remedy remains protective because there are currently no completed exposure pathways to groundwater on-site.

Table 14. Comparison of Maximum Groundwater Concentrations of PFAS to MMCL

Compound	Final MMCL (ng/L)	2019 Maximum Concentration in Groundwater (Location) (ng/L)	2020 Maximum Concentration in Groundwater (Location) (ng/L)	2021 Maximum Concentration in Groundwater (Location) (ng/L)
Massachusetts MCL Sum of 6 (PFOS, PFOA, PFDA, PFHpA, PFHxS, PFNA)	20	16.9 (B-08D)	**44** (LF-05C)	16.8 (MW-06B)
Notes: Bold result exceeds MMCL (October 2020)				

At this time, EPA has made no determination of whether these state standards will need to be added as an ARAR for the Site. However, for informational purposes, a comparison of PFAS data against state standards is included along with the comparison to EPA MCLs.

Summary of Site PFAS Activities

PFOA and PFOS are the only PFAS that were detected above EPA MCLs. During the June 2021 sampling event, the sum of the six PFAS compounds regulated by the MMCLs were not exceeded in any wells. During the October 2019 and January 2020 sampling events, the MMCL for the six PFAS compounds was exceeded in one well, LF-05C (44 ng/L). These results do not impact the protectiveness of the remedy. There are currently no completed exposure pathways to groundwater on-site.

1,4-Dioxane at the Site

There is no current federal MCL for 1,4-dioxane. Using 2013 updated IRIS toxicity information and the standard Superfund risk assessment approach, EPA's carcinogenic risk range of 10^{-6} to 10^{-4} for 1,4-dioxane equates to a concentration range of 0.46 to 46 µg/L (ppb). The highest 1,4-dioxane concentrations at the Site are found in the Southeast Landfill Area (10 µg/L [LF-22S] and 17 µg/L [AR-11B2]), which are within EPA's acceptable risk range. These results do not impact the protectiveness of the remedy. There are currently no completed exposure pathways to use of on-site groundwater.

Changes in Toxicity and Other Contaminant Characteristics

2022 cis-1,2-Dichloroethylene Noncancer Toxicity Value

In October 2022, EPA released a noncancer reference concentration (RfC) of 4.00E-02 mg/m³ for cis-1,2-dichloroethylene (cis-1,2-DCE), based on a Provisional Peer Reviewed Toxicity Value (PPRTV) screening value. Previously, no RfC was available for cis-1,2-DCE.

Cis-1,2-DCE was generally not detected during the 2022 sampling event. The only detections were below the EPA RSL of 2.5 µg/L. Therefore, this does not affect the protectiveness of the remedy.

2020 trans-1,2-Dichloroethylene Noncancer Toxicity Value

In November 2020, EPA finalized a new RfC for trans-1,2-dichloroethylene based on a new PPRTV. There previously was no RfC for trans-1,2-dichloroethylene.

Trans-1,2-dichloroethylene was detected during the 2022 sampling event at a maximum of 3 µg/L which is below the EPA RSL of 6.8 µg/L. Therefore, this does not affect the protectiveness of the remedy.

Lead in Soil Cleanups

On January 17, 2024, EPA OLEM released the "Updated Residential Soil Lead Guidance for CERCLA sites and RCRA Corrective Action Facilities" ("OLEM Memo") which updates the residential soil lead screening level (RSL) for the CERCLA and RCRA programs. A review of available site information determined that this update is not applicable because lead was not identified as a soil or sediment COC at the Site.

The 1988 OU-1 endangerment assessment evaluated lead in solid material (soil, sediment and surficial sludges combined) for the landfill, lagoons and the battery separator area. The highest average lead concentration from the areas was 22.4 mg/kg, significantly less than the 200 mg/kg residential screening value (Table D2-2 of Appendix D – risk assessment of the endangerment assessment).

Sediment lead concentrations identified in the 2005 OU-3 risk assessment are less than 200 mg/kg (maximum 153 mg/kg), as shown in the 2005 ROD.

While this site does not have any current residential use, given the potential for future residential use, a residential lead screening level checklist was completed for the Site as shown in Appendix J. The checklist indicates that no further investigation or action for lead is necessary because concentrations were found to be below the RSL of 200 mg/kg. Therefore, this update does not alter the protectiveness of the remedy.

Changes in Risk Assessment Methods

There have been no notable changes in risk methodologies since the previous FYR.

Changes in Exposure Pathways

EPA RSLs

EPA RSLs are risk-based concentrations derived by combining exposure information assumptions with EPA toxicity data. EPA RSLs are updated twice a year. The most up-to-date tables are available at www.epa.gov/risk/regional-screening-levels-rsls-generic-tables.

Methods for Evaluating Vapor Intrusion

EPA Guidance on Vapor Intrusion

The most current guidance available to evaluate risk from vapor intrusion is EPA's 2015 Vapor Intrusion Technical Guide. The guidance emphasizes the use of multiple lines of evidence to evaluate the potential for vapor intrusion. This guidance was considered when assessing the potential for vapor intrusion during the FYR process. This resource is available at www.epa.gov/sites/default/files/2015-09/documents/oswer-vapor-intrusion-technical-guide-final.pdf.

EPA's Vapor Intrusion Screening Level (VISL) Calculator

EPA's online VISL calculator is a web-based tool that can be used to obtain risk-based screening level concentrations for groundwater, sub-slab soil gas and indoor air. The VISL calculator uses the same database as the RSLs for toxicity values and physiochemical parameters and is automatically updated during the semi-annual RSL updates. The User's Guide provides further details on how to use the VISL calculator: www.epa.gov/vaporintrusion/vapor-intrusion-screening-level-calculator.

Vapor Intrusion Investigations for the Site

The vapor intrusion pathway was evaluated in the 2014 and 2019 FYRs using the same subset of wells that were used in the 2005 Baseline Human Health Risk Assessment. The groundwater plumes are mostly found in the deep overburden and bedrock; as a result, many of the shallow wells have been removed from the annual monitoring program, since contaminant concentrations above cleanup goals were no longer detected in the shallow aquifer. Table F-6 provides a summary of the 2022 groundwater sampling results. Of the shallow wells, most did not have detections of VOCs. AR-11B2 in the Southeast Landfill area had detectable concentrations of VDC (22 µg/L) and vinyl chloride (38 µg/L). These concentrations are fairly consistent with what was observed during the 2019 FYR evaluation (VDC at 22 µg/L and vinyl chloride at 4.2 µg/L, Table F-7). There are currently no buildings located on the Site. However, the vapor intrusion pathway may need to be revisited if development resulting in building on the Site is being considered.

Expected Progress Toward Meeting RAOs

OU-1

The OU-1 RAOs related to groundwater, surface water and wastes have been partially met. Source area soils were removed to cleanup goals intended to protect groundwater. The remedial actions were conducted to protect against direct contact with site contaminants and minimize environmental exposure during remedial activities. The number of source areas has been reduced to eliminate long-term management and permit unrestricted use on parts of the Site. The first RAO, to protect exposure points where humans or wildlife may be exposed to contaminants in soil, groundwater, surface water and sediments, during and after site remediation, has been partially met. While some areas of the Site have been thoroughly investigated and remediated based on a potential future residential use, there are other areas of the Site where the current status of soil contaminant concentrations is unknown. With the increased interest in redevelopment, an institutional control is necessary for OU-1 to ensure any future development will be protective of human health. Specifically, EPA is considering an institutional control to require environmental sampling prior to redevelopment to ensure site-related contamination is not present in soils at unacceptable levels.

OU-3

The RAO to prevent potential exposure to concentrations of contaminated groundwater from the Site is currently being met because there are no current exposure pathways to remaining groundwater contamination. However, institutional controls are necessary to ensure long-term protectiveness of remaining groundwater contamination. The groundwater has not been cleaned up so that the aquifer is suitable as a public water supply and for irrigation purposes without pre-treatment. However, activities and investigations continue to be conducted to work toward meeting the IGCLs.

Discharge of treated effluent has been controlled to prevent unacceptable impacts to sediment and surface water in Sinking Pond. Excavations of sediment in the North Lagoon Wetland and Sinking Pond have prevented risk to a future resident and prevented unacceptable risk to the environment. Ongoing sampling at Sinking Pond will determine if more measures are necessary to ensure long-term protectiveness of the remedy.

QUESTION C: Has any other information come to light that could call into question the protectiveness of the remedy?

The expected impacts of climate change in New England pose increasing risks to contaminated sites. Increases in air and water temperature, precipitation, flooding and periods of drought may result in altered fate and transport pathways and exposure assumptions, impaired aquatic habitats, dispersal of contaminants, damage to remediation related structures and, ultimately, ineffective remedies. At coastal sites, saltwater impacts made more likely by sea-level rise may cause corrosion of remediation equipment and impair restoration efforts. Increased frequency of extreme weather events may cause damage or releases at sites, impairing remedial efforts where remedies have not been adequately designed to protect against these risks.

The risks posed by climate change in New England are not expected to alter the protectiveness of the remedy at the W.R. Grace Acton Superfund Site. Overall, the site is at low risk of flooding, increased precipitation, and temperature increases. The northern portion of the Site, north of the MBTA tracks, has a low-moderate risk of flooding due to the proximity to Fort Pond Brook. Increased flooding in the northern portion of the Site could pose a risk to the Fort Pond Brook wetland restoration. Contaminated soils were excavated from the area and contaminated groundwater is no longer discharging to the wetland, so while the restored wetland could be damaged flooding would not affect the protectiveness of the remedy. Increased flooding in the northern portion of the Site would not be expected to change groundwater flow patterns due to the existing groundwater gradients across the Site. The northern portion of the Site also has a moderate to high risk of forest fires.

While these climate change issues are a concern, none of the reviewed impacts are expected to alter the protectiveness of the remedy. The only waste left in place at the Site is within the Industrial Landfill and the landfill is outside of the elevated risk areas for flooding and wildfires. The LATS groundwater extraction treatment system is also located outside of the areas of increased risk for wildfires and flooding. Climate change related impacts to the remedy will continue to be monitored through the FYR process.

VI. ISSUES/RECOMMENDATIONS

Issues/Recommendations
OU(s) without Issues and Recommendations Identified in the FYR:
None.

Issues and Recommendations Identified in the FYR:

<table>
<tr><td rowspan="3">OU(s): OU-1</td><td colspan="4">Issue Category: Changed Site Conditions</td></tr>
<tr><td colspan="4">Issue: Current status of soil is unknown in non-source areas. Given the increased interest in redevelopment at the Site, in order to ensure future protectiveness, additional institutional controls may be appropriate.</td></tr>
<tr><td colspan="4">Recommendation: Consider an institutional control to require soil characterization or soil management plan to ensure site-related contamination is not present in soils, and if present, is appropriately addressed by a soil management plan.</td></tr>
<tr><th>Affect Current Protectiveness</th><th>Affect Future Protectiveness</th><th>Party Responsible</th><th>Oversight Party</th><th>Milestone Date</th></tr>
<tr><td>No</td><td>Yes</td><td>PRP</td><td>EPA</td><td>6/30/2026</td></tr>
</table>

OU(s): OU-3	**Issue Category: Changed Site Conditions**
	Issue: The town of Concord installed a groundwater extraction well south of the Site for use at the bus facility.
	Recommendation: Properly abandon the groundwater extraction well at the bus facility.

Affect Current Protectiveness	Affect Future Protectiveness	Party Responsible	Oversight Party	Milestone Date
No	Yes	Other	EPA	12/31/2024

OU(s): OU-3	**Issue Category: Monitoring**
	Issue: Increasing concentrations of VOCs in the OSA-13 well cluster area have been observed during and prior to this FYR.
	Recommendation: Continue investigating the increasing concentrations of VOCs observed in the OSA-13 well cluster area and identify the source of that contamination.

Affect Current Protectiveness	Affect Future Protectiveness	Party Responsible	Oversight Party	Milestone Date
No	Yes	PRP	EPA	12/31/2025

OU(s): OU-3	**Issue Category: Monitoring**
	Issue: Groundwater concentrations of PFAS exceed the EPA MCLs.
	Recommendation: In order to evaluate the extent of PFAS in Site groundwater and whether further remedial action is needed, PFAS sampling for all compounds with either an MCL or MMCL should be added to the annual groundwater sampling program and the LATS system influent and effluent streams.

Affect Current Protectiveness	Affect Future Protectiveness	Party Responsible	Oversight Party	Milestone Date
No	Yes	PRP	EPA	12/31/2026

Other Findings

In addition, the following are recommendations that were identified during the FYR but do not affect current or future protectiveness:

- Consider revisiting the vapor intrusion pathway if development resulting in building on the Site is being considered.
- Perform a sediment sampling event of Sinking Pond once every five years to support EPA's FYR process. Future reevaluation of the protectiveness of the remedy is possible with respect to human health if a sustained decline approaching 130 feet in surface elevation is observed.
- The 2005 OU-3 remedial action continues to operate and function as designed. The ROD estimated the amount of time necessary to achieve the remedial goals consistent with potable/domestic use of the

aquifer to be about 26 years. It is unclear if that is attainable. An updated evaluation of when cleanup goals will be met across the Site may be appropriate.

- Consider whether a decision document is required to update remedy changes related to the Battery Separator Chip Pile (which was not capped and does not require institutional controls) and potential institutional controls for Sinking Pond.
- Acton Water District would like more regular communication with EPA and would like to see more community outreach about the Site. They also requested to receive raw water quality data on a more regular basis.
- Consider updating the annual groundwater monitoring plan for the Site to include all the COCs listed in the ROD, as well as PFAS that have a MCL or MMCL. In addition, include a comprehensive site-wide groundwater sampling event that occurs every five years in support of the FYR.

VII. PROTECTIVENESS STATEMENT

Protectiveness Statement(s)

Operable Unit:	*Protectiveness Determination:*
1	Short-term Protective

Protectiveness Statement:
The remedy at OU-1 currently protects human health and the environment because there are no completed exposure pathways to remaining contamination. However, in order for the remedy to be protective in the long-term, the following actions need to be taken to ensure protectiveness: consider an institutional control to require soil characterization or soil management plan prior to redevelopment to ensure site-related contamination is not present in soils.

Protectiveness Statement(s)

Operable Unit:	*Protectiveness Determination:*
3	Short-term Protective

Protectiveness Statement:
The remedy at OU-3 currently protects human health and the environment because there are no completed exposure pathways to remaining contamination. However, in order for the remedy to be protective in the long-term, the following actions need to be taken to ensure protectiveness: properly abandon the groundwater extraction well that the town of Concord installed at the bus facility; continue investigating the increasing concentrations of VOCs observed in the OSA-13 well cluster area and identify the source of that contamination; and add PFAS into the annual groundwater sampling program.

Sitewide Protectiveness Statement

Protectiveness Determination:
Short-term Protective

Protectiveness Statement:
The remedy at the Site currently protects human health and the environment because there are no completed exposure pathways to remaining contamination. However, in order for the remedy to be protective in the long-term, the following actions need to be taken to ensure protectiveness: consider an institutional control to require soil characterization or soil management plan prior to redevelopment to ensure site-related contamination is not present in soils; provide an updated plume map to the Acton and Concord Boards of Health and provide updated plume maps on a regular basis in the future; properly abandon the groundwater extraction well that the town of Concord installed at the bus facility; and continue investigating the increasing concentrations of VOCs observed in the OSA-13 well cluster area

and identify the source of that contamination; and add PFAS into the annual groundwater sampling program.

VIII. NEXT REVIEW

The next FYR for the W.R. Grace & Co., Inc. (Acton Plant) Superfund site is required five years from the completion date of this review.

APPENDIX A – REFERENCE LIST

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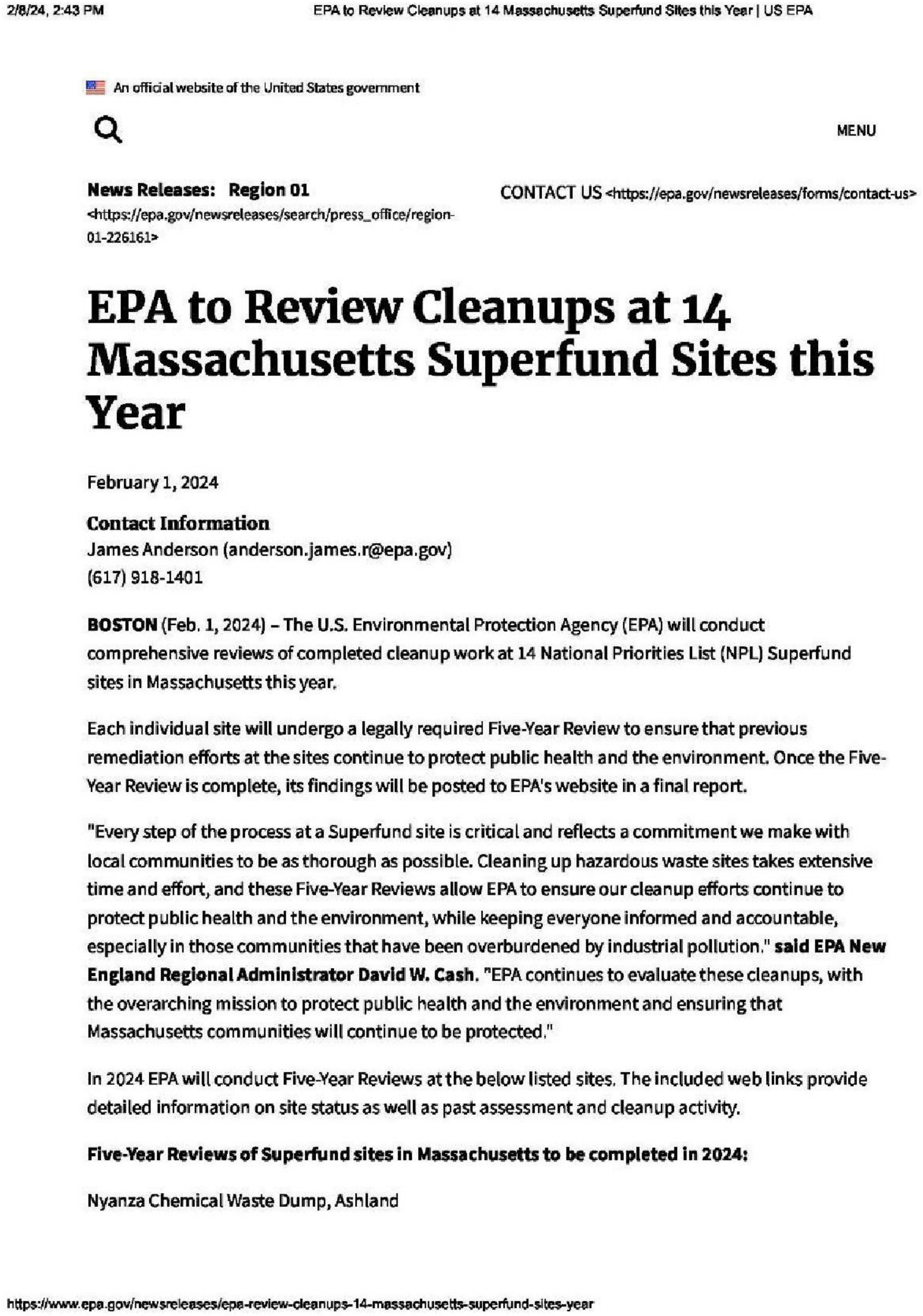
APPENDIX B – SITE CHRONOLOGY

Table B-1: Site Chronology

Event	Date
Dewey & Almy Chemical Company manufactured products such as latex, resins, plasticizers and paper battery separators at the Site	1945-1954
W.R. Grace acquired Dewey & Almy and continued various chemical manufacturing processes at the Acton site	1954-1991
Organic contaminants (vinylidene chloride, vinyl chloride, ethylbenzene, and benzene) detected in municipal wells	1978
The United States sued Grace to require cleanup of the Site	April 17, 1980
MassDEP issued an Administrative Order to Grace, specifying procedures and requirements for evaluating and correcting site contamination	July 14, 1980
Grace and EPA entered into a Consent Decree to clean up waste disposal areas and restore groundwater in drinking water aquifers; the provisions of the Consent Decree were similar to the requirements of the July 1980 MassDEP Administrative Order	October 21, 1980
MassDEP issued an Amended Order to W.R. Grace, amending MassDEP's July 1980 MassDEP Administrative Order.	April 15, 1981
EPA finalized the Site's listing on the NPL	September 8, 1983
ARS construction completed and operations began	March 1985
Phase IV Report and Addendum detailing the OU-1 remedy completed for Grace	June 6, 1989
Risk Analysis Report completed for EPA	June 30, 1989
OU-1 ROD signed by EPA	September 29,1989
Grace filed a Notice and Restriction Plan for the Industrial Landfill	March 16, 1989
PRPs initiated the OU-1 remedial action	October 17, 1994
Landfill gas treatment system installed; permanent fencing around landfill installed	March 1997
Final site inspection performed	June 1997
EPA issued Remedial Action Report for OU-1	September 30, 1997
EPA completed the Site's first FYR Report	September 1999
Grace completed the draft Remedial Investigation Report	August 30, 2002
Grace completed the Phase 2 Remedial Investigation Report	May 14, 2003
Grace completed the draft baseline ecological risk assessment	July 30, 2004
Grace completed the draft public health risk assessment	August 5, 2004
EPA completed the second FYR Report for the Site	September 29, 2004
OU-3 ROD signed by EPA	September 30, 2005
EPA completed the third FYR Report for the Site	September 23, 2009
Grace began operating the temporary groundwater extraction and treatment system in the Northeast Area	April 2010
ARS treatment system shut down	April 2011
Grace began operating the LATS	May 2011
EPA determined Sediment Construction was "Operational and Functional"	January 10, 2012
EPA issued the Preliminary Close-Out Report for the Site	February 8, 2012
EPA determined the Landfill Area groundwater extraction and treatment system was "Operational and Functional"	May 25, 2012
Northeast Area remediation system was shut down	September 24, 2013
EPA issued the fourth FYR Report for the Site	September 23, 2014
Town of Concord took part of the property by eminent domain	2015
The Site achieved Sitewide Ready for Anticipated Reuse	October 11, 2016
The Town of Concord installed an extraction well at the bus facility	Early 2017
Grace submitted the final Vegetation Monitoring Report for OU-3	January 12, 2017

Event	Date
Town of Concord completed construction of a solar array and school bus depot on the Concord Parcel at the Site	August 2017
Grace entered into an Access Easement with the Town of Concord following the town's taking of the Concord Parcel by eminent domain in 2015	September 25, 2017
EPA issued the fifth FYR Report for the Site	June 17, 2019
SELF-1 and SELF-2 extraction wells were shut down	May 12, 2021
Purifics photo catalytic oxidation system for 1,4-dioxane treatment was removed from LATS groundwater treatment train	August 2022
Grace submitted Notice of Intent to Sell Grace owned parcels north of MBTA rail line	September 7, 2022
LATS extraction rate reduction pilot test began	June 21, 2023
Acton Board of Health voted to continue administrative hold	July 26, 2023
Concord Board of Health approved new Well Regulations	April 8, 2024

APPENDIX C – PUBLIC NOTICE



2/8/24, 2:43 PM EPA to Review Cleanups at 14 Massachusetts Superfund Sites this Year | US EPA

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EPA to Review Cleanups at 14 Massachusetts Superfund Sites this Year

February 1, 2024

Contact Information
James Anderson (anderson.james.r@epa.gov)
(617) 918-1401

BOSTON (Feb. 1, 2024) – The U.S. Environmental Protection Agency (EPA) will conduct comprehensive reviews of completed cleanup work at 14 National Priorities List (NPL) Superfund sites in Massachusetts this year.

Each individual site will undergo a legally required Five-Year Review to ensure that previous remediation efforts at the sites continue to protect public health and the environment. Once the Five-Year Review is complete, its findings will be posted to EPA's website in a final report.

"Every step of the process at a Superfund site is critical and reflects a commitment we make with local communities to be as thorough as possible. Cleaning up hazardous waste sites takes extensive time and effort, and these Five-Year Reviews allow EPA to ensure our cleanup efforts continue to protect public health and the environment, while keeping everyone informed and accountable, especially in those communities that have been overburdened by industrial pollution." **said EPA New England Regional Administrator David W. Cash.** "EPA continues to evaluate these cleanups, with the overarching mission to protect public health and the environment and ensuring that Massachusetts communities will continue to be protected."

In 2024 EPA will conduct Five-Year Reviews at the below listed sites. The included web links provide detailed information on site status as well as past assessment and cleanup activity.

Five-Year Reviews of Superfund sites in Massachusetts to be completed in 2024:

Nyanza Chemical Waste Dump, Ashland

https://www.epa.gov/newsreleases/epa-review-cleanups-14-massachusetts-superfund-sites-year

Sutton Brook Disposal Area, Tewksbury

Industri-Plex, Woburn

Wells G&H, Woburn

W.R. Grace & Co., Inc. (Acton Plant), Acton

Baird & McGuire, Holbrook

Hatheway & Patterson, Mansfield & Foxboro

Rose Disposal Pit, Lanesborough

Hocomonco Pond, Westborough

Silresim Chemical Corp., Lowell

South Weymouth Naval Air Station, Weymouth

Naval Weapons Industrial Reserve Plant, Bedford

Five-Year Reviews of Superfund sites in Massachusetts to begin in 2024, to be completed in Fiscal Year 2025:

Blackburn & Union Privileges, Walpole

Norwood PCBs, Norwood

More information:

The Superfund program, a federal program established by Congress in 1980, investigates and cleans up the most complex, uncontrolled, or abandoned hazardous waste sites in the country and EPA endeavors to facilitate activities to return them to productive use. In total, there are 123 Superfund sites across New England.

Superfund and other cleanup sites in New England (pdf) <https://www.epa.gov/system/files/documents/2024-02/urls-ssp-chart-508.pdf> (91.4 KB)

EPA's Superfund program <https://epa.gov/superfund>

Contact Us <https://epa.gov/newsreleases/forms/contact-us> to ask a question, provide feedback, or report a problem.

LAST UPDATED ON FEBRUARY 1, 2024

APPENDIX D – INTERVIEWS

W.R. GRACE AND CO., INC. (ACTON PLANT) SUPERFUND SITE FIVE-YEAR REVIEW INTERVIEW FORM	
Site Name: W.R. Grace and Co., Inc. (Acton Plant)	
EPA ID: MAD001002252	
Interviewer name: Ali Cattani	**Interviewer affiliation:** Skeo
Subject name: Jennifer McWeeney	**Subject affiliation:** MassDEP
Subject contact information: Jennifer.mcweeney@mass.gov	
Interview date: 1/23/24	**Interview time:**
Interview location:	
Interview format (circle one): In Person Phone Mail [✓ Email] Other:	
Interview category: State Agency	

1. What is your overall impression of the project, including cleanup, maintenance and reuse activities (as appropriate)? **The Site is complicated, with multiple source areas and multiple remedial components. The remedies are performing as designed; however, OU1 soils may require further evaluation in between known release/discharge areas prior to implementing ICs and prior to redevelopment.**

2. What is your assessment of the current performance of the remedy in place at the Site? **The remedial components are performing as designed.**

3. Are you aware of any complaints or inquiries regarding site-related environmental issues or remedial activities from residents in the past five years? **No.**

4. Has your office conducted any site-related activities or communications in the past five years? If so, please describe the purpose and results of these activities. **DEP has not conducted any site-related activities or communications outside of those relating to Superfund.**

5. Are you aware of any changes to state laws that might affect the protectiveness of the Site's remedy? **The 2024 MCP amendments include MMCLs for PFAS6.**

6. Are you comfortable with the status of the institutional controls at the Site? If not, what are the associated outstanding issues? **Prior to implementing ICs, and prior to redevelopment, OU1 soils should be better characterized (i.e., areas outside of known release/discharge areas), both north and south of the RR tracks.**

7. Are you aware of any changes in projected land use(s) at the Site? **Yes, as informed by Grace.**

8. Do you have any comments, suggestions or recommendations regarding the management or operation of the Site's remedy? **We need to push the Town of Concord to decommission their deep bedrock non-potable well in accordance with their own forthcoming regs.**

9. Do you consent to have your name included along with your responses to this questionnaire in the FYR report? **Yes**

Site Name: W.R. Grace and Co., Inc. (Acton Plant)	
EPA ID: MAD001002252	
Interviewer name: Ali Cattani	**Interviewer affiliation: Skeo**
Subject name: Tony Penfold	**Subject affiliation: W.R. Grace**
Subject contact information: tony.penfold@grace.com	
Interview format (circle one): In Person Phone Mail Email Other:	
Interview category: Potentially Responsible Party (PRP)	

1. **What is your overall impression of the remedial activities at the Site?**

   Overall, the project is going well. The remedies for OU-1 and OU-2 (soil/sludge) have been successfully completed, and the construction of the remedy for OU-3 (groundwater, sediment and surface water) has been completed. For OU-3, sediment was successfully removed from Sinking Pond and the Northeast Lagoon Area wetlands, and five years of monitoring of the wetlands restoration plantings from 2012 through 2016 documented that the restoration criteria were met. The Landfill Area Treatment System (LATS) commenced operation in 2011. Groundwater extraction and treatment downgradient of the landfill and natural attenuation, has resulted in an overall decreasing trend in VOC concentrations in groundwater for most of the Site. Reevaluation of the Sinking Pond Sediment Remedy during 2022 concluded the remedy continues to be protective for ecological receptors and human health.

2. **What have been the effects of this Site on the surrounding community, if any?**

   Minimal in the last five years – the remedy is protective. Ongoing work includes operations and maintenance phase of the groundwater extraction and treatment system, maintenance of the landfill cap, and periodic monitoring of Sinking Pond water levels and sediment.

3. **What is your assessment of the current performance of the remedy in place at the Site?**

   OU-1 and OU-2 have been successfully addressed and OU-3 remedy construction has been completed. Remediation of OU-3 is ongoing and relies on groundwater extraction, treatment through the LATS downgradient of the landfill as well as natural attenuation in other areas of the Site. For most of the Site, natural attenuation is working, as VOC concentrations continue to decline. As requested in the 2022 Annual Monitoring Report review process, Grace will be providing a workplan to investigate the elevated VOC concentrations in the area of the monitoring well cluster OSA-13 in 2024.
   The sediment remedy for Sinking Pond was reevaluated in 2022 based on concerns related to ecological protectiveness due to lowered water levels in the Pond. The conclusions of the

remedy reevaluation indicated the remedy is protective but requires periodic monitoring of water levels, the pond thermocline, and sediment arsenic concentrations.

4. **Are you aware of any complaints or inquiries regarding environmental issues or the remedial action from residents since implementation of the cleanup?**

   Not in the last five years.

5. **Do you feel well-informed regarding the Site's activities and remedial progress? If not, how might EPA convey site-related information in the future?**

   Yes, routine communication with the EPA project manager is helpful in establishing expectations and schedule for deliverables.

6. **Do you have any comments, suggestions or recommendations regarding the management or operation of the Site's remedy?**

   As noted in the 2022 Annual Monitoring Report conclusions, VOC concentrations in the Southwest Landfill and Southeast Landfill Area groundwater are substantially lower than at the time the ROD was issued, and all are lower than concentrations for which the 2005 OU-3 ROD considered Monitored Natural Attenuation (MNA) an appropriate remedy. This is an appropriate timeframe to consider transitioning from active groundwater extraction and treatment to MNA downgradient of the landfill.

7. **Are you aware of any changes in projected land use(s) at the Site?**

   Special Permit approval was issued by the Town of Acton for solar development on a portion of the Grace owned property bounded by the former Blowdown Pit, the MBTA tracks, the property boundary with the Town of Concord, and the Industrial Landfill. The project is scheduled to be constructed by the end of 2024.

8. **Are you aware of any proposed redevelopment plans for the Site?**

   There are ongoing discussions with the Town of Acton related to potential future use(s) of the remaining Grace owned land in Acton including residential use on the parcels north of the MBTA tracks.

9. **Do you consent to have your name included along with your responses to this questionnaire in the FYR report?**

   Yes.

Site Name: W.R. Grace and Co., Inc. (Acton Plant)	
EPA ID: MAD001002252	
Interviewer name: Ali Cattani	**Interviewer affiliation: Skeo**
Subject name: Maryellen Johns	**Subject affiliation: de maximis inc.**
Subject contact information: mjohns@demaximis.com	
Interview format (circle one): In Person Phone Mail Email Other:	
Interview category: O&M Contractor	

1. **What is your overall impression of the project, including cleanup, maintenance and reuse activities (as appropriate)?**

   OU-1 clean-up activities including source area soil remediation and capping of the landfill have significantly improved the groundwater quality across the Site. The Landfill Area Treatment System (LATS) operating since 2011 providing groundwater extraction and treatment downgradient of the landfill has resulted in decreasing trends in VOC concentrations. Reevaluation of the Sinking Pond Sediment Remedy during 2022 concluded the remedy continues to be protective for ecological receptors and human health with continued periodic monitoring of water levels and sediment arsenic concentrations.

   The solar array lease area anticipated to be constructed in 2024 will be the first reuse of a portion of the Grace property.

2. **What is your assessment of the current performance of the remedy in place at the Site?**

   OU-1 and OU-2 remedies have been successfully addressed. Groundwater remediation for OU-3 includes active extraction and treatment for wells downgradient of the landfill and monitored natural attenuation in other areas of the Site. For most of the Site, natural attenuation is working, as VOC concentrations continue to decline, however additional investigation will be required for elevated VOC concentrations in the vicinity of OSA-13.

3. **What are the findings from the monitoring data? What are the key trends in contaminant levels that are being documented over time at the Site?**

   Groundwater

   With the exception of the OSA-13 area, monitored natural attenuation has been successful reducing groundwater VOC concentrations across the Site. As noted in the 2022 Annual Monitoring Report conclusions, VOC concentrations within the capture zone of the active extraction system are substantially lower than at the time the ROD was issued and are also currently lower than concentrations for which the 2005 OU-3 ROD considered Monitored Natural Attenuation (MNA) an appropriate remedy. Transition from active groundwater extraction and treatment to MNA for the area downgradient of the landfill should be a near term consideration.

Sediment

2019 Five Year Review recommended a reevaluation of the ecological protectives of the sediment remedy at Sinking Pond due to the lowering of the pond water levels and the assumed associated change in the thermocline. Sediment sampling was performed in May 2022 and the sediment remedy reevaluation concluded that the average total arsenic concentrations of sediment samples collected in sediments that were previously below the ROD-specified thermocline (128 ft) but are now above the current thermocline (120 ft) are below arsenic component of the short-term remediation goals of 730 mg/kg on average and therefore protective of the environment. Continued periodic sampling of arsenic concentrations in sediment at Sinking Pond is required to establish a trend toward attaining the long term goal of 42 mg/kg. Water level of the pond are measured on a biweekly basis to determine long term trends and if reevaluation of the thermocline depth is needed.

4. **Is there a continuous on-site O&M presence? If so, please describe staff responsibilities and activities. Alternatively, please describe staff responsibilities and the frequency of site inspections and activities if there is not a continuous on-site O&M presence.**

The LATS is staffed four to five days per week; the hours on-site vary from day to day. Telemetry associated with the LATS and extraction wells enables O&M, Inc. staff to respond to system faults or shutdowns, if they arise. Routine maintenance includes managing sludge produced by the groundwater metal removal system, monitoring extraction well operation,

5. **Have there been any significant changes in site O&M requirements, maintenance schedules or sampling routines since start-up or in the last five years? If so, do they affect the protectiveness or effectiveness of the remedy? Please describe changes and impacts.**

With respect to groundwater, recovery wells, SELF 1 and SELF 2 were shut down based on a conditional approval from EPA in May of 2021. These recovery wells have remained offline since May 2021. Post SELF shutdown groundwater monitoring data indicates no significant changes in water quality in this area.

The Purifics photo catalytic oxidation system was bypassed in August 2022 with USEPA approval and is no longer part of the overall groundwater treatment train. The influent and effluent concentrations of VOCs and 1,4-dioxane continue to meet the permit discharge requirements.

From June to August of 2023, a pilot test was conducted to determine the impacts on the LATS capture zone with a reduction in groundwater from 50 to 25 gpm. Grace is currently responding to comments from EPA on the LATS Flowrate Reduction Pilot Test report.

In addition, a well decommissioning request was submitted for EPA review in December 2023 for 34 wells in the proximity of the solar array development area. The request has not yet been approved.

The changes listed above have not impacted the protectiveness of the groundwater remedy.

With respect to the sediment remedy, a reevaluation of the ecological protectiveness of the Sinking Pond Sediment Remedy was performed in Spring of 2022. Based on the evaluation conclusions, routine monitoring of pond water levels, periodic evaluations of pond thermocline, and sediment sampling every five years are required by EPA to evaluate continued protectiveness of the Sinking Pond Sediment remedy.

6. **Have there been unexpected O&M difficulties or costs at the Site since start-up or in the last five years? If so, please provide details.**

   No unexpected difficulties in the last five years. O&M of the treatment system and the groundwater extraction well network remains significant due, in part, to the naturally occurring high concentrations of iron in the groundwater as well as the age of the recovery wells.

7. **Have there been opportunities to optimize O&M activities or sampling efforts? Please describe changes and any resulting or desired cost savings or improved efficiencies.**

   As indicated previously, shutdown of recovery wells, SELF-1 and SELF-2 provided a reduction in O&M activities due to ongoing iron fouling of these wells and the system influent lines. The 2023 LATS flowrate reduction pilot test was initiated to avoid capital costs of replacement filters for the metals removal system ($62 K) and operating the LATS at approximately 25 gpm has potential for reduction of chemical and electrical costs in the order of $12K.

8. **Do you have any comments, suggestions or recommendations regarding O&M activities and schedules at the Site?**

   No.

9. **Do you consent to have your name included along with your responses to this questionnaire in the FYR report?**

   Yes.

Site Name: W.R. Grace and Co., Inc. (Acton Plant)	
EPA ID: MAD001002252	
Interviewer name: Brenda Murcia	**Interviewer affiliation: EPA**
Subject name: [redacted]	**Subject affiliation: Acton Health Dept.**
Subject contact information: health@acton-ma.gov	
Interview date: 2/26/24	**Interview time:**
Interview location:	
Interview format (circle one): In Person Phone Mail [✓ **Email**] Other:	
Interview category: Local health official	

1. What is your overall impression of the remedial activities at the Site?

   My overall impression is satisfaction with the efforts by W.R. Grace and the oversight provided by both the EPA and the Mass. DEP with the continued information that is provided to both the Health Department and the Acton Water District.

2. What have been the effects of this Site on the surrounding community, if any?

   The community is unable to install irrigation and drinking water wells within 500 feet of the plume, which does affect the community on some level.

3. What is your assessment of the current performance of the remedy in place at the Site?

We remain concerned that the EPA has identified health concerns with the continuance of administrative holds. We would still request a strategy from the EPA on how to tie the restricted area to the current plume and when it will be safe for our residents to resume use of private wells.

4. Are you aware of any complaints or inquiries regarding environmental issues or the remedial action from residents since implementation of the cleanup?

There is still a strong community voice that shares their concerns regarding this site and the impacts. In order to protect the public health, the Water District installed the Water Treatment Plan facility at the tax payers' expense

5. Do you feel well-informed regarding the Site's activities and remedial progress? If not, how might EPA convey site-related information in the future?

   I would like more information provided to me through email if possible.

6. Do you have any comments, suggestions or recommendations regarding the management or operation of the Site's remedy?

   Not at this time.

7. Are you aware of any changes in projected land use(s) at the Site?

There has been a solar farm installed on the property currently owned by the Acton Water District in close proximity to the Grace Land.

8. Are you aware of any proposed redevelopment plans for the Site?

I am not aware of any proposed redevelopment plans for the Site.

9. Do you consent to have your name included along with your responses to this questionnaire in the FYR report?

I do not consent to having my name included of my responses to this questionnaire.

Site Name: W.R. Grace and Co., Inc. (Acton Plant)	
EPA ID: MAD001002252	
Interviewer name: Brenda Murcia	**Interviewer affiliation: EPA**
Subject name: [redacted]	**Subject affiliation: Concord Public Schools**
Interview date: 2/26/24	**Interview time:**
Interview location:	
Interview format (circle one): In Person Phone Mail [✓ **Email**] Other:	
Interview category: Local School District	

1. What is your overall impression of the remedial activities at the Site? It is nice to see a superfund site being used for the generation of electrical power.

2. What have been the effects of this Site on the surrounding community, if any? The Town is able to use the Site to store and repair the School District buses. There is also a solar array to generate clean energy for the CMLP. Both are positive effects for the surrounding communities.

3. What is your assessment of the current performance of the remedy in place at the Site? The remedies appears to be performing as designed. The Site is checked periodically by environmental sub-contractors from WR Grace and the EPA.

4. Are you aware of any complaints or inquiries regarding environmental issues or the remedial action from residents since implementation of the cleanup? Not aware of any complaints from residents regarding environmental issues.

5. Do you feel well-informed regarding the Site's activities and remedial progress? If not, how might EPA convey site-related information in the future? Except for this survey, the school district is usually contacted by Concord Town municipal departments such as the DPW or BOH for Site activities and remedial progress.

6. Do you have any comments, suggestions or recommendations regarding the management or operation of the Site's remedy? No

7. Are you aware of any changes in projected land use(s) at the Site? No

8. Are you aware of any proposed redevelopment plans for the Site? No

9. Do you consent to have your name included along with your responses to this questionnaire in the FYR report?

Site Name: W.R. Grace and Co., Inc. (Acton Plant)	
EPA ID: MAD001002252	
Interviewer name: Kara Nierenberg	**Interviewer affiliation: EPA**
Subject name: Matt Mostoller / Alex Wahlstrom	**Subject affiliation: Acton Water District**
Subject contact information: matt@actonwater.com, Alex@actonwater.com	
Interview date: 3/5/24	**Interview time: 11:00 AM**
Interview location: Microsoft Teams Call	
Interview format (circle one): In Person [✓ Phone] Mail Email Other:	
Interview category: Local Water District	

1. What is your overall impression of the remedial activities at the Site?
   Acton Water District (AWD) thinks remedial activities at the Site have been comprehensive, but they continue to be concerned about the Industrial Landfill since it will be forever present on the Site. Overall, AWD is pleased with remedial activities on the site over many decades.

2. What have been the effects of this Site on the surrounding community, if any?
   The Site has heightened the surrounding community's awareness of environmental issues and concern surrounding their drinking water. When community members reach out to AWD with questions about the Acton water supply or living in Acton, the Superfund program and the local Superfund Sites (WR Grace and Nuclear Metals) often come up in these conversations about drinking water quality.

3. What is your assessment of the current performance of the remedy in place at the Site?
   Big picture is good especially related to VOC contaminants of concern at the Site. AWD has concerns regarding the landfill pump and treat system and 1,4-dioxane in site groundwater. The current landfill groundwater treatment system impacts a small portion of the Site area and the target cleanup level for 1,4-dioxane is high (3 ppb compared to the MassDEP level of 0.3 ppb). AWD also has concerns regarding the portion of the property that was closed out under MCP (the Concord Landfill property, currently owned by the Town of Concord on Knox Trail), which is currently housing the Concord solar field and bus depot. AWD is concerned that this area has fallen into a regulatory gray zone and is not being adequately monitored and addressed. AWD think that the performance of remedies for the both the WR Grace Superfund Site and the MCP Concord Landfill Site should be jointly reviewed and confirmed that the remedy is still protective, especially in light of emerging contaminants.

4. Are you aware of any complaints or inquiries regarding environmental issues or the remedial action from residents since implementation of the cleanup?
   AWD receives many phone calls from the community that are directly related to the Superfund Sites/Grace, and other phone calls that start on other topics but often end up being a conversation about the Grace site. AWD understands that EPA has a website explaining the

Site and supplying documents; however, community members feel EPA is beyond their reach and often reach out to AWD instead to find out information about the Grace site. AWD thinks it would be helpful for the EPA website (and/or other outreach) to better explain where the site in terms of its cleanup, especially to highlight how much progress has been made and clearly state what risk(s) remain at the site. Without additional outreach and information from EPA, community members will continue to look to AWD for secondhand information on what is happening at the Site. AWD hears complaints that WR Grace and EPA don't do outreach on the site anymore and community members would like more information.

5. Do you feel well-informed regarding the Site's activities and remedial progress? If not, how might EPA convey site-related information in the future?
   AWD feels well informed and has a good handle on what is going on at the Site. AWD would like to receive site data, especially raw water quality data, in a timelier fashion than the annual reports so that they have an opportunity to make changes/decisions based on local and current groundwater conditions that may impact the AWD public water supply wells.

6. Do you have any comments, suggestions or recommendations regarding the management or operation of the Site's remedy?
   As far as site operation, AWD thinks that the landfill treatment system is lacking and not well designed to address all site contaminants, especially 1,4-dioxane. AWD asks that Grace continues to operate the system while looking for opportunities to improve the system. AWD advocates for improvements to the system treatment for 1,4-dioxane. In addition, AWD commented that MNA is being over relied on at the site, especially given sensitive nature of AWD wells relative to the site. AWD feels that more active remediation is necessary, and the Site should be less reliant on MNA.

   AWD has concerns about PFAS at the WR Grace site. PFAS sampling and analysis was done for the site in 2019, and while AWD understands that PFAS was not identified at elevated concentrations across the site at that time, they did note that PFAS was present in the landfill. AWD has concerns regarding discharge of landfill treatment system effluent to Sinking Pond, which is directly upgradient of the AWD Assabet well field. AWD is interested to know whether EPA would be willing to do additional PFAS screening of the Site considering the newly proposed EPA standards for PFAS. AWD would like EPA to consider additional PFAS sampling around the landfill and re-evaluate PFAS around the Site. The Acton community has a tough time accepting that Grace does not have an impact on the PFAS contamination present in the groundwater at the Assabet well field.

7. Are you aware of any changes in projected land use(s) at the Site?
   Yes, AWD is aware of the solar project (Syncarpha) planned for the Grace site and is aware of Grace's desire to sell property for possible housing and municipal uses at the site. AWD does want to confirm that EPA and Grace are reviewing the information on soils/materials being brought onto the Site during redevelopment to ensure no new contaminants are being introduced (including, but not limited to, PFAS) upgradient of the water supply wells.

8. Are you aware of any proposed redevelopment plans for the Site?

Overlapping with their response to question #8 above, AWD is involved in conversations regarding proposed redevelopment at the site. AWD is pleased that there is discussion about returning the property to productive reuses; however, they have concerns. AWD would like to ensure that groundwater modeling being performed is made available for peer review before decisions are made regarding future site uses. Further, AWD would like redevelopment work to proceed carefully and with close attention to detail to ensure that areas of the Site, even those areas that were not actively operated on and those areas not industrially used by Grace, are properly characterized. AWD also advocates for investigating and understanding the presence of emerging contaminants across the site. The community is very aware of the Site and concerned that future redevelopment is done with their safety in mind.

9. Do you consent to have your name included along with your responses to this questionnaire in the FYR report?
   Yes, AWD consents to including their names and responses (Matthew Mostoller and Alexandra Wahlstrom) included in the FYR report.

Site Name: W.R. Grace and Co., Inc. (Acton Plant)	
EPA ID: MAD001002252	
Interviewer name: Brenda Murcia	**Interviewer affiliation: EPA**
Subject name: Melanie Dineen	**Subject affiliation: Concord Health Dept.**
Subject contact information: mdineen@concordma.gov	
Interview date: March 4, 2024	**Interview time: 3:00 PM**
Interview location: online – 141 Keyes Road, Concord, MA	
Interview format (circle one): In Person Phone Mail Email Other:	
Interview category: Local health official	

1. What is your overall impression of the remedial activities at the Site?
    a. The remedial activities have been ongoing for some time. Although the contamination in bedrock is of concern there is extensive monitoring in place and there is little to no risk on the surface to Human Health. The main concern is contamination of groundwater migration of contaminants toward the Acton Public Drinking water supply well.

2. What have been the effects of this Site on the surrounding community, if any?
    a. The most significant effect is on the Concord bus depot and its inability to have a well on its site. The pending Board of Health well regulation will place moratorium on digging wells withing a 500 foot buffer zone of contamination.

3. What is your assessment of the current performance of the remedy in place at the Site?
    a. My assessment is that the remedy is working for the time being. Continued monitoring is necessary.

4. Are you aware of any complaints or inquiries regarding environmental issues or the remedial action from residents since implementation of the cleanup?
    a. There are limited complaints for this site in Concord at this time. We have had one individual call this year about the soil at the surface, which was of little concern.

5. Do you feel well-informed regarding the Site's activities and remedial progress? If not, how might EPA convey site-related information in the future?
    a. Yes I feel informed

6. Do you have any comments, suggestions or recommendations regarding the management or operation of the Site's remedy?
    a. No

7. Are you aware of any changes in projected land use(s) at the Site?

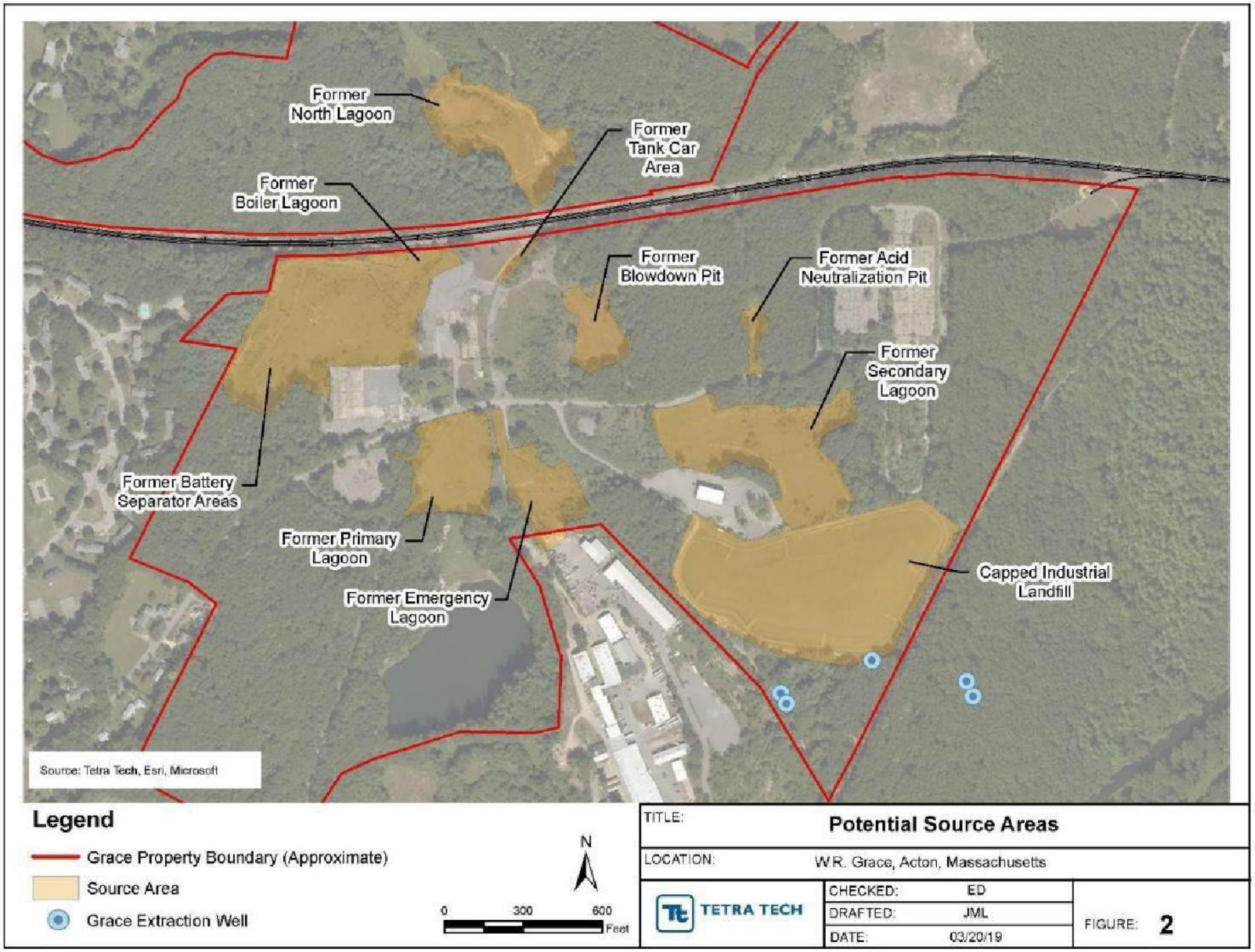
    a. No

8. Are you aware of any proposed redevelopment plans for the Site?
    a. No

9. Do you consent to have your name included along with your responses to this questionnaire in the FYR report? Yes.

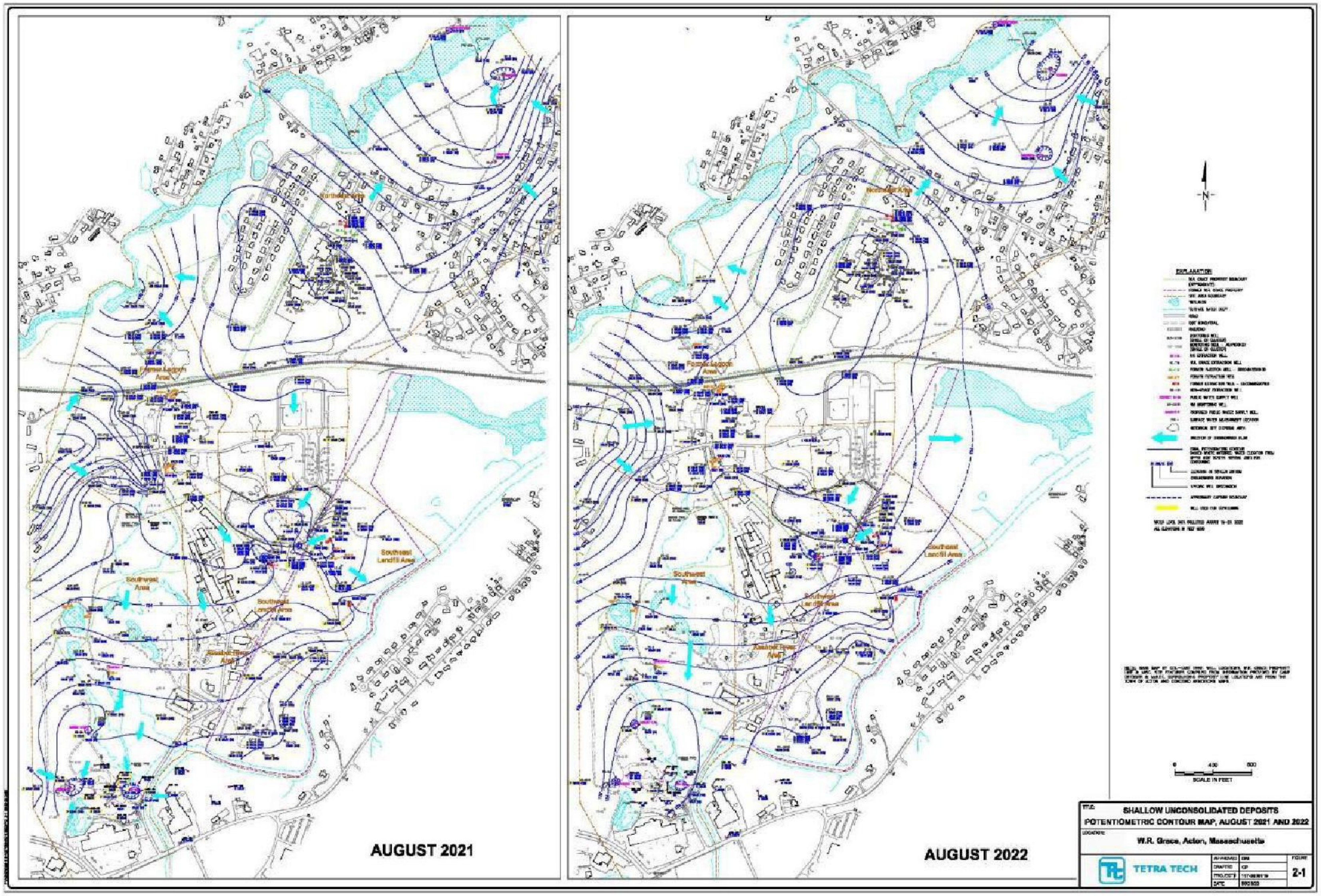
APPENDIX E – SUPPLEMENTAL FIGURES

Figure E-1: OU-1 Potential Source Areas



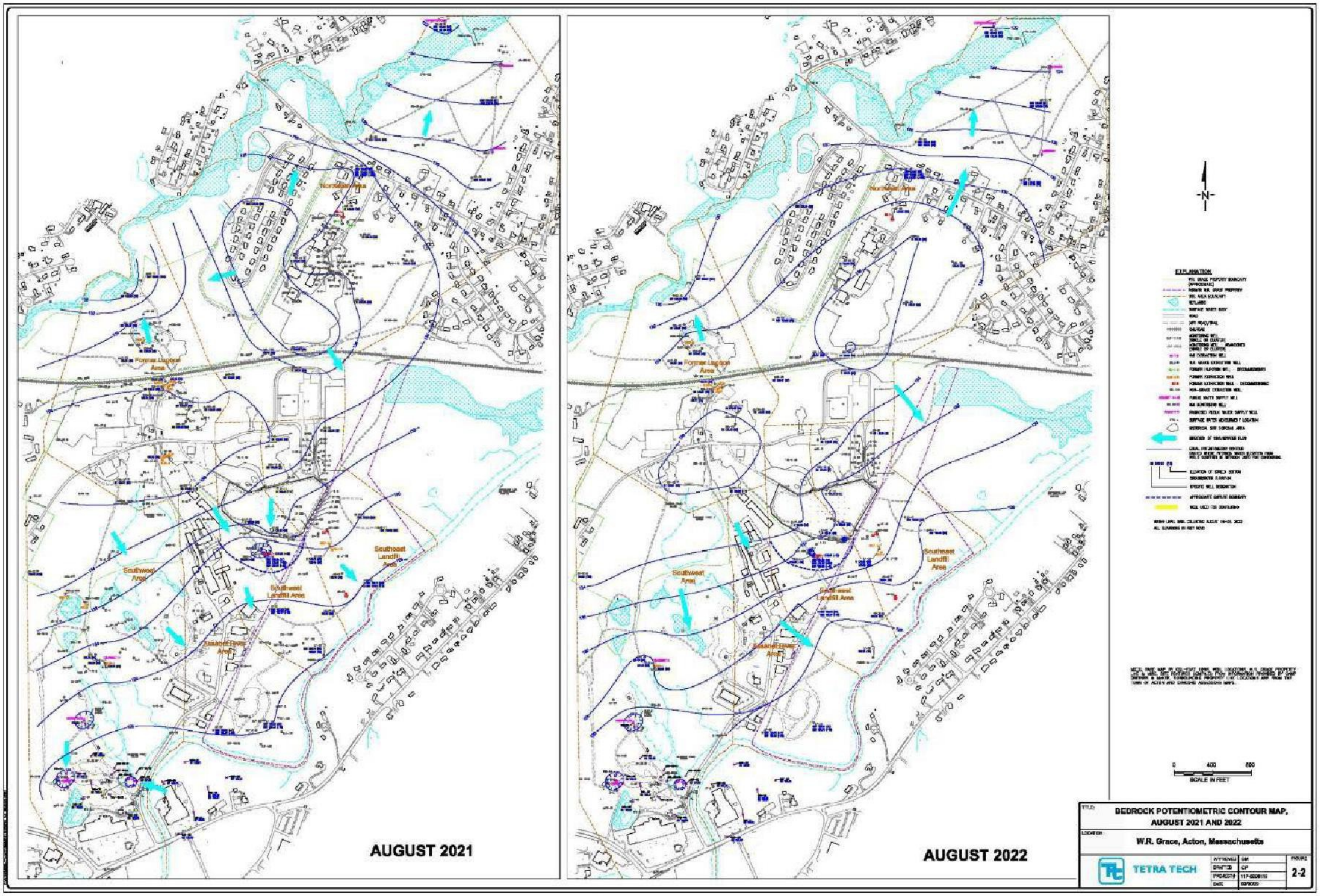
Source: Figure 2, the Site’s 2019 FYR.

Figure E-2: Shallow Unconsolidated Deposits Potentiometric Contour Map



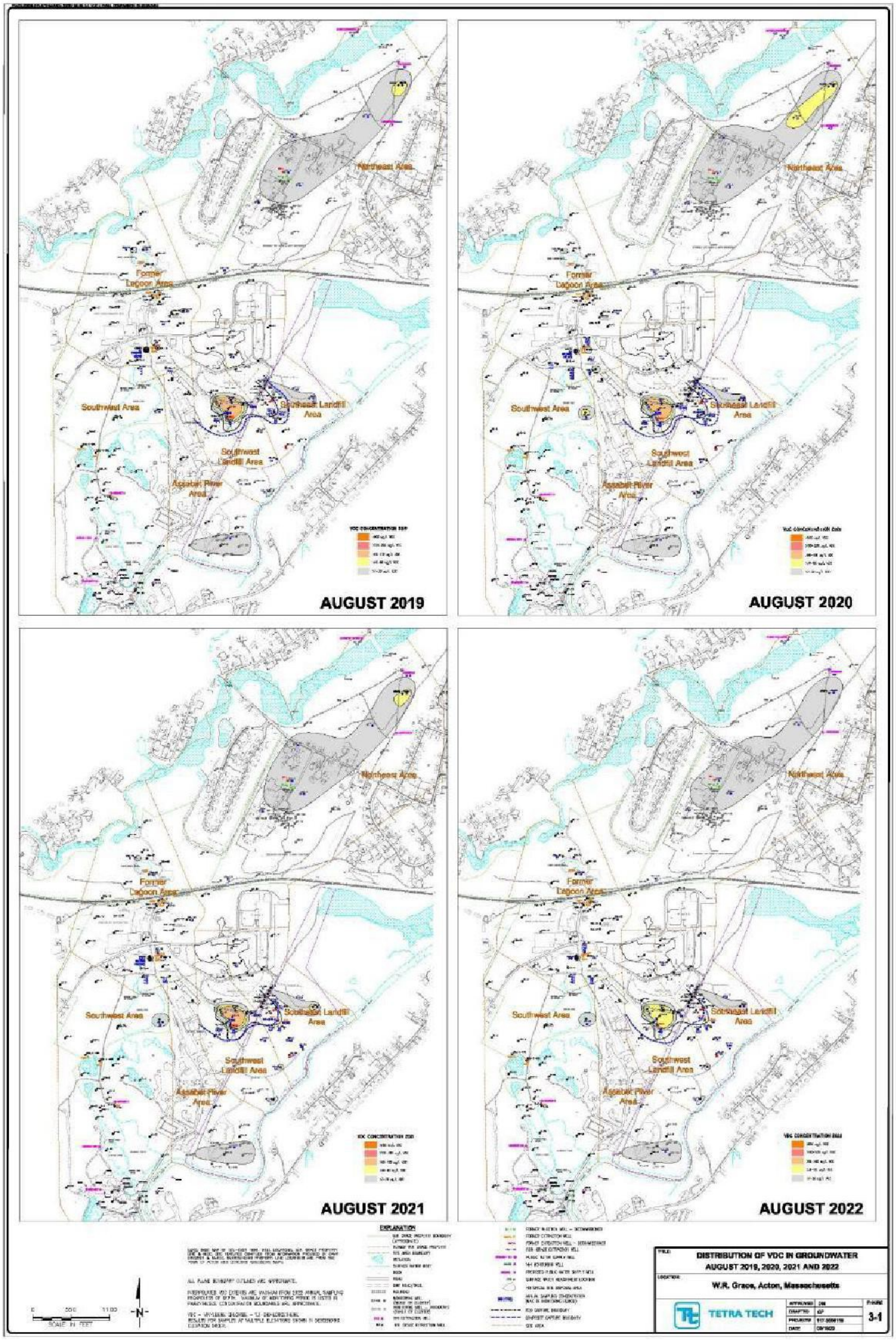
Source: Figure 2-1, the Site's *Operable Unit Three Monitoring Program Report 2022, Revision 1*.

Figure E-3: Bedrock Potentiometric Contour Map



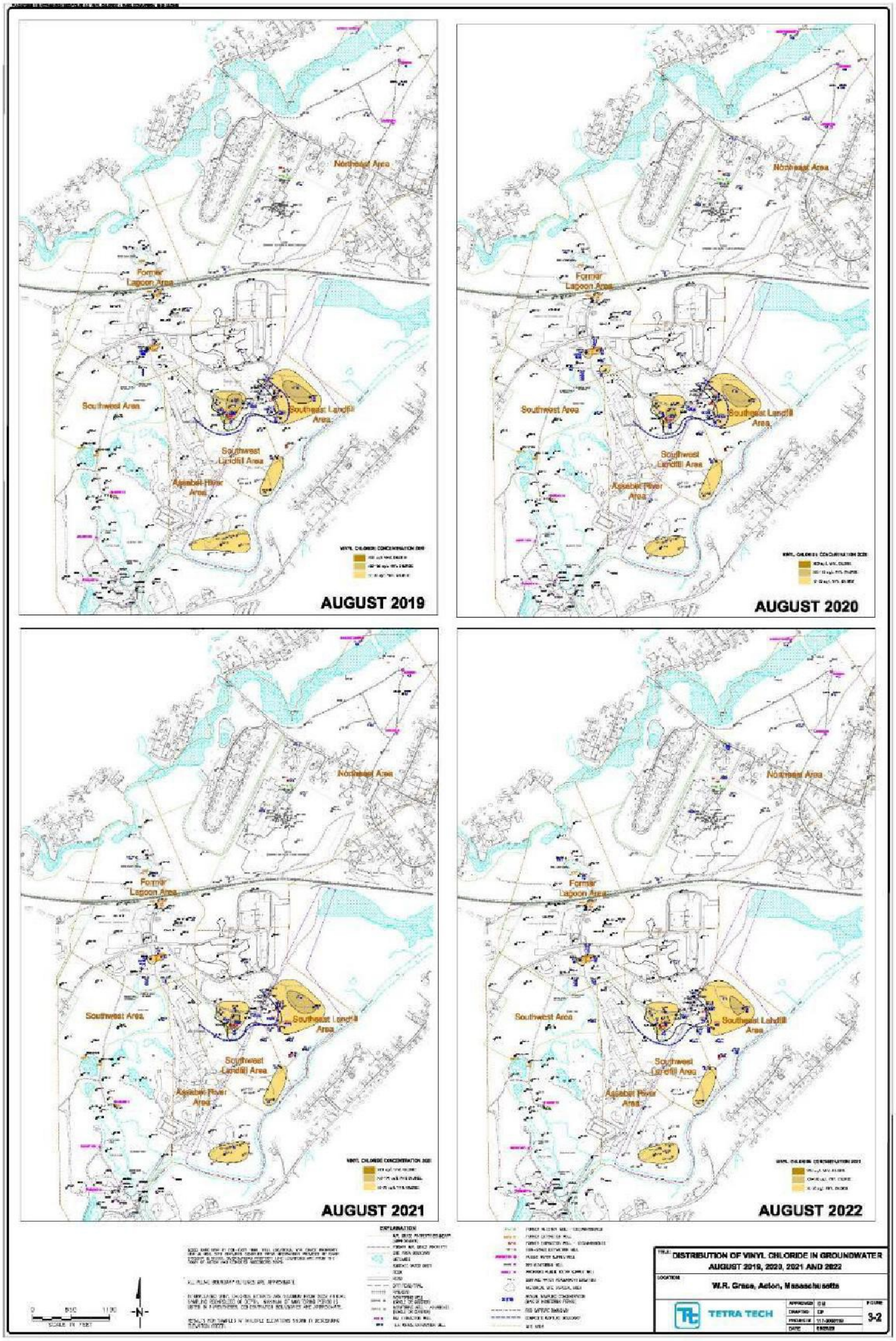
Source: Figure 2-2, the Site's *Operable Unit Three Monitoring Program Report 2022, Revision 1*.

Figure E-4: Distribution of VDC in Groundwater



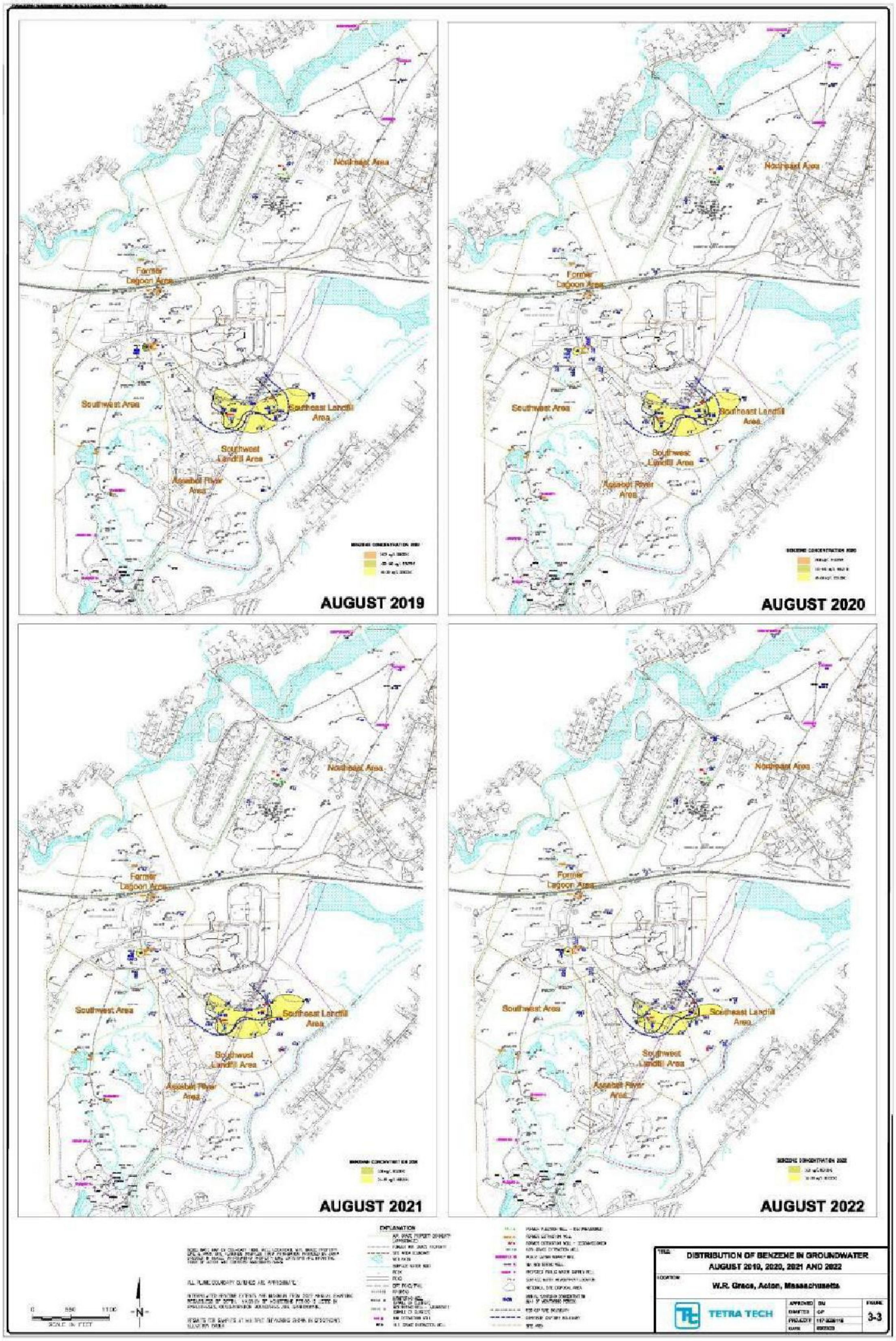
Source: Figure 3-1, the Site's *Operable Unit Three Monitoring Program Report 2022, Revision 1*.

Figure E-5: Distribution of Vinyl Chloride in Groundwater



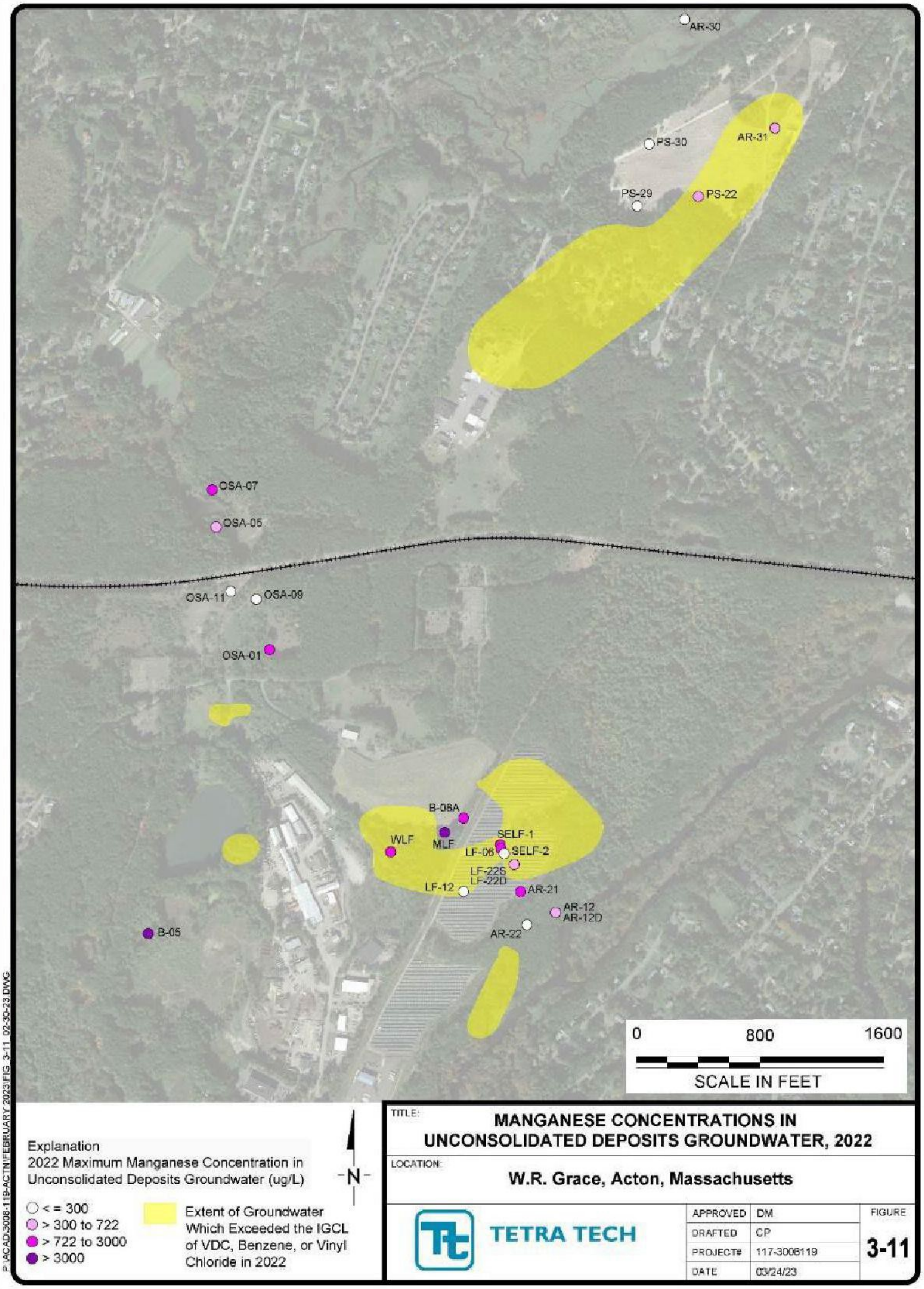
Source: Figure 3-2, the Site's *Operable Unit Three Monitoring Program Report 2022, Revision 1*.

Figure E-6: Distribution of Benzene in Groundwater



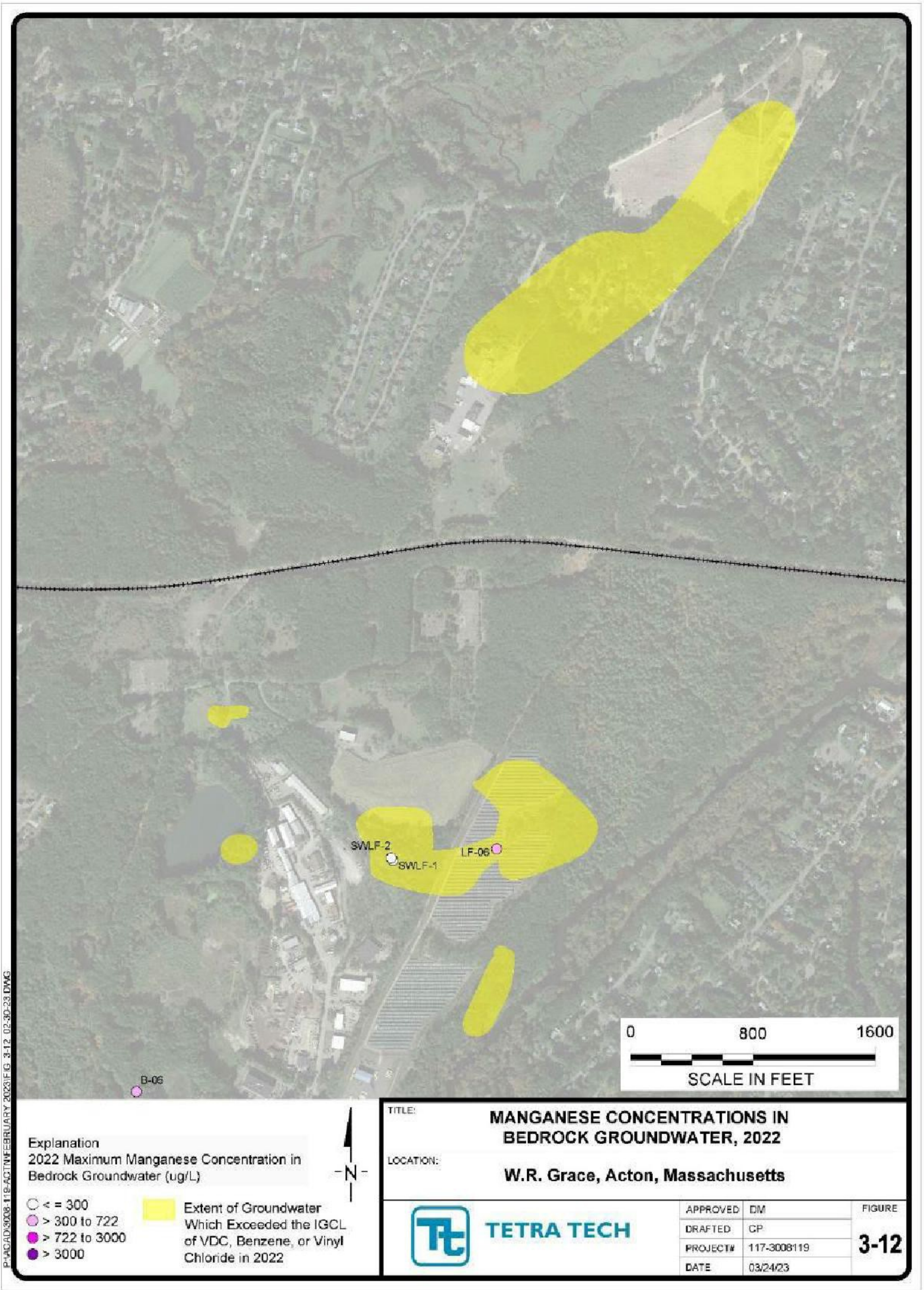
Source: Figure 3-3, the Site's *Operable Unit Three Monitoring Program Report 2022, Revision 1*.

Figure E-7: Distribution of Manganese in Unconsolidated Deposits, 2022



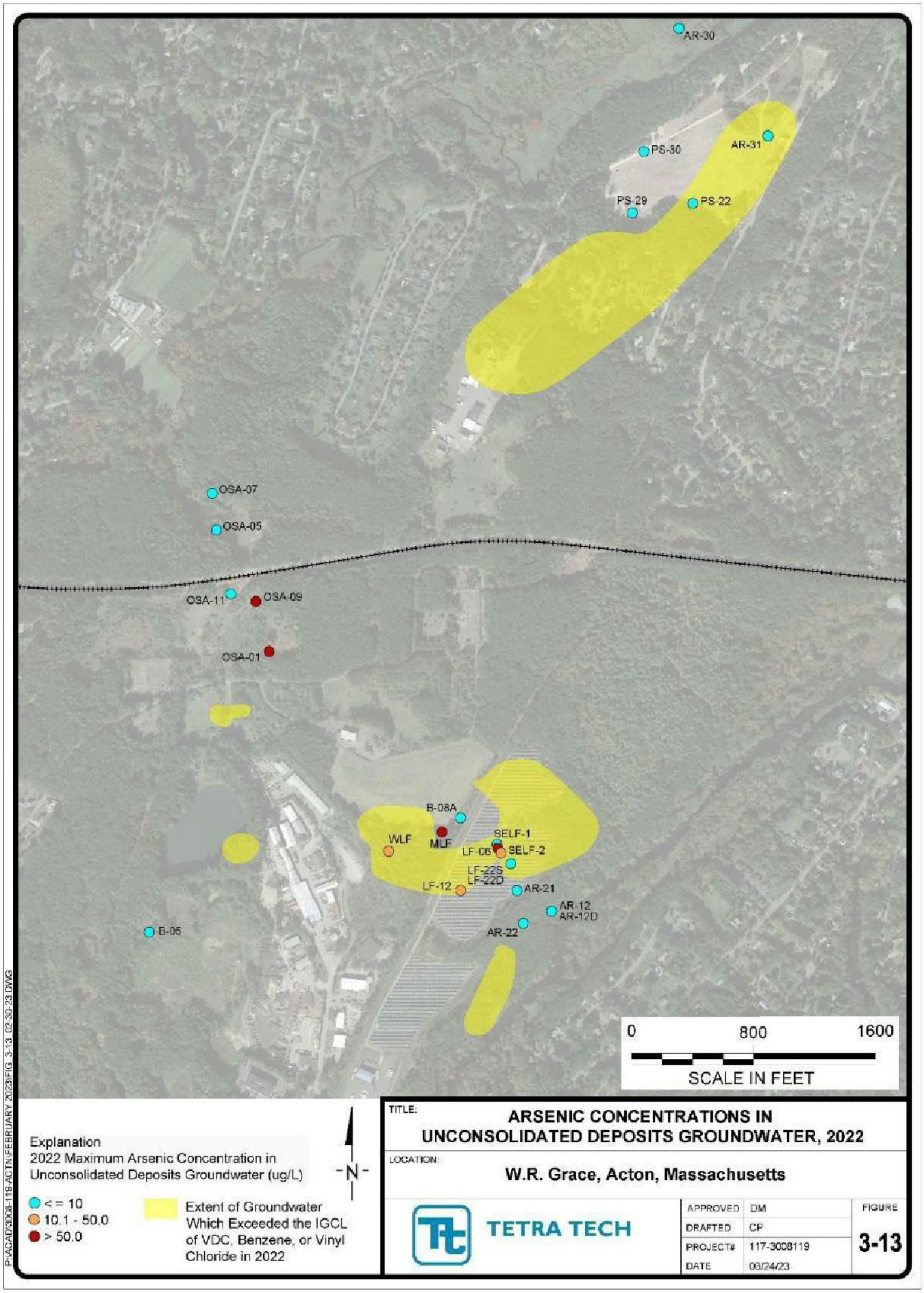
Source: Figure 3-11, the Site's *Operable Unit Three Monitoring Program Report 2022, Revision 1*.

Figure E-8: Distribution of Manganese in Bedrock, 2022



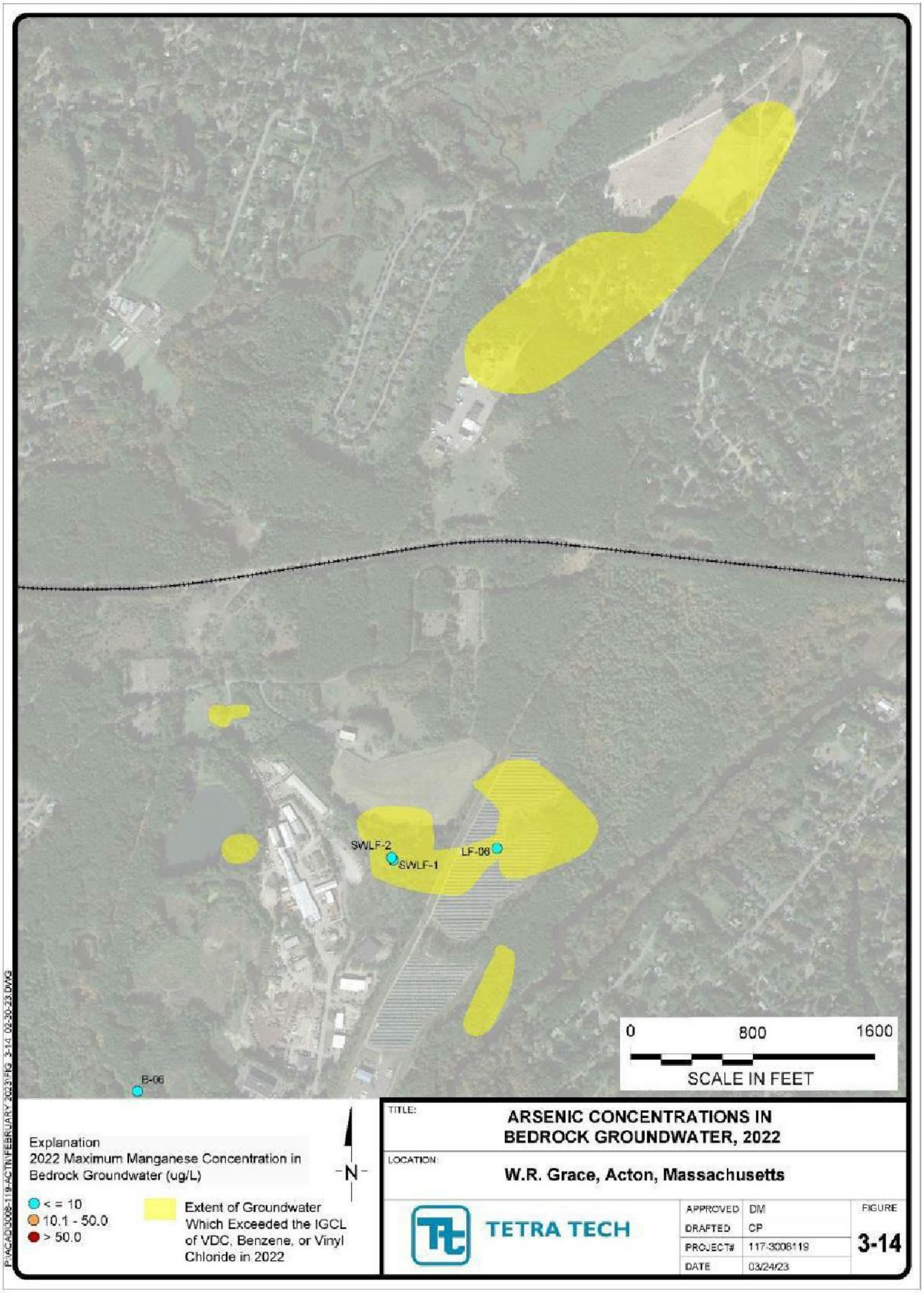
Source: Figure 3-12, the Site's *Operable Unit Three Monitoring Program Report 2022, Revision 1*.

Figure E-9: Distribution of Arsenic in Unconsolidated Deposits, 2022



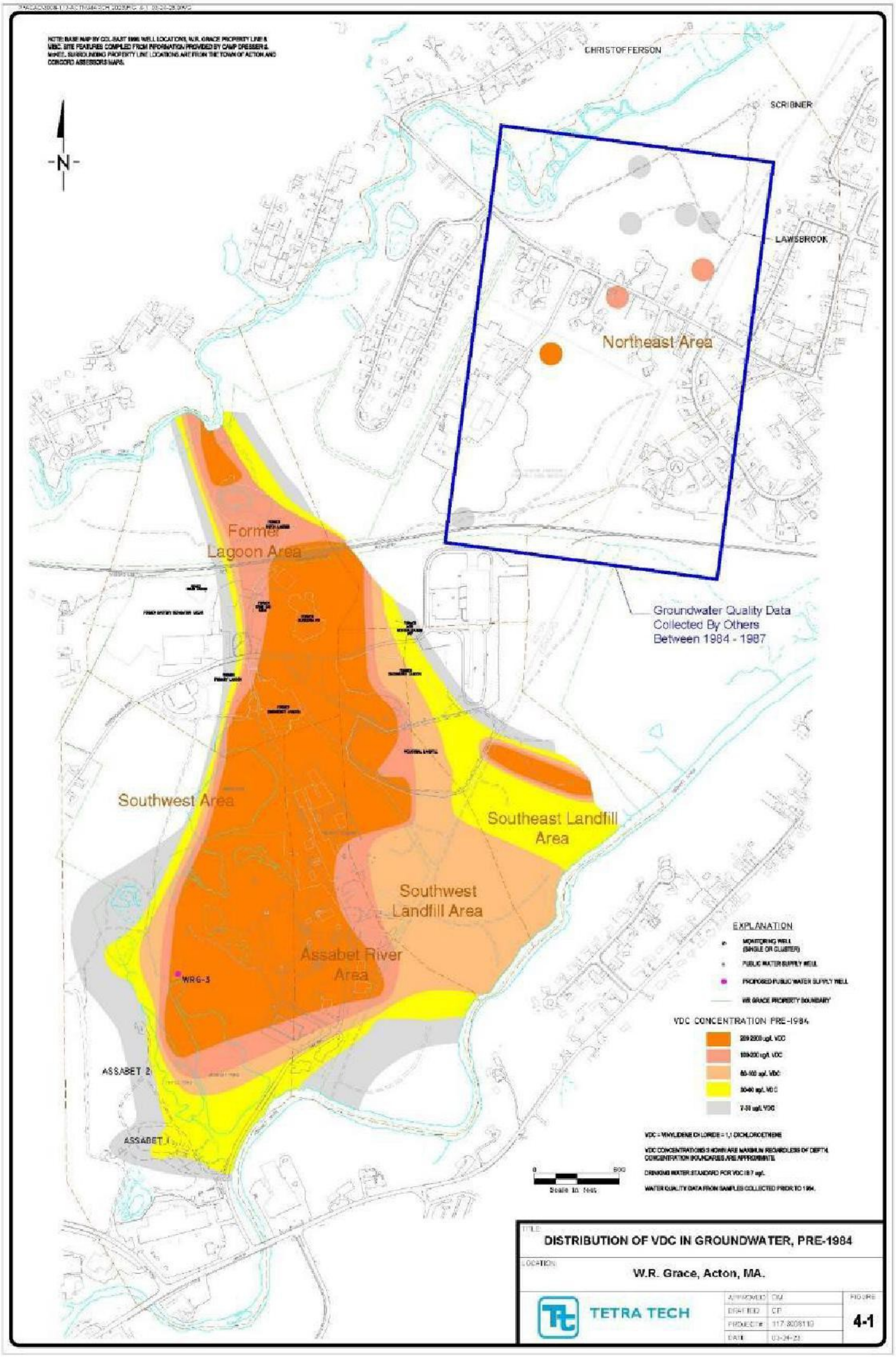
Source: Figure 3-13, the Site's *Operable Unit Three Monitoring Program Report 2022, Revision 1*.

Figure E-10: Distribution of Arsenic in Bedrock, 2022



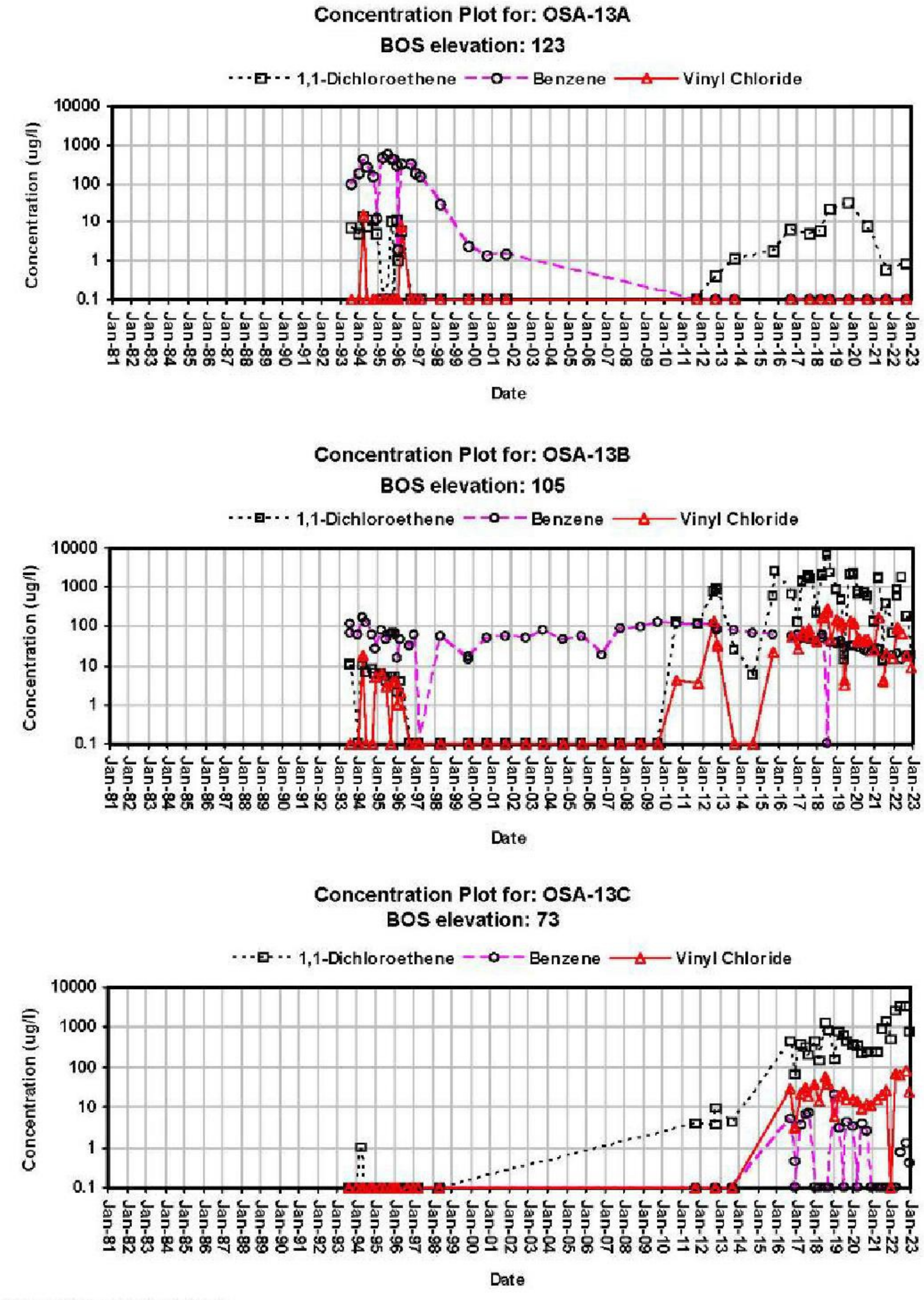
Source: Figure 3-14, the Site's *Operable Unit Three Monitoring Program Report 2022, Revision 1*.

Figure E-11: Distribution of VDC in Groundwater, Pre-1984



Source: Figure 4-1, the Site's *Operable Unit Three Monitoring Program Report 2022, Revision 1*.

Figure E-12: Concentration Plots for OSA Cluster



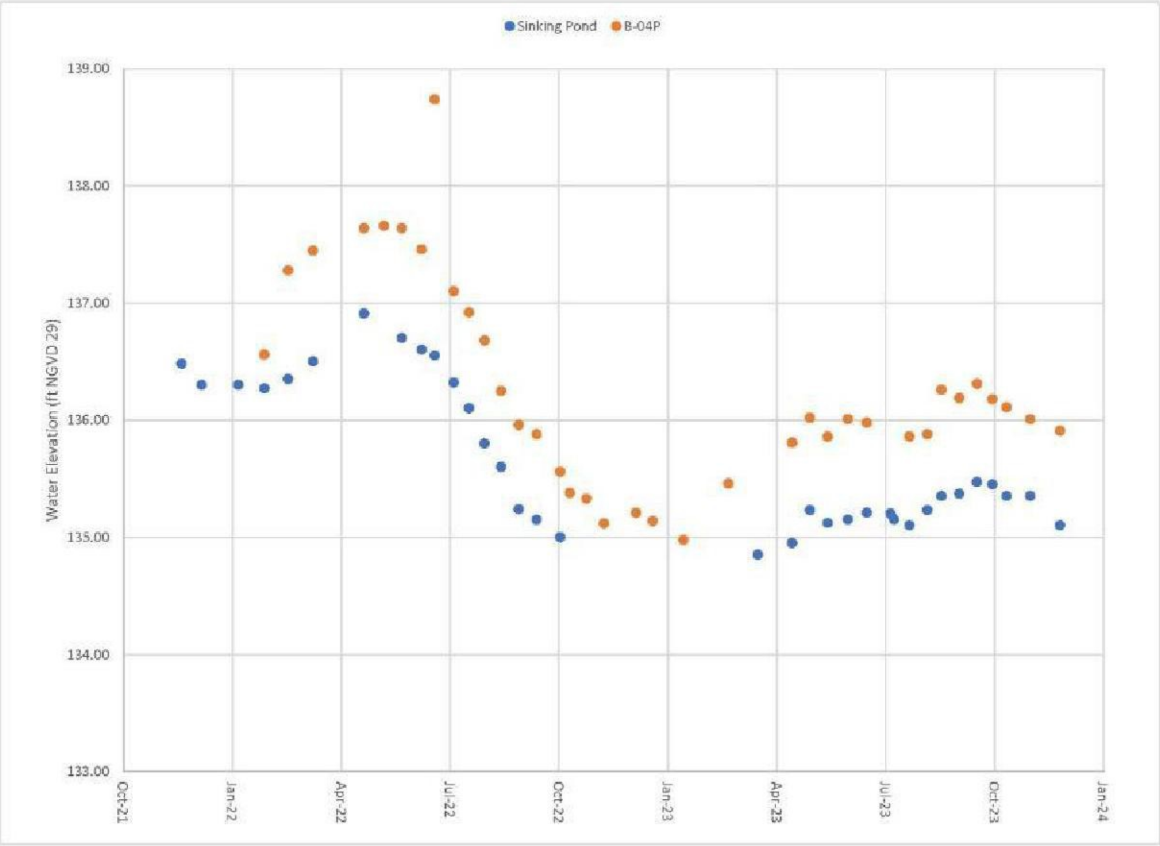
Not detected plotted as 0.1 ug/l.

C:\Users\DALLAS MELLOTT\Documents\WR Grace\Access Databases\2022

Tetra Tech
Wednesday, March 29, 2023

Source: Appendix D, the Site's *Operable Unit Three Monitoring Program Report 2022, Revision 1*.

Figure E-13: Elevations of Sinking Pond



Source: December 2023 Progress Report – W.R. Grace Acton Superfund Site.

APPENDIX F – SUPPLEMENTAL TABLES

Table F-1: Summary of Mann-Kendall Trend Test for VDC, Vinyl Chloride and Benzene

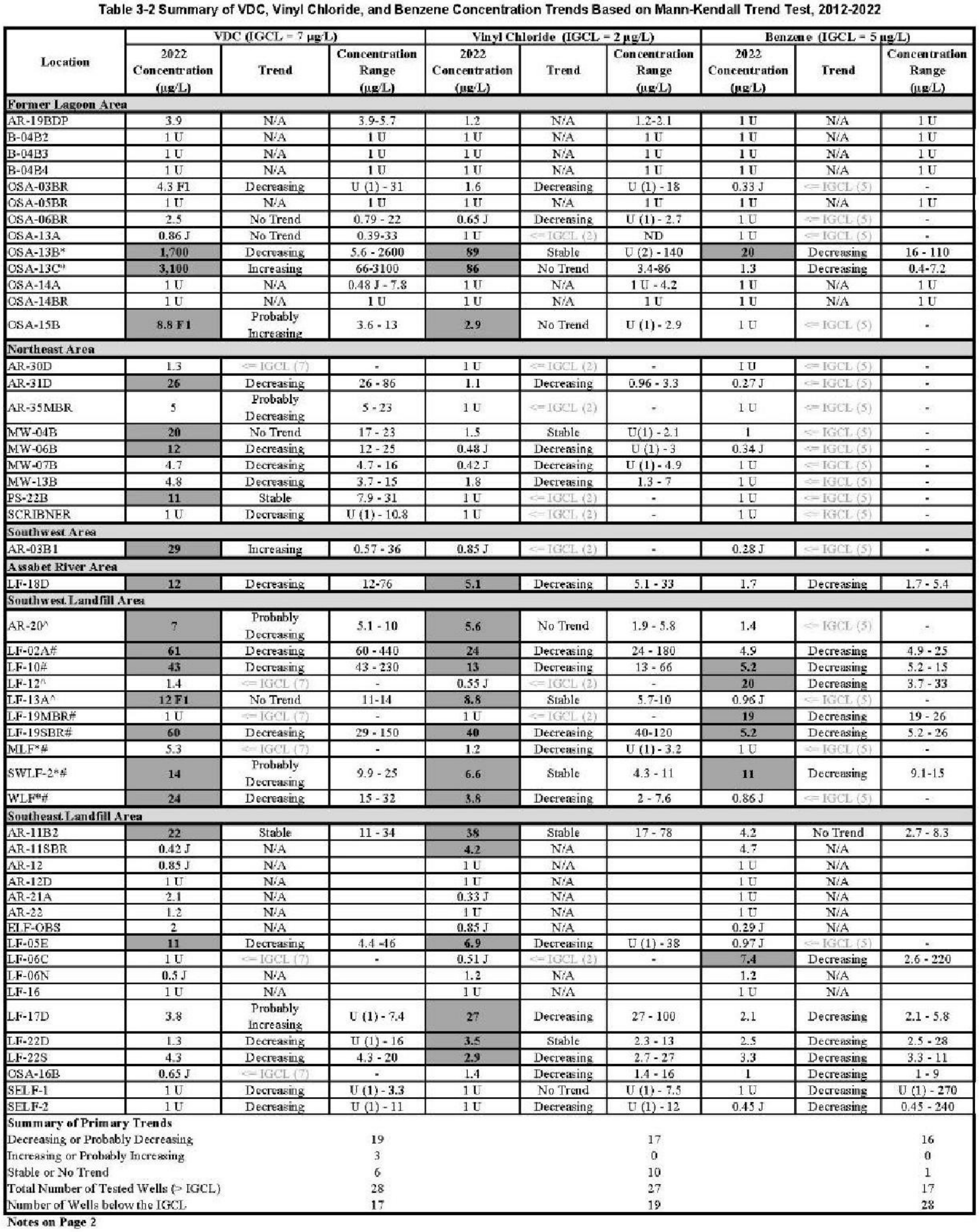


Table 3-2 Summary of VDC, Vinyl Chloride, and Benzene Concentration Trends Based on Mann-Kendall Trend Test, 2012-2022

Location	VDC (IGCL = 7 µg/L)			Vinyl Chloride (IGCL = 2 µg/L)			Benzene (IGCL = 5 µg/L)		
	2022 Concentration (µg/L)	Trend	Concentration Range (µg/L)	2022 Concentration (µg/L)	Trend	Concentration Range (µg/L)	2022 Concentration (µg/L)	Trend	Concentration Range (µg/L)
Former Lagoon Area									
AR-19BDP	3.9	N/A	3.9-5.7	1.2	N/A	1.2-2.1	1 U	N/A	1 U
B-04B2	1 U	N/A	1 U	1 U	N/A	1 U	1 U	N/A	1 U
B-04B3	1 U	N/A	1 U	1 U	N/A	1 U	1 U	N/A	1 U
B-04B4	1 U	N/A	1 U	1 U	N/A	1 U	1 U	N/A	1 U
OSA-03BR	4.3 F1	Decreasing	U (1) - 31	1.6	Decreasing	U (1) - 18	0.33 J	<= IGCL (5)	-
OSA-05BR	1 U	N/A	1 U	1 U	N/A	1 U	1 U	N/A	1 U
OSA-06BR	2.5	No Trend	0.79 - 22	0.65 J	Decreasing	U (1) - 2.7	1 U	<= IGCL (5)	-
OSA-13A	0.86 J	No Trend	0.39-33	1 U	<= IGCL (2)	ND	1 U	<= IGCL (5)	-
OSA-13B*	1,700	Decreasing	5.6 - 2600	89	Stable	U (2) - 140	20	Decreasing	16 - 110
OSA-13C*	3,100	Increasing	66-3100	86	No Trend	3.4-86	1.3	Decreasing	0.4-7.2
OSA-14A	1 U	N/A	0.48 J - 7.8	1 U	N/A	1 U - 4.2	1 U	N/A	1 U
OSA-14BR	1 U	N/A	1 U	1 U	N/A	1 U	1 U	N/A	1 U
OSA-15B	8.8 F1	Probably Increasing	3.6 - 13	2.9	No Trend	U (1) - 2.9	1 U	<= IGCL (5)	-
Northeast Area									
AR-30D	1.3	<= IGCL (7)	-	1 U	<= IGCL (2)	-	1 U	<= IGCL (5)	-
AR-31D	26	Decreasing	26 - 86	1.1	Decreasing	0.96 - 3.3	0.27 J	<= IGCL (5)	-
AR-35MBR	5	Probably Decreasing	5 - 23	1 U	<= IGCL (2)	-	1 U	<= IGCL (5)	-
MW-04B	20	No Trend	17 - 23	1.5	Stable	U(1) - 2.1	1	<= IGCL (5)	-
MW-06B	12	Decreasing	12 - 25	0.48 J	Decreasing	U (1) - 3	0.34 J	<= IGCL (5)	-
MW-07B	4.7	Decreasing	4.7 - 16	0.42 J	Decreasing	U (1) - 4.9	1 U	<= IGCL (5)	-
MW-13B	4.8	Decreasing	3.7 - 15	1.8	Decreasing	1.3 - 7	1 U	<= IGCL (5)	-
PS-22B	11	Stable	7.9 - 31	1 U	<= IGCL (2)	-	1 U	<= IGCL (5)	-
SCRIBNER	1 U	Decreasing	U (1) - 10.8	1 U	<= IGCL (2)	-	1 U	<= IGCL (5)	-
Southwest Area									
AR-03B1	29	Increasing	0.57 - 36	0.85 J	<= IGCL (2)	-	0.28 J	<= IGCL (5)	-
Assabet River Area									
LF-18D	12	Decreasing	12-76	5.1	Decreasing	5.1 - 33	1.7	Decreasing	1.7 - 5.4
Southwest Landfill Area									
AR-20^	7	Probably Decreasing	5.1 - 10	5.6	No Trend	1.9 - 5.8	1.4	<= IGCL (5)	-
LF-02A#	61	Decreasing	60 - 440	24	Decreasing	24 - 180	4.9	Decreasing	4.9 - 25
LF-10#	43	Decreasing	43 - 230	13	Decreasing	13 - 66	5.2	Decreasing	5.2 - 15
LF-12^	1.4	<= IGCL (7)	-	0.55 J	<= IGCL (2)	-	20	Decreasing	3.7 - 33
LF-13A^	12 F1	No Trend	11-14	8.8	Stable	5.7-10	0.96 J	<= IGCL (5)	-
LF-19MBR#	1 U	<= IGCL (7)	-	1 U	<= IGCL (2)	-	19	Decreasing	19 - 26
LF-19SBR#	60	Decreasing	29 - 150	40	Decreasing	40-120	5.2	Decreasing	5.2 - 26
MLF*#	5.3	<= IGCL (7)	-	1.2	Decreasing	U (1) - 3.2	1 U	<= IGCL (5)	-
SWLF-2*#	14	Probably Decreasing	9.9 - 25	6.6	Stable	4.3 - 11	11	Decreasing	9.1-15
WLF*#	24	Decreasing	15 - 32	3.8	Decreasing	2 - 7.6	0.86 J	<= IGCL (5)	-
Southeast Landfill Area									
AR-11B2	22	Stable	11 - 34	38	Stable	17 - 78	4.2	No Trend	2.7 - 8.3
AR-11SBR	0.42 J	N/A		4.2	N/A		4.7	N/A	
AR-12	0.85 J	N/A		1 U	N/A		1 U	N/A	
AR-12D	1 U	N/A		1 U	N/A		1 U	N/A	
AR-21A	2.1	N/A		0.33 J	N/A		1 U	N/A	
AR-22	1.2	N/A		1 U	N/A		1 U	N/A	
ELF-OBS	2	N/A		0.85 J	N/A		0.29 J	N/A	
LF-05E	11	Decreasing	4.4 -46	6.9	Decreasing	U (1) - 38	0.97 J	<= IGCL (5)	-
LF-06C	1 U	<= IGCL (7)	-	0.51 J	<= IGCL (2)	-	7.4	Decreasing	2.6 - 220
LF-06N	0.5 J	N/A		1.2	N/A		1.2	N/A	
LF-16	1 U	N/A		1 U	N/A		1 U	N/A	
LF-17D	3.8	Probably Increasing	U (1) - 7.4	27	Decreasing	27 - 100	2.1	Decreasing	2.1 - 5.8
LF-22D	1.3	Decreasing	U (1) - 16	3.5	Stable	2.3 - 13	2.5	Decreasing	2.5 - 28
LF-22S	4.3	Decreasing	4.3 - 20	2.9	Decreasing	2.7 - 27	3.3	Decreasing	3.3 - 11
OSA-16B	0.65 J	<= IGCL (7)	-	1.4	Decreasing	1.4 - 16	1	Decreasing	1 - 9
SELF-1	1 U	Decreasing	U (1) - 3.3	1 U	No Trend	U (1) - 7.5	1 U	Decreasing	U (1) - 270
SELF-2	1 U	Decreasing	U (1) - 11	1 U	Decreasing	U (1) - 12	0.45 J	Decreasing	0.45 - 240
Summary of Primary Trends									
Decreasing or Probably Decreasing			19			17			16
Increasing or Probably Increasing			3			0			0
Stable or No Trend			6			10			1
Total Number of Tested Wells (> IGCL)			28			27			17
Number of Wells below the IGCL			17			19			28

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Table 3-2 Summary of VDC, Vinyl Chloride, and Benzene Concentration Trends Based on Mann-Kendall Trend Test, 2012-2022

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Notes:

The wells for which no Mann-Kendall Trend Test (Trend Test) was completed are not listed in this **Table 3.2**. **Section 3.2** of this report discusses the rationale for Trend Test analysis.

Concentration Range - Range of maximum concentrations observed between 2012 and 2022.

µg/L - micrograms per liter

U (2) - Not detected at reporting limit in parentheses

J - Result is less than the reporting limit but greater than or equal to the method detection limit and the concentration is an approximate value

H - Sample was prepped or analyzed beyond the specified holding time

F1 - MS and/or MSD recovery exceeds control limits

- Not applicable.

Well is within the estimated composite LATS capture zone.

^ Well is outside of the estimated composite LATS capture zone.

*Location sampled quarterly and highest concentration detected in 2022 reported. Quarterly and annual data used for Trend Test.

Shaded results with bold font indicate exceedances of IGCL

<=IGCL (#) - Concentrations from all samples collected over the nine year time period were less than or equal to the Interim Groundwater Cleanup Goal (value of IGCL in µg/L).

ND - Not all sample results were less than or equal to IGCL, however, trend analysis not informative because more than half the results were "not detected" above laboratory reporting limit.

No Trend - Concentration trend indicates that either: the confidence factor of an increasing trend is less than 90 percent, or the confidence factor of a decreasing trend is less than 90 percent and the concentrations are variable (coefficient of variation is greater than or equal to 1).

Stable - Concentration trend indicates that the confidence factor of a decreasing trend is less than 90 percent and the concentrations are relatively constant (coefficient of variation is less than 1).

Probably Increasing or Probably Decreasing - Concentration trend indicates that the confidence factor of an increasing or decreasing trend is between 90 and 95 percent.

Increasing or Decreasing - Concentration trend indicates that the confidence factor of an increasing or decreasing trend is greater than 95 percent.

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Source: Table 3-2, the Site's *Operable Unit Three Monitoring Program Report 2022, Revision 1*.

Table F-2: Summary of Mann-Kendall Trend Test for 1,4-Dioxane

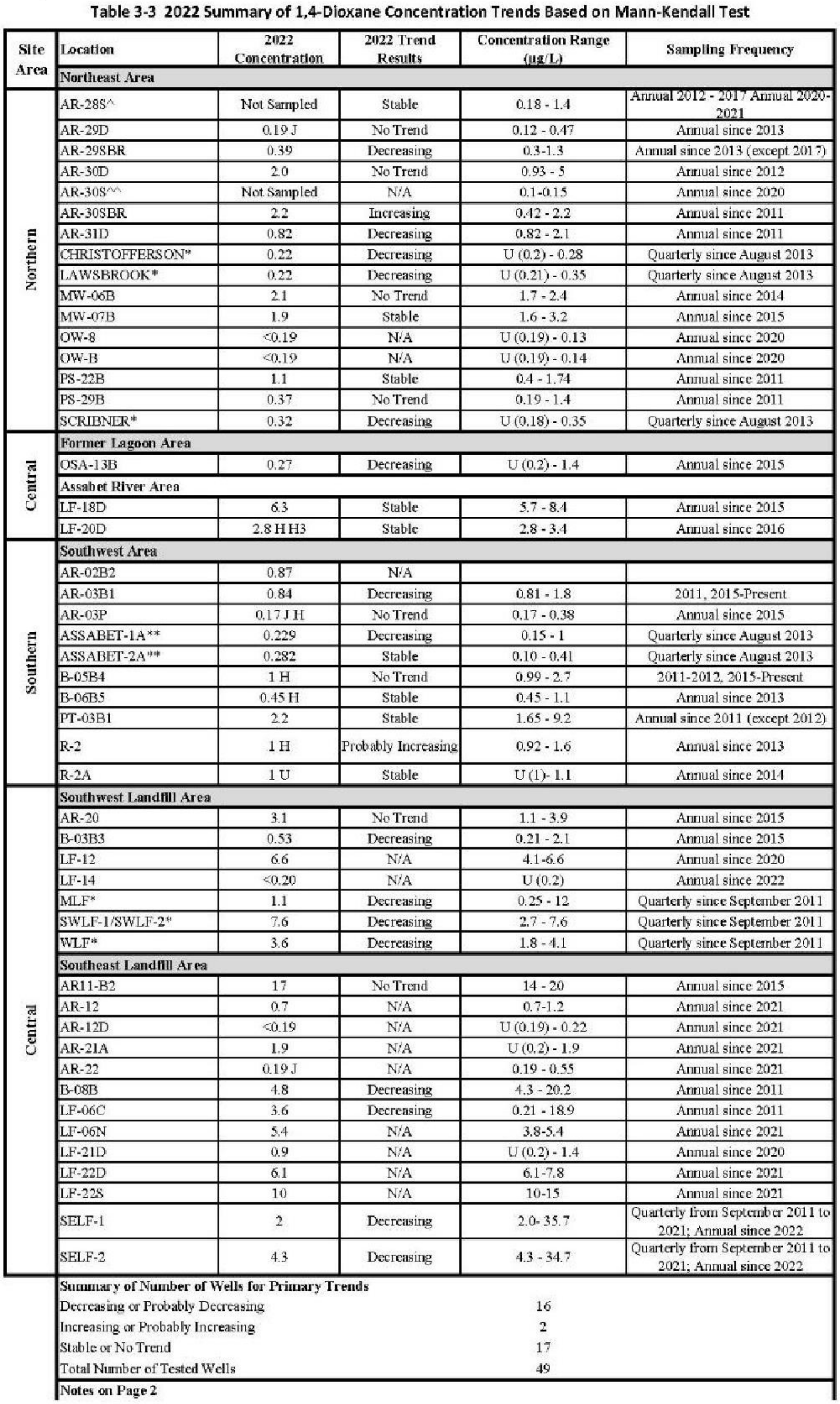
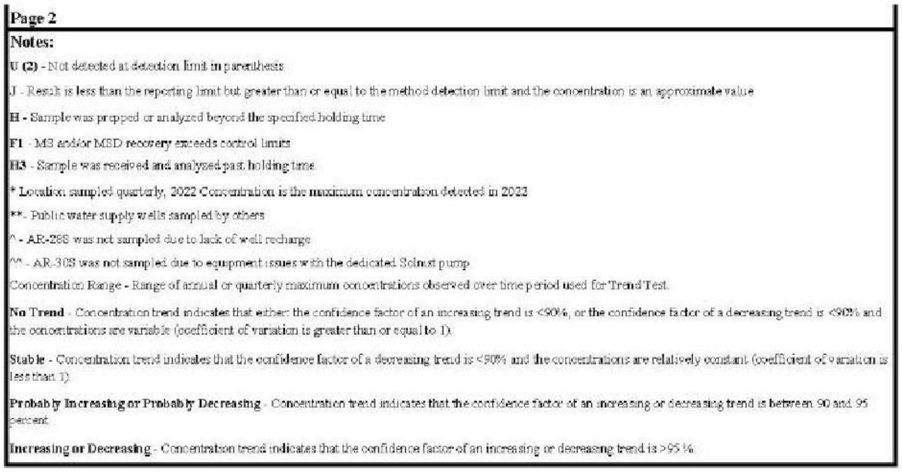


Table 3-3 2022 Summary of 1,4-Dioxane Concentration Trends Based on Mann-Kendall Test

Site Area	Location	2022 Concentration	2022 Trend Results	Concentration Range (µg/L)	Sampling Frequency
	Northeast Area				
Northern	AR-28S^	Not Sampled	Stable	0.18 - 1.4	Annual 2012 - 2017 Annual 2020-2021
	AR-29D	0.19 J	No Trend	0.12 - 0.47	Annual since 2013
	AR-29SBR	0.39	Decreasing	0.3-1.3	Annual since 2013 (except 2017)
	AR-30D	2.0	No Trend	0.93 - 5	Annual since 2012
	AR-30S^^	Not Sampled	N/A	0.1-0.15	Annual since 2020
	AR-30SBR	2.2	Increasing	0.42 - 2.2	Annual since 2011
	AR-31D	0.82	Decreasing	0.82 - 2.1	Annual since 2011
	CHRISTOFFERSON*	0.22	Decreasing	U (0.2) - 0.28	Quarterly since August 2013
	LAWSBROOK*	0.22	Decreasing	U (0.21) - 0.35	Quarterly since August 2013
	MW-06B	2.1	No Trend	1.7 - 2.4	Annual since 2014
	MW-07B	1.9	Stable	1.6 - 3.2	Annual since 2015
	OW-8	<0.19	N/A	U (0.19) - 0.13	Annual since 2020
	OW-B	<0.19	N/A	U (0.19) - 0.14	Annual since 2020
	PS-22B	1.1	Stable	0.4 - 1.74	Annual since 2011
	PS-29B	0.37	No Trend	0.19 - 1.4	Annual since 2011
	SCRIBNER*	0.32	Decreasing	U (0.18) - 0.35	Quarterly since August 2013
Central	**Former Lagoon Area**				
	OSA-13B	0.27	Decreasing	U (0.2) - 1.4	Annual since 2015
	Assabet River Area				
	LF-18D	6.3	Stable	5.7 - 8.4	Annual since 2015
	LF-20D	2.8 H H3	Stable	2.8 - 3.4	Annual since 2016
Southern	**Southwest Area**				
	AR-02B2	0.87	N/A		
	AR-03B1	0.84	Decreasing	0.81 - 1.8	2011, 2015-Present
	AR-03P	0.17 J H	No Trend	0.17 - 0.38	Annual since 2015
	ASSABET-1A**	0.229	Decreasing	0.15 - 1	Quarterly since August 2013
	ASSABET-2A**	0.282	Stable	0.10 - 0.41	Quarterly since August 2013
	B-05B4	1 H	No Trend	0.99 - 2.7	2011-2012, 2015-Present
	B-06B5	0.45 H	Stable	0.45 - 1.1	Annual since 2013
	PT-03B1	2.2	Stable	1.65 - 9.2	Annual since 2011 (except 2012)
	R-2	1 H	Probably Increasing	0.92 - 1.6	Annual since 2013
	R-2A	1 U	Stable	U (1)- 1.1	Annual since 2014
Central	**Southwest Landfill Area**				
	AR-20	3.1	No Trend	1.1 - 3.9	Annual since 2015
	B-03B3	0.53	Decreasing	0.21 - 2.1	Annual since 2015
	LF-12	6.6	N/A	4.1-6.6	Annual since 2020
	LF-14	<0.20	N/A	U (0.2)	Annual since 2022
	MLF*	1.1	Decreasing	0.25 - 12	Quarterly since September 2011
	SWLF-1/SWLF-2*	7.6	Decreasing	2.7 - 7.6	Quarterly since September 2011
	WLF*	3.6	Decreasing	1.8 - 4.1	Quarterly since September 2011
	Southeast Landfill Area				
	AR11-B2	17	No Trend	14 - 20	Annual since 2015
	AR-12	0.7	N/A	0.7-1.2	Annual since 2021
	AR-12D	<0.19	N/A	U (0.19) - 0.22	Annual since 2021
	AR-21A	1.9	N/A	U (0.2) - 1.9	Annual since 2021
	AR-22	0.19 J	N/A	0.19 - 0.55	Annual since 2021
	B-08B	4.8	Decreasing	4.3 - 20.2	Annual since 2011
	LF-06C	3.6	Decreasing	0.21 - 18.9	Annual since 2011
	LF-06N	5.4	N/A	3.8-5.4	Annual since 2021
	LF-21D	0.9	N/A	U (0.2) - 1.4	Annual since 2020
	LF-22D	6.1	N/A	6.1-7.8	Annual since 2021
	LF-22S	10	N/A	10-15	Annual since 2021
	SELF-1	2	Decreasing	2.0- 35.7	Quarterly from September 2011 to 2021; Annual since 2022
	SELF-2	4.3	Decreasing	4.3 - 34.7	Quarterly from September 2011 to 2021; Annual since 2022
	Summary of Number of Wells for Primary Trends				
	Decreasing or Probably Decreasing			16	
	Increasing or Probably Increasing			2	
	Stable or No Trend			17	
	Total Number of Tested Wells			49	
	Notes on Page 2				



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Notes:

U (2) - Not detected at detection limit in parenthesis

J - Result is less than the reporting limit but greater than or equal to the method detection limit and the concentration is an approximate value

H - Sample was prepped or analyzed beyond the specified holding time

F1 - MS and/or MSD recovery exceeds control limits

H3 - Sample was received and analyzed past holding time

* Location sampled quarterly, 2022 Concentration is the maximum concentration detected in 2022

**- Public water supply wells sampled by others

^ - AR-28S was not sampled due to lack of well recharge

^^ - AR-30S was not sampled due to equipment issues with the dedicated Solinst pump

Concentration Range - Range of annual or quarterly maximum concentrations observed over time period used for Trend Test.

No Trend - Concentration trend indicates that either: the confidence factor of an increasing trend is <90%, or the confidence factor of a decreasing trend is <90% and the concentrations are variable (coefficient of variation is greater than or equal to 1).

Stable - Concentration trend indicates that the confidence factor of a decreasing trend is <90% and the concentrations are relatively constant (coefficient of variation is less than 1).

Probably Increasing or Probably Decreasing - Concentration trend indicates that the confidence factor of an increasing or decreasing trend is between 90 and 95 percent.

Increasing or Decreasing - Concentration trend indicates that the confidence factor of an increasing or decreasing trend is >95 %.

Source: Table 3-3, the Site's *Operable Unit Three Monitoring Program Report 2022, Revision 1*.

Table F-3: Summary of PFAS Sampling Results

Summary Table of October 2019, January 2020, and June 2021 PFAS Sampling Results[1]

Regulated Compounds Only

Area of Site				Landfill					Former Primary Lagoon		Former Emergency Lagoon		Former Blow Down Pit		Northeast				Former Tank Car	Former Battery Separator	Former Boiler Lagoon	Former North Lagoon	SW Area		
Date Sampled				10/07/19	10/09/19	10/08/19	01/15/20	10/08/19	10/08/19	10/08/19	10/07/19	10/07/19	10/09/19	10/07/19	10/08/19	N/A	10/14/19	N/A	10/09/19	10/09/19	10/09/19	10/09/19	10/07/19	N/A	N/A
PARAMETER [3]	FSP-Related	MCP-Related	Unit	LF-10C	LF-11CR	LF-12	LF-05C [2]	B-08D	OSA-13A	OSA-13B	OSA-14A	OSA-14B	OSA-01A	BD-2	AR-31D	MW-06B	MW-13B	PS-22B	OSA-10A	OSA-21	OSA-23A	OSA-7A	B-06B5	B-05B3	AR-03B1
Perfluorobutanesulfonic acid (PFBS)	X		ng/L	0.3 J	0.57 J	0.35 J B	2.0 U	0.59 J B	1.9 U	0.41 J B	0.24 J	1.9 U	2.0 U	1.9 U	0.64 J B	N/A	0.22 J	N/A	0.45 J	1.9 U	0.62 J	1.9 U	0.78 J	N/A	N/A
Perfluorooctanesulfonic acid (PFOS)	X	X	ng/L	1.9 U	3.9 U G	1.8 J I	3 I	1.9 U	0.63 J I	2.8 I C I	1.9 U	1.4 J I	4.4 U G	1.4 J I C	3.0	N/A	0.79 J I	N/A	2.0 U	1.9 U	5.3 I	1.9 U	1.2 J	N/A	N/A
Perfluorooctanoic acid (PFOA)	X	X	ng/L	1.9 U	3.2	2.4	22	5.9	1.9 U	1.5 J	1.2 J	1.9	4.4	3.2	3.9	N/A	4.2	N/A	3.4	0.86 J	2.4	1.9 U	3.6	N/A	N/A
Perfluorodecanoic acid (PFDA)		X	ng/L	1.9 U	2.0 U	1.9 U	2.0 U	1.9 U	1.9 U	2.0 U	1.9 U	1.9 U	2.0 U	1.9 U	0.38 J	N/A	1.8 U	N/A	2.0 U	1.9 U	2.0 U	1.9 U	1.9 U	N/A	N/A
Perfluoroheptanoic acid (PFHpA)		X	ng/L	1.9 U	0.91 J	1.0 J	19	11	0.4 J	1.2 J	0.46 J	0.54 J	2.3	0.59 J I	1.0 J	N/A	0.36 J	N/A	1.6 J	0.47 J	0.30 J	1.9 U	0.81 J	N/A	N/A
Perfluorohexanesulfonic acid (PFHxS)		X	ng/L	0.33 J B	0.60 J B	0.49 J I B	1.1 J B	0.64 J B	0.4 J B	1.6 J I B	1.1 J B	0.87 J B	1.2 J I B	0.44 J B	1.1 J B	N/A	4.2 B	N/A	0.55 J B	0.41 J B	0.99 J B	0.28J B	1.4 J B	N/A	N/A
Perfluorononanoic acid (PFNA)		X	ng/L	1.9 U	0.43 J	0.67 J	1.3 J	1.9 U	1.9 U	2.0 U	1.9 U	0.25 J I	2.0 U	1.9 U	0.3 J	N/A	1.8 U	N/A	2.0 U	1.9 U	2.0 U	1.9 U	1.9 U	N/A	N/A
Sum of PFOA and PFOS			ng/L	1.9 U	3.2	2.4	25.0	5.9	1.9 U	2.0 U	1.9 U	1.9	4.4	3.2	6.9	N/A	4.2	N/A	3.4	1.9 U	7.7	1.9 U	3.6	N/A	N/A
PFBS only			ng/L	0.3 J	0.57 J	0.35 J B	2.0 U	0.59 J B	1.9 U	0.41 J B	0.24 J	1.9 U	2.0 U	1.9 U	1.0 J	N/A	0.22 J	N/A	0.45 J	1.9 U	0.62 J	1.9 U	0.78 J	N/A	N/A
Sum of MCP Method 1 GW-1 Groundwater Standard for PFAS			ng/L	1.9 U	3.2	2.4	44.0	16.9	1.9 U	2.0 U	1.9 U	1.9	6.7	3.2	6.9	N/A	4.2	N/A	3.4	1.9 U	2.4	1.9 U	3.6	N/A	N/A

Date Sampled				06/21/21	06/21/21	06/23/21	06/23/21	06/25/21	06/21/21	06/22/21	06/22/21	06/21/21	06/23/21	06/22/21	06/23/21	06/29/21	06/25/21	06/23/21	06/22/21	06/24/21	06/23/21	06/25/21	06/22/21	06/24/21	06/24/21
PARAMETER [3]	FSP-Related	MCP-Related	Unit	LF-10C	LF-11CR	LF-12	LF-05C	B-08D	OSA-13A	OSA-13B	OSA-14A	OSA-14B	OSA-01A	BD-2	AR-31D	MW-06B	MW-13B	PS-22B	OSA-10A	OSA-21	OSA-23A	OSA-7A	B-06B5	B-05B3	AR-03B1
Perfluorobutanesulfonic acid (PFBS)	X		ng/L	0.26 J	0.58 J	1.9 U	1.9 U	1.9 U	1.9 U	0.19 J I	0.20 J I	0.38 J	0.43 J	0.19 J	0.89 J I	1.9 U	0.38 J	1.0 J I	0.44 J	0.23 J	0.27 J	1.9 U	1.0 J	0.48 J	0.51 J
Perfluorooctanesulfonic acid (PFOS)	X	X	ng/L	2.1 U	1.3 J	1.1 J I	0.85 J	1.9 U	1.9 U	7.3 U G	2.0 U	1.2 J	2.0 U	1.8 U	1.3 J	1.3 J	1.9 U	1.9 U	1.9 U	1.8 U	4.2	1.9 U	2.0	1.8 J	1.9 U
Perfluorooctanoic acid (PFOA)	X	X	ng/L	2.1 U	3.0	2.6	5.3	5.4	1.3 J	4.4	1.3 J	1.7	2.0	0.77 J	3.9	4.5	3.5	3.8	2.6	1.8	1.8 J	1.9 U	4.2	2.7	2.8
Perfluorodecanoic acid (PFDA)		X	ng/L	2.1 U	2.0 U	0.45 J	0.50 J	1.9 U	1.9 U	0.73 J	2.0 U	1.6 U	2.0 U	1.8 U	0.49 J	2.5	1.9 U	0.32 J	1.9 U	1.8 U	1.9 U	1.9 U	0.41 J	1.9 U	1.9 U
Perfluoroheptanoic acid (PFHpA)		X	ng/L	2.1 U	0.93 J	2.2	2.6	4.2	1.1 J	3.6	0.37 J	0.33 J	1.1 J	1.8 U	1.0 J	7.2	0.52 J	1.3 J	0.69 J	0.34 J	0.39 J	1.9 U	1.2 J	0.9 J	0.8 J
Perfluorohexanesulfonic acid (PFHxS)		X	ng/L	2.1 U	0.61 J	0.58 J	1.9 U	0.75 J I	1.9 U	1.3 J	0.80 J	0.84 J	1.5 J I	1.8 U	0.91 J	1.4 J	4.1	0.91 J	1.9 U	0.67 J	0.69 J	1.9 U	1.6 J	1.3 J	3.0
Perfluorononanoic acid (PFNA)		X	ng/L	2.1 U	2.0 U	0.60 J	1.9 U	1.9 U	1.9 U	1.1 J	2.0 U	1.6 U	2.0 U	1.8 U	0.26 J	2.6	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	0.34 J	1.9 U	1.9 U
Sum of PFOA and PFOS			ng/L	2.1 U	3.0	2.6	5.3	5.4	1.3 J	4.4	1.3 J	1.7	2.0	0.77 J	3.9	4.5	3.5	3.8	2.6	1.8	4.2	1.9 U	6.2	2.7	2.8
PFBS only			ng/L	0.26 J	0.58 J	1.9 U	1.9 U	1.9 U	1.9 U	0.19 J I	0.20 J I	0.38 J	0.43 J	0.19 J	0.89 J I	1.9 U	0.38 J	1.0 J I	0.44 J	0.23 J	0.27 J	1.9 U	1.0 J	0.48 J	0.51 J
Sum of MCP Method 1 GW-1 Groundwater Standard for PFAS			ng/L	2.1 U	3.0	4.8	7.9	9.6	1.3 J	8.0	1.3 J	1.7	2.0	0.77 J	3.9	16.8	7.6	3.8	2.6	1.8	4.2	1.9 U	6.2	2.7	5.8

N/A = Well was not included in the sampling event

FSP=Field Sampling Plan

MCP=Massachusetts Contingency Plan

[1] Groundwater sampling performed in October 2019, January 2020, and June 2021 under implementation of EPA approved PFAS sampling plan, dated August 6, 2019.

[2] Due to the presence of several PFAS compounds in the October 8, 2019 field reagent blank associated with the sample, the results were considered invalid and the well was re-sampled with EPA approval in January 2020.

[3] 537M Manual SPE Method Compounds

B =Compound found in the blank and the sample

C =Compound did not meet DoD criteria in the corresponding daily calibration verification

G =The reported quantitation limit has been raised due to an exhibited elevated noise or matrix interference

I =Estimated maximum concentration

J =Result is less than the Reporting Limit (RL) but greater than the Method Detection Limit (MDL) and the concentration is approximate

U =Compound not detected above the specified level

Summary Table of June 2021 PFAS Sampling Results All 537M Manual SPE Method Compounds [1]

Area of Site				Landfill					Former Primary Lagoon		Former Emergency Lagoon		Former Blow Down Pit		Northeast				Former Tank Car	Former Battery Separator	Former Boiler Lagoon	Former North Lagoon	SW Area		
Date Sampled				06/21/21	06/21/21	06/23/21	06/23/21	06/25/21	06/21/21	06/22/21	06/22/21	06/21/21	06/23/21	06/22/21	06/23/21	06/29/21	06/25/21	06/23/21	06/22/21	06/24/21	06/23/21	06/25/21	06/22/21	06/24/21	06/24/21
PARAMETER [2]	FSP-Related	MCP-Related	Unit	LF-10C	LF-11CR	LF-12	LF-05C	B-08D	OSA-13A	OSA-13B	OSA-14A	OSA-14B	OSA-01A	BD-2	AR-31D	MW-06B	MW-13B	PS-22B	OSA-10A	OSA-21	OSA-23A	OSA-7A	B-06B5	B-05B3	AR-03B1
Perfluorobutanesulfonic acid (PFBS)	x		ng/L	0.26 J	0.58 J	1.9 U	1.9 U	1.9 U	1.9 U	0.19 J I	0.20 J I	0.38 J	0.43 J	0.19 J	0.89 J I	1.9 U	0.38 J	1.0 J I	0.44 J	0.23 J	0.27 J	1.9 U	1.0 J	0.48 J	0.51 J
Perfluorooctanesulfonic acid (PFOS)	x	x	ng/L	2.1 U	1.3 J	1.1 J I	0.85 J	1.9 U	1.9 U	7.3 U G	2.0 U	1.2 J	2.0 U	1.8 U	1.3 J	1.3 J	1.9 U	1.9 U	1.9 U	1.8 U	4.2	1.9 U	2.0	1.8 J	1.9 U
Perfluorooctanoic acid (PFOA)	x	x	ng/L	2.1 U	3.0	2.6	5.3	5.4	1.3 J	4.4	1.3 J	1.7	2.0	0.77 J	3.9	4.5	3.5	3.8	2.6	1.8	1.8 J	1.9 U	4.2	2.7	2.8
Perfluorodecanoic acid (PFDA)		x	ng/L	2.1 U	2.0 U	0.45 J	0.50 J	1.9 U	1.9 U	0.73 J	2.0 U	1.6 U	2.0 U	1.8 U	0.49 J	2.5	1.9 U	0.32 J	1.9 U	1.8 U	1.9 U	1.9 U	0.41 J	1.9 U	1.9 U
Perfluoroheptanoic acid (PFHpA)		x	ng/L	2.1 U	0.93 J	2.2	2.6	4.2	1.1 J	3.6	0.37 J	0.33 J	1.1 J	1.8 U	1.0 J	7.2	0.52 J	1.3 J	0.69 J	0.34 J	0.39 J	1.9 U	1.2 J	0.9 J	0.8 J
Perfluorohexanesulfonic acid (PFHxS)		x	ng/L	2.1 U	0.61 J	0.58 J	1.9 U	0.75 J I	1.9 U	1.3 J	0.80 J	0.84 J	1.5 J I	1.8 U	0.91 J	1.4 J	4.1	0.91 J	1.9 U	0.67 J	0.69 J	1.9 U	1.6 J	1.3 J	3.0
Perfluorononanoic acid (PFNA)		x	ng/L	2.1 U	2.0 U	0.60 J	1.9 U	1.9 U	1.9 U	1.1 J	2.0 U	1.6 U	2.0 U	1.8 U	0.26 J	2.6	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	0.34 J	1.9 U	1.9 U
Sum of PFOA and PFOS			ng/L	2.1 U	3.0	2.6	5.3	5.4	1.3 J	4.4	1.3 J	1.7	2.0	0.77 J	3.9	4.5	3.5	3.8	2.6	1.8	4.2	1.9 U	6.2	2.7	2.8
PFBS only			ng/L	0.26 J	0.58 J	1.9 U	1.9 U	1.9 U	1.9 U	0.19 J I	0.20 J I	0.38 J	0.43 J	0.19 J	0.89 J I	1.9 U	0.38 J	1.0 J I	0.44 J	0.23 J	0.27 J	1.9 U	1.0 J	0.48 J	0.51 J
Sum of MCP Method 1 GW-1 Groundwater Standard for PFAS			ng/L	2.1 U	3.0	4.8	7.9	9.6	1.3 J	8.0	1.3 J	1.7	2.0	0.77 J	3.9	16.8	7.6	3.8	2.6	1.8	4.2	1.9 U	6.2	2.7	5.8
Additional Method 537M PFAS Compounds																									
6:2 FTS	No	No	ng/L	5.3 U	5.0 U	30	4.6 U	4.7 U	4.9 U	12	4.9 U	4.0 U	4.9 U	4.5 U	4.8 U	4.8 U	4.7 U	4.8 U	4.6 U	4.5 U	2.9 J	4.7 U	4.6 U	4.8 U	4.8 U
Perfluorobutanoic acid (PFBA)	No	No	ng/L	5.3 U	5.0 U	3.9 J	4.6 U	3.0 J	3.3 J	47	4.9 U	4.0 U	4.9 U	4.5 U	2.7 J	41	4.7 U	6.3	3.3 J	4.5 U	4.7 U	4.7 U	4.6 U	4.8 U	4.8 U
Perfluorohexanoic acid (PFHxA)	No	No	ng/L	2.1 U	0.87 J	8.1	2.1	3.8	0.97 J	5.2	0.92 J	1.1 J	1.2 J	1.8 U	2.0	8.8	1.6 J	2.6	1.2 J	0.71 J	0.66 J	1.9 U	2.2	1.3 J	1.6 J
Perfluorooctanesulfonamide (FOSA)	No	No	ng/L	2.1 U	2.0 U	1.9 U	1.9	1.9 U	1.9 U	1.9 U	1.1 J	1.6 U	2.0 U	1.8 U	1.4 J	1.1 J	1.9 U	1.9 U	1.9 U	1.8 U	1.9 U	1.9 U	5.1	1.9 U	1.0 J
Perfluoropentanesulfonic acid (PFPeS)	No	No	ng/L	2.1 U	2.0 U	0.35 J I	1.9 U	1.9 U	1.9 U	0.33 J I	2.0 U	1.6 U	2.0 U	1.8 U	0.29 J I	1.9 U	0.28 J I	0.55 J I	1.9 U	1.8 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U
Perfluoropentanoic acid (PFPeA)	No	No	ng/L	2.1 U	2.0 U	11	1.5 J	5.3 *+	1.9 U	36	2.0 U	0.48 J	0.49 J	1.8 U	1.7 J	38	1.1 J *+	2.7	0.66 J	1.8 U *+	0.58 J *+	1.9 U *+	1.7 J	1.2 J *+	1.2 J *+
4:2 FTS	No	No	ng/L	2.1 U	2.0 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	2.0 U	1.6 U	2.0 U	1.8 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.8 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U
8:2 FTS	No	No	ng/L	2.1 U	2.0 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	2.0 U	1.6 U	2.0 U	1.8 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.8 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	No	No	ng/L	5.3 U	2.0 U	4.7 U	4.6 U	4.7 U	4.9 U	4.8 U	4.9 U	4.0 U	4.9 U	4.5 U	4.8 U	4.8 U	4.7 U	4.8 U	4.6 U	4.5 U	4.7 U	4.7 U	4.6 U	4.8 U	4.8 U
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	No	No	ng/L	5.3 U	2.0 U	4.7 U	4.6 U	4.7 U	4.9 U	4.8 U	4.9 U	4.0 U	4.9 U	4.5 U	4.8 U	4.8 U	4.7 U	4.8 U	4.6 U	4.5 U	4.7 U	4.7 U	4.6 U	4.8 U	4.8 U
Perfluorodecanesulfonic acid (PFDS)	No	No	ng/L	2.1 U	2.0 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	2.0 U	1.6 U	2.0 U	1.8 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.8 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U
Perfluorododecanoic acid (PFDoA)	No	No	ng/L	2.1 U	2.0 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	2.0 U	1.6 U	2.0 U	1.8 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.8 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U
Perfluorononanesulfonic acid (PFNS)	No	No	ng/L	2.1 U	2.0 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	2.0 U	1.6 U	2.0 U	1.8 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.8 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U
Perfluorotetradecanoic acid (PFTeA)	No	No	ng/L	2.1 U	2.0 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	2.0 U	1.6 U	2.0 U	1.8 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.8 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U
Perfluorotridecanoic acid (PFTriA)	No	No	ng/L	2.1 U	2.0 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	2.0 U	1.6 U	2.0 U	1.8 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.8 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U
Perfluoroundecanoic acid (PFUnA)	No	No	ng/L	2.1 U	2.0 U	1.9 U	1.9 U	1.9 U *+	1.9 U	1.9 U	2.0 U	1.6 U	2.0 U	1.8 U	1.9 U	1.9 U	1.9 U *+	1.9 U	1.9 U	1.8 U *+	1.9 U *+	1.9 U *+	1.9 U	1.9 U *+	1.9 U *+

N/A = Well was not included in the sampling event

FSP= Field Sampling Plan

MCP = Massachusetts Contingency Plan

[1] Groundwater sampling performed in June 2021 under implementation of EPA-approved PFAS sampling plan, dated August 6, 2019.

[2] 537M Manual SPE Method Compounds

I = Estimated maximum concentration

J = Result is less than the Reporting Limit (RL) but greater than the Method Detection Limit (MDL) and the concentration is approximate

U = Compound not detected above the specified level

*+ = LCS or LCSD recoveries were outside acceptable limits, data is biased high

Source: Appendix B and C of the June 2021 Per- and Polyfluoroalkyl Substances Sampling Results.

Table F-4: Sinking Pond Historic Elevations and Associated Top of Thermocline Depths and Elevations

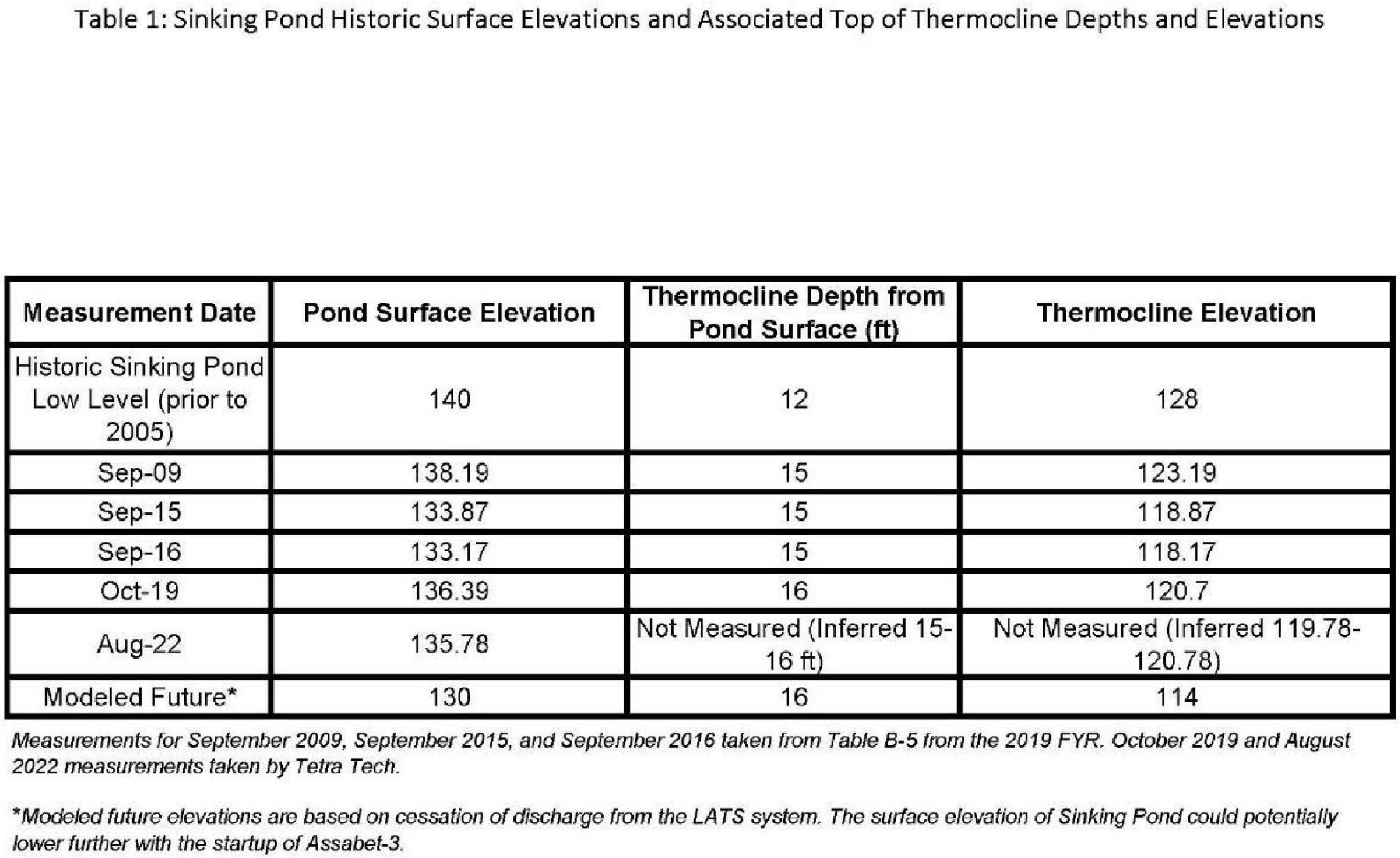


Table 1: Sinking Pond Historic Surface Elevations and Associated Top of Thermocline Depths and Elevations

Measurement Date	Pond Surface Elevation	Thermocline Depth from Pond Surface (ft)	Thermocline Elevation
Historic Sinking Pond Low Level (prior to 2005)	140	12	128
Sep-09	138.19	15	123.19
Sep-15	133.87	15	118.87
Sep-16	133.17	15	118.17
Oct-19	136.39	16	120.7
Aug-22	135.78	Not Measured (Inferred 15-16 ft)	Not Measured (Inferred 119.78-120.78)
Modeled Future*	130	16	114

Measurements for September 2009, September 2015, and September 2016 taken from Table B-5 from the 2019 FYR. October 2019 and August 2022 measurements taken by Tetra Tech.

**Modeled future elevations are based on cessation of discharge from the LATS system. The surface elevation of Sinking Pond could potentially lower further with the startup of Assabet-3.*

Source: Table 1 of the 2023 Sinking Pond Tech Memorandum.

Table F-5: Sediment Core Descriptions and Sediment Sample Results for Sampling Stations in Sinking Pond, May 9-11, 2022

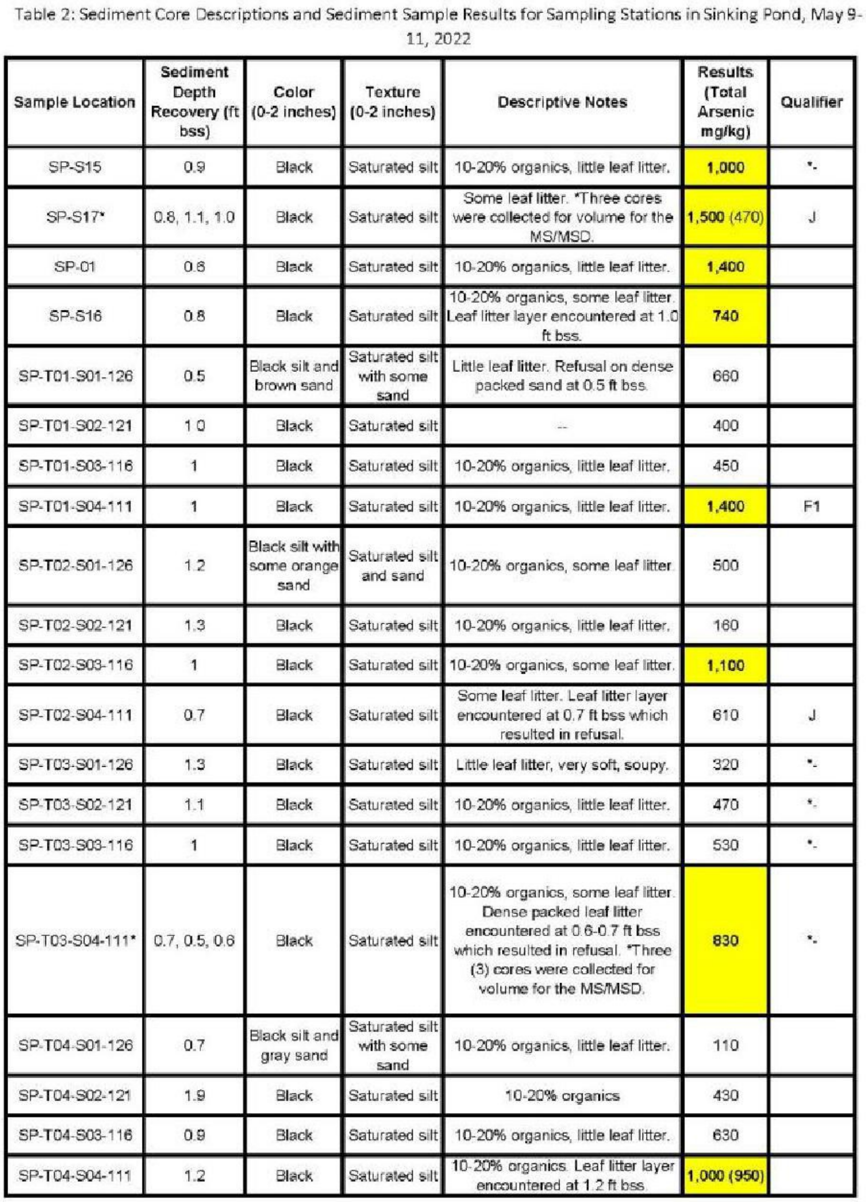


Table 2: Sediment Core Descriptions and Sediment Sample Results for Sampling Stations in Sinking Pond, May 9-11, 2022

Sample Location	Sediment Depth Recovery (ft bss)	Color (0-2 inches)	Texture (0-2 inches)	Descriptive Notes	Results (Total Arsenic mg/kg)	Qualifier
SP-S15	0.9	Black	Saturated silt	10-20% organics, little leaf litter.	**1,000**	*-
SP-S17*	0.8, 1.1, 1.0	Black	Saturated silt	Some leaf litter. *Three cores were collected for volume for the MS/MSD.	**1,500** (470)	J
SP-01	0.6	Black	Saturated silt	10-20% organics, little leaf litter.	**1,400**	
SP-S16	0.8	Black	Saturated silt	10-20% organics, some leaf litter. Leaf litter layer encountered at 1.0 ft bss.	**740**	
SP-T01-S01-126	0.5	Black silt and brown sand	Saturated silt with some sand	Little leaf litter. Refusal on dense packed sand at 0.5 ft bss.	660	
SP-T01-S02-121	1.0	Black	Saturated silt	--	400	
SP-T01-S03-116	1	Black	Saturated silt	10-20% organics, little leaf litter.	450	
SP-T01-S04-111	1	Black	Saturated silt	10-20% organics, little leaf litter.	**1,400**	F1
SP-T02-S01-126	1.2	Black silt with some orange sand	Saturated silt and sand	10-20% organics, some leaf litter.	500	
SP-T02-S02-121	1.3	Black	Saturated silt	10-20% organics, little leaf litter.	160	
SP-T02-S03-116	1	Black	Saturated silt	10-20% organics, some leaf litter.	**1,100**	
SP-T02-S04-111	0.7	Black	Saturated silt	Some leaf litter. Leaf litter layer encountered at 0.7 ft bss which resulted in refusal.	610	J
SP-T03-S01-126	1.3	Black	Saturated silt	Little leaf litter, very soft, soupy.	320	*-
SP-T03-S02-121	1.1	Black	Saturated silt	10-20% organics, little leaf litter.	470	*-
SP-T03-S03-116	1	Black	Saturated silt	10-20% organics, little leaf litter.	530	*-
SP-T03-S04-111*	0.7, 0.5, 0.6	Black	Saturated silt	10-20% organics, some leaf litter. Dense packed leaf litter encountered at 0.6-0.7 ft bss which resulted in refusal. *Three (3) cores were collected for volume for the MS/MSD.	**830**	*-
SP-T04-S01-126	0.7	Black silt and gray sand	Saturated silt with some sand	10-20% organics, little leaf litter.	110	
SP-T04-S02-121	1.9	Black	Saturated silt	10-20% organics	430	
SP-T04-S03-116	0.9	Black	Saturated silt	10-20% organics, little leaf litter.	630	
SP-T04-S04-111	1.2	Black	Saturated silt	10-20% organics. Leaf litter layer encountered at 1.2 ft bss.	**1,000 (950)**	

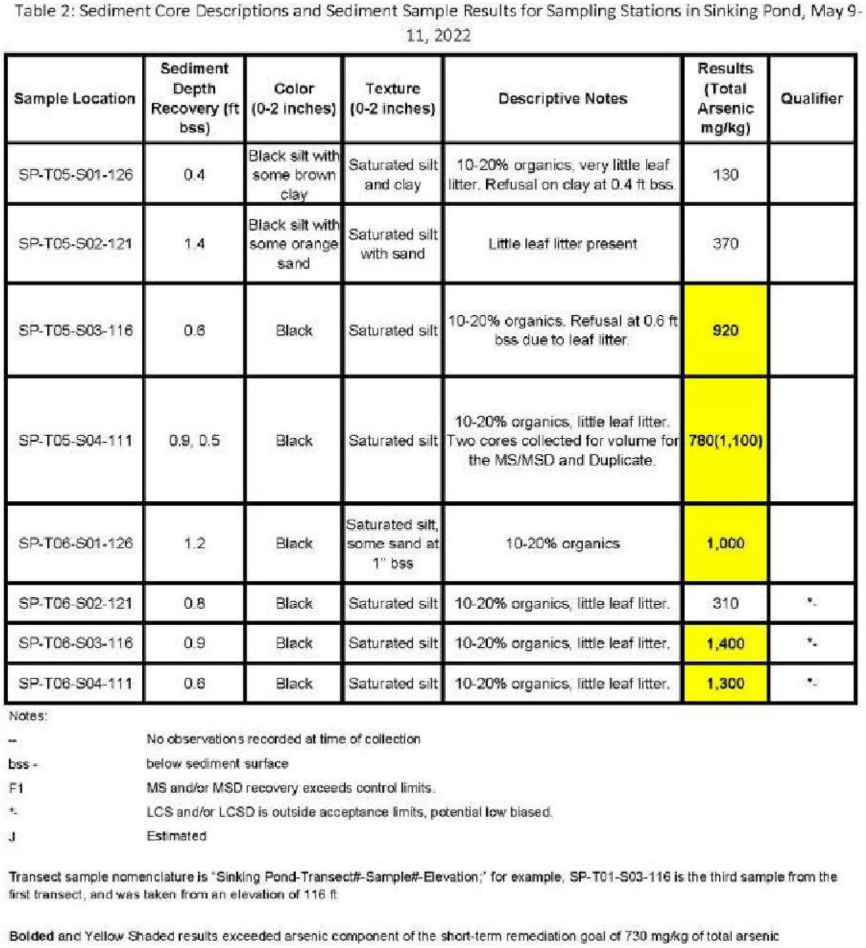


Table 2: Sediment Core Descriptions and Sediment Sample Results for Sampling Stations in Sinking Pond, May 9-11, 2022

Sample Location	**Sediment Depth Recovery (ft bss)**	**Color (0-2 inches)**	**Texture (0-2 inches)**	**Descriptive Notes**	**Results (Total Arsenic mg/kg)**	**Qualifier**
SP-T05-S01-126	0.4	Black silt with some brown clay	Saturated silt and clay	10-20% organics, very little leaf litter. Refusal on clay at 0.4 ft bss.	130	
SP-T05-S02-121	1.4	Black silt with some orange sand	Saturated silt with sand	Little leaf litter present	370	
SP-T05-S03-116	0.6	Black	Saturated silt	10-20% organics. Refusal at 0.6 ft bss due to leaf litter.	**920**	
SP-T05-S04-111	0.9, 0.5	Black	Saturated silt	10-20% organics, little leaf litter. Two cores collected for volume for the MS/MSD and Duplicate.	**780(1,100)**	
SP-T06-S01-126	1.2	Black	Saturated silt, some sand at 1" bss	10-20% organics	**1,000**	
SP-T06-S02-121	0.8	Black	Saturated silt	10-20% organics, little leaf litter.	310	*-
SP-T06-S03-116	0.9	Black	Saturated silt	10-20% organics, little leaf litter.	**1,400**	*-
SP-T06-S04-111	0.6	Black	Saturated silt	10-20% organics, little leaf litter.	**1,300**	*-

Notes:

--	No observations recorded at time of collection
bss -	below sediment surface
F1	MS and/or MSD recovery exceeds control limits.
*-	LCS and/or LCSD is outside acceptance limits, potential low biased.
J	Estimated

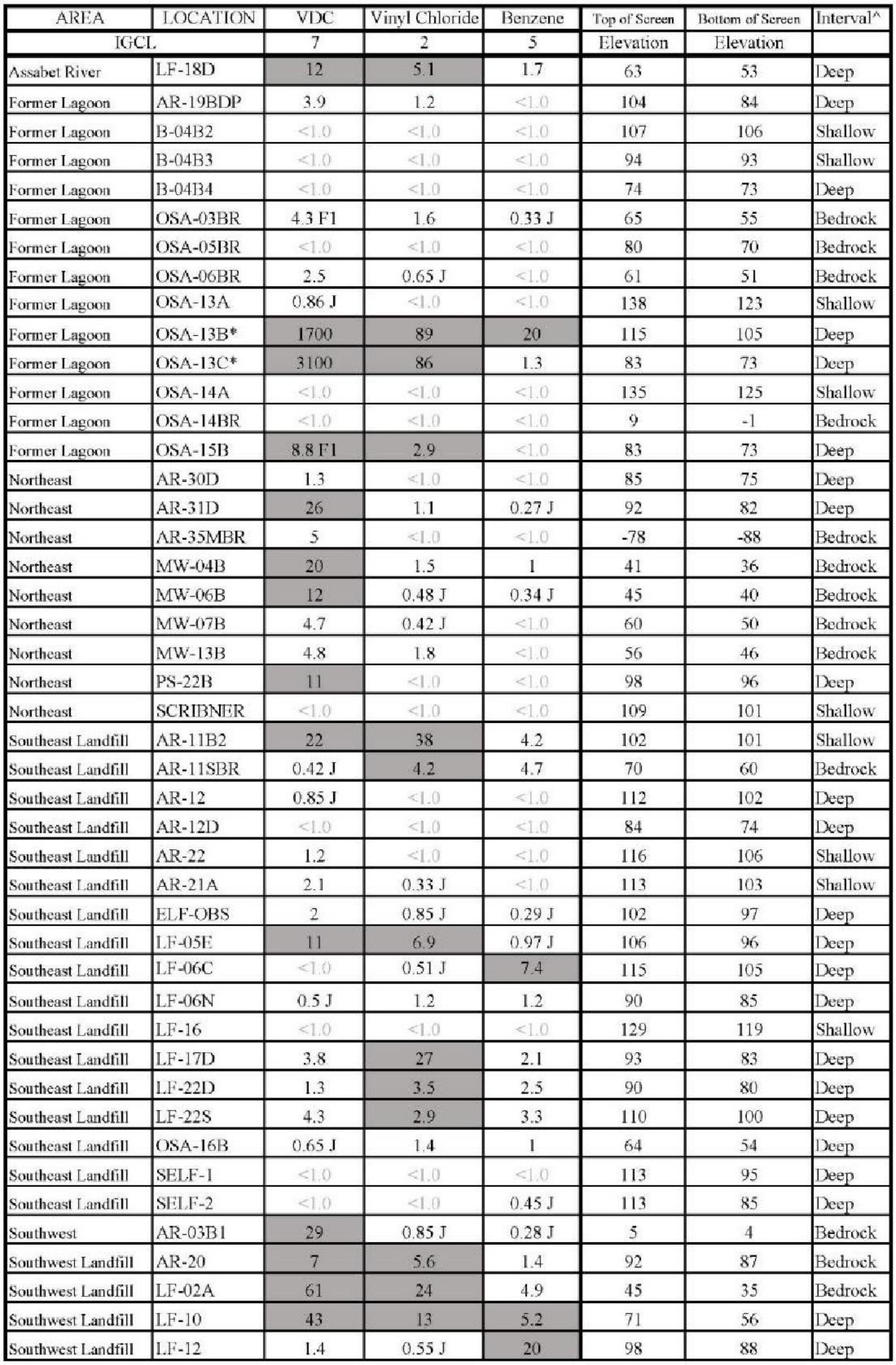
Transect sample nomenclature is "Sinking **Pond-Transect#-Sample#-Elevation;**" **for example, SP-T01-S03-116 is** the third sample from the first transect, and was taken from an elevation of 116 ft

Bolded and Yellow Shaded results exceeded arsenic component of the short-term remediation goal of 730 mg/kg of total arsenic

Source: Table 2 of the 2023 Sinking Pond Tech Memorandum.

Table F-6: VOCs compared to IGCLs, 2022

Table 3-5 Comparison of Volatile Organic Compounds in Groundwater to Interim Groundwater Cleanup Levels by Geographic Area, January 1, 2022 to December 2022



AREA	LOCATION	VDC	Vinyl Chloride	Benzene	Top of Screen	Bottom of Screen	Interval^
IGCL		7	2	5	Elevation	Elevation	
Assabet River	LF-18D	12	5.1	1.7	63	53	Deep
Former Lagoon	AR-19BDP	3.9	1.2	<1.0	104	84	Deep
Former Lagoon	B-04B2	<1.0	<1.0	<1.0	107	106	Shallow
Former Lagoon	B-04B3	<1.0	<1.0	<1.0	94	93	Shallow
Former Lagoon	B-04B4	<1.0	<1.0	<1.0	74	73	Deep
Former Lagoon	OSA-03BR	4.3 F1	1.6	0.33 J	65	55	Bedrock
Former Lagoon	OSA-05BR	<1.0	<1.0	<1.0	80	70	Bedrock
Former Lagoon	OSA-06BR	2.5	0.65 J	<1.0	61	51	Bedrock
Former Lagoon	OSA-13A	0.86 J	<1.0	<1.0	138	123	Shallow
Former Lagoon	OSA-13B*	1700	89	20	115	105	Deep
Former Lagoon	OSA-13C*	3100	86	1.3	83	73	Deep
Former Lagoon	OSA-14A	<1.0	<1.0	<1.0	135	125	Shallow
Former Lagoon	OSA-14BR	<1.0	<1.0	<1.0	9	-1	Bedrock
Former Lagoon	OSA-15B	8.8 F1	2.9	<1.0	83	73	Deep
Northeast	AR-30D	1.3	<1.0	<1.0	85	75	Deep
Northeast	AR-31D	26	1.1	0.27 J	92	82	Deep
Northeast	AR-35MBR	5	<1.0	<1.0	-78	-88	Bedrock
Northeast	MW-04B	20	1.5	1	41	36	Bedrock
Northeast	MW-06B	12	0.48 J	0.34 J	45	40	Bedrock
Northeast	MW-07B	4.7	0.42 J	<1.0	60	50	Bedrock
Northeast	MW-13B	4.8	1.8	<1.0	56	46	Bedrock
Northeast	PS-22B	11	<1.0	<1.0	98	96	Deep
Northeast	SCRIBNER	<1.0	<1.0	<1.0	109	101	Shallow
Southeast Landfill	AR-11B2	22	38	4.2	102	101	Shallow
Southeast Landfill	AR-11SBR	0.42 J	4.2	4.7	70	60	Bedrock
Southeast Landfill	AR-12	0.85 J	<1.0	<1.0	112	102	Deep
Southeast Landfill	AR-12D	<1.0	<1.0	<1.0	84	74	Deep
Southeast Landfill	AR-22	1.2	<1.0	<1.0	116	106	Shallow
Southeast Landfill	AR-21A	2.1	0.33 J	<1.0	113	103	Shallow
Southeast Landfill	ELF-OBS	2	0.85 J	0.29 J	102	97	Deep
Southeast Landfill	LF-05E	11	6.9	0.97 J	106	96	Deep
Southeast Landfill	LF-06C	<1.0	0.51 J	7.4	115	105	Deep
Southeast Landfill	LF-06N	0.5 J	1.2	1.2	90	85	Deep
Southeast Landfill	LF-16	<1.0	<1.0	<1.0	129	119	Shallow
Southeast Landfill	LF-17D	3.8	27	2.1	93	83	Deep
Southeast Landfill	LF-22D	1.3	3.5	2.5	90	80	Deep
Southeast Landfill	LF-22S	4.3	2.9	3.3	110	100	Deep
Southeast Landfill	OSA-16B	0.65 J	1.4	1	64	54	Deep
Southeast Landfill	SELF-1	<1.0	<1.0	<1.0	113	95	Deep
Southeast Landfill	SELF-2	<1.0	<1.0	0.45 J	113	85	Deep
Southwest	AR-03B1	29	0.85 J	0.28 J	5	4	Bedrock
Southwest Landfill	AR-20	7	5.6	1.4	92	87	Bedrock
Southwest Landfill	LF-02A	61	24	4.9	45	35	Bedrock
Southwest Landfill	LF-10	43	13	5.2	71	56	Deep
Southwest Landfill	LF-12	1.4	0.55 J	20	98	88	Deep

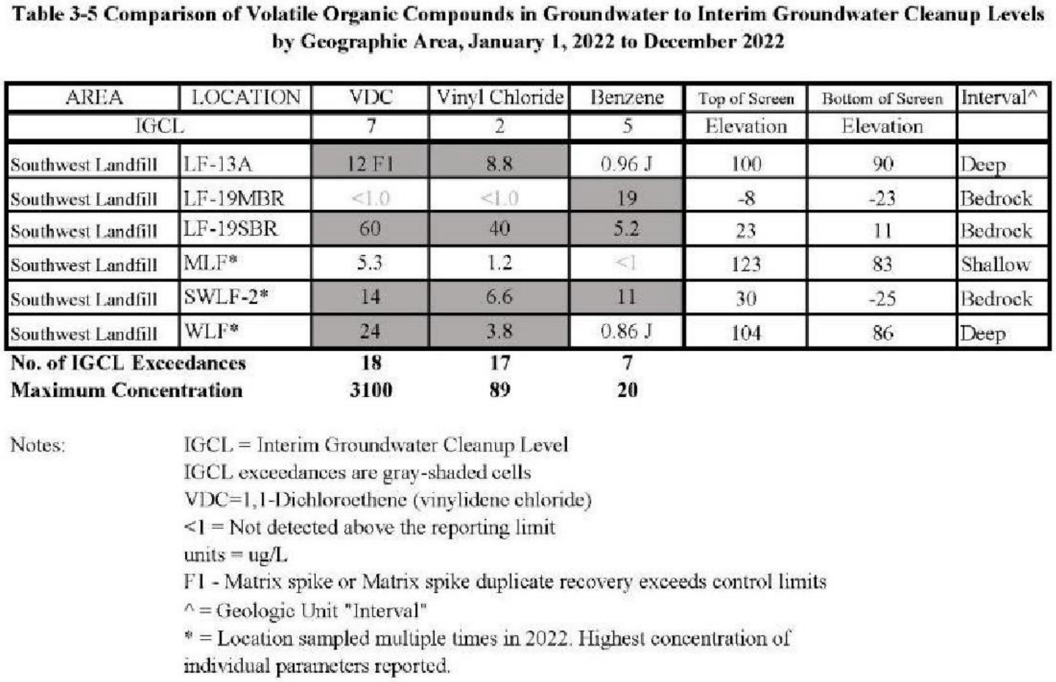


Table 3-5 Comparison of Volatile Organic Compounds in Groundwater to Interim Groundwater Cleanup Levels by Geographic Area, January 1, 2022 to December 2022

AREA	LOCATION	VDC	Vinyl Chloride	Benzene	Top of Screen Elevation	Bottom of Screen Elevation	Interval^
IGCL		7	2	5			
Southwest Landfill	LF-13A	12 F1	8.8	0.96 J	100	90	Deep
Southwest Landfill	LF-19MBR	<1.0	<1.0	19	-8	-23	Bedrock
Southwest Landfill	LF-19SBR	60	40	5.2	23	11	Bedrock
Southwest Landfill	MLF*	5.3	1.2	<1	123	83	Shallow
Southwest Landfill	SWLF-2*	14	6.6	11	30	-25	Bedrock
Southwest Landfill	WLF*	24	3.8	0.86 J	104	86	Deep
No. of IGCL Exceedances		**18**	**17**	**7**			
Maximum Concentration		**3100**	**89**	**20**			

Notes:

IGCL = Interim Groundwater Cleanup Level
IGCL exceedances are gray-shaded cells
VDC=1,1-Dichloroethene (vinylidene chloride)
<1 = Not detected above the reporting limit
units = ug/L
F1 - Matrix spike or Matrix spike duplicate recovery exceeds control limits
^ = Geologic Unit "Interval"
* = Location sampled multiple times in 2022. Highest concentration of individual parameters reported.

Source: Table 3-5, the Site's *Operable Unit Three Monitoring Program Report 2022, Revision 1.*

Table F-7: 2019 FYR Comparison of Maximum Detected Groundwater Concentrations to Vapor Intrusion Screening Levels

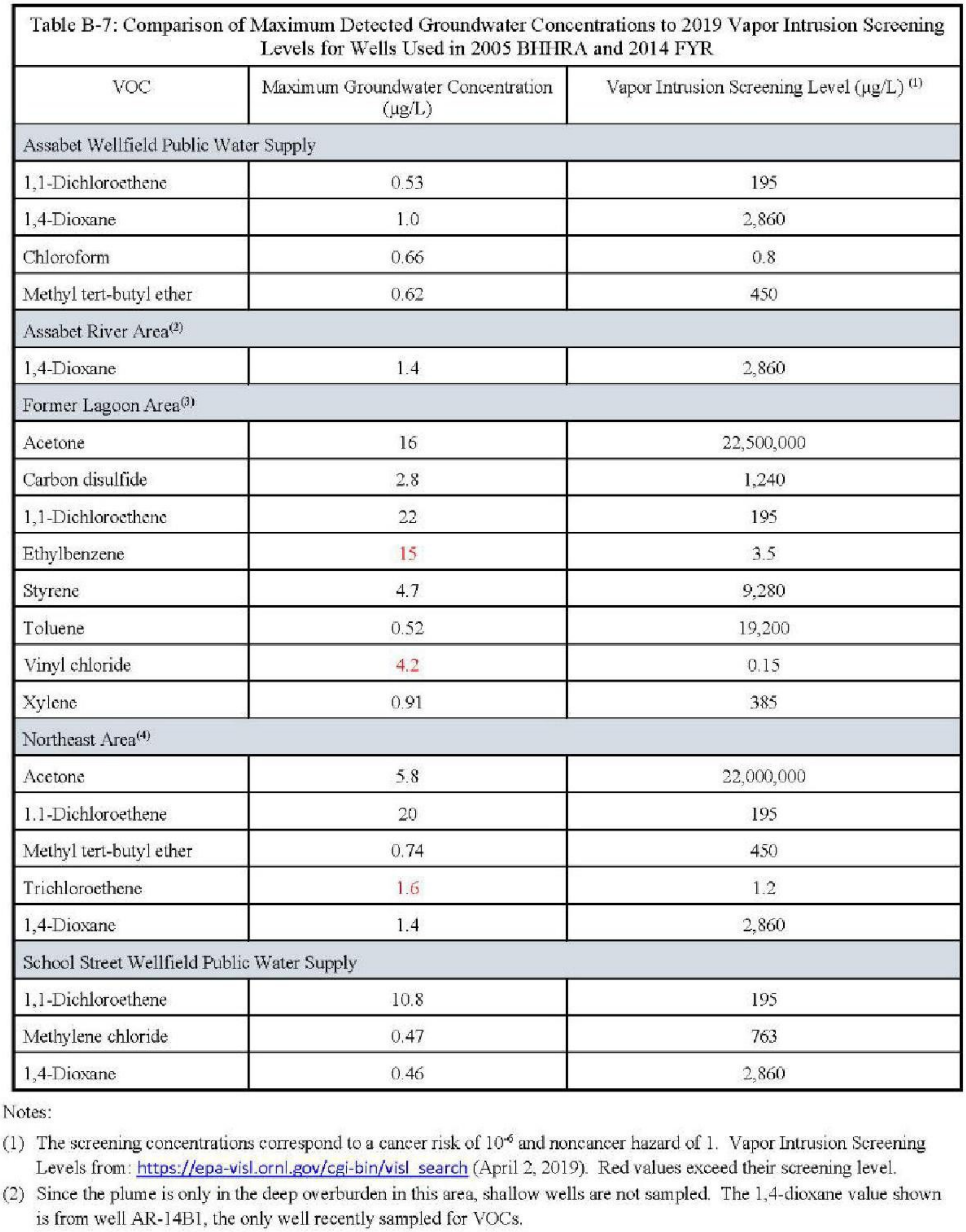


Table B-7: Comparison of Maximum Detected Groundwater Concentrations to 2019 Vapor Intrusion Screening Levels for Wells Used in 2005 BHHRA and 2014 FYR

VOC	Maximum Groundwater Concentration (µg/L)	Vapor Intrusion Screening Level (µg/L) (1)
Assabet Wellfield Public Water Supply		
1,1-Dichloroethene	0.53	195
1,4-Dioxane	1.0	2,860
Chloroform	0.66	0.8
Methyl tert-butyl ether	0.62	450
Assabet River Area(2)		
1,4-Dioxane	1.4	2,860
Former Lagoon Area(3)		
Acetone	16	22,500,000
Carbon disulfide	2.8	1,240
1,1-Dichloroethene	22	195
Ethylbenzene	15	3.5
Styrene	4.7	9,280
Toluene	0.52	19,200
Vinyl chloride	4.2	0.15
Xylene	0.91	385
Northeast Area(4)		
Acetone	5.8	22,000,000
1.1-Dichloroethene	20	195
Methyl tert-butyl ether	0.74	450
Trichloroethene	1.6	1.2
1,4-Dioxane	1.4	2,860
School Street Wellfield Public Water Supply		
1,1-Dichloroethene	10.8	195
Methylene chloride	0.47	763
1,4-Dioxane	0.46	2,860

Notes:

(1) The screening concentrations correspond to a cancer risk of 10^{-6} and noncancer hazard of 1. Vapor Intrusion Screening Levels from: https://epa-visl.ornl.gov/cgi-bin/visl_search (April 2, 2019). Red values exceed their screening level.

(2) Since the plume is only in the deep overburden in this area, shallow wells are not sampled. The 1,4-dioxane value shown is from well AR-14B1, the only well recently sampled for VOCs.

Source: Table B-7, the Site's 2019 FYR.

APPENDIX G – SITE INSPECTION PHOTOS

Gated site entrance

LATS


Interior of the LATS building


Landfill cap with the solar facility in background

Stormwater drainage with some vegetative growth

Former Lagoon Area

Former building area with remaining pavement and slabs

Area north of the MBTA commuter rail line, slated for potential future residential development

Monitoring wells OSA-13 A, B and C

Sinking Pond


Inactive pumping well on Concord Bus Facility

APPENDIX H – SITE INSPECTION CHECKLIST

FIVE-YEAR REVIEW SITE INSPECTION CHECKLIST

I. SITE INFORMATION

Site Name: W.R. Grace & Co., Inc. (Acton Plant)	**Date of Inspection:** 12/12/2023
Location and Region: Acton, Massachusetts, Region 1	**EPA ID:** MAD001002252
Agency, Office or Company Leading the Five-Year Review: EPA	**Weather/Temperature:** 40 degrees Fahrenheit, sunny

Remedy Includes: (check all that apply)

☒ Landfill cover/containment
☐ Access controls
☒ Institutional controls
☒ Groundwater pump and treatment
☐ Surface water collection and treatment
☐ Other: _____

☒ Monitored natural attenuation
☐ Groundwater containment
☐ Vertical barrier walls

Attachments: ☐ Inspection team roster attached ☐ Site map attached

II. INTERVIEWS (check all that apply)

1. **O&M Site Manager**

Name	Title	Date
Maryellen Johns	De maximus, Inc.	_____

Interviewed ☐ at site ☐ at office ☐ by phone Email _____
Problems, suggestions ☒ Report attached: See Appendix D of this FYR Report

2. **O&M Staff**

Name	Title	Date
_____	_____	_____

Interviewed ☐ at site ☐ at office ☐ by phone Phone: _____
Problems/suggestions ☐ Report attached: _____

3. **Local Regulatory Authorities and Response Agencies** (i.e., state and tribal offices, emergency response office, police department, office of public health or environmental health, zoning office, recorder of deeds, or other city and county offices). Fill in all that apply.

Agency Acton Water District

	Name	Title	Date	Phone
Contact	Matt Mostoller/Alex Wahlstrom	_____	3/5/2024	_____

Problems/suggestions ☒ Report attached: See Appendix D of this FYR Report

Agency Concord Health Department

	Name	Title	Date	Phone
Contact	Melanie Dineen	_____	3/4/2024	_____

Problems/suggestions ☒ Report attached: See Appendix D of this FYR Report

Agency Acton Health Department

	Name	Title	Date	Phone
Contact	Redacted	_____	2/26/2024	_____

Problems/suggestions ☒ Report attached: See Appendix D of this FYR Report

Agency MassDEP

	Name	Title	Date	Phone
Contact	Jennifer McWeeney	_____	1/23/2024	_____

Problems/suggestions ☒ Report attached: See Appendix D of this FYR Report

Agency ______________________________
Contact _____ _____ _____ _____
Name Title Date Phone
Problems/suggestions ☐ Report attached: _____

4. **Other Interviews** (optional) ☐ Report attached: _____

Concord Public School

W.R. Grace

III. ON-SITE DOCUMENTS AND RECORDS VERIFIED (check all that apply)

1. **O&M Documents**

☒ O&M manual ☒ Readily available ☒ Up to date ☐ N/A
☐ As-built drawings ☐ Readily available ☐ Up to date ☒ N/A
☒ Maintenance logs ☒ Readily available ☐ Up to date ☐ N/A
Remarks: _____

2. **Site-Specific Health and Safety Plan** ☒ Readily available ☒ Up to date ☐ N/A
☐ Contingency plan/emergency response plan ☐ Readily available ☐ Up to date ☒ N/A
Remarks: _____

3. **O&M and OSHA Training Records** ☐ Readily available ☐ Up to date ☒ N/A
Remarks: _____

4. **Permits and Service Agreements**

☐ Air discharge permit ☐ Readily available ☐ Up to date ☒ N/A
☒ Effluent discharge ☐ Readily available ☐ Up to date ☐ N/A
☐ Waste disposal, POTW ☐ Readily available ☐ Up to date ☒ N/A
☐ Other permits: _____ ☐ Readily available ☐ Up to date ☒ N/A
Remarks: _____

5. **Gas Generation Records** ☐ Readily available ☐ Up to date ☒ N/A
Remarks: _____

6. **Settlement Monument Records** ☐ Readily available ☐ Up to date ☒ N/A
Remarks: _____

7. **Groundwater Monitoring Records** ☒ Readily available ☒ Up to date ☐ N/A
Remarks: _____

8. **Leachate Extraction Records** ☐ Readily available ☐ Up to date ☒ N/A
Remarks: _____

9. **Discharge Compliance Records**

☐ Air ☐ Readily available ☐ Up to date ☒ N/A
☒ Water (effluent) ☒ Readily available ☐ Up to date ☐ N/A
Remarks: _____

10. **Daily Access/Security Logs** ☒ Readily available ☒ Up to date ☐ N/A

Remarks: _____

IV. O&M COSTS

1. **O&M Organization**

☐ State in-house ☐ Contractor for state

☐ PRP in-house ☒ Contractor for PRP

☐ Federal facility in-house ☐ Contractor for Federal facility

☐ _____

2. **O&M Cost Records**

☐ Readily available ☐ Up to date

☐ Funding mechanism/agreement in place ☒ Unavailable

Original O&M cost estimate: _____ ☐ Breakdown attached

Total annual cost by year for review period if available

From: _____ Date	To: _____ Date	_____ Total cost	☐ Breakdown attached
From: _____ Date	To: _____ Date	_____ Total cost	☐ Breakdown attached
From: _____ Date	To: _____ Date	_____ Total cost	☐ Breakdown attached
From: _____ Date	To: _____ Date	_____ Total cost	☐ Breakdown attached
From: _____ Date	To: _____ Date	_____ Total cost	☐ Breakdown attached

3. **Unanticipated or Unusually High O&M Costs during Review Period**

Describe costs and reasons: _____

V. ACCESS AND INSTITUTIONAL CONTROLS ☒ Applicable ☐ N/A

A. Fencing

1. **Fencing Damaged** ☐ Location shown on site map ☒ Gates secured ☐ N/A

Remarks: _____

B. Other Access Restrictions

1. **Signs and Other Security Measures** ☐ Location shown on site map ☐ N/A

Remarks: Fencing surrounds portions of the Site.

C. Institutional Controls (ICs)

1. **Implementation and Enforcement**

Site conditions imply ICs not properly implemented ☐ Yes ☒ No ☐ N/A

Site conditions imply ICs not being fully enforced ☐ Yes ☒ No ☐ N/A

Type of monitoring (e.g., self-reporting, drive by): _____

Frequency: _____

Responsible party/agency: _____

Contact _____ _____ _____ _____

Name Title Date Phone

Reporting is up to date ☐ Yes ☐ No ☒N/A

Reports are verified by the lead agency ☐ Yes ☐ No ☒ N/A

Specific requirements in deed or decision documents have been met ☐ Yes ☐ No ☒ N/A

Violations have been reported ☐ Yes ☐ No ☒ N/A

Other problems or suggestions: ☐ Report attached

2. **Adequacy** ☐ ICs are adequate ☒ ICs are inadequate ☐ N/A

Remarks: Institutional controls may not be adequate in protecting exposure to remaining contamination.

D. General

1. **Vandalism/Trespassing** ☐ Location shown on site map ☒ No vandalism evident

Remarks: _____

2. **Land Use Changes On-Site** ☐ N/A

Remarks: Reuse in the form of a solar field and a residential development are being investigated as options for parts of the on-site property.

3. **Land Use Changes Off-Site** ☒ N/A

Remarks: _____

VI. GENERAL SITE CONDITIONS

A. Roads ☒ Applicable ☐ N/A

1. **Roads Damaged** ☐ Location shown on site map ☒ Roads adequate ☐ N/A

Remarks: _____

B. Other Site Conditions

Remarks: _____

VII. LANDFILL COVERS ☒ Applicable ☐ N/A

A. Landfill Surface

1. **Settlement** (low spots) ☐ Location shown on site map ☒ Settlement not evident

Area extent: _____ Depth: _____

Remarks: _____

2. **Cracks** ☐ Location shown on site map ☒ Cracking not evident

Lengths: _____ Widths: _____ Depths: _____

Remarks: _____

3. **Erosion** ☐ Location shown on site map ☒ Erosion not evident
Area extent: _____ Depth: _____
Remarks: _____

4. **Holes** ☐ Location shown on site map ☒ Holes not evident
Area extent: _____ Depth: _____
Remarks: _____

5. **Vegetative Cover** ☒ Grass ☒ Cover properly established
☐ No signs of stress ☐ Trees/shrubs (indicate size and locations on a diagram)
Remarks: _____

6. **Alternative Cover** (e.g., armored rock, concrete) ☒ N/A
Remarks: _____

7. **Bulges** ☐ Location shown on site map ☒ Bulges not evident
Area extent: _____ Height: _____
Remarks: _____

8. **Wet Areas/Water Damage** ☒ Wet areas/water damage not evident

☐ Wet areas ☐ Location shown on site map Area extent: _____
☐ Ponding ☐ Location shown on site map Area extent: _____
☐ Seeps ☐ Location shown on site map Area extent: _____
☐ Soft subgrade ☐ Location shown on site map Area extent: _____
Remarks: _____

9. **Slope Instability** ☐ Slides ☐ Location shown on site map
☒ No evidence of slope instability
Area extent: _____
Remarks: _____

B. Benches ☐ Applicable ☒ N/A

(Horizontally constructed mounds of earth placed across a steep landfill side slope to interrupt the slope in order to slow down the velocity of surface runoff and intercept and convey the runoff to a lined channel.)

1. **Flows Bypass Bench** ☐ Location shown on site map ☐ N/A or okay
Remarks: _____

2. **Bench Breached** ☐ Location shown on site map ☐ N/A or okay
Remarks: _____

3. **Bench Overtopped** ☐ Location shown on site map ☐ N/A or okay
Remarks: _____

C. Letdown Channels ☐ Applicable ☒ N/A

(Channel lined with erosion control mats, riprap, grout bags or gabions that descend down the steep side slope of the cover and will allow the runoff water collected by the benches to move off of the landfill cover without creating erosion gullies.)

1. **Settlement** (Low spots) ☐ Location shown on site map ☐ No evidence of settlement

Area extent: _____ Depth: _____

Remarks: _____

2. **Material Degradation** ☐ Location shown on site map ☐ No evidence of degradation

Material type:_____ Area extent: _____

Remarks: _____

3. **Erosion** ☐ Location shown on site map ☐ No evidence of erosion

Area extent: _____ Depth: _____

Remarks: _____

4. **Undercutting** ☐ Location shown on site map ☐ No evidence of undercutting

Area extent: _____ Depth: _____

Remarks: _____

5. **Obstructions** Type: _____ ☐ No obstructions

☐ Location shown on site map Area extent: _____

Size: _____

Remarks: _____

6. **Excessive Vegetative Growth** Type: _____

☐ No evidence of excessive growth

☐ Vegetation in channels does not obstruct flow

☐ Location shown on site map Area extent: _____

Remarks: _____

D. Cover Penetrations ☒ Applicable ☐ N/A

1. **Gas Vents** ☐ Active ☒ Passive

☐ Properly secured/locked ☐ Functioning ☐ Routinely sampled ☐ Good condition

☐ Evidence of leakage at penetration ☐ Needs maintenance ☐ N/A

Remarks: _____

2. **Gas Monitoring Probes**

☐ Properly secured/locked ☐ Functioning ☐ Routinely sampled ☐ Good condition

☐ Evidence of leakage at penetration ☐ Needs maintenance ☒ N/A

Remarks: _____

3. **Monitoring Wells** (within surface area of landfill)

☐ Properly secured/locked ☐ Functioning ☐ Routinely sampled ☐ Good condition

☐ Evidence of leakage at penetration ☐ Needs maintenance ☒ N/A

Remarks: _____

4. **Extraction Wells Leachate**

☐ Properly secured/locked ☐ Functioning ☐ Routinely sampled ☐ Good condition

☐ Evidence of leakage at penetration ☐ Needs maintenance ☒ N/A

Remarks: _____

5. **Settlement Monuments** ☐ Located ☐ Routinely surveyed ☒ N/A

Remarks: _____

E. Gas Collection and Treatment ☐ Applicable ☒ N/A

1. **Gas Treatment Facilities**

☐ Flaring ☐ Thermal destruction ☐ Collection for reuse

☐ Good condition ☐ Needs maintenance

Remarks: _____

2. **Gas Collection Wells, Manifolds and Piping**

☐ Good condition ☐ Needs maintenance

Remarks: _____

3. **Gas Monitoring Facilities** (e.g., gas monitoring of adjacent homes or buildings)

☐ Good condition ☐ Needs maintenance ☐ N/A

Remarks: _____

F. Cover Drainage Layer ☒ Applicable ☐ N/A

1. **Outlet Pipes Inspected** ☐ Functioning ☒ N/A

Remarks: _____

2. **Outlet Rock Inspected** ☒ Functioning ☐ N/A

Remarks: _____

G. Detention/Sedimentation Ponds ☐ Applicable ☒ N/A

1. **Siltation** Area extent: _____ Depth: _____ ☐ N/A

☐ Siltation not evident

Remarks: _____

2. **Erosion** Area extent: _____ Depth: _____

☐ Erosion not evident

Remarks: _____

3. **Outlet Works** ☐ Functioning ☐ N/A

Remarks: _____

4. **Dam** ☐ Functioning ☐ N/A

Remarks: _____

H. Retaining Walls ☐ Applicable ☒ N/A

1. **Deformations** ☐ Location shown on site map ☐ Deformation not evident

Horizontal displacement: _____ Vertical displacement: _____

Rotational displacement: _____

Remarks: _____

2. **Degradation** ☐ Location shown on site map ☐ Degradation not evident

Remarks: ______

I. Perimeter Ditches/Off-Site Discharge ☒ Applicable ☐ N/A

1. **Siltation** ☐ Location shown on site map ☒ Siltation not evident

Area extent: ______ Depth: ______

Remarks: ______

2. **Vegetative Growth** ☐ Location shown on site map ☐ N/A

☒ Vegetation does not impede flow

Area extent: ______ Type: ______

Remarks: ______

3. **Erosion** ☐ Location shown on site map ☒ Erosion not evident

Area extent: ______ Depth: ______

Remarks: ______

4. **Discharge Structure** ☒ Functioning ☐ N/A

Remarks: On the north side of the landfill, water in perimeter channel discharges to a culvert that crosses beneath the perimeter road and fence and discharges to a low area.

VIII. VERTICAL BARRIER WALLS ☐ Applicable ☒ N/A

1. **Settlement** ☐ Location shown on site map ☐ Settlement not evident

Area extent: ______ Depth: ______

Remarks: ______

2. **Performance Monitoring** Type of monitoring: ______

☐ Performance not monitored

Frequency: ______ ☐ Evidence of breaching

Head differential: ______

Remarks: ______

IX. GROUNDWATER/SURFACE WATER REMEDIES ☒ Applicable ☐ N/A

A. Groundwater Extraction Wells, Pumps and Pipelines ☒ Applicable ☐ N/A

1. **Pumps, Wellhead Plumbing and Electrical**

☒ Good condition ☒ All required wells properly operating ☐ Needs maintenance ☐ N/A

Remarks: ______

2. **Extraction System Pipelines, Valves, Valve Boxes and Other Appurtenances**

☒ Good condition ☐ Needs maintenance

Remarks: ______

3. **Spare Parts and Equipment**

☒ Readily available ☐ Good condition ☐ Requires upgrade ☐ Needs to be provided

Remarks: ______

B. Surface Water Collection Structures, Pumps and Pipelines ☐ Applicable ☒ N/A

1. **Collection Structures, Pumps and Electrical**

☐ Good condition ☐ Needs maintenance

Remarks: _____

2. **Surface Water Collection System Pipelines, Valves, Valve Boxes and Other Appurtenances**

☐ Good condition ☐ Needs maintenance

Remarks: _____

3. **Spare Parts and Equipment**

☐ Readily available ☐ Good condition ☐ Requires upgrade ☐ Needs to be provided

Remarks: _____

C. Treatment System ☒ Applicable ☐ N/A

1. **Treatment Train** (check components that apply)

☒ Metals removal ☐ Oil/water separation ☐ Bioremediation

☐ Air stripping ☒ Carbon adsorbers

☐ Filters: _____

☐ Additive (e.g., chelation agent, flocculent): _____

☐ Others: _____

☒ Good condition ☐ Needs maintenance

☒ Sampling ports properly marked and functional

☐ Sampling/maintenance log displayed and up to date

☒ Equipment properly identified

☒ Quantity of groundwater treated annually: About 20 million gallons of groundwater are removed annually.

☐ Quantity of surface water treated annually: _____

Remarks: _____

2. **Electrical Enclosures and Panels** (properly rated and functional)

☐ N/A ☒ Good condition ☐ Needs maintenance

Remarks: _____

3. **Tanks, Vaults, Storage Vessels**

☐ N/A ☒ Good condition ☒ Proper secondary containment ☐ Needs maintenance

Remarks: _____

4. **Discharge Structure and Appurtenances**

☐ N/A ☒ Good condition ☐ Needs maintenance

Remarks: _____

5. **Treatment Building(s)**

☐ N/A ☒ Good condition (esp. roof and doorways) ☐ Needs repair

☒ Chemicals and equipment properly stored

Remarks: _____

6. **Monitoring Wells** (pump and treatment remedy)

☒ Properly secured/locked ☒ Functioning ☒ Routinely sampled ☒ Good condition

☐ All required wells located ☐ Needs maintenance ☐ N/A

Remarks: _____

D. Monitoring Data

1. **Monitoring Data**

☒ Is routinely submitted on time ☒ Is of acceptable quality

2. **Monitoring Data Suggests:**

☒ Groundwater plume is effectively contained ☒ Contaminant concentrations are declining

E. Monitored Natural Attenuation

1. **Monitoring Wells** (natural attenuation remedy)

☒ Properly secured/locked ☒ Functioning ☒ Routinely sampled ☒ Good condition

☐ All required wells located ☐ Needs maintenance ☐ N/A

Remarks: _____

X. OTHER REMEDIES

If there are remedies applied at the site and not covered above, attach an inspection sheet describing the physical nature and condition of any facility associated with the remedy. An example would be soil vapor extraction.

XI. OVERALL OBSERVATIONS

A. Implementation of the Remedy

Describe issues and observations relating to whether the remedy is effective and functioning as designed. Begin with a brief statement of what the remedy is designed to accomplish (e.g., to contain contaminant plume, minimize infiltration and gas emissions).

The remedy consolidated contaminated soil and sediment into the Industrial Landfill, treated groundwater contamination and put institutional controls in place restricting the use of the Site. The remedy has generally been effective. Groundwater continues to be treated. However, some wells are increasing in contaminant concentrations. Potential reuse investigations are being conducted for parts of the Site.

B. Adequacy of O&M

Describe issues and observations related to the implementation and scope of O&M procedures. In particular, discuss their relationship to the current and long-term protectiveness of the remedy.

Current O&M activities appear to be adequate in maintaining the remedy components.

C. Early Indicators of Potential Remedy Problems

Describe issues and observations such as unexpected changes in the cost or scope of O&M or a high frequency of unscheduled repairs that suggest that the protectiveness of the remedy may be compromised in the future.

There are no current indicators of potential remedy problems.

D. Opportunities for Optimization

Describe possible opportunities for optimization in monitoring tasks or the operation of the remedy.

Opportunities for optimization, as well as ensuring that future use is conducted safely, continue to be reviewed.

APPENDIX I – CLEANUP GOAL REVIEW

OU-1

The goals of the selected remedy were to protect the drinking water aquifer by minimizing further contamination of the groundwater and surface water and to eliminate the threats posed by direct contact with or ingestion of contaminants in soil and waste sludges at the Site. Table I-1 through I-7 compare site soil cleanup goals to current residential RSLs. Tables I-1 through I-7 indicate that all of the areas that had soil cleanup goals were cleaned up to current residential standards.

Table I-1: Soil Cleanup Goal Review of the Primary Lagoon

COC	1989 OU-1 ROD Cleanup Goals (mg/kg)	Residential RSL[a] (mg/kg)		Cancer Risk[b]	Noncancer HQ[c]
		1 x 10^{-6} Risk	HQ = 1.0		
1,1-DCE (VDC)	0.017	--	230	--	0.00007
Vinyl chloride	0.019	0.059	70	3 x 10^{-7}	0.0003
Ethyl benzene	1.277	5.8	2,400	2 x 10^{-7}	0.0005
Benzene	0.002	1.2	82	2 x 10^{-9}	0.00002
Bis-2-ethylhexyl phthalate	0.128	39	1,300	3 x 10^{-9}	0.0001

Notes:

a. Current EPA RSLs, dated 2023, are available at www.epa.gov/risk/regional-screening-levels-rsls-generic-tables (accessed 2/14/2023).

b. The cancer risks were calculated using the following equation, based on the fact that RSLs are derived based on 1 x 10^{-6} risk: cancer risk = (cleanup level ÷ cancer-based RSL) × 10^{-6}.

c. The noncancer HQ was calculated using the following equation: HQ = cleanup level ÷ noncancer-based RSL.

HQ = hazard quotient
-- = not applicable; toxicity criteria not established
mg/kg = milligrams per kilogram

Table I-2: Soil Cleanup Goal Review of the Secondary Lagoon

COC	1989 OU-1 ROD Cleanup Goals (mg/kg)	Residential RSL[a] (mg/kg)		Cancer Risk[b]	Noncancer HQ[c]
		1 x 10^{-6} Risk	HQ = 1.0		
1,1-DCE (VDC)	0.065	--	230	--	0.0003
Vinyl chloride	0.075	0.059	70	1 x 10^{-6}	0.001
Ethyl benzene	4.914	5.8	2,400	9 x 10^{-7}	0.002
Benzene	0.007	1.2	82	6 x 10^{-9}	0.00009
Bis-2-ethylhexyl phthalate	0.491	39	1,300	1 x 10^{-8}	0.0004

Notes:

a. Current EPA RSLs, dated 2023, are available at www.epa.gov/risk/regional-screening-levels-rsls-generic-tables (accessed 2/14/2023).

b. The cancer risks were calculated using the following equation, based on the fact that RSLs are derived based on 1 x 10^{-6} risk: cancer risk = (cleanup level ÷ cancer-based RSL) × 10^{-6}.

c. The noncancer HQ was calculated using the following equation: HQ = cleanup level ÷ noncancer-based RSL.

HQ = hazard quotient
-- = not applicable; toxicity criteria not established
mg/kg = milligrams per kilogram

Table I-3: Soil Cleanup Goal Review of the Emergency Lagoon

COC	1989 OU-1 ROD Cleanup Goals (mg/kg)	Residential RSL[a] (mg/kg)		Cancer Risk[b]	Noncancer HQ[c]
		1 x 10^{-6} Risk	HQ = 1.0		
1,1-DCE (VDC)	0.008	--	230	--	0.00003
Vinyl chloride	0.009	0.059	70	2 x 10^{-7}	0.0001
Ethyl benzene	0.619	5.8	2,400	1 x 10^{-7}	0.0003
Benzene	0.001	1.2	82	8 x 10^{-10}	0.00001
Bis-2-ethylhexyl phthalate	0.061	39	1,300	2 x 10^{-9}	0.00005

Notes:

a. Current EPA RSLs, dated 2023, are available at www.epa.gov/risk/regional-screening-levels-rsls-generic-tables (accessed 2/14/2023).

b. The cancer risks were calculated using the following equation, based on the fact that RSLs are derived based on 1 x 10^{-6} risk: cancer risk = (cleanup level ÷ cancer-based RSL) × 10^{-6}.

c. The noncancer HQ was calculated using the following equation: HQ = cleanup level ÷ noncancer-based RSL.

HQ = hazard quotient
-- = not applicable; toxicity criteria not established
mg/kg = milligrams per kilogram

Table I-4: Soil Cleanup Goal Review of the Blowdown Pit

COC	1989 OU-1 ROD Cleanup Goals (mg/kg)	Residential RSL[a] (mg/kg)		Cancer Risk[b]	Noncancer HQ[c]
		1 x 10^{-6} Risk	HQ = 1.0		
1,1-DCE (VDC)	0.015	--	230	--	0.00007
Vinyl chloride	0.017	0.059	70	3 x 10^{-7}	0.0002
Ethyl benzene	1.122	5.8	2,400	2 x 10^{-7}	0.0005
Benzene	0.002	1.2	82	2 x 10^{-9}	0.00002
Bis-2-ethylhexyl phthalate	0.112	39	1,300	3 x 10^{-9}	0.00009

Notes:

a. Current EPA RSLs, dated 2023, are available at www.epa.gov/risk/regional-screening-levels-rsls-generic-tables (accessed 2/14/2023).

b. The cancer risks were calculated using the following equation, based on the fact that RSLs are derived based on 1 x 10^{-6} risk: cancer risk = (cleanup level ÷ cancer-based RSL) × 10^{-6}.

c. The noncancer HQ was calculated using the following equation: HQ = cleanup level ÷ noncancer-based RSL.

HQ = hazard quotient
-- = not applicable; toxicity criteria not established
mg/kg = milligrams per kilogram

Table I-5: Soil Cleanup Goal Review of the Boiler Lagoon

COC	1989 OU-1 ROD Cleanup Goals (mg/kg)	Residential RSL[a] (mg/kg)		Cancer Risk[b]	Noncancer HQ[c]
		1×10^{-6} Risk	HQ = 1.0		
1,1-DCE (VDC)	0.023	--	230	--	0.0001
Vinyl chloride	0.026	0.059	70	4×10^{-7}	0.0004
Ethyl benzene	1.741	5.8	2,400	3×10^{-7}	0.0007
Benzene	0.003	1.2	82	3×10^{-9}	0.00004
Bis-2-ethylhexyl phthalate	0.174	39	1,300	5×10^{-9}	0.0001

Notes:

a. Current EPA RSLs, dated 2023, are available at www.epa.gov/risk/regional-screening-levels-rsls-generic-tables (accessed 2/14/2023).

b. The cancer risks were calculated using the following equation, based on the fact that RSLs are derived based on 1×10^{-6} risk: cancer risk = (cleanup level ÷ cancer-based RSL) × 10^{-6}.

c. The noncancer HQ was calculated using the following equation: HQ = cleanup level ÷ noncancer-based RSL.

HQ = hazard quotient
-- = not applicable; toxicity criteria not established
mg/kg = milligrams per kilogram

Table I-6: Soil Cleanup Goal Review of the Battery Separator Lagoons

COC	1989 OU-1 ROD Cleanup Levels (mg/kg)	Residential RSL[a] (mg/kg)		Cancer Risk[b]	Noncancer HQ[c]
		1×10^{-6} Risk	HQ = 1.0		
1,1-DCE (VDC)	0.015	--	230	--	0.00006
Vinyl chloride	0.018	0.059	70	3×10^{-7}	0.0003
Ethyl benzene	1.161	5.8	2,400	2×10^{-7}	0.0005
Benzene	0.002	1.2	82	2×10^{-9}	0.00002
Bis-2-ethylhexyl phthalate	0.116	39	1,300	3×10^{-9}	0.00009

Notes:

a. Current EPA RSLs, dated 2023, are available at www.epa.gov/risk/regional-screening-levels-rsls-generic-tables (accessed 2/14/2023).

b. The cancer risks were calculated using the following equation, based on the fact that RSLs are derived based on 1×10^{-6} risk: cancer risk = (cleanup level ÷ cancer-based RSL) × 10^{-6}.

c. The noncancer HQ was calculated using the following equation: HQ = cleanup level ÷ noncancer-based RSL.

HQ = hazard quotient
-- = not applicable; toxicity criteria not established
mg/kg = milligrams per kilogram

Table I-7: Soil Cleanup Goal Review of the Tank Car Area

COC	1989 OU-1 ROD Cleanup Levels (mg/kg)	Residential RSL[a] (mg/kg)		Cancer Risk[b]	Noncancer HQ[c]
		1×10^{-6} Risk	HQ = 1.0		
1,1-DCE (VDC)	0.017	--	230	--	0.00007
Vinyl chloride	0.019	0.059	70	3×10^{-7}	0.0003
Ethyl benzene	1.277	5.8	2,400	2×10^{-7}	0.0005
Benzene	0.002	1.2	82	2×10^{-9}	0.00002
Bis-2-ethylhexyl phthalate	0.128	39	1,300	3×10^{-9}	0.0001

Notes:

a. Current EPA RSLs, dated 2023, are available at www.epa.gov/risk/regional-screening-levels-rsls-generic-tables (accessed 2/14/2024).

b. The cancer risks were calculated using the following equation, based on the fact that RSLs are derived based on 1×10^{-6} risk: cancer risk = (cleanup level ÷ cancer-based RSL) × 10^{-6}.

c. The noncancer HQ was calculated using the following equation: HQ = cleanup level ÷ noncancer-based RSL.

HQ = hazard quotient
-- = not applicable; toxicity criteria not established
mg/kg = milligrams per kilogram

OU-3

The goals of the selected groundwater remedy are to restore the drinking water aquifer and to eliminate the threats posed by direct contact with or ingestion of contaminants in sediment in the North Lagoon Wetland and Sinking Pond. Table I-8 shows that the groundwater IGCLs based on MCLs and MCLGs have not changed since the signing of the 2005 ROD. Table I-9 shows that for the risk- or health-based cleanup goals, when comparing the cleanup goals against RSLs, the cleanup goals remain valid with the exception of bis(2-chloroethyl)ether, which slightly exceeds EPA's upper bound of risk management (10^{-4} to 10^{-6}). SVOCs bis(2-chloroethyl)ether and bis(2-ethylhexyl)phthalate have ROD cleanup levels but were not included in the EPA-approved Groundwater Monitoring Plan and subsequent revisions.

The OU-3 2005 ROD selected sediment cleanup goals for the protection of human health for Sinking Pond and the North Lagoon Wetland. Both arsenic sediment goals were based on background. Therefore, they remain valid. The OU-3 2005 ROD also selected sediment cleanup goals for the protection of ecological receptors. Arsenic sediment cleanup levels were selected for Sinking Pond and the North Lagoon Wetland based on background. Therefore, they remain valid. The ROD also selected a cleanup goal for manganese in the North Lagoon Wetland based on a site-specific risk for muskrat. Given that ecological risk assessment methods have not significantly changed since the 2005 ROD was signed, this cleanup goal remains valid.

Table I-8: Groundwater Cleanup Levels Review

Chemical	2005 OU-3 Interim Cleanup Level[a] (µg/L)	Current Standards (µg/L)	ROD Basis
Antimony	6	6	MCLG
Arsenic	10	10	MCL
Beryllium	4	4	MCLG
Benzene	5	5	MCL
Bis(2-chloroethyl)ether	5	--	PQL
Bis(2-ethylhexyl)phthalate	6	6	MCL
Chromium (Total)	100	100	MCLG
1,2-Dichloroethane	5	5	MCL
1,1-Dichloroethylene	7	7	MCLG
1,2-Dichloropropane	5	5	MCL
Lead	15	15[c]	MCL (Action Level)
Manganese	300	--	Health Advisory

Methylene chloride	5	5	MCL
MTBE	16	--	Risk-based
Nickel	100	--	Health Advisory
Trichloroethylene (TCE)	5	5	MCL
Vinyl chloride	2	2	MCL

Notes:

a. Table L-4 of the Site's 2005 OU-2 ROD (pdf page 256).
b. National Primary Drinking Water Standards, located at www.epa.gov/ground-water-and-drinking-water/national-primary-drinking-water-regulations, accessed 2/14/2024.
c. Action level.

-- = chemical does not have a current federal standard.

Table I-9: Risk-based Groundwater Cleanup Level Review

COC	2005 OU-3 Interim Cleanup Level (µg/L)	Tap Water RSL[a] (mg/kg)		Cancer Risk[b]	Noncancer HQ[c]
		1 x 10^{-6} Risk	HQ = 1.0		
Bis(2-chloroethyl)ether	5	0.014	--	4 x 10^{-4}	--
Manganese	300	--	430	--	0.7
MTBE	16	14	6,300	1 x 10^{-6}	0.003
Nickel	100	--	390	--	0.3

Notes:

a. Current EPA RSLs, dated 2023, are available at www.epa.gov/risk/regional-screening-levels-rsls-generic-tables (accessed 2/14/2024).
b. The cancer risks were calculated using the following equation, based on the fact that RSLs are derived based on 1 x 10^{-6} risk: cancer risk = (cleanup level ÷ cancer-based RSL) × 10^{-6}.
c. The noncancer HQ was calculated using the following equation: HQ = cleanup level ÷ noncancer-based RSL.

HQ = hazard quotient
-- = not applicable; toxicity criteria not established
mg/kg = milligrams per kilogram

APPENDIX J – RESIDENTIAL LEAD SCREENING LEVEL CHECKLIST

Residential Lead Screening Level Checklist

Site Information			
Site or study area name	W.R. GRACE & CO., INC. (ACTON PLANT)		
Location (City/County, State, Zip)	ACTON, MA	SEMS EPA ID	MAD001002252
Current remedial pipeline phase	POST CONSTRUCTION	Does a site boundary exist in SEMS?	☒ Yes ☐ No
Briefly describe any removal or remedial work completed to date, including previous screening levels	Lead was not identified as a soil or sediment COC at the Site, data shows lead concentrations less than the 200 mg/kg residential screening value.		
Briefly describe the geographic scope of the study area that was considered while completing the checklist	Full site boundary		

Checklist completed by:		
Name	Title and Organization	Date
Matthew Audet	Chief, MA Superfund Section	3/4/2024

Table 1: Evaluate Primary Data Sources in "Residential Lead GIS Screening Tool" [**Ctrl+Click here to access GIS tool**]

Yes	No	?	Question	Data Evaluation Notes	References
☐	☒	☐	Is the study area in a NAAQS nonattainment zone for lead?	SCREENSHOT ATTACHED	EPA Green Book provides detailed information about NAAQS designations
☐	☒	☐	Does the EJScreen Lead Paint Index data demonstrate that a majority of the homes in the study area are at or above the 80th percentile?	SCREENSHOT ATTACHED	EJ Screen Environmental Indicators Census Bureau housing data tools American Community Survey data
☒	☐	☐	Are you able to you select a screening level based on these primary data sources?	☒ Yes: 200 ppm ☐ Yes: 100 ppm ☐ No: continue with checklist *If yes, skip to the last page to summarize the weight of evidence and to document approval.*	

Table 2: Evaluate Secondary Data Sources on Potential Lead Exposures

Yes	No	?	Question	Data Evaluation Notes	References
☐	☐	☐	Are you aware of any potential soil exposures due to deteriorating exterior lead-based paint?		EPA Regional Lead-Based Paint Contacts
☐	☐	☐	Are there facilities in the study area with known lead violations?		Search for facilities to assess their compliance Check with state and local contacts for facilities not subject to EPA authorities
☐	☐	☐	Are you aware of lead pipes and/or lead service lines in the study area?		Check with the state's drinking water program Check local drinking water quality annual reports
☐	☐	☐	Among the schools in the study area, are there drinking water reports or testing that indicate lead exposures?		The local public water department may have more information Check local drinking water quality annual reports EPA contacts for voluntary testing in schools
☐	☐	☐	Are you aware of any local cultural practices or community activities that may involve lead? (e.g., ceremonial uses, traditional medicines, pottery/jewelry making)		EPA resources on lead in cultural products
☐	☐	☐	Are there reports or data demonstrating elevated blood lead levels (BLL) in children in the study area? (If so, do reports indicate meaningful trends?)		Local Health Department may have more information CDC childhood lead poisoning prevention data and statistics

Table 3: Evaluate Mitigation Efforts

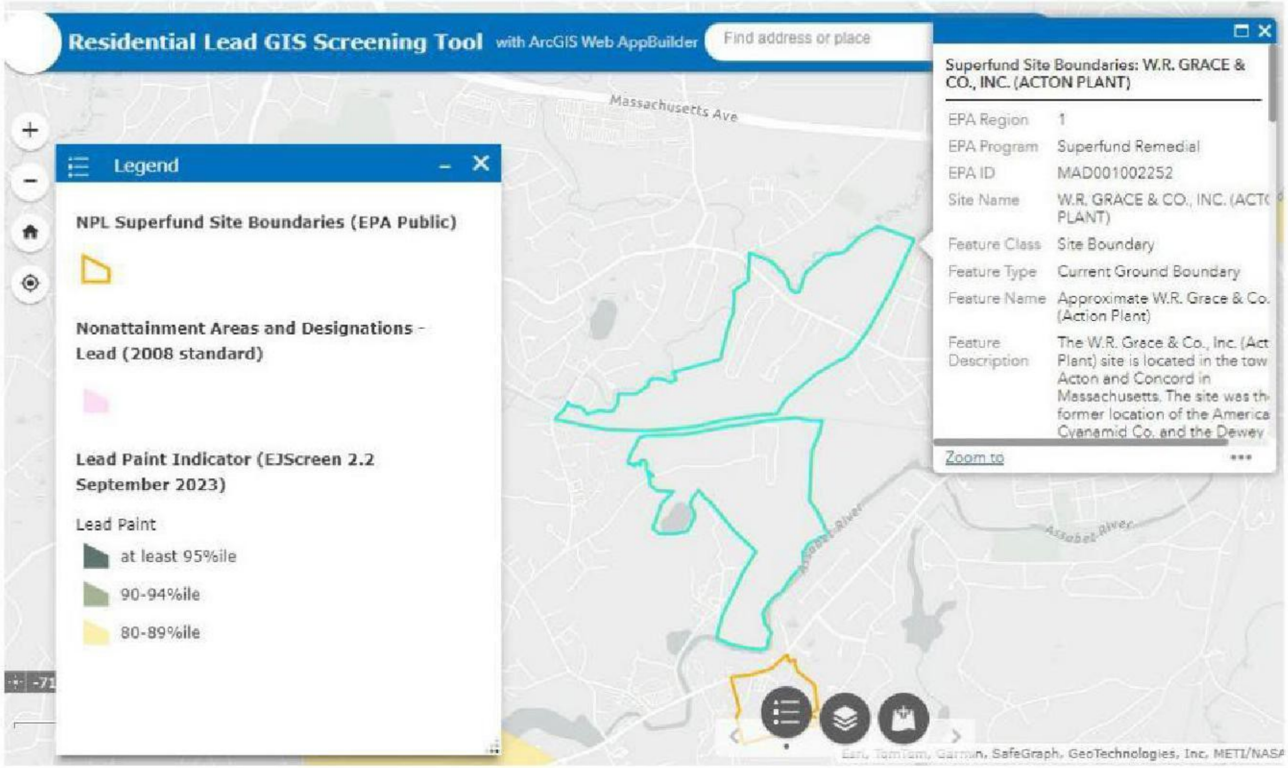
Yes	No	?	Question	Data Evaluation Notes	References
☐	☐	☐	Does the state, tribe, or territory have an EPA-authorized lead-based paint program?		Lead-based paint abatement programs RRP program information Identify authorized professionals EPA Regional Lead-Based Paint Contacts
☐	☐	☐	Is the study area covered by a lead ordinance or local lead laws? (e.g., real estate disclosure, dust hazard mitigation, building codes, permits or requirements for renovations)		Check with the state and local government authorities to find out about lead laws and ordinances specific to the area. Learn about federal lead laws and regulations Real estate disclosures about potential lead hazards
☐	☐	☐	Are you aware of whether older homes and/or schools have addressed lead-based paint through mitigation, encapsulation, or renovation?		Check with your regional Lead-Based Paint Coordinator, the local health department, education department, or school district(s) for this information. How to check for lead hazards in schools and childcare facilities
☐	☐	☐	Are you aware of whether lead service lines have been replaced or are scheduled to be replaced?		Check with the local public water department for more information
☐	☐	☐	Have there been other previous initiatives to directly address lead exposures in the study area? *(If yes, add notes on the outcome, including successes, challenges and gaps in effectiveness.)*		Check with your state or local health department

Additional Notes
Document any additional findings not addressed by the items specified in the checklist, including any input from key points of contact in other lead programs in the region or other federal, state and local agencies.
From 2019 Five Year Review: Lead was not identified as a soil or sediment COC at the Site. Sediment lead concentrations identified in the 2005 OU-3 Risk Assessment are less than 200 mg/kg. The 1988 OU-1 Endangerment Assessment evaluated lead in solid material (soil, sediment and surficial sludges combined) for three source areas (Primary Lagoon, Landfill, and Battery Separator Area), believed to be representative of contaminants across the Site. An average lead concentration was calculated for each source area. The highest average lead concentration from the three areas was 22.4 mg/kg, significantly less than the 200 mg/kg residential screening value. Therefore, no further investigation or action for lead is necessary.

Recommended Regional Screening Level		
Select the appropriate screening level and summarize the weight of evidence assembled above.	☒ 200 ppm	☐ 100 ppm

ROBERT CIANCIARULO Digitally signed by ROBERT CIANCIARULO
Date: 2024.03.04 11:21:47 -05'00'

Approved By [Type Name, Title] **Date**



Superfund Site Boundaries: W.R. GRACE & CO., INC. (ACTON PLANT)

EPA Region	1
EPA Program	Superfund Remedial
EPA ID	MAD001002252
Site Name	W.R. GRACE & CO., INC. (ACT PLANT)
Feature Class	Site Boundary
Feature Type	Current Ground Boundary
Feature Name	Approximate W.R. Grace & Co. (Action Plant)
Feature Description	The W.R. Grace & Co., Inc. (Act Plant) site is located in the tow Acton and Concord in Massachusetts. The site was th former location of the America Cyanamid Co. and the Dewey

Legend

NPL Superfund Site Boundaries (EPA Public)

Nonattainment Areas and Designations - Lead (2008 standard)

Lead Paint Indicator (EJScreen 2.2 September 2023)

Lead Paint
- at least 95%ile
- 90-94%ile
- 80-89%ile