DRAFT USEPA ANALYSIS OF BROWNFIELDS CLEANUP ALTERNATIVES-PRELIMINARY EVALUATION

Boulter Farm Area Site
Parcels 29-15 and 29-16
North Attleborough, Massachusetts
MADEP Release Tracking Number 4-19736

November 2023

PREPARED FOR:

Town of North Attleborough
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North Attleborough, Massachusetts 02760

PREPARED BY:

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Ref: \\Verdantas.Com\ESM\Shared\Client Projects\MA Clients\8080-BFA BF Cleanup North Attleborough\Reports\Draft Abcas\Boulter Farm Area Cleanup Draft ABCA.Docx

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1.0 INTRODUCTION & BACKGROUND

1.1 SITE LOCATION

The Site consists of portions of a 10.4-acre parcel of land (Parcel 29-15) and a portion of a 72-acre parcel (Parcel 29-16) in North Attleborough, Massachusetts, (herein referred to as the Site). The Site is unoccupied and was formerly utilized as a sand and gravel facility from at least 1949 to the 1980s. The Site property was acquired by the Town of North Attleborough (the Town) on November 16, 1998, as a tax taking. A Site Locus Map and Site Plan are provided as Figures 1 and 2.

1.2 FORCASTED CLIMATE CONDITIONS

According to the Massachusetts Climate Change Adaption Report, the impacts of climate change are wide-ranging and growing in severity in Massachusetts, with impacts from sea level rise, storm events, flooding, greenhouse gas emissions and changing weather patterns. As a coastal state, storm surges have broad implications and impacts to infrastructure, natural resources, and ecosystems, including drinking water supplies. The financial impacts are expected to be very high.

2.0 PREVIOUS SITE USE(S) AND ANY PREVIOUS CLEANUP/ CONTAMINATION

2.1 SITE HISTORY AND PREVIOUS SITE USES

The Site property was owned by several individuals from at least 1926 to 1946. The Site was operated as Courtois Sand & Gravel Co, Inc. from at least 1949 to at least the 1980s and has been vacant since that time. In the 1940s, the westerly abutting, Boulter Farm Area (BFA) Site, was used as a pig farm by the former owner Samuel Boulter and included Parcel 29-15. This parcel was subsequently sold to Courtois Sand & Gravel Co, Inc. in 1949. The Site property was acquired by the Town on November 16, 1998, as a tax taking.

According to environmental reports, operations at the Former BFA reportedly included a non-licensed solid waste disposal facility, along with the storage of derelict vehicles from the late 1960s to at least 1976. Practices reportedly included the open burning of demolition waste.

2.2 PREVIOUS CLEANUP/CONTAMINATION

Based upon the results of investigations conducted by the United States Environmental Protection Agency (EPA) in 2002, 2009, and 2010, and Lord Associates, Inc., there was evidence of petroleum hydrocarbons, volatile organic compounds (VOCs), polychlorinated biphenyls (PCBs), and metals in soil and/or groundwater which appears to be attributed to historic operations at the former BFA Site, located hydraulically upgradient of the subject Site. EPA conducted observations and limited sampling at the Site (Parcel 29-15) as part of the BFA investigation, which indicated the presence of a "black tarlike substance" adjacent to a suspect lagoon. A Site reconnaissance conducted by Camp, Dresser & McKee in 2009 verified the presence of the lagoon, along with an area of "oily material". EPA described the lagoon as containing "soil which were saturated with tarry substances having oily odors". According to EPA, "Lagoon No. 2" was first observed in 1984 by Whitman & Howard, Inc. (W&H) personnel during an inspection of the BFA property conducted on behalf of the Massachusetts Department of Environmental Protection (MassDEP) (then the Massachusetts Department of Environmental Quality Engineering). W&H personnel reported that the bed of Lagoon No. 2 was covered "'with about 4 inches of leaves and soil saturated with tarry substances having oily odors." Moreover, W&H personnel reported the presence of a "buried dump", containing"...partly exposed rusted-out drums, auto parts, and refuse of wood, glass, rubber, plastic, metal and fiberglass", located "adjacent" to Lagoon No. 2". Measurable quantities of light non-aqueous phase liquid (LNAPL) containing PCBs and petroleum hydrocarbons was encountered by LAI in a Site monitoring well located within the lagoon.

The Site is identified by the MassDEP by Release Tracking Number (RTN) 4-19736, based upon a release of petroleum hydrocarbons and PCBs. The Massachusetts Contingency Plan (MCP) Disposal Site is classified by MassDEP as "Tier ID" (default status). LAI in an

Immediate Response Action Plan prepared for J.F. Realty, LLC (dated September 13, 2006) inferred that transformers were buried at the Site. However, there was no evidence of buried transformers encountered during investigative activities. It is noted that "auto crushing" is conducted by the upgradient automotive salvage yard within 300 feet of the lagoon.

A fenced enclosure, equipped with signage, was installed by the Town at portions of the Site in 2009 to restrict access to Site contaminants present at the ground surface within the lagoon. This measure mitigates a Potential Condition of Imminent Hazard.

2.3 SITE ASSESSMENT FINDINGS

From January to February 2016, Ransom Consulting, Inc. (Ransom) completed a Site investigation which included the advancement of soil borings, the installation of groundwater monitoring wells and the collection and laboratory analysis of soil and groundwater samples and a limited geophysical survey. Ransom encountered measurable LNAPL in a Site groundwater well within the immediate vicinity of the lagoon. Concentrations of petroleum hydrocarbons constituents and PCBs were detected in Site soil and groundwater at levels exceeding applicable MCP Method 1 Soil Standards.

Based on a review of previous environmental investigations, a release of lead and zinc was identified in analytical results collected during investigation activities conducted 2002 and the Town obtained knowledge of the release in September 2016. MassDEP assigned RTN 4-26387 to the release. A Phase I Initial Site Investigation and Tier Classification (Ransom Consulting, Inc., Nov. 2016) was completed on behalf of the Town and submitted to MassDEP.

3.0 PROJECT GOAL/REUSE PLAN

The owner has established plans to clean up and redevelop the property for affordable housing, solar energy, and recreation.

4.0 APPLICABLE REGULATIONS AND CLEANUP STANDARDS

4.1 CLEANUP OVERSIGHT RESPONSIBILITY

Site Cleanup will be conducted pursuant to the MCP, 310 CMR 40.0000 under a Massachusetts Licensed Site Professional (LSP)[1] and EPA Toxics Substances Control Act (TSCA) regulatory requirements. Additional applicable local, state and federal regulatory requirements will be adhered to, including the appropriate procurement of contractors.

4.2 CLEANUP STANDARDS FOR MAJOR CONTAMINANTS

The applicable MCP Standards for the Site are MCP Method 1 Soil Cleanup Standards and MCP Method 1 (S-1) Soil and Groundwater (GW-2/GW-3) Standards.

4.3 LAWS & REGULATIONS APPLICABLE TO THE CLEANUP

The MCP is the state's environmental regulation that provides for the protection of health, safety, public welfare, and the environment by establishing requirements and procedures for the activities and cleanup of oil or hazardous materials. The EPA TSCA regulation applies to PCB remediation at the Site.

The Town is conducting voluntary Site cleanup. Additional laws and regulations applicable to the Cleanup include the Federal Small Business Liability Relief and Brownfields Revitalization Act, the Federal Davis-Bacon Act and Town by-laws. Federal, state and local laws regarding procurement of contractors to conduct the cleanup will be followed.

[1] In 1993, Massachusetts created a model program that privatized the cleanup of hazardous waste sites in the Commonwealth. Licensed Site Professionals (LSPs) are authorized by the Commonwealth to work on behalf of property owners, operators, and other responsible parties to oversee the assessment and cleanup of contamination that has been released into the environment. LSPs are scientists, engineers, and public health specialists with significant professional expertise in oil and hazardous material contamination. LSPs are governed by the Massachusetts Board of Registration of Hazardous Waste Site Cleanup Professionals, also known as the LSP Board.

5.0 EVALUATION OF CLEANUP ALTERNATIVES

5.1 CLEANUP ALTERNATIVES

To address contamination at the Site, four different alternatives were considered including Alternative #1: No Remedial Action; Alternative #2, Cleanup and Post-Remedial Monitoring #3, Institutional Controls, Passive Containment, #4 Targeted Ex-Situ Remediation and Institutional Controls, Passive Containment, Monitoring.

Alternative #1: No Remedial Action

The "No Remedial Action" alternative assumes that no additional remedial efforts are implemented to address petroleum hydrocarbon and PCB impacts at the Site. The "No Action" alternative can provide a basis for assessing the effects of implementing remedial actions; however, it does not directly reduce the toxicity, mobility or volume of impacted soils. This response action alternative does not reduce Site risks associated with groundwater that may be impacted in the future and provides no additional protection to human health or public welfare. Additionally, the constituents of concern are at levels that do not naturally attenuate and therefore "No Action" is not an effective approach in reducing impacts and mitigating risk to human health and/or the environmental receptors in the long term.

Alternative #2: Ex-Situ Remediation and Post-Remedial Groundwater Monitoring

Soil excavation is an effective approach for source removal. The primary purpose of is to remove impacted media, and thus control potential exposure risks. Excavation involves the removal of impacted soil that presents a potential direct contact risk, along with soil which may serve as a continuing source of contaminant impacts to groundwater. LNAPL will be recovered during dewatering activities if encountered. The impacted media are removed from its current setting and transported off-Site for contaminant removal to a licensed receiving facility. A drying agent is applied to wet soils, prior to transport & disposal (T&D). Confirmatory soil sampling is performed. Clean soil will be sourced from on-Site and used as backfill within the excavation. Prior to disposal, soils will be treated to stabilize leachable lead detected at concentrations exceeding the toxicity characteristic leaching procedure (TCLP) regulatory level. Clean soil backfill will be sourced from on-Site.

Groundwater monitoring is conducted as a measure to assess the effectiveness of the cleanup. Groundwater is collected from monitoring wells at area within and/or hydraulically downgradient of the cleanup area.

Alternative #3: Institutional Controls, Passive Containment, Monitoring

Institutional controls are mechanisms to limit access to impacted media and include alternatives such as fencing, barriers, and Activity and Use Limitations (AULs) in the form of deed restrictions. While institutional controls do not eliminate contamination, they can

provide an effective, low cost means of reducing exposure potential, and thus risk, if properly maintained and enforced. Institutional controls may be effective in mitigating exposure to PCB, petroleum hydrocarbon, and metal impacted soils in locations at which it may be infeasible to reach background conditions. Implementation of an AUL on a Site property to restrict access to impacted groundwater (other than as "exposure pathway elimination measures" or to restrict access to drinking water) is not supported by MassDEP. However, AULs may be implemented to ensure that engineering controls be maintained to mitigate potential risk.

Passive Containment: The primary purpose of containment technologies is to isolate impacted media, and thus control potential exposure risks. Passive containment involves placement of horizontal physical barriers, such as a cap, sealant or membrane, or vertical barriers such as a grout curtain, slurry wall, or sheet piling in the areas of contamination. Clean fill soil will be sourced from on-Site and used as a pre-capping material to raise the existing grade in portions of the lagoon to eliminate low-lying areas and shed surface water off the engineered barrier. Inspection of the cap is required on a regular basis to evaluate the condition and integrity.

Monitoring: Refer to Alternative #1.

Alternative #4: Targeted Ex-Situ Remediation and Institutional Controls, Passive Containment, Monitoring

Targeted soil excavation is an effective approach for mitigating impacts from the source area containing the highest concentrations of constituents of concern that pose a greater risk to receptors. The primary purpose of targeted soil excavation is to remove the most heavily impacted media which may serve as a continuing source of contaminant impacts to groundwater. The impacted media are removed from its current setting. A drying agent is applied to wet soils and transported off-Site to a licensed receiving facility. Prior to disposal, soils will be treated to stabilize leachable lead detected at concentrations exceeding the TCLP regulatory level. Confirmatory soil sampling is performed. Clean soil is sourced on-Site and used as backfill within the excavation.

Implementation of passive containment and institutional controls along with targeted soil excavation will serve to isolate impacted media, and thus control potential exposure risks. Passive containment involves placement of horizontal physical barriers, such as a cap, sealant or membrane in the areas of contamination. Institutional controls, such as fencing, barriers, and AULS, help ensure that engineering controls be maintained to mitigate potential risk of exposure to isolated impacted soil remaining at the Site. Clean soil will be sourced from on-Site and used as a pre-capping material to raise the existing grade in portions of the lagoon to eliminate low-lying areas and shed surface water off the engineered barrier.

Monitoring: Refer to Alternative #1.

5.2 COST ESTIMATE OF CLEANUP

Effectiveness-Including Vulnerability/Resiliency Considerations:

Alternative #1: No Remedial Action: Alternative #1 is not effective in controlling or preventing the exposure of Site OHM to human or environmental receptors. This approach is not resilient from climate change impacts.

Alternative #2: Ex-Situ Remediation and Post-Remedial Groundwater Monitoring: Alternative #2 is effective at removing the sources of OHM and preventing the migration of OHM sources to human and environmental receptors. Groundwater monitoring is effective at assessing the success of the cleanup. This approach is resilient from climate change impacts.

Alternative #3: Institutional Controls, Passive Containment and Monitoring: Although Alternative #3 mitigates direct exposure to contaminated soil, it does not remediate the OHM sources and does not prevent migration of OHM in groundwater to human or environmental receptors. Long-term groundwater monitoring is effective at assessing potential impacts to receptors. Cap inspections are effective for monitoring the condition of the cap. Implementation of an AUL is an effective administrative control to mitigate potential contaminated media impacts to receptors. This approach is resilient from climate change impacts.

Alternative #4: Targeted Ex-Situ Remediation and Institutional Controls, Passive Containment, Monitoring: Alternative #4 is effective at removing the highest concentrations of constituents of concern from the source area and limiting the migration of OHM sources to human and environmental receptors. This alternative does not completely remediate all OHM sources. Cap inspections are effective for monitoring the condition of the cap. Implementation of an AUL is an effective administrative control to mitigate potential contaminated media impacts to receptors. This approach is resilient from climate change impacts.

Implementability:

Alternative #1: No Remedial Action and Monitoring

- No remedial action is conducted and is readily implementable.
- Monitoring: There is low to moderate technical complexity associated with implementability.

Alternative #2: Ex-Situ Remediation and Post-Remedial Groundwater Monitoring

- Ex-Situ Technologies: There is moderate technical complexity associated with implementability.
- Monitoring: There is low to moderate technical complexity associated with implementability.

Alternative #3: Institutional Controls, Passive Containment and Monitoring:

- An AUL is readily implementable.
- Passive Horizontal Containment: There is moderate technical complexity associated with implementability.
- Monitoring: There is low to moderate technical complexity associated with implementability.

Alternative #4: Targeted Ex-Situ Remediation and Institutional Controls, Passive Containment, Monitoring:

- Ex-Situ Technologies: There is moderate technical complexity associated with implementability.
- An AUL is readily implementable.
- Passive Horizontal Containment: There is moderate technical complexity associated with implementability.
- Monitoring: There is low to moderate technical complexity associated with implementability.

COSTS:

Alternative #1: No Remedial Action and Monitoring: The estimated cost to implement this option is $150K.

Alternative #2: Ex-Situ Remediation and Post-Remedial Groundwater Monitoring: The estimated cost to implement this option is estimated at $$1.6M

Alternative #3: Institutional Controls, Passive Containment and Monitoring: The estimated cost to implement this option is $450K.

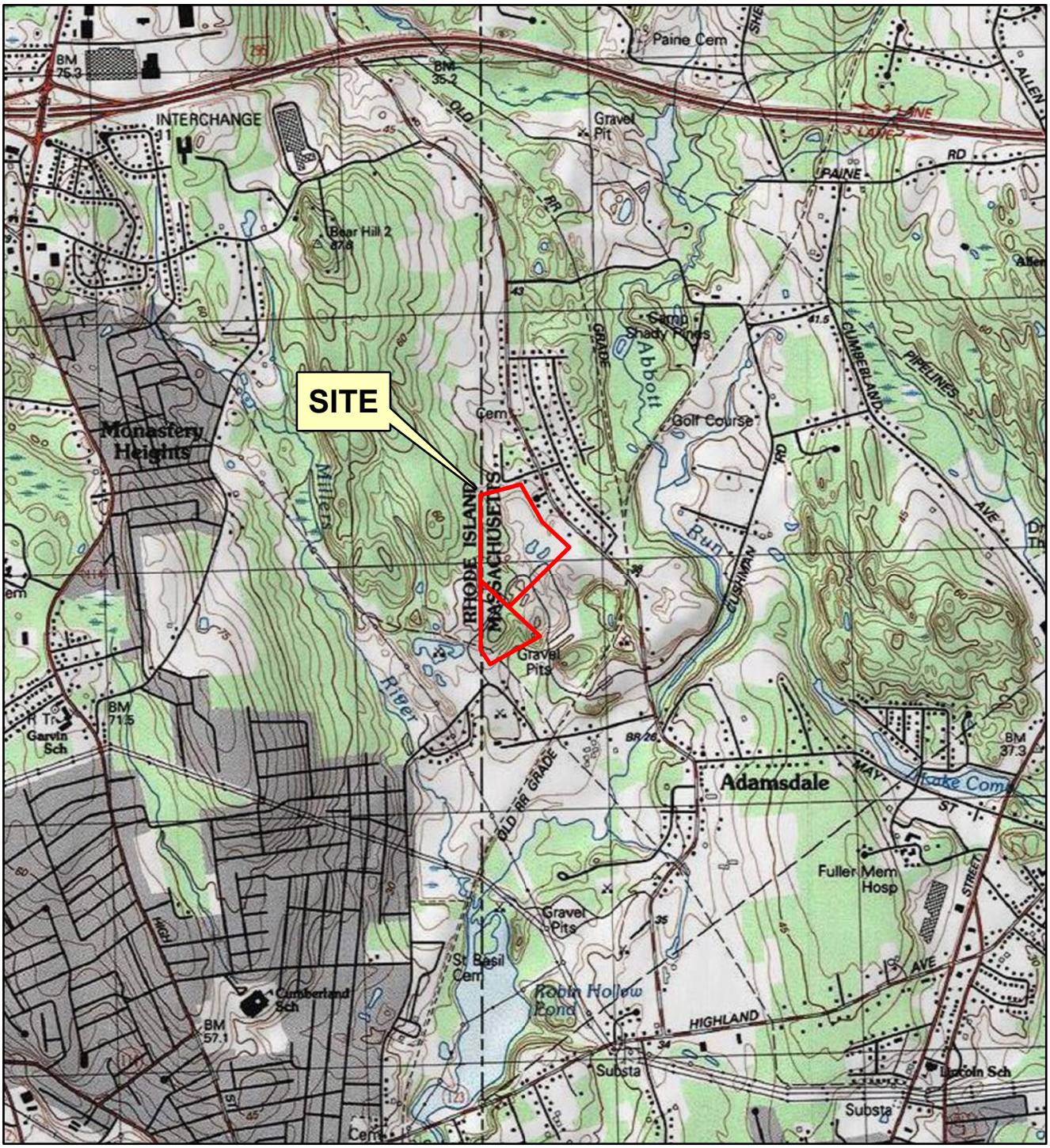
Alternative #4: Targeted Ex-Situ Remediation and Institutional Controls, Passive Containment, Monitoring: The estimated cost to implement this option is $700K to $1M. The lower range of costs assumes targeted excavation for highly contaminated soils and the high range of costa assumes excavation of up to 50% of impacted area.

5.3 RECOMMENDED CLEANUP UP ALTERNATIVE

The recommended cleanup alternative is: **Alternative #4: Targeted Ex-Situ Remediation and Institutional Controls, Passive Containment, Monitoring.** This approach assumes targeted excavation of high PCB concentrations (> 50 mg/kg). A Lagoon Plan depicting the proposed excavation area and engineered barriers detail is provided as Figure 3.

Green and Sustainable Remedial (GSR) Measures for Selected Alternative: Storm water design will be incorporated as part of Site development. In addition, the cleanup design will include the implementation of storm water controls. The use of clean on-Site gravel will be used for backfill/restoration purposes. Bid documents will incorporate GSR measures for implementation by the cleanup contractor.

FIGURES



Legend

Subject Property

APPROXIMATE SITE COORDINATES:
LAT 41°55'55"N LONG 71°22'50"W

SOURCE: USA TOPO MAPS ARCGIS SERVICE

0 1,000 2,000 4,000

Scale in Feet (1:24,000)

PREPARED BY

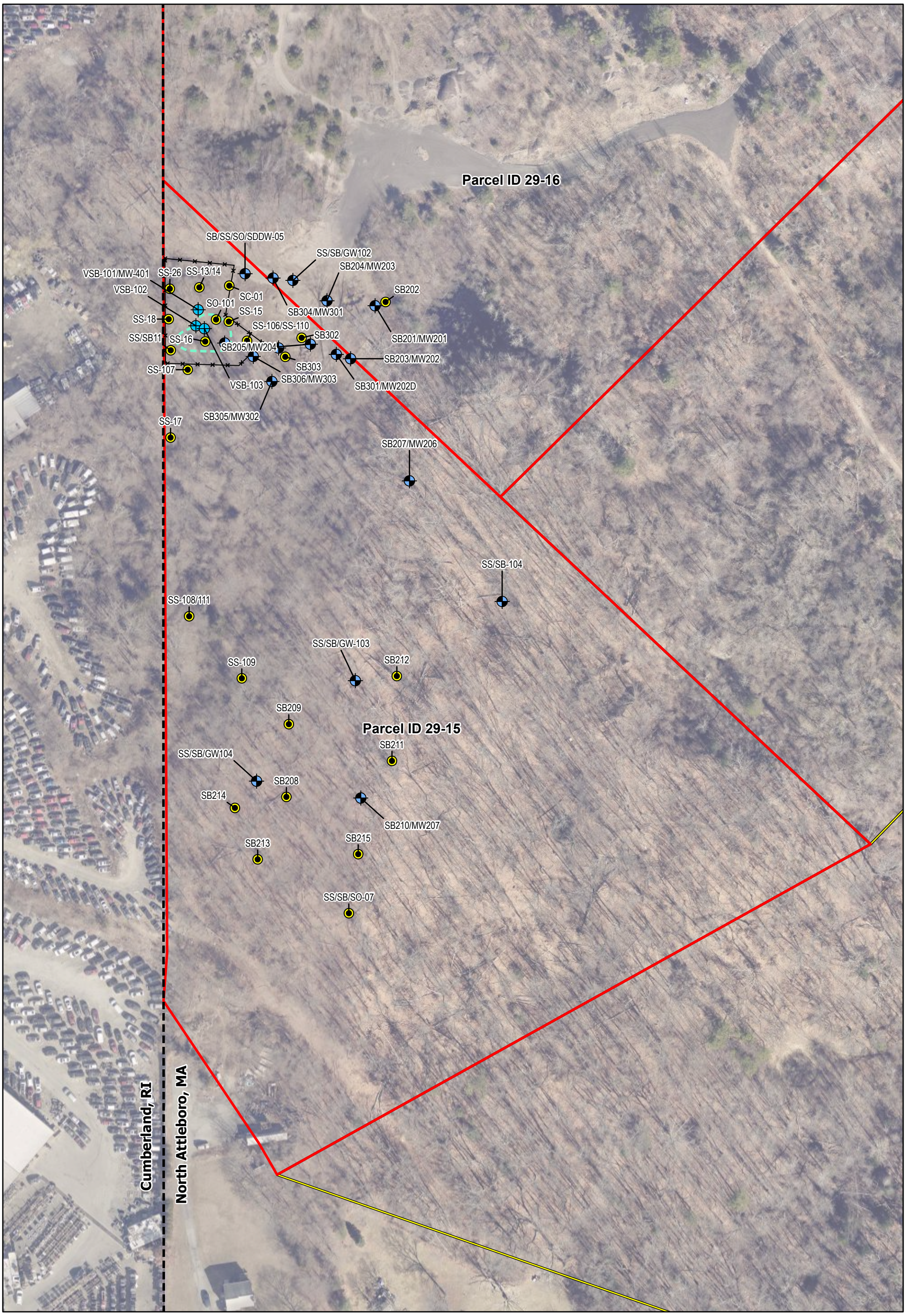
verdantas
PEOPLE FOCUSED FUTURE

LOCUS MAP

Boulter Farm Area Site
North Attleboro
Massachusetts

DRAWN	CHECKED	PROJ MGR	PROJECT	DATE	FIGURE
DMR	DC	TC	8080	8/2/2023	1

File: GIS 8080.aprx



Legend

- Verdantas Soil Boring / Monitoring Well
- Soil Boring
- Soil Boring / Monitoring Well
- Fence Surrounding Lagoon (approximate)
- Subject Property
- Parcel Line
- Town/State (MA/RI) Boundary
- Lagoon Area (approximate)

0 50 100 200

SCALE IN FEET

N

Base Map Sources: MassGIS Level 3 Parcel and Town Boundary Data Layers; Rhode Island Aerial Photographs (Spring 2023); "Site Plan" prepared by Ransom dated Nov. 2016; "Site Plan with Proposed Soil, Source, and Groundwater Samples" prepared by Sovereign Consulting Inc dated 5/17/2010; "Start Sample Location Sketch" prepared by Weston Solutions, dated 4/3/03.

PREPARED BY

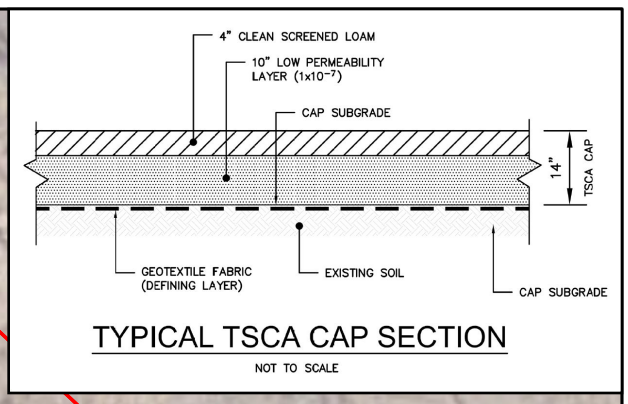
verdantas
PEOPLE FOCUSED FUTURE

SITE PLAN

Boulter Farm Area Site
North Attleboro, Massachusetts

DRAWN	CHECKED	PROJ MGR	PROJECT	DATE	FIGURE
DMR	DC	TC	8080	8/2/2023	2

Project File: GIS 8080.aprx Layout: Boulter Farm Site Map Date Saved: 8/2/2023 4:02 PM



TYPICAL TSCA CAP SECTION

NOT TO SCALE

Proposed Excavation Area

G3 F3 E3
G2 F2 E2
G1 F1 E1
SS-13/14
SS-26
Upland-01
VSB-101/MW-401
D4 C4 B4 A4
SS-18
D3 C3 B3 SO-101 A3
VSB-102
D2 C2 VSB-103 B2 A2
D1 C1 B1 A1
SS-16
SDDW-07/SO-15
SS/SB11
SS-107
SB/SS/SO/SDDW-05
SC-01
SS-15
Upland-02
SS-106/SS-110
SB306/MW303

Legend

- Soil Sample
- Verdantas Soil Boring / Monitoring Well
- Soil Boring
- Soil Boring / Monitoring Well
- Fence Surrounding Lagoon (approximate)
- Subject Property
- 10 Foot Grid
- Proposed Excavation Area

0 5 10 20
SCALE IN FEET

N

Base Map Sources: MassGIS Level 3 Parcel and Town Boundary Data Layers; Rhode Island Aerial Photographs (Spring 2023); "Site Plan" prepared by Ransom dated Nov. 2016; "Site Plan with Proposed Soil, Source, and Groundwater Samples" prepared by Sovereign Consulting Inc dated 5/17/2010; "Start Sample Location Sketch" prepared by Weston Solutions, dated 4/3/03.

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LAGOON PLAN

Boulter Farm Area Site
North Attleboro, Massachusetts

DRAWN	CHECKED	PROJ MGR	PROJECT	DATE	FIGURE
DMR	DC	TC	8080	11/3/2023	3

Project File: GIS 8080.aprx Layout: Boulter Farm Lagoon Date Saved: 11/3/2023 1:59 PM

TABLES

Table 1. Estimated Remedial Costs-Alternative #2
Boulter Farm Area
North Attleboro, MA

VERDANTAS, LLC
273 West Main Street
Norton, MA 02766
Phone: 508-829-6000
www.verdantas.com

Date: November 6, 2023

TASK NO.	ITEM NAME	UNITS	QUANTITY	UNIT COST	COST ESTIMATE
ABCA Alternative #2-Ex-Situ Remediation and Groundwater Monitoring					
001	Mobilization & Demoblization	LS	1	$20,000	$20,000
002	Furnish & Install Erosion Control (compost filter sock)	LF	420	$10	$4,200
003	Temporary Chain-link Construction Fence	LF	420	$20	$8,400
004	Clear & Grub existing Vegetation (1/2 site area 4,000 sf)	SY	445	$20	$8,900
005	Excavate/Stockpile/Load PCB Impacted Soil (9,250 sf x 6' deep)	CY	2,056	$30	$61,680
006	Apply Dryng Agent to soils within GWT (approx. 3 feet deep)	Ton	1,542	$140	$215,880
007	Transportation and Disposal of approx 267 CY of Soil PCB over 50 ppm	Ton	401	$350	$140,350
008	Transportation and Disposal of approx 1,789 CY of Soil PCB under 50 ppm	Ton	2,684	$245	$657,580
009	Backfill excavation area with on-site materials	CY	2,056	$25	$51,400
010	Furnish & Install Stabilization Agent for TCLP Lead Soil (9,250 sf x 24" deep)	CY	685	$100	$68,500
011	Permanent 6' high Chain-link Fence	LF	420	$60	$25,200
012	Qualified Environmental Professional (QEP) Services.	LS	1	$150,000	$150,000
013	Monitoring (groundwater and cap)	EA	1	$5,000	$5,000
014				$0.0	$0
			SUB-TOTAL		**$1,417,090**
			15% Contingency		**$212,564**
			TOTAL		**$1,629,654**

Notes:

1. All Quantities are approximate; Unit Prices obtained from recent MASSDOT Weighted Average Unit Prices
2. Total Subject area equates to approximately 9,250 sf
3. Clean backfill materials will be sourced from on-Site and the associated cost is reflecting labor to excavate, transport, & backfill
4. Assume 1 post-remedial groundwater monitoring event.

Table 2. Estimated Remedial Costs-Alternate #3
Boulter Farm Area
North Attleboro, MA

VERDANTAS, LLC
273 West Main Street
Norton, MA 02766
Phone: 508-829-6000
www.verdantas.com

Date: November 6, 2023

TASK NO.	ITEM NAME	UNITS	QUANTITY	UNIT COST	COST ESTIMATE
ABCA Alternative #3-Institutional Controls, Passive Containment and Monitoring					
001	Mobilization & Demoblization	LS	1	$20,000	$20,000
002	Furnish & Install Erosion Control (compost filter sock)	LF	420	$10	$4,200
003	Temporary Chain-link Construction Fence	LF	420	$20	$8,400
004	Clear & Grub existing Vegetation (1/2 site area 4,000 sf)	SY	445	$20	$8,900
005	Backfill existing depression area with on-site material	CY	140	$25	$3,500
006	Rough Grade Site for Geotextile	SY	1,030	$15	$15,450
007	Furnish & Install Geotextile Fabric (14" TSCA Cap)	SY	1,030	$20	$20,600
008	Furnish & Install 10" Thick Low Permeability Layer (14" TSCA Cap)	CY	300	$80	$24,000
009	Furnish & Install 4" Thick Loam Layer (14" TSCA Cap)	SY	1,030	$10	$10,300
010	Hydro-seed Area	SY	1,030	$3	$3,090
011	Permanent 6' high Chain-link Fence	LF	420	$60	$25,200
012	Groundwater monitoring and cap inspections	EA	20	$5,000	$100,000
013	Qualified Environmental Professional (QEP) Services.	LS	1	$150,000.0	$150,000
			SUB-TOTAL		**$393,640**
			15% Contingency		**$59,046**
			TOTAL		**$452,686**

Notes: ABCA Alt 3

1. All Quantities are approximate; Unit Prices obtained from recent MASSDOT Weighted Average Unit Prices
2. Total Subject area equates to approximately 9,250 sf
3. Backfill materials will be sourced from on-Site and the associated cost is reflecting labor to excavate, transport, & backfill
4. On-Site material will be used as pre-capping material to raise the existing grade in portions of the site (approximate 2') to eliminate low-lying areas and shed surface water off the cap.
5. Assume 20 annual groundwater monitoring and cap inspection events

Table 3. Estimated Remedial Costs-Alternative 4A
Boulter Farm Area
North Attleboro, MA

Date: November 6, 2023

VERDANTAS, LLC
273 West Main Street
Norton, MA 02766
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www.verdantas.com

TASK NO.	ITEM NAME	UNITS	QUANTITY	UNIT COST	COST ESTIMATE
ABCA Alternative #4- Targeted Ex-Situ Remediation (PCBs > 50 ppm) and Institutional Controls, Passive Containment, Monitoring					
001	Mobilization & Demoblization	LS	1	$20,000	$20,000
002	Furnish & Install Erosion Control (compost filter sock)	LF	420	$10	$4,200
003	Temporary Chain-link Construction Fence	LF	420	$20	$8,400
004	Clear & Grub existing Vegetation (1/2 site area 4,000 sf)	SY	445	$20	$8,900
005	Excavate/Stockpile/Load PCB Impacted Soil from G3 & F3 15' Perimeter (1,200 sf x 6' deep	CY	267	$30	$8,010
006	Apply Dryng Agent to soils within GWT (approx. 3 feet deep)	Ton	200	$140	$28,000
007	Transportation and Disposal of approx 267 CY of Soil PCB over 50 ppm	Ton	400	$350	$140,000
008	Backfill Excavation Area with Clean Common Borrow (3" minus)	CY	267	$50	$13,350
009	Furnish & Install Stabilization Agent for TCLP Lead Soil (Assume 1,200 sf x 24" deep)	CY	89	$100	$8,900
010	Backfill existing depression area with on-site materials	CY	140	$25	$3,500
011	Rough Grade Site for Geotextile	SY	1,030	$15	$15,450
012	Furnish & Install Geotextile Fabric (14" TSCA Cap)	SY	1,030	$20	$20,600
013	Furnish & Install 10" Thick Low Permeability Layer (14" TSCA Cap)	CY	300	$80	$24,000
014	Furnish & Install 4" Thick Loam Layer (14" TSCA Cap)	SY	1,030	$10	$10,300
015	Hydro-seed Area	SY	1,030	$3	$3,090
016	Permanent 6' high Chain-link Fence	LF	420	$60	$25,200
017	Groundwater Monitoring	EA	20	$5,000	$100,000
018	Qualified Environmental Professional (QEP) Services.	LS	1	$150,000.0	$150,000
			SUB-TOTAL		**$591,900**
			15% Contingency		**$88,785**
			TOTAL		**$680,685**

Notes:

1. All Quantities are approximate; Unit Prices obtained from recent MASSDOT Weighted Average Unit Prices
2. Total Subject area equates to approximately 9,250 sf
3. Clean backfill materials will be sourced from on-Site and the associated cost is reflecting labor to excavate, transport, & backfill
4. On-Site material will be used as pre-capping material to raise the existing grade in portions of the site (approximate 2') to eliminate low-lying areas and shed surface water off the cap.
5. Assume 20 annual groundwater monitoring and cap inspection events

Table 4. Estimated Remedial Costs-Alternative 4B
Boulter Farm Area
North Attleboro, MA
North Attleboro, MA

Date: November 6, 2023

VERDANTAS, LLC
273 West Main Street
Norton, MA 02766
Phone: 508-829-6000
www.verdantas.com

TASK NO.	ITEM NAME	UNITS	QUANTITY	UNIT COST	COST ESTIMATE
ABCA Alternative #4- Targeted Ex-Situ Remediation (50% of area) and Institutional Controls, Passive Containment, Monitoring					
001	Mobilization & Demoblization	LS	1	$20,000	$20,000
002	Furnish & Install Erosion Control (compost filter sock)	LF	420	$10	$4,200
003	Temporary Chain-link Construction Fence	LF	420	$20	$8,400
004	Clear & Grub existing Vegetation (1/2 site area 4,000 sf)	SY	445	$20	$8,900
005	Excavate/Stockpile/Load PCB Impacted Soil (4,000 sf x 6' deep)	CY	889	$30	$26,670
006	Apply Dryng Agent to soils within GWT (approx. 3 feet deep)	Ton	667	$140	$93,380
007	Transportation and Disposal of approx 267 CY of Soil PCB over 50 ppm	Ton	401	$350	$140,350
008	Transportation and Disposal of approx 622 CY of Soil PCB under 50 ppm	Ton	933	$245	$228,585
009	Backfill excavation area with on-site materials	CY	889	$25	$22,225
010	Furnish & Install Stabilization Agent for TCLP Lead Soil (Assume 5,250 sf x 24" deep)	CY	390	$100	$39,000
011	Rough Grade Site for Geotextile	SY	583	$15	$8,745
012	Furnish & Install Geotextile Fabric (14" TSCA Cap)	SY	583	$20	$11,660
013	Furnish & Install 10" Thick Low Permeability Layer (14" TSCA Cap)	CY	162	$80	$12,960
014	Furnish & Install 4" Thick Loam Layer (14" TSCA Cap)	SY	583	$10	$5,830
015	Permanent 6' high Chain-link Fence	LF	420	$60	$25,200
016	Qualified Environmental Professional (QEP) Services.	LS	1	$150,000	$150,000
017	Groundwater Monitoring and cap inspections	EA	20	$5,000	$100,000
018				$0	$0
			SUB-TOTAL		**$906,105**
			15% Contingency		**$135,916**
			TOTAL		**$1,042,021**

Notes:
1. All Quantities are approximate; Unit Prices obtained from recent MASSDOT Weighted Average Unit Prices
2. Total Subject area equates to approximately 9,250 sf
3. Clean backfill materials will be sourced from on-Site and the associated cost is reflecting labor to excavate, transport, & backfill
4. Assume 20 annual groundwater monitoring and cap inspection events