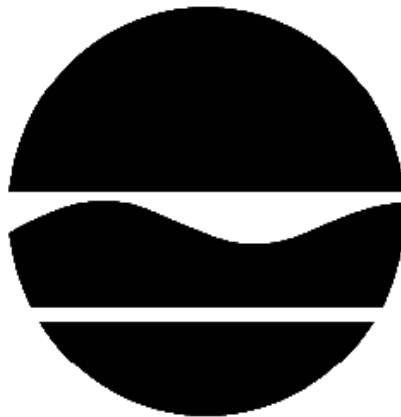


RECORD OF DECISION

Undeveloped Portion-Former Abex Mfg. Facility
Environmental Restoration Project
Medina, Orleans County
Site No. E837015
March 2018



Prepared by
Division of Environmental Remediation
New York State Department of Environmental Conservation

DECLARATION STATEMENT - RECORD OF DECISION

Undeveloped Portion-Former Abex Mfg. Facility
Environmental Restoration Project
Medina, Orleans County
Site No. E837015
March 2018

Statement of Purpose and Basis

This document presents the remedy for the Undeveloped Portion-Former Abex Mfg. Facility site, an environmental restoration site. The remedial program was chosen in accordance with the New York State Environmental Conservation Law and Title 6 of the Official Compilation of Codes, Rules and Regulations of the State of New York (6 NYCRR) Part 375.

This decision is based on the Administrative Record of the New York State Department of Environmental Conservation (the Department) for the Undeveloped Portion-Former Abex Mfg. Facility site and the public's input to the proposed remedy presented by the Department. A listing of the documents included as a part of the Administrative Record is included in Appendix B of the ROD.

Description of Selected Remedy

The elements of the selected remedy are as follows:

1. Excavation

All soil/fill material in the lagoon areas and along the northern, eastern, western, and southern perimeter ditches/swales at the site that exceed the industrial or protection of groundwater SCOs will be excavated and transported off-site for disposal. Approximately 5,700 cubic yards of contaminated soil will be removed from the site and disposed off-site at a permitted landfill facility. Removal of these areas of contamination are expected to improve surface water and groundwater conditions. Additional monitoring (sampling on a recurring basis) of these media is therefore not needed; however, additional sampling might be warranted in the future to document that the remedial action objectives specified in Section 6.5 have been achieved.

2. Backfill

Clean fill meeting the requirements of 6 NYCRR Part 375-6.7(d) will be brought in to replace the excavated soil and fill material and establish the designed grades at the site. The site will be regraded to accommodate installation of a cover system as described in remedy element #3.

3. Cover System

A site cover will be required to allow industrial use of the site where the upper one foot of exposed surface soil will exceed the applicable soil cleanup objectives (SCOs). The site cover may consist of paved surface parking areas, sidewalks, or a soil cover. Where a soil cover is to be used, it will

be a minimum of one foot of soil placed over a demarcation layer with the upper six inches of soil of sufficient quality to maintain a vegetative layer. Soil cover material, including any fill material brought to the site, will meet the SCOs for cover material as set forth in 6 NYCRR Part 375-6.7(d). In areas where building foundations or building slabs preclude contact with the soil, the requirements for a site cover will be deferred until such time that they are removed.

4. Institutional Controls

Imposition of an institutional control in the form of an environmental easement for the controlled property which will:

- require the remedial party or site owner to complete and submit to the Department a periodic certification of institutional and engineering controls in accordance with Part 375-1.8 (h)(3);
- allow the use and development of the controlled property for industrial use as defined by Part 375-1.8(g), although land use is subject to local zoning laws;
- restrict the use of surface and groundwater as sources of potable or process water, without necessary water quality treatment as determined by the NYSDOH or County DOH; and
- require compliance with the Department approved Site Management Plan.

5. Site Management Plan

A Site Management Plan is required, which includes the following:

1. An Institutional and Engineering Control Plan that identifies all use restrictions and engineering controls for the site and details the steps and media-specific requirements necessary to ensure the following institutional and/or engineering controls remain in place and effective:

Institutional Controls: The Environmental Easement, groundwater use restriction, and the Site Management Plan as discussed in Paragraphs 4 and 5 above.

Engineering Controls: The cover system as discussed in Paragraph 3 above.

This plan includes, but may not be limited to:

- an Excavation Plan which details the provisions for management of future excavations in areas of remaining contamination;
- a provision should redevelopment occur to ensure no soil exceeding protection of groundwater concentrations will remain below storm water retention basin or infiltration structures.
- descriptions of the provisions of the environmental easement including any land use and groundwater;
- a provision for evaluation of the potential for soil vapor intrusion for any buildings on the site, including provision for implementing actions recommended to address exposures related to soil vapor intrusion;
- a provision that should a building foundation or building slab be removed in the future, a cover system consistent with that described in Paragraph 4 above will be placed in any areas where the upper one foot of exposed surface soil exceeds the applicable soil cleanup objectives (SCOs);
- provisions for the management and inspection of the identified engineering

- controls;
 - maintaining site access controls and Department notification; and
 - the steps necessary for the periodic reviews and certification of the institutional and/or engineering controls.
2. A Monitoring Plan to assess the performance and effectiveness of the remedy. The plan includes, but may not be limited to:
- monitoring for vapor intrusion for any buildings on the site, as may be required by the Institutional and Engineering Control Plan discussed above.

New York State Department of Health Acceptance

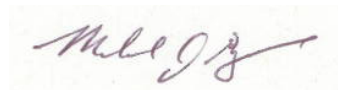
The New York State Department of Health (NYSDOH) concurs that the remedy for this site is protective of human health.

Declaration

The selected remedy is protective of human health and the environment, complies with State and Federal requirements that are legally applicable or relevant and appropriate to the remedial action to the extent practicable, and is cost effective. This remedy utilizes permanent solutions and alternative treatment or resource recovery technologies, to the maximum extent practicable, and satisfies the preference for remedies that reduce toxicity, mobility, or volume as a principal element.

March 26, 2018

Date



Michael J. Ryan, P.E., Director
Division of Environmental Remediation

RECORD OF DECISION

Undeveloped Portion-Former Abex Mfg. Facility
Medina, Orleans County
Site No. E837015
March 2018

SECTION 1: SUMMARY AND PURPOSE

The New York State Department of Environmental Conservation (the Department), in consultation with the New York State Department of Health (NYSDOH), has selected a remedy for the above referenced site. The disposal of contaminants at the site has resulted in threats to public health and the environment that would be addressed by the remedy. The disposal or release of contaminants at this site, as more fully described in this document, has contaminated various environmental media. Contaminants include hazardous waste and/or petroleum. The remedy is intended to attain the remedial action objectives identified for this site for the protection of public health and the environment. This Record of Decision (ROD) identifies the selected remedy, summarizes the other alternatives considered, and discusses the reasons for selecting the remedy.

The 1996 Clean Water/ Clean Air Bond Act provides funding to municipalities for the investigation and cleanup of brownfields. Brownfields are abandoned, idled, or under-used properties where redevelopment is complicated by real or perceived environmental contamination. They typically are former industrial or commercial properties where operations may have resulted in environmental contamination. Brownfields often pose not only environmental, but legal and financial burdens on communities. Under the Environmental Restoration Program, the state provides grants to municipalities to reimburse up to 90 percent of eligible costs for site investigation and remediation activities. Once remediated, the property can then be reused.

The Department has issued this document in accordance with the requirements of New York State Environmental Conservation Law and 6 NYCRR Part 375. This document is a summary of the information that can be found in the site-related reports and documents.

SECTION 2: CITIZEN PARTICIPATION

The Department seeks input from the community on all remedies. A public comment period was held, during which the public was encouraged to submit comment on the proposed remedy. All comments on the remedy received during the comment period were considered by the Department in selecting a remedy for the site. Site-related reports and documents were made available for review by the public at the following document repository:

Lee Whedon Memorial Library
620 West Avenue
Medina, NY 14103

Phone: 585-798-3430

A public meeting was also conducted. At the meeting, the findings of the remedial investigation (RI) and the elements of the proposed remedy were presented. After the presentation, a question-and-answer period was held, during which verbal or written comments were accepted on the proposed remedy.

Comments on the remedy received during the comment period are summarized and addressed in the responsiveness summary section of the ROD.

Receive Site Citizen Participation Information By Email

Please note that the Department's Division of Environmental Remediation (DER) is "going paperless" relative to citizen participation information. The ultimate goal is to distribute citizen participation information about contaminated sites electronically by way of county email listservs. Information will be distributed for all sites that are being investigated and cleaned up in a particular county under the State Superfund Program, Environmental Restoration Program, Brownfield Cleanup Program, Voluntary Cleanup Program, and Resource Conservation and Recovery Act Program. We encourage the public to sign up for one or more county listservs at <http://www.dec.ny.gov/chemical/61092.html>

SECTION 3: SITE DESCRIPTION AND HISTORY

Location:

The Undeveloped Portion – Former Abex Manufacturing Facility site is a 36.70-acre site located in a rural area within the Town of Ridgeway in Orleans County. The site is located at 3959 Bates Road, southeast of the intersection of Bates Road and New York State (NYS) Route 31.

Site Features:

The site contains the wastewater settling basins (lagoons) that formerly served the foundry located to the north, a fire pond, an active electric substation that currently serves the Brunner International parcel located to the north, two rail spurs (one active and one abandoned) and portions of two occupied buildings constructed by Brunner during a facility expansion in 2008 and 2014, wetlands, drainage ditches, and undeveloped woodland.

Current Zoning and Land Use:

The site is currently zoned for industrial use. The surrounding parcels are currently residential, commercial, and industrial manufacturing properties. The northern border of the site is the former foundry operation and associated structures currently occupied by Brunner International. The southern border of the site is a chain-link fence and drainage ditch that borders undeveloped land. The eastern border of the site the south side of the bound by wooded undeveloped land. The western border of the site is Bates Road. The nearest residential property is approximately 200 feet west on Bates Road.

Past Use of the Site:

The site was originally part of the 48-acre parcel known as the former Abex Corporation Foundry. The 48-acre parcel was subdivided in September 1992 into 2 parcels – 36.70 and 12.3-acre parcels. The 12.3-acre parcel that contains the former foundry buildings was purchased by Brunner International. The 36.70-acre parcel ownership was transferred from Abex to MCG Intermediate Holdings Inc. in 1995 and then in 2006 to County of Orleans Industrial Development Agency. The 36.70-acre parcel is defined as the site. The former foundry was constructed in the early 1950's. Prior to development the parcels were undeveloped woodland and tilled farmland.

The lagoons were used to collect wash water from the foundry process as well as storm water discharge. The former foundry and manufacturing facility used foundry sands for the casting of metal parts. Foundry sands and waste have been identified across the site and within the settling lagoons. Settled foundry sands in the lagoons was reclaimed for reuse at the former foundry facility by staging adjacent to lagoons or were collected for disposal.

Several Phase I and Phase II Environmental Site Assessments were conducted on the site and the adjoining Brunner parcel from 1990 to 2008. The Phase I and Phase II Environmental Site Assessments indicated the disposal of remaining foundry sand inventory on-site, accumulation of sediment in two of the lagoons, reclaimed foundry sand was staged near the lagoons, and total petroleum hydrocarbons (TPH) concentrations in foundry sand disposal area exceeded State standards and guidance values. A spill of Dasco- Kleen and Dasco-ARC-417 occurred December 1999 at a pond located behind the former foundry building (Spill Number 9911020). A review of past site development and use indicates that site disposal of waste occurred primarily on the western half of the site while the eastern portion of the site has remained largely unaffected by site operations or disposal.

Site Geology and Hydrogeology:

The overburden soils are predominantly fill underlain by native fine-grained silt and sand mixtures. Fill material consists of silt, sand and/or black fine-grained foundry sand. Foundry sand was observed ranging in depth from just below grade up to 8 feet below ground surface. Bedrock was generally encountered at approximately 10 feet to 12 feet below ground surface.

The depth to groundwater ranges from approximately 0.21 feet to 5.83 feet below ground surface at the site. Groundwater flow appears to be towards the west near the fire pond and then shifts northwest towards Erie Canal and Oak Orchard Creek across the western portion of the site.

A site location map is attached as Figure 1.

SECTION 4: LAND USE AND PHYSICAL SETTING

The Department may consider the current, intended, and reasonably anticipated future land use of the site and its surroundings when evaluating a remedy for soil remediation. For this site, alternatives (or an alternative) that restrict(s) the use of the site to industrial use as described in Part 375-1.8(g) were/was evaluated in addition to an alternative which would allow for unrestricted use of the site.

A comparison of the results of the RI to the appropriate standards, criteria and guidance values

(SCGs) for the identified land use and the unrestricted use SCGs for the site contaminants is included in the Tables for the media being evaluated in Exhibit A.

SECTION 5: ENFORCEMENT STATUS

Potentially Responsible Parties (PRPs) are those who may be legally liable for contamination at a site. This may include past or present owners and operators, waste generators, and haulers.

No PRPs have been documented to date.

Since no viable PRPs have been identified, there are currently no ongoing enforcement actions. However, legal action may be initiated at a future date by the state to recover state response costs should PRPs be identified. County of Orleans Industrial Development Agency and Orleans Land Restoration Corporation (OLRC) will assist the state in its efforts by providing all information to the state which identifies PRPs. County of Orleans Industrial Development Agency and Orleans Land Restoration Corporation (OLRC) will also not enter into any agreement regarding response costs without the approval of the Department.

SECTION 6: SITE CONTAMINATION

6.1: Summary of the Remedial Investigation

A Remedial Investigation (RI) has been conducted. The purpose of the RI was to define the nature and extent of any contamination resulting from previous activities at the site. The field activities and findings of the investigation are described in the RI Report.

The following general activities are conducted during an RI:

- Research of historical information,
- Geophysical survey to determine the lateral extent of wastes,
- Test pits, soil borings, and monitoring well installations,
- Sampling of waste, surface and subsurface soils, groundwater, and soil vapor,
- Sampling of surface water and sediment,
- Ecological and Human Health Exposure Assessments.

The analytical data collected on this site includes data for:

- groundwater
- surface water
- soil
- soil vapor

6.1.1: Standards, Criteria, and Guidance (SCGs)

The remedy must conform to promulgated standards and criteria that are directly applicable or that are relevant and appropriate. The selection of a remedy must also take into consideration guidance,

as appropriate. Standards, Criteria and Guidance are hereafter called SCGs.

To determine whether the contaminants identified in various media are present at levels of concern, the data from the RI were compared to media-specific SCGs. The Department has developed SCGs for groundwater, surface water, sediments, and soil. The NYSDOH has developed SCGs for drinking water and soil vapor intrusion. The tables found in Exhibit A list the applicable SCGs in the footnotes. For a full listing of all SCGs see: <http://www.dec.ny.gov/regulations/61794.html>

6.1.2: RI Results

The data have identified contaminants of concern. A "contaminant of concern" is a contaminant that is sufficiently present in frequency and concentration in the environment to require evaluation for remedial action. Not all contaminants identified on the property are contaminants of concern. The nature and extent of contamination and environmental media requiring action are summarized in Exhibit A. Additionally, the RI Report contains a full discussion of the data. The contaminant(s) of concern identified at this site is/are:

benzo(a)pyrene	chromium
benzo(b)fluoranthene	copper
dibenz[a,h]anthracene	silver
benzo(a)anthracene	lead
indeno(1,2,3-cd)pyrene	1,1,1-trichloroethane
chrysene	1,1-dichloroethane

As illustrated in Exhibit A, the contaminant(s) of concern exceed the applicable SCGs for:

- groundwater
- surface water
- soil

6.2: Interim Remedial Measures

An interim remedial measure (IRM) is conducted at a site when a source of contamination or exposure pathway can be effectively addressed before issuance of the Record of Decision.

There were no IRMs performed at this site during the RI.

6.3: Summary of Environmental Assessment

This section summarizes the assessment of existing and potential future environmental impacts presented by the site. Environmental impacts may include existing and potential future exposure pathways to fish and wildlife receptors, wetlands, groundwater resources, and surface water.

Based upon the resources and pathways identified and the toxicity of the contaminants of ecological concern at this site, a Fish and Wildlife Resources Impact Analysis (FWRIA) was deemed not necessary for OU 01.

Nature and Extent of Contamination:

The primary contaminants of concern are volatile organic compounds (VOCs), semi-volatile (SVOCs) organic compounds, and metals.

The remedial investigation activities included soil borings, groundwater monitoring well installation, lagoon borings, and soil gas investigation. Surface and subsurface soil, groundwater, surface water, and soil gas samples were collected for laboratory analysis. The soil and groundwater samples were analyzed for Target Compound List (TCL) VOCs plus tentatively identified compounds (TICs), TCL SVOCs plus TICs, TAL metals, cyanide, pesticides, and PCBs. The soil gas samples were analyzed using Method TO-15 for VOCs. Six soil boring samples and three groundwater samples were also analyzed for parathion due a known parathion spill event that occurred in 1982. Lagoon samples were analyzed for TCL VOCs plus TICs, TCL SVOCs plus TICs, TAL metals, pesticides, PCBs, cyanide, and total organic carbon.

Surface Soil:

Twenty-five (25) surface soil samples were collected from 0-2 inches for analysis. Surface soil data does not indicate off-site impacts.

Benzo(a)pyrene concentrations ranged from non-detect to 12.8 parts per million (ppm) [Industrial SCO - 1.1 ppm]. Benzo(b)fluoranthene concentrations range from non-detect to 13.8 ppm [Industrial SCO – 11 ppm]. Dibenzo[a,h]anthracene concentrations ranged from non-detect to 2.2 ppm [Industrial SCO – 1.1 ppm].

Subsurface soils:

Seventy-six (76) subsurface soil samples were collected from soil borings completed during the subsurface and lagoon sampling as well as monitoring well installation activities. Some of the subsurface soil samples were analyzed for parathion and Total Organic Carbon. Subsurface soil data does not indicate off-site impacts.

The lagoon soil analytical results indicated the two (2) VOCs exceeded the Protection of Groundwater SCOs, in particular 1,1,1-trichloroethane and 1,1-dichloroethane. 1,1,1-Trichloroethane concentrations ranged from non-detect to 1.1 ppm [Protection of Groundwater SCO – 0.68 ppm]. 1,1-Dichloroethane concentrations ranged from non-detect to 4.6 ppm [Protection of Groundwater SCO – 0.27]. No VOCs including parathion exceeded industrial SCOs.

The lagoon soil analytical results indicated three (3) SVOCS, in particular poly aromatic hydrocarbons (PAHs), exceeded the industrial SCOs and three (3) SVOCs exceeded the protection of groundwater SCOs. Benzo(a)pyrene concentrations ranged from non-detect to 36.73 ppm [Industrial SCO - 1.1 ppm]. Benzo(b)fluoranthene concentrations range from non-detect to 49.97 ppm [Protection of Groundwater SCO – 1.7 ppm]. Benzo(a)anthracene concentrations ranged from non-detect to 17.38 ppm [Industrial SCO – 11 ppm]. Dibenzo[a,h]anthracene concentrations ranged from non-detect to 3.96 ppm [Industrial SCO – 1.1 ppm]. Indeno(1,2,3-cd)pyrene concentrations ranged from non-detect to 12.04 ppm [Protection of Groundwater SCO – 8.2 ppm].

The subsurface soil analytical indicated three (3) SVOCS, in particular PAHs, exceeded the industrial SCOs and three (3) SVOCs exceeded the protection of groundwater SCOs. Benzo(a)pyrene concentrations ranged from non-detect to 43.38 ppm [Industrial SCO - 1.1 ppm]. Benzo(b)fluoranthene concentrations range from non-detect to 51.32 ppm [Protection of Groundwater SCO – 1.7 ppm]. Benzo(a)anthracene concentrations ranges from non-detect to 23.7 ppm [Industrial SCO – 11 ppm]. Dibenzo[a,h]anthracene concentrations ranged from non-detect to 7.1 ppm [Industrial SCO – 1.1 ppm]. Indeno(1,2,3-cd)pyrene concentrations ranged from non-detect to 22.2 ppm [Protection of Groundwater SCO – 8.2 ppm].

PCBs concentrations ranged from non-detect to 20 ppm [Industrial SCO – 25 ppm].

No VOCs including parathion exceeded industrial SCOs.

Surface Water:

Twenty-one (21) surface water samples were collected and analyzed from the lagoons and drainage swales/ditches for the parameters listed above. PCBs, pesticides, and cyanide were not detected in the surface water samples. Eight (8) VOCs were detected in the surface water samples that exceeded Class C Standards and Guidance Values (SGVs). VOC concentrations ranged from non-detect to 5 parts per billion (ppb). VOCs detected were 1,1,1-trichloroethane, 1,1-dichloroethane, carbon disulfide, acetone, toluene, chloroform, bromodichloromethane, and chloroethane. Twenty-five (25) SVOCs were detected in the surface water samples and concentrations ranged from non-detect to 0.92 ppb. Seventeen (17) metals were detected in the surface water samples. Aluminum (8 to 133 ppb), copper (non-detect to 56 ppb), iron (100 to 1,640 ppb), and silver (non-detect to 0.2 ppb) exceeded the Class C SGVs. Surface water data does not indicate off-site impacts.

Groundwater:

Groundwater samples were collected from groundwater monitoring wells located on-site. A total of 18 groundwater samples were collected for laboratory analysis. The groundwater samples were analyzed for the same contaminants as the soil samples. VOCs, SVOCs, and metals exceeded the groundwater standards and guidance values (SGVs). PCBs, pesticides, and cyanide were not detected in the groundwater samples. Groundwater data does not indicate off-site impacts.

One of the 18 groundwater samples had VOCs that exceeded the groundwater standards and guidance values (typically 5 ppb). 1,1,1-trichloroethane concentration ranged from non-detect to 6 ppb and 1,1-dichloroethane (14 ppb).

One of the 18 groundwater samples had SVOCs that exceeded the groundwater standards and guidance values. Benzo(a)pyrene concentrations ranged from non-detect to 0.24 ppb (any detection is an exceedance). Benzo(b)fluoranthene concentrations ranged from non-detect to 0.87 ppb (SGVs - 0.002 ppb). Indeno(1,2,3-cd)pyrene concentrations ranged from non-detect to 0.44 ppb (SGVs – 0.002 ppb). Chrysene concentrations ranged from non-detect to 0.38 ppb (SGVs – 0.002 ppb).

Six (6) of the 18 groundwater samples exceeded the groundwater standards and guidance values for metals. Chromium concentrations ranged from non-detect to 106 ppb (SGVs – 50 ppb).

Copper concentrations ranged from non-detect to 268 ppb (SGVs – 200 ppb). Nickel concentrations ranged from non-detect to 109 ppb (SGVs – 100 ppb). Lead concentrations ranged from non-detect to 53.6 ppb (SGVs – 25 ppb).

Soil Vapor:

Three (3) soil vapor samples were collected and analyzed for VOCs (Method TO-15). Fifteen (15) VOCs were detected at all 3 sampling locations. Concentrations of the petroleum related compounds (benzene, toluene, xylenes, hexane, and trimethylbenzenes) ranged from non-detect to 294.63 ug/m³. Tetrachloroethene was detected in all 3 samples and concentrations ranged from 14.24 to 65.24 ug/m³. Trichloroethene was detected in a sample at 2.26 ug/m³. Soil vapor data does not indicate off-site impacts.

6.4: Summary of Human Exposure Pathways

This human exposure assessment identifies ways in which people may be exposed to site-related contaminants. Chemicals can enter the body through three major pathways (breathing, touching or swallowing). This is referred to as *exposure*.

Access is not restricted and people who enter the site could contact contaminants in the soil by walking on it, digging, or otherwise disturbing the soil. People are not drinking contaminated groundwater because the area is served by a public water supply that is not contaminated by the site. Volatile organic compounds in the soil vapor (air spaces within the soil) may move into overlying buildings and affect the indoor air quality. This process, which is similar to the movement of radon gas from the subsurface into the indoor air of buildings, is referred to as soil vapor intrusion. Additional evaluation is needed to evaluate whether actions are needed to address soil vapor intrusion on-site. Environmental sampling indicates that soil vapor intrusion is not a concern for off-site buildings.

6.5: Summary of the Remediation Objectives

The objectives for the remedial program have been established through the remedy selection process stated in 6 NYCRR Part 375. The goal for the remedial program is to restore the site to pre-disposal conditions to the extent feasible. At a minimum, the remedy shall eliminate or mitigate all significant threats to public health and the environment presented by the contamination identified at the site through the proper application of scientific and engineering principles.

The remedial action objectives for this site are:

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/pre-release 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.

Surface Water

RAOs for Public Health Protection

- Prevent ingestion of water impacted by contaminants.
- Prevent contact or inhalation of contaminants from impacted water bodies.
- Prevent surface water contamination which may result in fish advisories.

RAOs for Environmental Protection

- Restore surface water to ambient water quality criteria for the contaminant of concern.
- Prevent impacts to biota from ingestion/direct contact with surface water causing toxicity and impacts from bioaccumulation through the marine or aquatic 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.

SECTION 7: SUMMARY OF THE SELECTED REMEDY

To be selected the remedy must be protective of human health and the environment, be cost-effective, comply with other statutory requirements, and utilize permanent solutions, alternative technologies or resource recovery technologies to the maximum extent practicable. The remedy must also attain the remedial action objectives identified for the site, which are presented in Section 6.5. Potential remedial alternatives for the Site were identified, screened and evaluated in the alternatives analysis (AA) report.

A summary of the remedial alternatives that were considered for this site is presented in Exhibit B. Cost information is presented in the form of present worth, which represents the amount of money invested in the current year that would be sufficient to cover all present and future costs associated with the alternative. This enables the costs of remedial alternatives to be compared on a common basis. As a convention, a time frame of 30 years is used to evaluate present worth costs

for alternatives with an indefinite duration. This does not imply that operation, maintenance, or monitoring would cease after 30 years if remediation goals are not achieved. A summary of the Remedial Alternatives Costs is included as Exhibit C.

The basis for the Department's remedy is set forth at Exhibit D.

The selected remedy is referred to as the Excavation, Cover System, Site Management remedy.

The estimated present worth cost to implement the remedy is \$5,100,000. The cost to construct the remedy is estimated to be \$5,098,000 and the estimated average annual cost is \$2,000.

The elements of the selected remedy are as follows:

1. Excavation

All soil/fill material in the lagoon areas and along the northern, eastern, western, and southern perimeter ditches/swales at the site that exceed the industrial or protection of groundwater SCOs will be excavated and transported off-site for disposal. Approximately 5,700 cubic yards of contaminated soil will be removed from the site and disposed off-site at a permitted landfill facility. Removal of these areas of contamination are expected to improve surface water and groundwater conditions. Additional monitoring (sampling on a recurring basis) of these media is therefore not needed; however, additional sampling might be warranted in the future to document that the remedial action objectives specified in Section 6.5 have been achieved.

2. Backfill

Clean fill meeting the requirements of 6 NYCRR Part 375-6.7(d) will be brought in to replace the excavated soil and fill material and establish the designed grades at the site. The site will be re-graded to accommodate installation of a cover system as described in remedy element #4.

3. Cover System

A site cover will be required to allow industrial use of the site where the upper one foot of exposed surface soil will exceed the applicable soil cleanup objectives (SCOs). The site cover may consist of paved surface parking areas, sidewalks, or a soil cover. Where a soil cover is to be used, it will be a minimum of one foot of soil placed over a demarcation layer with the upper six inches of soil of sufficient quality to maintain a vegetative layer. Soil cover material, including any fill material brought to the site, will meet the SCOs for cover material as set forth in 6 NYCRR Part 375-6.7(d). In areas where building foundations or building slabs preclude contact with the soil, the requirements for a site cover will be deferred until such time that they are removed.

4. Institutional Controls

Imposition of an institutional control in the form of an environmental easement for the controlled property which will:

- require the remedial party or site owner to complete and submit to the Department a periodic certification of institutional and engineering controls in accordance with Part 375-1.8 (h)(3);
- allow the use and development of the controlled property for industrial use as defined by Part 375-1.8(g), although land use is subject to local zoning laws;

- restrict the use of surface and groundwater as sources of potable or process water, without necessary water quality treatment as determined by the NYSDOH or County DOH; and
- require compliance with the Department approved Site Management Plan.

5. Site Management Plan

A Site Management Plan is required, which includes the following:

1. An Institutional and Engineering Control Plan that identifies all use restrictions and engineering controls for the site and details the steps and media-specific requirements necessary to ensure the following institutional and/or engineering controls remain in place and effective:

Institutional Controls: The Environmental Easement, groundwater use restriction, and the Site Management Plan as discussed in Paragraphs 5 and 6 above.

Engineering Controls: The cover system as discussed in Paragraph 4 above.

This plan includes, but may not be limited to:

- an Excavation Plan which details the provisions for management of future excavations in areas of remaining contamination;
 - a provision should redevelopment occur to ensure no soil exceeding protection of groundwater concentrations will remain below storm water retention basin or infiltration structures.
 - descriptions of the provisions of the environmental easement including any land use and groundwater;
 - a provision for evaluation of the potential for soil vapor intrusion for any buildings on the site, including provision for implementing actions recommended to address exposures related to soil vapor intrusion;
 - a provision that should a building foundation or building slab be removed in the future, a cover system consistent with that described in Paragraph 4 above will be placed in any areas where the upper one foot of exposed surface soil exceeds the applicable soil cleanup objectives (SCOs);
 - provisions for the management and inspection of the identified engineering controls;
 - maintaining site access controls and Department notification; and
 - the steps necessary for the periodic reviews and certification of the institutional and/or engineering controls.
2. A Monitoring Plan to assess the performance and effectiveness of the remedy. The plan includes, but may not be limited to:
 - monitoring for vapor intrusion for any buildings on the site, as may be required by the Institutional and E

Exhibit A

Nature and Extent of Contamination

This section describes the findings of the Remedial Investigation for all environmental media that were evaluated. As described in Section 6.1, samples were collected from various environmental media to characterize the nature and extent of contamination.

For each medium for which contamination was identified, a table summarizes the findings of the investigation. The tables present the range of contamination found at the site in the media and compares the data with the applicable SCGs for the site. The contaminants are arranged into four categories: volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), polychlorinated biphenyls (PCBs), and inorganics (metals and cyanide). For comparison purposes, the SCGs are provided for each medium that allows for unrestricted use. For soil, if applicable, the Restricted Use SCGs identified in Section 4 and Section 6.1.1 are also presented.

Waste/Source Areas

As described in the RI report, waste/source materials were identified at the site and are impacting groundwater, soil, and surface water.

Wastes are defined in 6 NYCRR Part 375-1.2(aw) and include solid, industrial and/or hazardous wastes. Source areas are defined in 6 NYCRR Part 375(au). Source areas are areas of concern at a site where substantial quantities of contaminants are found which can migrate and release significant levels of contaminants to another environmental medium. Wastes and source areas were identified at the site include the site as a whole.

The site is a former foundry and manufacturing facility that used foundry sands for the casting of metal parts. Foundry sands and waste have been identified across the site and within the settling lagoons. Figure 2 shows the locations of the settling lagoons.

The waste/source areas identified will be addressed in the remedy.

Groundwater

Groundwater samples were collected from overburden to assess groundwater conditions on-site. Samples were analyzed for TCL VOCs plus TICs, TCL SVOCs plus TICs, TAL metals, cyanide, pesticides, and PCBs. The results indicate that contamination in shallow groundwater at the site exceeds the SCGs for volatile organic compounds, semi-volatile organic compounds, and inorganics. Figure 2 presents the groundwater exceedances.

Table 1 - Groundwater

Detected Constituents	Concentration Range Detected (ppb) ^a	SCG ^b (ppb)	Frequency Exceeding SCG
VOCs			
1,1,1-Trichloroethane	ND to 6	5	1 of 18
1,1-Dichloroethane	ND to 14	5	1 of 18
SVOCs			

Detected Constituents	Concentration Range Detected (ppb) ^a	SCG ^b (ppb)	Frequency Exceeding SCG
Benzo(a)pyrene	ND to 0.24	**	1 of 18
Benzo(b)fluoranthene	ND to 0.87	0.002	1 of 18
Indeno(1,2,3-cd)pyrene	ND to 0.44	0.002	1 of 18
Chrysene	ND to 0.38	0.002	1 of 18
Inorganics			
Chromium	ND to 106	50	6 of 18
Copper	ND to 268	200	6 of 18
Lead	ND to 53.6	25	6 of 18
Nickel	ND to 109	100	6 of 18

a: ppb: parts per billion, which is equivalent to micrograms per liter, ug/L, in water.

b: SCG: Standard Criteria or Guidance - Ambient Water Quality Standards and Guidance Values (TOGs 1.1.1), 6 NYCRR Part 703, Surface water and Groundwater Quality Standards, and Part 5 of the New York State Sanitary Code (10 NYCRR Part 5).

** : Benzo(a)pyrene – any detection of the compound is deemed an exceedance.

The primary groundwater contaminants are VOCs, SVOCs, and inorganics associated with operation of the former foundry facility. As noted on Figure 2, the primary groundwater contamination is associated with the foundry operations and located mainly in the northern and southern portion of the Site.

Based on the findings of the RI, the operation of the foundry and settling lagoons has resulted in the contamination of groundwater. The site contaminants that are considered to be the primary contaminants of concern which will drive the remediation of groundwater to be addressed by the remedy selection process are: SVOCs, in particular PAHs, and inorganics.

Soil

Surface and subsurface soil samples were collected at the site during the RI. Surface soil samples were collected from a depth of 0-2 inches to assess direct human exposure. Subsurface soil samples were collected from a depth of 0 - 10 feet to assess soil contamination and its impacts to groundwater. The results indicate that soils at the site exceed the unrestricted SCG for semi-volatile organics, metals, and PCBs primarily in the 0-8 foot depth range. Tables 2A, 2B, and 2C present the results for all of the tested analytes found to exceed unrestricted SCOs.

Table 2A – Surface Soil

Detected Constituents	Concentration Range Detected (ppm) ^a	Unrestricted SCG ^b (ppm)	Frequency Exceeding Unrestricted SCG	Restricted Use SCG (ppm)	Frequency Exceeding Restricted SCG
SVOCs					
Benzo(a)anthracene	ND to 9.1	1	7 of 25	11 ^c	0 of 25
Benzo(a)pyrene	ND to 12.8	1	9 of 25	1.1 ^c	9 of 25
Benzo(b)fluoranthene	ND to 13.8	1	9 of 25	1.7 ^d	5 of 25
Benzo(k)fluoranthene	ND to 11.2	0.8	9 of 25	110 ^c	0 of 25
Chrysene	ND to 12.3	1	8 of 25	1.0 ^d	8 of 25
Dibenzo(a,h)anthracene	ND to 2.2	0.33	6 of 25	1.1 ^c	2 of 25
Indeno(1,2,3-cd)pyrene	ND to 8.0	0.5	12 of 25	11 ^c	0 of 25
Inorganics					
Copper	11.7 to 86.2	50	4 of 25	10,000 ^c	0 of 25
Nickel	3.05 to 488	30	9 of 25	130 ^d	1 of 25
Lead	10.8 to 208	63	1 of 25	3,900 ^c	0 of 25
Mercury	ND to 0.213	0.18	2 of 25	5.7 ^c	0 of 25
Zinc	10.6 to 481	109	2 of 25	10,000 ^c	0 of 25

a: ppm: parts per million, which is equivalent to milligrams per kilogram, mg/kg, in soil;

b: SCG: Part 375-6.8(a), Unrestricted Soil Cleanup Objectives.

c: SCG: Part 375-6.8(b), Restricted Use Soil Cleanup Objectives for the Protection of Public Health for Industrial Use, unless otherwise noted.

d: SCG: Part 375-6.8(b), Restricted Use Soil Cleanup Objectives for the Protection of Groundwater.

Table 2B – Sub-Surface Soil Lagoon

Detected Constituents	Concentration Range Detected (ppm) ^a	Unrestricted SCG ^b (ppm)	Frequency Exceeding Unrestricted SCG	Restricted Use SCG (ppm)	Frequency Exceeding Restricted SCG
VOCs					
1,1,1-Trichloroethane	ND to 1.1	0.68	1 of 13	0.68 ^d	1 of 13
1,1-Dichloroethane	ND to 4.6	0.27	1 of 13	0.27 ^d	1 of 13
Benzene	ND to 0.139	0.06	1 of 13	89 ^c	0 of 13
SVOCs					
Benzo(a)anthracene	ND to 17.38	1	8 of 27	11 ^c	8 of 27
Benzo(a)pyrene	ND to 36.73	1	10 of 27	1.1 ^c	10 of 27
Benzo(b)fluoranthene	ND to 49.97	1	11 of 27	1.7 ^d	9 of 27
Benzo(k)fluoranthene	ND to 34.94	0.8	10 of 27	110 ^c	0 of 27

Detected Constituents	Concentration Range Detected (ppm) ^a	Unrestricted SCG ^b (ppm)	Frequency Exceeding Unrestricted SCG	Restricted Use SCG (ppm)	Frequency Exceeding Restricted SCG
Chrysene	ND to 23.05	1	10 of 27	1 ^d	10 of 27
Dibenzo(a,h)anthracene	ND to 3.96	0.33	7 of 27	1.1 ^c	4 of 27
Indeno(1,2,3-cd)pyrene	ND to 12.04	0.5	10 of 27	8.2 ^d	3 of 27
Inorganics					
Chromium	1.4 to 139	30	8 of 27	6,800 ^c	0 of 27
Copper	12.2 to 177	50	11 of 27	1,720 ^d	0 of 27
Nickel	4.35 to 586	30	17 of 27	130 ^d	11 of 27
Lead	1.93 to 1,220	63	14 of 27	450 ^d	4 of 27
Zinc	6.64 to 2,170	109	9 of 27	10,000 ^c	0 of 27

a: ppm: parts per million, which is equivalent to milligrams per kilogram, mg/kg, in soil;

b: SCG: Part 375-6.8(a), Unrestricted Soil Cleanup Objectives.

c: SCG: Part 375-6.8(b), Restricted Use Soil Cleanup Objectives for the Protection of Public Health for Industrial Use, unless otherwise noted.

d: SCG: Part 375-6.8(b), Restricted Use Soil Cleanup Objectives for the Protection of Groundwater.

Table 2C – Sub-Surface Soil

Detected Constituents	Concentration Range Detected (ppm) ^a	Unrestricted SCG ^b (ppm)	Frequency Exceeding Unrestricted SCG	Restricted Use SCG (ppm)	Frequency Exceeding Restricted SCG
VOCs					
1,1,1-Trichloroethane	ND to 1.1	0.68	1 of 13	0.68 ^d	1 of 13
1,1-Dichloroethane	ND to 4.6	0.27	1 of 13	0.27 ^d	1 of 13
Benzene	ND to 0.139	0.06	1 of 13	0.06 ^d	1 of 13
SVOCs					
Benzo(a)anthracene	ND to 23.7	1	21 of 73	11 ^c	5 of 73
Benzo(a)pyrene	ND to 43.38	1	28 of 73	1.1 ^c	27 of 73
Benzo(b)fluoranthene	ND to 51.32	1	30 of 73	1.7 ^d	19 of 73
Benzo(k)fluoranthene	ND to 40.3	0.8	29 of 73	1.7 ^d	18 of 73
Chrysene	ND to 27.74	1	25 of 73	1 ^d	19 of 73
Dibenzo(a,h)anthracene	ND to 7.1	0.33	19 of 73	1.1 ^c	14 of 73
Indeno(1,2,3-cd)pyrene	ND to 22.20	0.5	28 of 73	8.2 ^d	9 of 73
Inorganics					
Chromium	1.34 to 518	30	16 of 41	6,800 ^c	0 of 41
Copper	12.2 to 177	50	19 of 41	1,720 ^d	0 of 41
Nickel	4.31 to 586	30	26 of 41	130 ^d	13 of 41

Detected Constituents	Concentration Range Detected (ppm) ^a	Unrestricted SCG ^b (ppm)	Frequency Exceeding Unrestricted SCG	Restricted Use SCG (ppm)	Frequency Exceeding Restricted SCG
Lead	1.93 to 1,220	63	21 of 41	450 ^d	0 of 41
Zinc	6.64 to 2,170	109	20 of 41	10,000 ^c	0 of 41
PCBs					
Aroclor 1254	ND to 20	0.1	1 of 6	25 ^c	0 of 6

a: ppm: parts per million, which is equivalent to milligrams per kilogram, mg/kg, in soil;

b: SCG: Part 375-6.8(a), Unrestricted Soil Cleanup Objectives.

c: SCG: Part 375-6.8(b), Restricted Use Soil Cleanup Objectives for the Protection of Public Health for Industrial Use, unless otherwise noted.

d: SCG: Part 375-6.8(b), Restricted Use Soil Cleanup Objectives for the Protection of Groundwater.

Figures 3, 4, and 5 presents the locations that exceed the Unrestricted SCO exceedances.

The primary soil contaminants are polycyclic aromatic hydrocarbons (PAHs) and metals associated with the operation of the foundry. As noted on the Figures 3, 4, and 5, the soil contamination is widespread across the sites.

Based on the findings of the Remedial Investigation, the presence of PAHs and metals has resulted in the contamination of soil. The site contaminants identified in soil, which are considered the primary contaminants of concern, to be addressed by the remedy selection process are PAHs and metals.

Surface Water

Surface water samples were collected during the RI from the lagoons and low lying area on the site. The samples were collected to assess the surface water conditions on-site. The results indicate that contaminants in surface water at the site exceed the Department's SCG for aluminum, copper, and silver. Figure 6 presents the location of the surface water samples and the concentrations detected.

Table 3 - Surface Water

Detected Constituents	Concentration Range Detected (ppb) ^a	SCG ^b (ppb)	Frequency Exceeding SCG
Inorganics			
Aluminum	ND to 133	100	4 of 21
Copper	ND to 56	29	1 of 21
Silver	ND to 0.2	0.1	1 of 21

a: ppb: parts per billion, which is equivalent to micrograms per liter, ug/L, in water.

b: SCG: Ambient Water Quality Standards and Guidance Values (TOGs 1.1.1) and 6 NYCRR Part 703: Surface Water and Groundwater Quality Standards.

Surface water contamination identified during the RI is addressed during remedy implementation.

Based on the findings of the Remedial Investigation, the presence of metals has resulted in the contamination of surface water. The site contaminants that are considered to be the primary contaminants of concern which will drive the remediation of surface water to be addressed by the remedy selection process are aluminum, copper, and silver.

Soil Vapor

Samples of soil vapor were collected to determine, along with the other environmental media samples collected, whether actions are needed to address exposures related to soil vapor intrusion. At this site, no buildings were present in impacted areas, so only soil vapor was evaluated.

Three (3) soil vapor samples were collected and analyzed for VOCs (Method TO-15). Fifteen (15) VOCs were detected at all 3 sampling locations. Concentrations of the petroleum related compounds (benzene, toluene, xylenes, hexane, and trimethylbenzenes) ranged from non-detect to 294.63 ug/m³. Tetrachloroethene was detected in all 3 samples and concentrations ranged from 14.24 to 65.24 ug/m³. Trichloroethene was detected in a sample at 2.26 ug/m³.

Based on the findings of the Remedial Investigation, the site contaminants that are considered to be the primary contaminants of concern which will drive the remediation of soil vapor to be addressed by the remedy selection process are, benzene, toluene, xylenes, hexane, trimethylbenzenes and tetrachloroethene.

Exhibit B

Description of Remedial Alternatives

Alternative 1: No Action

The No Action Alternative is evaluated as a procedural requirement and as a basis for comparison. This alternative leaves the site in its present condition and does not provide any additional protection to public health and the environment.

Alternative 2: Restoration to Pre-Disposal or Unrestricted Conditions

This alternative achieves all of the SCGs discussed in Section 6.1.1 and Exhibit A and soil meets the unrestricted soil clean objectives listed in Part 375-6.8 (a). This alternative would include: excavation and off-site disposal of all soil/fill material exceeding unrestricted soil clean objectives listed in Part 375-6.8(a) and site restoration. Note, in most cases this alternative will involve excavation and off-site disposal of all waste and soil contamination above the unrestricted soil cleanup objectives. The remedy will not rely on institutional or engineering controls to prevent future exposure provided groundwater, surface water, and soil vapor RAOs presented in Section 6.5 are also achieved. There is no Site Management, no restrictions, and no periodic review. This remedy will have no annual cost, only the capital cost.

Capital Cost:..... \$45,900,000

Alternative 3: Excavation, Cover System, and Site Management

This alternative would include the excavation of all soil and fill material in the lagoon areas and along the northern, eastern, western, and southern perimeter of the site that exceed the industrial SCOs and protection of groundwater SCOs. All soil/fill material excavated will be transported off-site for disposal at a permitted landfill facility. Site restoration will include backfill of the excavation areas and installation of a cover system where the upper one foot of exposed surface soil will exceed the applicable soil cleanup objectives (SCOs). A Site Management Plan will be developed which will include an Institutional and Engineering Control Plan that identifies all use restrictions and engineering controls for the site and details the steps and media-specific requirements necessary to ensure the institutional and/or engineering controls remain in place and effective.

Present Worth:..... \$5,100,000

Capital Cost:..... \$5,098,000

Annual Costs:..... \$2,000

Exhibit C

Remedial Alternative Costs

Remedial Alternative	Capital Cost (\$)	Annual Costs (\$)	Total Present Worth (\$)
No Action	0	0	0
Restoration to Pre-Disposal or Unrestricted Conditions	45,900,000	0	0
Excavation, Cover System, Site Management	5,098,000	2,000	5,100,000

Exhibit D

SUMMARY OF THE SELECTED REMEDY

The Department has selected Alternative 3 - Excavation, Cover System and Site Management as the remedy for this site. Alternative 3 would achieve the remediation goals for the site by excavation of contaminated soil/fill material and the implementation of institutional and engineering controls. The elements of this remedy are described in Section 7. The selected remedy is depicted in Figure 7.

Basis for Selection

The selected remedy is based on the results of the RI and the evaluation of alternatives. The criteria to which potential remedial alternatives are compared are defined in 6 NYCRR Part 375.

The first two evaluation criteria are termed "threshold criteria" and must be satisfied in order for an alternative to be considered for selection.

1. Protection of Human Health and the Environment. This criterion is an overall evaluation of each alternative's ability to protect public health and the environment.

The selected remedy Alternative 3 satisfies this criterion by removing the contaminated soil and fill material that exceed the Industrial SCOs or the Protection of Groundwater SCOs and installation of a cover system where the upper one foot of exposed surface soil will exceed the applicable soil cleanup objectives (SCOs). Alternative 1 (No Action) does not provide any additional protection to public health and the environment and will not be evaluated further. Alternative 2, by removing all soil and fill material contaminated above the unrestricted soil cleanup objective, meets the threshold criteria provided groundwater, surface water, and soil vapor RAOs presented in Section 6.5 are achieved with these removals. Alternative 3 meets the threshold criteria for groundwater and soil vapor through use of institutional controls, and is expected to meet the criteria for surface water and groundwater through the removal of contaminated soil/fill material from the site.

2. Compliance with New York State Standards, Criteria, and Guidance (SCGs). Compliance with SCGs addresses whether a remedy will meet environmental laws, regulations, and other standards and criteria. In addition, this criterion includes the consideration of guidance which the Department has determined to be applicable on a case-specific basis.

Alternative 3 complies with SCGs to the extent practicable. It addresses areas of contamination and complies with the restricted use soil cleanup objectives at the surface through construction of a cover system. It also creates the conditions necessary to restore groundwater and surface water quality to the extent practicable with the removal of contaminated soil and fill material that exceed the Protection of Groundwater SCOs. Alternative 2 also complies with this criterion but to a greater degree with the removal of all soil and fill material that exceeds the unrestricted use SCOs. Because Alternatives 2 and 3 satisfy the threshold criteria, the remaining criteria are particularly important in selecting a final remedy for the site. It is expected Alternative 3 will achieve groundwater SCGs over time with the removal of soil/fill material that exceeds the industrial and protection of groundwater SCOs.

The next six "primary balancing criteria" are used to compare the positive and negative aspects of each of the remedial strategies.

3. Long-term Effectiveness and Permanence. This criterion evaluates the long-term effectiveness of the remedial alternatives after implementation. If wastes or treated residuals remain on-site after the selected remedy has been implemented, the following items are evaluated: 1) the magnitude of the remaining risks, 2) the adequacy of the engineering and/or institutional controls intended to limit the risk, and 3) the reliability of these controls.

Long-term effectiveness is best accomplished by those alternatives involving excavation of the contaminated overburden soils that exceed the Industrial or Protection of Groundwater SCOs (Alternatives 3 and 2). Since the contamination is wide spread across the upper 8 feet of the Site, Alternative 2 results in removal of all the contamination at the Site and removes the need for property use restrictions and long-term monitoring. Alternative 3 results in the removal or covering of the contaminated soil accessible to the public at the site but it also requires an environmental easement and long-term monitoring. For Alternative 2, there is no site management provided groundwater, surface water, and soil vapor RAOs presented in Section 6.5 are achieved with removal of contaminated sediments and fill material from the site. For Alternative 3, site management requires long term maintenance of the cover system (engineering control) and submittal of Periodic Review Reports.

4. Reduction of Toxicity, Mobility or Volume. Preference is given to alternatives that permanently and significantly reduce the toxicity, mobility or volume of the wastes at the site.

Alternative 2 with the excavation and off-site disposal of all material that exceeds unrestricted use SCOs, reduces the toxicity, mobility and volume of on-site waste by transferring the material to an approved off-site location. Alternative 3 requires the excavation and off-site disposal at permitted landfill facility of approximately 5,700 cubic yards of contaminated soil. Alternative 2 addresses the toxicity, mobility, and volume of contamination but at a significant cost and substantially less green approach. Whereas Alternative 3 reduces the toxicity, mobility, and volume of the contaminated soil at the site through excavation and the installation of a cover system at a lower cost and using a green remedial approach.

5. Short-term Impacts and Effectiveness. The potential short-term adverse impacts of the remedial action upon the community, the workers, and the environment during the construction and/or implementation are evaluated. The length of time needed to achieve the remedial objectives is also estimated and compared against the other alternatives.

Alternatives 2 and 3 have short-term impacts which are easily be controlled; however, Alternative 3 has the least impact. The time needed to achieve the remediation goals is the shortest for Alternative 3 and longer for Alternative 2.

6. Implementability. The technical and administrative feasibility of implementing each alternative are evaluated. Technical feasibility includes the difficulties associated with the construction of the remedy and the ability to monitor its effectiveness. For administrative feasibility, the availability of the necessary personnel and materials is evaluated along with potential difficulties in obtaining specific operating approvals, access for construction, institutional controls, and so forth.

Alternatives 2 and 3 are favorable in that they are readily implementable and have short-term impacts which can be easily controlled. Alternative 2 is implementable, but this alternative necessitates increased truck traffic on local roads for several months, is a significantly less green remedial approach due to the significant consumption of fossil fuel for trucking and excavation activities, large volume of soil/fill material that requires off-site disposal, increased emission during remedy implementation, and increased noise pollution. Whereas Alternative 3 also does necessitate truck traffic on local roads but for a much shorter period of time, is considered a significantly

greener remedial approach due to decreased fossil fuel consumption during trucking and excavation activities, smaller volume of soil/fill material that requires off-site disposal, a minimal increase emission impact during remedy implementation, and a minimal increase in noise pollution during implementation.

7. Cost-Effectiveness. Capital costs and annual operation, maintenance, and monitoring costs are estimated for each alternative and compared on a present worth basis. Although cost-effectiveness is the last balancing criterion evaluated, where two or more alternatives have met the requirements of the other criteria, it can be used as the basis for the final decision.

The costs of the alternatives vary significantly. Alternative 3 has a lower cost than Alternative 2. Under Alternative 3 any remaining contaminated soil not addressed through excavation is to WHAT addressed/managed at a lower cost with institutional and engineering controls. With its large volume of soil to be handled, Alternative 2 (excavation and off-site disposal) has the highest present work cost. The capital cost for Alternative 2 is significantly higher than that of Alternative 3 to achieve pre-release conditions. Alternative 2 achievement of pre-release conditions does not provide a significant environmental benefit that outweighs the considerably less green remedial approach with the significant consumption of fossil fuels, increased volume of material that requires off-site disposal and disposal fees, and increased emissions and noise pollution. Alternative 3 eliminates areas of contamination while achieving a greener remedial approach with residual impacted soil/fill material that is managed under site management. Alternative 3 does incur a long-term maintenance cost of the cover system whereas Alternative 2 has no long-term maintenance cost.

8. Land Use. When cleanup to pre-disposal conditions is determined to be infeasible, the Department may consider the current, intended, and reasonable anticipated future land use of the site and its surroundings in the selection of the soil remedy.

Since the anticipated use of the site is industrial, Alternatives 3 allows for the anticipated site use of industrial. Under Alternative 3 the remaining contaminated soil on the property is controllable under long-term site management at a reduced cost. Alternative 2 removes all the remaining the soil/fill material that exceeds the Unrestricted SCOs at the Site at a significant cost and considerable consumption of fossil fuel to allow the site to be used for industrial purposes. Alternative 3 allows for the anticipated use of the site at a reduced cost, has considerably less consumption of fossil fuel, protective of the environment, and is reasonable for the future land use of the site and its surroundings.

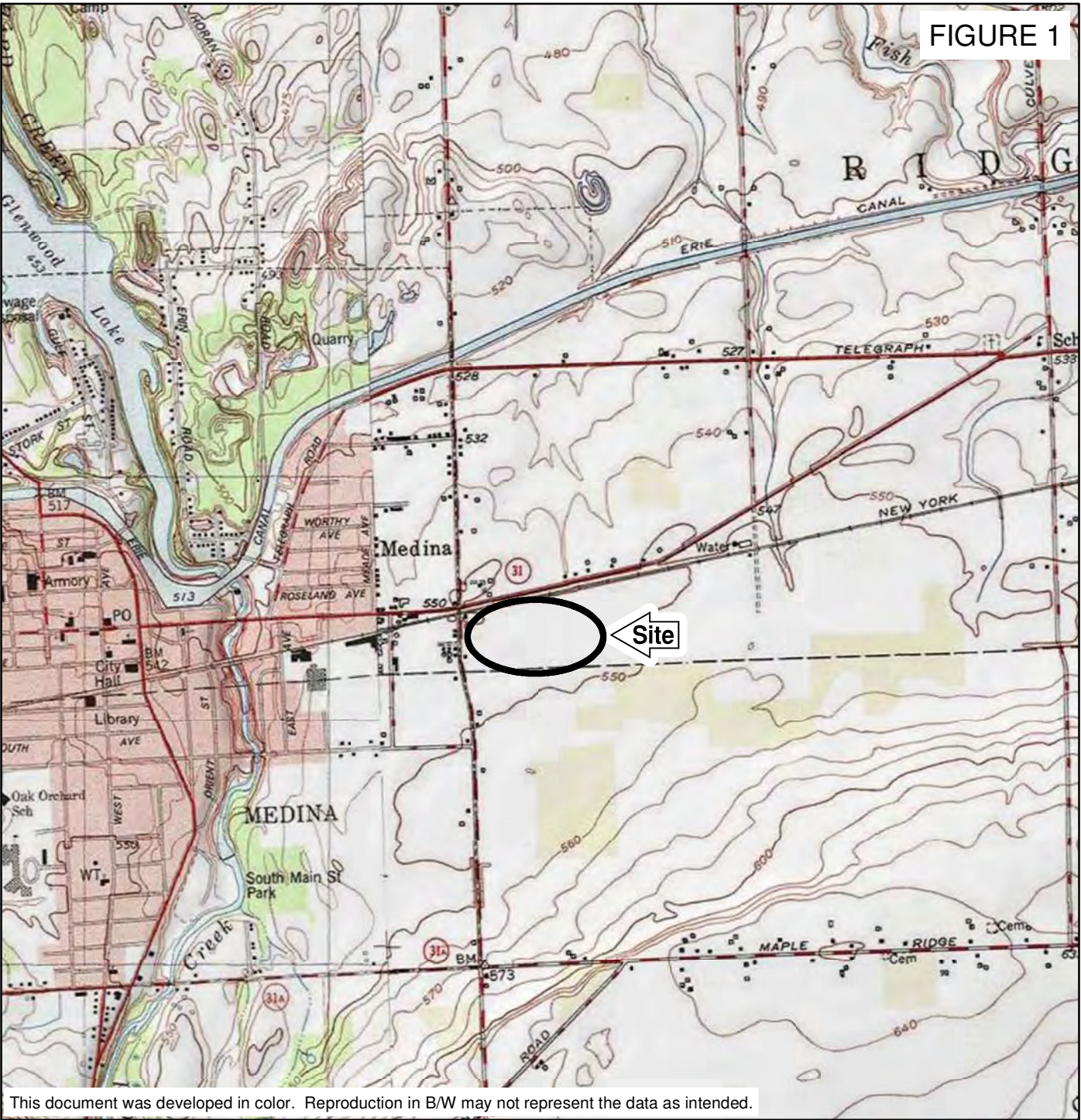
The final criterion, Community Acceptance, is considered a "modifying criterion" and is taken into account after evaluating those above. It is evaluated after public comments on the Proposed Remedial Action Plan have been received.

9. Community Acceptance. Concerns of the community regarding the investigation, the evaluation of alternatives, and the PRAP are evaluated. A responsiveness summary will be prepared that describes public comments received and the manner in which the Department will address the concerns raised.

Alternative 3 is being selected because, as described above, it satisfies the threshold criteria and provides the best balance of the balancing criterion.

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PLOT DATE: 01/11/13 12:34:26 PM YoungAS

FIGURE 1

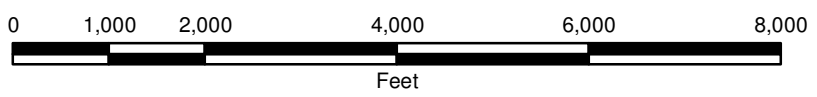


ADAPTED FROM: KNOWLESVILLE AND MEDINA, NY USGS QUADRANGLE

COUNTY OF ORLEANS IDA
FORMER ABEX CORPORATION FOUNDRY
TOWN OF RIDGEWAY,
ORLEANS COUNTY, NEW YORK



SITE LOCATION



Plot Date: 09/05/16 8:46:06 AM Gardheme
Rochester\projects\Orleans-County-IDA_14052-43045-Former-Abex-Fac-Data\DWG\WMD\SH\SurfaceSoils_Finals_SVOC.mxd

Chemical	Part 375 (Unrestricted)	CP-51 (Industrial)	Part 375 (Residential)	CP-51 (Industrial)	Part 375 (Protection of Groundwater)	CP-51 (Protection of Groundwater)
Benzene	1	NC	11	NC	1	NC
Benzene	1	NC	11	NC	23	NC
Benzene	1	NC	11	NC	1.7	NC
Chrysene	0.8	NC	11	NC	1.7	NC
Chrysene	1.0	NC	11	NC	3	NC
Dibenz[a,h]anthracene	0.33	NC	1.1	NC	100	NC
Fluorene	10	NC	100	NC	100	NC
Indeno[1,2,3-cd]pyrene	0.5	NC	11	NC	8.2	NC
Pyrene	10	NC	100	NC	100	NC

NOTES:
1. SAMPLE LOCATIONS WERE SURVEYED BY LARSEN ENGINEERS, HOFFMAN LAND SURVEYING AND GEOMATICS, AND O'BRIEN & GERE.
2. SOIL BORINGS SB-104, SB-105, SB-121 THROUGH SB-127, AND SB-129 INDICATE PRESENCE OF FOUNDRY SAND.



LEGEND

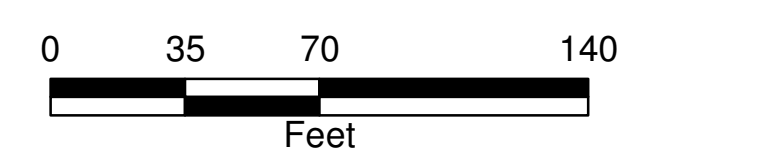
- SUPPLEMENTAL RI SAMPLE
 - SOIL BORING
 - SURFACE SOIL
 - SURFACE WATER/SEDIMENT
- HISTORIC SAMPLE TYPE
 - MONITORING WELL
 - LAGOON BORING
 - SOIL BORING
 - SURFACE SOIL
 - SURFACE WATER/ SEDIMENT
 - SOIL VAPOR
- APPROXIMATE LOCATION OF UNDERGROUND ELECTRIC TUNNEL
- ABANDONED TANK CRADLES
- FIRE POND
- RAILROAD
- LAGOON/ DRAINAGE DITCH
- BUILDINGS
- PAVEMENT/ DRIVEWAY
- FENCE LINE
- SITE BOUNDARY (36.7 AC)
- LIMITS OF WETLAND EVALUATION (8.65 ac)
- APPROXIMATE LOCATION OF "AREA C" - PETROLEUM BASED PRODUCT OBSERVED
- APPROXIMATE LOCATION OF PHASE I EXCAVATION AREA
- APPROXIMATE LOCATION OF "AREAS A & B" - PETROLEUM IMPACTED SOIL INVESTIGATION AREAS (1994-1995)

Location	Sample Date	Sample ID	Sample Type Code	Start Depth (ft bgs)	End Depth (ft bgs)	Chemical	RESULTS IN mg/kg
SS-01	4/17/2014	SS-01-041714	N	0	2	Benzene	0.33 U
SS-01	4/17/2014	SS-01-041714	N	0	2	Benzene	0.33 U
SS-01	4/17/2014	SS-01-041714	N	0	2	Chrysene	0.33 U
SS-01	4/17/2014	SS-01-041714	N	0	2	Dibenz[a,h]anthracene	0.33 U
SS-01	4/17/2014	SS-01-041714	N	0	2	Fluorene	0.33 U
SS-01	4/17/2014	SS-01-041714	N	0	2	Indeno[1,2,3-cd]pyrene	0.33 U
SS-01	4/17/2014	SS-01-041714	N	0	2	Pyrene	0.33 U

COUNTY OF ORLEANS IDA
TOWN OF RIDGEWAY
ORLEANS COUNTY, NEW YORK

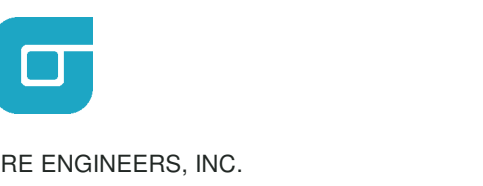
**SUPPLEMENTAL REMEDIAL INVESTIGATION REPORT
FORMER ABEX CORPORATION
FOUNDRY**

**REMEDIAL INVESTIGATION
SURFACE SOIL SVOCs RESULTS**



14052.43045
AUGUST 2016

Figure modified by NYSDEC July 2017



Source: Esri, DigitalGlobe, GeoEye, Earthstar (Google Earth), Air Photo Images, USDA, USGS, GEBCO, DEMNAS, AeroGRID, IGN, SRTM3, and the GIS User Community

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NOTES:
 1. LOCATIONS OF BUILDING AND ROAD EXPANSIONS ARE APPROXIMATE. SOURCE: EXHIBIT 1, PROPOSED BUILDING ADDITION, UNDATED, BME ASSOCIATES.
 2. SAMPLE LOCATIONS WERE SURVEYED BY LARSEN ENGINEERS, HOFFMAN LAND SURVEYING AND GEOMATICS, AND O'BRIEN & GERE.
 3. SOIL BORINGS SB-104, SB-105, SB-121 THROUGH SB-127, AND SB-129 INDICATE PRESENCE OF FOUNDRY SAND.
 4. DELINEATED WETLANDS ARE APPROXIMATE AND BASED ON "FEDERAL WETLAND DELINEATION REPORT FOR ORLEANS COUNTY EDA BRUNNER INTERNATIONAL, INC. PROPERTY," PREPARED BY BME ASSOCIATES, OCTOBER 2013.
 5. CONSTRUCTED WETLAND IS BASED ON DOCUMENTS PROVIDED BY BME ASSOCIATES, JULY 2015.

Chemical	Part 375 Unrestricted ¹	CP-51 Residential ²	Part 375 Industrial ³	CP-51 Industrial ⁴	Part 375 Protection of Groundwater ⁵	CP-51 Protection of Groundwater ⁶
2-Methylnaphthalene	NC	0.41	NC	NC	NC	36.4
2-Methylphenol	0.33	NC	1000	NC	0.33	NC
Benzo[a]anthracene	1	NC	11	NC	1	NC
Benzo[a]pyrene	1	NC	1.1	NC	22	NC
Benzo[b]fluoranthene	1	NC	110	NC	1.7	NC
Chrysene	1	NC	110	NC	1	NC
Dibenz[a,h]Anthracene	0.33	NC	1.1	NC	1000	NC
Indeno[1,2,3-cd]pyrene	0.5	NC	11	NC	8.2	NC



LEGEND

SUPPLEMENTAL RI SAMPLE

- ▲ SOIL BORING
- ★ SURFACE SOIL
- ✦ SURFACE WATER/SEDIMENT

HISTORIC SAMPLE TYPE

- ✦ MONITORING WELL
- ★ LAGOON BORING
- ▲ SOIL BORING
- ★ SURFACE SOIL
- ✦ SURFACE WATER/ SEDIMENT
- SOIL VAPOR

--- APPROXIMATE LOCATION OF UNDERGROUND ELECTRIC TUNNEL

--- ABANDONED TANK CRADLES

--- FIRE POND

--- RAILROAD

--- LAGOON/ DRAINAGE DITCH

--- BUILDINGS

--- PAVEMENT/ DRIVEWAY

--- FENCE LINE

□ SITE BOUNDARY (36.7 AC)

□ LIMITS OF WETLAND EVALUATION (8.65 ac)

Location	SB-151
Sample Date	7/14/2015
Sample ID	SB-151-01455_4-6
Sample Type Code	N
Start Depth (ft bgs)	6
End Depth (ft bgs)	6
Chemical	10
Benzo[a]anthracene	22.28
Benzo[a]pyrene	18.3
Benzo[b]fluoranthene	15.9
Benzo[k]fluoranthene	16.9
Chrysene	12.9
Dibenz[a,h]anthracene	3.8
Fluoranthene	10.1
Indeno[1,2,3-cd]pyrene	12.1
Pyrene	9.8

Exceeds Part 375 Unrestricted and Protection of Groundwater SCOs

Exceeds Part 375 Unrestricted, Industrial and Protection of Groundwater SCOs

Exceeds Part 375 Unrestricted and Industrial SCOs

Exceeds Part 375 Unrestricted SCOs

COUNTY OF ORLEANS IDA
 TOWN OF RIDGEWAY,
 ORLEANS COUNTY, NEW YORK

SUPPLEMENTAL REMEDIAL
 INVESTIGATION REPORT
 FORMER ABEX CORPORATION
 FOUNDRY

REMEDIAL INVESTIGATION
 SUB-SURFACE SOIL
 SVOCs RESULTS

0 150 300 450
 Feet

0 35 70 140
 Feet

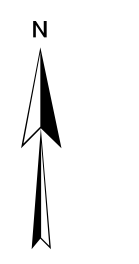
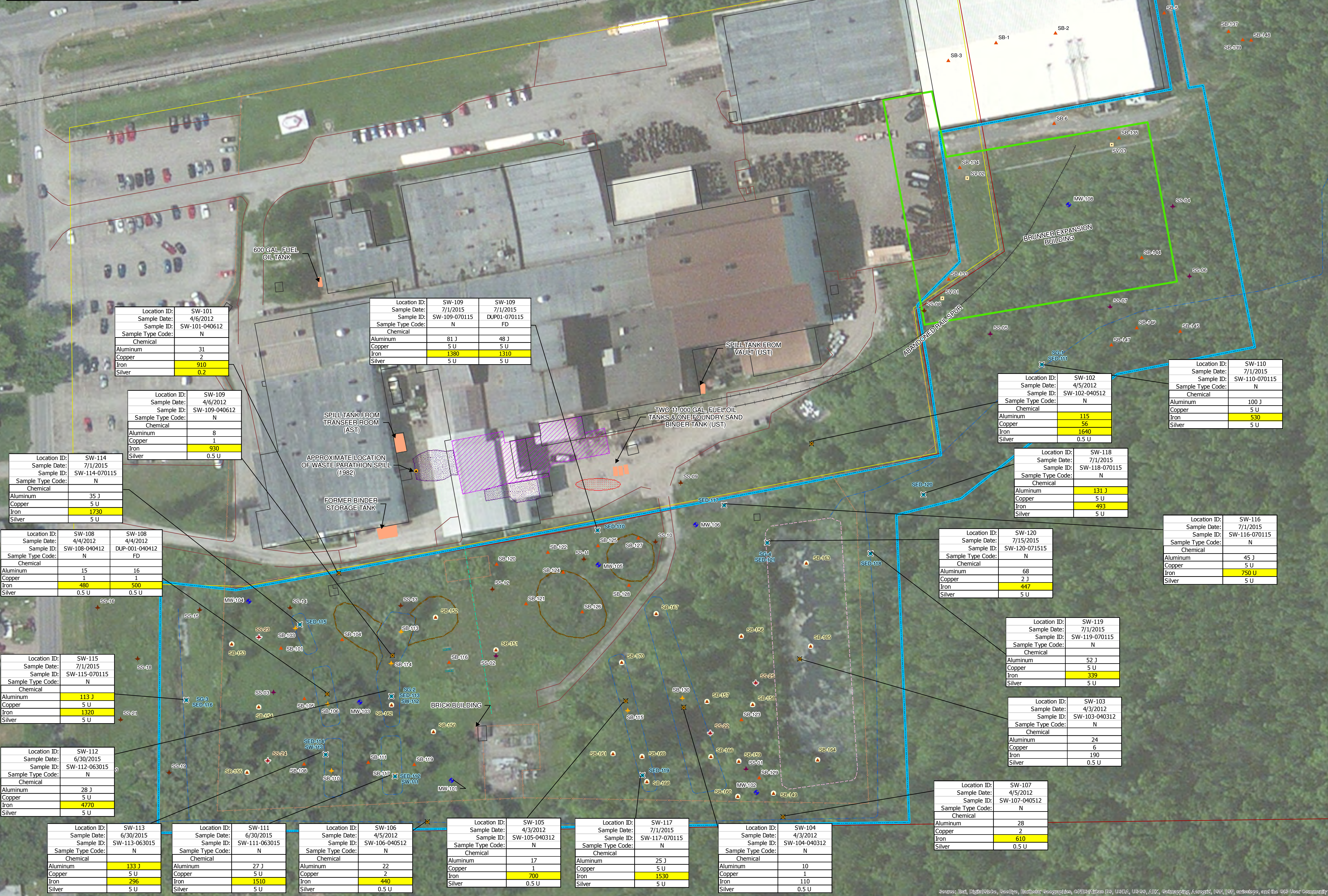
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 AUGUST 2016
 Figure modified by NYSDEC July 2017



PLOT DATE: 08/07/16 2:50:46 PM Gardname
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NYS DEC TOGS (1.1.1), Class C Standards and Guidance Values, Revised June 2004

Chemical	CLASS C ¹
Aluminum	100
Copper	29
Iron	300
Silver	0.1



LEGEND

- SUPPLEMENTAL RI SAMPLE**
- ▲ SOIL BORING
- ✦ SURFACE SOIL
- ✦ SURFACE WATER/SEDIMENT
- HISTORIC SAMPLE TYPE**
- ✦ MONITORING WELL
- ✦ LAGOON BORING
- ▲ SOIL BORING
- ✦ SURFACE SOIL
- ✦ SURFACE WATER/ SEDIMENT
- ✦ SOIL VAPOR
- APPROXIMATE LOCATION OF UNDERGROUND ELECTRIC TUNNEL
- ABANDONED TANK CRADLES
- FIRE POND
- RAILROAD
- LAGOON/ DRAINAGE DITCH
- BUILDINGS
- PAVEMENT/ DRIVEWAY
- FENCE LINE
- SITE BOUNDARY (36.7 AC)
- LIMITS OF WETLAND EVALUATION (8.65 ac)
- APPROXIMATE LOCATION OF "AREA C" - PETROLEUM BASED PRODUCT OBSERVED (1993-1996)
- APPROXIMATE LOCATION OF PHASE I EXCAVATION AREA
- APPROXIMATE LOCATION OF "AREAS A & B" - PETROLEUM IMPACTED SOIL INVESTIGATION AREAS (1994-1995)

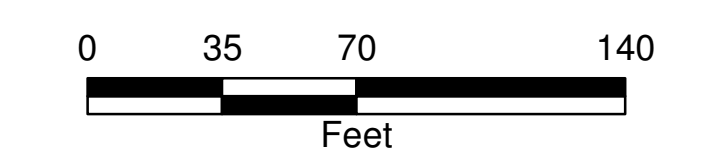
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Sample Date:	7/1/2015
Sample ID:	SW-110-070115
Sample Type Code:	N
Chemical	
Aluminum	100 J
Copper	5 U
Iron	530
Silver	0.5 U

EXCEEDS STANDARD/
GUIDANCE VALUE.
RESULTS IN ug/L.

COUNTY OF ORLEANS IDA
TOWN OF RIDGEWAY
ORLEANS COUNTY, NEW YORK

SUPPLEMENTAL REMEDIAL
INVESTIGATION REPORT
FORMER ABEX CORPORATION
FOUNDRY

**REMEDIAL INVESTIGATION
SURFACE WATER INORGANICS
RESULTS**



14052.43045
AUGUST 2016

Figure modified by NYSDEC July 2017

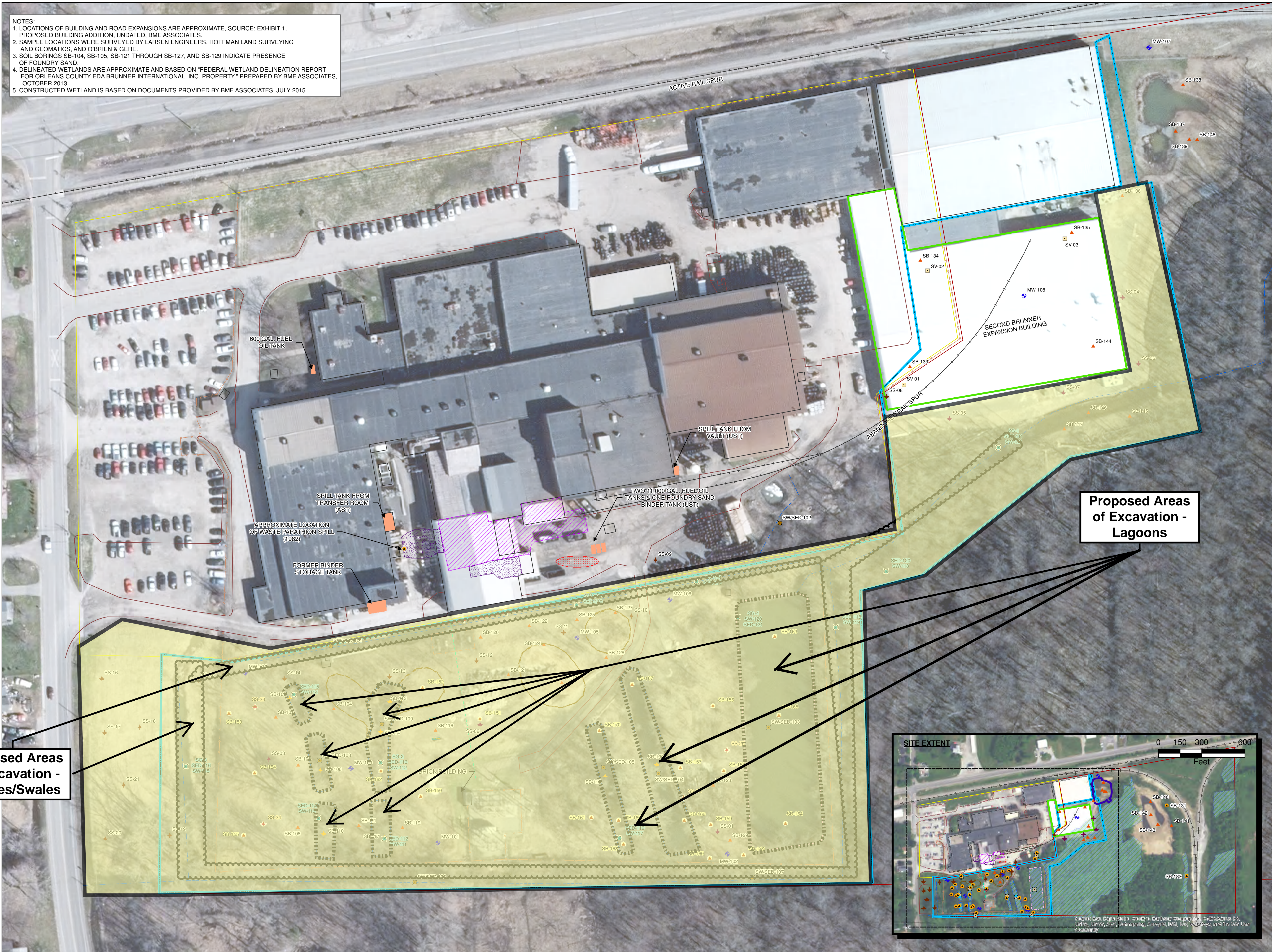


O'BRIEN & GERE ENGINEERS, INC.

PLOTDATE: 09/05/16 8:16:25 AM GardHome
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NOTES:

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LEGEND

- SUPPLEMENTAL RI SAMPLE**
- ▲ SOIL BORING
 - ✦ SURFACE SOIL
 - ✕ SURFACE WATER/SEDIMENT
- HISTORIC SAMPLE TYPE**
- ◆ MONITORING WELL
 - ★ LAGOON BORING
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 - APPROXIMATE LOCATION OF UNDERGROUND ELECTRIC TUNNEL
 - ABANDONED TANK CRADLES
 - FIRE POND
 - RAILROAD
 - APPROXIMATE LAGOON/ DRAINAGE DITCH
 - BUILDINGS
 - PAVEMENT/ DRIVEWAY
 - FENCE LINE
 - SITE BOUNDARY (36.7 AC)
 - LIMITS OF WETLAND EVALUATION (8.65 ac)
 - APPROX. PROPOSED SECOND BUILDING EXPANSION

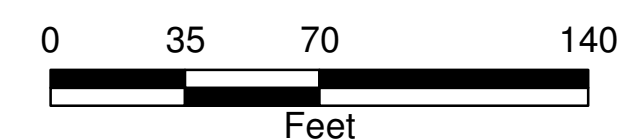
Remedial Alternative #3:

Proposed Cover System

COUNTY OF ORLEANS
TOWN OF RIDGEWAY,
ORLEANS COUNTY, NEW YORK

PROPOSED REMEDIAL ACTION PLAN
FORMER ABEX CORPORATION
FOUNDRY

Remedial
Alternative #3



14052.43045
AUGUST 2016

Figure Modified by NYSDEC June 2017
All locations are approximate.



O'BRIEN & GERE ENGINEERS, INC.

Proposed Areas of Excavation - Ditches/Swales

Proposed Areas of Excavation - Lagoons



APPENDIX A

Responsiveness Summary

RESPONSIVENESS SUMMARY

**Undeveloped Portion-Former Abex Mfg. Facility
Environmental Restoration Project
Town of Shelby, Orleans County, New York
Site No. E837015**

The Proposed Remedial Action Plan (PRAP) for the Undeveloped Portion-Former Abex Mfg. Facility site was prepared by the New York State Department of Environmental Conservation (the Department) in consultation with the New York State Department of Health (NYSDOH) and was issued to the document repositories on February 1, 2018. The PRAP outlined the remedial measure proposed for the contaminated soil, surface water, and groundwater at the Undeveloped Portion-Former Abex Mfg. Facility site.

The release of the PRAP was announced by sending a notice to the public contact list, informing the public of the opportunity to comment on the proposed remedy.

A public meeting was held on February 21, 2018, which included a presentation of the remedial investigation and alternative analysis for the Undeveloped Portion-Former Abex Mfg. Facility as well as a discussion of the proposed remedy. The meeting provided an opportunity for citizens to discuss their concerns, ask questions and comment on the proposed remedy. These comments have become part of the Administrative Record for this site. The public comment period for the PRAP ended on March 19, 2018.

This responsiveness summary responds to all questions and comments raised during the public comment period. The following are the comments received, with the Department's responses:

COMMENT 1:

Regarding a slide in the presentation concerning the use of recycled concrete as cover, compared to other cover options such as asphalt and crusher run, can you please elaborate.

RESPONSE 1:

Recycled concrete was offered as an example, to show that haul costs would be less expensive and that there are alternatives to virgin material (e.g., crusher run).

COMMENT 2:

Regarding the other parts of the site, in particular the large wooded land parcel within the site boundaries, that were not included in the Proposed Remedial Action Plan, please explain why no cleanup is planned.

RESPONSE 2:

Based on the site investigation and review of historical aerial photographs, there was no history of industrial use in those areas. Thus, sampling was limited to the areas of known/documented activity.

COMMENT 3:

The Orleans County IDA representative asked if the other areas of the parcel can be subdivided off.

RESPONSE 3:

Under the ERP, the areas where remedial action is needed have been delineated. If the site continued in the ERP, these areas will require cleanup prior to reuse. Other areas of the site would be eligible for subdivision and/or redevelopment, though subject to the terms of the environmental easement. Whereas if an applicant applied for a portion of the site for acceptance into the Brownfield Cleanup Program (BCP), the State would be amendable to allow the site to be subdivided. The subdivided area(s) would then proceed with the implementation of the remedy as defined in the ROD, and site redevelopment under the Brownfield Cleanup Program.

COMMENT 4:

Was the excavation limited to the lagoons and drainage areas?

RESPONSE 4:

Yes, based on the investigation data collected to date, the main/source areas of the site that require excavation are limited to the lagoon and drainage areas. If during remedy implementation it appears that the extent of the source area contamination extends beyond the current proposed limits of excavation, then the excavation limits will be adjusted to address the source area contamination, as needed.

COMMENT 5:

Does the state have any plans for the development of the site?

RESPONSE 5:

No. The State, through the Environmental Restoration Program, has awarded a grant to the County for investigation and now issued a cleanup plan. Once remediated, the property owner will be able to redevelop the site pursuant to applicable land use restrictions, local zoning and local approvals.

COMMENT 6:

Will the State cleanup the site?

RESPONSE 6:

This site does not raise to the level to be listed as a state superfund site. The site, however, will be eligible to apply for additional ERP monies. Alternatively, a developer, if interested, could pursue cleanup (i.e., implementation of the ROD) through the State's Brownfield Cleanup Program.

COMMENT 7:

What does ERP stand for?

RESPONSE 7:

ERP is an abbreviation for the State's Environmental Restoration Program.

APPENDIX B

Administrative Record

Administrative Record

**Undeveloped Portion-Former Abex Mfg. Facility
Environmental Restoration Project
Town of Shelby, Orleans County, New York
Site No. E837015**

1. *Proposed Remedial Action Plan for the Undeveloped Portion – Former Abex Mfg. Facility site*, dated February 2018 prepared by the Department.
2. The Department and the County of Orleans Industrial Development Agency entered into a State Assistance Contract, Contract No. C303754, September 18, 2007.
3. Remedial Investigation Report, dated September 2016, prepared by O'Brien & Gere Engineers, Inc.
4. Summary of Soil Vapor Intrusion Investigation and Associated Tables and Figures, E-mail, dated March 15, 2017, prepared by O'Brien & Gere Engineers, Inc.