DECISION DOCUMENT

Olean Redevelopment Parcel 3
Brownfield Cleanup Program
Olean, Cattaraugus County
Site No. C905033
January 2014

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

DECLARATION STATEMENT - DECISION DOCUMENT

Olean Redevelopment Parcel 3
Brownfield Cleanup Program
Olean, Cattaraugus County
Site No. C905033
January 2014

Statement of Purpose and Basis

This document presents the remedy for the Olean Redevelopment Parcel 3 site, a brownfield cleanup 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 Olean Redevelopment Parcel 3 site and the public's input to the proposed remedy presented by the Department.

Description of Selected Remedy

The elements of the selected remedy are as follows:

1. Remedial Design
A remedial design program will be implemented to provide the details necessary for the construction, operation, optimization, maintenance, and monitoring of the remedial program. Green remediation principles and techniques will be implemented to the extent feasible in the design, implementation, and site management of the remedy as per DER-31. The major green remediation components are as follows;

- Considering the environmental impacts of treatment technologies and remedy stewardship over the long term;
- Reducing direct and indirect greenhouse gases and other emissions;
- Increasing energy efficiency and minimizing use of non-renewable energy;
- Conserving and efficiently managing resources and materials;
- Reducing waste, increasing recycling and increasing reuse of materials which would otherwise be considered a waste;
- Maximizing habitat value and creating habitat when possible;
- Fostering green and healthy communities and working landscapes which balance ecological, economic and social goals; and
- Integrating the remedy with the end use where possible and encouraging green and sustainable re-development.

2. Pipe Removal - Removal of an estimated 44,000 linear feet of abandoned subsurface product piping. Based on field conditions a limited amount of piping may be cleaned and capped in-

place. The piping will be cleaned and capped or recycled off-site; all pipe contents will be containerized, characterized, and disposed/recycled off-site.

3. Excavation - Excavation and off-site disposal of contaminant source areas, including:

- areas of concentrated solid or semi-solid hazardous substances including soil with arsenic concentrations exceeding 90 mg/kg.

Approximately 1,340 cubic yards of soil will be removed from the site.

On-site soil, which does not exceed site specific SCOs, may be used to backfill the excavation to the extent that a sufficient volume of on-site soil is available to establish the designed grades at the site below the cover system described in remedy element 8 below.

Clean fill meeting the requirements of 6 NYCRR Part 375-6.7(d) may be brought in to replace the excavated soil or complete the backfilling of the excavation, as needed to 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 8 below. Soil derived from the re-grading may be used to backfill the excavation.

4. In-Situ Stabilization - In-situ solidification/stabilization is a process that uses a solidifying or stabilizing agent to bind the soil particles in place creating a low permeability mass. The contaminated soil is mixed in place with a solidifying and stabilizing agent (portland cement). Typically, the soil and binding agent are mixed by augers to produce a solidified mass resulting in a low permeable monolith. The solidified mass would then be covered with a soil cover to prevent direct exposure to the solidified mass. The resulting solid matrix reduces or eliminates mobility of contamination and reduces or eliminates the matrix as a source of groundwater contamination.

In-situ stabilization of an estimated 4,200 cubic yards of hazardous lead-impacted soil/fill with approximately 5% portland cement by weight (in dry form).

Additional hazardous lead delineation will be completed as part of the final remedy.

5. In-Situ Soil Vapor Extraction - In-Situ soil vapor extraction (SVE) will be implemented to remove VOCs and SVOCs from the subsurface to treat subsurface grossly contaminated soil, as defined in 6 NYCRR Part 375-1.2(u). VOCs and a portion of SVOCs will be physically removed from the soil by applying a vacuum to wells that have been installed into the vadose zone (the area below the ground but above the water table). The vacuum draws air through the soil matrix which carries the VOCs and SVOCs from the soil to the SVE well. The air extracted from the SVE wells will be treated by passing the air stream through a biofilter to remove nuisance odors prior to it being discharged to the atmosphere.

An area of approximately 482,610 square feet (11 acres) of grossly contaminated soil will be treated at depths ranging from 2 to 15 feet below ground surface.

6. Forced Vent Bio Piles - Forced Vent Bio Piles (FVBPs) will be used to remove petroleum related VOCs and SVOCs from grossly contaminated soil, as defined in 6 NYCRR Part 375-1.2(u), located near surface, adjacent to subsurface piping and in planned utility corridors. Grossly contaminated soil will be excavated and placed in rows on pads for on-site treatment. VOCs, and a portion of SVOCs, will be physically removed from the soil by applying a vacuum to pipes placed below the soil piles. The vacuum draws air through the soil matrix which carries the VOCs and SVOCs from the soil to the pipe. The air flow also stimulates aerobic degradation of the contaminants within the soil. The air extracted from the FVBPs will be treated by passing the air stream through a biofilter to remove nuisance odors prior to it being discharged to the atmosphere.

Approximately 11,000 to 15,000 cubic yards of grossly contaminated soil will be treated in the FVBPs.

7. Utility Corridor Installation - Excavation of a clean utility corridor to lay utilities for future development.

8. Cover System - A site cover will be required to allow for commercial use of the site. The cover will consist either of structures such as buildings, pavement, sidewalks comprising the site development or a soil cover in areas where the upper one foot of exposed surface soil will exceed the applicable soil cleanup objectives (SCOs). Where the soil cover is required it will be a minimum of one foot of soil, meeting the SCOs for cover material as set forth in 6 NYCRR Part 375-6.7(d) for commercial use. The soil cover will be placed over a demarcation layer, with the upper six inches of the soil of sufficient quality to maintain a vegetation layer. Any fill material brought to the site will meet the requirements for the identified site use as set forth in 6 NYCRR Part 375-6.7(d).

9. Institutional Control - Imposition of an institutional control in the form of an environmental easement for the controlled property that:

- requires 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);
- allows the use and development of the controlled property for commercial and industrial uses as defined by Part 375-1.8(g), although land use is subject to local zoning laws;
- restricts the use of groundwater as a source of potable or process water, without necessary water quality treatment as determined by the NYSDOH or County DOH; and
- requires compliance with the Department approved Site Management Plan.

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

a. 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 discussed in remedy element 9 above.

Engineering Controls: The SVE system discussed in remedial element 5 above, the soil cover

discussed in remedy element 8 above and the LNAPL recovery systems discussed in remedial element 10(d) below.

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;
- descriptions of the provisions of the environmental easement including any land use, and/or groundwater and/or surface water use restrictions;
- a provision for evaluation of the potential for soil vapor for any buildings developed on the site, including provision for implementing actions recommended to address exposures related to soil vapor intrusion;
- 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.

b. a Monitoring Plan to assess the performance and effectiveness of the remedy. The plan includes, but may not be limited to:

- monitoring of groundwater to assess the performance and effectiveness of the remedy;
- a schedule of monitoring and frequency of submittals to the Department; and
- monitoring for vapor intrusion for any buildings developed on the site, as may be required by the Institutional and Engineering Control Plan discussed above.

c. an Operation and Maintenance (O&M) Plan to ensure continued operation, maintenance, optimization, monitoring, inspection, and reporting of any mechanical or physical components of the remedy. The plan includes, but is not limited to:

- compliance monitoring of treatment systems to ensure proper O&M as well as providing the data for any necessary permit or permit equivalent reporting;
- maintaining site access controls and Department notification; and
- providing the Department access to the site and O&M records.

d. LNAPL Recovery - Light Non-Aqueous Phase Liquid (LNAPL) (i.e., petroleum product), will be recovered from all wells containing measurable quantities of LNAPL using high vacuum extraction, dual phase extraction, passive skimmers and/or sorbent socks. Additional recovery wells will be added as necessary to effectively remove LNAPL.

e. The operation of the components of the remedy will continue until the remedial objectives have been achieved or until the Department determines that continued operation is technically impracticable or not feasible.

Declaration

The remedy conforms with promulgated standards and criteria that are directly applicable, or that are relevant and appropriate and takes into consideration Department guidance, as appropriate. The remedy is protective of public health and the environment.

1/6/2014

Michael J Cruden

Digitally signed by Michael J Cruden
DN: cn=Michael J Cruden, o=DER, ou=RBE, email=mjcruden@gw.dec.state.ny.us, c=US
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Date

Michael Cruden, Director
Remedial Bureau E

DECISION DOCUMENT

Olean Redevelopment Parcel 3
Olean, Cattaraugus County
Site No. C905033
January 2014

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 New York State Brownfield Cleanup Program (BCP) is a voluntary program. The goal of the BCP is to enhance private-sector cleanups of brownfields and to reduce development pressure on "greenfields." A brownfield site is real property, the redevelopment or reuse of which may be complicated by the presence or potential presence of a contaminant.

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:

Olean Public Library
Attn: Mr. Lance Chaffee
134 North Second Street
Olean, NY 14760
Phone: 716-372-0200

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 Olean Redevelopment Parcel 3 Site, located at 1404-1406R, and 1420 Buffalo Street, is in an industrial zoned area of the City of Olean. The 24.37 acre site is located just south of I-86. The site is bordered by commercial and industrial properties, including an associated BCP site to the west (Olean Redevelopment Parcel 2 Site), the Dresser Rand Company to the south and Southern Tier Rail Authority freight rail lines to the north and east. The nearest residential area is approximately 150 feet northeast of the site.

Site Features:
The site is currently fenced and vacant with no standing buildings. Concrete foundations and associated concrete pads are visible at and above ground level. An extensive network of abandoned below ground piping exists from historic industrial activities.

Current Zoning and Land Use:
The site is currently inactive and is zoned for industrial use. The site is surrounded by industrial and commercial properties.

Past Use of the Site:
The site and abutting properties were historically home to various oil refineries beginning in the late 19th century. Oil refining, storage and distribution operations were conducted on various portions of the site and surrounding properties until 1954. Following several property transactions, the site was acquired by the Felmont Oil Corporation in 1964. The Felmont Oil Corporation produced ammonia on the subject property which was sold to Agway for fertilizer manufacturing on a neighboring parcel (Olean Redevelopment Parcel 1) to the southwest. Fertilizer manufacture ceased in 1983 and the majority of the property has been vacant since that time.

Past industrial use has contaminated the site with petroleum product, volatile organic compounds, semi-volatile organic compounds and metals.

Site Geology and Hydrogeology:
In general, the site geology consists of a limited layer of topsoil underlain by a layer of fill (ash, slag, coal, bricks, etc.) underlain by an 80 foot thick outwash aquifer which is divided into upper and lower water bearing units. Lenses of silt and clay are scattered throughout the sand and gravel outwash deposits. Depth to bedrock is estimated at 220 to 260 feet below ground surface. Groundwater flow is to the southwest. The water table is approximately 20 feet below ground surface.

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 commercial use (which allows for 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 Remedial Investigation (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 available in the RI Report.

SECTION 5: ENFORCEMENT STATUS

The Applicant(s) under the Brownfield Cleanup Agreement is a/are Volunteer(s). The Applicant(s) does/do not have an obligation to address off-site contamination. The Department has determined that this site poses a significant threat to the environment.

SECTION 6: SITE CONTAMINATION

6.1: Summary of the Remedial Investigation

A remedial investigation (RI) serves as the mechanism for collecting data to:

- characterize site conditions;
- determine the nature of the contamination; and
- assess risk to human health and the environment.

The RI is intended to identify the nature (or type) of contamination which may be present at a site and the extent of that contamination in the environment on the site, or leaving the site. The RI reports on data gathered to determine if the soil, groundwater, soil vapor, indoor air, surface water or sediments may have been contaminated. Monitoring wells are installed to assess groundwater and soil borings or test pits are installed to sample soil and/or waste(s) identified. If other natural resources are present, such as surface water bodies or wetlands, the water and sediment may be sampled as well. Based on the presence of contaminants in soil and groundwater, soil vapor will also be sampled for the presence of contamination. Data collected in the RI influence the development of remedial alternatives. The RI report is available for review in the site document repository and the results are summarized in section 6.3.

The analytical data collected on this site includes data for:

- groundwater
- soil

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. 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 below. Additionally, the RI Report contains a full discussion of the data. The contaminant(s) of concern identified at this site is/are:

ARSENIC	N-PROPYLBENZENE
LEAD	BENZENE
PETROLEUM PRODUCTS	XYLENE (MIXED)
BENZENE	1,3,5-TRIMETHYLBENZENE
1,2,4-TRIMETHYLBENZENE	CHLOROBENZENE
ETHYLBENZENE	1,4-DICHLOROBENZENE
TOLUENE	PAHs

The contaminant(s) of concern exceed the applicable SCGs for:

- groundwater
- 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 Decision Document.

The following IRM(s) has/have been completed at this site based on conditions observed during the RI.

IRM - Tank Removals and Soil Excavation

The initial remedial investigation identified multiple underground storage tanks (USTs) and two areas of soil with significantly elevated metals concentrations for lead, copper, chromium,

selenium and zinc. In 2010, five USTs ranging in size from 500 to 2,000 gallons were removed from the site. Water and sediment within the tanks were disposed off-site. In addition, 672 tons of metals contaminated soil was excavated and disposed in a hazardous waste landfill due to characteristically hazardous concentrations of lead. Post excavation confirmatory samples confirmed concentrations of metals were below commercial SCOs, with the exception of lead. Supplemental investigations identified additional soil exhibiting characteristics of a hazardous waste due to lead. This additional soil will be addressed as part of the final remedy.

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. The RI report presents a detailed discussion of any existing and potential impacts from the site to fish and wildlife receptors.

Nature and Extent of Contamination:

Based upon the investigations to date, the primary contaminants of concern at the site are petroleum product, volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs) and metals.

Soil - SVOC compounds that exceed commercial Soil Cleanup Objectives (SCOs) include benzo(a)anthracene, benzo(a)pyrene, dibenzo(a,h)anthracene, benzo(b)flouranthene, indeno(1,2,3-cd)pyrene, chrysene and benzo(k)fluoranthene. Metals that exceed commercial SCOs include arsenic, mercury, copper, chromium, lead and zinc. A shallow area of lead contaminated soil exceeds the criteria for a characteristic hazardous waste. Areas of grossly contaminated petroleum impacted soil are also present. Off-site migration of contaminants has not significantly impacted off-site soil quality.

Groundwater - Groundwater beneath the site is contaminated with petroleum related VOC and SVOC compounds and metals. VOC compounds that exceed NYS TOGS regulatory values include toluene, sec-butylbenzene, n-propylbenzene, benzene, xylene and 135- and 1,2,4-trimethylbenzene. SVOC compounds that exceed NYS TOGS regulatory values include chrysene, benzo(a)anthracene and benzo(a)pyrene. Metal compounds that exceed regulatory values include chromium and magnesium. Petroleum product was observed floating on the groundwater in multiple monitoring wells at thicknesses ranging from trace levels to 0.6 feet of product. Contaminated groundwater is migrating offsite to the south onto an adjacent industrial property (Dresser Rand). This off-site migration of contaminated groundwater will be address as part of the final remedy for this site.

Soil Vapor and Indoor Air - No soil vapor sampling was completed but due to the nature of contamination at the property, impacts to on-site soil vapor are likely. Migration of site related contamination is not expected to significantly impact soil vapor on the adjacent off-site industrial property (Dresser Rand).

Special Resources Impacted/Threatened:
Drinking water in the area of the site is provided via a municipal treatment facility. The site is located in a predominately commercial/industrial area with no significant impact to fish or wildlife.

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*.

The site is completely fenced, which restricts public access. However, persons who enter the site could contact contaminants in the soil by walking on the site, digging or otherwise disturbing the soil. Contaminated groundwater at the site is not used for drinking or other purposes and the site is served by a public water supply that obtains water from a different source not affected by this contamination. Volatile organic compounds in the groundwater may move into the soil vapor (air spaces within the soil), which in turn 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. Currently there are no buildings on the site. However, the potential exists for the inhalation of site contaminants due to soil vapor intrusion for any future onsite development.

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

- 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.

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: ELEMENTS OF THE SELECTED REMEDY

The alternatives developed for the site and the evaluation of the remedial criteria are presented in the Alternative Analysis. The remedy is selected pursuant to the remedy selection criteria set forth in DER-10, Technical Guidance for Site Investigation and Remediation and 6 NYCRR Part 375.

The selected remedy is a Track 4: Restricted use with site-specific soil cleanup objectives remedy.

The selected remedy is referred to as the Olean Redevelopment Parcel 3 Remediation remedy.

The elements of the selected remedy, as shown in Figure 2, are as follows:

1. Remedial Design

A remedial design program will be implemented to provide the details necessary for the construction, operation, optimization, maintenance, and monitoring of the remedial program. Green remediation principles and techniques will be implemented to the extent feasible in the design, implementation, and site management of the remedy as per DER-31. The major green remediation components are as follows;

- Considering the environmental impacts of treatment technologies and remedy stewardship over the long term;
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- Conserving and efficiently managing resources and materials;
- Reducing waste, increasing recycling and increasing reuse of materials which would otherwise be considered a waste;
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Additional hazardous lead delineation will be completed as part of the final remedy.

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6. Forced Vent Bio Piles - Forced Vent Bio Piles (FVBPs) will be used to remove petroleum related VOCs and SVOCs from grossly contaminated soil, as defined in 6 NYCRR Part 375-

1.2(u), located near surface, adjacent to subsurface piping and in planned utility corridors. Grossly contaminated soil will be excavated and placed in rows on pads for on-site treatment. VOCs, and a portion of SVOCs, will be physically removed from the soil by applying a vacuum to pipes placed below the soil piles. The vacuum draws air through the soil matrix which carries the VOCs and SVOCs from the soil to the pipe. The air flow also stimulates aerobic degradation of the contaminants within the soil. The air extracted from the FVBPs will be treated by passing the air stream through a biofilter to remove nuisance odors prior to it being discharged to the atmosphere.

Approximately 11,000 to 15,000 cubic yards of grossly contaminated soil will be treated in the FVBPs.

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8. Cover System - A site cover will be required to allow for commercial use of the site. The cover will consist either of structures such as buildings, pavement, sidewalks comprising the site development or a soil cover in areas where the upper one foot of exposed surface soil will exceed the applicable soil cleanup objectives (SCOs). Where the soil cover is required it will be a minimum of one foot of soil, meeting the SCOs for cover material as set forth in 6 NYCRR Part 375-6.7(d) for commercial use. The soil cover will be placed over a demarcation layer, with the upper six inches of the soil of sufficient quality to maintain a vegetation layer. Any fill material brought to the site will meet the requirements for the identified site use as set forth in 6 NYCRR Part 375-6.7(d).

9. Institutional Control - Imposition of an institutional control in the form of an environmental easement for the controlled property that:

- requires 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);
- allows the use and development of the controlled property for commercial and industrial uses as defined by Part 375-1.8(g), although land use is subject to local zoning laws;
- restricts the use of groundwater as a source of potable or process water, without necessary water quality treatment as determined by the NYSDOH or County DOH; and
- requires compliance with the Department approved Site Management Plan.

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

a. 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 discussed in remedy element 9 above.

Engineering Controls: The SVE system discussed in remedial element 5 above, the soil cover discussed in remedy element 8 above and the LNAPL recovery systems discussed in remedial element 10(d) below.

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;
- descriptions of the provisions of the environmental easement including any land use, and/or groundwater and/or surface water use restrictions;
- a provision for evaluation of the potential for soil vapor for any buildings developed on the site, including provision for implementing actions recommended to address exposures related to soil vapor intrusion;
- 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.

b. a Monitoring Plan to assess the performance and effectiveness of the remedy. The plan includes, but may not be limited to:

- monitoring of groundwater to assess the performance and effectiveness of the remedy;
- a schedule of monitoring and frequency of submittals to the Department; and
- monitoring for vapor intrusion for any buildings developed on the site, as may be required by the Institutional and Engineering Control Plan discussed above.

c. an Operation and Maintenance (O&M) Plan to ensure continued operation, maintenance, optimization, monitoring, inspection, and reporting of any mechanical or physical components of the remedy. The plan includes, but is not limited to:

- compliance monitoring of treatment systems to ensure proper O&M as well as providing the data for any necessary permit or permit equivalent reporting;
- maintaining site access controls and Department notification; and
- providing the Department access to the site and O&M records.

d. LNAPL Recovery - Light Non-Aqueous Phase Liquid (LNAPL) (i.e., petroleum product), will be recovered from all wells containing measurable quantities of LNAPL using high vacuum extraction, dual phase extraction, passive skimmers and/or sorbent socks. Additional recovery wells will be added as necessary to effectively remove LNAPL.

e. The operation of the components of the remedy will continue until the remedial objectives have been achieved or until the Department determines that continued operation is technically impracticable or not feasible.

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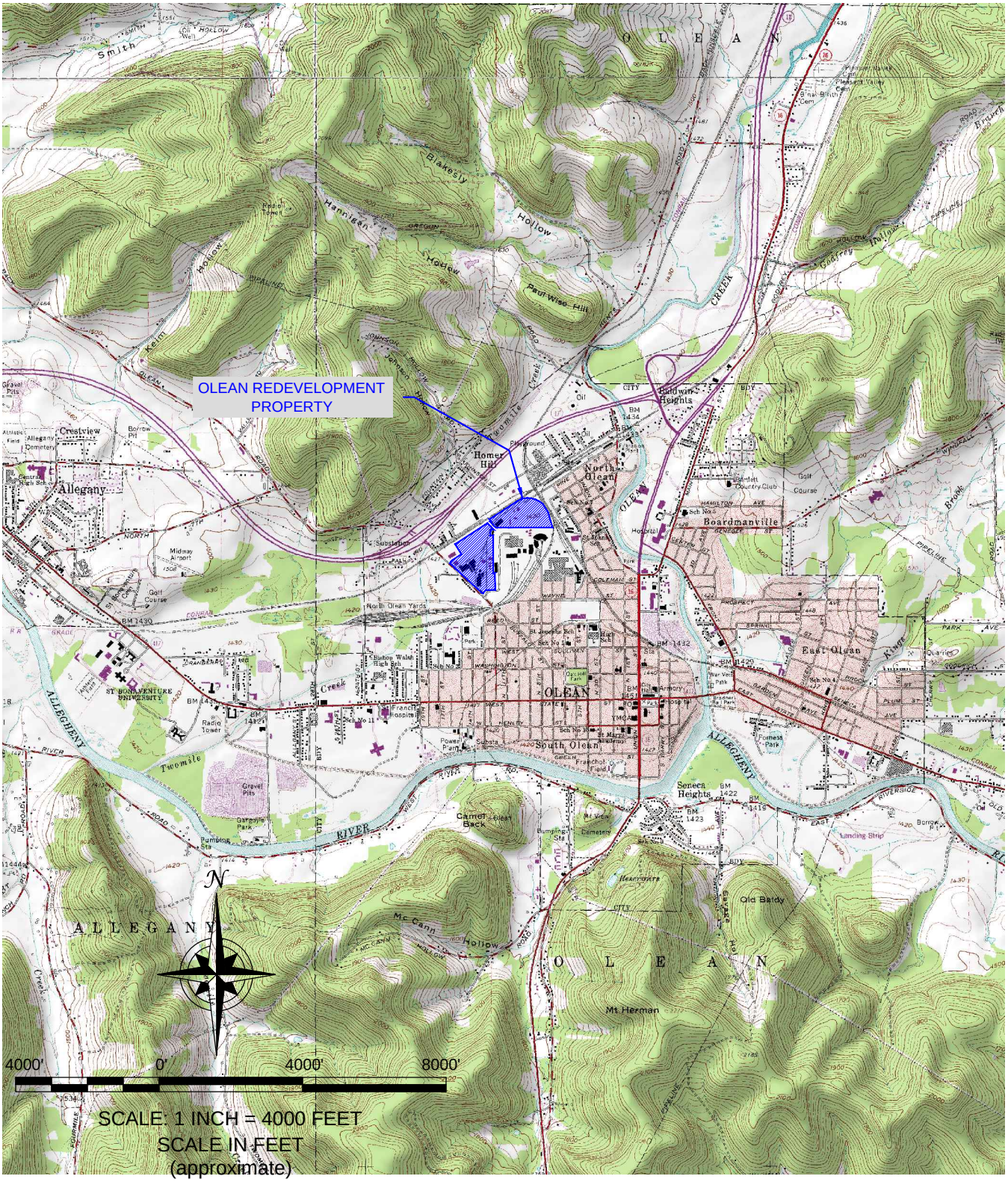
Figure 1: Site Location Map

FIGURE 1-1



TURNKEY ENVIRONMENTAL RESTORATION, LLC
2558 HAMBURG TURNPIKE
SUITE 300
BUFFALO, NY 14218
(716) 856-0635

PROJECT NO.: 0250-012-001

DATE: NOVEMBER 2012

DRAFTED BY: BLR

SITE LOCATION & VICINITY MAP

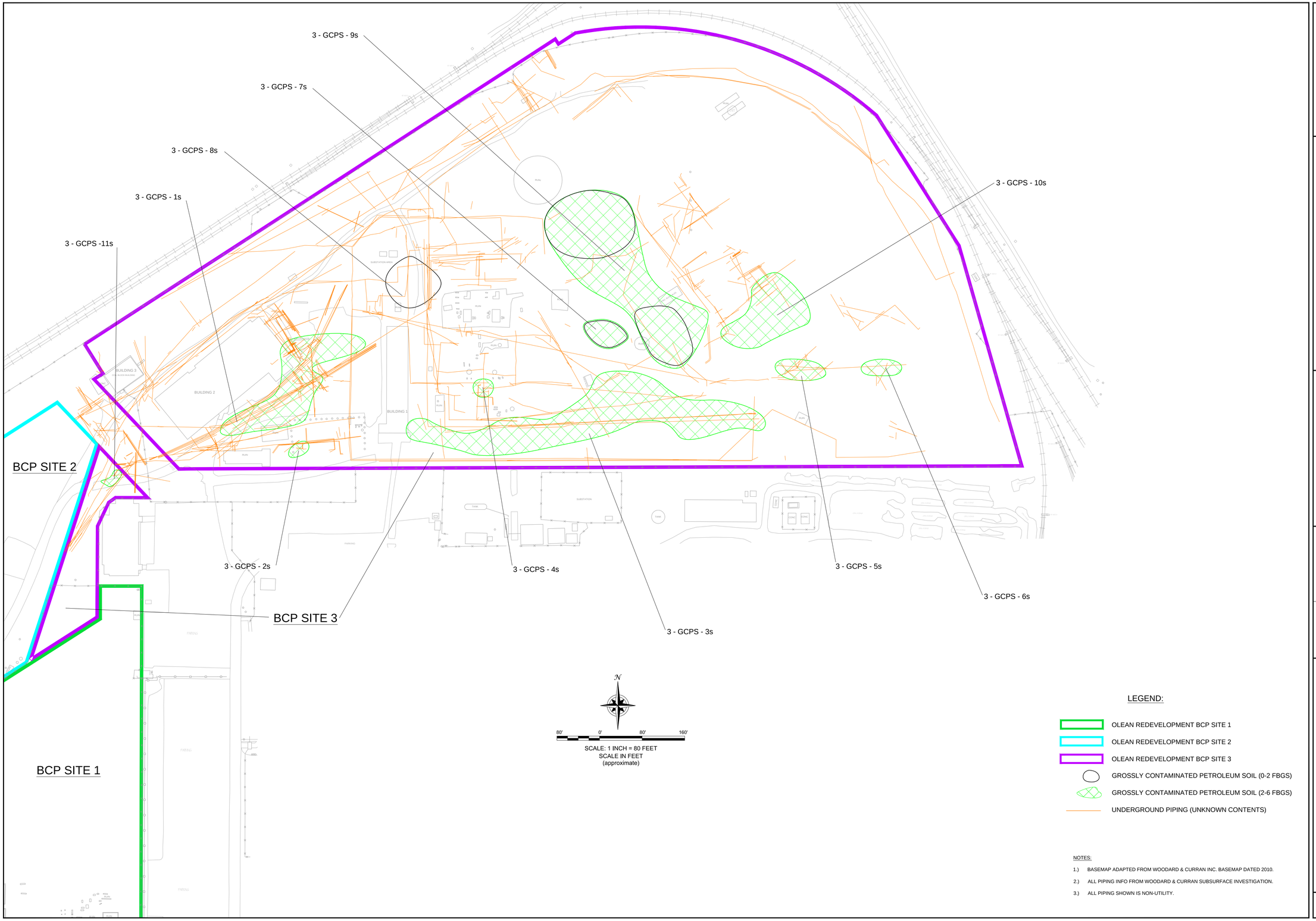
RI/AA REPORT

OLEAN REDEVELOPMENT PROPERTY
OLEAN, NEW YORK
BCP SITE NOs. C905031, C905032, C905033

PREPARED FOR

OLEAN GATEWAY, LLC

Figure 2-a: Elements of the Proposed Remedy for BCP Parcel 3



NOTES:

1.) BASEMAP ADAPTED FROM WOODARD & CURRAN INC. BASEMAP DATED 2010.

2.) ALL PIPING INFO FROM WOODARD & CURRAN SUBSURFACE INVESTIGATION.

3.) ALL PIPING SHOWN IS NON-UTILITY.

TURNKEY ENVIRONMENTAL RESTORATION, LLC
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JOB NO.: 0250-012-001

REVISIONS

NO.	BY	DATE	REMARKS

SEAL

DRAWN BY: BLR
DATE: NOVEMBER 2012
CHECKED BY: CHECKED-BY
APPROVED BY:

SHALLOW GROSSLY CONTAMINATED PETROLEUM SOIL PROXIMATE TO SUBSURFACE PIPING - BCP SITE 3

RI/AA REPORT

OLEAN REDEVELOPMENT PROPERTY

OLEAN, NEW YORK

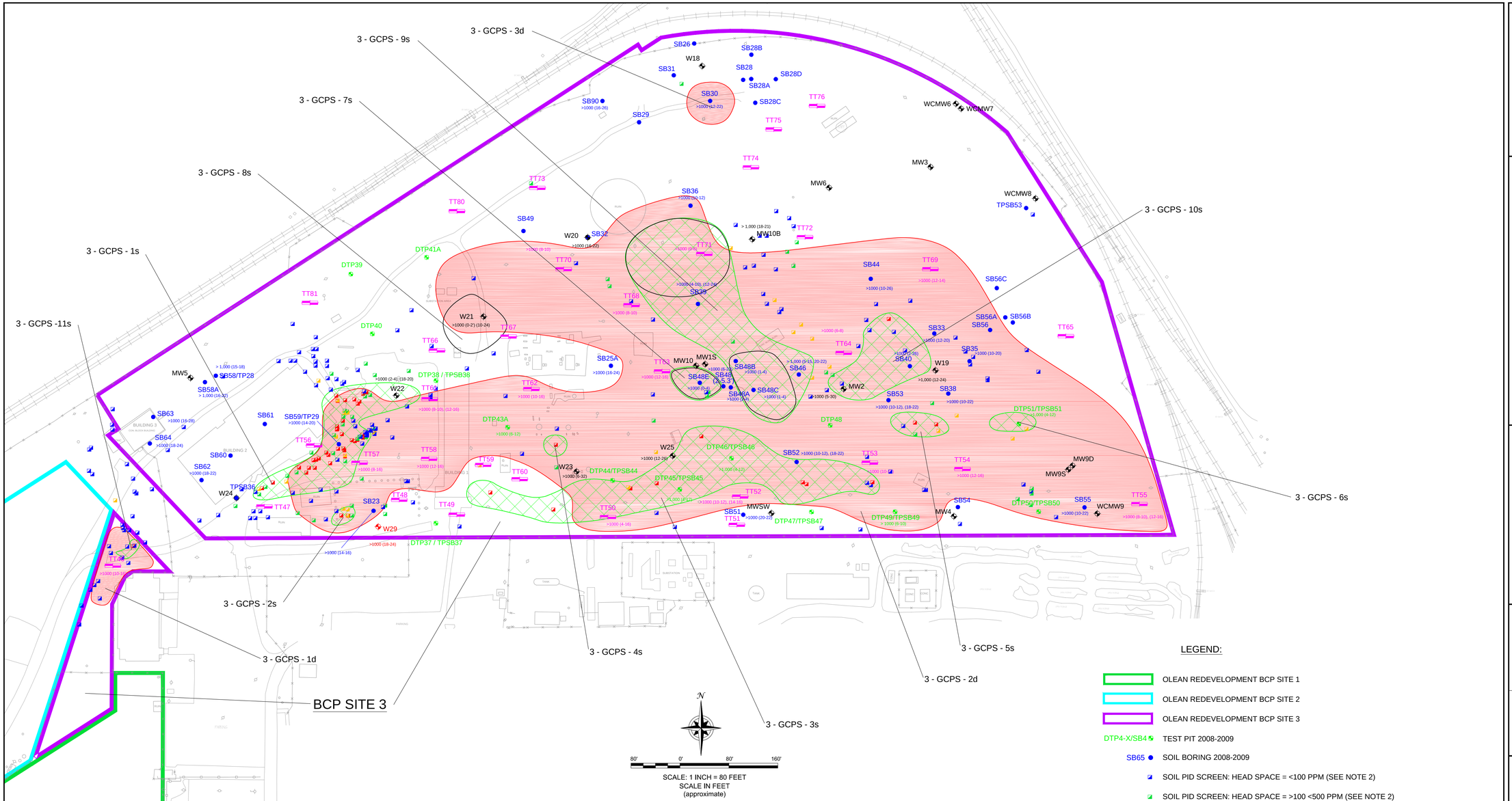
BCP SITE NOs: C905031, C905032, C905033

PREPARED FOR

OLEAN GATEWAY, LLC

FIGURE 4-17

Figure 2-b: Elements of the Proposed Remedy for BCP Parcel 3


3 - GCPS - 9s
3 - GCPS - 3d
3 - GCPS - 7s
3 - GCPS - 8s
3 - GCPS - 1s
3 - GCPS -11s
3 - GCPS - 10s
3 - GCPS - 6s
3 - GCPS - 2s
3 - GCPS - 1d
3 - GCPS - 4s
3 - GCPS - 5s
3 - GCPS - 2d
3 - GCPS - 3s
BCP SITE 3
BCP SITE 1
SB26
SB28B
W18
SB31
SB28
SB28D
SB28A
SB30
SB28C
SB90
SB29
TT76
TT75
WCMW6
WCMW7
TT74
MW3
TT73
MW6
SB36
WCMW8
TPSB53
TT80
SB49
W20
SB37
TT72
MW10B
DTP41A
TT71
TT70
SB44
TT69
SB56C
DTP39
TT81
TT68
SB39
SB56A
SB56B
SB56
W21
TT67
SB33
TT65
DTP40
TT66
SB25A
TT63
MW10
MW1S
SB48B
SB40
SB35
TT64
MW5
SB58/TP28
SB58A
DTP38 / TPSB38
W22
TT62
SB48
SB48E
SB46
W19
MW2
SB53
SB38
SB63
SB61
SB59/TP29
SB46A
SB48C
DTP51/TPSB51
DTP43A
DTP48
SB64
TT56
TT57
TT58
TT59
DTP46/TPSB46
W25
SB52
TT53
TT54
MW9D
MW9S
SB60
SB62
TT60
W23
DTP44/TPSB44
DTP45/TPSB45
TPSB36
W24
TT47
SB23
TT48
TT49
TT52
TT50
SB51
TT51
MW5W
DTP47/TPSB47
DTP49/TPSB49
MW4
SB54
DTP50/TPSB50
SB55
WCMW9
TT55
W29
DTP37 / TPSB37
TT46
TT45
TT44
TT43
TT42
TT41
TT40
TT39
TT38
TT37
TT36
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TT32
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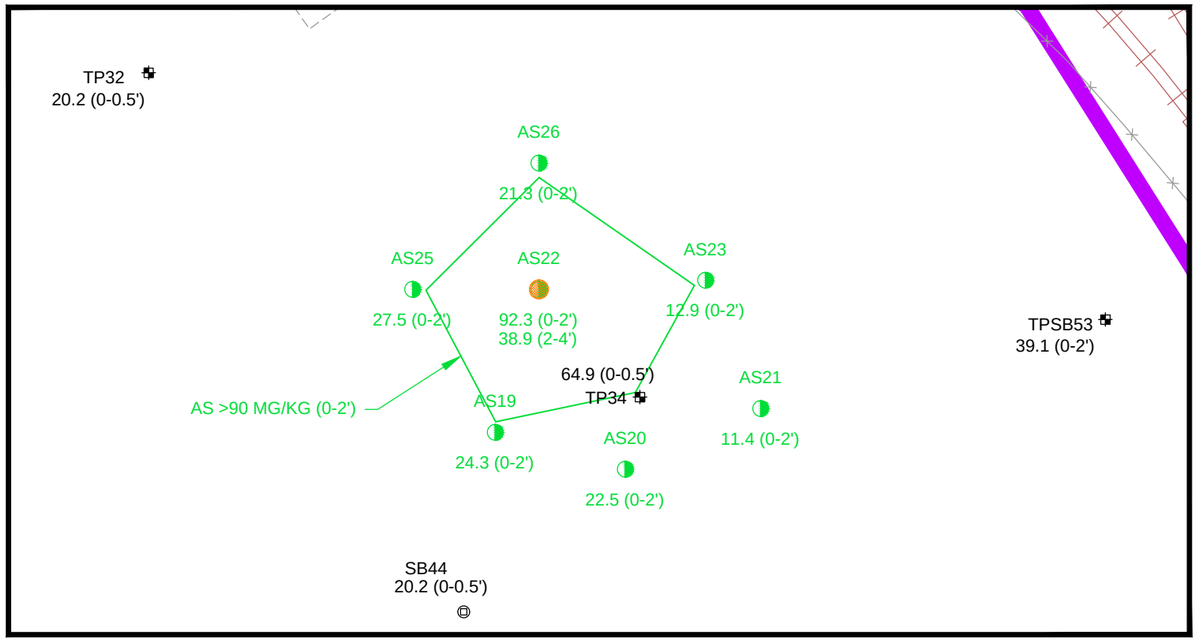
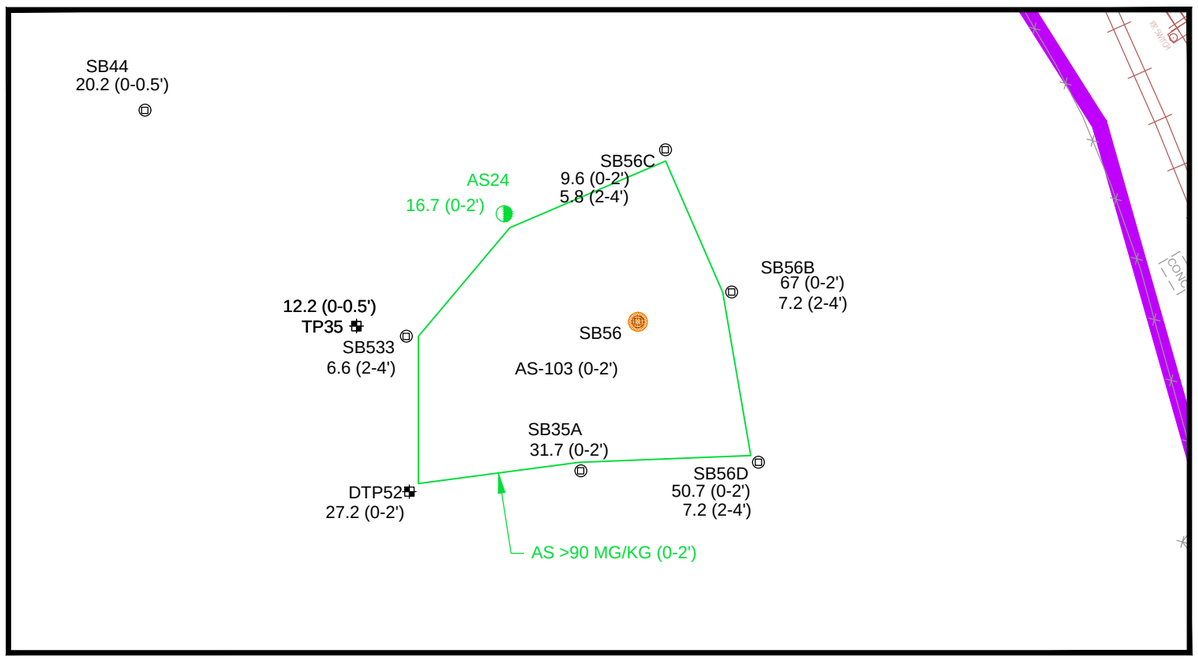
SB105

Figure 2-c: Elements of the Proposed Remedy for BCP Parcel 3

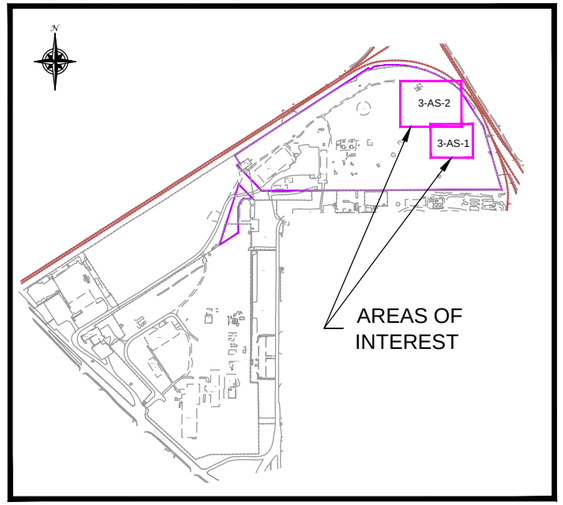
ARSENIC-IMPACTED SOIL/FILL AOC (3-AS-2): Scale 1" = 60 ft.



ARSENIC-IMPACTED SOIL/FILL AOC (3-AS-1): Scale 1" = 60 ft.



SITE PLAN: Scale 1" = 1000 ft.



LEGEND:

- OLEAN REDEVELOPMENT BCP SITE 1
- OLEAN REDEVELOPMENT BCP SITE 2
- OLEAN REDEVELOPMENT BCP SITE 3
- RAILROAD TRACK
- CHAIN LINK FENCE

ANALYTICAL DATA SHOWN IS LIMITED TO THE METAL OF INTEREST
(E.G., ONLY LEAD IS SHOWN IN THE LEAD AREA OF INTEREST)

- TPSB26B 71.6 (0-2') — SAMPLE DESIGNATION FROM RI, METAL CONCENTRATION IN MG/KG AND (SAMPLE DEPTH)
- AS5 31.5 (0-2') — ARSENIC CONCENTRATION MG/KG AND (SAMPLE DEPTH) 2012 SRI
- PB4 1,200 (0-2') — LEAD CONCENTRATION MG/KG AND (SAMPLE DEPTH) 2012 SRI
- AS > 90 MG/KG
- PB > 2,000 MG/KG
- CONTOUR REPRESENTS MAXIMUM EXTENT OF AREA EXCEEDING SSAL

NOTES:

1. BASEMAP ADAPTED FROM WOODARD & CURRAN INC. BASEMAP DATED 2010.
2. IRM MEANS INTERIM REMEDIAL MEASURE CONSISTING OF SOIL/FILL REMOVAL COMPLETED BY WOODARD & CURRAN.
3. FBGS = FEET BELOW GROUND SURFACE.
4. MG/KG = MILLIGRAMS PER KILOGRAM
5. AS = ARSENIC

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TURNKEY ENVIRONMENTAL RESTORATION, LLC

JOB NO.: 0250-012-001

ARSENIC EXCEEDENCES OF SSALs IN NEAR SURFACE SOIL / FILL - BCP SITE 3

RI/AA REPORT

OLEAN REDEVELOPMENT PROPERTY
OLEAN, NEW YORK
BCP SITE NOs. C905031, C905032, C905033

PREPARED FOR
OLEAN GATEWAY, LLC

FIGURE 8-7

DATE: JANUARY 2013
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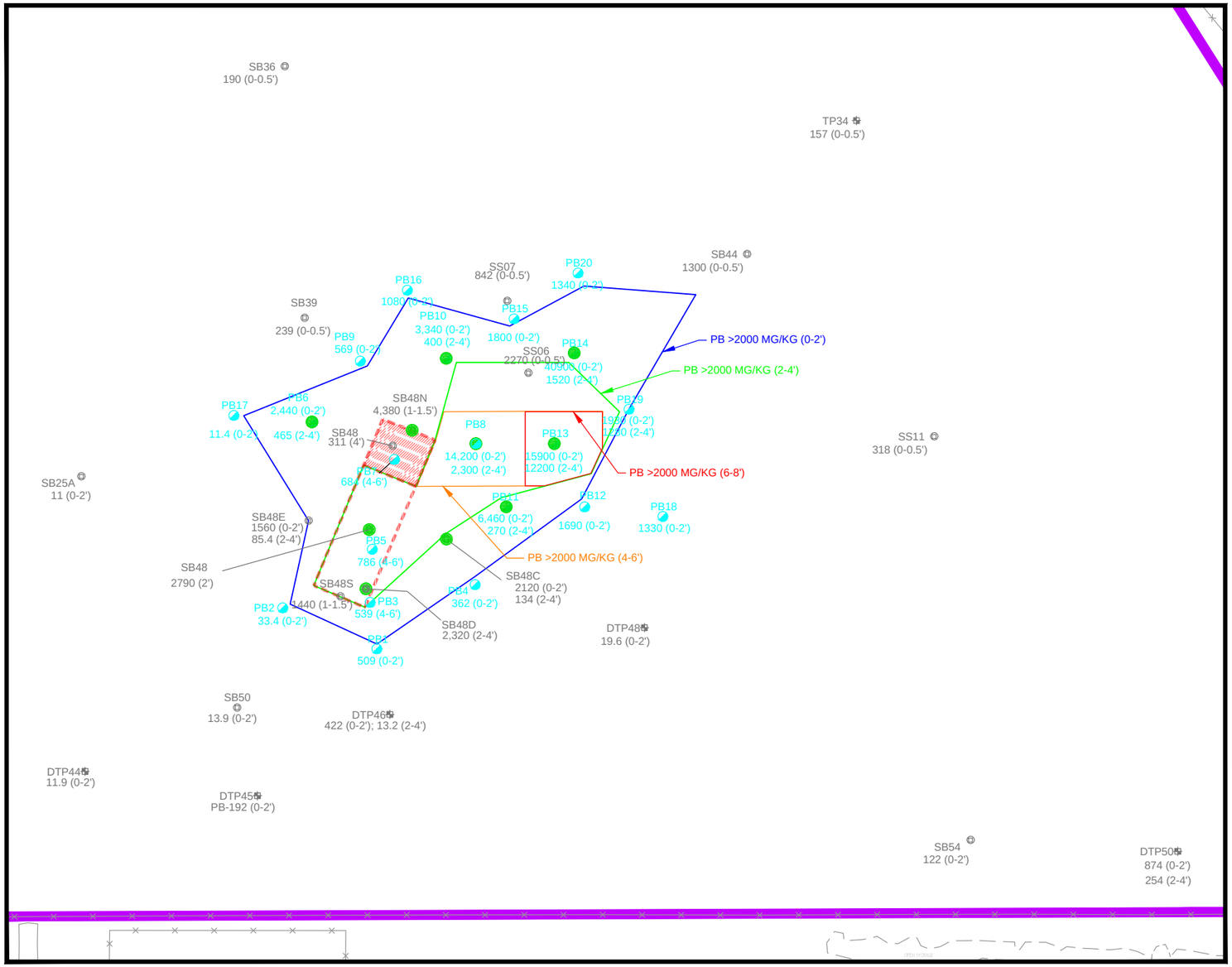
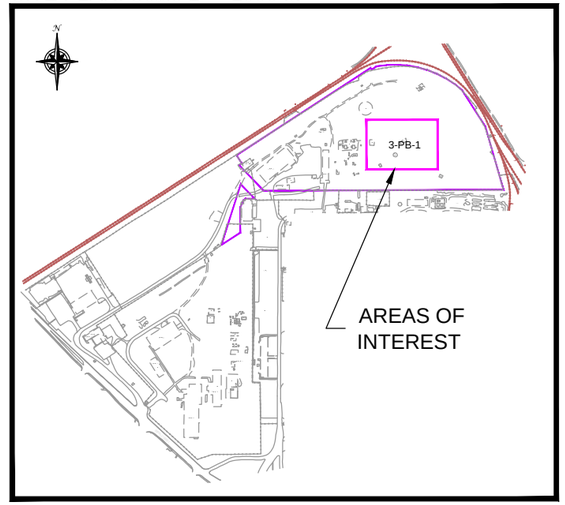
Figure 2-d: Elements of the Proposed Remedy for BCP Parcel 3

LEAD-IMPACTED SOIL/FILL AOC (3-PB-1): Scale 1" =80 ft.



SITE PLAN: Scale 1" = 1000 ft.



LEGEND:

- OLEAN REDEVELOPMENT BCP SITE 1
- OLEAN REDEVELOPMENT BCP SITE 2
- OLEAN REDEVELOPMENT BCP SITE 3
- RAILROAD TRACK
- CHAIN LINK FENCE

ANALYTICAL DATA SHOWN IS LIMITED TO THE METAL OF INTEREST
(E.G., ONLY LEAD IS SHOWN IN THE LEAD AREA OF INTEREST)

- TPSB26B 73.6 (0-2') — SAMPLE DESIGNATION FROM RI, METAL CONCENTRATION IN MG/KG AND (SAMPLE DEPTH)
- PB4 1,200 (0-2') — LEAD CONCENTRATION MG/KG AND (SAMPLE DEPTH) 2012 SRI
- PB > 2,000 MG/KG
- SOIL/FILL IRM AREA EXCAVATION TO 2 FBGS
- SOIL/FILL IRM AREA EXCAVATION TO 4 FBGS
- CONTOUR REPRESENTS MAXIMUM EXTENT OF AREA EXCEEDING SSAL

NOTES:

1. BASEMAP ADAPTED FROM WOODARD & CURRAN INC. BASEMAP DATED 2010.
2. IRM MEANS INTERIM REMEDIAL MEASURE CONSISTING OF SOIL/FILL REMOVAL COMPLETED BY WOODARD & CURRAN.
3. ALL PRE-IRM SAMPLE LOCATIONS THAT WHERE REMOVED DURING IRM ARE NOT SHOWN.
4. FBGS = FEET BELOW GROUND SURFACE.
5. MG/KG = MILLIGRAMS PER KILOGRAM
6. PB = LEAD

N

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TurnKey Environmental Restoration, LLC

JOB NO.: 0250-012-001

LEAD EXCEEDENCES OF SSALs IN NEAR SURFACE SOIL / FILL - BCP SITE 3

RI/AA REPORT

OLEAN REDEVELOPMENT PROPERTY
OLEAN, NEW YORK
BCP SITE NOs. C905031, C905032, C905033

PREPARED FOR
OLEAN GATEWAY, LLC

FIGURE 8-8

DATE: JANUARY 2013
DRAFTED BY: BLR

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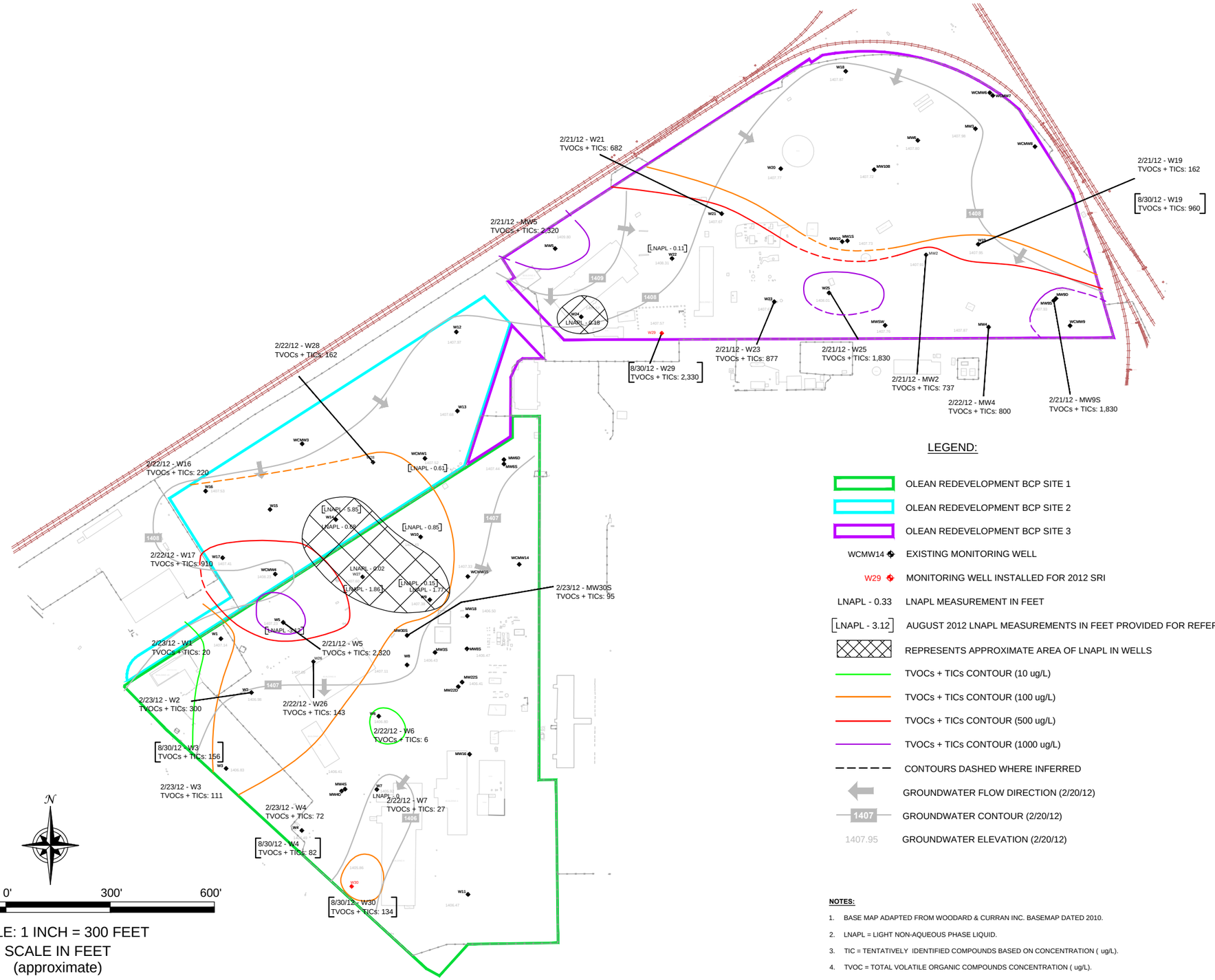
Figure 2-e: Elements of the Proposed Remedy for Parcel 3



SCALE: 1 INCH = 300 FEET
SCALE IN FEET
(approximate)

DATE: NOVEMBER 2012
DRAFTED BY: BLR

LEGEND:

- OLEAN REDEVELOPMENT BCP SITE 1
- OLEAN REDEVELOPMENT BCP SITE 2
- OLEAN REDEVELOPMENT BCP SITE 3
- WCMW14 — EXISTING MONITORING WELL
- W29 — MONITORING WELL INSTALLED FOR 2012 SRI
- LNAPL - 0.33 — LNAPL MEASUREMENT IN FEET
- [LNAPL - 3.12] — AUGUST 2012 LNAPL MEASUREMENTS IN FEET PROVIDED FOR REFERENCE
- REPRESENTS APPROXIMATE AREA OF LNAPL IN WELLS
- TVOCs + TICs CONTOUR (10 ug/L)
- TVOCs + TICs CONTOUR (100 ug/L)
- TVOCs + TICs CONTOUR (500 ug/L)
- TVOCs + TICs CONTOUR (1000 ug/L)
- CONTOURS DASHED WHERE INFERRED
- GROUNDWATER FLOW DIRECTION (2/20/12)
- 1407 — GROUNDWATER CONTOUR (2/20/12)
- 1407.95 — GROUNDWATER ELEVATION (2/20/12)

NOTES:

1. BASE MAP ADAPTED FROM WOODARD & CURRAN INC. BASEMAP DATED 2010.
2. LNAPL = LIGHT NON-AQUEOUS PHASE LIQUID.
3. TIC = TENTATIVELY IDENTIFIED COMPOUNDS BASED ON CONCENTRATION (ug/L).
4. TVOC = TOTAL VOLATILE ORGANIC COMPOUNDS CONCENTRATION (ug/L).

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TOTAL VOCs (+TICS) AND LNAPL IN GROUNDWATER FEBRUARY 2012

RI/AA REPORT

OLEAN REDEVELOPMENT PROPERTY
OLEAN, NEW YORK
BCP SITE NOs. C905031, C905032, C905033

PREPARED FOR
OLEAN GATEWAY, LLC

FIGURE 4-8