FOOT OF MAIN, LLC
Stony Point, New York

ALTERNATIVES ANALYSIS REPORT

Site Name: **Former Tidewater Terminal**
Location: **41 Gedney Street, Village of Nyack, NY**
Tax ID: **Portion of Section 66.39 – Block 1 – Lot 2**

SUBMITTED TO
New York State Department of Environmental Conservation
Brownfield Cleanup Program
Index Number: **A3-0568-1006**
Site Number: **C344067**

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1 INTRODUCTION

1.1 BACKGROUND

This Alternatives Analysis (AA) report provides the basis for recommending the selection of a remedy to clean the former Tidewater Terminal site (the "Site"), located at 41 Gedney Street, Village of Nyack, Rockland County, New York (Figure 1 - Site Location Map). The Site encompasses the western 0.8-acre portion of the 2.6-acre property identified on the Rockland County tax map as Section 66.39, Block 1, Lot 2. (Figure 2 – Site Boundary Map). This AA report has been prepared pursuant to a Brownfield Site Cleanup Agreement (BSCA) between the owner of the property (Foot of Main, LLC, the "Volunteer") and the New York State Department of Environmental Conservation (NYSDEC). The BSCA is identified by its Index Number A3-0568-1006 and the Site is identified by its Brownfield Cleanup Program (BCP) Site Number C344067.

The AA and this associated report comply with the requirements for such reports as expressed in New York's brownfield regulations 6 NYCRR 375-3.8(f) and NYSDEC's related guidance DER-10 *Technical Guidance for Site Investigation and Remediation* (May 3, 2010). The AA report identifies alternatives and evaluates the effectiveness of each with respect to evaluation factors presented in the regulations and guidance. The AA supports the decision-making for the selection of a remedy and identifies the goal of the remedial program, defines the nature and extent of contamination to be addressed by the alternatives development, defines the remedial action objectives for the site, develops remedial action alternatives, and undertakes an initial screening and detailed analysis of the alternatives.

The AA is based on a Remedial Investigation (RI) of the Site conducted in 2009. The RI included activities such as soil borings, groundwater monitoring well installation, soil and groundwater sampling, and soil vapor sampling. The report on the RI, dated June 2010, has been placed in the public repositories established for the Site.

HDR was retained by the Volunteer to conduct the AA.

The Volunteer intends to construct a residential development at the Site. The development would consist of condominium units on the ground and upper floors and underground parking with vehicular access from an existing driveway at the southeastern corner of the Site. Ultimate management of the development would be through a condominium association.

1.2 REPORT ORGANIZATION

- **Section 1** provides an introduction including background information, objectives of the AA, and a summary of the report organization.

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- **Section 2** provides information on the historical and current site conditions and the physical setting of the Site.
- **Section 3** presents a summary of the RI and related assessments.
- **Section 4** presents the remedial goals and remedial action objectives.
- **Section 5** presents the development and analysis of alternatives.
- **Section 6** presents the recommended remedy, with a discussion supporting why it is recommended.
- **Section 7** lists the report references.
- **Section 8** has the engineer's certification for the report.

SECTION TWO Site Description and History

2 SITE DESCRIPTION AND HISTORY

2.1 SITE LOCATION AND DESCRIPTION

The Site is located at 41 Gedney Street, Nyack, New York, 10960, at the northeast corner of the intersection of Gedney Street and Main Street. Nyack is an incorporated village in the Town of Orangetown, Rockland County. Figure 1 is a USGS map that shows the location of the Site and its environs. Figure 2 shows the Site and the overall property of which it is a part. Figure 3 shows the same information presented in Figure 2 superimposed on an aerial photograph. The position of the property lines relative to the photograph is approximate.

The Site encompasses the western 0.8-acre portion of the 2.6-acre property identified on the Rockland County tax map as Section 66.39, Block 1, Lot 2. This lot is composed of the following (Numbers 4 and 5, below, constitute the Site):

1. Underwater land beneath the Hudson River. The area is approximately 1.4 acres.

2. Lower terrace (approximately 0.3 acres). This section is used for controlled access parking (through a gate) for the Clermont Condominium complex to the south. There is a public access easement along the waterfront (identified as Easement E in Figures 2 and 3). Orange & Rockland Utilities (O&R) recently completed a project to remediate coal tar-contaminated soil over the northern two-thirds of the lower terrace. The area of remediation is indicated in Figures 2 and 3. This remediation was completed through in-situ soil stabilization techniques and the area will be subject to future use restrictions that will be put in place by the property owner, O&R, and the NYSDEC.

3. Main Street extension (approximately 0.1 acres). This section, identified as Easement B in Figures 2 and 3, effectively functions as a public street. The easement is extensively developed with subsurface utilities, including recently installed water supply, storm water, electric power, and telephone lines.

4. Middle terrace (approximately 0.3 acres). This section, used for controlled access parking (through the same gate noted for the lower terrace), is part of the Site (Figure 3).

5. Upper terrace (approximately 0.5 acres). This section, recently used for staging trailers and equipment for the remediation of the former O&R coal gasification site to the north, is part of the Site (Figure 3).

The Village's zoning map shows that the Site is in a Waterfront Development C-3 zone. The proposed use is consistent with this zone and land use plans, subject to a special permit approved by the Village Board.

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Public water, electricity, natural gas, and sanitary sewer utilities are at the street, available to support the proposed site development. Other than the electricity used to support the parking for the Clermont Condominium complex, all such services into the Site have been shut off.

The Site is bordered to the south and west by a mix of commercial and apartment/condominium properties. To the north the land is vacant, recently remediated by O&R for the contamination resulting from a former coal gasification operation. There are no industrial or agricultural areas in proximity.

2.2 SITE HISTORY

Information has been assembled to document the history of the Site back to the year 1887. The early history of the Site, as documented below, is primarily from the Sanborn fire insurance maps, copies of which have been placed in the public repositories for this Brownfield project.

The 1887 insurance map shows dwellings and a boat and sail maker in the upper terrace. The middle terrace is vacant.

The 1892, 1896, and 1903 insurance maps show the Site being used for boat building by the Charles L. Seabury & Co. (1892 and 1896) and the Pinckney Co. (1903). There is a large machine shop that covers the southern half of the middle terrace. There are several smaller structures on the upper and middle terraces, with one structure on the middle terrace being labeled “coal”.

The 1910 map shows that the boat builder’s buildings are vacant.

The 1919 map shows the Site is vacant except for a new warehouse that straddles the middle and lower terraces.

In the 1926 map, there are three horizontal, aboveground gasoline tanks in the middle terrace and the warehouse shown in 1919 is labeled as including a garage. The three aboveground storage tanks (ASTs) are shown in Figure 4. The name of Tidewater Oil Sales Corporation appears on the map.

The 1946, 1957 and 1966 insurance maps are identical and show the facilities of the Tidewater Oil Sales Corporation. The warehouse and garage shown in the 1926 map are gone. In the middle terrace, there are two large circular gasoline ASTs plus the three horizontal ASTs present in 1926. In the upper terrace, there are a loading rack, pump house (which apparently was used for marine transfer operations, though this history is uncertain) and an auto/truck garage and office. These features are shown in Figure 4. On Figure 4, the positions of the ASTs are taken from scans of the historic maps and their

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actual locations on that figure are therefore approximate. The positions of the garage and pump house, taken from a land survey drawing, are more accurate. The position of the truck rack is taken from a 2005 sketch map of the concrete slab for that rack.

The fire insurance maps do not depict two underground petroleum storage tanks (USTs) that were excavated in 1992.

Additional information on site history is provided in the RI report and materials attached to the BCP application.

2.3 CURRENT SITE OPERATIONS

As noted above, the middle terrace (approximately 0.3 acres) of the Site is used for controlled access parking (through the same gate noted for the lower terrace, which is not part of the Site).

O&R used the upper tier as an equipment staging and office trailer area for the remediation of the property to the north of the Site, shown on the aerial photograph in Figure 3. Presently, the upper tier is vacant and fenced.

2.4 ENVIROMENTAL SETTING

2.4.1 Site and Regional Geology

The Site is located in the Triassic Lowlands of the New England Province. The Triassic Lowlands are characterized by broad gentle valleys and only a moderate pattern of ridges. The area is underlain by the igneous and sedimentary bedrock of the Triassic Newark Group, specifically the conglomerates, sandstones and shales. Bedrock underlying the Site is mapped as the Newark Group – Brunswick formation. The Brunswick Formation (Upper Triassic) consists of sandstone (most likely arkose sandstone), siltstone, mudstone, and conglomerate bedrock. The Newark Group in general includes shale, sandstone, and red conglomerate. Bedrock cores obtained at the Site indicate that the rock is reddish-brown and gray mottled sandstone, fractured, and generally fine to medium grained.

There is a plateau in the surface of the bedrock at elevation 16 ft through the center of the upper tier and a portion of the middle tier. The surface slopes steeply from this plateau to the east and to the north, and more moderately from the upper tier to the south toward Main Street. As a result, depth-to-bedrock widely varies throughout the Site. There appears to be a depression in the surface of the bedrock in the northwestern corner of the Site. However, based primarily on one boring (LR-1), the actual extent and shape of the depression are uncertain. In the upper tier, depth to bedrock is typically in the range of 15 to 17 feet. In middle and southern portions of the western half of the middle tier, the

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depth is less than 5 feet. Along the eastern border of the Site, the depth to bedrock is estimated to be on the order of 20 feet.

2.4.2 Site Soils

The upper portion of the overburden consists of fill from prior construction/demolition activities and includes brown to dark grey fine sand, angular gravel, black silt, brick, concrete, metal, and minor amounts of ash, coal fragments, wood, etc. The fill overlies native glacial till, consisting primarily of reddish brown silty fine sand with some tan and grey fine sand. The thickness of the fill and till varies throughout the Site. Geologic cross-sections depicting the ground surface, water table, and bedrock surface are presented in Figure 5.

2.4.3 Site Topography and Hydrology

The upper terrace of the Site is at elevation 30 feet for the most part. The land surface then slopes steeply to the middle terrace where the elevation averages around 20 feet at the toe of the slope from the upper terrace. At the eastern edge of the middle terrace parking, the elevation averages about 16 feet. From the eastern edge of the middle terrace parking, the land surface again slopes steeply east to the toe of the slope at elevation 12, where the western edge of the lower tier parking forms the approximate eastern bound of the Site.

Groundwater occurs in the overburden and bedrock. Groundwater is not present in the overburden in the center of the Site in the area of the shallow bedrock noted above. Where the bedrock deepens to the east, the overburden again contains groundwater. The location of the transition from unsaturated to saturated overburden is not known with certainty, but is assumed to follow the shape of the bedrock surface. Where present, groundwater in the overburden appears to flow east.

Groundwater occurs in the fractured bedrock, with flow east toward the Hudson River. The hydraulic gradient in the groundwater appears to be down from the overburden to the bedrock, except for an area in the center where available data indicates an upward gradient.

There are no streams or surface waters on the Site. The Hudson River is approximately 50 ft east of the eastern bound of the Site.

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2.5 AREAS OF CONCERN

Areas of Concern (AOCs) at the Site are identified below:

RIWP Designated Areas of Concern (AOCs)			
AOC ID	**Description**	**Possible Media Impacted**	**Location on Site**
GAR	former garage	Soil, groundwater, soil vapor	southwest
PH	former pump house east of the former garage	Soil, groundwater, soil vapor	southwest
UST	former USTs	Soil, groundwater, soil vapor	northwest
LR	Former loading rack	Soil, groundwater, soil vapor	center
PT	pipe trenches and magnetic anomaly	Soil, groundwater, soil vapor	center
HA	former horizontal ASTs	Soil, groundwater, soil vapor	south
VA	former circular vertical ASTs	Soil, groundwater, soil vapor	center
NAP	Area of LNAPL found at HVMW-41D. This may actually be a result of the VA AOC.	Groundwater	center
AW	Areawide. This AOC is added to address conditions not incorporated into the other AOCs. These conditions include the presence of ash, chlorinated solvents and petroleum contamination not associated with any of the above AOCs.	Soil, groundwater, soil vapor	entire Site

The locations of the AOCs are depicted in Figure 4.

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3 SUMMARY OF RI AND EXPOSURE ASSESSMENT

The RI report (June 2010), including the exposure assessment documented in that report, has been approved by the NYSDEC.

3.1 INTRODUCTION

The RI is fully documented in the RI report, available at the public repositories. The RI included 32 soil borings, with coring into the bedrock at 12 locations. Five permanent groundwater monitoring wells were completed in the soil overburden and two were constructed into bedrock. Seven temporary monitoring wells were constructed, sampled, and later removed. Four soil vapor probes were constructed. The locations for the borings and monitoring wells are depicted on Figure 4.

Environmental samples included: 51 soil samples, 20 groundwater samples, 4 soil vapor samples, and 1 sample of petroleum liquid floating on the water table. Samples were analyzed for a broad range of constituents, including volatile organic compounds (VOCs) as might be present from gasoline and solvent spills, semivolatile organic compounds (SVOCs) as might be present from spills of oil and coal gasification wastes, heavy metals such as lead and cadmium as might be present from gasoline and filling of the Site with incinerator or coal ash, PCBs, herbicides, and pesticides. The investigations completed by O&R for their former coal gasification facilities north of the Site provided additional information that was integrated into the remedial investigation. O&R constructed five monitoring wells into the site's bedrock and completed numerous soil borings on and in the vicinity of the site. With the subject remedial investigation, O&R's studies, and earlier studies by other investigators, a substantial body of site-information has been collected.

For reader convenience, condensed summaries of the RI sample results are provided in the following tables (tables are presented in Appendix A):

Table 1	Sample and Analysis Summary
Table 2	VOCs in Soil
Table 3	SVOCs in Soil
Table 4	Metals in Soil
Table 5	Pesticides, Herbicides and PCBs in Soil
Table 6	VOCs in Groundwater
Table 7	SVOCs in Groundwater
Table 8	Metals in Groundwater
Table 9	Soil Vapor Results

In order to clarify the presentation of the data, the tables listed above include only those VOCs and SVOCs that were detected in at least one environmental sample; VOCs and SVOCs that were not detected are not listed in those tables.

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The four soil tables show the Soil Cleanup Objectives (SCOs) listed in Subpart 375-6 for Restricted Residential use, which is "the land use category which shall only be considered when there is common ownership or a single owner/managing entity of the site. Restricted residential use:

(a) shall, at a minimum, include restrictions which prohibit:
(1) any vegetable gardens on a site, although community vegetable gardens may be considered with Department approval; and
(2) single family housing, and
(b) includes active recreational uses, which are public uses with a reasonable potential for soil contact."

The proposed condominium development of the Site meets the definition of restricted residential use.

The three soil tables also show the SCOs for the protection of groundwater. However, the site groundwater is not, nor will be, used; there are no possible uses of the groundwater downgradient of the Site. Therefore, the protection of groundwater SCOs is not applicable to this Site.

The three groundwater tables show the ambient groundwater standards as set in 6 NYCRR Part 371. NYSDEC has additional guidance values for some chemicals; however, only the actual standards are tabulated for this report.

3.2 RI FINDINGS

3.2.1 Pesticides, Herbicides, and PCBs

No pesticides, herbicides, or PCBs were detected in the soil and groundwater samples collected during the RI; therefore, these three groups of parameters are not Substances of Concern (SOCs) for the Site.

3.2.2 Metals

Metals were detected in the soil samples that were analyzed for this class of chemical; however, the reported concentrations were compliant with Unrestricted, Restricted Residential, and Protection of Groundwater SCOs. Therefore, metals in the soil are not SOCs for the site. There were no exceedances of the groundwater standards for metals such as arsenic, beryllium, cadmium, lead, and mercury. All but one of the monitoring wells yielded groundwater samples with metals concentrations that exceeded standards for iron, manganese, and sodium. Reported concentrations for iron were in the range of 1,900 ug/L to 54,000 ug/L, well in excess of the 300 ug/L standard. Sample turbidity may account for some of the variability; however, one sample had relatively low

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turbidity. Concentrations of manganese in the groundwater ranged from 1,700 ug/L to 15,000 ug/L, greater than the 300 ug/L standard. All samples contained sodium at concentrations greater than the 20,000 ug/L standard, with the highest concentration of 380,000 ug/L occurring at upgradient well MW09-4. Other than for iron, manganese, and sodium, all reported concentrations for metals were compliant with NYSDEC standards. The sodium source is upgradient, most likely road salt. Historic fill at the Site may account for the iron and manganese concentrations in the groundwater samples.

3.2.3 VOCs

No VOCs were detected in the two upgradient wells, except that one well had 9 ug/L chloroform, which is not related to the Site. The most likely source of the chloroform is chlorinated water in the area, probably from a water main and/or house connection leak. (As noted in Section 3.2.6, below, chloroform was detected in the soil vapor for those probes constructed near Main Street, but not in the probes in the site interior.) Other than chloroform, no chlorinated VOCs were detected in the groundwater samples. All of the other monitoring wells and piezometers contained petroleum-related VOCs at concentrations over the groundwater standards. The exceedances were marginally over standards for many of the samples; however, several samples had VOC concentrations two to three orders of magnitude above standards and therefore VOC results are discussed in more detail below.

Two groundwater samples were collected in the UST AOC. VOCs detected at concentrations above standard were 1,2,4-trimethylbenzene, benzene, ethylbenzene, isopropylbenzene, and n-propylbenzene. However, the maximum concentration measured for any one of these contaminants was just 13 ug/L for n-propylbenzene. The groundwater standard for these contaminants is 5 ug/L, except for benzene which has a 1 ug/L standard.

Seven gasoline-related VOCs (and chloroform - see above regarding upgradient sources) were detected in the groundwater samples collected in the area of the Garage AOC, with the highest concentration being 50 ug/L ethylbenzene.

The groundwater in the areas of the Loading Rack, Pipe Trench, and Pump House AOCs, exhibited the highest VOC concentrations for the Site:

	CONCENTRATION (ug/L)		
	Loading Rack	Pipe Trench	Pump House
1,2,4-trimethylbenzene	990	120	1,800
1,3,5-trimethylbenzene	380	23	520
4-isopropyltoluene	16	4.4	28
benzene	610	5.5	<5
chloroform	<10	51	<10

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	CONCENTRATION (ug/L)		
	Loading Rack	Pipe Trench	Pump House
ethylbenzene	1500	230	2000
isopropylbenzene	100	28	160
m&p-xylenes	4700	200	5300
n-butylbenzene	<10	9.1	18
n-propylbenzene	130	69	250
o-xylene	1900	19	1900
sec-butylbenzene	14	5.9	23
toluene	1400	30	400
xylenes (total)	6600	219	7200
1,2,4-trimethylbenzene	990	120	1,800
1,3,5-trimethylbenzene	380	23	520

However, at the downgradient limit of the Site, VOC concentrations attenuate. Two wells were constructed; the highest VOC concentrations measured in either well were 4 ug/L benzene, 27 ug/L isopropylbenzene, 34 ug/L n-propylbenzene, and 6.2 ug/L sec-butylbenzene. No other VOCs were detected in the downgradient groundwater. Accordingly, significant attenuation in VOC concentration is indicated as the groundwater migrates from the Site.

The above discussion summarizes the RI findings for VOCs in groundwater. With regard to VOCs in soil, no samples contained VOCs at concentrations above the Restricted Residential SCO. Although, the sampling was biased to retain the soil with the greatest degree of apparent contamination (generally the soil near the water table), only five soil samples had VOCs at concentrations above the Groundwater Protection SCOs. Just five individual VOCs were at concentrations above the Groundwater Protection SCOs; the following shows the highest concentrations measured for the five:

	CONCENTRATION (mg/kg)		
	SCO.		Highest
	Rest. Res	GW	Concentration
1,2,4-trimethylbenzene	52	3.6	21
ethylbenzene	41	1	5.2
m&p-xylenes	100	1.3	1.6
n-propylbenzene	100	3.9	14
xylenes (total)	100	1.3	1.84

The concentrations of VOCs in the soil samples are relatively low in comparison to the results for the groundwater. The likely explanation for the difference is that relatively few soil samples were collected from the central area of the Site where soil would be removed in any event for the construction of the new residential development. In addition, groundwater contamination reflects the soil conditions over a wide area,

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whereas the soil test results represent the material retrieved from a 2-inch borehole at one specific location.

3.2.4 SVOCs

Several phenolics SVOCs (2,4-dimethylphenol, 2-methylphenol, 3&4-methylphenol, and phenol) were detected in the groundwater in the west central portion of the Site in the areas of the Loading Rack, Pipe Trench, and Pump House AOCs. All three locations yielded 2,4-dimethylphenol, with the highest concentration being 48 ug/L at the Pump House AOC. The other three were detected only at the Loading Rack AOC, with the highest concentration at 8.1 ug/L. Phenolics were not detected in any other groundwater samples. The phenolics appear to be from historic operations, but the specific source is unknown.

Naphthalene, likely from oil, was detected above the groundwater standard at one location (Pump House AOC) - 180 ug/L.

No other SVOCs were detected in the groundwater at concentrations over standards.

With regard to SVOCs in the soil, only polycyclic aromatic hydrocarbons (PAHs) were detected at concentrations above SCOs and these elevated concentrations were found only in the easternmost portion of the Site. The individual sample results are presented below:

	CONCENTRATION (mg/kg)					
	SCO.		AW-2	AW-3	AW-3	AW-4
	Rest. Res	GW	(12-14)	(7-9)	(13-15)	(8-10)
benzo[a]anthracene	1	1	4.8	1.3	ND	0.41
benzo(a)pyrene	1	22	3.8	1.2	ND	0.39
benzo[b]fluoranthene	1	1.7	4.4	1.2	ND	0.46
benzo[k]fluoranthene	3.9	1.7	2.0	0.45	ND	0.21
chrysene	3.9	1	4.0	1.1	ND	0.37
dibenzo[a,h]anthracene	0.33	1000	0.84	0.20	ND	0.099
indeno[1,2,3-cd]pyrene	0.5	8.2	1.7	0.53	ND	0.23

These PAHs also are present in the soil in the area immediately adjacent to the Site where O&R conducted its remediation of the coal gasification contamination. The chemical fingerprint of the PAHs noted above and the PAHs in the adjacent coal tar contamination area are similar, leading to the conclusion that most, if not all, of the Site PAHs above SCOs are from the coal gasification contamination. O&R's off-site remediation of these wastes was limited to soils that had a total PAH concentration greater than 500 mg/kg, which are on the lower tier. The remediation was limited to stabilization with cement to reduce the mobility of the PAHs, rather than remove them.

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3.2.5 Free Product Oil

There is light non-aqueous phase liquid (LNAPL) in one bedrock well (HVMW-41D). Measurements at this well indicate the thickness of the LNAPL varies from 0.01 to 0.06 ft. Whereas gasoline is the primary contaminant to the groundwater elsewhere at the Site, testing of the LNAPL shows the material to be primarily weathered diesel oil, and to a lesser extent gasoline and coal gasification tar. Additional wells were installed around HVMW-41D, but no more LNAPL was found, so its occurrence appears to be localized. The well is downhill of a depression in the bedrock apparently below the Loading Rack AOC, and this depression might have an accumulation of historic spills, which could account for the LNAPL in this downgradient well.

3.2.6 Soil Vapor

Soil vapor samples were collected within and around the Site. Except for chloroform, none of the samples contained chemicals at concentrations above federal or state guidelines. The chloroform guidance level, relatively low (1.1 ug/m^3) compared to other chemicals, was exceeded only for the samples collected along Main Street. The chemical is not a site-related contaminant and its presence in the soil vapor is probably from leaks of publically supplied chlorinated water from the water main or house connections in the street.

3.2.7 Summary

Figure 6 shows the estimated areas of the Site where the soil is contaminated at concentrations above the restricted residential and protection of groundwater SCOs. The figure is based on information obtained during the RI as well as from earlier studies. These earlier studies are summarized the RIWP. As indicated, there are three areas of contamination. The largest area covers much of the upper tier and is contaminated with gasoline-related constituents.

There is a small, isolated area in the southern portion of the middle tier near the former horizontal gasoline tanks. Concentrations of contaminants in soil samples collected from the RI borings in this area were compliant with the SCOs. However, one previous boring (year 1992) in the area yielded soil that contained 2 mg/kg of ethylbenzene, higher than the 1.0 mg/kg protection of groundwater SCO. It is possible that natural degradation over 18 years has lowered the ethylbenzene concentration to below 1.0 mg/kg; however, for the purposes of Figure 6, this degradation is assumed not to have occurred.

The third area with soil at concentrations above SCOs is the easternmost portion of the Site contaminated primarily by coal tar-related PAHs.

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3.3 EXPOSURE ASSESSMENT

3.3.1 Fish & Wildlife

Fish and Wildlife Exposure Assessments (FWEAs) are conducted using the criteria for a Fish and Wildlife Resources Impact Analysis (FWRIA) presented in NYSDEC document "Technical Guidance for Site Investigation and Remediation" – DER-10. The need for and level of study is based on the fish and wildlife resources found on or downgradient of the Site, the presence and level of any contaminants found on the Site, and the ecological exposure pathways on or off the Site.

The area surrounding the Site is urbanized and developed for mixed use – residential, commercial, and former industrial. Two habitat cover types are associated with the Site; paved road/path for the parking areas and urban vacant lot for the unpaved areas used for former construction staging. The habitat in these areas has very limited use for wildlife and is not ecologically significant.

The NYSDEC guidelines state that no FWEA is needed if:

1. There are no fish or wildlife resources on or adjacent to the site and absence is not due to contamination at the site;
2. There are no ecological exposure pathways;
3. The remediation is directed toward a specific event that does not adversely impact fish or wildlife resources;
4. The site is an underground tank or underground tank system, and/or
5. The site is a point source of contamination to groundwater which will be prevented from discharging to surface water and there is no widespread soil contamination or habitat for endangered, threatened, or special concern species.

The data developed during the RI, coupled with applicable water quality criteria, demonstrates that contamination in the groundwater is not migrating from the Site to the Hudson River at levels that adversely impact fish and wildlife. In addition, the New York State Department of Health (NYSDOH) publishes fish and wildlife consumption advisories for the lower Hudson River. According to the NYSDOH 2009–10 guidance document the contaminants triggering advisories in the Hudson River near the Site are PCBs, dioxin, and cadmium. These contaminants were not detected in the soil and groundwater samples; thus the Site is not a contributor to the advisories.

Review of the New York State Department of State Coastal Area Boundary indicates that the Site is within the mapped Coastal Zone Boundary. There are no Significant Coastal Fish and Wildlife Habitats, Scenic Areas of Statewide Significance, federally-owned lands, or native American-owned lands depicted on the Coastal Atlas other than Hook Mountain, which is located approximately two miles upriver and inland of the Site and thus should not be considered as "adjacent" for purposes of the remediation project.

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In summary, there are no fish and wildlife resources on the Site, no resources that could be affected by the proposed remedial work and no exposure pathways relative to fish and wildlife resources.

No further action is required regarding fish and wildlife.

3.3.2 Public Health Exposure Assessment

A qualitative Public Health Exposure Assessment (PHEA) describes existing and post-remediation scenario site conditions. Remedial activities that are anticipated to occur include the excavation and off-site disposal of petroleum-impacted soil over much of the Site. The purpose of the exposure assessment is to qualitatively characterize possible human health exposures associated with current and future uses of the Site. A qualitative exposure assessment does not quantify the risks associated with exposures; that is done in risk assessment.

This exposure assessment was prepared in accordance with Appendix 3B of DER-10. Risk assessment guidelines from USEPA were consulted as appropriate. According to the NYSDEC guidance, "An exposure pathway has five elements: (1) a contaminant source; (2) contaminant release and transport mechanisms; (3) a point of exposure; (4) route of exposure; and (5) a receptor population… An exposure pathway is complete when all five elements are documented. A potential exposure pathway exists when any one or more of the five elements comprising an exposure pathway is not documented. An exposure pathway may be eliminated from further evaluation when any one of the five elements comprising an exposure pathway has not existed in the past, does not exist in the present, and will never exist in the future."

Soil Contamination

Soil contaminated with petroleum-related VOCs was found throughout much of the Site; the samples with PAHs were collected from several feet below ground surface along the eastern edge of the Site and the impacted area appears to be limited in extent.

Ingestion (Soil)

Presently, the upper tier of the Site is unoccupied and fenced and the middle tier is used for parking. The soil ingestion pathway is not considered an exposure pathway for the current site use.

The soil ingestion pathway is not considered for construction workers or those performing soil remedial activities.

The Site is proposed to be developed for restricted residential use. The only soil that is contaminated at concentrations above the Restricted Residential SCOs is at depth along

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the eastern edge of the Site. The overlying soil will be excavated, disposed off site, and replaced with clean fill, eliminating the soil ingestion exposure pathway for children that may occupy the Site at some future time.

Inhalation (Soil)

The soil inhalation pathway is not considered an exposure pathway as long as the Site soils remain undisturbed.

The soil inhalation pathway will be addressed during remedial and construction activities by implementation of a community air monitoring plan (CAMP) to be prepared for the work. The CAMP will have similar action levels and procedures as employed during the remedial investigation. Workers on site will be required to adhere to a site-specific health and safety plan (HASP).

Direct Contact (Soil)

The Site will be secured with a fence prior to excavation, grading, and construction activities, preventing those other than workers and authorized personnel from coming into direct contact with contaminated soil. Workers will be required to adhere to a site-specific HASP and wear the appropriate protective equipment, such as gloves, protective clothing, etc., eliminating the soil direct contact exposure pathway.

Groundwater Contamination

Ingestion (Groundwater)

Remedial excavation at the Site will achieve at least partial, if not complete groundwater restoration at the Site. Complete removal of the LNAPL found at HVMW-41D may not be practical. Therefore, in addition to the excavation of contaminated soil and LNAPL removal at HVMW-41D, there will be an Environmental Easement to prohibit future use of groundwater, eliminating the groundwater ingestion pathway for both current and future site uses.

Direct Contact (Groundwater)

During excavation, groundwater will be encountered. Water removed from the excavation will be pumped into containers and removed from the Site for disposal. Contact with this water will be addressed by the HASP for the construction workers.

Portions of the building slab will be below the water table. Footing drains will be constructed so as to prevent exposure of the groundwater.

Soil Vapor

SECTION THREE Summary of RI and Exposure Assessment

Inhalation (Soil Vapor)

Presently, the Site is unoccupied except for parking. Therefore, the inhalation pathway is not considered for the current site conditions.

During remedial activities and excavation/grading, the soil vapor inhalation pathway will be addressed through implementation of a CAMP, as noted above. Workers on site will be required to adhere to a site-specific HASP and wear the appropriate PPE to reduce the soil vapor inhalation exposure pathway during intrusive activities.

There will be underground parking beneath the building. The parking will be open to the east. Therefore, for future users of the Site, the soil vapor inhalation pathway will be eliminated.

Except for chloroform, which is not related to the Site, soil vapor levels along Main Street are not problematic and the planned site remediation will reduce vapors even further. Therefore, there is no exposure pathway for soil vapor.

No complete exposure pathways have been identified for soil, groundwater, and soil vapor contaminants.

SECTION FOUR Remedial Goals and Remedial Action Objectives

4 REMEDIAL GOALS AND REMEDIAL ACTION OBJECTIVES

The remedial goals for the Site are to clean up the soil and groundwater and establish additional necessary controls to provide the necessary degree of protection to human health and the environment such that the property can be put into productive use for a residential development.

Remedial action objectives (RAOs) are medium (groundwater, soil, surface water, sediment, and soil vapor) specific objectives for the public health protection and environmental protection. RAOs are developed based on contaminant-specific standards, criteria, and guidelines (SCGs) to address contamination identified at a site. For each medium, the generic description of the RAOs is as follows:

GROUNDWATER

RAOs for Public Health Protection

- Prevent ingestion of groundwater with contaminant levels exceeding drinking water standards.
- Prevent contact with, or inhalation of volatiles, from contaminated groundwater.

RAOs for Environmental Protection

- Restore ground water aquifer to pre-disposal/prerelease conditions, to the extent practicable.
- Prevent the discharge of contaminants to surface water.
- Remove the source of ground or surface water contamination.

SOIL

RAOs for Public Health Protection

- Prevent ingestion/direct contact with contaminated soil.
- Prevent inhalation of or exposure from contaminants volatilizing from contaminants in soil

RAOs for Environmental Protection

- Prevent migration of contaminants that would result in groundwater or surface water contamination.
- Prevent impacts to biota from ingestion/direct contact with soil causing toxicity or impacts from bioaccumulation through the terrestrial food chain.

SOIL VAPOR

RAOs for Public Health Protection

- Mitigate impacts to public health resulting from existing, or the potential for, soil vapor intrusion into buildings at a site.

For this project, RAO's have not been developed for surface water and sediment, because no impacts have been found to these media.

SECTION FOUR Remedial Goals and Remedial Action Objectives

The Volunteer intends to construct a residential development at the Site. The development would consist of condominium units on the ground and upper floors and underground parking with vehicular access from an existing driveway at the southeastern corner of the Site. Ultimate management of the development would be through a condominium association. NYSDEC regulations define restricted residential use as:

> "the land use category which shall only be considered when there is common ownership or a single owner/managing entity of the site. Restricted-residential use:
> (a) shall, at a minimum, include restrictions which prohibit:
> (1) any vegetable gardens on a site, although community vegetable gardens may be considered with Department approval; and
> (2) single family housing; and
> (b) includes active recreational uses, which are public uses with a reasonable potential for soil contact;

Therefore, the appropriate RAOs for soils are the restricted residential SCOs. As noted in Section 3, the restricted residential SCOs are exceeded only for PAHs in the eastern portion of the Site.

Although groundwater is not used, nor has the potential to be used, on or downgradient of the Site, NYSDEC nevertheless requires groundwater restoration to be addressed. Therefore, additional RAOs for soils are the groundwater protection SCOs and RAOs for groundwater are the New York State groundwater standards.

New York State Department of Health (NYSDOH) has established sub-slab soil vapor guidelines that set action levels for controlling or abating vapor intrusion into buildings. The U.S. Environmental Protection Agency (USEPA) has its own guidelines. These guidelines are considered appropriate RAOs for soil vapor. As noted in Section 3, present soil vapor concentrations do not exceed these guidelines (except for chloroform, from an off-site source). Nevertheless, as detailed in the following sections, the proposed development will be protected against vapor intrusion.

Section 5 presents alternatives that have been identified to meet the RAOs (as well as a "no action" alternative that will not meet RAOs). These alternatives are evaluated against criteria presented in the regulations and DER-10. These criteria, as paraphrased from DER-10, are:

1. Overall protectiveness of the public health and the environment. This criterion considers how each alternative would eliminate, reduce or control through removal, treatment, containment, engineering controls or institutional controls any existing or potential human exposures or environmental impacts identified by the RI.

SECTION FOUR Remedial Goals and Remedial Action Objectives

2. Standards, criteria and guidance (SCGs). The remedy must conform to applicable official standards and criteria and consideration must be given to guidelines. Applicable SCGs must be identified as to whether or not they are met, with appropriate explanation being given if the SCGs are not met.

3. Long-term effectiveness and permanence. This criterion is used to address the alternative after implementation. If contamination will remain, human, ecological, and environmental exposures must be evaluated along with any institutional or engineering controls.

4. Reduction of toxicity, mobility or volume of contamination through treatment. Preference is given to alternatives that permanently or significantly reduce the toxicity, mobility or volume of the contamination at a site.

5. Short-term impact and effectiveness. This criterion is used to evaluate the potential short-term adverse environmental impacts and human exposures during the construction and implementation of an alternative. Short-term impacts include increased traffic, loss of property access, odors, vapors, dust, etc. A discussion to mitigate the impacts should be included.

6. Implementability. This criterion is an evaluation of the technical and administrative feasibility of implementing an alternative or remedy. The criterion addresses technical feasibility, including construction difficulties, as well as reliability, regulatory issues, etc.

7. Cost-effectiveness. This criterion requires an assessment as to whether the capital and on-going costs of an alternative are proportional to the alternative's effectiveness, as evaluated through criteria 3 through 5, above.

8. Land Use. This criterion is an evaluation of the current, intended and reasonably anticipated future use of the site and its surroundings, as it relates to an alternative or remedy, when unrestricted levels would not be achieved. The anticipated use of the Site is for residential condominiums. The evaluation of the land use criterion considers 16 factors:

i. current/historic use and development patterns
ii. consistency of proposed use with applicable zoning laws
iii. brownfield opportunity areas
iv. consistency of proposed use with applicable comprehensive community master plans, etc.
v. proximity to real property currently used for residential use and other areas
vi. public comments
vii. environmental justice concerns
viii. federal or state land-use designations

SECTION FOUR Remedial Goals and Remedial Action Objectives

ix. whether population growth patterns and projections support the proposed use
x. accessibility to existing infrastructure
xi. proximity to important cultural resources
xii. natural resources
xiii. vulnerability of groundwater to contamination
xiv. floodplains
xv. geography and geology
xvi. current institutional controls

9. Community acceptance. This criterion is evaluated after the public review of the remedy selection process as part of the final NYSDEC selection/approval of a remedy for the Site.

In addition to the above nine criteria, NYSDEC requires consideration of "green remediation" in remedial programs. Green remediation seeks to minimize ancillary environmental impacts such as green house gas emissions (GHGs) from remedial programs. Applying green remediation concepts, such as minimizing energy consumption, maximizing the reuse of land and the recycling of materials, and conserving natural resources helps to achieve that objective. Green remediation concepts will be applied to the cleanup of contaminated properties such that the remedies are protective of public health and the environment, economically sound, and as sustainable as possible. Green remediation is not intended to encourage, and does not justify, implementation of a no action alternative or lesser remedy when a more comprehensive remedy is called for, appropriate, and feasible. These efforts will provide for a more sustainable cleanup by:

i. reducing direct and indirect emissions of carbon dioxide and other GHGs;
ii. conserving natural resources;
iii. reducing waste; and
iv. maximizing habitat value.

SECTION FIVE Development and Analysis of Alternatives

5 DEVELOPMENT AND ANALYSIS OF ALTERNATIVES

5.1 INTRODUCTION

NYSDEC regulations identify four cleanup "tracks" for the development of remedial alternatives:

Track 1: Unrestricted Use. This track allows a site to be put to any use, without restriction. The SCOs for Unrestricted Use are the most stringent of all those in the regulation.

Track 2: Restricted Use. There are four restricted uses defined by the regulations:

- Residential Use (e.g., single family homes)
- Restricted Residential Use (townhouses, apartments, condominiums)
- Commercial Use
- Industrial Use

There are different SCOs for each of these uses, with the Residential Use SCOs being the most stringent and the Industrial Use SCOs being the least stringent. In addition, the Protection of Groundwater SCOs must be met. The SCOs apply to soils to a depth of 15 feet below the ground surface, provided the deeper soils do not represent a source of contamination. Although a deed restriction prohibiting the use of the site's groundwater is allowed, there can be no engineered controls for Track 2.

Track 3: Restrictive Use with Modified SCOs. The NYSDEC may approve the modification of a SCO based on site-specific data, in accordance with the provisions of subdivision 375-6.9(e) of the regulation.

Track 4: Restricted Use with Site-Specific SCOs. This track allows different SCOs, if protective of public health and the environment. In addition, long term institutional or engineering controls are allowed. For the two residential uses, a cover over soils not meeting the residential SCOs is allowed, if the cover is a component of a building, pavement, or clean soil at least 2 feet thick and meeting the Unrestricted Use SCOs.

As explained in Section 6, a Track 4 remediation is recommended for the Site. As Track 4 is a restricted use alternative, NYSDEC regulations require a minimum of two alternatives be developed and evaluated:

i. one alternative will achieve unrestricted use relative to soil contamination, without the use of institutional/engineering controls;
ii. other alternatives proposed by the remedial party which would achieve the cleanup track and intended use indentified for the site.

SECTION FIVE Development and Analysis of Alternatives

For this Site, the NYSDEC has directed the Volunteer to include a third, no action alternative.

In summary then, three remedial alternatives have been developed:

Alternative 1. No action alternative
Alternative 2. Track 1 alternative
Alternative 3. Track 4 alternative

5.2 ALTERNATIVE 1 - NO ACTION

As the name implies, this alternative has no remediation of the contamination. The Site is presently used for above ground parking, and this use would probably continue into the future since the local municipality might not permit any building on the property. Groundwater would continue to be impacted (primarily by gasoline) and the VOC and PAH contamination to the soil would remain. In spite of the remaining contamination, the exposure assessment conducted during the RI indicates that there are no complete exposure pathways under existing use. However, without any institutional controls, there might be future excavation in the Site for, e.g., water, sewer, or telephone lines, whereby the contractor might inadvertently expose his work crew to the contamination. Therefore, the alternative is not protective of health and the environment and does not comply with applicable standards, criteria, and guidance values. The alternative is not effective in the short or long term and offers no reduction in contamination, other than a low amount that might occur through natural degradation and attenuation. The no action alternative is easily implemented and has no direct monetary cost. There may be indirect costs to the local municipality for loss of tax revenue.

5.3 ALTERNATIVE 2 - TRACK 1

For Track 1, the Site would be cleaned up such than all remaining soil would meet the unrestricted SCOs.

The Volunteer's planned development for the Site is to provide aboveground housing, with an underground parking garage that would encompass essentially all of the building footprint, as indicated in Figure 4. The entrance to the parking garage would be from the east side of the building on the lower level of the Site, accessed from Main Street. This construction achieves the Volunteer's need to provide off-street parking, while at the same time achieving substantial remediation through the excavation and off-site disposal of most of the contaminated soil at the Site.

The extent of excavation needed for the garage is indicated in plan view by Figure 4; Figure 5 shows west to south cross-sections of the excavation and pertinent geologic

SECTION FIVE Development and Analysis of Alternatives

details. The Volunteer is presently preparing more detailed site plans in consultation with the local municipality and the final plan will provide a different foot print and depth of excavation than indicated in these figures. However, the change will not be so different as to materially impact the remedial alternatives under analysis.

The excavation needed for the site development will remove most of the soil that exceeds the Unrestricted Use SCOs. Over most of the Site, bedrock is shallow relative to the excavation needed for the building. Additional excavation is feasible to remove all the remaining contaminated soil, except in two areas. One area is the portion of the Site immediately adjacent to Main Street to the south and Gedney Street to the west. The deep excavation would have to be limited in this area to avoid undermining the public sidewalk, street, and buried utilities in the street. In these areas where excavation is not practical, additional remediation for the remaining soils would entail soil vapor extraction (SVE) for removal of gasoline-related contaminants above the water table and either oxidation (through chemical injection) or air sparging for removal of gasoline-related contaminants below the water table.

The second area where excavation alone is not feasible to achieve Track 1 is in the vicinity of borings AW-2 and AW-3 along the eastern portion of the Site. In this area, bedrock becomes increasingly deep and the water table is relatively shallow and most likely tidal because of its proximity to the Hudson River. Excavation of the contaminated soil beneath the water table in this area is not feasible. Alternative technologies such as in-situ oxidation or bioremediation to remove the PAHs and few VOCs in the area of AW-2 and AW-3 could be implemented.

This alternative is protective of human health and the environment and, if the in situ technologies are effective, would comply with standards, criteria and guidance values, and provides substantial reduction of toxicity, mobility and volume of the contamination. However, the Track 1 SCOs for PAHs are very low - down to 0.33 mg/kg in the case of dibenzo(a,h)anthracene. It is uncertain whether such low levels should reasonably be expected from injection of oxidants or use of bioremediation, particularly considering the difficulty encountered during the drilling for the RI in the eastern portion of the Site. Premature refusal was encountered at all drill locations in this area, which indicates that the proper distribution of chemicals to achieve the requisite oxidation or bioremediation would be difficult, if not impossible, to achieve. Even if the PAHs could be reduced to the requisite concentrations, there is no assurance that the newly cleaned soils might not be recontaminated by migration from the unstabilized coal gasification waste contamination (up to 500 mg/kg total PAHs) on the land adjoining the Site. Therefore, in addition to having a high monetary cost, the Track 1 alternative is rated low in terms of implementability.

5.4 ALTERNATIVE 3 - TRACK 4

As with Alternative 2, the Track 4 alternative would excavate contaminated soil from the Site in order to construct the building. To the west and south, there would be additional

SECTION FIVE Development and Analysis of Alternatives

excavation to the extent that the public sidewalk and street would not be undermined. Available data indicates that the restricted residential SCOs would be met in the west and southwest areas of the Site. Since contaminant levels appear to attenuate with distance from the AOCs and the available data indicate relatively modest levels of contamination in the soil to the west and south, it might be possible that this excavation will also achieve the groundwater protection SCOs (except for the isolated area to the south where an earlier study reported 2 mg/kg of ethylbenzene at a depth of 12 feet). However, because of the uncertainty about the excavation and whether there might have been any natural degradation of the isolated ethylbenzene, it is assumed that some soil will remain with contaminant levels marginally above the groundwater protection SCOs.

As noted above, complete excavation of the contaminated soil on the south side of the Site would require extensive dewatering and deep excavation of soils below the water table immediately adjacent to public rights-of-way. Such removal would require partial street closures, further impacting the local community. Extensive support structures would be required to stabilize the sides of the excavation. Nearby buried utilities might be damaged by the work in spite of the support structures and therefore, Alternative 2 has low implementability compared to the other alternatives. In order to address the low implementability, high cost, and short term impacts of Alternative 2, Alternative 3 has been conceived to limit the removal of soil where excavation would be problematic and allow some limited areas of soil to remain with contamination that exceeds the restricted residential and groundwater protection SCOs for PAHs and the groundwater protection SCOs for VOCs. Therefore, this alternative provides a cover system. NYSDEC regulations require that the cover be a component of the development (e.g., building and pavement) or 2 feet of soil. The soil must meet the restricted residential SCOs, or if the cover soil is imported to the Site, the imported soil must meet the unrestricted SCOs. A fabric is required below the soil cover to provide warning about the presence of the underlying soil contamination.

Track 4 requires a deed restriction to prevent on-site use of the groundwater and require adherence to a site management plan that includes, among other items, a plan that addresses possible future excavation or disturbance of the cover as might occur during installation of underground utilities. In addition, a periodic certification to the NYSDEC is required to demonstrate, among other items, that:

- the institutional control and/or engineering control(s) is unchanged from the date that the control was put in-place, or was last approved by the NYSDEC;
- nothing has occurred that would impair the ability of such control, to protect public health and the environment;
- access to the site will continue to be provided to the NYSDEC to evaluate the remedy, including access to evaluate the continued maintenance of this control;
- nothing has occurred that would constitute a violation or failure to comply with the site management plan for this control;

SECTION FIVE Development and Analysis of Alternatives

The Track 4 alternative removes significant amounts of contamination and implements a site management plan that will prevent exposure to contamination. There will be substantial groundwater restoration achieved through the excavation of the contaminated soil. Some soil will remain with concentrations above groundwater protection SCOs. However, the protection of groundwater SCOs for the site contaminants of concern were calculated based on a formula with an assumed total organic carbon content of 1%. The TOC measurement of the Site soil obtained during the RI is 2.7%., which would help to minimize contaminant dissolution into the groundwater. With the significant attenuation of groundwater contamination from west to east across the Site, it is expected that future groundwater concentrations will eventually be compliant, or nearly compliant, with New York standards. As noted above, there will be a deed restriction to prevent on-site use of the groundwater and there is no downgradient groundwater use. Therefore, the Track 4 alternative is considered to be fully protective of human health and the environment.

Although applicable SCOs would not be met fully across the Site, Track 4 is in compliance with applicable standards, criteria and guidance values. The alternative is effective in the short term, and as groundwater quality is eventually restored, will become more effective in the long term. Track 4 provides significant reduction in contaminant volume, almost to the same degree as Track 1. Track 4 is implementable and has a cost that falls between the no action and Track 1 alternatives.

5.5 SUMMARY

The table on the following page summarizes the analysis of the alternatives.

Track 4 is the recommended alternative.

SECTION FIVE Development and Analysis of Alternatives

	ALTERNATIVE		
CRITERIA	**1. NO ACTION**	**2. TRACK 1**	**3. TRACK 4**
1. Overall protectiveness of the public health and the environment	Not protective.	Most protective.	Protective.
2. Standards, criteria and guidance	Does not comply.	Complies, if effective.	Complies, but remaining soils over SCOs require controls.
3. Long-term effectiveness and permanence	Not effective.	May not be fully effective.	Effective. Most but not all contamination permanently removed.
4. Reduction of toxicity, mobility or volume of contamination through treatment	No reduction.	Complete reduction, if effective.	Not as much reduction as Alternative 2.
5. Short-term impact and effectiveness	No short term impact.	Requires truck movement to achieve excavation. Takes longer to implement.	Requires truck movement to achieve excavation.
6. Implementability	Implementable.	Questionable implementability.	Implementable.
7. Cost-effectiveness	Least cost.	Most cost and low cost-effectiveness.	Cost-effective.
8. Land Use	Not consistent with area land use plans	Consistent.	Consistent.
9. Community acceptance	Community acceptance is evaluated during the public brownfield participation process.		

SECTION SIX Recommended Remedy

6 RECOMMENDED REMEDY

6.1 OVERVIEW

The recommended remedy for the Site includes the following elements:

- Excavation of contaminated soils
- Cover
- LNAPL control
- Protection against vapor intrusion
- Easement
- Abandonment of groundwater monitoring wells
- Remedial Action Work Plan
- Site Management Plan

These elements are detailed below.

6.2 EXCAVATION

The anticipated area of excavation needed to construct the building is indicated in Figures 4 and 6 in plan view and Figure 5 in cross-section. There will be additional excavation of contaminated soil to the west and south to the extent that stable sidewalls can be achieved and undermining of the public sidewalks and roads is avoided.

Soil samples will be collected from all post-excavation surfaces (that are not rock) to document the quality of the soils left in place. Samples will be collected at the frequency specified in NYSDEC guidance DER-10. Actual sample collection will be detailed in the future Remedial Action Work Plan for the Site. At the limit of the excavation to the west and south where available information indicates that volatile gasoline-related chemicals are the only substances of concern in these areas, analysis will be limited to VOCs. Sample analysis in the eastern area of the site impacted by PAHs will include VOCs and SVOCs. Method of analysis and quality control will be as specified in the existing Remedial Investigation Work Plan.

Available information indicates a depression in the bedrock in the vicinity of the Loading Rack AOC. This depression may have been an accumulation point for historic spills, which would account in part for the LNAPL found in one of the wells. Therefore, there will be additional excavation to the extent feasible in the area of this depression. Assuming all of the soil can be removed, there would be no post-excavation soil sampling in this area.

On the east side of the Site, excavation beyond that needed for the building construction will be to the extent needed to establish the requisite minimum 2 feet of soil cover, as detailed in Section 6.3, below.

SECTION SIX Recommended Remedy

Because the excavation will penetrate the water table, dewatering will be required. Water removed from the excavation will be contained and removed from the Site for off-site disposal. Alternatively, the water may be treated on-site and discharged to surface water pursuant to a NYSDEC permit that the Volunteer would apply for.

A stormwater management plan will be required for the construction to address erosion control and other issues.

Air emissions during the excavation will be controlled through the implementation of a CAMP, similar as followed during the RI. The CAMP will be made a component of Site's future Remedial Action Work Plan. The CAMP for the RI required continuous monitoring for organic vapors and dust and set action levels for corrective actions if needed during the investigation. The data gathered during the RI indicates that the soil that will be exposed during the excavation meets residential SCOs, except for minor exceedances in the eastern portion of the site where there would be relatively limited excavation. Therefore, the dust component of the CAMP can be eliminated.

A HASP to be employed to protect workers during the excavation would be prepared and incorporated into the Remedial Action Work Plan.

6.3 COVER

Figure 7 shows the estimated area where soils remaining after excavation will contain contaminants (i.e., PAHs) above restricted residential SCOs. The extent of the cover is based on the estimated depth of bedrock and on the analytical results and drill logs for the soil borings completed during the RI and by O&R (on- and off-site) for the investigation of the coal gasification remedial investigations. A cover meeting Part 375 requirements will be established for this area. The cover has an estimated area of approximately 4000 ft^2, about 80% of which is soil.

An isolated area of cover is shown south of the middle tier where a previous study indicated low level (2 mg/kg) ethylbenzene at a depth too deep below the water table to be excavated. This concentration is compliant with the restricted residential SCO but exceeds the 1 mg/kg protection of groundwater SCO. Because of the uncertainty as to whether natural degradation has lowered the actual concentration since that previous study was conducted, Figure 7 shows this area as being provided a cover.

As indicated, a portion of the area will be covered by building/pavement and the remainder will be landscaped. The landscape area is the portion of the Site east of the building and largely falls beneath the slope from the leading to the lower off-site parking area along the Hudson River.

A demarcation layer (e.g., woven filter fabric) will be placed below the cover to provide a warning during possible future excavation through the cover. The cover will be maintained per the requirements of the future Site Management Plan.

SECTION SIX Recommended Remedy

6.4 LNAPL CONTROL

As noted above, soil excavation from the depression in the bedrock in the area of the loading rack is expected to remove a source of contamination to HVMW-41D, the isolated groundwater well that exhibits LNAPL contamination. In addition, product will be bailed monthly for a period of one year to provide additional removal. The removal may begin before formal NYSDEC acceptance of the remedy. This well is in the proposed soil excavation area. However, the soil at this location is only 3-ft deep. Therefore, the well can be protected from damage (e.g., concrete manhole ring placed over the well) until such time as the requisite bailing has been accomplished and the well has been properly abandoned (Section 6.7, below).

6.5 PROTECTION AGAINST VAPOR INTRUSION

Testing during the RI shows that vapor intrusion into the proposed residential structure should not be an issue. The underground garage will underlay most if not all of the above residences. The garage will not be enclosed with floor to ceiling walls at its eastern entrance, which will allow free exchange of the garage air with the outdoors. Therefore, even with a concern about subsurface vapors, intrusion to the living spaces will not occur. However, vapor intrusion into the building will be re-evaluated as part of the future Remedial Action Work Plan if there is a change in the foot print of the building vis a vis the parking garage.

6.6 ENVIRONMENTAL EASEMENT

A declaration of covenants and restrictions will be attached to the deed for the Site to provide for (the following provides an overview of the declaration, not specific, final text):

1. Unless prior written approval by the NYSDEC is first obtained, there shall be no construction, use or occupancy of the Site that results in the disturbance or excavation of the Site, which threatens the integrity of the cover or results in unacceptable human exposure to contaminated soils.
2. The owner of the Site (i.e., the condominium association) shall maintain the cover or, after obtaining the written approval of the NYSDEC, by covering the Site with another material.
3. The owner of the Site shall prohibit the Site from ever being used for purposes other than for restricted residential use without the express written waiver of such prohibition by the NYSDEC.
4. The owner of the Site shall prohibit the use of the groundwater underlying the Site without treatment rendering it safe for drinking water or industrial purposes, as appropriate, unless the user first obtains permission to do so from the NYSDEC.

SECTION SIX Recommended Remedy

5. The owner of the Site shall continue in full force and effect any institutional and engineering controls required under the Brownfield Site Cleanup Agreement and maintain such controls unless the owner first obtains permission to discontinue such controls from the NYSDEC.
6. The declaration shall be binding upon all future owners of the Site who shall consent to enforcement by the NYSDEC and not contest the authority of the NYSDEC to seek enforcement.
7. The declaration will reference a Site Management Plan. (Refer to Section 6.9, below.)

In addition, access will be provided to the NYSDEC to allow verification that the requirements of the declaration are being met.

6.7 ABANDONMENT OF GROUNDWATER MONITORING WELLS

Prior to the remedial excavation, all of the monitoring wells (with the possible exception of HVMW-41D) will be abandoned. Abandonment will be conducted by a well drilling contractor licensed for such work by the NYSDEC and Rockland County Department of Health (RCDOH). Well abandonment is subject to permitting by RCDOH. Abandonment procedures will comply with NYSDEC's CP-43 *Commissioner's Policy on Groundwater Monitoring Well Decommissioning* and Article II of the Rockland County Health Code.

Depending on schedule, continued bailing of LNAPL from monitoring well HVMW-41D might be required during or after excavation. In this case, HVMW-41D will be protected from damage by the excavation equipment (e.g., placing a concrete manhole ring over the curb box). After the requisite LNAPL removal has been achieved, HVMW-41D will be abandoned as noted above.

6.8 REMEDIAL ACTION WORK PLAN

After final acceptance of the recommended (or other) remedy by the NYSDEC, a Remedial Action Work Plan (RAWP) will be prepared to finalize the above elements. The document will be prepared according to the requirements of NYSDEC guidance DER-10 and include the following:

1. description of the remedial action
2. location and description of temporary construction facilities
3. description of soil and sediment erosion control, storm water management and monitoring and dust, odor and organic vapor control and monitoring procedures
4. health and safety plan and community air monitoring plan
5. confirmation and documentation sampling plan
6. site restoration plan
7. cost estimate, if required

8. schedule
9. description of institutional controls
10. requirement to submit a Site Management Plan (Section 6.9, below)
11. drawings and figures as needed

The remediation will be documented in a Construction Completion Report and Final Engineering Report (Section 5.9 of DER-10).

6.9 SITE MANAGEMENT PLAN

The recommended remedy has a restricted use (restricted residential use and prohibition against use of the groundwater) and an engineering control (cover system) that must be maintained in the future. Therefore, a Site Management Plan (SMP) will be required. The SMP must be approved before the NYSDEC approves the Final Engineering Report. The SMP includes an institutional and engineering control (IEC) plan and can include a monitoring plan and operation and maintenance plan. However, as the long term controls include only a cover system and restricted use and the groundwater wells will be abandoned, the SMP for the Site will be limited to the IEC plan.

SECTION SEVEN References

7 REFERENCES

HDR|LMS. Remedial Investigation Work Plan. 2007.

HDR. Remedial Investigation Report. 2010

NYSDEC. DER-10 Technical Guidance for Site Investigation and Remediation. May 3, 2010

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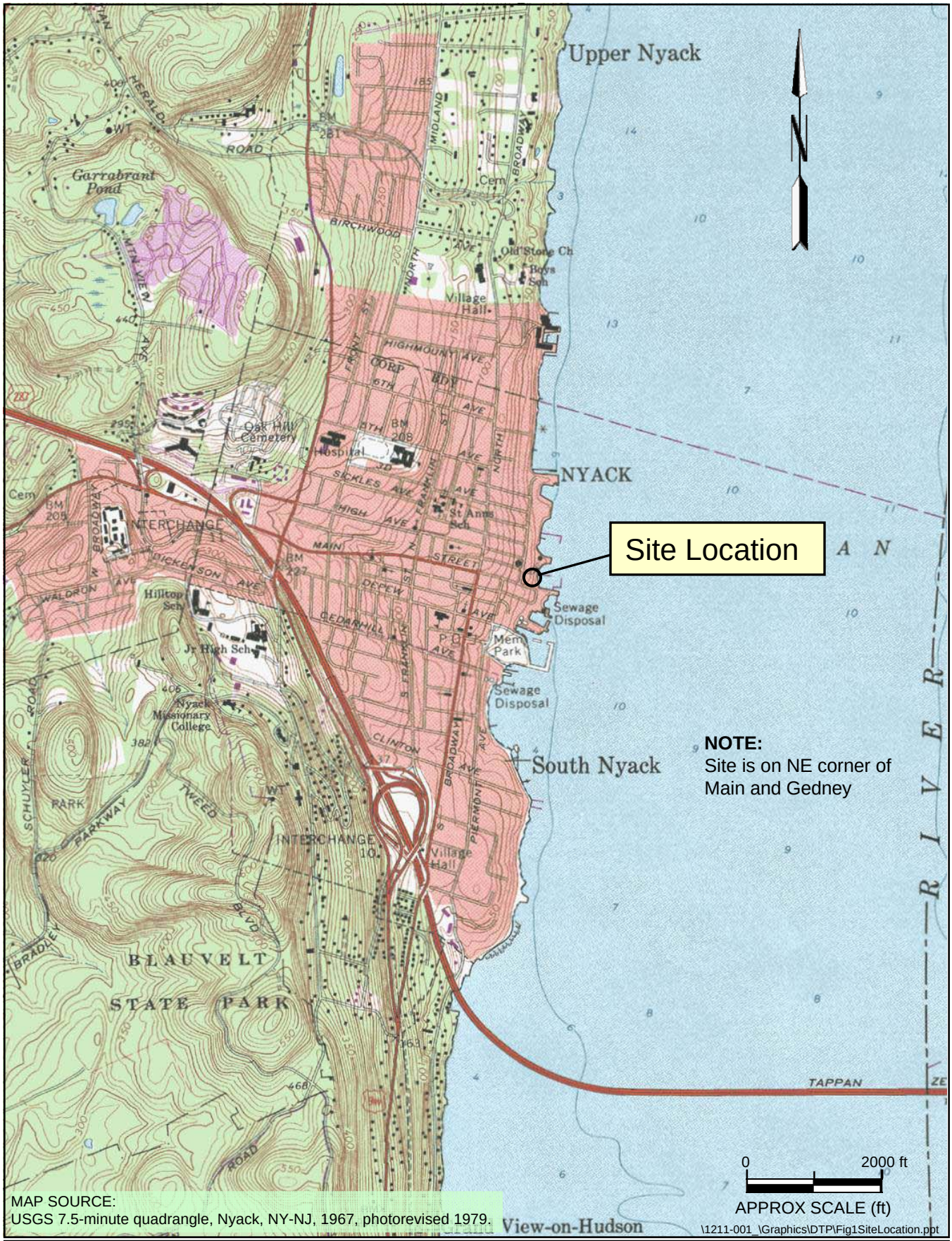
8 AA REPORT CERTIFICATION

I Stuart E. Bassell certify that I am currently a New York State registered professional engineer and that this report was prepared in accordance with all applicable statutes and regulations and in substantial conformance with the DER Technical Guidance for Site Investigation and Remediation (DER-10) and that all activities were performed in full accordance with the DER-approved work plan and any DER-approved modifications.

Stuart Bassell, P.E.
Senior Project Manager

FIGURES



MAP SOURCE:
USGS 7.5-minute quadrangle, Nyack, NY-NJ, 1967, photorevised 1979.

\1211-001_\Graphics\DTP\Fig1SiteLocation.ppt

HDR	Henningson, Durham & Richardson Architecture and Engineering, P.C. in association with HDR Engineering, Inc. One Blue Hill Plaza Pearl River, NY 10965	**Site Location Map** **Former Tidewater Terminal Brownfields Site C344067** **FOOT OF MAIN, LLC**	**Figure 1**

GEDNEY

MAIN STREET

N11°13'25"E
174.00'

S71°40'00"E
177.07'

S11°44'32"E
26.71'

S00°37'40"E
131.87'

N69°40'35"W
162.69'

S20°19'24"W
25.00'

N69°40'35"W
38.92'

S85°53'43"W
10.08'

AREA REMEDIATED BY ORANGE AND ROCKLAND UTILITIES

EASEMENT E

BROWNFIELD SITE

UNDER WATER

EASEMENT B

NORTH

LEGEND

- SITE
- PROPERTY LINE
- EASEMENT

0 20' 40' 80'

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Brownfield Site C344067
Gedney Street
Rockland County, Nyack, New York

SITE BOUNDARY MAP

DATE
12–11–06

FIGURE
2

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ISSUE	DATE	DESCRIPTION
–	–	–

PROJECT MANAGER	–
	Stu Bassell
	Steve Walz
PROJECT NUMBER	0028010

SIGNATURE DATE

WARNING: It is a violation of the New York State Education Law for any person unless acting under the direction of a licensed professional engineer, to alter any item on these plans in any way. If alterations to these plans are made, the alterations shall be made in accordance with 145-subsection 7209 of the New York State Education Law.

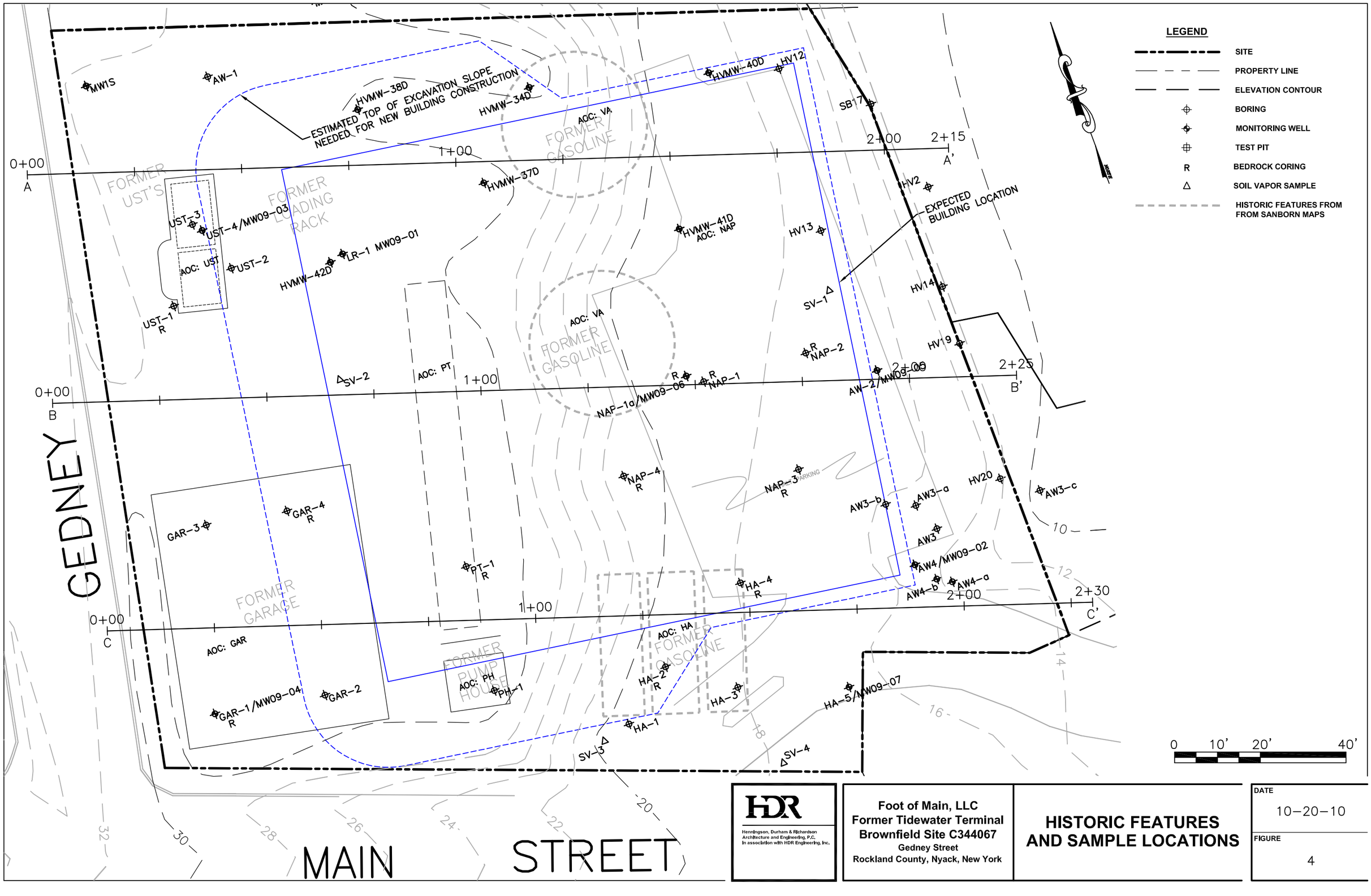
Foot of Main, LLC
Former Tidewater Terminal
Brownfield Site C344067
Gedney Street
Rockland County, Nyack, New York

CURRENT SITE FEATURES

0 10 20 30

FILENAME
SCALE AS NOTED

SHEET
FIGURE 3



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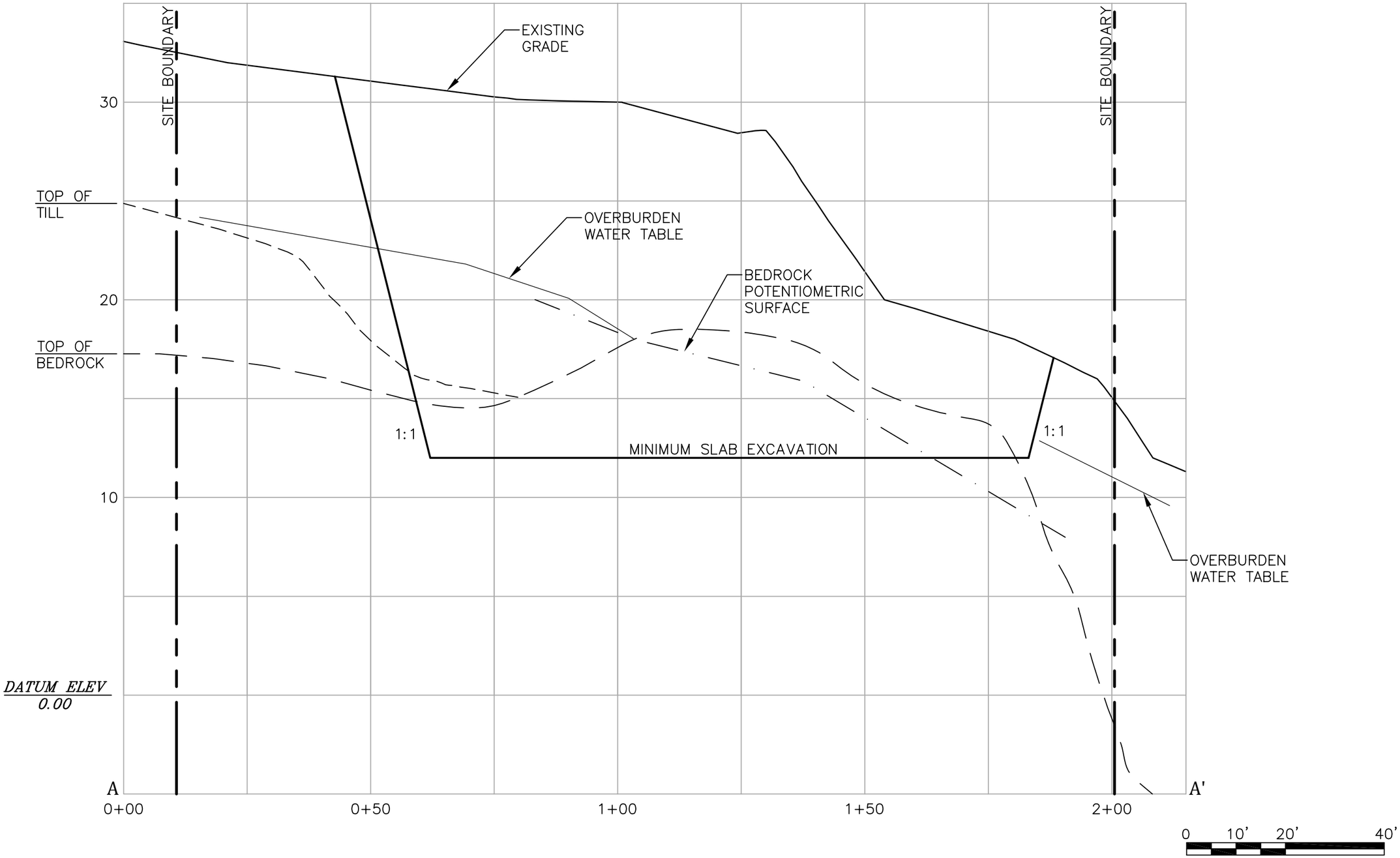
Brownfield Site C344067
Gedney Street
Rockland County, Nyack, New York

HISTORIC FEATURES AND SAMPLE LOCATIONS

DATE
10-20-10

FIGURE
4



0 10 20 40

HORIZONTAL SCALE
1" = 20'

0 2.5 5 10

VERTICAL SCALE
1" = 5'

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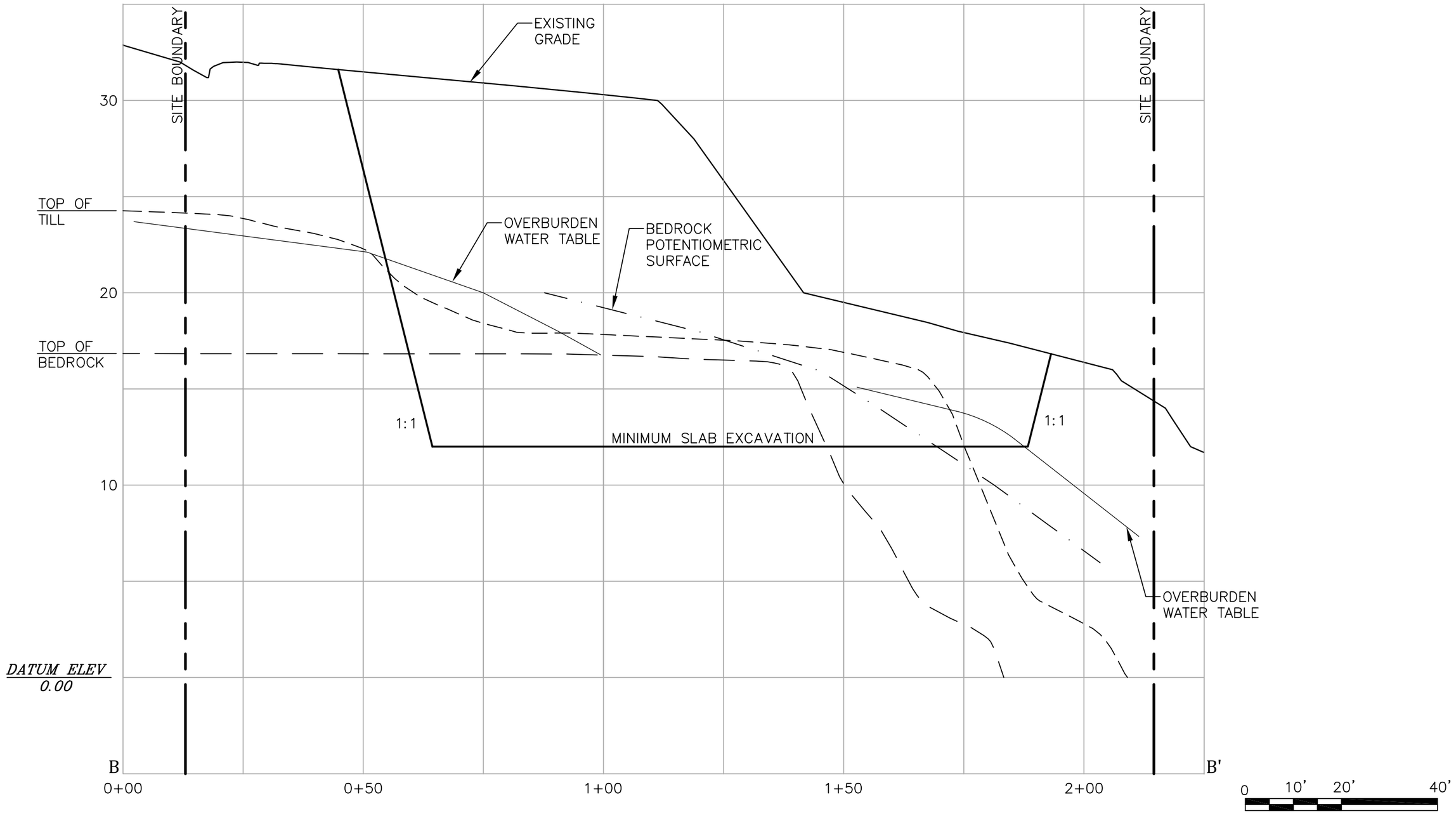
Former Tidewater Terminal
Brownfield Site C344067
Gedney Street
Rockland County, Nyack, New York

GEOLOGIC CROSS-SECTIONS (PAGE 1 OF 3)

DATE
12–11–09

FIGURE
5A



0 10 20 40
HORIZONTAL SCALE
1" = 20'

0 2.5 5 10
VERTICAL SCALE
1" = 5'

HDR
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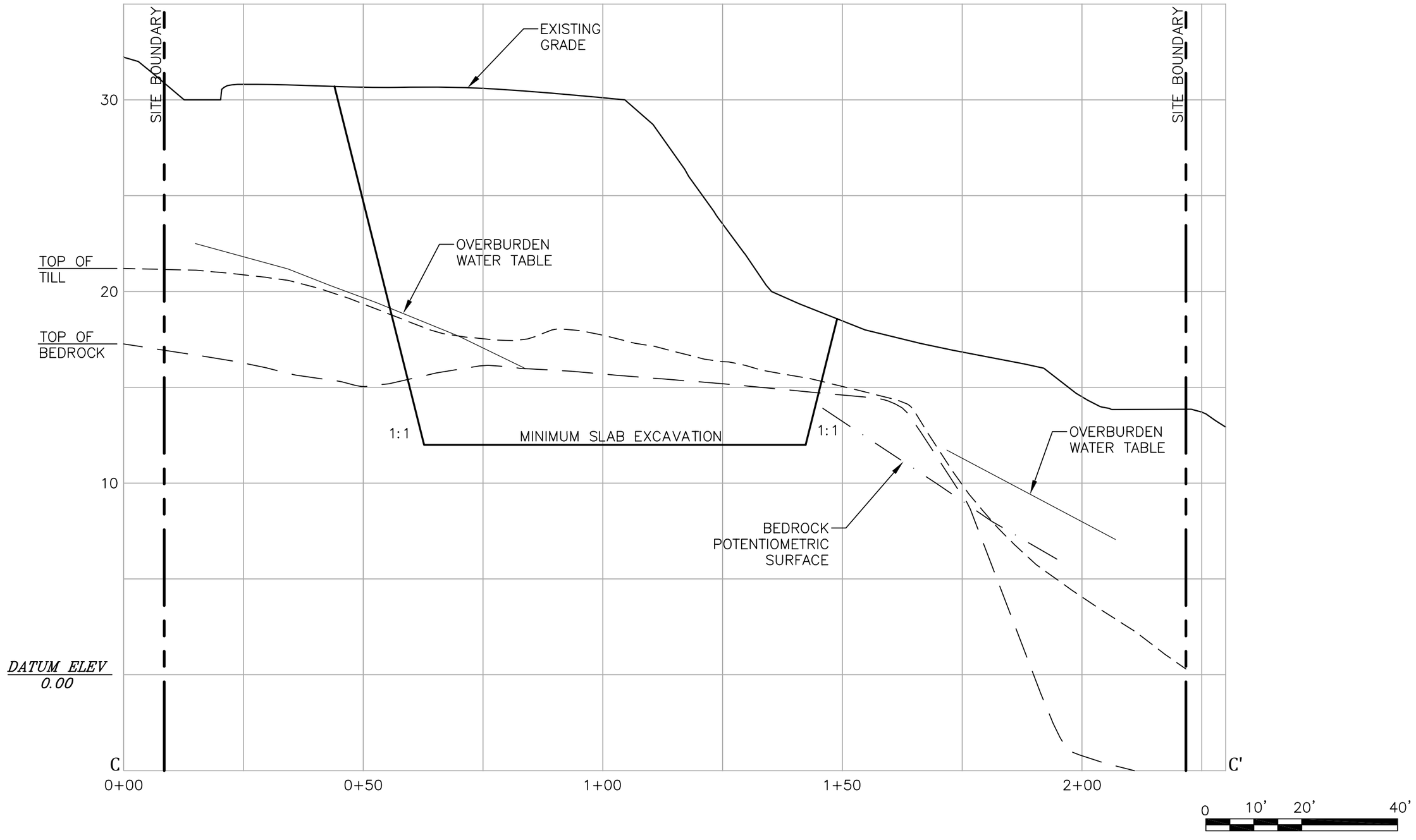
Former Tidewater Terminal
Brownfield Site C344067
Gedney Street
Rockland County, Nyack, New York

GEOLOGIC CROSS-SECTIONS (PAGE 2 OF 3)

DATE
12–11–09

FIGURE
5B



0 10 20 40
HORIZONTAL SCALE
1" = 20'

0 2.5 5 10
VERTICAL SCALE
1" = 5'

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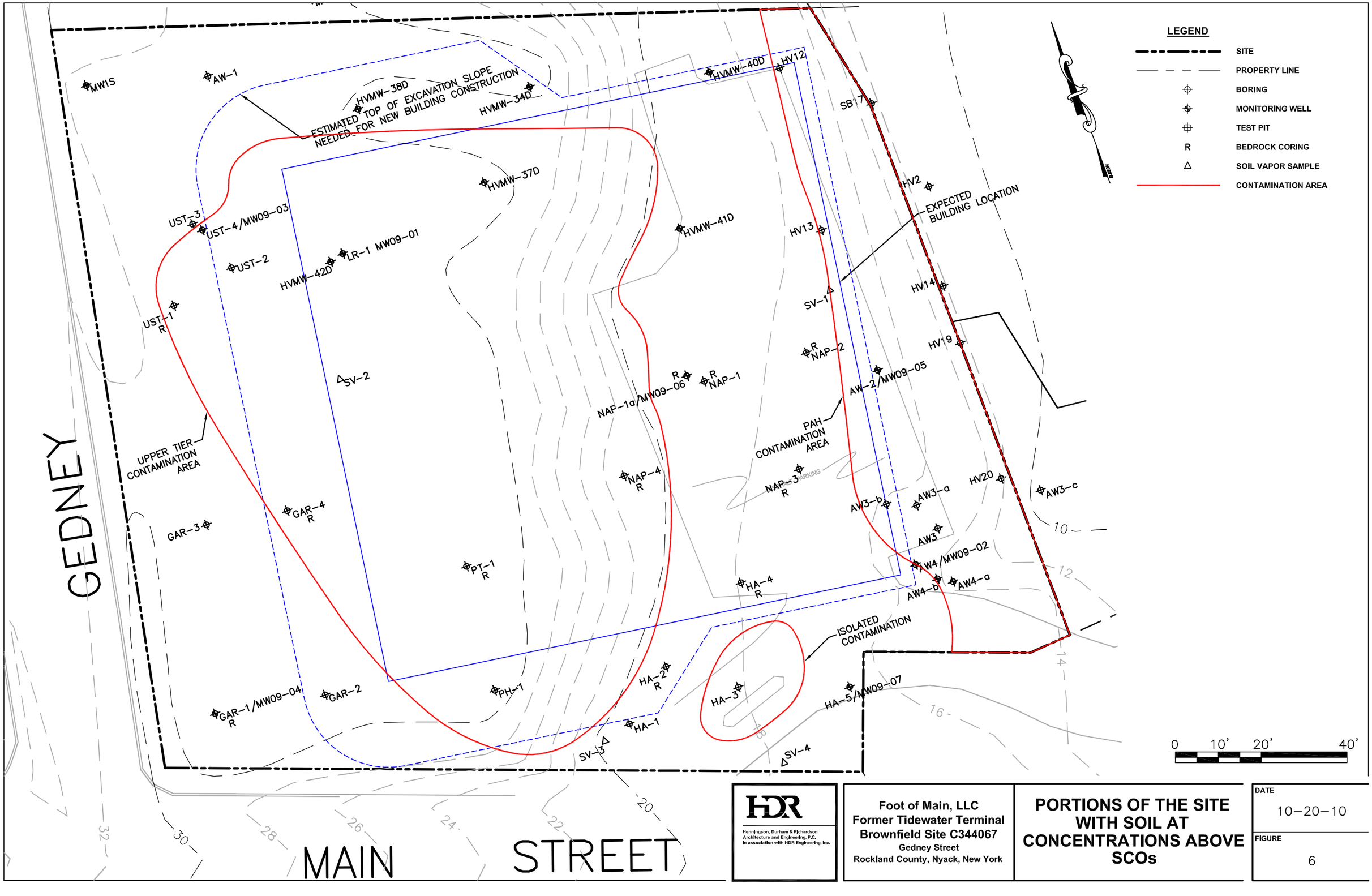
Former Tidewater Terminal
Brownfield Site C344067
Gedney Street
Rockland County, Nyack, New York

GEOLOGIC CROSS-SECTIONS (PAGE 3 OF 3)

DATE
12–11–09

FIGURE
5C



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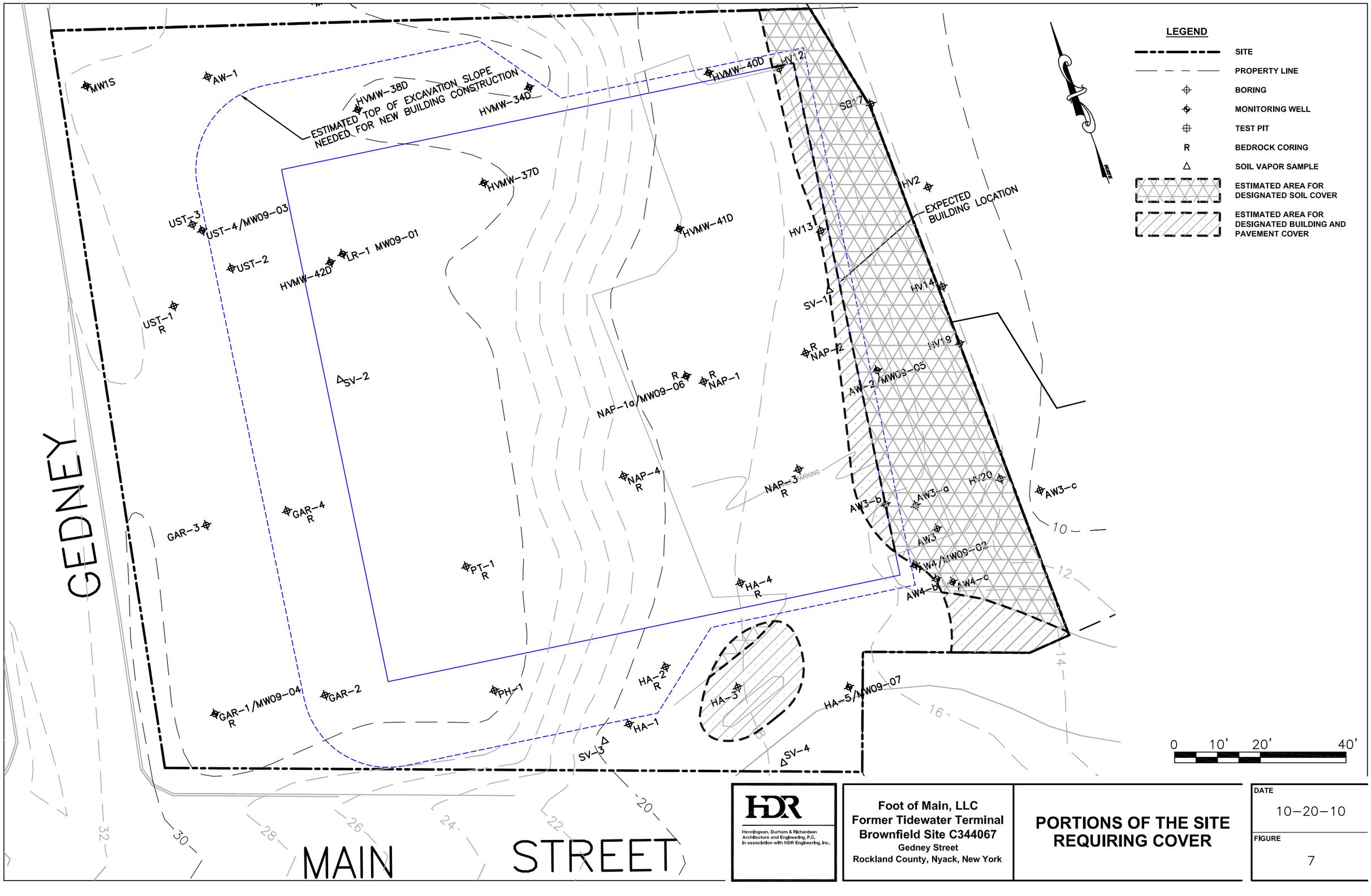
Former Tidewater Terminal
Brownfield Site C344067
Gedney Street
Rockland County, Nyack, New York

PORTIONS OF THE SITE WITH SOIL AT CONCENTRATIONS ABOVE SCOs

DATE
10-20-10

FIGURE
6



HDR Henningson, Durham & Richardson Architecture and Engineering, P.C. In association with HDR Engineering, Inc.	Foot of Main, LLC Former Tidewater Terminal Brownfield Site C344067 Gedney Street Rockland County, Nyack, New York
PORTIONS OF THE SITE REQUIRING COVER	DATE 10–20–10 FIGURE 7

APPENDIX A

Summary Tables From the Remedial Investigation Report

TABLE 1
SAMPLE AND ANALYSIS SUMMARY

AOC	SAMPLE NAME	LAB SAMPLE ID	LAB	SAMPLE DEPTH (ft)	SAMPLE DATE	BORING/ WELL DEPTH (ft)	MATRIX	LABORATORY ANALYSIS								
								VOCs	SVOCs	METALS	PCBs	HERB/PEST	TOC	DENSITY	ADDITIONAL *	NOTES
UST	UST-2 (9.5)	AC46483-001	HCI	9.5	8/17/09	15	Soil	X								
UST	UST-2 (8.5-11)	AC46483-002	HCI	8.1-11	8/17/09	15	Soil		X							
UST	UST-1 (13.5)	AC46483-003	HCI	13.5	8/17/09	15	Soil	X								
UST	UST-1 (12-14)	AC46483-004	HCI	12-14	8/17/09	15	Soil		X							
UST	UST-3 (10)	AC46506-001	HCI	10	8/18/09	17	Soil	X								
UST	UST-3 (9-11.5)	AC46506-002	HCI	9-11.5	8/18/09	17	Soil		X							
PH	PH-1 (14)	AC46506-003	HCI	14	8/18/09	17	Soil	X								
PH	PH-1 (13-16)	AC46506-004	HCI	13-16	8/18/09	17	Soil		X	X	X					
GAR	GAR-4 (10)	AC46506-005	HCI	10	8/18/09	13.8	Soil	X								
GAR	GAR-4 (10-13)	AC46506-006	HCI	10-13	8/18/09	13.8	Soil		X	X	X					
GAR	MW-X	AC46506-007	HCI	10, 10-13	8/18/09	13.8	Soil	X	X	X	X					GAR-4 dupe
GAR	MS-GAR-4 (10)	AC46506-008	HCI	10	8/18/09	13.8	Soil	X								MS
GAR	MS-GAR-4 (10-13)	AC46506-009	HCI	10-13	8/18/09	13.8	Soil		X	X	X					MS
GAR	MSD-GAR-4 (10)	AC46506-010	HCI	10	8/18/09	13.8	Soil	X								MSD
GAR	MSD-GAR-4 (10-13)	AC46506-011	HCI	10-13	8/18/09	13.8	Soil		X							MSD
UST	UST-4 (10)	AC46506-012	HCI	10	8/18/09	15	Soil	X								
UST	UST-4 (9-11.5)	AC46506-013	HCI	9-11.5	8/18/09	15	Soil		X							
	FB-GAR-4	AC46542-001	HCI	n.a.	8/19/2009	n.a	Water	X								FB
LR	LR-1 (17)	AC46542-002	HCI	17	8/19/2009	19	Soil	X								
LR	LR-1 (16-18)	AC46542-003	HCI	16-18	8/19/2009	19	Soil		X							
GAR	GAR-3 (10)	AC46542-004	HCI	10	8/19/2009	15.2	Soil	X								
GAR	GAR-3 (9-13)	AC46542-005	HCI	9-13	8/19/2009	15.2	Soil		X	X	X					
UST	PZ-UST-3	AC46589-015	HCI	n.a.	8/20/2009	17	Water	X	X							
PH	PZ-PH-1	AC46589-016	HCI	n.a.	8/20/2009	17	Water	X	X							
	FB-HA-1	AC46589-022	HCI	n.a.	8/21/2009	n.a	Water	X								FB
HA	HA-5 (6)	AC46589-001	HCI	6	8/20/2009	9.7	Soil	X								
HA	HA-5 (5-8)	AC46589-002	HCI	5-8	8/20/2009	9.7	Soil		X							
NAP	NAP-2 (12)	AC46589-003	HCI	12	8/20/2009	14	Soil	X								
NAP	NAP-2 (10-12)	AC46589-004	HCI	10-12	8/20/2009	14	Soil		X							
HA	HA-3 (1.5)	AC46589-005	HCI	1.5	8/20/2009	2.5	Soil	X								
HA	HA-3 (1-2.5)	AC46589-006	HCI	1-2.5	8/20/2009	2.5	Soil		X							
AW	AW-3 (8)	AC46589-007	HCI	8	8/20/2009	15.5	Soil	X								

TABLE 1
SAMPLE AND ANALYSIS SUMMARY

								LABORATORY ANALYSIS								
AOC	SAMPLE NAME	LAB SAMPLE ID	LAB	SAMPLE DEPTH (ft)	SAMPLE DATE	BORING/ WELL DEPTH (ft)	MATRIX	VOCs	SVOCs	METALS	PCBs	HERB/PEST	TOC	DENSITY	ADDITIONAL *	NOTES
AW	AW-3 (7-9)	AC46589-008	HCI	7-9	8/20/2009	15.5	Soil		X							
HA	HA-2 (2)	AC46589-009	HCI	2	8/20/2009	4.1	Soil	X								
HA	HA-2 (1-3)	AC46589-010	HCI	1-3	8/20/2009	4.1	Soil		X							
AW	AW-3 (14)	AC46589-011	HCI	14	8/20/2009	15.5	Soil	X								
AW	AW-3 (13-15)	AC46589-012	HCI	13-15	8/20/2009	15.5	Soil		X							
NAP	NAP-3 (11)	AC46589-013	HCI	11	8/20/2009	13.5	Soil	X								
NAP	NAP-3 (10-13)	AC46589-014	HCI	10-13	8/20/2009	13.5	Soil		X							
HA	HA-1 (2)	AC46589-017	HCI	2	8/21/2009	3.9	Soil	X								
HA	MW-B	AC46589-018	HCI	n.a.	8/21/2009	3.9	Soil	X								HA-1 (2) dupe
HA	MSD-HA-1 (2)	AC46589-019	HCI	n.a.	8/21/2009	3.9	Soil	X								MSD
HA	MS-HA-1 (2)	AC46589-020	HCI	n.a.	8/21/2009	3.9	Soil	X								MS
AW	AW-4 (9)	AC46589-021	HCI	9	8/21/2009	17.8	Soil	X								
HA	HA-1 (1-3)	AC46589-023	HCI	1-3	8/21/2009	3.9	Soil		X							
AW	AW-4 (8-10)	AC46589-024	HCI	8-10	8/21/2009	17.8	Soil		X							
HA	MSD-HA-1 (1-3)	AC46589-025	HCI	1-3	8/21/2009	3	Soil		X							MSD
	MW-B	AC46589-026	HCI		8/21/2009	3.9	Soil		X							HA-1 (1-3) dupe
HA	MS-HA-1 (1-3)	AC46589-027	HCI	1-3	8/21/2009	3.9	Soil		X							MS
GAR	PA-GAR-4	AC46749-001	HCI	n.a.	8/27/2009	13.8	Water	X	X							
PT	PZ PT-1	AC46749-002	HCI	n.a.	8/27/2009	13.5	Water	X	X							
AW	AW-2 (12)	AC46749-003	HCI	12	8/27/2009	14.2	Soil	X								
AW	AW-2 (12-14)	AC46749-004	HCI	12-14	8/27/2009	14.2	Soil		X			X				
NAP	NAP-2 (14)	AC46800-001	HCI	14	8/31/2009	14	Soil	X								
NAP	NAP-2 (13.5-14)	AC46800-002	HCI	13.5-14	8/31/2009	14	Soil		X							
AW	AW-3 (8-10)	AC46800-003	HCI	8-10	9/1/2009	15.5	Soil		X				X			
AW	MW09-02	AC47112-001	HCI	n.a.	9/16/2009	15	Water	X	X	X						
HA	MW09-07	AC47112-002	HCI	n.a.	9/16/2009	22.5	Water	X	X	X						
GAR	MW09-04	AC47112-003	HCI	n.a.	9/16/2009	14.5	Water	X	X	X						
VA	HVMW-40D	AC47112-004	HCI	n.a.	9/16/2009	19	Water	X	X							
	TB-091709	AC47112-005	HCI	n.a.	9/16/2009	n.a	Water	X								TB
UST	MW09-03	AC47076-001	HCI	n.a.	9/15/2009	15	Water	X	X	X						
	HVMW-1S	AC47076-002	HCI	n.a.	9/15/2009	14	Water	X	X	X						
LR	MW09-01	AC47076-003	HCI	n.a.	9/14/2009	20	Water	X	X	X						

TABLE 1
SAMPLE AND ANALYSIS SUMMARY

								LABORATORY ANALYSIS								
AOC	SAMPLE NAME	LAB SAMPLE ID	LAB	SAMPLE DEPTH (ft)	SAMPLE DATE	BORING/ WELL DEPTH (ft)	MATRIX	VOCs	SVOCs	METALS	PCBs	HERB/PEST	TOC	DENSITY	ADDITIONAL *	NOTES
LR	HVMW-42D	AC47076-004	HCI	n.a.	9/15/2009	25	Water	X	X							
LR	HVMW-37D	AC47076-005	HCI	n.a.	9/15/2009	30	Water	X	X							
NAP	MW09-06	AC47076-006	HCI	n.a.	9/15/2009	15.5	Water	X	X	X						
NAP	MW-A	AC47076-007	HCI	n.a.	9/15/2009	15.5	Water	X	X	X						MW09-06 dupe
NAP	MS-MW09-06	AC47076-008	HCI	n.a.	9/15/2009	15.5	Water	X	X	X						MS
NAP	MSD-MW09-06	AC47076-009	HCI	n.a.	9/15/2009	15.5	Water	X	X	X						MSD
	FB-MW09-06	AC47076-010	HCI	n.a.	9/15/2009	15.5	Water	X								FB
	TB091609	AC47076-011	HCI	n.a.	9/15/2009	n.a	Water	X								TB
AW	MW09-05	AC47076-012	HCI	n.a.	9/15/2009	14	Water	X	X	X						
LR	MW09-01		HCI	n.a.	10/14/09	20	Water								X	
AW	MW09-02		HCI	n.a.	10/14/09	15	Water								X	
NAP	HVWM-41D	HL090918-01	META	n.a.	9/16/09	20	LNAPL									fingerprint
AW	SV-1		ChemTech	n.a.	10/14/09	4	Soil Vapor	X								
PT	SV-2		ChemTech	n.a.	10/14/09	4	Soil Vapor	X								
HA	SV-3		ChemTech	n.a.	10/14/09	4	Soil Vapor	X								
HA	SV-4		ChemTech	n.a.	10/14/09	4	Soil Vapor	X								
AW	AW-3 (8-10)	01-091609	Fairway	8-10	8/27/09	15.5	Soil							X		

*dissolved iron, dissolved manganese, nitrate, sulfate, methane, ethene/ethane, BOD, COD, TPH
PZ-GAR-4 syntax corrected from laboratory report Sample ID.
HCI - Hampton-Clarke, Inc.
META - META Environmental, Inc.
Fairway - Fairway Testing
MS - matrix spike
MSD - matrix spike duplicate
TB - trip blank
FB - field blank
dupe - duplicate sample

TABLE 2
VOCs IN SOIL

	SITE ID:			NAP-2 (14)			AW-2 (12)			UST-3 (10)			PH-1 (14)			GAR-4 (10)			UST-4 (10)		
	LAB ID:			AC46800-001			AC46749-003			AC46506-001			AC46506-003			AC46506-005			AC46506-012		
	DATE:			8/31/2009			8/27/2009			8/18/2009			8/18/2009			8/18/2009			8/18/2009		
	Cleanup Objective																				
TestName	Units	Rest. Res	GW	Result	Flg	RL	Result	Flg	RL	Result	Flg	RL	Result	Flg	RL	Result	Flg	RL	Result	Flg	RL
1,2,4-Trimethylbenzene	mgKg	52	3.6	ND		0.11	ND		0.14	ND		0.11	**21**		0.11	ND		0.11	ND		0.10
1,3,5-Trimethylbenzene	mgKg	52	8.4	ND		0.11	ND		0.14	ND		0.11	1.7		0.11	0.53		0.11	ND		0.10
1,3-Dichlorobenzene	mgKg	49	2.4	ND		0.11	ND		0.14	ND		0.11	ND		0.11	ND		0.11	ND		0.10
2-Butanone	mgKg	100	0.12	ND		0.11	ND		0.14	ND		0.11	ND		0.11	ND		0.11	ND		0.10
4-Isopropyltoluene	mgKg			ND		0.11	ND		0.14	ND		0.11	1.5		0.11	0.14		0.11	0.28		0.10
Acetone	mgKg	100	0.05	ND		0.54	ND		0.69	ND		0.55	ND		0.55	ND		0.55	ND		0.51
Ethylbenzene	mgKg	41	1	ND		0.11	ND		0.14	ND		0.11	**3.9**		0.11	**1.2**		0.11	ND		0.10
Isopropylbenzene	mgKg			0.26		0.11	2.5		0.14	ND		0.11	1.4		0.11	0.86		0.11	0.30		0.10
m&p-Xylenes	mgKg	100	1.3	ND		0.11	ND		0.14	ND		0.11	**1.6**		0.11	ND		0.11	ND		0.10
Methylene chloride	mgKg	100	0.05	ND		0.11	ND		0.14	ND		0.11	ND		0.11	ND		0.11	ND		0.10
n-Butylbenzene	mgKg	100	11	0.39		0.11	2.6		0.14	ND		0.11	2.0		0.11	0.79		0.11	0.61		0.10
n-Propylbenzene	mgKg	100	3.9	0.34		0.11	3.8		0.14	ND		0.11	3.4		0.11	1.7		0.11	0.76		0.10
o-Xylene	mgKg	100	1.3	ND		0.11	ND		0.14	ND		0.11	0.24		0.11	ND		0.11	ND		0.10
sec-Butylbenzene	mgKg	100	11	0.22		0.11	2.0		0.14	ND		0.11	0.80		0.11	0.55		0.11	0.58		0.10
t-Butylbenzene	mgKg	100	5.9	ND		0.11	0.20		0.14	ND		0.11	ND		0.11	ND		0.11	ND		0.10
Tetrachloroethene	mgKg	19	1.3	ND		0.11	ND		0.14	ND		0.11	ND		0.11	ND		0.11	ND		0.10
Xylenes (Total)	mgKg	100	1.6	ND		0.11	ND		0.14	ND		0.11	**1.84**		0.11	ND		0.11	ND		0.1
Cyclohexane	mgKg																				
Methylcyclohexane	mgKg																				

highlighted - exceeds GW Objective
no other compounds detected

TABLE 2
VOCs IN SOIL

	LR-1 (17)			GAR-3 (10)			HA-5 (6)			NAP-2 (12)			HA-3 (1.5)			AW-3 (8)		
	AC46542-002			AC46542-004			AC46589-001			AC46589-003			AC46589-005			AC46589-007		
	8/19/2009			8/19/2009			8/20/2009			8/20/2009			8/20/2009			8/20/2009		
TestName	Result	Flg	RL	Result	Flg	RL	Result	Flg	RL	Result	Flg	RL	Result	Flg	RL	Result	Flg	RL
1,2,4-Trimethylbenzene	0.0044		0.0011	ND		0.0011	0.0071		0.0012	0.011		0.0059	ND		0.0011	0.0042		0.0011
1,3,5-Trimethylbenzene	0.0025		0.0011	ND		0.0011	ND		0.0012	ND		0.0059	ND		0.0011	0.0012		0.0011
1,3-Dichlorobenzene	ND		0.0057	ND		0.0054	ND		0.0060	ND		0.030	ND		0.0056	ND		0.0057
2-Butanone	0.020		0.0057	0.020		0.0054	0.033		0.0060	ND		0.030	ND		0.0056	ND		0.0057
4-Isopropyltoluene	0.0013		0.0011	ND		0.0011	0.0016		0.0012	0.010		0.0059	ND		0.0011	ND		0.0011
Acetone	ND		0.028	ND		0.027	0.16		0.030	ND		0.15	ND		0.028	0.033		0.028
Ethylbenzene	ND		0.0011	ND		0.0011	ND		0.0012	ND		0.0059	ND		0.0011	ND		0.0011
Isopropylbenzene	ND		0.0011	ND		0.0011	ND		0.0012	0.088		0.0059	ND		0.0011	ND		0.0011
m&p-Xylenes	ND		0.0011	ND		0.0011	0.0024		0.0012	ND		0.0059	ND		0.0011	ND		0.0011
Methylene chloride	ND		0.0057	ND		0.0054	ND		0.0060	ND		0.030	ND		0.0056	ND		0.0057
n-Butylbenzene	0.0015		0.0011	ND		0.0011	ND		0.0012	0.065		0.0059	ND		0.0011	ND		0.0011
n-Propylbenzene	ND		0.0011	0.0024		0.0011	ND		0.0012	0.12		0.0059	ND		0.0011	ND		0.0011
o-Xylene	ND		0.0011	ND		0.0011	ND		0.0012	ND		0.0059	ND		0.0011	ND		0.0011
sec-Butylbenzene	0.0012		0.0011	0.014		0.0011	0.0020		0.0012	0.059		0.0059	ND		0.0011	ND		0.0011
t-Butylbenzene	ND		0.0011	ND		0.0011	ND		0.0012	0.011		0.0059	ND		0.0011	ND		0.0011
Tetrachloroethene	ND		0.0057	ND		0.0054	ND		0.0060	ND		0.030	ND		0.0056	ND		0.0057
Xylenes (Total)	ND		0.0011	ND		0.0011	0.0024		0.0012	ND		0.0059	ND		0.0011	ND		0.0011
Cyclohexane																		
Methylcyclohexane																		

highlighted - exceeds GW Objective
no other compounds detected

TABLE 2
VOCs IN SOIL

	HA-2 (2)			AW-3 (14)			NAP-3 (11)			HA-1 (2)			AW-4 (9)			UST-2 (9.5)			UST-1 (13.5)		
	AC46589-009			AC46589-011			AC46589-013			AC46589-017			AC46589-021			AC46483-001			AC46483-003		
	8/20/2009			8/20/2009			8/20/2009			8/21/2009			8/21/2009			8/17/2009			8/17/2009		
TestName	Result	Flg	RL	Result	Flg	RL	Result	Flg	RL	Result	Flg	RL	Result	Flg	RL	Result	Flg	RL	Result	Flg	RL
1,2,4-Trimethylbenzene	0.71		0.11	ND		1.1	ND		0.11	ND		0.0011	0.0053		0.0012	2.0		0.21	ND		0.12
1,3,5-Trimethylbenzene	1.0		0.11	ND		1.1	ND		0.11	ND		0.0011	0.0014		0.0012	6.3		0.21	ND		0.12
1,3-Dichlorobenzene	ND		0.11	ND		1.1	ND		0.11	ND		0.0056	ND		0.0060	ND		0.21	ND		0.12
2-Butanone	ND		0.11	ND		1.1	ND		0.11	ND		0.0056	0.021		0.0060	ND		0.21	ND		0.12
4-Isopropyltoluene	0.70		0.11	ND		1.1	ND		0.11	ND		0.0011	ND		0.0012	0.83		0.21	0.15		0.12
Acetone	ND		0.55	ND		5.7	ND		0.55	ND		0.028	0.13		0.030	ND		1.1	ND		0.58
Ethylbenzene	ND		0.11	ND		1.1	ND		0.11	ND		0.0011	ND		0.0012	**5.2**		0.21	ND		0.12
Isopropylbenzene	0.18		0.11	8.7		1.1	1.5		0.11	ND		0.0011	ND		0.0012	1.4		0.21	3.3		0.12
m&p-Xylenes	ND		0.11	ND		1.1	ND		0.11	ND		0.0011	ND		0.0012	**1.4**		0.21	ND		0.12
Methylene chloride	ND		0.11	ND		1.1	ND		0.11	ND		0.0056	0.0066		0.0060	ND		0.21	ND		0.12
n-Butylbenzene	0.84		0.11	8.1		1.1	1.1		0.11	ND		0.0011	ND		0.0012	0.73		0.21	4.7		0.12
n-Propylbenzene	0.47		0.11	**14**		1.1	2.0		0.11	ND		0.0011	ND		0.0012	2.3		0.21	**11**		0.12
o-Xylene	ND		0.11	ND		1.1	ND		0.11	ND		0.0011	ND		0.0012	ND		0.21	ND		0.12
sec-Butylbenzene	0.68		0.11	4.7		1.1	0.88		0.11	ND		0.0011	ND		0.0012	0.56		0.21	3.8		0.12
t-Butylbenzene	0.17		0.11	ND		1.1	0.15		0.11	ND		0.0011	ND		0.0012	ND		0.21	0.36		0.12
Tetrachloroethene	ND		0.11	ND		1.1	ND		0.11	ND		0.0056	ND		0.0060	ND		0.21	0.17		0.12
Xylenes (Total)	ND		0.11	ND		1.1	ND		0.11	ND		0.0011	ND		0.0012	1.4		0.21	ND		0.12
Cyclohexane																15		0.21	ND		0.12
Methylcyclohexane																57		0.21	ND		0.12

highlighted - exceeds GW Objective
no other compounds detected

TABLE 3
SVOCs IN SOIL

	SITE ID:			NAP-2 (13.5-14)			AW-2 (12-14)			UST-2 (8.5-11)			UST-1 (12-14)			UST-3 (9-11.5)			PH-1 (13-16)		
	LAB ID:			AC46800-002			AC46749-004			AC46483-002			AC46483-004			AC46506-002			AC46506-004		
	DATE:			8/31/2009			8/27/2009			8/17/2009			8/17/2009			8/18/2009			8/18/2009		
		Cleanup Objective																			
TestName	Units	Rest. Res	GW	Result	Flg	RL	Result	Flg	RL	Result	Flg	RL	Result	Flg	RL	Result	Flg	RL	Result	Flg	RL
1,2,4-Trichlorobenzene	mgKg			ND		0.079	ND		0.082	ND		0.23	ND		0.078	ND		0.077	ND		0.074
1,2-Diphenylhydrazine	mgKg			ND		0.079	ND		0.082	ND		0.23	ND		0.078	ND		0.077	ND		0.074
2,4,5-Trichlorophenol	mgKg			ND		0.079	ND		0.082	ND		0.23	ND		0.078	ND		0.077	ND		0.074
2,4,6-Trichlorophenol	mgKg			ND		0.079	ND		0.082	ND		0.23	ND		0.078	ND		0.077	ND		0.074
2,4-Dichlorophenol	mgKg			ND		0.079	ND		0.082	ND		0.23	ND		0.078	ND		0.077	ND		0.074
2,4-Dimethylphenol	mgKg			ND		0.079	ND		0.082	ND		0.23	ND		0.078	ND		0.077	ND		0.074
2,4-Dinitrophenol	mgKg			ND		0.40	ND		0.41	ND		2.3	ND		0.39	ND		0.38	ND		0.37
2,4-Dinitrotoluene	mgKg			ND		0.079	ND		0.082	ND		0.23	ND		0.078	ND		0.077	ND		0.074
2,6-Dinitrotoluene	mgKg			ND		0.079	ND		0.082	ND		0.23	ND		0.078	ND		0.077	ND		0.074
2-Chloronaphthalene	mgKg			ND		0.079	ND		0.082	ND		0.23	ND		0.078	ND		0.077	ND		0.074
2-Chlorophenol	mgKg			ND		0.079	ND		0.082	ND		0.23	ND		0.078	ND		0.077	ND		0.074
2-Methylnaphthalene	mgKg			1.6		0.079	1.3		0.082	3.4		0.23	3.6		0.078	ND		0.077	1.4		0.074
Acenaphthene	mgKg	100	98	0.25		0.079	0.64		0.082	ND		0.23	0.36		0.078	ND		0.077	ND		0.074
Acenaphthylene	mgKg	100	107	ND		0.079	0.66		0.082	ND		0.23	ND		0.078	0.080		0.077	ND		0.074
Anthracene	mgKg	100	1000	ND		0.079	2.2	g	0.082	ND		0.23	ND		0.078	0.13		0.077	ND		0.074
Benzo[a]anthracene	mgKg	1	1	ND		0.079	**4.8**	*g	0.082	ND		0.23	ND		0.078	0.53		0.077	ND		0.074
Benzo[a]pyrene	mgKg	1	22	ND		0.079	3.8	*g	0.082	ND		0.23	ND		0.078	0.56		0.077	ND		0.074
Benzo[b]fluoranthene	mgKg	1	1.7	ND		0.079	**4.4**	*g	0.082	ND		0.23	ND		0.078	0.68		0.077	ND		0.074
Benzo[g,h,i]perylene	mgKg	100	1000	ND		0.079	1.8	g	0.082	ND		0.23	ND		0.078	0.43		0.077	ND		0.074
Benzo[k]fluoranthene	mgKg	3.9	1.7	ND		0.079	**2.0**	g	0.082	ND		0.23	ND		0.078	0.21		0.077	ND		0.074
bis(2-Ethylhexyl)phthalate	mgKg			0.38		0.079	0.80	g	0.082	ND		0.23	0.85		0.078	1.5		0.077	0.39		0.074
Chrysene	mgKg	3.9	1	ND		0.079	**4.0**	*g	0.082	ND		0.23	ND		0.078	0.57		0.077	ND		0.074
Dibenzo[a,h]anthracene	mgKg	0.33	1000	ND		0.079	0.84	*g	0.082	ND		0.23	ND		0.078	0.11		0.077	ND		0.074
Dibenzofuran	mgKg	59	7	0.13		0.079	0.59		0.082	ND		0.23	0.28		0.078	ND		0.077	ND		0.074
Fluoranthene	mgKg	100	1000	ND		0.079	5.9	g	0.082	ND		0.23	0.16		0.078	1.5		0.077	ND		0.074
Fluorene	mgKg	100	386	0.22		0.079	1.6		0.082	ND		0.23	0.56		0.078	0.084		0.077	ND		0.074
Hexachlorobenzene	mgKg	1.2	3.2	ND		0.079	ND		0.082	ND		0.23	ND		0.078	ND		0.077	ND		0.074
Indeno[1,2,3-cd]pyrene	mgKg	0.5	8.2	ND		0.079	1.7	*g	0.082	ND		0.23	ND		0.078	0.36		0.077	ND		0.074
Isophorone	mgKg			ND		0.079	ND		0.082	ND		0.23	ND		0.078	ND		0.077	ND		0.074
Naphthalene	mgKg	100	12	ND		0.079	0.55		0.082	0.70		0.23	ND		0.078	ND		0.077	0.70		0.074
Phenanthrene	mgKg	100	1000	0.69		0.079	5.4	g	0.082	0.28		0.23	1.0		0.078	0.99		0.077	ND		0.074
Pyrene	mgKg	100	1000	ND		0.079	5.5	g	0.082	ND		0.23	0.21		0.078	1.2		0.077	ND		0.074

highlighted - exceeds GW Objective

* - exceeds restricted Resident. Obj.

no other compounds detected

g - Estimated value, based on quality assurance review. Refer to Data Usability Summary Report (Appendix D).

TABLE 3
SVOCs IN SOIL

	GAR-4 (10-13)			UST-4 (9-11.5)			LR-1 (16-18)			GAR-3 (9-13)			HA-5 (5-8)			NAP-2 (10-12)			HA-3 (1-2.5)		
	AC46506-006			AC46506-013			AC46542-003			AC46542-005			AC46589-002			AC46589-004			AC46589-006		
	8/18/2009			8/18/2009			8/19/2009			8/19/2009			8/20/2009			8/20/2009			8/20/2009		
TestName	Result	Flg	RL	Result	Flg	RL	Result	Flg	RL	Result	Flg	RL	Result	Flg	RL	Result	Flg	RL	Result	Flg	RL
1,2,4-Trichlorobenzene	ND		0.078	ND		0.078	ND		0.077	ND		0.077	ND		0.079	ND		0.078	ND		0.076
1,2-Diphenylhydrazine	ND		0.078	ND		0.078	ND		0.077	ND		0.077	ND		0.079	ND		0.078	ND		0.076
2,4,5-Trichlorophenol	ND		0.078	ND		0.078	ND		0.077	ND		0.077	ND		0.079	ND		0.078	ND		0.076
2,4,6-Trichlorophenol	ND		0.078	ND		0.078	ND		0.077	ND		0.077	ND		0.079	ND		0.078	ND		0.076
2,4-Dichlorophenol	ND		0.078	ND		0.078	ND		0.077	ND		0.077	ND		0.079	ND		0.078	ND		0.076
2,4-Dimethylphenol	ND		0.078	ND		0.078	ND		0.077	ND		0.077	ND		0.079	ND		0.078	ND		0.076
2,4-Dinitrophenol	ND		0.39	ND		0.39	ND		0.77	ND		0.77	ND		0.40	ND		0.39	ND		0.38
2,4-Dinitrotoluene	ND		0.078	ND		0.078	ND		0.077	ND		0.077	ND		0.079	ND		0.078	ND		0.076
2,6-Dinitrotoluene	ND		0.078	ND		0.078	ND		0.077	ND		0.077	ND		0.079	ND		0.078	ND		0.076
2-Chloronaphthalene	ND		0.078	ND		0.078	ND		0.077	ND		0.077	ND		0.079	ND		0.078	ND		0.076
2-Chlorophenol	ND		0.078	ND		0.078	ND		0.077	ND		0.077	ND		0.079	ND		0.078	ND		0.076
2-Methylnaphthalene	0.11		0.078	0.24		0.078	ND		0.077	ND		0.077	ND		0.079	ND		0.078	ND		0.076
Acenaphthene	ND		0.078	ND		0.078	ND		0.077	ND		0.077	ND		0.079	ND		0.078	ND		0.076
Acenaphthylene	ND		0.078	ND		0.078	ND		0.077	ND		0.077	0.11		0.079	ND		0.078	ND		0.076
Anthracene	ND		0.078	ND		0.078	ND		0.077	ND		0.077	0.13		0.079	ND		0.078	ND		0.076
Benzo[a]anthracene	ND		0.078	ND		0.078	ND		0.077	ND		0.077	0.54		0.079	ND		0.078	ND		0.076
Benzo[a]pyrene	ND		0.078	ND		0.078	ND		0.077	ND		0.077	0.49		0.079	ND		0.078	ND		0.076
Benzo[b]fluoranthene	ND		0.078	ND		0.078	ND		0.077	ND		0.077	0.62		0.079	ND		0.078	ND		0.076
Benzo[g,h,i]perylene	ND		0.078	ND		0.078	ND		0.077	ND		0.077	0.35		0.079	ND		0.078	ND		0.076
Benzo[k]fluoranthene	ND		0.078	0.079		0.078	ND		0.077	ND		0.077	0.19		0.079	ND		0.078	ND		0.076
bis(2-Ethylhexyl)phthalate	0.38		0.078	0.98		0.078	1.4		0.077	0.14		0.077	0.60		0.079	0.60		0.078	0.21		0.076
Chrysene	ND		0.078	ND		0.078	ND		0.077	ND		0.077	0.60		0.079	ND		0.078	ND		0.076
Dibenzo[a,h]anthracene	ND		0.078	ND		0.078	ND		0.077	ND		0.077	0.11		0.079	ND		0.078	ND		0.076
Dibenzofuran	ND		0.078	ND		0.078	ND		0.077	ND		0.077	ND		0.079	ND		0.078	ND		0.076
Fluoranthene	ND		0.078	ND		0.078	ND		0.077	ND		0.077	0.77		0.079	ND		0.078	ND		0.076
Fluorene	ND		0.078	ND		0.078	ND		0.077	ND		0.077	ND		0.079	ND		0.078	ND		0.076
Hexachlorobenzene	ND		0.078	ND		0.078	ND		0.077	ND		0.077	ND		0.079	ND		0.078	ND		0.076
Indeno[1,2,3-cd]pyrene	ND		0.078	ND		0.078	ND		0.077	ND		0.077	0.27		0.079	ND		0.078	ND		0.076
Isophorone	ND		0.078	ND		0.078	ND		0.077	ND		0.077	ND		0.079	ND		0.078	ND		0.076
Naphthalene	ND		0.078	ND		0.078	ND		0.077	ND		0.077	ND		0.079	ND		0.078	ND		0.076
Phenanthrene	ND		0.078	ND		0.078	ND		0.077	ND		0.077	0.37		0.079	ND		0.078	ND		0.076
Pyrene	ND		0.078	ND		0.078	ND		0.077	ND		0.077	1.0		0.079	ND		0.078	ND		0.076

highlighted - exceeds GW Objective
* - exceeds restricted Resident. Obj.
no other compounds detected

TABLE 3
SVOCs IN SOIL

	AW-3 (7-9)			HA-2 (1-3)			AW-3 (13-15)			NAP-3 (10-13)			HA-1 (1-3)			AW-4 (8-10)		
	AC46589-008			AC46589-010			AC46589-012			AC46589-014			AC46589-023			AC46589-024		
	8/20/2009			8/20/2009			8/20/2009			8/20/2009			8/21/2009			8/21/2009		
TestName	Result	Flg	RL	Result	Flg	RL	Result	Flg	RL	Result	Flg	RL	Result	Flg	RL	Result	Flg	RL
1,2,4-Trichlorobenzene	ND		0.079	ND		0.077	ND		0.23	ND		0.082	ND		0.071	ND		0.079
1,2-Diphenylhydrazine	ND		0.079	ND		0.077	ND		0.23	ND		0.082	ND		0.071	ND		0.079
2,4,5-Trichlorophenol	ND		0.079	ND		0.077	ND		0.23	ND		0.082	ND		0.071	ND		0.079
2,4,6-Trichlorophenol	ND		0.079	ND		0.077	ND		0.23	ND		0.082	ND		0.071	ND		0.079
2,4-Dichlorophenol	ND		0.079	ND		0.077	ND		0.23	ND		0.082	ND		0.071	ND		0.079
2,4-Dimethylphenol	ND		0.079	ND		0.077	ND		0.23	ND		0.082	ND		0.071	ND		0.079
2,4-Dinitrophenol	ND		0.40	ND		0.38	ND		1.2	ND		0.41	ND		0.35	ND		0.40
2,4-Dinitrotoluene	ND		0.079	ND		0.077	ND		0.23	ND		0.082	ND		0.071	ND		0.079
2,6-Dinitrotoluene	ND		0.079	ND		0.077	ND		0.23	ND		0.082	ND		0.071	ND		0.079
2-Chloronaphthalene	ND		0.079	ND		0.077	ND		0.23	ND		0.082	ND		0.071	ND		0.079
2-Chlorophenol	ND		0.079	ND		0.077	ND		0.23	ND		0.082	ND		0.071	ND		0.079
2-Methylnaphthalene	ND		0.079	1.2		0.077	9.0		0.23	4.2		0.082	ND		0.071	0.17		0.079
Acenaphthene	ND		0.079	ND		0.077	0.90		0.23	0.52		0.082	ND		0.071	0.56		0.079
Acenaphthylene	0.21		0.079	ND		0.077	ND		0.23	ND		0.082	ND		0.071	ND		0.079
Anthracene	0.19		0.079	ND		0.077	ND		0.23	0.11		0.082	ND		0.071	0.18		0.079
Benzo[a]anthracene	**1.3**	*	0.079	ND		0.077	ND		0.23	ND		0.082	0.19		0.071	0.41		0.079
Benzo[a]pyrene	1.2	*	0.079	ND		0.077	ND		0.23	ND		0.082	0.18		0.071	0.39		0.079
Benzo[b]fluoranthene	1.2	*	0.079	ND		0.077	ND		0.23	0.083		0.082	0.24		0.071	0.46		0.079
Benzo[g,h,i]perylene	0.70		0.079	ND		0.077	ND		0.23	ND		0.082	0.13		0.071	0.26		0.079
Benzo[k]fluoranthene	0.45		0.079	ND		0.077	ND		0.23	ND		0.082	0.081		0.071	0.21		0.079
bis(2-Ethylhexyl)phthalate	0.27		0.079	0.13		0.077	ND		0.23	ND		0.082	0.24		0.071	ND		0.079
Chrysene	**1.1**		0.079	ND		0.077	ND		0.23	ND		0.082	0.21		0.071	0.37		0.079
Dibenzo[a,h]anthracene	0.20		0.079	ND		0.077	ND		0.23	ND		0.082	ND		0.071	0.099		0.079
Dibenzofuran	ND		0.079	ND		0.077	0.61		0.23	0.27		0.082	ND		0.071	0.15		0.079
Fluoranthene	1.5		0.079	ND		0.077	ND		0.23	0.088		0.082	0.32		0.071	0.53		0.079
Fluorene	ND		0.079	ND		0.077	1.2		0.23	0.51		0.082	ND		0.071	0.92		0.079
Hexachlorobenzene	ND		0.079	ND		0.077	ND		0.23	ND		0.082	ND		0.071	ND		0.079
Indeno[1,2,3-cd]pyrene	0.53	*	0.079	ND		0.077	ND		0.23	ND		0.082	0.099		0.071	0.23		0.079
Isophorone	ND		0.079	ND		0.077	ND		0.23	ND		0.082	ND		0.071	ND		0.079
Naphthalene	ND		0.079	ND		0.077	ND		0.23	ND		0.082	ND		0.071	0.087		0.079
Phenanthrene	0.21		0.079	ND		0.077	2.3		0.23	1.4		0.082	0.15		0.071	0.63		0.079
Pyrene	2.2		0.079	ND		0.077	ND		0.23	0.15		0.082	0.38		0.071	0.73		0.079

highlighted - exceeds GW Objective

* - exceeds restricted Resident. Obj.

no other compounds detected

TABLE 4
METALS IN SOIL

	SITE ID:			PH-1 (13-16)			GAR-4 (10-13)			GAR-3 (9-13)		
	LAB ID:			AC46506-004			AC46506-006			AC46542-005		
	DATE:			8/18/2009			8/18/2009			8/19/2009		
		Cleanup Objective										
TestName	Units	Rest. Res	GW	Result	Flg	RL	Result	Flg	RL	Result	Flg	RL
Mercury	mgKg	0.81	0.73	ND	g	0.093	ND	g	0.097	ND		0.096
Aluminum	mgKg			6,700		220	9,300		230	3,500		230
Antimony	mgKg			ND		2.2	ND		2.3	ND	g	2.3
Arsenic	mgKg	16	16	ND		2.2	2.9		2.3	ND		2.3
Barium	mgKg	400	820	49	g	11	70	g	12	38	g	11
Beryllium	mgKg	72	47	1.0	g	0.67	0.88	g	0.70	ND		0.69
Cadmium	mgKg	4.3	7.5	ND		0.67	ND		0.70	ND		0.69
Calcium	mgKg			1,800	g	1,100	2,700	g	1,200	1,900		1,100
Chromium*	mgKg	110	19	14	g	5.6	19	g	5.8	11		5.7
Cobalt	mgKg			4.5		2.8	7.9		2.9	4.6		2.9
Copper	mgKg	270	1720	7.7	g	5.6	19	g	5.8	12		5.7
Iron	mgKg			12,000		220	18,000		230	9,100		230
Lead	mgKg	400	450	13	g	5.6	16	g	5.8	8.2		5.7
Magnesium	mgKg			2,600	g	560	4,100	g	580	1,900	g	570
Manganese	mgKg	2000	2000	440		11	390		12	630		11
Nickel	mgKg	310	130	10	g	5.6	17	g	5.8	11		5.7
Potassium	mgKg			1,600	g	560	2,100	g	580	1,000	g	570
Selenium	mgKg	180	4	ND		2.0	ND		2.1	ND		2.1
Silver	mgKg	180	8.3	ND		1.7	ND		1.7	ND		1.7
Sodium	mgKg			ND		280	ND		290	ND		290
Thallium	mgKg			ND		1.3	ND		1.4	ND		1.4
Vanadium	mgKg			18	g	11	28	g	12	15	g	11
Zinc	mgKg	10000	2480	25	g	11	40	g	12	16	g	11

*Cleanup objective is for hexavalent chromium. Test results are for total chromium.

g - Estimated value, based on quality assurance review. Refer to Data Usability Summary Report (Appendix D).

TABLE 5
PESTICIDES, HERBICIDES AND PCBs IN SOIL

	SITE ID:			AW-2 (12-14)			PH-1 (13-16)			GAR-4 (10-13)			GAR-3 (9-13)		
	LAB ID:			AC46749-004			AC46506-004			AC46506-006			AC46542-005		
	DATE:			8/27/2009			8/18/2009			8/18/2009			8/19/2009		
		Cleanup Objective													
TestName	Units	Rest. Res	GW	Result	Flg	RL	Result	Flg	RL	Result	Flg	RL	Result	Flg	RL
Pesticides															
Aldrin	mgKg	0.097	0.19	ND		0.0062									
Alpha-BHC	mgKg	0.48	0.02	ND		0.0012									
beta-BHC	mgKg	0.36	0.09	ND		0.0012									
Chlordane	mgKg	4.2	2.9	ND		0.012									
delta-BHC	mgKg	100	0.25	ND		0.0062									
Dieldrin	mgKg	0.2	0.1	ND		0.0012									
Endosulfan I	mgKg	24	102	ND		0.0062									
Endosulfan II	mgKg	24	102	ND		0.0062									
Endosulfan Sulfate	mgKg	24	1000	ND		0.0062									
Endrin	mgKg	11	0.06	ND		0.0062									
Endrin Aldehyde	mgKg			ND		0.0062									
Endrin Ketone	mgKg			ND		0.0062									
gamma-BHC	mgKg	1.3	0.1	ND		0.0012									
Heptachlor	mgKg	2.1	0.38	ND		0.0062									
Heptachlor Epoxide	mgKg			ND		0.0062									
Methoxychlor	mgKg			ND		0.0062									
p,p'-DDD	mgKg			ND		0.0031									
p,p'-DDE	mgKg			ND		0.0031									
p,p'-DDT	mgKg			ND		0.0031									
Toxaphene	mgKg			ND		0.031									
Herbicides															
2,4,5-T	mgKg			ND		0.0099									
2,4-D	mgKg			ND		0.0049									
Dicamba	mgKg			ND		0.0049									
Silvex	mgKg	13	3.8	ND		0.0049									
PCBs															
Aroclor (Total)	mgKg	1	3.2				ND		0.028	ND		0.029	ND		0.029
Aroclor-1016	mgKg	1	3.2				ND		0.028	ND		0.029	ND		0.029
Aroclor-1221	mgKg	1	3.2				ND		0.028	ND		0.029	ND		0.029
Aroclor-1232	mgKg	1	3.2				ND		0.028	ND		0.029	ND		0.029
Aroclor-1242	mgKg	1	3.2				ND		0.028	ND		0.029	ND		0.029
Aroclor-1248	mgKg	1	3.2				ND		0.028	ND		0.029	ND		0.029
Aroclor-1254	mgKg	1	3.2				ND		0.028	ND		0.029	ND		0.029
Aroclor-1260	mgKg	1	3.2				ND		0.028	ND		0.029	ND		0.029
Aroclor-1262	mgKg	1	3.2				ND		0.028	ND		0.029	ND		0.029
Aroclor-1268	mgKg	1	3.2				ND		0.028	ND		0.029	ND		0.029

Table 6
VOCs IN GROUNDWATER

			CLIENT ID:	MW09-03			PZ-UST-3			HVMW-1S			MW09-01			HVMW-42D		
			LAB ID:	AC47076-001			AC46589-015			AC47076-002			AC47076-003			AC47076-004		
			COLLECTION DATE:	9/15/2009			8/20/2009			9/15/2009			9/14/2009			9/15/2009		
				(UST-4)									(LR-1)					
TestName	Units	Standard		Result	Flg	RL	Result	Flg	RL	Result	Flg	RL	Result	Flg	RL	Result	Flg	RL
1,2,4-Trimethylbenzene	ugL	5		ND		1.0	6.6		1.0	ND		1.0	990		10	88		5.0
1,3,5-Trimethylbenzene	ugL	5		ND		1.0	1.9		1.0	ND		1.0	380		10	32		5.0
2-Butanone	ugL	50		ND		1.0	ND		1.0	ND		1.0	ND		10	ND		5.0
4-Isopropyltoluene	ugL	5		ND		1.0	1.2		1.0	ND		1.0	16		10	ND		5.0
Acetone	ugL	50		ND		5.0	39		5.0	ND		5.0	ND		50	ND		25
Benzene	ugL	1		ND		0.50	1.2		0.50	ND		0.50	610		5.0	240		2.5
Chloroform	ugL	7		ND		1.0	ND		1.0	ND		1.0	ND		10	ND		5.0
Ethylbenzene	ugL	5		9.6		1.0	12		1.0	ND		1.0	1500		10	390		5.0
Isopropylbenzene	ugL	5		4.6		1.0	9.3		1.0	ND		1.0	100		10	59		5.0
m&p-Xylenes	ugL	5		ND		1.0	2.4		1.0	ND		1.0	4700		10	310		5.0
n-Butylbenzene	ugL	5		ND		1.0	1.7		1.0	ND		1.0	ND		10	ND		5.0
n-Propylbenzene	ugL	5		5.4		1.0	13		1.0	ND		1.0	130		10	63		5.0
o-Xylene	ugL	5		ND		1.0	ND		1.0	ND		1.0	1900		10	70		5.0
sec-Butylbenzene	ugL	5		ND		1.0	2.9		1.0	ND		1.0	14		10	8		5.0
t-Butylbenzene	ugL	5		ND		1.0	ND		1.0	ND		1.0	ND		10	ND		5.0
Toluene	ugL	5		ND		1.0	ND		1.0	ND		1.0	1400		10	63		5.0
Xylenes (Total)	ugL	5		ND		1	2.4		1	ND		1	6600		10	380		5

highlighted - exceeds GW standard

Table 6
VOCs IN GROUNDWATER

	HVMW-37D			MW09-06			MW09-05			MW09-02			MW09-07			MW09-04		
	AC47076-005			AC47076-006			AC47076-012			AC47112-001			AC47112-002			AC47112-003		
	9/15/2009			9/15/2009			9/15/2009			9/16/2009			9/16/2009			9/16/2009		
				(NAP-1A)			(AW-2)			(AW-4)			(HA-5)			(GAR-1)		
TestName	Result	Flg	RL	Result	Flg	RL	Result	Flg	RL	Result	Flg	RL	Result	Flg	RL	Result	Flg	RL
1,2,4-Trimethylbenzene	ND		1.0	ND		1.0	ND		1.0	ND		1.0	ND		1.0	ND		1.0
1,3,5-Trimethylbenzene	ND		1.0	ND		1.0	ND		1.0	ND		1.0	ND		1.0	ND		1.0
2-Butanone	ND		1.0	ND		1.0	ND		1.0	ND		1.0	ND		1.0	ND		1.0
4-Isopropyltoluene	ND		1.0	1.9		1.0	ND		1.0	ND		1.0	ND		1.0	ND		1.0
Acetone	ND		5.0	ND		5.0	16		5.0	ND		5.0	ND		5.0	ND		5.0
Benzene	19		0.50	16		0.50	4.0		0.50	ND		0.50	2.1		0.50	ND		0.50
Chloroform	ND		1.0	ND		1.0	ND		1.0	ND		1.0	ND		1.0	9.0		1.0
Ethylbenzene	ND		1.0	19		1.0	ND		1.0	ND		1.0	ND		1.0	ND		1.0
Isopropylbenzene	18		1.0	67		1.0	8.0		1.0	27		1.0	33		1.0	ND		1.0
m&p-Xylenes	1.6		1.0	7.4		1.0	2.1		1.0	ND		1.0	1.8		1.0	ND		1.0
n-Butylbenzene	1.1		1.0	5.7		1.0	ND		1.0	1.8		1.0	2.2		1.0	ND		1.0
n-Propylbenzene	24		1.0	70		1.0	6.3		1.0	34		1.0	15		1.0	ND		1.0
o-Xylene	ND		1.0	1.5		1.0	ND		1.0	ND		1.0	ND		1.0	ND		1.0
sec-Butylbenzene	5.2		1.0	11		1.0	1.0		1.0	6.2		1.0	5.9		1.0	ND		1.0
t-Butylbenzene	1.1		1.0	2.3		1.0	ND		1.0	1.2		1.0	1.5		1.0	ND		1.0
Toluene	1.6		1.0	3.8		1.0	1.5		1.0	1.4		1.0	1.0		1.0	ND		1.0
Xylenes (Total)	1.6		1	8.9		1	2.1		1	ND		1	1.8		1	ND		1

highlighted - exceeds GW standard

Table 6
VOCs IN GROUNDWATER

	HVMW-40D			GAR-4 PZ			PZ PT-1			PZ-PH-1		
	AC47112-004			AC46749-001			AC46749-002			AC46589-016		
	9/16/2009			8/27/2009			8/27/2009			8/20/2009		
TestName	Result	Flg	RL	Result	Flg	RL	Result	Flg	RL	Result	Flg	RL
1,2,4-Trimethylbenzene	ND		1.0	23		1.0	120		1.0	1,800		10
1,3,5-Trimethylbenzene	ND		1.0	27		1.0	23		1.0	520		10
2-Butanone	ND		1.0	17		1.0	18		1.0	ND		10
4-Isopropyltoluene	ND		1.0	2.3		1.0	4.4		1.0	28		10
Acetone	ND		5.0	46		5.0	48		5.0	ND		50
Benzene	3.0		0.50	0.73		0.50	5.5		0.50	ND		5.0
Chloroform	ND		1.0	34		1.0	51		1.0	ND		10
Ethylbenzene	ND		1.0	50		1.0	230		1.0	2000		10
Isopropylbenzene	19		1.0	21		1.0	28		1.0	160		10
m&p-Xylenes	ND		1.0	5.5		1.0	200		1.0	5300		10
n-Butylbenzene	2.9		1.0	1.8		1.0	9.1		1.0	18.0		10
n-Propylbenzene	14		1.0	23		1.0	69		1.0	250		10
o-Xylene	ND		1.0	1.3		1.0	19		1.0	1900		10
sec-Butylbenzene	3.4		1.0	3.5		1.0	5.9		1.0	23.0		10
t-Butylbenzene	ND		1.0	1.2		1.0	ND		1.0	ND		10
Toluene	ND		1.0	2.2		1.0	30		1.0	400		10
Xylenes (Total)	ND		1	6.8		1	219		1	7200		10

highlighted - exceeds GW standard

TABLE 7
SVOCs IN GROUNDWATER

			CLIENT ID:	MW09-03			PZ-UST-3			HVMW-1S			MW09-01			HVMW-42D		
			LAB ID:	AC47076-001			AC46589-015			AC47076-002			AC47076-003			AC47076-004		
			COLLECTION DATE:	9/15/2009			8/20/2009			9/15/2009			9/14/2009			9/15/2009		
				(UST-4)									(LR-1)					
TestName	Units	Standard		Result	Flg	RL	Result	Flg	RL	Result	Flg	RL	Result	Flg	RL	Result	Flg	RL
2,4-Dimethylphenol	ugL	1		ND		2.2	ND		2.0	ND		2.1	26		2.0	ND		2.2
2-Methylnaphthalene	ugL	50		ND		2.2	ND		2.0	ND		2.1	23		2.0	9.3		2.2
2-Methylphenol	ugL	1		ND		2.2	ND		2.0	ND		2.1	8.1		2.0	ND		2.2
3&4-Methylphenol	ugL	1		ND		2.2	ND		2.0	ND		2.1	7.1		2.0	ND		2.2
Acenaphthene	ugL	50		ND		2.2	ND		2.0	ND		2.1	ND		2.0	ND		2.2
Anthracene	ugL	50		ND		2.2	ND		2.0	ND		2.1	ND		2.0	ND		2.2
bis(2-Ethylhexyl)phthalate	ugL	5		ND		2.2	ND		2.0	ND		2.1	ND		2.0	ND		2.2
Dibenzofuran	ugL	50		ND		2.2	ND		2.0	ND		2.1	ND		2.0	ND		2.2
Diethylphthalate	ugL	50		ND		2.2	ND		2.0	ND		2.1	3.1		2.0	ND		2.2
Di-n-butylphthalate	ugL	50		ND		2.2	2.7		2.0	ND		2.1	ND		2.0	ND		2.2
Fluorene	ugL	50		ND		2.2	ND		2.0	ND		2.1	ND		2.0	ND		2.2
Naphthalene	ugL	50		ND		2.2	ND		2.0	ND		2.1	95		2.0	20		2.2
Phenanthrene	ugL	50		ND		2.2	ND		2.0	ND		2.1	ND		2.0	ND		2.2
Phenol	ugL	1		ND		2.2	ND		2.0	ND		2.1	7.0		2.0	ND		2.2

highlighted - exceeds GW standard

TABLE 7
SVOCs IN GROUNDWATER

	HVMW-37D			MW09-06			MW09-05			MW09-02			MW09-07			MW09-04		
	AC47076-005			AC47076-006			AC47076-012			AC47112-001			AC47112-002			AC47112-003		
	9/15/2009			9/15/2009			9/15/2009			9/16/2009			9/16/2009			9/16/2009		
				(NAP-1A)			(AW-2)			(AW-4)			(HA-5)			(GAR-1)		
TestName	Result	Flg	RL	Result	Flg	RL	Result	Flg	RL	Result	Flg	RL	Result	Flg	RL	Result	Flg	RL
2,4-Dimethylphenol	ND		2.0	ND		2.1	ND		2.0	ND		2.1	ND		2.0	ND		2.1
2-Methylnaphthalene	21		2.0	34		2.1	2.9		2.0	32		2.1	2.4		2.0	ND		2.1
2-Methylphenol	ND		2.0	ND		2.1	ND		2.0	ND		2.1	ND		2.0	ND		2.1
3&4-Methylphenol	ND		2.0	ND		2.1	ND		2.0	ND		2.1	ND		2.0	ND		2.1
Acenaphthene	ND		2.0	3.8		2.1	4.3		2.0	4.0		2.1	ND		2.0	ND		2.1
Anthracene	ND		2.0	ND		2.1	ND		2.0	ND		2.1	ND		2.0	ND		2.1
bis(2-Ethylhexyl)phthalate	ND		2.0	ND		2.1	ND		2.0	ND		2.1	ND		2.0	ND		2.1
Dibenzofuran	ND		2.0	2.7		2.1	3.2		2.0	3.0		2.1	ND		2.0	ND		2.1
Diethylphthalate	ND		2.0	ND		2.1	ND		2.0	ND		2.1	ND		2.0	ND		2.1
Di-n-butylphthalate	ND		2.0	ND		2.1	ND		2.0	ND		2.1	ND		2.0	ND		2.1
Fluorene	2.3		2.0	3.9		2.1	5.4		2.0	5.7		2.1	ND		2.0	ND		2.1
Naphthalene	ND		2.0	ND		2.1	3.0		2.0	ND		2.1	ND		2.0	ND		2.1
Phenanthrene	4.2		2.0	8.5		2.1	6.1		2.0	5.9		2.1	ND		2.0	ND		2.1
Phenol	ND		2.0	ND		2.1	ND		2.0	ND		2.1	ND		2.0	ND		2.1

highlighted - exceeds GW standard

TABLE 7
SVOCs IN GROUNDWATER

	HVMW-40D			GAR-4 PZ			PZ PT-1			PZ-PH-1		
	AC47112-004			AC46749-001			AC46749-002			AC46589-016		
	9/16/2009			8/27/2009			8/27/2009			8/20/2009		
TestName	Result	Flg	RL	Result	Flg	RL	Result	Flg	RL	Result	Flg	RL
2,4-Dimethylphenol	ND		2.1	ND		2.0	3.8		2.0	48		2.1
2-Methylnaphthalene	ND		2.1	ND		2.0	19		2.0	49		2.1
2-Methylphenol	ND		2.1	ND		2.0	ND		2.0	ND		2.1
3&4-Methylphenol	ND		2.1	ND		2.0	ND		2.0	ND		2.1
Acenaphthene	9.4		2.1	ND		2.0	ND		2.0	ND		2.1
Anthracene	2.1		2.1	ND		2.0	ND		2.0	ND		2.1
bis(2-Ethylhexyl)phthalate	ND		2.1	ND		2.0	ND		2.0	3.2		2.1
Dibenzofuran	3.3		2.1	ND		2.0	ND		2.0	ND		2.1
Diethylphthalate	ND		2.1	ND		2.0	ND		2.0	ND		2.1
Di-n-butylphthalate	ND		2.1	ND		2.0	ND		2.0	3.2		2.1
Fluorene	5.7		2.1	ND		2.0	ND		2.0	ND		2.1
Naphthalene	2.4		2.1	ND		2.0	34		2.0	180		2.1
Phenanthrene	13		2.1	ND		2.0	ND		2.0	ND		2.1
Phenol	ND		2.1	ND		2.0	ND		2.0	ND		2.1

highlighted - exceeds GW standard

TABLE 8
METALS IN GROUNDWATER

	CLIENT ID:		MW09-03			HVMW-1S			MW09-01			MW09-06			MW09-05			MW09-02			MW09-07			MW09-04		
	LAB ID:		AC47076-001			AC47076-002			AC47076-003			AC47076-006			AC47076-012			AC47112-001			AC47112-002			AC47112-003		
	COLLECTION DATE:		9/15/2009			9/15/2009			9/14/2009			9/15/2009			9/15/2009			9/16/2009			9/16/2009			9/16/2009		
			Aqueous			Aqueous			Aqueous			Aqueous			Aqueous			Aqueous			Aqueous			Aqueous		
TestName	Units	Standard	Result	Flg	RL	Result	Flg	RL	Result	Flg	RL	Result	Flg	RL	Result	Flg	RL	Result	Flg	RL	Result	Flg	RL	Result	Flg	RL
Mercury	ugL	0.70	ND		0.70	ND		0.70	ND		0.70	ND		0.70	ND		0.70	ND		0.70	ND		0.70	ND		0.70
Aluminum	ugL		ND		180	940		180	ND		180	220		180	ND		180	ND		180	ND		180	4,200		180
Antimony	ugL	3	ND		12	ND		12	ND		12	ND		12	ND		12	ND		12	ND		12	ND		12
Arsenic	ugL	25	ND		7.5	ND		7.5	ND		7.5	ND		7.5	ND		7.5	ND		7.5	ND		7.5	ND		7.5
Barium	ugL	1,000	270		50	90		50	280		50	330		50	430		50	400		50	670		50	140		50
Beryllium	ugL		ND		4.0	ND		4.0	ND		4.0	ND		4.0	ND		4.0	ND		4.0	ND		4.0	ND		4.0
Cadmium	ugL	5	ND		3.5	ND		3.5	ND		3.5	ND		3.5	ND		3.5	ND		3.5	ND		3.5	ND		3.5
Calcium	ugL		160,000		2,000	50,000		2,000	200,000		2,000	130,000		2,000	160,000		2,000	180,000		2,000	150,000		2,000	170,000		2,000
Chromium	ugL	50	ND		50	ND		50	ND		50	ND		50	ND		50	ND		50	ND		50	ND		50
Cobalt	ugL		ND		20	ND		20	ND		20	ND		20	ND		20	ND		20	ND		20	ND		20
Copper	ugL	200	ND		50	ND		50	ND		50	ND		50	ND		50	ND		50	ND		50	ND		50
Iron	ugL	300	ND		280	1,900		280	11,000		280	6,800		280	16,000		280	54,000		280	3,200		280	4,000		280
Lead	ugL	25	14		4.0	ND		4.0	5.7		4.0	ND		4.0	ND		4.0	ND		4.0	ND		4.0	ND		4.0
Magnesium	ugL		29,000		2,000	12,000		2,000	32,000		2,000	12,000		2,000	13,000		2,000	19,000		2,000	13,000		2,000	30,000		2,000
Manganese	ugL	300	6,600		40	1,700		40	15,000		40	15,000		40	11,000		40	12,000		40	7,100		40	2,600		40
Nickel	ugL	100	ND		50	ND		50	ND		50	ND		50	ND		50	ND		50	ND		50	ND		50
Potassium	ugL		5,100		5,000	ND		5,000	ND		5,000	ND		5,000	ND		5,000	9,000		5,000	ND		5,000	8,100		5,000
Selenium	ugL	10	ND		40	ND		40	ND		40	ND		40	ND		40	ND		40	ND		40	ND		40
Silver	ugL	50	ND		20	ND		20	ND		20	ND		20	ND		20	ND		20	ND		20	ND		20
Sodium	ugL	20,000	65,000		5,000	84,000		5,000	49,000		5,000	50,000		5,000	38,000		5,000	330,000		5,000	44,000		5,000	380,000		5,000
Thallium	ugL		ND		10	ND		10	ND		10	ND		10	ND		10	ND		10	ND		10	ND		10
Vanadium	ugL		ND		50	ND		50	ND		50	ND		50	ND		50	ND		50	ND		50	ND		50
Zinc	ugL		ND		50	ND		50	ND		50	ND		50	140		50	ND		50	ND		50	ND		50

highlighted - exceeds GW standard

Table 9
SOIL VAPOR RESULTS

		CONCENTRATION (ug/m^3)							
SAMPLE ID:		**SV-1**		**SV-2**		**SV-3**		**SV-4**	
LAB ID:		**A4731-01**		**A4731-02**		**A4731-03**		**A4731-04**	
SAMPLE DATE:		**10/14/2009**		**10/14/2009**		**10/14/2009**		**10/14/2009**	
		(sub-slab)		(soil probe)		(soil probe)		(sub-slab)	
COMPOUND	GUIDANCE[a]	RESULT	Flag	RESULT	Flag	RESULT	Q	RESULT	Flag
1,2,4-Trimethylbenzene	60	8.11		0.49	U	1.82		1.52	
1,3,5-Trimethylbenzene	60	2.26		0.44	U	0.49	J	0.44	U
2,2,4-Trimethylpentane	-	1.4		17,057	D,g	7.89		0.19	U
2-Butanone	10,000	3.04		0.29	U	2.95		0.8	
Acetone	3,500	14.4		0.24	U	34.3		4.16	
Benzene	3.1	1.6		0.13	U	2.04		0.61	
Carbon Disulfide	7,000	0.16	U	0.16	U	0.16	U	0.37	
Carbon Tetrachloride	5[b]	0.63		0.25	U	0.25	U	0.25	J
Chloroform	1.1	0.1	U	0.1	U	1.22		2.54	
Chloromethane	-	0.58		2.35		0.29		0.12	U
Cyclohexane	-	1.38		157	D	2.2		0.28	U
Dichlorodifluoromethane	2,000	2.08		0.2	U	1.98		1.73	
Ethyl Benzene	22	0.96		0.35	U	2.22		0.35	U
Heptane	-	0.9		0.25	U	2.62		0.25	U
Hexane	2,000	5.25		8.85		6.94		1.76	
m/p-Xylene	70,000	4.26		0.48	U	5.6		0.48	U
Methyl tert-Butyl Ether	30,000	1.41		0.18	U	1.84		0.18	U
Methylene Chloride	52	5.49		0.17	U	1.32		1.63	
o-Xylene	70,000	1.39		0.3	U	1.69		0.3	U
tert-Butyl alcohol	-	0.3	U	0.3	U	0.3	U	0.33	
Tetrachloroethene	100[b]	0.41		2.31		0.81		0.68	
Tetrahydrofuran	-	1.71		0.24	U	1.71		0.24	U
Toluene	4,000	12.9		0.19	U	21.7		3.5	
Trichloroethene	5[b]	0.91		0.21	U	0.27		0.21	U
Trichlorofluoromethane	7,000	1.57		0.22	U	1.57		5.73	
Vinyl Chloride	2.8	0.18	U	0.33		0.18	U	0.18	U

Flags

U - The compound was not detected at the indicated concentration.

B - The analyte was found in the laboratory blank as well as the sample. This indicates possible laboratory contamination of the environmental sample.

D - The reported value is from a secondary analysis with a dilution factor. The original analysis exceeded the calibration range.

J - Data indicates the presence of a compound that meets the identification criteria. The result is less than the quantitation limit but greater than MDL. The concentration given is an approximate value.

g - Estimated value, based on quality assurance review. Refer to Data Usability Summary Report (Appendix D).

[a]Unless otherwise noted, guidance is from USEPA November 2002 Table 2c (10^{-6} risk).

[b]NYSDOH sub-slab vapor concentration at which mitigation is not required.

highlighted - exceeds guidance

TABLE 10
SVOCs IN RETEC SOIL SAMPLES

	HV12 (7.5-8.5)	HV13 (14.0-14.6)	HV15 (7.0-8.5)	HV16 (11.4-11.8)	HV17 (11.4-11.7)	HV19 (8.0- 9.0)	HV20 (8.0-8.7)	SB17 (10-12)	SB18 (11-11.5)
2-Methylnaphthalene	45 J	380 U	250000	53000	4500 J	800	810 J	990000	4100 U
Acenaphthene	160 J	380 U	240000	40000	41000	580	1400	380000	5900
Acenaphthylene	250 J	380 U	44000 J	6100	5600 J	250	450 J	210000	2900 J
Anthracene	450	52 J	280000	32000	34000	1200	1100	630000	21000
Benzo(a)anthracene	1200	190 J	240000	29000	38000	1300	1300	450000	26000
Benzo(a)pyrene	1200	170 J	160000	22000	28000	750	960	240000	19000
Benzo(b)fluoranthene	1400	210 J	170000	19000	24000	800	1100	280000	20000
Benzo(ghi)perylene	950	160 J	76000 J	11000	15000	310 J	580 J	51000 J	5800
Benzo(k)fluoranthene	570	77 J	78000 J	7000	8000 J	340 J	460 J	140000	9200
Chrysene	1200	180 J	170000	22000	29000	970	1100	390000	23000
Dibenz(a,h)anthracene	200 J	380 U	24000 J	3100 J	3900 J	120 J	160 J	37000 J	3400 J
Fluoranthene	3300	300 J	540000	54000	60000	2400	2800	820000	47000
Fluorene	230 J	380 U	270000	28000	33000	1100	1800	710000	11000
Indeno(1,2,3-cd)pyrene	1100	160 J	94000 J	12000	15000	400	660 J	78000	8400
Naphthalene	74 J	380 U	420000	81000	22000	460	1600	1100000	720 J
Phenanthrene	2300	210 J	860000	96000	120000	3300	5100	1700000	52000
Pyrene	2700	320 J	410000	60000	80000	1900	2400	620000	41000
1,2-Dichlorobenzene	NA	NA	NA	NA	NA	NA	NA	61000 U	4100 U
1,1'-Biphenyl	380 U	380 U	47000 J	9200	1700 J	91 J	160 J	NA	NA
2,4-Dimethylphenol	380 U	380 U	97000 U	4000 U	8300 U	370 U	400 J	21000 J	4100 U
2-Methylphenol	380 U	380 U	97000 U	4000 U	8300 U	370 U	850 U	61000 U	4100 U
4-Methylphenol	380 U	380 U	97000 U	4000 U	8300 U	370 U	850 U	21000 J	4100 U
Acetophenone	130 J	42 J	97000 U	4000 U	8300 U	75 J	850 U	NA	NA
bis(2-Ethylhexyl) phthalate	72 J	1100	97000 U	4000 U	8300 U	47 J	850 U	61000 U	4100 U
Carbazole	180 J	380 U	55000 J	1300 J	3300 J	150 J	190 J	180000	860 J
Dibenzofuran	110 J	380 U	180000	8500	16000	590	1100	440000	4500
Phenol	380 U	380 U	97000 U	4000 U	8300 U	370 U	850 U	61000 U	4100 U

no other compounds detected
concentrations in units of mg/kg

TABLE 10
SVOCs IN RETEC SOIL SAMPLES

	MW3S-CH (10-12)		MW3S-CH (17.6-18.0)		MW4-CH (6-8)	
2-Methylnaphthalene	1600		12000		78	J
Acenaphthene	2000		8000	U	190	J
Acenaphthylene	110	J	8000	U	310	J
Anthracene	600	J	8000	U	390	J
Benzo(a)anthracene	710	J	8000	U	1700	
Benzo(a)pyrene	540	J	8000	U	1500	
Benzo(b)fluoranthene	340	J	8000	U	1300	
Benzo(ghi)perylene	310	J	8000	U	1600	
Benzo(k)fluoranthene	350	J	8000	U	1200	
Chrysene	670	J	980	J	1900	
Dibenz(a,h)anthracene	86	J	8000	U	490	J
Fluoranthene	1200		900	J	3000	
Fluorene	720	J	840	J	200	J
Indeno(1,2,3-cd)pyrene	290	J	8000	U	1500	
Naphthalene	4300		12000		150	J
Phenanthrene	2200		2300	J	1800	
Pyrene	1700		8000	U	3300	
1,2-Dichlorobenzene	790	U	61000		760	U
1,1'-Biphenyl	NA		NA		NA	
2,4-Dimethylphenol	790	U	1600	J	760	U
2-Methylphenol	790	U	1300	J	760	U
4-Methylphenol	790	U	3200	J	760	U
Acetophenone	NA		NA		NA	
bis(2-Ethylhexyl) phthalate	790	U	8000	U	760	U
Carbazole	360	J	8000	U	160	J
Dibenzofuran	390	J	8000	U	100	J
Phenol	790	U	1400	J	760	U

no other compounds detected
concentrations in units of mg/kg