# PROPOSED REMEDIAL ACTION PLAN

1318 Niagara Street
Environmental Restoration Project
Buffalo, Erie County
Site No. E915213
February 2014

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

1/17/2014

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION
DIVISION OF ENVIRONMENTAL REMEDIATION
**PRAP/ROD ROUTING SLIP**

TO: Michael J. Ryan, P.E., Assistant Division Director
FROM: The attached is submitted for your approval by:

| NAME | INITIAL | DATE |
|---|---|---|
| Project Manager: Anthony Lopes | ALL | 1/17/14 |
| Section Chief/RHWRE: Martin Doster | MLD | 1/17/14 2/3/14 |
| Bureau Director: Michael Cruden | | |

DATE: ~~1/17/2014~~ 2/3/14

RE: **Site Name** 1318 Niagara Street **Site Code** E915213
**City** Buffalo **County** Erie

■ **PRAP**
- ■ Draft PRAP
- ■ Clean copy of the PRAP
- ■ Redline/Strikeout version of the PRAP
- ■ Copies of edits to PRAP (Michael J.'s/Robert's)
- ■ Site Briefing Report
- ■ NYSDOH concurrence letter 2/3/14
- ☐ USEPA concurrence letter
- ☐ OGC Referral
  - ☐ Attached
  - ☐ Not Required: Explain:
- ☐ Project Reviews (IGP-13) (if waived, explain why)
  - ☐ Scoping RI date:
  - ■ Scoping FS date: 4-22-13

PRAP Release Appr

Ass't Div Director: _____
Michael J. Ryan, P.E.

Division Director: 02/04/2014
Robert Schick, P.E.

☐ **ROD**
- ☐ Draft ROD
- ☐ Signature-ready copy of the ROD
- ☐ Redline/Strikeout version of the ROD
- ☐ Copies of edits to ROD (Michael J.'s/Robert's)
- ☐ Site Briefing Report
- ☐ NYSDOH concurrence letter

ROD Signoff

Ass't Div Director: _____
Michael J. Ryan, P.E.

■ **BRIEFING**
**Date:** 1/29/14 **Time:** 3PM **Room:** _____

c: Robert Schick, P.E.
Other reviewers who are invited to Briefing

# PROPOSED REMEDIAL ACTION PLAN

1318 Niagara Street
Buffalo, Erie County
Site No. E915213
February 2014

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## SECTION 1: SUMMARY AND PURPOSE OF THE PROPOSED PLAN

The New York State Department of Environmental Conservation (the Department), in consultation with the New York State Department of Health (NYSDOH), is proposing 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 proposed by this Proposed Remedial Action Plan (PRAP). The disposal of contaminants at this site, as more fully described in Section 6 of this document, has contaminated various environmental media. Contaminants include hazardous waste and/or petroleum. The proposed remedy is intended to attain the remedial action objectives identified for this site for the protection of public health and the environment. This PRAP identifies the preferred remedy, summarizes the other alternatives considered, and discusses the reasons for the preferred 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 Title 6 of the Official Compilation of Codes, Rules and Regulations of the State of New York; (6 NYCRR) Part 375. This document is a summary of the information that can be found in the site-related reports and documents in the document repository identified below.

## SECTION 2: CITIZEN PARTICIPATION

The Department seeks input from the community on all PRAPs. This is an opportunity for public participation in the remedy selection process. The public is encouraged to review the reports and documents, which are available at the following repository:

**A public comment period has been set from:**

**02/04/2014 to 03/20/2014**

**A public meeting is scheduled for the following date:**

**02/12/2014 at 6:15 PM**

**Public meeting location:**

**Niagara Branch Library – meeting room**
**280 Porter Ave, Buffalo, NY 14201**

At the meeting, the findings of the remedial investigation (RI) and the alternatives analyses (AA) will be presented along with a summary of the proposed remedy. After the presentation, a question-and-answer period will be held, during which verbal or written comments may be submitted on the PRAP.

Written comments may also be sent through 03/19/2014 to:

Anthony Lopes, PE
NYS Department of Environmental Conservation
Division of Environmental Remediation
270 Michigan Ave
Buffalo, NY 14203-2915
allopes@gw.dec.state.ny.us

The Department may modify the proposed remedy or select another of the alternatives presented in this PRAP based on new information or public comments. Therefore, the public is encouraged to review and comment on the proposed remedy identified herein. Comments will be summarized and addressed in the responsiveness summary section of the Record of Decision (ROD). The ROD is the Department's final selection of the remedy for this site.

**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.htmlhttp://www.dec.ny.gov/chemical/61092.html

## SECTION 3: SITE DESCRIPTION AND HISTORY

Location: The 1318 Niagara Street Site is located in an urban area in the City of Buffalo, Erie

County. The site is across from the intersection of Niagara Street and Lafayette Avenue.

Site Features: The site is a vacant lot that slopes to the west, and is covered with 2-3 inches of crushed stone. The site is bordered to the west by Penn Central Railroad and beyond that by NYS I-90 and the Black Rock Canal.

Current Zoning and Land Use: The site is currently inactive, and is zoned for commercial use. The surrounding parcels are a rail corridor to the west, and mixed commercial/residential properties along Niagara Street to the north, south, and east. The nearest residential area is 150 feet east of the site.

Past Use of the Site: From 1909 to 1987 the site was used as a brewery, and from 1987 to 2004 utilized by private owners for unknown purposes.

Prior uses that appear to have led to site contamination include two 20,000 gallon underground storage tanks (USTs), a furnace pit, and storage of 55 gallon drums containing PCBs and waste oil. In 2004 the City of Buffalo obtained the property through tax foreclosure. Demolition of the site buildings began in May of 2006. Residual oil in the USTs was removed using a vacuum truck and the USTs were excavated in February 2007. The tanks were staged and subsequently removed from the site in 2010. Upon UST excavation, it was found that one of the USTs had leaked into the subsurface, impacting the surrounding soil. As a result of the UST leak, the New York State Department of Environmental Conservation assigned Spill Number 0651726 to the site. Underground piping associated with the USTs was also discovered and removed prior to 2009. A former furnace was discovered in January 2007. The furnace contained PCB sludge (23,700 mg/kg) and TCLP organics/metals. The furnace and sludge were subsequently removed.

Site Geology and Hydrogeology: The site is overlain by 8-10 feet of fill underlain by 8-12 feet of silty clay to limestone bedrock. Shallow groundwater is at 20-25 feet, and generally flows to the west southwest.

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, an alternative that restricts the use of the site to commercial use (which allows for commercial use and industrial use) as described in Part 375-1.8(g) is being evaluated in addition to an alternative which would allow for unrestricted use of the site.

A comparison of the results of the investigation 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. City of Buffalo, Office of Strategic Planning and City of Buffalo will assist the state in its efforts by providing all information to the state which identifies PRPs. City of Buffalo, Office of Strategic Planning and City of Buffalo 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
- 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. 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.htmlhttp://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:

| | |
|---|---|
| PCB-aroclor 1260 | 1,2,4-trichlorobenzene |
| dichloroethylene | trichloroethene (TCE) |
| acetone | vinyl chloride |
| benzene | 1,2-dichloroethane |
| xylene (mixed) | indeno(1,2,3-cd)pyrene |
| chromium | lead |

As illustrated in Exhibit A, the contaminant of concern exceeds 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 Record of Decision.

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

IRM - Removal of PCB Waste and Soil

Two IRMs were conducted at the site between 2010 and 2013. The objectives of IRM-1 (Figure 4) was to clean and dispose of highly contaminated polychlorinated biphenyl (PCB) wastes including the former USTs and contents, 55 gallon drums and contents, and PCB-contaminated soil from the UST and furnace pit excavations. Excavation endpoint sampling was conducted in conjunction with IRM-1 as part of the Site Investigation phase of the project.

IRM-2 (Figure 5) included limited excavations of five discrete areas identified as A-E, where PCB concentrations were identified exceeding 10 ppm. Confirmatory sampling conducted after IRM-2 found areas of remaining contamination (Areas A-D), including PCB contaminated fill

material, above 10 ppm located over the western portion of the site. Data also indicates that PCB contaminated soil greater than 1 ppm remains over a majority of the site (Figure 6).

## 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.

**Nature and Extent of Contamination**
**On-site Areas:**

Based upon investigations conducted to date, the primary contaminant of concern is polychlorinated biphenyls (PCBs) in soil. The only metals in soil exceeding commercial SCOs are copper (8,770 ppm) and zinc (70,000 ppm) at MW-03, 18-20 feet below ground surface. The SVOC indeno(1,2,3-cd)pyrene was noted in two samples (530 and 600 ppb), slightly exceeding the unrestricted SCO of 500 ppb. No VOCs exceeded restricted residential in soil. On-site groundwater also indicated the presence of PCBs at trace levels, in addition to VOCs and metals.

Soil - In general, soil contamination is limited to PCBs in fill but extends to native clay at depths of 12 feet below ground surface (fbgs) or greater in the former UST and furnace pit areas.

Based on soil excavation confirmatory sample results from IRM-2, PCB-contaminated fill material remains site wide from 1 ppm to 530 ppm. The known areas of elevated PCB soil contamination (300 ppm and 530 ppm) are located along the south and east walls of IRM-2 Excavation Area C, and the south wall of Excavation Area B (150 ppm).

Groundwater - Groundwater contamination slightly exceeding groundwater standards was noted in monitoring wells MW-03, MW-04, and MW-05 and consisted of several volatile organic compounds (VOCs) and associated degradation products (e.g., trichloroethylene at 350 ppb). PCB impacts to groundwater were limited to one well, MW-03, with total PCBs at 1.3 ug/l and 8.7 ug/l respectively, exceeding the AWQSGVs standard of 0.09 ug/l.

**Off-Site Areas:**

Soil - Contamination was found off-site at Excavation Area E, located in the sidewalk along Niagara Street adjacent to the northeastern portion of the site. This area was addressed by the IRM and no exceedences of the PCB SCO (1 ppm) were evident in the sidewall and bottom endpoint samples. The final excavation was approximately 295 sq. ft. The excavation was backfilled with crushed stone and the sidewalk repaired.

Groundwater - There is no evidence of site-related contaminated groundwater migrating off-site.

## 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 digging beneath the crushed stone or otherwise disturbing the soil below. People are not drinking the contaminated groundwater because the area is served by a public water supply that is not contaminated by the site. 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. Because there is no on-site building, inhalation of site contaminants in indoor air due to soil vapor intrusion does not represent a concern for the site in its current condition. However, the potential exists for the inhalation of site contaminants due to soil vapor intrusion for any future on-site development. Environmental sampling indicates 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.

**Soil**

**RAOs for Public Health Protection**

- Prevent ingestion/direct contact with contaminated 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: SUMMARY OF THE PROPOSED 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 SI/RAR 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 proposed remedy is set forth in Exhibit D.

The proposed remedy is referred to as the Excavation/Disposal of Contaminated Soils remedy.

The estimated present worth cost to implement the remedy is $1,142,000. The cost to construct the remedy is estimated to be $968,000 and the estimated average annual cost is $11,400.

The elements of the proposed 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. Excavation

Excavation and off-site disposal of approximately 2,562 cubic yards of soil exceeding 10 ppm PCBs

Clean fill meeting the requirements of 6 NYCRR Part 375-6.7(d) will be brought in to replace the excavated soil or complete the backfilling of the excavation and establish the designed grades at the site. The site will be re-graded to accommodate installation of a cover system as described in Paragraph 3 below. Soil derived from the re-grading meeting commercial SCOs may be used to backfill the excavation.

3. Cover System

A site cover will be required to allow for commercial use of the site. The cover will consist either of the 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).

4. 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 use 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;

• requires compliance with the Department approved Site Management Plan.

5. 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 engineering controls remain in place and effective:

Institutional Control: The Environmental Easement as discussed in paragraph 4 above.

Engineering Control: A minimum of one foot of cover soil as discussed in paragraph 3 above.

The Site Management 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 groundwater use restrictions;
• provision for evaluation of the potential for soil vapor intrusion 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 for vapor intrusion for any buildings developed on the site, as may be required by the Institutional and Engineering Control Plan discussed above; and
• post-remedial groundwater monitoring.

## 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 three categories: volatile and semi-volatile organic compounds (VOCs/SVOC), in-organics (metals), and pesticides / polychlorinated biphenyls (PCBs). 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 is also presented.

### Waste/Source Areas

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

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. Remaining PCB waste and source areas identified at the site post IRM-1 and IRM-2 are generally found site-wide, and include:

- PCB contaminated shallow soil samples collected entirely or partially within the top 1 foot of ground surface range from >1 up to 7.3 ppm.
- PCB contaminated fill materials extending to native clay soil (Figure 5), typically encountered between six and eight feet below ground surface (fbgs), but ranges from as little as 4 fbgs to as much as 15 fbgs. The areas exceeding PCB Industrial SCOs of 25 ppm and hazardous waste concentrations greater than 50 ppm are located along the south and east walls of IRM-2 Excavation Area C (300 ppm/530 ppm), north and east wall of Excavation Area A (44 ppm and 28 ppm respectively), and south wall of Excavation Area B (150 ppm).
- Several samples from native clay soil showed PCB concentrations which exceeded the 1 ppm SCO (Figure 12). These exceedences were evident at depths of 12 feet or greater in the UST and furnace pit areas.
- In general, soil contamination is limited to PCBs with the exception of copper (8,770 ppm) and zinc (70,000 ppm) at MW-03, 18-20 fbgs, in excess of Commercial use SCOs of 270 ppm for copper and the Industrial use SCO of 10,000 ppm for zinc.
- No VOCs exceeded restricted SCOs. The 1,2,4-trichlorobenzene detection at MW-03 soil (16,000 ug/l at 18-20 fbgs) exceeds the CP-51 protection of groundwater standard of 3,400 ug/l. Acetone, benzene, and xylene were the only VOCs exceeding unrestricted SCO.
- The only SVOC exceedance site-wide was indeno(1,2,3-cd)pyrene, noted in two samples (530 and 600 ppb), slightly exceeding the unrestricted SCO of 500 ppb.

Certain waste/source areas identified at the site were partially addressed by the two IRMs described in Section 6.2. The remaining PCB contaminated soil waste/source area(s) identified during the RI will be addressed in the remedy selection process.

## Groundwater

Groundwater samples from MW-01 through MW-05 (Figure 5) were analyzed for VOCs using USEPA Method 8260. Several VOC compounds, including 1,2,4-trichlorobenzene, 1,1-dichloroethane, benzene, cis-1,2-dichloroethene, trichloroethene, 1,1-dichloroethane, 1,2-dichloroethane, and vinyl chloride were detected at concentrations slightly above the NYSDEC Ambient Water Quality Standards and Guidance Values (AWQSGV) in monitoring wells MW-03, MW-04, and MW-05. No exceedences of NYSDEC AWQSGV s for VOC were seen in MW-01 and MW-02.

No SVOC concentrations were detected above AWQSGVs (Method 8270) in groundwater samples from MW-02 through MW-05.

Groundwater samples from MW-02 through MW-05 were analyzed for TAL metals using Method 6010/7471. Each sample contained at least one compound (sodium, thallium, antimony, magnesium, iron and manganese) at a level exceeding AWQSGVs.

No pesticide concentrations were detected above AWQSGVs (Method 8081) in the groundwater samples from MW-01 through MW-05.

PCB impacts to groundwater were limited to one well, MW-03, with total PCBs at 1.3 ug/l and 8.7 ug/l respectively, exceeding the AWQSGVs standard of 0.09 ug/l.

**Table #1 - Groundwater**

| Detected Constituents | Concentration Range Detected (ppb)[a] | SCG[b] (ppb) | Frequency Exceeding SCG |
|---|---|---|---|
| **VOCs** | | | |
| 1,2,4-Trichlorobenzene | 0.88-24.0 | 5.0 | 2 of 10 |
| 1,1-Dichloroethane | 1.3-12.0 | 5.0 | 1 of 10 |
| Benzene | 1.2-3.4 | 1.0 | 2 of 10 |
| cis-1,2-Dichloroethene | 1.6-63.0 | 5.0 | 3 of 10 |
| Trichloroethene | 0.6-350.0 | 5.0 | 2 of 10 |
| Vinyl chloride | <1-26.0 | 2.0 | 1 of 10 |
| 1,2-Dichloroethane | 0.78-3.6 | 0.6 | 3 of 10 |
| **Pesticides/PCBs** | | | |
| Dieldrin | 0.004-0.025 | 0.004 | 1 of 10 |
| Heptachlor epoxide | 0.024-0.19 | 0.03 | 1 of 10 |
| Total PCB's | 1.3-8.7 | 0.09 | 2 of 10 |

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).

The primary groundwater contaminants are several VOC compounds, including 1,2,4-trichlorobenzene, 1,2-dichloroethane, benzene, cis-1,2-dichloroethene, trichloroethene, 1,1-dichloroethane, and vinyl chloride, detected at concentrations above the NYSDEC AWQSGV in monitoring wells MW-03, MW-04, and MW-05. Monitoring wells MW-01 and MW-02 had no exceedences of the NYSDEC AWQSGVs for VOCs.

The 1,2,4-trichlorobenzene detection at MW-03 was also detected in the MW-3 soil sample. The other VOC compounds observed in groundwater (chlorinated solvents TCE and associated breakdown products) were not detected in soil but were noted in the 2009 preliminary site investigation sampling of the UST and 55-galllon drum contents.

The only PCB impact to groundwater at the Site was observed at MW-03 (1.3/8.7 ppb).

Based on the findings of the RI, the past disposal of hazardous waste PCB's 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 PCB's.

## 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 2 - 15 feet to assess soil contamination impacts to groundwater.

The results indicate that soils at the site exceed the residential, restricted residential, commercial and industrial SCG for PCBs (Figure 6). Based on the irregular pattern of contaminant distribution, contaminated soil may have been moved around the site during the site demolition work and backfilling operations. The soil contamination appears to be prevalent in fill (Figure 5), with marginal impact to the underlying native soil (Figure 6).

PCB concentrations which exceed the threshold for designation as hazardous waste (i.e., > 50 ppm) remain in fill and soil in the western and southern portions of the site, and nearly all fill (except clean backfill placed in the IRM excavation areas) can be inferred to be contaminated at levels which exceed the commercial use SCO of 1 ppm. Because of the manner in which contamination was distributed in the fill area, significant uncertainty remains concerning the relative amount of hazardous (PCB >50 ppm) vs. non-hazardous (PCB <50ppm) soil.

**Table #2 - Soil**

| Detected Constituents | Concentration Range Detected (ppm)[a] | Unrestricted SCG[b] (ppm) | Frequency Exceeding Unrestricted SCG | Restricted Use SCG[c] (ppm) Commercial | Frequency Exceeding Restricted SCG |
|---|---|---|---|---|---|
| **VOCs/SVOC** | | | | | |
| Acetone | 0.013-0.18 | 0.05 | 1 of 35 | 500 | 0 of 35 |
| Benzene | 0.004-0.12 | 0.06 | 1 of 35 | 44 | 0 of 35 |
| Xylenes, Total | <0.012-3.0 | 0.26 | 5 of 35 | 500 | 0 of 35 |
| Indeno(1,2,3-cd)pyrene | 0.071-0.600 | 0.5 | 2 of 19 | 5.6 | 0 of 19 |
| **Inorganics** | | | | | |
| Chromium | 3.4-26.2 | 1 | 20 of | 400 | 0 of 23 |
| Lead | 11.4-255.0 | 63 | 5 of 23 | 1000 | 0 of 23 |
| **PCBs** | | | | | |

| Detected Constituents | Concentration Range Detected (ppm)[a] | Unrestricted SCG[b] (ppm) | Frequency Exceeding Unrestricted SCG | Restricted Use SCG[c] (ppm) Commercial | Frequency Exceeding Restricted SCG |
|---|---|---|---|---|---|
| PCB-Total | 0.12-530 | 0.1 | 115 of 198 | 1.0 | 69 of 198 |

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 commercial use, unless otherwise noted.

The primary soil contaminants are PCBs associated with residues from past site operations. Soil contamination identified during the RI was partially addressed during two IRM's described in Section 6.2. The primary soil contamination is distributed across a majority of the site (Figure 6). Based on the irregular pattern of contaminant distribution, contaminated soil may have been moved around the site during the demolition work, excavations related to the former Underground Storage Tanks (USTs), the Former Furnace Pit removals, and backfilling operations.

Based on the findings of the Remedial Investigation, the past disposal of hazardous waste has resulted in the contamination of soil. The site contaminant identified in soil which is considered to be the primary contaminant of concern, to be addressed by the remedy selection process is PCBs.

## Exhibit B

## Description of Remedial Alternatives

The following alternatives were considered based on the remedial action objectives (see Section 6.5) to address the contaminated media identified at the site as described in Exhibit A.

### Alternative 1: No Further Action with Site Management

The No Further Action with Site Management Alternative recognizes the remediation of the site completed by the IRMs described in Section 6.2 and Site Management and Institutional Controls and Engineering Controls are necessary to confirm the effectiveness of the IRM. This alternative maintains engineering controls which were part of the IRM and includes institutional controls, in the form of and environmental easement and site management plan, necessary to protect public health and the environment from contamination remaining at the site after the IRMs.

Present Worth: ..... $190,000
Capital Cost:..... $15,000
Annual Costs:..... $9,300

### Alternative 2: Excavation/Disposal greater than 1 ppm

This alternative achieves all of the SCGs discussed in Section 6.1.1 and Exhibit A and soil meets the unrestricted soil cleanup objectives listed in Part 375-6.8 (a) and includes:

- Excavation and off-site disposal of all soil greater than 1 ppm PCBs. The estimated volume of contaminated soils is 6,312 cubic yards.
- PCB-contaminated soils will be properly disposed under NYSDEC Part 371 the Toxic Substances Control Act (TSCA). A comprehensive pre-design investigation will be conducted to separate highly contaminated (>50 ppm) soil from soil with lower PCB concentrations. For cost estimating, approximately 45 percent of the excavated soil will be assumed to be highly contaminated. Reductions in the amount of hazardous soil disposal may significantly reduce the remedial costs.
- Verification samples would be collected from the excavation bottom and sidewalls. Excavated soil would be subject to waste characterization testing prior to off-site disposal.
- Collection and off-site disposal of water encountered during excavation, decontamination water, and any other water potentially contaminated.
- Site restoration includes backfilling, as necessary, with clean backfill.
- Cover and seed site with topsoil for erosion control.
- Groundwater use restriction, post-remedial groundwater monitoring, and soil vapor intrusion provision,.

Present Worth: ..... $1,710,000
Capital Cost:..... $1,670,000
Annual Costs:..... $9,300

### Alternative 3: Excavation/Disposal greater than 10 ppm, Cover System, SMP

This alternative includes:

- Excavation and off-site disposal of all soil greater than 10 ppm PCBs, as identified in Figure 7. The estimated volume of contaminated soils is 2,562 cubic yards.
- PCB-contaminated soils will be properly disposed under NYSDEC Part 371 and the Toxic Substances Control Act (TSCA). A comprehensive pre-design investigation will be conducted to separate highly contaminated (>50 ppm) soil from soil with lower PCB concentrations. For cost estimating, approximately 45 percent of the excavated soil will be assumed to be highly contaminated. Reductions in the amount of hazardous soil disposal may significantly reduce the remedial costs.
- Verification samples would be collected from the excavation bottom and sidewalls. Excavated soil would be subject to waste characterization testing prior to off-site disposal.
- Collection and off-site disposal of water encountered during excavation, decontamination water, and any other water potentially contaminated.
- Site restoration includes backfilling, as necessary, with clean backfill.
- The surface will be covered with a one-foot thick layer of clean fill and topsoil, and then seeded for erosion control.
- Groundwater use restriction, post-remedial groundwater monitoring, and soil vapor intrusion provision.

Present Worth: ..... $1,010,000
Capital Cost: ..... $968,000
Annual Costs: ..... $9,300

**Alternative 4: Excavation and Disposal greater than 25 ppm, Cover System, SMP**

This alternative includes:

- Excavation and off-site disposal of all soil greater than 25 ppm PCBs to meet Industrial SCOs. The estimated volume of contaminated soils is 2,437 cubic yards.
- PCB-contaminated soils will be properly disposed under NYSDEC Part 371 the Toxic Substances Control Act (TSCA). A comprehensive pre-design investigation will be conducted to separate highly contaminated (>50 ppm) soil from soil with lower PCB concentrations. For cost estimating, approximately 45 percent of the excavated soil will be assumed to be highly contaminated. Reductions in the amount of hazardous soil disposal may significantly reduce the remedial costs.
- Verification samples would be collected from the excavation bottom and sidewalls. Excavated soil would be subject to waste characterization testing prior to offsite disposal.
- Collection and off-site disposal of water encountered during excavation, decontamination water, and any other water potentially contaminated.
- Site restoration includes backfilling, as necessary, with clean backfill. The surface will be covered with a one-foot thick layer of clean fill and topsoil, and then seeded for erosion control.
- Groundwater use restriction, post-remedial groundwater monitoring, and soil vapor intrusion provision.

Present Worth: ..... $1,080,000
Capital Cost: ..... $932,000
Annual Costs: ..... $9,300

**Exhibit C**

## Remedial Alternative Costs

| Remedial Alternative | Capital Cost ($) | Annual Costs ($) | Total Present Worth ($) |
|---|---|---|---|
| #1- No Action, SMP | 15,000 | 11,400 | 190,000 |
| #2 - Removal >1 ppm | 1,670,000 | 9,300 | 1,710,000 |
| #3 - Removal >10 ppm/Cover/SMP | 968,000 | 9,300 | 1,010,000 |
| #4 - Removal >25 ppm/Cover/SMP | 932,000 | 9,300 | 1,080,000 |

## Exhibit D

## SUMMARY OF THE PROPOSED REMEDY

The Department is proposing Alternative #3, Excavation / Disposal of PCB contaminated soils greater than 10 ppm, Cover System, and SMP as the remedy for this site. Alternative 3 would achieve the remediation goals of possible future Commercial development of the site by removing on-site soil exceeding 10 ppm and disposing off-site. A one-foot thick cover of clean soil would be applied to ensure compliance with the 1 ppm surface soil criterion. The elements of this remedy are described in Section 7. The proposed remedy is depicted in Figure 7.

### Basis for Selection

The proposed 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. A detailed discussion of the evaluation criteria and comparative analysis is included in the AA report.

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.

Alternatives 2 and 3 provide the greatest overall protection to human health and the environment as the majority of contaminated soil is removed from the site, largely meeting the soil SCGs and meeting CP-51 presumptive remedy criteria. Under Alternative 2, remaining soil that exceeds criteria would be removed allowing the site to be used for restricted residential, commercial, or industrial re-use. Under Alternative 3 (1 ppm surface/10 ppm subsurface), remaining soil that exceeds criteria would be removed, the potential exposure to subsurface soil would be mitigated by a soil cover and the SMP, and the site would be suitable for commercial re-use. Under Alternative 4 (1 ppm surface/25 ppm subsurface), remaining soil that exceeds criteria would be removed, the potential exposure to subsurface soil would be mitigated by a soil cover and the SMP, and the site would be suitable for industrial re-use, however, this use is inconsistent with municipal zoning.

Alternative 1 (No Action) does not provide any protection to public health and the environment and will not be evaluated further. Alternatives 2, 3, and 4 rely on a restriction of groundwater use and SVI provision at the site, Alternatives 3 and 4 also rely on a Site Management Plan including a soil cover system to protect human health.

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.

Alternatives 2 and 3 provide the greatest overall protection to human health and the environment as the majority of contaminated soil is removed from the site, largely meeting the soil SCGs and meeting CP-51 presumptive remedy criteria. Under Alternative 2, remaining soil exceeding criteria in limited areas would not present a human exposure concern and the site would be suitable for restricted-residential, commercial or industrial re-use. Under Alternative 3, potential exposure to subsurface soil would be mitigated by the SMP and the site would be suitable for commercial or industrial re-use. Alternative 4 would only allow for industrial re-use,

which would be inconsistent with land use planning. Because Alternatives 2, 3 and 4 satisfy the threshold criteria, the remaining criteria are particularly important in selecting a final remedy for the site.

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.

Excavating contaminated soil would be effective for the site-specific contaminants, and permanent in the long-term. Additional remedial measures would not be required at the site as long as the soil management and groundwater use restrictions and SVI provision detailed in the SMP were enforced. Alternative 2 results in removal of all of the PCB contamination at the site above 1 ppm and removes the need for a SMP and a soil cover system and long-term monitoring. Alternative 3 and 4 would result in the removal of approximately 40% and 34% of the contaminated soil, respectively, but also require an environmental easement and long-term monitoring. Alternative 2 is the most effective and permanent alternative. For Alternatives 3 and 4, site management activities will maintain the remedy effectiveness, but these Alternatives are slightly less desirable in the long-term. Each Alternative will require a groundwater use restriction and SVI provision to insure long-term effectiveness and permanence as well as site-related contamination in GW exceeding MCLs.

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.

Alternatives 2, 3 and 4 entail excavation and off-site disposal, thus reducing the toxicity, mobility and volume of on-site waste by transferring the material to an approved off-site location. However, depending on the disposal facility, the volume of the material would not be reduced.

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.

Alternative 2 poses the greatest short-term impacts to workers, the community, and the environment, however, similar short-term impacts will also be associated with Alternatives 3 and 4. Adequate health and safety measures must be undertaken with Alternatives 2, 3 and 4 to monitor air, control dust, and limit truck traffic. The RAOs for soil to eliminate or reduce the potential for exposure to elevated PCBs in soil without management of a soil cover would be met to the greatest extent upon completion of excavation activities with Alternative 2. However, Alternative 3 and 4 would also provide a high level of compliance with the RAO for soil although management of the site cover system will be required. The RAO for groundwater and soil vapor would be met through continued enforcement of groundwater use restrictions and SVI evaluations in the SMP for all alternatives.

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, 3 and 4 entail excavation with off-site disposal, approaches that are favorable in that they are readily implementable. Equipment and trained personnel are readily available. Pre-design soil testing will be conducted to identify PCB concentrations in soil/fill and to develop an approach for segregating hazardous from non-hazardous PCB contaminated materials. Excavated material will be classified as hazardous or non-hazardous and transported and disposed in accordance with TSCA. Adequate health and safety measures must be undertaken for the proposed remediation which will occur adjacent to a residential neighborhood. The higher volume of soil excavated under Alternative 2 would necessitate increased truck traffic on local roads.

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 2, with its large volume of soil to be handled, through excavation and off-site disposal would have the highest present worth and capital costs. The present worth and capital costs of Alternatives 3 and 4 are similar to each other, but approximately 50% higher for Alternative 2. Alternatives 3 and 4 require a long-term maintenance cost over 30 years and a SMP, Alternative 2 requires neither.

The costs for the excavation alternatives are driven by the amount of soil exceeding 50 ppm. Because of uncertainty in the distribution of PCB contamination, the cost estimates used conservative (i.e., worst case) estimates of the area where soil may exceed 50 ppm. Detailed pre-design testing should be conducted to better delineate PCB concentrations site wide and to develop an approach for segregating areas where hazardous PCB-contaminated soil is present. Reductions in the amount of hazardous soil disposal may significantly reduce the remedial costs.

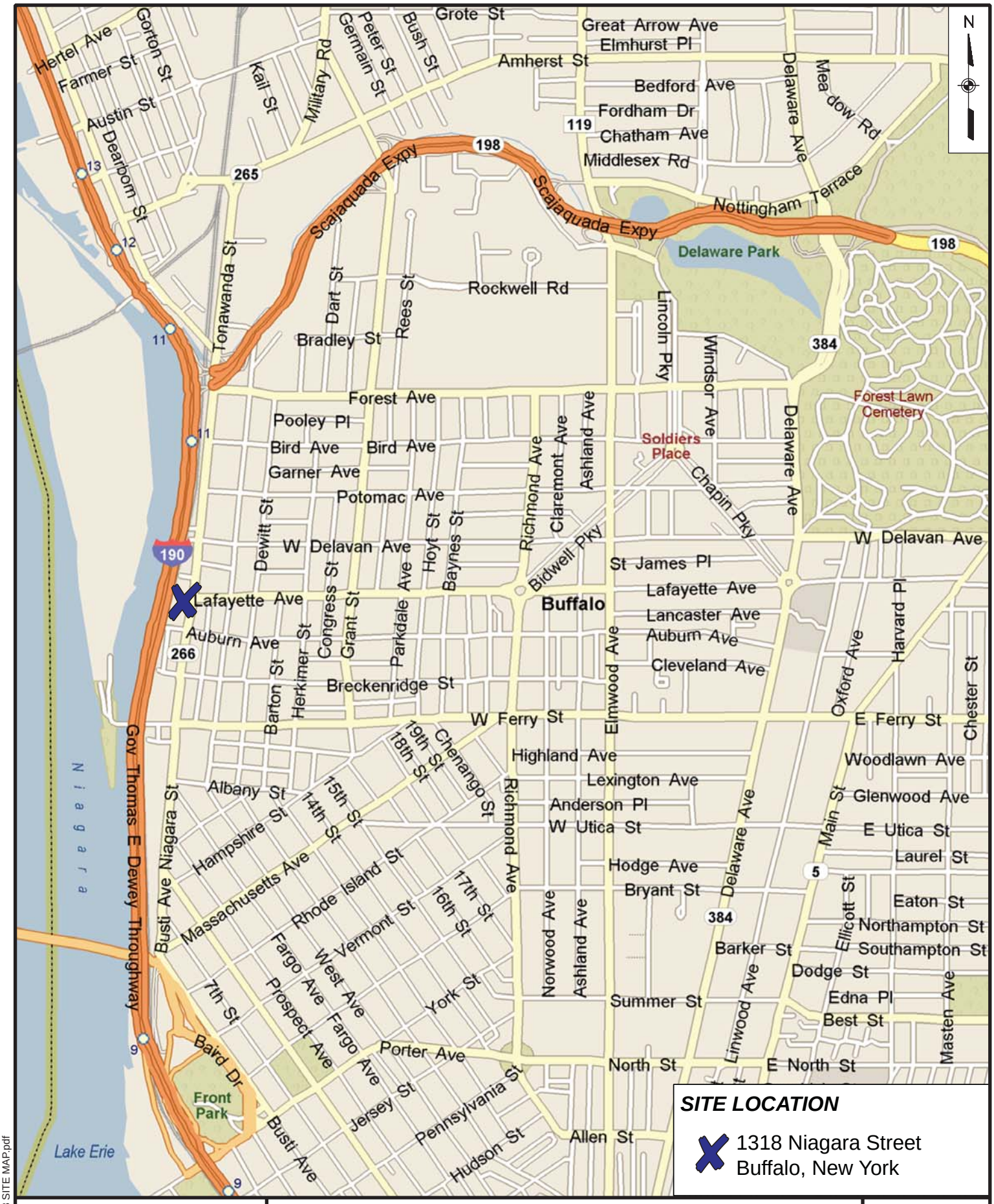
8. Land Use. When cleanup to pre-disposal conditions is determined to be infeasible, the Department may consider the current, intended, and reasonable anticipated future land use of the site and its surroundings in the selection of the soil remedy.

Since the anticipated use of the site is commercial, Alternatives 4 would be less desirable because only industrial SCOs are met. However, the remaining contamination with Alternative 4 would be controllable with implementation of a Site Management Plan. With Alternative 2, removing all of the contaminated overburden soil above 1 ppm, most of the unsaturated overburden would be removed, and restrictions on the site use would not likely be necessary beyond a groundwater use restriction and SVI mitigation.

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. If the selected remedy differs significantly from the proposed remedy, notices to the public will be issued describing the differences and reasons for the changes.

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




LiRo Engineers, Inc.
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Buffalo, New York

# 1318 NIAGARA STREET
# SITE LOCATION MAP

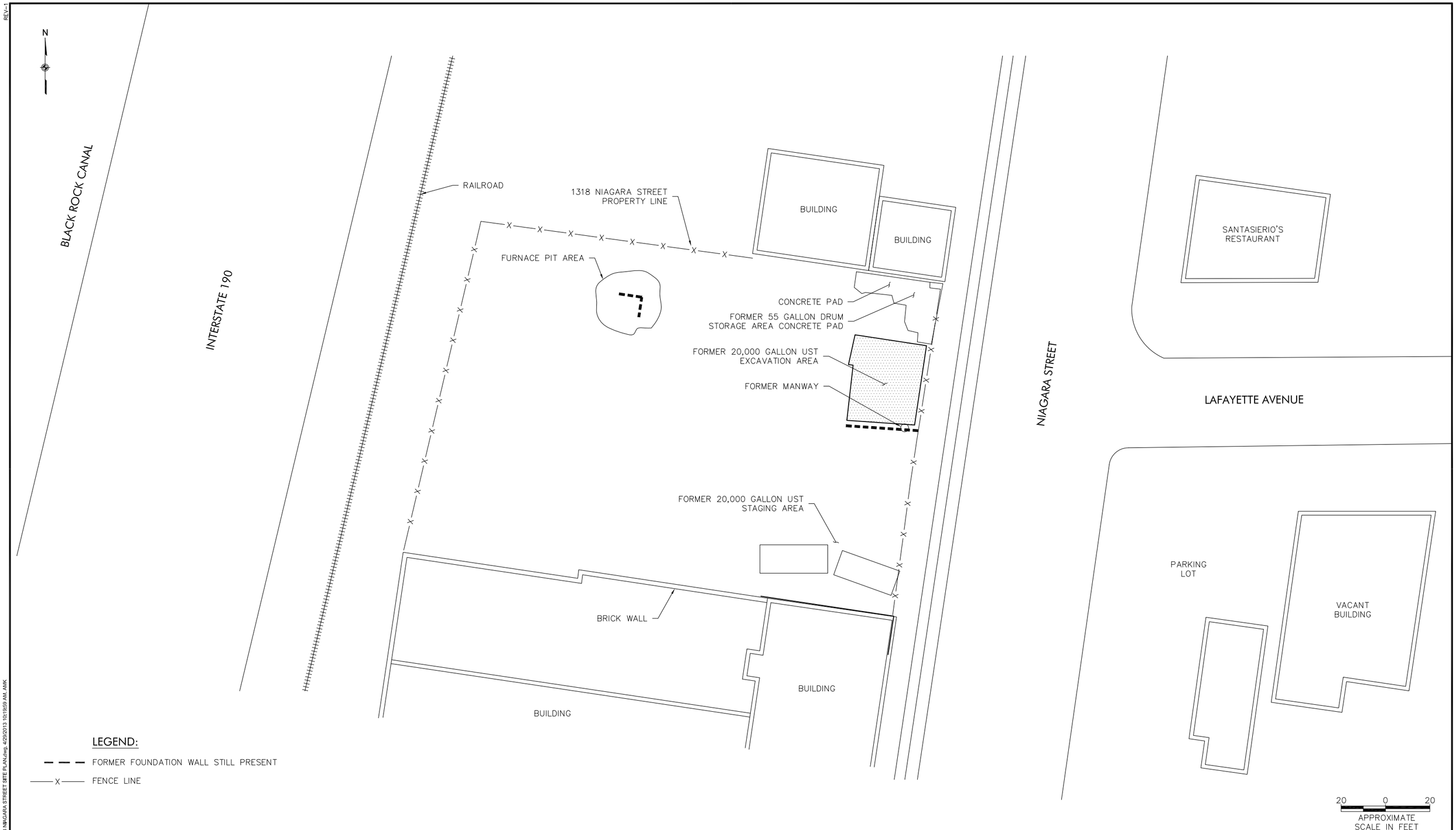
FIGURE NO.

1

J:\1318 nia\CAD\1318 SITE MAP.pdf


Figure 2: Site Overview

REV-1




J:\09-29-426 1318 Niagara\CAD\PHASE 5\1318 NIAGARA STREET SITE PLAN.dwg, 4/29/2013 10:19:59 AM, AMK



| NO. | DATE | DESCRIPTION |
|---|---|---|
| | | REVISIONS |

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690 Delaware Ave.
Buffalo, New York

| | |
|---|---|
| PROJ. ENG.: | |
| DESIGNED BY: | |
| CHECKED BY: | |
| DRAWN BY: | |
| CLIENT: | |
| DATE: | APRIL 2013 |
| SCALE: | AS SHOWN |

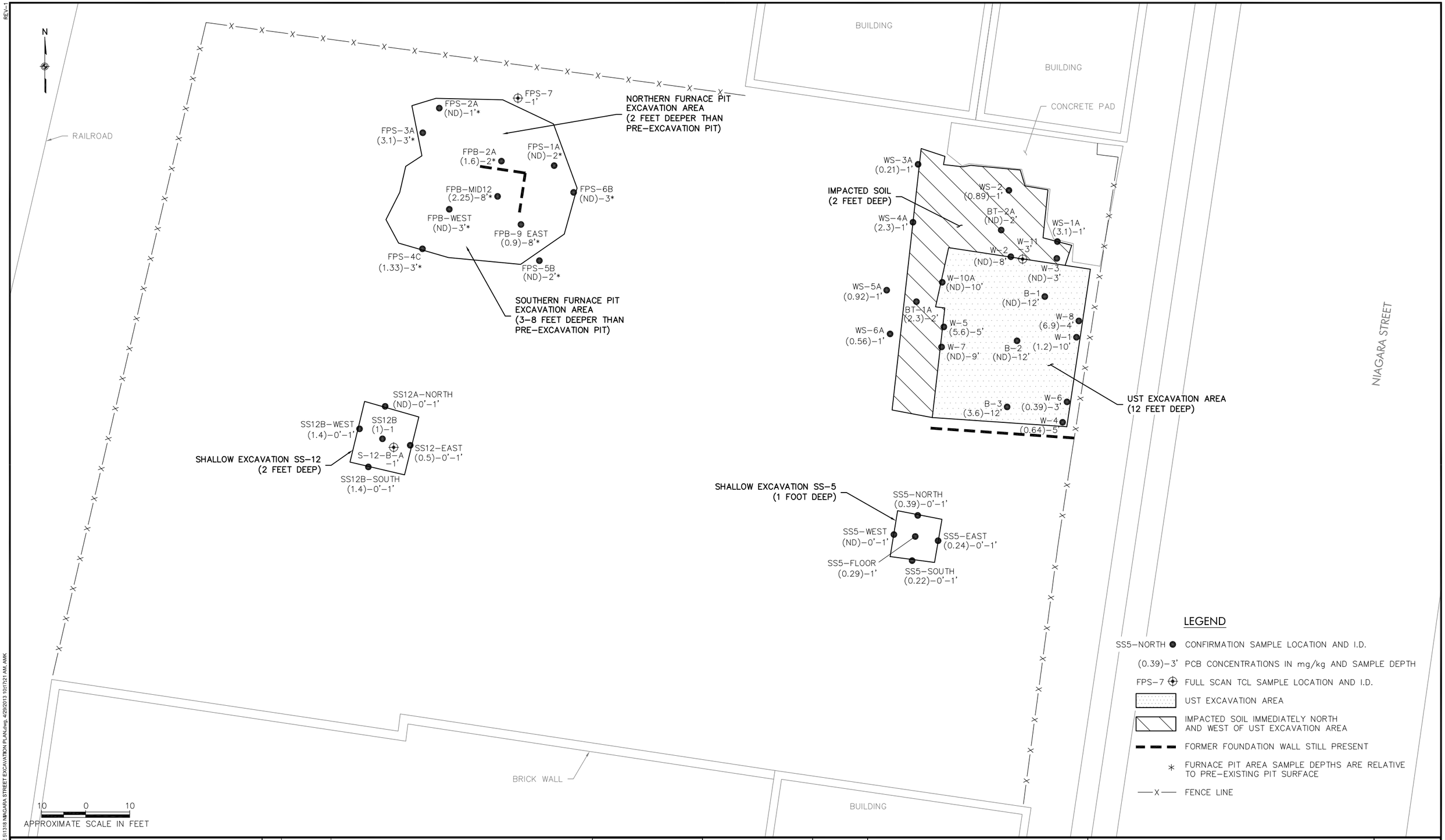
JOB TITLE AND LOCATION:
CITY OF BUFFALO - ERP INVESTIGATION
OF 1318 NIAGARA STREET

LIRO JOB NO.: 09-29-426
SHEET OF

DRAWING TITLE:
SITE PLAN

FIGURE NO.
3

REV-1




## LEGEND

- SS5-NORTH ● CONFIRMATION SAMPLE LOCATION AND I.D.
- (0.39)-3' PCB CONCENTRATIONS IN mg/kg AND SAMPLE DEPTH
- FPS-7 ⊕ FULL SCAN TCL SAMPLE LOCATION AND I.D.
- UST EXCAVATION AREA
- IMPACTED SOIL IMMEDIATELY NORTH AND WEST OF UST EXCAVATION AREA
- FORMER FOUNDATION WALL STILL PRESENT
- * FURNACE PIT AREA SAMPLE DEPTHS ARE RELATIVE TO PRE-EXISTING PIT SURFACE
- —X— FENCE LINE



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| CLIENT: | |
| DATE: | APRIL 2013 |
| SCALE: | AS SHOWN |

JOB TITLE AND LOCATION:
CITY OF BUFFALO - ERP INVESTIGATION
OF 1318 NIAGARA STREET

LIRO JOB NO.: 09-29-426
SHEET OF

DRAWING TITLE:
IRM-1 EXCAVATION AREAS
AND ENDPOINT PCB RESULTS

FIGURE NO.: 4

J:\09-29-426 1318 Niagara\CAD\PHASE 5\1318 NIAGARA STREET EXCAVATION PLAN.dwg, 4/29/2013 10:17:21 AM, AMK

REV-1

N

| NORTHWALL-2 AREA B | 2'-6.5' |
|---|---|
| PCB's | 5.6 |

FURNACE PIT EXCAVATION AREA

| BOTTOM-1 AREA B EAST | 6.5' |
|---|---|
| PCB's | 6.6 |

AREA B

NORTHWALL-2 AREA B

WESTWALL-2 AREA B

BOTTOM-1 AREA B WEST

EASTWALL-2 AREA B

BOTTOM-1 AREA B EAST

SOUTHWALL-3 AREA B

| EASTWALL-2 AREA B | 2'-6.5' |
|---|---|
| PCB's | 26 |

RAILROAD

| WESTWALL-2 AREA B | 2'-6.5' |
|---|---|
| PCB's | 6.7 |

MW-01

| BOTTOM-1 AREA B WEST | 6.5' |
|---|---|
| PCB's | 1.2 |

| SOUTHWALL-3 AREA B | 2'-6.5' |
|---|---|
| PCB's | 150 |

NORTHWALL-2 AREA A WEST

NORTHWALL-1 AREA A EAST

MW-03

| EASTWALL-2 AREA A EAST | 2'-8.5' |
|---|---|
| PCB's | ND |

| WESTWALL-2 AREA A WEST | 2'-8.5' |
|---|---|
| PCB's | 13 |

EASTWALL-2 AREA A WEST

WESTWALL-1 AREA A EAST

BOTTOM-1 AREA A EAST

EASTWALL-2 AREA A EAST

WESTWALL-2 AREA A WEST

BOTTOM-1 AREA A WEST

SOUTHWALL-2 AREA A EAST

| BOTTOM-1 AREA E EAST | 8.5' |
|---|---|
| PCB's | ND |

| NORTHWALL-2 AREA A WEST | 2'-8.5' |
|---|---|
| PCB's | 44 |

SOUTHWALL-1 AREA A WEST

AREA A

2' COVER SOIL REMOVED

| SOUTHWALL-2 AREA E EAST | 2'-8.5' |
|---|---|
| PCB's | 0.18 |

EXCAVATION AREA SS-12

| BOTTOM-1 AREA E WEST | NA |
|---|---|
| PCB's | ND |

| SOUTHWALL-2 AREA A WEST | 2'-8.5' |
|---|---|
| PCB's | 1.1 |

| EASTWALL-2 AREA A WEST | 2'-8.5' |
|---|---|
| PCB's | 28 |

| WESTWALL-1 AREA A EAST | 2'-8.5' |
|---|---|
| PCB's | 5.2 |

MW-04

| NORTHWALL-1 AREA A EAST | 2'-8.5' |
|---|---|
| PCB's | 1.3 |

| WESTWALL-1 AREA C | 2'-8' |
|---|---|
| PCB's | 0.52 |

| NORTHWALL-2 AREA C | 2'-8' |
|---|---|
| PCB's | 0.59 |

AREA C

NORTHWALL-1 AREA C

| BOTTOM-1 AREA C | 8' |
|---|---|
| PCB's | ND |

WESTWALL-1 AREA C

BOTTOM-1 AREA C

EASTWALL-2 AREA C

2' COVER SOIL REMOVED

SOUTHWALL-2 AREA C

| EASTWALL-2 AREA C | 2'-8' |
|---|---|
| PCB's | 530 |

| SOUTHWALL-2 AREA C | 2'-8' |
|---|---|
| PCB's | 300 |

BRICK WALL

10 0 10

APPROXIMATE SCALE IN FEET

BUILDING

BUILDING

CONCRETE PAD

| NORTHWALL-2 AREA D | 0'-3' |
|---|---|
| PCB's | 39 |

| BOTTOM-1 AREA D | 3' |
|---|---|
| PCB's | 0.13 |

| WESTWALL-1 AREA D | 0'-3' |
|---|---|
| PCB's | 1.3 |

NORTHWALL-2 AREA D

WESTWALL-1 AREA D

EASTWALL-1 AREA D

BOTTOM-1 AREA D

SOUTHWALL-1 AREA D

AREA D

| SOUTHWALL-1 AREA D | 0'-3' |
|---|---|
| PCB's | ND |

| EASTWALL-1 AREA D | 0'-3' |
|---|---|
| PCB's | 3.3 |

MW-02

EXCAVATION AREA SS-5

MW-05

| NORTHWALL-1 AREA E | 0'-2' |
|---|---|
| PCB's | 0.89 |

| WESTWALL-1 AREA E | 0'-2' |
|---|---|
| PCB's | 0.14 |

NORTHWALL-1 AREA E

WESTWALL-1 AREA E

BOTTOM-1 AREA E

EASTWALL-1 AREA E

AREA E

SOUTHWALL-1 AREA E

| EASTWALL-1 AREA E | 0'-2' |
|---|---|
| PCB's | ND |

| BOTTOM-1 AREA E WEST | 2' |
|---|---|
| PCB's | ND |

| SOUTHWALL-1 AREA E | 0'-2' |
|---|---|
| PCB's | 0.26 |

NIAGARA STREET

## LEGEND

- MONITORING WELL
- CONFIRMATION SAMPLE LOCATION (JANUARY 2013)
- UST EXCAVATION AREA
- IMPACTED SOIL IMMEDIATELY NORTH AND WEST OF UST EXCAVATION AREA
- FORMER FOUNDATION WALL STILL PRESENT

| SOUTHWALL-2 AREA C | NA |
|---|---|
| PCB's | 300 |

SAMPLE I.D./DEPTH

CONCENTRATION IN ppm

NA NOT APPLICABLE



| NO. | DATE | DESCRIPTION |
|---|---|---|
| | | REVISIONS |

LiRo Engineers, Inc.
690 Delaware Ave.
Buffalo, New York

| PROJ. ENG.: | CLIENT: | JOB TITLE AND LOCATION: | LIRO JOB NO.: |
|---|---|---|---|
| DESIGNED BY: | | CITY OF BUFFALO - ERP INVESTIGATION OF 1318 NIAGARA STREET | 09-29-426 |
| CHECKED BY: | | | SHEET OF |
| DRAWN BY: | DATE: APRIL 2013 / SCALE: AS SHOWN | DRAWING TITLE: IRM-2 EXCAVATION AREAS AND LIMITS | FIGURE NO. 5 |

J:\09-29-426 1318 Niagara\CAD\PHASE 5\1318 NIAGARA STREET PHASE 2 EX.dwg, 4/29/2013 10:16:54 AM, AMK

REV-1

N

| GP-19 | PCBs |
|---|---|
| 0'-2' | 2.4 |
| 5'-7' | 5.4 |
| 14'-16' | 2.1 |

FURNACE PIT EXCAVATION AREA

AREA B

| NORTHWALL-2 AREA B | 2'-6.5' |
|---|---|
| PCB's | 5.6 |

| WESTWALL-2 AREA B | 2'-6.5' |
|---|---|
| PCB's | 6.7 |

| BOTTOM-1 AREA B WEST | 6.5' |
|---|---|
| PCB's | 1.2 |

| SOUTHWALL-3 AREA B | 2'-6.5' |
|---|---|
| PCB's | 150 |

| BOTTOM-1 AREA B EAST | 6.5' |
|---|---|
| PCB's | 6.6 |

| FPB-2A | 2'* |
|---|---|
| PCB's | 1.6 |

| FPB-MID12* | 8' |
|---|---|
| PCB's | 2.25 |

| GP-26 | 10'-12' |
|---|---|
| PCB's | 6.9 |

| GP-16* | 16'-17.75' |
|---|---|
| PCB's | 9.9 |

| FPS-4C* | 3' |
|---|---|
| PCB's | 1.33 |

| SB-11 | 0"-4" |
|---|---|
| PCB's | 7.3 |

| WS-4A | 1' |
|---|---|
| PCB's | 2.3 |

| SB-07 | 1'-2' |
|---|---|
| PCB's | 5.6 |

| BT-1A | 2' |
|---|---|
| PCB's | 2.3 |

| EASTWALL-1 AREA D | 0'-3' |
|---|---|
| PCB's | 3.3 |

| NORTHWALL-2 AREA D | 0'-3' |
|---|---|
| PCB's | 39 |

| WESTWALL-1 AREA D | 0'-3' |
|---|---|
| PCB's | 1.3 |

| SB-06 | 3' | 4' |
|---|---|---|
| PCB's | 2.9 | 9.9 |

| SB-05 | 3' |
|---|---|
| PCB's | 9.5 |

| W-5 | 5' |
|---|---|
| PCB's | 5.6 |

| WS-1A | 1' |
|---|---|
| PCB's | 3.1 |

| W-8 | 4' |
|---|---|
| PCB's | 6.9 |

| W-1 | 10' |
|---|---|
| PCB's | 1.2 |

| SB-04 | 13' | 15' |
|---|---|---|
| PCB's | 1.81 | 4.5 |

| B-3 | 12' |
|---|---|
| PCB's | 3.6 |

AREA A

| WESTWALL-2 AREA A WEST | 2'-8.5' |
|---|---|
| PCB's | 13 |

| NORTHWALL-2 AREA A WEST | 2'-8.5' |
|---|---|
| PCB's | 44 |

| SOUTHWALL-2 AREA A WEST | 2'-8.5' |
|---|---|
| PCB's | 1.1 |

| EASTWALL-2 AREA A WEST | 2'-8.5' |
|---|---|
| PCB's | 28 |

| WESTWALL-1 AREA A EAST | 2'-8.5' |
|---|---|
| PCB's | 5.2 |

| NORTHWALL-1 AREA A EAST | 2'-8.5' |
|---|---|
| PCB's | 1.3 |

| MW-04 | 2'-3.5' |
|---|---|
| PCB's | 1.3 |

AREA C

| EASTWALL-2 AREA C | 2'-8' |
|---|---|
| PCB's | 530 |

| SOUTHWALL-2 AREA C | 2'-8' |
|---|---|
| PCB's | 300 |

| SS12B-WEST | 0'-1' |
|---|---|
| PCB's | 1.4 |

| SS12B-SOUTH | 0'-1' |
|---|---|
| PCB's | 1.4 |

EXCAVATION AREA SS-12

| SS-14 | 0"-4" |
|---|---|
| PCB's | 1.6 |

EXCAVATION AREA SS-5

| MW-05 | 0"-4" |
|---|---|
| PCB's | 1.38 |

AREA D

AREA E

BUILDING

BUILDING

CONCRETE PAD

RAILROAD

NIAGARA STREET

BRICK WALL

10 0 10

APPROXIMATE SCALE IN FEET

## LEGEND

- MONITORING WELL (JUNE 2011)
- SURFACE SOIL SAMPLE (SEPTEMBER 2009)
- SURFACE SOIL SAMPLE (JUNE 2011)
- SOIL BORING (NOVEMBER 2011)
- SOIL BORING (JUNE 2011)
- CONFIRMATION SAMPLE LOCATION (SEPTEMBER – OCTOBER 2010)
- CONFIRMATION SAMPLE LOCATION (JANUARY 2013)
- PHASE I IRM EXCAVATIONS (SEPTEMBER – OCTOBER 2010)
- PHASE II IRM EXCAVATIONS (JANUARY 2013)
- IRM EXCAVATION AREAS
- FORMER FOUNDATION WALL STILL PRESENT
- SAMPLE I.D./DEPTH
- CONCENTRATION IN ppm
- * FURNACE PIT AREA SAMPLE DEPTHS ARE RELATIVE TO PRE-EXISTING PIT SURFACE
- NA NOT APPLICABLE



| NO. | DATE | DESCRIPTION |
|---|---|---|
| REVISIONS | | |

LiRo Engineers, Inc.
690 Delaware Ave.
Buffalo, New York

| PROJ. ENG.: | CLIENT: | JOB TITLE AND LOCATION: | LIRO JOB NO.: |
|---|---|---|---|
| DESIGNED BY: | | CITY OF BUFFALO - ERP INVESTIGATION OF 1318 NIAGARA STREET | 09-29-426 |
| CHECKED BY: | | | SHEET OF |
| DRAWN BY: | DATE: JUNE 2013 | DRAWING TITLE: COMMERCIAL SCO EXCEEDANCES | FIGURE NO. 6 |
| | SCALE: AS SHOWN | | |

J:\09-29-426 1318 Niagara\CAD\PHASE II\1318 NIAGARA STREET COMMERCIAL SCO_REV.dwg, 8/2/2013 9:11:02 AM, AMK

REV-1

N

AREA B

NORTHWALL-2 AREA B
BOTTOM-1 AREA B WEST
WESTWALL-2 AREA B
GP-2
GP-19
FPS-7
FPS-2A
SS-15-SED
SOUTHWALL-3 AREA B
PCB's 150
BOTTOM-1 AREA B EAST
SB-10
SS-13-SED
FPB-2A
FPS-1A
SS-14-SED
FPB-MID12
FPB-WEST
FPB-9 EAST
FPS-4C
FPS-5B
GP-15
FPS-6B
GP-20
SB-11
MW-03
GP-16
GP-26
RAILROAD

| SOUTHWALL-3 AREA B | 2'-6.5' |
|---|---|
| PCB's | 150 |

NORTHWALL-2 AREA A WEST
NORTHWALL-1 AREA A EAST
WESTWALL-2 AREA A WEST
WESTWALL-1 AREA A EAST
GP-21
EASTWALL-2 AREA A EAST
EASTWALL-2 AREA A WEST
GP-22
AREA A
SOUTHWALL-1 AREA A WEST
SOUTHWALL-2 AREA E EAST SS12A-NORTH

| WESTWALL-2 AREA A WEST | 2'-8.5' |
|---|---|
| PCB's | 13 |

| NORTHWALL-2 AREA A WEST | 2'-8.5' |
|---|---|
| PCB's | 44 |

| EASTWALL-2 AREA A WEST | 2'-8.5' |
|---|---|
| PCB's | 28 |

SS-16 SS-15
SS12B-WEST
SS12B
SS12-EAST
S-12-B-A
SS-12
SS12B-SOUTH
SS-13
SS-14
EXCAVATION AREA SS-12
GP-23
GP-17
SS-10
GP-13
MW-04
SS-11
GP-24
AREA C
NORTHWALL-2 AREA C
WESTWALL-1 AREA C
GP-18
EASTWALL-2 AREA C
SS-9
GP-9
SOUTHWALL-2 AREA C

| EASTWALL-2 AREA C | 2'-8' |
|---|---|
| PCB's | 530 |

| SOUTHWALL-2 AREA C | 2'-8' |
|---|---|
| PCB's | 300 |

BRICK WALL

BUILDING
BUILDING
CONCRETE PAD

SS-8 GP-5
MW-01
GP-1
WS-3A
WS-2
WS-4A
SS-1
BT-2A
SB-07
SB-08
W-2
WS-1A
W-11
W-3
GP-3
WS-5A
W-10A
SB-01
BT-1A
B-1
GP-6
SB-06
W-5
SS-2
W-8
AREA E
W-1
W-7
B-2
MW-02
SB-05
SB-03
SB-02
SS-4
W-6
SS-3
B-3
GP-7
SB-04
W-4
GP-25

GP-11
NORTHWALL-2 AREA D
WESTWALL-1 AREA D
AREA D
GP-12
WS-6A
EASTWALL-1 AREA D
SOUTHWALL-1 AREA D

| NORTHWALL-2 AREA D | 0'-3' |
|---|---|
| PCB's | 39 |

SS-10
SS-6
SS-5
SS5-NORTH
SS5-WEST
SS5-EAST
SS5-FLOOR
SS5-SOUTH
EXCAVATION AREA SS-5
SS-7
GP-4
GP-14
GP-10
MW-05
SB-13
GP-8

NIAGARA STREET

## LEGEND

- MONITORING WELL (JUNE 2011)
- SURFACE SOIL SAMPLE (SEPTEMBER 2009)
- SURFACE SOIL SAMPLE (JUNE 2011)
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- PHASE I IRM EXCAVATIONS (SEPTEMBER – OCTOBER 2010)
- PHASE II IRM EXCAVATIONS (JANUARY 2013)
- IRM EXCAVATION AREAS
- APPROXIMATE AREA OF CONTAMINATED FILL SOIL
- FORMER FOUNDATION WALL STILL PRESENT

| EASTWALL-2 AREA C | 2'-8' |
|---|---|
| PCB's | 530 |

SAMPLE I.D./DEPTH
CONCENTRATION IN ppm

* FURNACE PIT AREA SAMPLE DEPTHS ARE RELATIVE TO PRE-EXISTING PIT SURFACE

NA NOT APPLICABLE

10 0 10
APPROXIMATE SCALE IN FEET



| NO. | DATE | DESCRIPTION |
|---|---|---|
| | | REVISIONS |

LiRo Engineers, Inc.
690 Delaware Ave.
Buffalo, New York

PROJ. ENG.:
DESIGNED BY:
CHECKED BY:
DRAWN BY:
CLIENT:
DATE: JUNE 2013
SCALE: AS SHOWN

JOB TITLE AND LOCATION:
CITY OF BUFFALO - ERP INVESTIGATION
OF 1318 NIAGARA STREET

LIRO JOB NO.: 09-29-426
SHEET OF

DRAWING TITLE:
ALTERNATIVE 3 - EXCAVATION/DISPOSAL OF SOILS OVER 10 PPM

FIGURE NO. 7

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