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October 2, 2015

Mr. David Locey
NYSDEC Region 9
270 Michigan Avenue
Buffalo, NY 14203

RE: Alternatives Analysis Report/Remedial Action Plan Addendum
ENRX, Inc. – Voelker Analysis Site (ID# C915150)
AFI Project: A12B-ENRX-BCP

Dear Mr. Locey:

AFI Environmental (AFI) has prepared this *Alternatives Analysis Report/ Remedial Action Plan (AAR/RAP) Addendum* on behalf of Diamond Hurwitz Scrap, LLC. (DHS) for the Site located at 766 New Babcock Street in the City of Buffalo, Erie County, New York (the Site). The Site is listed as "ENRX, Inc.-Voelker Analysis" in the New York State Department of Environmental Conservation (NYSDEC) Brownfield Cleanup Program (BCP) (Site number C915150). The purpose of this addendum is to document the revised selected remedy per the on-site discussion with NYSDEC on August 17, 2015. During this discussion, NYSDEC indicated the proposed selected remedy (i.e., groundwater pump and control via extraction from BR-7) outlined in the Revised Supplemental Remedial *Investigation Report/Alternatives Analysis Report/Remedial Action Plan* submitted by AFI to NYSDEC in May 2015, was not acceptable to the Department, and that a more aggressive approach consisting of pumping from the source area (i.e., BR-1 and/or BR-2) would be required.

This addendum outlines AFI's remedial plan for capping the entire site with asphalt and/or concrete pavement, installing and operating a bedrock groundwater pump and treat (GWP&T) system with extraction via down well, pneumatic pumps in BR-1 and BR-2, and installation and operation of a sub-slab depressurization system (SSD).

Please note installation of the recommended remedy is currently underway.

If you have any questions or comments regarding our report, please contact AFI at 716-283-7645 at your convenience.

Sincerely,
AFI Environmental

Steven Leitten
Senior Project Manager

Cc: Mr. Mike Diamond, DHS
Mr. Steve Olgin, DHS
Ms. Deborah Chadsey, Kavinoky Cook LLP
Mr. William Heitzenrater, AFI Environmental
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Enclosure
A12B-ENRX-BCP FINAL AAR Addendum 10 02 15 rev3

Alternatives Analysis Report / Remedial Action Plan Addendum

Prepared For:
Diamond Hurwitz Scrap, LLC
267 Marilla Street
Buffalo, New York 14220

Project Location:
ENRX, Inc. – Voelker Analysis
766 New Babcock Street
Buffalo, New York 14206
Site ID. C915150

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October 2015

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1.0 INTRODUCTION

AFI Environmental (AFI) has prepared this *Alternatives Analysis Report/ Remedial Action Plan* (AAR/RAP) *Addendum* on behalf of Diamond Hurwitz Scrap, LLC. (DHS) for the Site located at 766 New Babcock Street in the City of Buffalo, Erie County, New York (the Site). The Site is listed as "ENRX, Inc.-Voelker Analysis" in the New York State Department of Environmental Conservation (NYSDEC) Brownfield Cleanup Program (BCP) (Site number C915150). The purpose of this addendum is to document the revised selected remedy per the on-site discussion with NYSDEC on August 17, 2015. During this discussion, NYSDEC indicated the proposed selected remedy (i.e., groundwater pump and control via extraction from BR-7) outlined in the *Revised Supplemental Remedial Investigation Report/Alternatives Analysis Report/Remedial Action Plan* (Ref 1) submitted by AFI to NYSDEC in May 2015, was not acceptable to the Department, and that a more aggressive approach consisting of pumping from the source area (i.e., BR-1 and/or BR-2) would be required.

DHS, as a volunteer, whose liability arises solely as a result of ownership, is submitting this revised AAR/RAP in order to facilitate remediation of the Site under the BCP and to support a viable redevelopment and utilization of the property. The objective of the planned remediation activities, is to achieve the level for restricted use Soil Cleanup Objectives (SCOs) for commercial use identified in NYSDEC Title 6 (6) New York Codes, Rules and Regulations (NYCRR) Part 375 (Ref 2). A site location map is provided as **Figure 1**. A site map is provided as **Figure 2**.

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2.0 ALTERNATIVES ANALYSIS

The following alternative analysis is a continuation of the five (5) alternatives presented in the previously submitted SRIR/AAR/RAP (Ref 1).

2.1 Alternative #6: Track 4 Cleanup with GWP&T

2.1.1 Identification and Description

Remedial alternative #6 is defined as a Track 4 cleanup as defined in 6 NYCRR Subpart 375-3 (Ref 2) via capping of exposed surface soils with one or more volatile organic compound (VOC), semi-volatile organic compound (SVOC), polychlorinated biphenyl (PCB) and/or metal concentration exceeding 6 NYCRR Part 375 6.8 (b) (Ref 2) Commercial SCOs. Bulk reduction in bedrock groundwater contamination to asymptotic levels is achieved to the extent feasible through extraction of bedrock groundwater and light non-aqueous phase liquid (LNAPL) via down-well, pneumatic pump(s), separation of bedrock groundwater and LNAPL via an oil/water separator with appropriate off-site disposal of any LNAPL followed by treatment of bedrock groundwater via an air stripper and granulated activated carbon (GAC). Treated groundwater will be discharged under permit to the BSA combined sanitary/storm sewer system servicing the Site. Soil vapor impacts are mitigated through installation of a sub-slab vapor extraction system.

This remedy will include a number of long term institutional controls and engineering controls (IC/ECs). The engineering controls include maintaining the security fencing encompassing the site to prevent unauthorized personnel from accessing the Site and placement of pavement and/or concrete cover where contamination is present in the exposed surface soil above 6 NYCRR Part 375 6.8 (b) (Ref 2) Commercial SCOs. Additionally, two short term ECs (anticipated operation for three to five years) utilized as part of the remedy are the bedrock groundwater pump and treat (GWP&T) system coupled with the sub-slab vapor extraction system for the on-Site building. The institutional controls include obtaining an environmental easement restricting land use on the entire site to commercial use, preparation of a Site Management Plan (SMP) and periodic review of the IC/ECs to ensure the continued integrity of any such control.

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2.1.2 Screening and Analysis

A Track 4 cleanup as defined in 6NYCRR Subpart 375-3 (Ref 2) with bedrock GWP&T, and soil vapor mitigation was evaluated as a remedial alternative. A detailed evaluation of the alternative is presented on **Table 1**. It should be noted this table includes the alternatives presented in the previously submitted SRIR/AAR/RAP (Ref 1) for reference. This alternative is not technically and administratively difficult and, therefore, is readily implementable. A Track 4 cleanup would not reduce the soil impacts beyond what was achieved from implementing the IRMs during the RI but it would reduce the toxicity, mobility and volume of impacted bedrock groundwater and soil vapor beyond what was achieved from implementing the IRMs during the RI. A map showing the areas where contamination is present in the exposed surface soil above 6 NYCRR Part 375 6.8 (b) (Ref 2) Commercial SCOs is included as **Figure 3**. A map showing where asphalt and/or concrete pavement cover will be placed is shown in **Figure 4**. The remedy would provide compliance with all the RAOs established in Section 9.0 of the previously submitted SRIR/AAR/RAP (Ref 1). This remedy would not achieve 6 NYCRR Part 375 6.8 (b) (Ref 2) Commercial SCOs but would be compliant with guidance outlined in NYSDEC Department of Environmental Remediation (DER)-10; *Technical Guidance for Site Investigation and Remediation* (Ref. 3) regarding appropriate measures to take regarding exposed surface soil that does not meet appropriate SCOs. The remedy would strive to be compliant with groundwater standards contained in NYSDEC TOGS 1.1.1 (Ref 4) and would be compliant with soil vapor guidance contained in NYSDOH *Guidance for Evaluating Soil Vapor Intrusion in the State of New York* (Ref 5). Because the remedy achieves the RAOs for soil impacts on-Site, provides hydraulic control and mitigates soil vapor impacts it would result in long-term effectiveness.

The short-term effectiveness of the technology would be high because of the minimal potential for exposure of environmental workers to the most impacted soil because cover will be placed over these soils as shown on **Figure 4**. Additionally, as shown on **Figure 4**, the anticipated bedrock GWP&T system piping trench is anticipated to be installed predominantly in areas that have previously been excavated, thus minimizing potential exposure to impacted soils. This would also minimize the potential to place the surrounding community at risk from vapors and odors, therefore, it is unlikely odor suppression agents such as foam would be necessary. This remedy would not require temporary or permanent re-routing of

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the gas line servicing the on-Site building thus eliminating the potential to expose workers to an explosion hazard.

A Track 4 remediation with bedrock GWP&T alternative would necessitate trenching through soil/fill where concentrations exceed 6 NYCRR Part 375 6.8 (a) (Ref 2) Commercial SCOs as shown on **Figure 4**. Soils in these areas would need to be transported and disposed of at a permitted disposal facility. This alternative, however, minimizes the amount of soil needed to be transported off-site for disposal as well as the amount of clean fill/cover that is needed to be brought to the site.

This remedy ranks high from a cost perspective because this alternative is the least expensive of the remedial alternatives that can achieve all the RAOs for the Site that is acceptable to NYSDEC per the on-site meeting on August 17, 2015. A detailed cost analysis of this remedial option is included as **Table 2** which indicates the net present value of remedial option #6 is $1,744,741 inclusive of the capital cost of the IRM, the supplemental remedial investigation and the pumping test which is approximately $998,000.

This option provides for hydraulic control and mitigation of soil vapor impacts and minimizes excavation activities resulting in minimized dust, noise, truck traffic and potential nuisance odors. Therefore, this remedial option would most likely be positively perceived by the community.

3.0 RECOMENDATIONS

Based on the analysis provided in Section 11.0 of the previously submitted SRIR/AAR/RAP (Ref 1), the detailed alternative analysis in **Table 1** and the summary of lifecycle costs shown in **Table 2**, remedial alternative #6 (Track 4 cleanup with GWP&T), is the preferred remedial option. This option presents the least short term exposure risk to environmental workers and the community as well as being the most cost effective of the remedial alternatives that is compliant with SCGs, can achieve all the RAOs for the Site and will be acceptable to NYSDEC with respect to the area of pumping. It reduces the toxicity, mobility and volume of contamination at the Site and provides long term effectiveness to maintain protection of human health and the environment through the use of IC/ECs. Additionally, this alternative is most likely to be positively perceived by the community.

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4.0 REMEDIAL ACTION WORK PLAN

4.1 Introduction and Purpose

As discussed above, the AAR recommends a Remedial Action (RA) be conducted to address potential exposure risk. The RA is intended to address the exposure risks related to remaining SVOC and select metals impacts in soil, elevated VOC concentrations in soil vapor and indoor air, and LNAPL and elevated VOC, SVOC and PCB impacts in bedrock groundwater. The RAs recommended include placement of a soil cover over remaining surface soils with contaminant concentrations exceeding 6 NYCRR Part 375 6.8 (b) (Ref 2) Commercial SCOs, installation and operation of a vapor mitigation system for the on-Site building and installation and operation of a bedrock GWP&T system. Details of the design and installation of the aforementioned RAs are provided in following sections of this Remedial Action Work Plan (RAP).

All work conducted during implementation of the RAP will be completed in accordance with the RAP support documents discussed in Section 5.

4.2 Soil Cap Design and Installation

4.2.1 Design Basis and Remedial Goals

The soil analytical data discussed in Section 6.1 of the previously submitted SRIR/AAR/RAP (Ref 1) was used as the basis for determining where exposed surface soil contaminant concentrations exceed 6NYCRR Part 375 6.8 (b) (Ref 2) Commercial SCOs as shown on **Figure 3**. The remedial goal of the cap is to prevent contact or exposure to this soil, therefore, in accordance with guidance contained in NYSDEC DER-10 (Ref 3), these areas will be capped with asphalt/concrete pavement as shown on **Figure 4**.

4.2.2 Cap Installation

Pavement and/or concrete will be used as the cap over exposed surface soil with contaminant concentrations exceeding 6NYCRR Part 375 6.8 (b) (Ref 2) Commercial SCOs in the areas depicted on

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Figure 4. Fill material may be brought to the site for grading purposes. Fill material will be gravel, rock or stone consisting of virgin material from a permitted mine or quarry, or recycled concrete or brick from a NYSDEC registered construction and demolition debris processing facility provided the material conforms to the requirements of Section 304 of the New York State Department of Transportation Standard Specifications Construction and Materials Volume 1 (2002). Therefore, as specified in NYSDEC DER-10 (Ref 3), no documentation samples are required for this material.

4.3 Soil Cap Maintenance

Procedures for inspecting and maintaining the cap system will be outlined in the operation and maintenance (O&M) plan included in the SMP discussed in Section 4.8. At a minimum, the cap components will be inspected once a quarter for evidence of degradation, erosion or failure. Any such deficiency will be documented any corrected as soon as reasonable feasible.

4.4 Vapor Mitigation System Design and Installation

4.4.1 Design Basis and Remedial Goals

Sub slab and indoor air sampling data as discussed in Section 6.4 of the previously submitted SRIR/AAR/RAP (Ref 1) were used as the basis for the design of the vapor mitigation system. The remedial goal of the vapor mitigation system is to create a minimum negative pressure differential of at least 0.004 inches of water below the on-Site building concrete slab to prevent potential soil vapor intrusion into indoor air until such time as bedrock groundwater impacts have been remediated to where it would be appropriate to turn the system off.

4.4.2 Pre-Installation Activities

Prior to any installation, the concrete slab of the on-Site building will be inspected for any cracks and/or gaps that may compromise the integrity of the slab. A sealant will be used to fill and repair any cracks or gaps that are identified.

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4.4.3 Vapor Extraction Points

In order to achieve sufficient negative pressure (minimum pressure differential of 0.004 inches of water) under the concrete slab of the on-Site building, AFI anticipates installing three vapor extraction points in the vicinity of sub-slab sample points, SV1-SS and SV3-SS installed to conduct the SVI investigation in 2012 as shown on **Figure 4**. Details of a typical suction point are shown on **Figure 5**. The suction point will be constructed by drilling a 4-inch diameter hole through the existing concrete slab. Sufficient soil will be removed from beneath the slab to create the suction point sump. The sump will then be left open to create a void from which sub-slab soil gas is drawn from under the concrete slab. The vent pipe riser will be secured to a PVC (or similar) cover plate over the suction point. Silicone caulk will be used to seal the cover plate in place to minimize leakage of indoor air into the vapor mitigation system.

13.4.4 System Components

The proposed vent pipe riser will be composed of 1-inch Schedule 40 PVC pipe at the suction point that transitions to 2-inch Schedule 40 PVC pipe that connects to the regenerative blower in the remedial trailer. The bottom of the vent pipe riser will be secured to prevent downward migration of the vent pipe riser into the suction points. Each vent pipe riser will be equipped with a differential pressure gauge. This gauge will allow quick and easy confirmation that the system fan remains operational. An alarm will also be installed to alert building occupants if the system fails. A sticker with AFI contact information will be fixed on the vent pipe riser adjacent to the differential pressure gauge with instructions to contact AFI if the differential pressure gauge or alarm indicates that the system is not operating as intended.

From each suction point, the vent pipe riser will extend vertically up the nearest building wall. A 90^{o} PVC elbow will be used to run the vent pipe horizontally along the wall to connect to a common vent exhaust pipe. PVC joints and fittings will be used as needed to route the vent pipe riser around utilities or other building features as necessary. Supports for the vent pipe riser will be installed at least every eight (8) feet along length of the riser pipe. All PVC joints will be permanently sealed with PVC pipe cement to prevent leakage from the vent pipe riser.

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The common vent exhaust pipe riser will run through the building wall and connect to the regenerative blower in the remedial trailer. The vent pipe from the remedial trailer will discharge at least two feet above the top of the trailer, and at least ten feet from the nearest window.

The vapor mitigation system exhaust blower is a 10-HP regenerative blower. Specifications and blower curves will be included in the O&M plan included in the SMP discussed in Section 4.8. The blower is hard wired into the remedial trailer's electrical system to help ensure that the blower remains in continuous operation. For system safety and maintenance, a disconnect switch is located within sight of the fan.

4.5 Vapor Mitigation System Operation and Maintenance

Complete procedures for start-up, operating and maintaining the vapor mitigation system will be outlined in the O&M plan included in the SMP discussed in Section 4.8.

4.5.1 Verification of System Integrity

Following installation of the vapor mitigation system components, caulked joints and seals will require a minimum of one (1) day or more to cure, depending on manufacturer recommendations for each caulk and/or sealant used. Therefore, system start-up will be at least one (1) week from system installation. Upon system start-up, joints and seals will be visually and audibly inspected for leaks. If leaks are detected, the system will be turned off so that leaks can be repaired and allowed to set. The system will be initiated again as soon as feasible after leak repair (small leaks may only require a few minutes to set sufficiently for system start-up).

If no leaks are detected, all of the critical safety devices will be triggered to ensure correct operation. Any unsafe operating conditions and/or safety device deficiencies will be corrected before continuing to verification of system performance as described in Section 4.5.2. NYSDEC will be informed of any delays in system start-up as well as an anticipated resolution if the delay is expected to be greater than three (3) days.

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13.5.2 Verification of System Performance

Pending successful system start-up as described in Section 4.5.1, adequate system performance will be verified by installing several sub slab monitoring points at various points inside the on-Site building and verifying a minimum pressure differential of 0.004 inches of water. The sub slab monitoring points will be installed by drilling a ½-inch hole that penetrates at least six (6) inches below the concrete slab. A tube will be placed into the hole and the space between the tubing and concrete will be sealed. A pressure gauge will be connected to the tube to measure the pressure differential between the indoor air and the sub slab air. If in-sufficient pressure differential readings are obtained at any monitoring point, options for correcting the system deficiency will be evaluated and implemented. Additional testing and modifications will be conducted until such time as sufficient pressure differentials are obtained at all monitoring points.

Once sufficient pressure differentials are obtained at all monitoring points, the tubing will be removed from the monitoring points and the holes in the concrete slab will be sealed off. No further sub slab testing or system modifications will be conducted and routine system inspection and maintenance will be initiated as discussed in Section 4.5.3.

4.5.3 Quarterly System O&M Visits

Pending verification of adequate system performance as described in Section 4.5.2, quarterly system O&M visits will be conducted to verify that the system is operating as expected. Full details of the O&M procedures will be outlined in the O&M plan included in the SMP discussed in Section 4.8. At a minimum, the visit will include the following:

- A differential pressure gauge reading will be taken at each vapor extraction point and recorded.
- The condition of system piping, fittings, and pipe supports will be evaluated and recorded.
- The condition of foundation sealing will be evaluated and recorded.
- Changes to building structure will be evaluated and recorded.

Deficiencies identified during quarterly O&M visit will be corrected as soon as possible, typically within 30 days of discovery.

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4.6 Bedrock GWP&T System Design and Installation

4.6.1 Design Basis and Remedial Goals

Bedrock groundwater monitoring and sampling data as discussed in Section 6.2 of the previously submitted SRIR/AAR/RAP (Ref 1) and results of the various pumping tests discussed in Section 3.8 of the previously submitted SRIR/AAR/RAP (Ref 1) were used as the basis for the design of the bedrock GWP&T system. The remedial goals of the system are as follows:

- Bulk reduction in bedrock groundwater contamination to asymptotic levels to the extent feasible.
- Eliminate LNAPL in on-Site wells.
- Create an inward bedrock groundwater gradient to prevent impacted bedrock groundwater from exiting the site.

4.6.2 Bedrock Groundwater Extraction Well Network

A review of **Table 3** indicates the greatest impacts to bedrock groundwater for total VOCs, SVOCs and total PCBs exceeding NYSDEC TOGS 1.1.1 (Ref 4) groundwater standards are on the southwestern portion of the site (BR-1, BR-2, BR-9 and BR-11). As is shown in the bedrock groundwater elevation contours on **Figures 6 and 7**, wells BR-1, BR-2, BR-9 and BR-11 are located on the upgradient portion of the site. Therefore, it is advantageous to maximize groundwater capture in this area. As discussed in Section 5.5 of the previously submitted SRIR/AAR/RAP (Ref 1), a review of **Figure 8** shows bedrock groundwater on-Site could be completely captured by pumping at approximately 1 GPM out of BR-2 and could be further supplemented to the south by pumping approximately 0.5 GPM out of BR-1 in conjunction with BR-2. Therefore, in order to maximize bedrock groundwater recovery in the most impacted area of the site and to maximize the potential for groundwater capture to the south, BR-1 and BR-2 will be used as the bedrock groundwater extraction wells for the bedrock GWP&T system. **Figure 8** shows the anticipated ROI for the bedrock GWP&T system.

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4.6.3 System Components

The process and instrumentation diagram (P&ID) for the bedrock GWP&T system is included as **Figure 9**. The location of the bedrock GWP&T equipment trailer is shown on **Figure 4**. In order to recover bedrock groundwater in the extraction wells, controllerless, pneumatic, top-loading, total-fluids submersible pumps will be placed in each bedrock groundwater extraction well (BR-1 and BR-2). A typical recovery well is shown on **Figure 10**. Details of the actual pumps utilized will be included in the O&M plan included in the SMP discussed in Section 13.8. Air supply, pump exhaust and fluid discharge lines will run from the remedial system enclosure to the pumping wells in the bedrock GWP&T system trench as shown on **Figure 4**. A typical bedrock GWP&T system trench cross section is shown on **Figure 11**. The trench will be excavated to sufficient depth to facilitate installation of the piping on a six (6) inch bed of pea gravel and remain at least 36-inches below grade to protect the lines from freezing.

The soil around each pumping well will be removed to sufficient depth to facilitate necessary wellhead connections. It is anticipated the well casing will be cut off approximately 3-4 feet below grade where the pump air supply, air exhaust and fluid discharge lines will exit from the remedial system trench. The well cap will be modified to run the pump tubing through the cap and be fitted with a fastener to attach the support cable that will suspend the pump in the well. A traffic rated flush mount well vault of sufficient size (3 ft X 3 ft minimum) will be installed to provide adequate working room to perform maintenance activities as necessary.

An air compressor capable of supplying a minimum of 8-10 standard cubic feet per minute (SCFM) of air at a minimum of 125 pounds per square inch (psi) will drive the down-well submersible pumps. Details of the actual air compressor utilized will be included in the O&M plan included in the SMP discussed in Section 4.8. Based on the data collected during the pumping tests on BR-1 and BR-2, the total flow from the pumping wells is expected to be approximately 1-2 GPM.

The discharge from the pumps will combine in the remedial system enclosure and enter an oil/water separator (OWS) to separate the LNAPL from the bedrock groundwater before further treatment. Any LNAPL that collects in the OWS will be transferred into a storage drum for proper off-site disposal later. The OWS will be of sufficient size to be able to handle a flow rate of 2-6 GPM. Details of the actual OWS utilized will be included in the O&M plan included in the SMP discussed in Section 4.8.

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The granulated activated carbon (GAC) usage calculations shown in **Table 4** uses the latest bedrock groundwater sampling data from BR-1 and BR-2, indicates approximately 50 pounds of GAC per day is needed to treat the VOCs and SVOCs in the extracted bedrock groundwater prior to discharge. Based on the calculated carbon usage for two (2) 500 pound GAC units in series, breakthrough will occur in approximately 21 days. This will result in numerous carbon change outs and increased cost for system operation. Therefore, AFI will utilize an air stripper prior to carbon treatment to help extend the life of the carbon units. This will also maximize the ability of the carbon to treat the PCBs which would not be removed by the air stripper. The air stripper will be sufficient size to handle a flow rate of 1-20 GPM and achieve approximately 99% efficiency. Details of the actual air stripper utilized will be included in the O&M plan included in the SMP discussed in Section 4.8.

Water from the air stripper will be pumped through a 10 micron followed by a 5 micron particulate filer before entering two (2) GAC units in series. The water will then flow through a 0.5 micron particulate filter followed by a flow totalizer and final permitted discharge into the BSA combined sanitary/storm sewer system.

The system will be connected to a central control panel and interlocked to automatically shut down on any of the following fault conditions:

- High water and/or LNAPL in the OWS;
- High water in the air stripper;
- High pressure in the air stripper if the trays become fouled;
- Low pressure in the air stripper if the blower shuts down;
- High water in the system enclosure sump if the system leaks anywhere along the treatment train; and,
- Any additional fault conditions identified during system installation.

An alarm will be installed to alert building occupants if any of the aforementioned fault conditions occur. A sticker with AFI contact information will be fixed on the remedial system equipment enclosure with instructions to contact AFI if the alarm indicates that the system is not operating as intended.

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4.7 Bedrock GWP&T Operation and Maintenance

Complete procedures for start-up, operating and maintaining the bedrock GWP&T system will be outlined in the O&M plan included in the SMP discussed in Section 4.8.

4.7.1 Verification of System Integrity

Following installation of the bedrock GWP&T mitigation system components, glued joints and seals will require a minimum of one (1) day or more to cure, depending on manufacturer recommendations for each caulk and/or sealant used. Therefore, system start-up will be at least one (1) week from system installation. Prior to system start-up, each bedrock monitoring well will be measured for static groundwater level and LNAPL using an oil/water interface probe. Upon system start-up, joints and seals will be visually and audibly inspected for leaks. If leaks are detected, the system will be turned off so that leaks can be repaired and allowed to set. The system will be initiated again as soon as feasible after leak repair (small leaks may only require a few minutes to set sufficiently for system start-up).

If no leaks are detected, all of the critical safety devices will be triggered to ensure correct operation. Any unsafe operating conditions and/or safety device deficiencies will be corrected before continuing to verification of system performance as described in Section 4.7.2. NYSDEC will be informed of any delays in system start-up as well as an anticipated resolution if the delay is expected to be greater than three (3) days.

4.7.2 Verification of System Performance

Pending successful system start-up and critical safety device validation as described in Section 4.7.1, daily system O&M visits will be conducted for a minimum of three (3) consecutive days. The following tasks and any additional tasks identified during system install and/or system start-up will be completed during the system shakedown period:

- Monitor the water/LNAPL levels in the pumping wells (BR-1 and BR-2) to ensure maximum drawdown is maintained;

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- Monitor the water/LNAPL levels in the remaining bedrock monitoring wells and compare to the pre start-up static water levels to verify system ROI;
- Inspect the system piping and components for leaks that may develop over time;
- Monitor the rate of LNAPL collection in the OWS to determine an appropriate removal rate to prevent excessive LNAPL accumulation in the OWS;
- Monitor the air stripper for potential fouling by biological processes and/or chemical precipitates;
- Monitor the effluent of the air stripper with a PID and/or lab samples to determine if a permit and/or effluent treatment is necessary;
- Monitor the transfer pumps, pressure gauges and liquid levels in the system components to ensure flow rates are optimized.
- Monitor the pressure differential across the particulate filters and the GAC units for excessive blockage preventing adequate system flow.
- At least once, collect a water sample to be sent for laboratory analysis for TCL VOCs by USEPA method 8260, TCL SVOCs using USEPA method 8270 and PCBs using USEPA method 8082 at the following locations:
    - Influent to the OWS;
    - Influent to the air stripper;
    - Influent to the GAC units;
    - In-between the GAC units; and,
    - Effluent to the BSA combined sanitary/storm sewer system (laboratory analysis dependent on permit requirements).

If system operating deficiencies are discovered, system operation, components and/or configuration will be modified as necessary to achieve required system performance objectives. Any system design or component modifications will be reported to NYSDEC. Additional daily O&M visits will be conducted as needed to ensure the bedrock GWP&T system is operating as designed. Once the system has been optimized and is operating as designed, routine O&M will be initiated as described in the following sections.

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4.7.3 Bi-Weekly O&M Visits

Pending verification of adequate system performance as described in Section 13.7.2, bi-weekly system O&M visits will be conducted to verify the system is operating as expected. Full details of the bi-weekly O&M procedures will be outlined in the O&M plan included in the SMP discussed in Section 4.8. At a minimum, the bi-weekly O&M visit will include the following:

- A depth to water and/or LNAPL reading will be collected at each pumping well and recorded.
- Any down well pump found to be malfunctioning will be pulled and cleaned and/or repaired and returned to service. After pumping is resumed, the water level in the pumping well will be monitored to ensure maximum drawdown in achieved.
- The condition of bedrock monitoring wells, pumping well vaults, system piping, fittings, and remedial system enclosure will be evaluated and recorded.
- Any LNAPL that has collected in the OWS will be transferred into a storage drum if necessary. The volume of any collected LNAPL will be recorded.
- The air stripper will be inspected for potential fouling by biological processes and/or chemical precipitates. All pressure gauge readings will be recorded.
- A PID reading will be collected from the air stripper effluent stack and recorded.
- The pressure differential across the particulate filters and the GAC units will be recorded. The particulate filters will be changed if excessive pressure differentials indicate clogged filters.
- The totalizer reading will be recorded.
- Any bi-weekly routine equipment maintenance per manufacture specifications will be completed.
- If sufficient waste (LNAPL and/or personal protective equipment [PPE]) has accumulated, waste pick-up and disposal will be conducted.

Deficiencies identified during bi-weekly bedrock GWP&T O&M visits will be corrected as soon as possible, typically within 30 days of discovery. If any deficiency requires temporary shut-down of the system for more than three (3) days, NYSDEC will be notified of the deficiency requiring the shut-down and an anticipated schedule for system repair and start-up.

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4.7.4 Monthly O&M Visits

Full details of the monthly O&M procedures will be outlined in the O&M plan included in the SMP discussed in Section 4.8. At a minimum, the monthly O&M visit will include the following:

- All components of the bi-weekly O&M visit will be completed as necessary.
- System performance monitoring samples will be collected at two locations in the groundwater treatment chain. The samples will typically be collected at the system influent to monitor contaminant reduction over time and before the secondary GAC unit to monitor for carbon breakthrough in the primary GAC unit. Samples will be sent for laboratory analysis for TCL VOCs by USEPA method 8260, TCL SVOCs using USEPA method 8270 and PCBs using USEPA method 8082.
- Results of the system samples will be used to modify system operation and to determine appropriate timing of carbon change-outs.
- Additional samples may be collected if warranted.
- An air sample will be collected from the effluent of the air stripper if required by any necessary discharge permit.
- Any monthly routine equipment maintenance per manufacture specifications will be completed.

Deficiencies identified during monthly bedrock GWP&T O&M visits will be corrected as soon as possible, typically within 30 days of discovery. If any deficiency requires temporary shut-down of the system for more than three (3) days, NYSDEC will be notified of the deficiency requiring the shut-down and an anticipated schedule for system repair and start-up.

4.7.5 Quarterly O&M Visits

Full details of the quarterly O&M procedures will be outlined in the O&M plan included in the SMP discussed in Section 4.8. At a minimum, the quarterly O&M visit will include the following:

- All components of the bi-weekly and monthly O&M visits will be completed as necessary.
- Quarterly discharge sampling will be conducted per requirements in the BSA discharge permit.
- The air stripper trays will be cleaned per manufacturer recommendations if required.

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- A carbon change-out will be conducted if warranted.
- Any quarterly routine equipment maintenance per manufacture specifications will be completed.

Deficiencies identified during quarterly bedrock GWP&T O&M visits will be corrected as soon as possible, typically within 30 days of discovery. If any deficiency requires temporary shut-down of the system for more than three (3) days, NYSDEC will be notified of the deficiency requiring the shut-down and an anticipated schedule for system repair and start-up.

4.7.5 Annual O&M Visits

Full details of the annual O&M procedures will be outlined in the O&M plan included in the SMP discussed in Section 4.8. At a minimum, the annual O&M visit will include the following:

- All components of the bi-weekly and monthly O&M visits will be completed as necessary.
- Bedrock groundwater monitoring and sampling will be conducted at wells BR-1, BR-2, BR-4, BR-7 and BR-13 to evaluate the effectiveness of the bedrock GWP&T system in reducing contaminant concentrations in bedrock groundwater. Each bedrock monitoring well will be measured for static bedrock groundwater level and LNAPL using an oil/water interface probe. Field personnel will purge and sample bedrock monitoring wells using a submersible pump with dedicated pump tubing following low-flow/minimal drawdown purge and sample collection procedures In the event of pump failure or the saturated unit does not permit the proper implementation of low-flow sampling, a dedicated polyethylene bailer will be used to purge and sample the well.
- Any annual routine equipment maintenance per manufacture specifications will be completed.

Deficiencies identified during the annual bedrock GWP&T O&M visit will be corrected as soon as possible, typically within 30 days of discovery. If any deficiency requires temporary shut-down of the system for more than three (3) days, NYSDEC will be notified of the deficiency requiring the shut-down and an anticipated schedule for system repair and start-up.

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4.8 Institutional and Engineering Controls

Following completion of the RA activities the following Institutional and Engineering Controls (IC/ECs) will be in place or implemented:

- The cover system described in Sections 4.2 and 4.3 will serve as a long term (longer than five [5] years) EC for the site.
- The security fence currently surrounding the site will serve as a long term EC for the site.
- The bedrock GWP&T system described in Sections 4.6 and 4.7 will serve as a short term (three [3] to five [5] years) EC for the site. AFI anticipates shutdown of the GWP&T system may be achieved in three to five years (i.e., mass recovery by the system has reached asymptotic conditions) but will keep the system in operation until shutdown is approved by NYSDEC.
- The vapor mitigation system described in Sections 4.4 and 4.5 will serve as a short term EC for the site operated in conjunction with the GWP&T system.
- An environmental easement will be prepared that restricts site use to commercial/industrial use, only and prohibits the use of groundwater at the site.
- A Site Management Plan (SMP) will be prepared in accordance with Section 6.2 of NYSDEC DER-10 (Ref 3) which will include the following components:
    - An institutional and engineering control plan detailing the steps and media-specific requirements necessary to assure the institutional and/or engineering controls remain in place and effective, identification of items to be evaluated for the IC/EC certification, identification of areas of the site where contamination remains to be managed by the SMP, an excavation plan for managing site excavations and a site-specific HASP and CAMP.
    - A monitoring plan describing the measures for monitoring the performance and effectiveness of the bedrock GWP&T and vapor mitigation systems.
    - An operation and maintenance plan (O&M) describing the physical components of the bedrock GWP&T and vapor mitigations systems. The O&M plan will include procedures for start-up, operation, monitoring, optimization and maintenance of remedial systems.

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5.0 REMEDIAL ACTION WORK PLAN SUPPORT DOCUMENTS

All work conducted during implementation of the RAP discussed in Section 4 will be conducted in accordance with the support documents discussed below.

5.1 Health and Safety Plan (HASP)

A Site specific Health and Safety Plan ("HASP") has been prepared in accordance with 40 CFR 300.150 of the NCP and 29CFR1910.120 for the proposed RAP activities. A copy of the HASP is included as **Appendix A**. The HASP will be enforced by AFI and any AFI subcontractors engaged in RI/IRM field activities in accordance with the requirements of 29 CFR1910.120. The HASP covers on-site investigation and interim remedial activities. Subcontractors will be required to develop and implement a HASP as or more stringent an AFI's HASP. Health and safety activities will be monitored throughout implementation of the RAP. A member of the field team will be designated to serve as the on-site Health and Safety Officer throughout the field program. This person will report directly to the Project Manager and the Corporate Health and Safety Coordinator. The HASP will be subject to revision as necessary, based on new information that is discovered during the field work. The HASP also includes a contingency plan that addresses potential site-specific emergencies.

5.2 Community Air Monitoring Plan (CAMP)

The HASP also includes a Community Air Monitoring Plan (CAMP) that describes required particulate and vapor monitoring to protect the neighboring community during intrusive site activities. The CAMP is included as **Appendix B**. The CAMP is consistent with the requirements for community air monitoring at remediation sites as established by NYSDOH and NYSDEC. Accordingly it follows procedures and practices outlined under NYSDOH's *Generic Community Air Monitoring Plan* (dated December 2002) and NYSDEC Technical Assistance and Guidance Memorandum (TAGM) 4031, *Fugitive Dust Suppression and Particulate Monitoring Program at Inactive Hazardous Waste Sites.*

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5.3 Quality Assurance Project Plan (QAPP)

There is no documentation and/or confirmatory sampling planned for the implementation of the RAP. If such conditions arise or if requested by NYSDEC to conduct documentation and/or confirmatory sampling, procedures outlined in the Quality Assurance Project Plan (QAPP) submitted as Appendix A of the *Supplemental Remedial Investigative Work Plan Brownfield Cleanup Program*, July 2014 (Ref 1) will be adhered to.

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6.0 SCHEDULE

Pending NYSDEC review and approval of the recommended remedial alternative set forth in Section 12.0 and subsequent receipt of the decision document (DD) detailing the approved remedial alternative for the Site issued by NYSDEC, AFI is prepared to proceed according to the following schedule:

Deliverable/Action	**Anticipated Deadline**
Implementation of the RAP	In Progress
Submittal of FER/SMP to NYSDEC	In Progress
Issuance of Certificate of Completion	December 31, 2015

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7.0 REFERENCES

1. AFI Environmental. *Revised Supplemental Remedial Investigative Report/Alternatives Analysis Report/Remedial Action Plan*. May 2015

2. New York State Department of Environmental Conservation. 6 *NYCRR Part 375 Environmental Remediation Programs Subparts 375-1 to 375-4 & 375-6*. December 14, 2006.

3. New York State Department of Environmental Conservation. *DER-10; Technical Guidance for Site Investigation and Remediation.* May 2010.

4. New York State Department of Environmental Conservation. Technical and Operational Guidance Series (TOGS) 1.1.1 *Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations*. June 1998

5. New York State Department of Health. *Guidance for Evaluating Soil Vapor Intrusion in the State of New York.* October 2006

FIGURES

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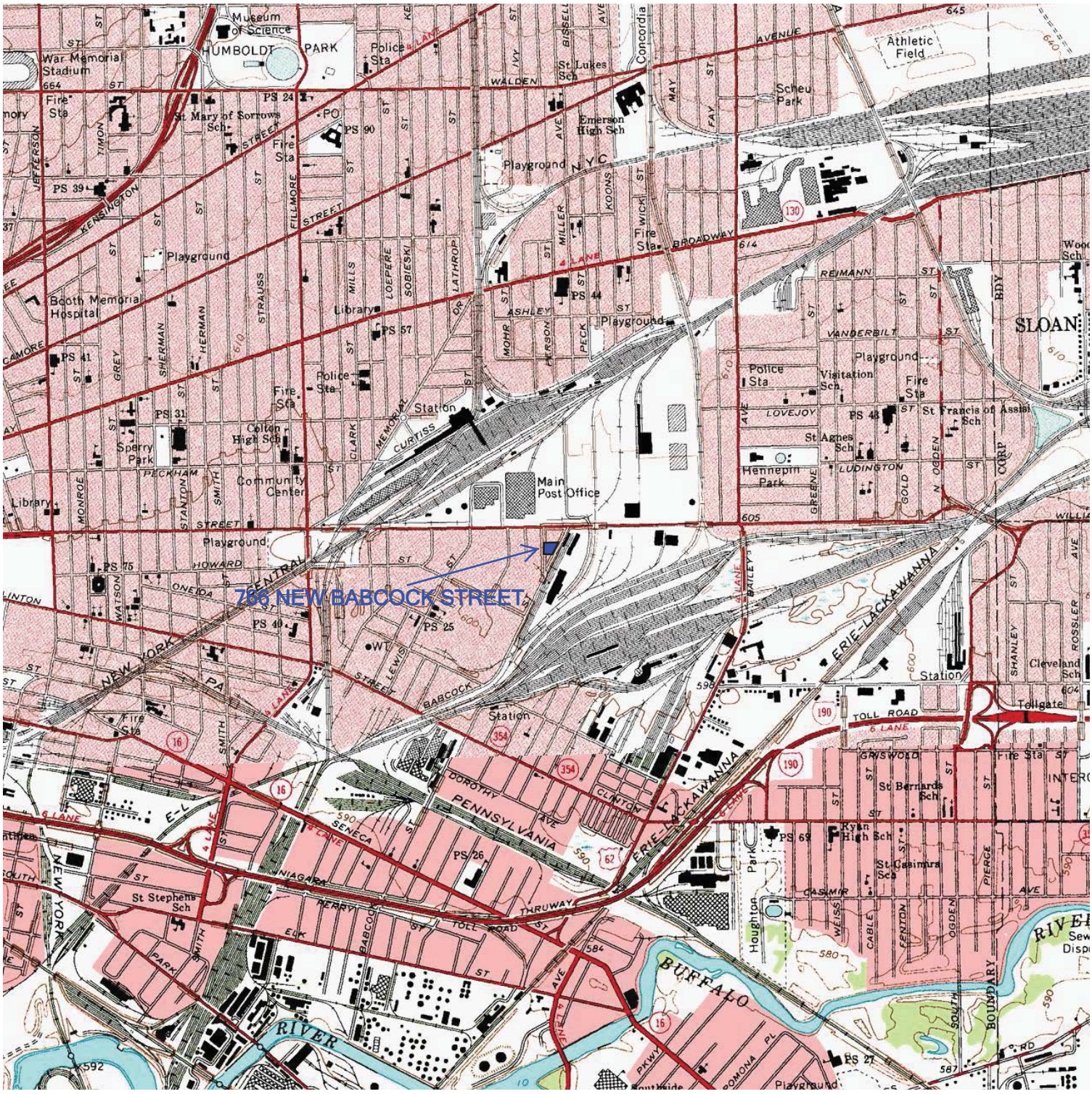

Source: United States Geological Survey (USGS) Topographic Map

Quadrangle Location

N

Scale: Undefined

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Niagara Falls, NY 14304

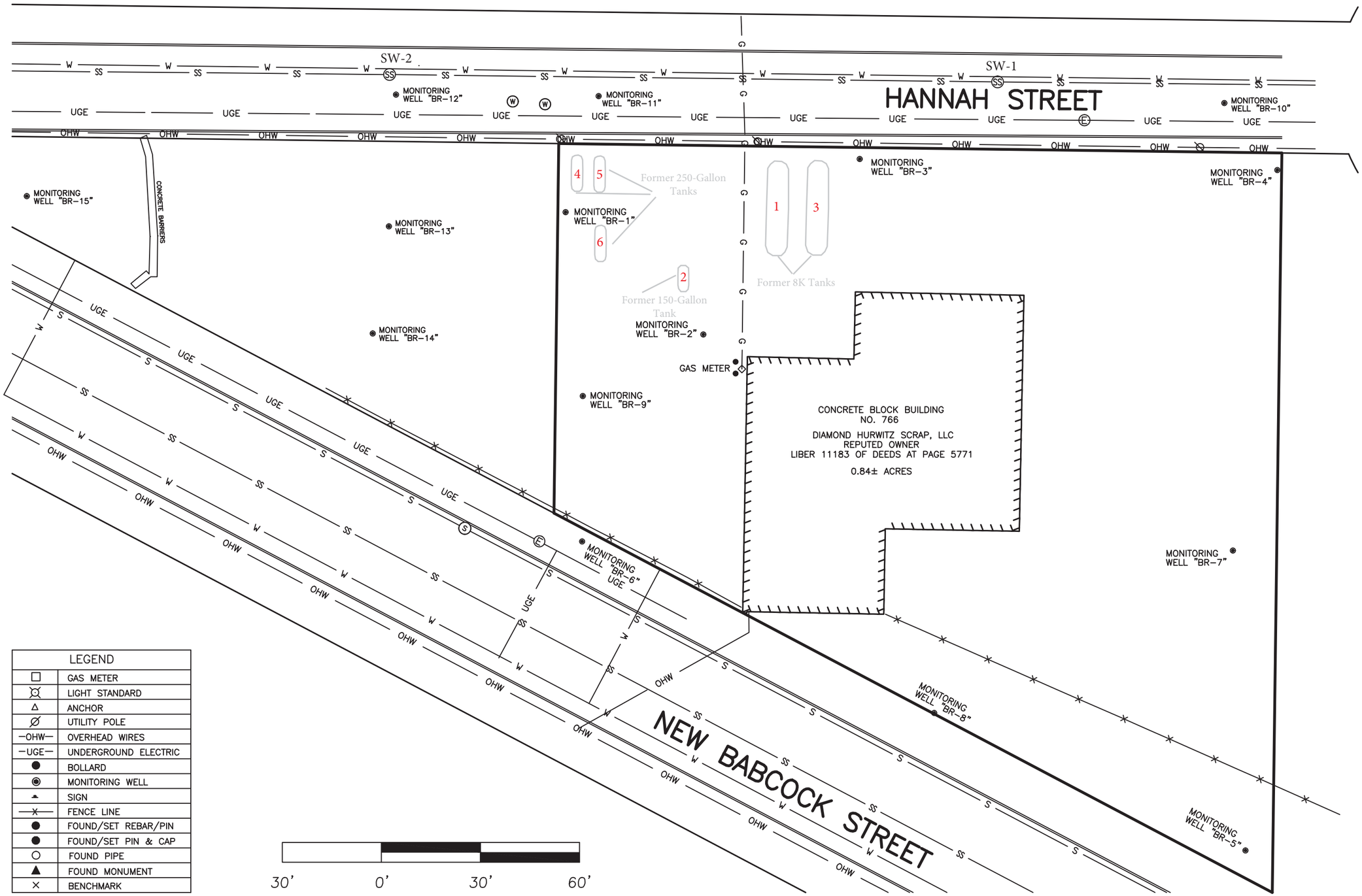
SITE LOCATION MAP

Former ENRX, Inc. - Voelker Analysis Site

766 New Babcock Street
Buffalo, NY 14207

Figure Number	Project Number
1	A12B- ENRX BCP

Date	Revision
8/13/2014	Rev1 ash



LEGEND	
□	GAS METER
⊠	LIGHT STANDARD
△	ANCHOR
⌀	UTILITY POLE
—OHW—	OVERHEAD WIRES
—UGE—	UNDERGROUND ELECTRIC
●	BOLLARD
◉	MONITORING WELL
▬	SIGN
—×—	FENCE LINE
●	FOUND/SET REBAR/PIN
●	FOUND/SET PIN & CAP
○	FOUND PIPE
▲	FOUND MONUMENT
×	BENCHMARK

1 Former UST Tank Number

30' 0' 30' 60'

GRAPHIC SCALE 1" = 30'

SITE MAP

FORMER ENRX, INC. - VOELKER ANALYSIS SITE
766 NEW BABCOCK STREET, BUFFALO, NY 14206

AFI ENVIRONMENTAL

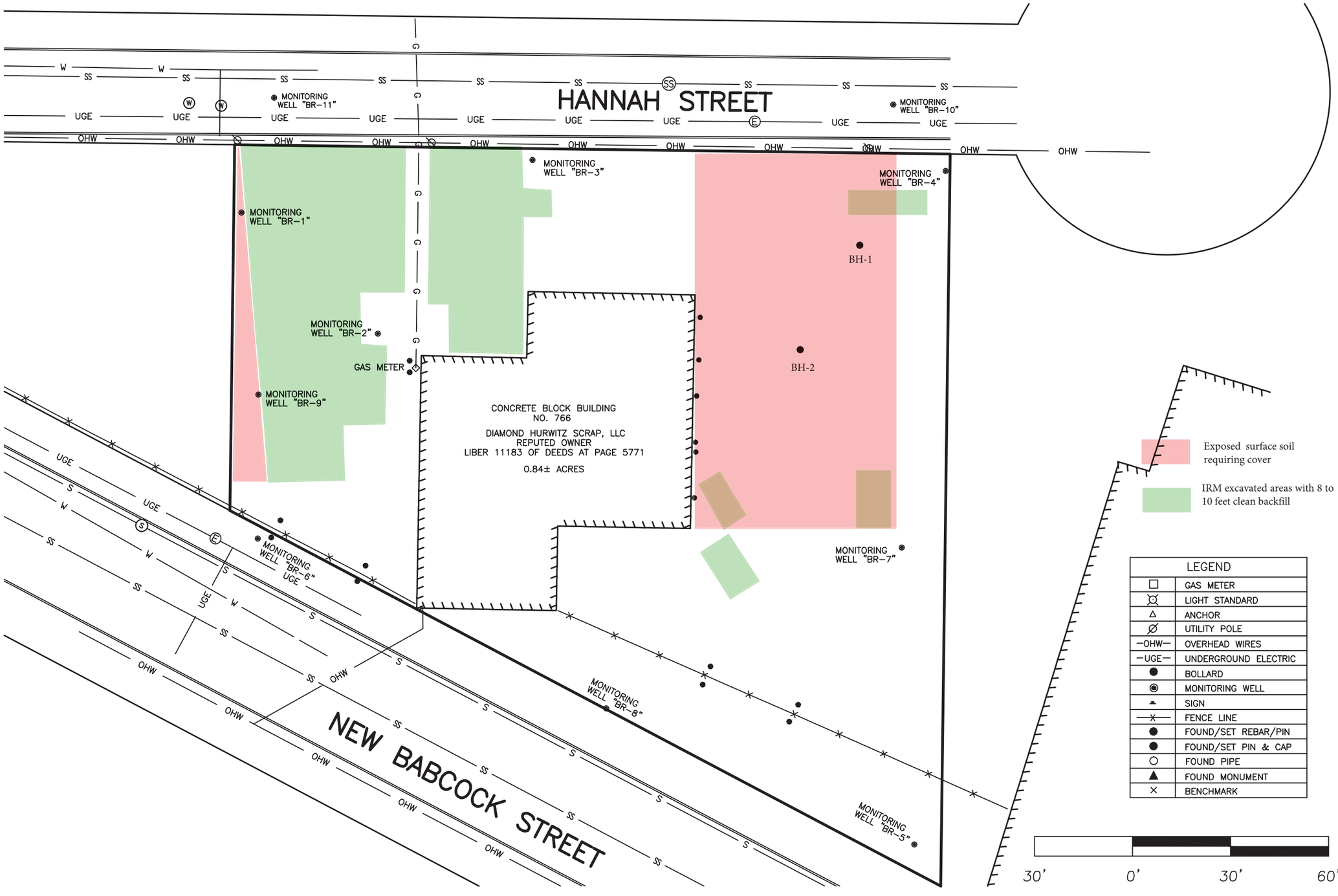
DATE
05/13/15

SCALE
1"=30'

FIGURE #
2

PROJECT #
A12B-ENRX BCP

REVISION #
Rev1 spl



Exposed Surface Soils Exceeding 6 NYCRR Part 375 6.8 (b) Commercial SCOs

FORMER ENRX, INC. - VOELKER ANALYSIS SITE
766 NEW BABCOCK STREET, BUFFALO, NY 14206

AFI ENVIRONMENTAL

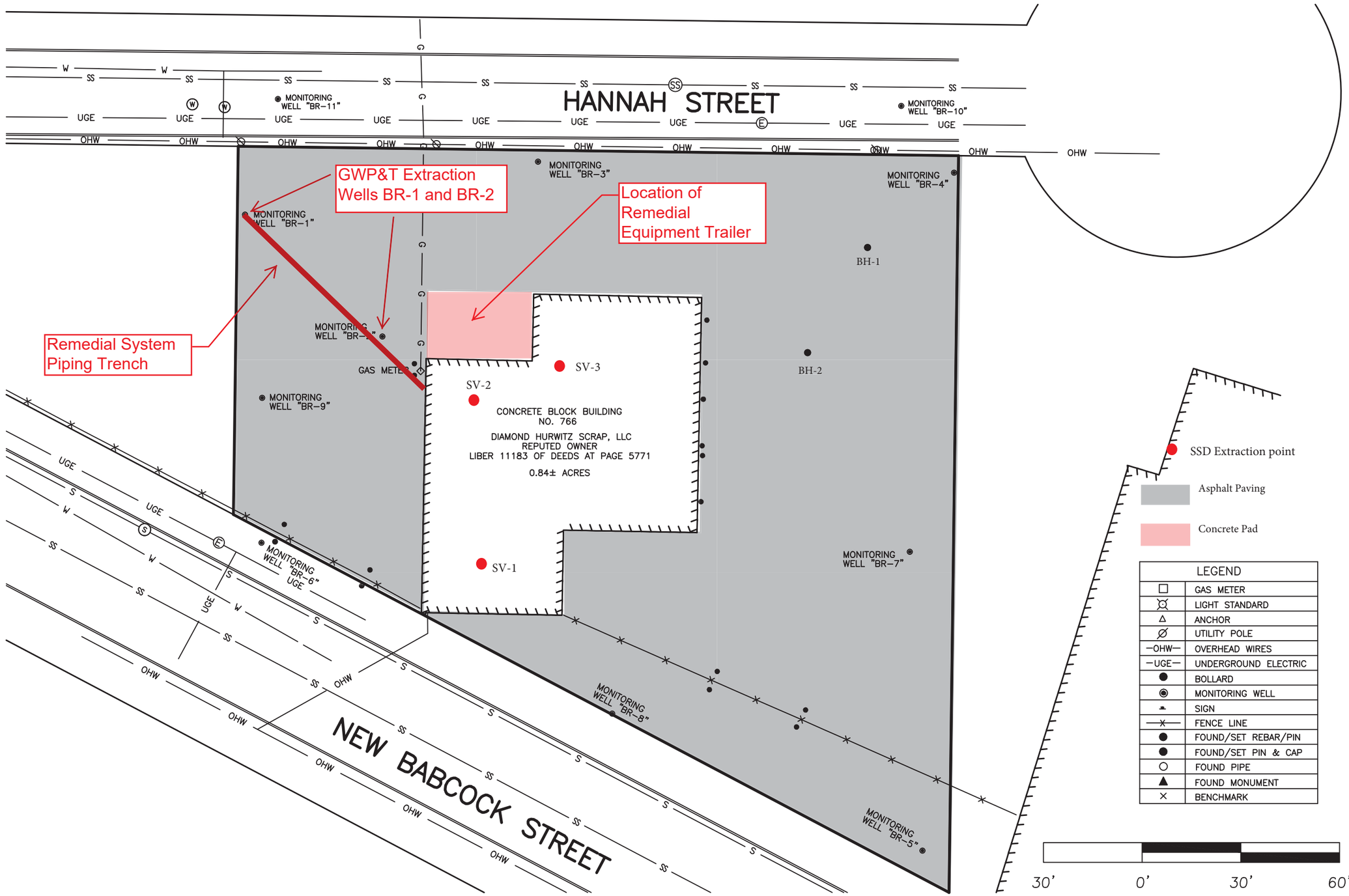
DATE
09/29/15

SCALE
1"=30'

FIGURE #
3

PROJECT #
A12B-ENRX BCP

REVISION #
Rev3 spl



Engineering Control Location Map

FORMER ENRX, INC. - VOELKER ANALYSIS SITE
766 NEW BABCOCK STREET, BUFFALO, NY 14206

AFI ENVIRONMENTAL

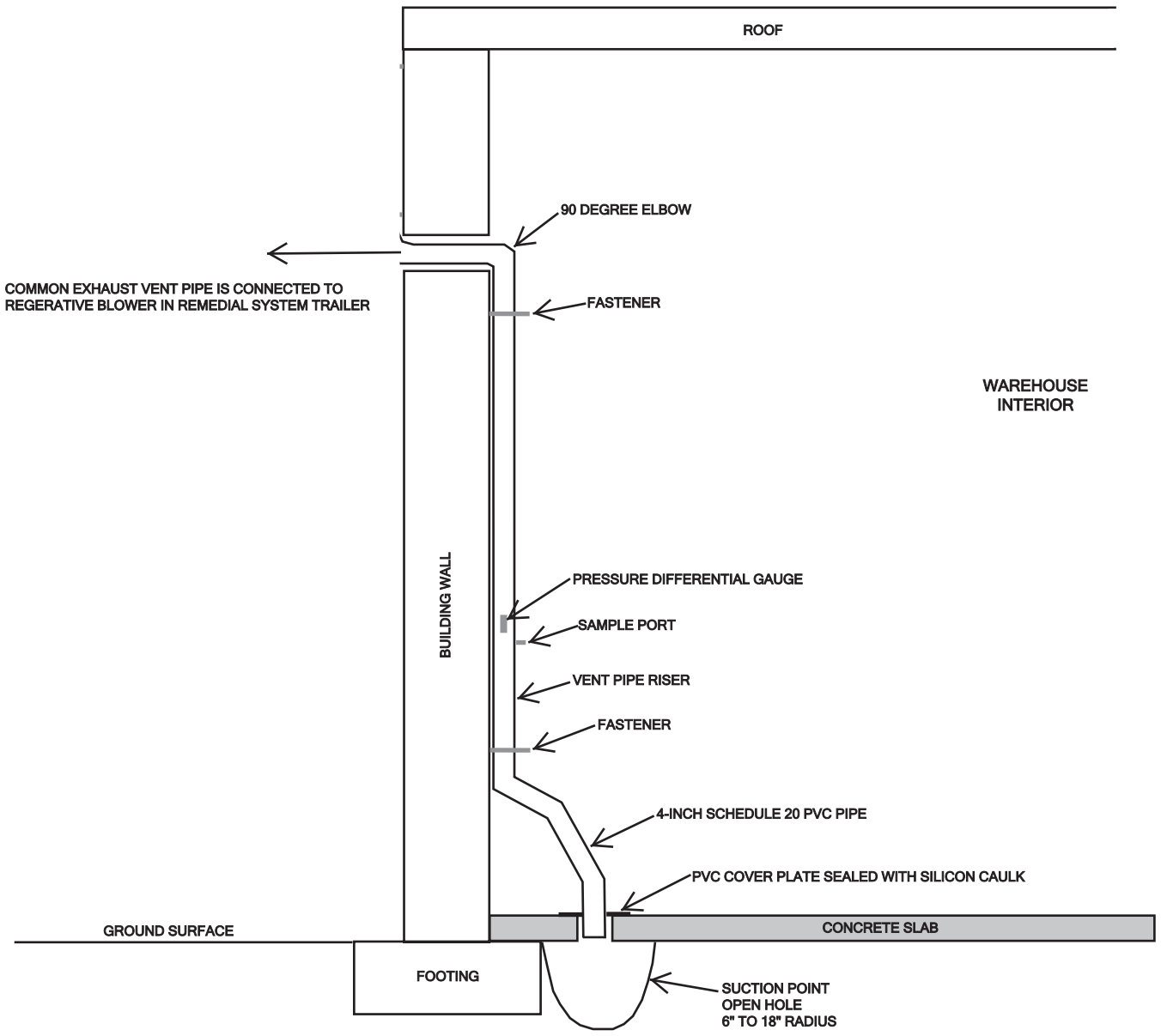
DATE
09/29/15

SCALE
1"=30'

FIGURE #
4

PROJECT #
A12B-ENRX BCP

REVISION #
Rev1 spl



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VAPOR MITIGATION SYSTEM DETAIL

Former ENRX, Inc. - Voelker Analysis Site

766 New Babcock Street
Buffalo, NY 14206

Figure Number
5

Project Number
A12B-ENRX BCP

Date
09/30/2015

Revision
Rev2spl

GROUNDWATER MONITORING AND SAMPLING MAP
AUGUST 20-22, 2014

FORMER ENRX, INC. - VOELKER ANALYSIS SITE
766 NEW BABCOCK STREET, BUFFALO, NY 14206

HANNAH STREET

NEW BABCOCK STREET

593.0
592.5
592.0
591.5
591.0

BR-1
592.73
14016
0.69
0.056 J

BR-2
592.27
942
16.29
8.0

BR-3
592.41
2077
7.15
0.083 U

BR-4
589.70
43.30
0.59 J
0.083 U

BR-5
593.19
0.79 J
ND
0.083 U

BR-6
593.18
235.75
1.93
0.083 U

BR-7
591.24
631.3
0.07 J
0.083 U

BR-8
591.48
158.34
0.38
0.083 U

BR-9
592.60
4155
18.05
0.083 U

BR-10
591.57
74.23
33.80
0.083 U

BR-11
592.66
13976
2.02
1.37

MONITORING WELL "BR-1"
MONITORING WELL "BR-2"
MONITORING WELL "BR-3"
MONITORING WELL "BR-4"
MONITORING WELL "BR-5"
MONITORING WELL "BR-6"
MONITORING WELL "BR-7"
MONITORING WELL "BR-8"
MONITORING WELL "BR-9"
MONITORING WELL "BR-10"
MONITORING WELL "BR-11"

APPARENT GROUNDWATER FLOW

GAS METER

CONCRETE BLOCK BUILDING
NO. 766
DIAMOND HURWITZ SCRAP, LLC
REPUTED OWNER
LIBER 11183 OF DEEDS AT PAGE 5771
0.084± ACRES

BR-1	- Monitoring Well Name
592.73	- GW Elevation (ft)
14016	- Total VOCs (ug/L)
0.69	- Total SVOCs (ug/L)
0.056 J	- Total PCBs (ug/L)

LEGEND	
□	GAS METER
⊠	LIGHT STANDARD
△	ANCHOR
⌀	UTILITY POLE
—OHW—	OVERHEAD WIRES
—UGE—	UNDERGROUND ELECTRIC
●	BOLLARD
◉	MONITORING WELL
▬	SIGN
—×—	FENCE LINE
●	FOUND/SET REBAR/PIN
●	FOUND/SET PIN & CAP
○	FOUND PIPE
▲	FOUND MONUMENT
×	BENCHMARK

591.0 — GW Contour Lines (ft)

30' 0' 30' 60'

GRAPHIC SCALE 1" = 30'

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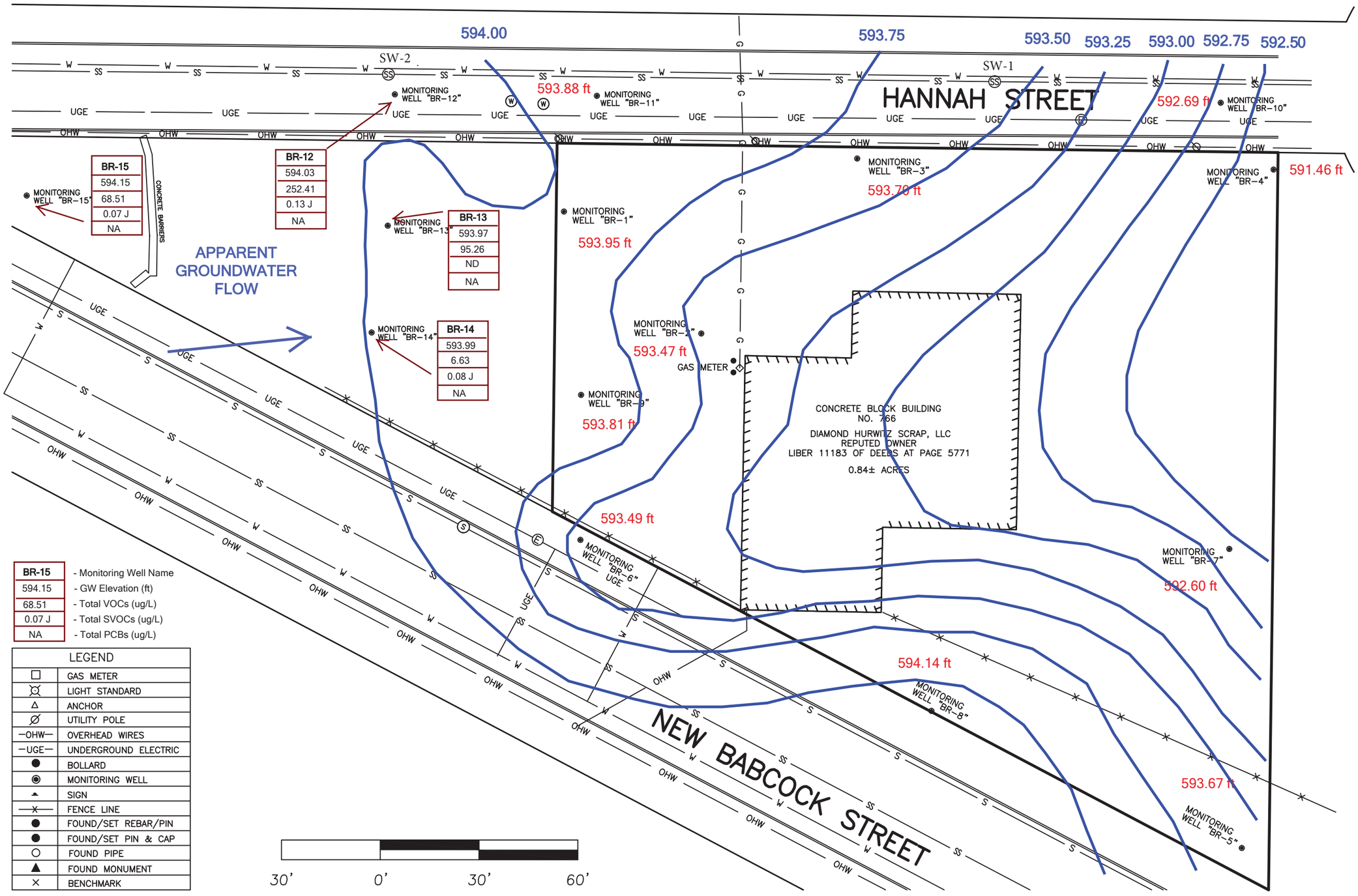
DATE	10/28/14
SCALE	1"=30'
FIGURE #	6
PROJECT #	A12B-ENRX BCP
REVISION #	Rev2 ash



GROUNDWATER MONTIORING AND SAMPLING MAP (APRIL 13-14, 2015)

FORMER ENRX, INC. - VOELKER ANALYSIS SITE
766 NEW BABCOCK STREET, BUFFALO, NY 14206

AFI ENVIRONMENTAL

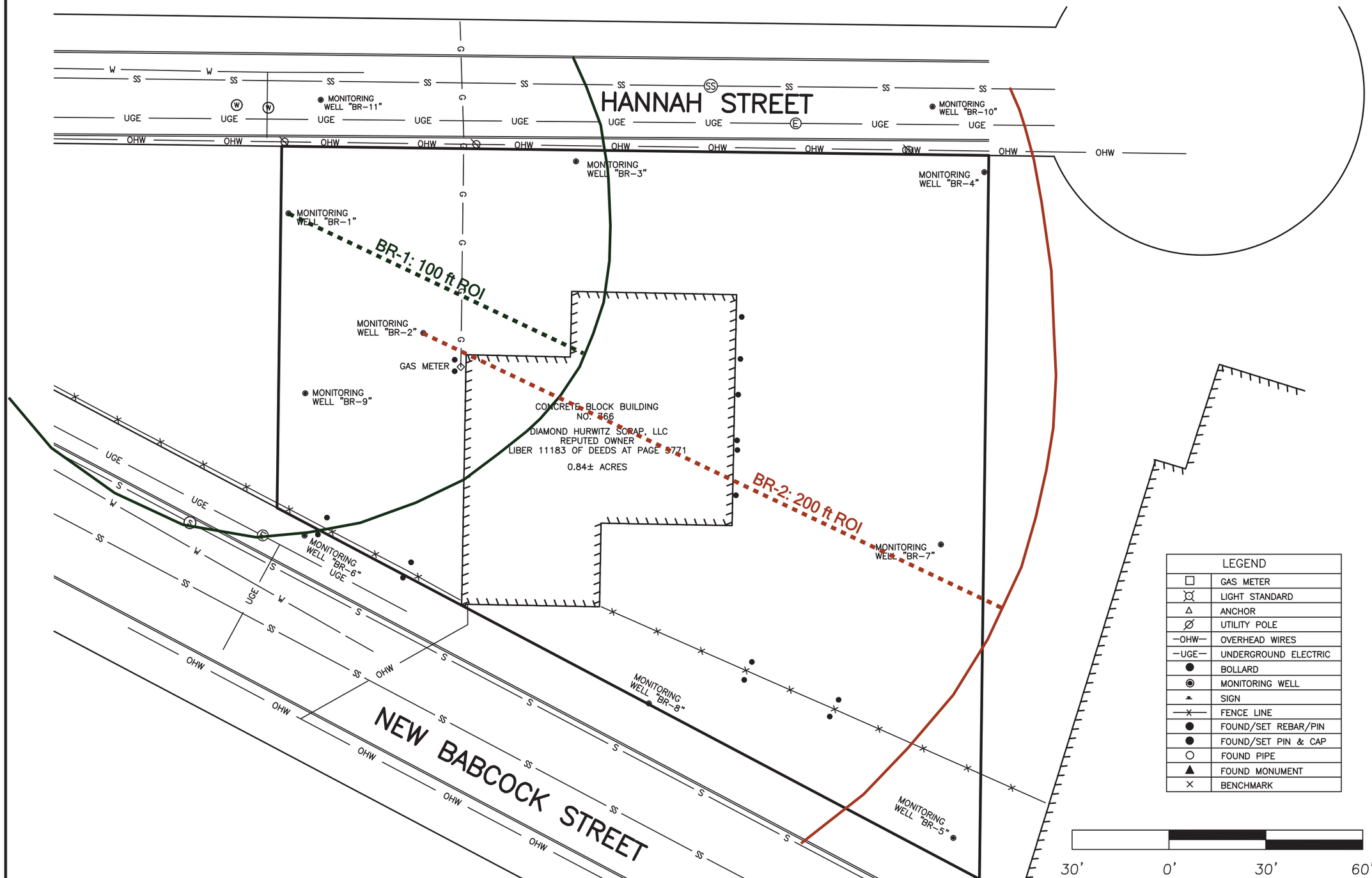
DATE
05/15/15

SCALE
1"=30'

FIGURE #
7

PROJECT #
A12B-ENRX BCP

REVISION #
Rev1 spl



PUMPING TEST AND ANTICIPATED GWP&T RADIUS OF INFLUENCE MAP

FORMER ENRX, INC. - VOELKER ANALYSIS SITE
766 NEW BABCOCK STREET, BUFFALO, NY 14206

AFI ENVIRONMENTAL

DATE
09/30/15

SCALE
1"=30'

FIGURE #
8

PROJECT #
A12B-ENRX BCP

REVISION #
Rev1 spl

PIPING & INSTRUMENTATION DIAGRAM
GROUNDWATER TREATMENT SYSTEM

DIAMOND HURWITZ SCRAP METAL
766 NEW BABCOCK STREET, BUFFALO, NY 14206

CE #2
CE #3
CE #4
CE #5
CE #6
CE #7
CE #8

FROM GROUNDWATER RECOVERY SYSTEM PUMP

PRODUCT RECOVERY TANK (SECONDARY CONTAINED) T-1

OUTSIDE EQUIPMENT CONTAINER

VENT TO OUTSIDE

OIL/WATER SEPARATOR OWS-1

2"-GW-SCH 80 PVC BY-PASS (FUTURE USE)

HOLDING TANK ST-1

TRANSFER PUMP TP-1

BAG FILTERS F-5 F-6

LIQUID PHASE GAC VESSELS (2) 1,000 # CARBON

AIR STRIPPER BLOWER B-1

AMBIENT AIR

LIQUID PHASE AIR STRIPPER AS-1

TRANSFER PUMP TP-2

VAPOR PHASE CARBON UNIT (2) 1,000 # VESSEL

DISCHARGE TO ATMOSPHERE (PERMIT PENDING)

2" HEATER

FLOOR SUMP (INSIDE EQUIPMENT CONTAINER)

SIPHON BREAK

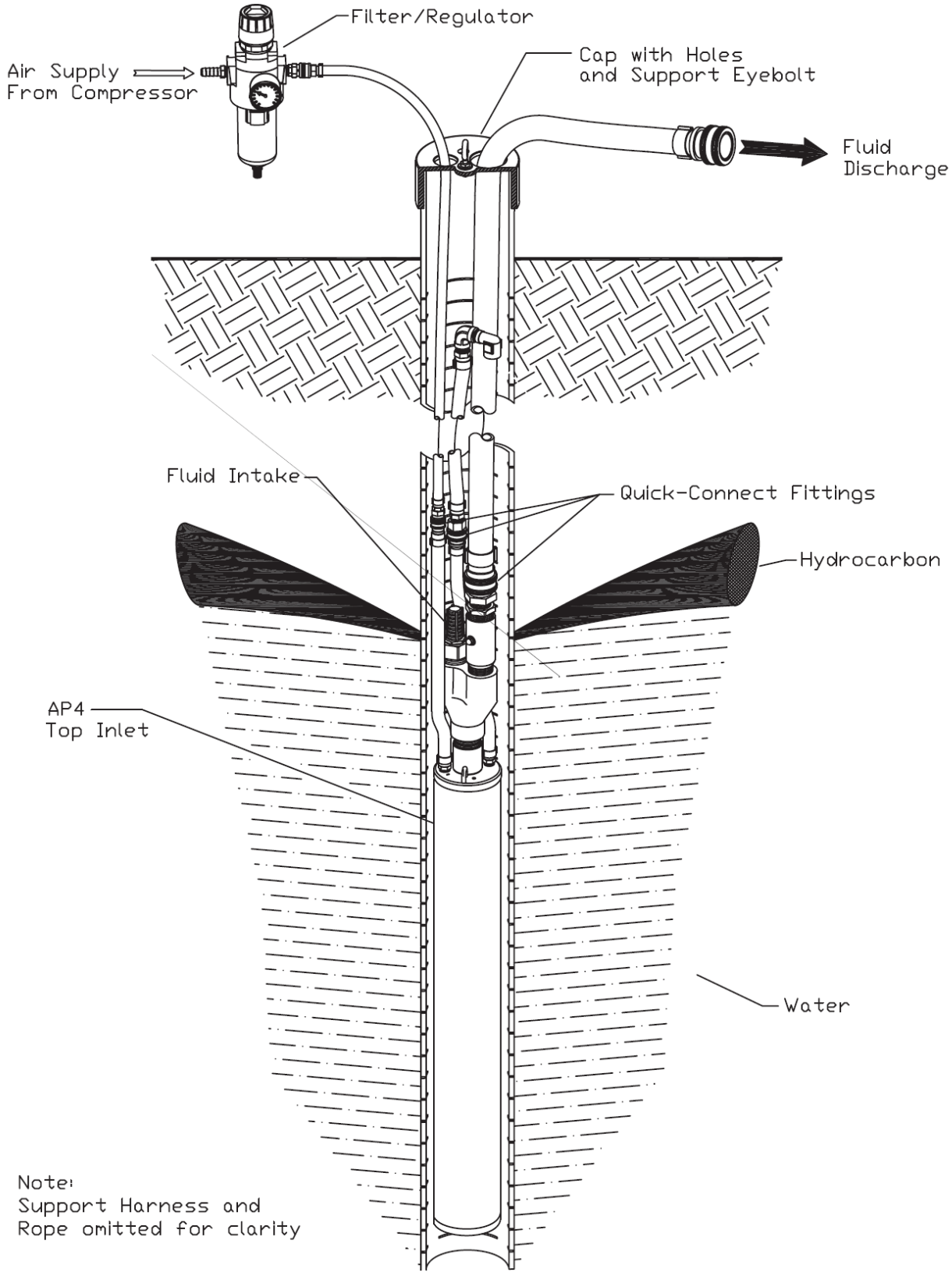
SP-001

ABOVE GRADE (INSIDE EQUIPMENT CONTAINER) BELOW GRADE

DISCHARGE TO SANITARY SEWER (PERMIT PENDING)

C1 C2
1,000 # Carbon

DATE	09/16/15
SCALE	N/A
FIGURE NUMBER	9
PROJECT NUMBER	A12B-ENRX BCP
REVISION	Rev1 ear



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Niagara Falls, NY 14304

TYPICAL GROUNDWATER EXTRACTION WELL

Former ENRX, Inc. - Voelker Analysis Site

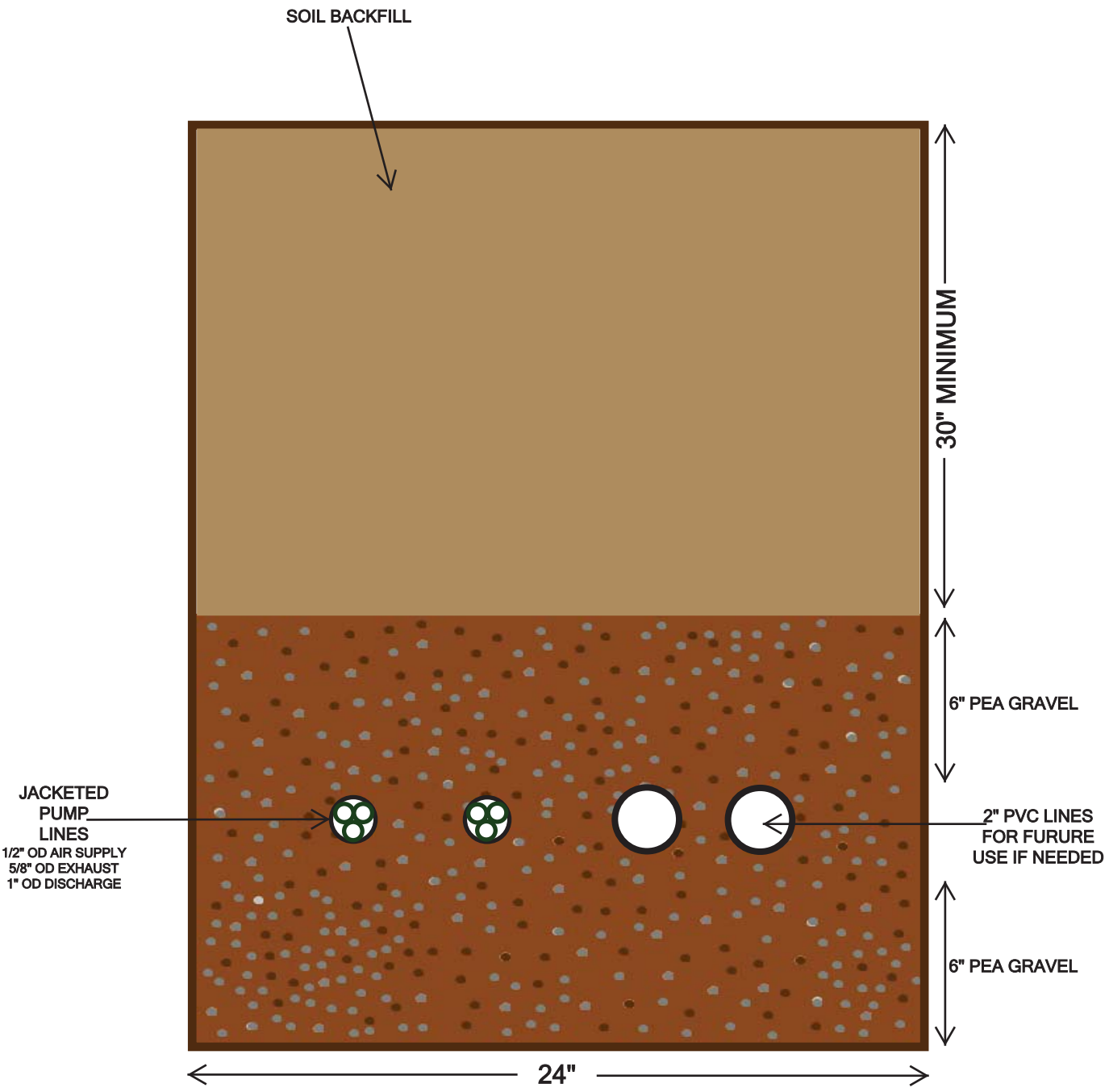
766 New Babcock Street
Buffalo, NY 14206

Figure Number
10

Project Number
A12B-ENRX BCP

Date
11/7/2014

Revision
Rev1spl



NOT TO SCALE

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TYPICAL GWP&T SYSTEM PIPING TRENCH CROSS SECTION

Former ENRX, Inc. - Voelker Analysis Site

766 New Babcock Street
Buffalo, NY 14206

Date	Revision
09/30/15	Rev1 spl

Figure Number: 11

Project Number: A12B-ENRX BCP

TABLES

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Table 1
Detailed Evaluation of Remedial Alternatives
ENRX, Inc. – Voelker Analysis
766 New Babcock Street
Buffalo, New York 14206
Site ID. C915150

EVALUATION CRITERIA	Alternative #1 No Further Action	Alternative #2 Track 4 Cleanup w/HIT Events	Alternative #3 Track 4 Cleanup w/GWP&C	Alternative #4 Track 2 Cleanup	Alternative #5 Track 1 Cleanup	Alternative #6 Track 4 Cleanup w/GWP&T
Overall Protection of the Public Health and the Environment Alternative eliminates, reduces or controls threats to public health and the environment.	• Volume and concentration of soil, GW and soil vapor contaminants will not be reduced beyond what was achieved through the IRM Activities. • RAOs for public health protection will not be met. • RAOs for environmental protection will not be met.	• Volume and concentration of soil contaminants, will not be reduced beyond what was achieved through the IRM Activities. • Volume and concentration of GW and soil vapor contaminants will be eliminated over time but impacted groudwater may exit the site in-between HIT events. • RAOs for public health protection will be met. • RAOs for environmental protection will not be met.	• Volume and concentration of soil contaminants, will not be reduced beyond what was achieved through the IRM Activities. • Volume and concentration of GW and soil vapor contaminants will be controlled and eliminated over time (10+ yrs). • RAOs for public health protection will be met. • RAOs for environmental protection will be met.	• Volume and concentration of soil contaminants will be reduced to meet commercial SCOs • Volume and concentration of GW and soil vapor contaminants will be controlled and eliminated over time. • RAOs for public health protection will be met. • RAOs for environmental protection will be met.	• Volume and concentration of soil contaminants will be eliminated. • Volume and concentration of GW will be controlled and eliminated over time. • Soil Vapor Impacts would not need to be mitigated since the on-Site building would need to be demolished to facilitate soil removal. • RAOs for public health protection will be met. • RAOs for environmental protection will be met.	• Volume and concentration of soil contaminants, will not be reduced beyond what was achieved through the IRM Activities. • Volume and concentration of GW and soil vapor contaminants will be controlled and eliminated over time (3-5 yrs). • RAOs for public health protection will be met. • RAOs for environmental protection will be met.
EVALUATION RATING[a] =	0	3	3	4	5	4
Compliance with Relevant Standards, Criteria and Guidance (SCGs) Alternative meets soil cleanup objectives (SCOs) as defined in 6 NYCRR Part 375, GW standards as defined in NYSDEC TOGS 1.1.1 and SVI guidance as defined in NYSDOH *Guidance for Evaluating Soil Vapor Intrusion in the State of New York* .	• Commercial SCOs as defined in 6 NYCRR Part 375 will not be met. • GW standards as defined in NYSDEC TOGS 1.1.1 will not be met. • SVI guidance as defined in NYSDOH *Guidance for Evaluating Soil Vapor Intrusion in the State of New York* will not be met. • Alternative does not provide for completion of a SMP and long term periodic review of the effectiveness of the IC/ECs.	• Commercial SCOs as defined in 6 NYCRR Part 375 will not be met but appropriate SCGs regarding how to mitigate soil not meeting SCOs will be met. • GW standards as defined in NYSDEC TOGS 1.1.1 may be met over time but impacted groundwater may exit the site in-between HIT events.. • SVI guidance as defined in NYSDOH Guidance for Evaluating Soil Vapor Intrusion in the State of New York will be met. • Alternative provides for completion of a SMP and long term periodic review of the effectiveness of the IC/ECs.	• Commercial SCOs as defined in 6 NYCRR Part 375 will not be met but appropriate SCGs regarding how to mitigate soil not meeting SCOs will be met. • GW standards as defined in NYSDEC TOGS 1.1.1 may be met over time but may take 10 years or longer. • SVI guidance as defined in NYSDOH Guidance for Evaluating Soil Vapor Intrusion in the State of New York will be met. • Alternative provides for completion of a SMP and long term periodic review of the effectiveness of the IC/ECs.	• Commercial SCOs as defined in 6 NYCRR Part 375 will be met. • GW standards as defined in NYSDEC TOGS 1.1.1 may be met over time (3-5 years) • SVI guidance as defined in NYSDOH Guidance for Evaluating Soil Vapor Intrusion in the State of New York will be met. • Alternative does not require completion of a SMP and long term periodic review of the effectiveness of the IC/ECs.	• Unrestricted SCOs as defined in 6 NYCRR Part 375 will be met. • GW standards as defined in NYSDEC TOGS 1.1.1 may be met over time (3-5 years) • SVI guidance as defined in NYSDOH Guidance for Evaluating Soil Vapor Intrusion in the State of New York will be met. • Alternative does not require completion of a SMP and long term periodic review of the effectiveness of the IC/ECs.	• Commercial SCOs as defined in 6 NYCRR Part 375 will not be met but appropriate SCGs regarding how to mitigate soil not meeting SCOs will be met. • GW standards as defined in NYSDEC TOGS 1.1.1 may be met over time (3-5 years) • SVI guidance as defined in NYSDOH Guidance for Evaluating Soil Vapor Intrusion in the State of New York will be met. • Alternative provides for completion of a SMP and long term periodic review of the effectiveness of the IC/ECs.
EVALUATION RATING[a] =	0	3	3	4	4	4
Long-Term Effectiveness Alternative can maintain protection of human health and the environment over time under the conditions and limitations present at the Site (includes treatment residuals and /or untreated or treated waste).	• Volume and concentration of soil, GW and soil vapor contaminants will not be reduced beyond what was achieved through the IRM Activities. • RAOs will not be achieved • Impacted groundwater below the Site may migrate off Site • On-Site industrial workers may be exposed to VOCs in indoor air. • Lack of SMP and periodic reviews may lead to compromise of ECs over time.	• Volume and concentration of soil, will not be reduced beyond what was achieved through the IRM Activities. • RAOs will be achieved • Impacted groundwater below the Site may migrate off Site • On-Site workers will not be exposed to VOCs in indoor air. • SMP and periodic reviews ensure competency of ICs/ECs over time.	• Volume and concentration of soil, will not be reduced beyond what was achieved through the IRM Activities. • RAOs will be achieved • Impacted groundwater below the Site will not migrate off Site • On-Site workers will not be exposed to VOCs in indoor air. • SMP and periodic reviews ensure competency of ICs/ECs over time.	• Volume and concentration of soil contaminants will be reduced to meet commercial SCOs • RAOs will be achieved • Impacted groundwater below the Site will not migrate off Site • On-Site workers will not be exposed to VOCs in indoor air.	• Volume and concentration of soil contaminants will be eliminated. • RAOs will be achieved • Impacted groundwater below the Site will not migrate off Site • There will be no building on-site, therefore, there will be no potential for on-Site workers to be exposed to VOCs in indoor air.	• Volume and concentration of soil, will not be reduced beyond what was achieved through the IRM Activities. • RAOs will be achieved • Impacted groundwater below the Site will not migrate off Site • On-Site workers will not be exposed to VOCs in indoor air. • SMP and periodic reviews ensure competency of ICs/ECs over time.
EVALUATION RATING[a] =	0	2	3	4	5	3
Reduction in Toxicity, Mobility and Volume of Hazardous Waste Alternative reduces the harmful effects of principal contaminants, contaminant mobility and the amount of contamination present.	• Volume and concentration of soil, GW and soil vapor contaminants will not be reduced beyond what was achieved through the IRM Activities. • Impacted groundwater below the Site may migrate off Site • On-Site industrial workers may be exposed to VOCs in indoor air.	• Volume and concentration of soil, will not be reduced beyond what was achieved through the IRM Activities. • Impacted groundwater below the Site may migrate off Site • On-Site industrial workers will not be exposed to VOCs in indoor air.	• Volume and concentration of soil, will not be reduced beyond what was achieved through the IRM Activities. • Impacted groundwater below the Site will not migrate off Site • On-Site industrial workers will not be exposed to VOCs in indoor air.	• Volume and concentration of soil contaminants will be reduced to meet commercial SCOs • Impacted groundwater below the Site will not migrate off Site • On-Site industrial workers will not be exposed to VOCs in indoor air.	• Volume and concentration of soil contaminants will be eliminated. • Impacted groundwater below the Site will not migrate off Site • There will be no building on-site, therefore, there will be no potential for on-Site workers to be exposed to VOCs in indoor air.	• Volume and concentration of soil, will not be reduced beyond what was achieved through the IRM Activities. • Impacted groundwater below the Site will not migrate off Site • On-Site industrial workers will not be exposed to VOCs in indoor air.
EVALUATION RATING[a] =	0	2	3	4	5	3

Table 1
Detailed Evaluation of Remedial Alternatives
ENRX, Inc. – Voelker Analysis
766 New Babcock Street
Buffalo, New York 14206
Site ID. C915150

EVALUATION CRITERIA	Alternative #1 No Further Action	Alternative #2 Track 4 Cleanup w/HIT Events	Alternative #3 Track 4 Cleanup w/GWP&C	Alternative #4 Track 2 Cleanup	Alternative #5 Track 1 Cleanup	Alternative #6 Track 4 Cleanup w/GWP&T
Short-Term Effectiveness Implementation of the alternative does not pose risks to environmental workers, the local community or the environment.	• There would be no excavation therefore there would be no risk for exposure to environmental workers or risk to the community from vapors, odors, dust, noise or increased truck traffic. • There would be no loss of access to the property for the property owner.	• There are no intrusive activities thus eliminating exposing impacted soil on-Site which could pose a risk for exposure to environmental workers. • The HIT events could pose a risk to the community from vapors, odors and noise. • This option would not require excavation but would require trips for the vac truck to the disposal facility. • The property owner would lose access to a small portion of the property for one day three times a year.	• There would be an open trench potentially exposing impacted soil on-Site which could pose a risk for exposure to environmental workers. • The construction activities could pose a risk to the community from vapors, odors, dust, noise and increased truck traffic. • This option would require excavation of approximately 50 tons of soil resulting in approximately 2 trips to the landfill. • The property owner would lose access to a small portion of the property for approximately one week.	• There would be an open excavation exposing the most impacted soil on-Site which could pose a risk for exposure to environmental workers. • The construction activities could pose a risk to the community from vapors, odors, dust, noise and increased truck traffic. • The gas line servicing the on-site building would need to be temporarily re-routed to remove all soil above industrial SCOs and then re-installed posing an explosion hazard. • This option would require excavation of approximately 6,500 tons of soil resulting in approximately 270 trips to the landfill. • The property owner would lose access to most of the property for approximately three to four weeks.	• There would be an open excavation exposing the most impacted soil on-Site which could pose a risk for exposure to environmental workers. • The construction activities could pose a risk to the community from vapors, odors, dust, noise and increased truck traffic. • The gas line servicing the on-site building would need to be removed to access all soil above unrestricted SCOs. • This option would require excavation of approximately 11,250 tons of soil resulting in approximately 470 trips to the landfill. • The property owner would lose access to nearly all of the property for approximately four to five weeks. • The workers would be exposed to hazards from demolition of the on-Site building to facilitate soil removal.	• There would be an open trench potentially exposing impacted soil on-Site which could pose a risk for exposure to environmental workers. • The construction activities could pose a risk to the community from vapors, odors, dust, noise and increased truck traffic. • This option would require excavation of approximately 50 tons of soil resulting in approximately 2 trips to the landfill. • The property owner would lose access to a small portion of the property for approximately one week.
EVALUATION RATING[a] =	5	4	4	2	1	4
Implementation and Technical Reliability Alternative is technically and administratively feasible considering the relative degree of difficulty anticipated in implementing the technology option under the regulatory and technical constraints posed at the Site.	• There is no additional work therefore it is readily implementable. • It would not be administratively burdensome to obtain the environmental easements. • Lack of mitigation of groundwater and soil vapor impacts may pose human and environmental exposure risks, therefore, minimizes technical reliability.	• There are no intrusive activities planned therefore, would not require extensive coordination with the property owner to minimize loss of use of the property during the remediation. • There would be no need to remove and replace the gas line servicing the on-Site building. • HIT events and vapor mitigation are proven technologies that are not technically difficult to design and implement. • It would not be administratively burdensome to obtain the environmental easements. • Site Management Plans and Deed Restrictions are established and proven methods of minimizing exposure risks.	• The extent of trenching is minimal and would not require extensive coordination with the property owner to minimize loss of use of the property during the remediation. • There would be no need to remove and replace the gas line servicing the on-Site building. • Pump and treat and vapor mitigation are proven technologies that are not technically difficult to design, install and operate. • It would not be administratively burdensome to obtain the environmental easements. • Site Management Plans and Deed Restrictions are established and proven methods of minimizing exposure risks.	• The extent of excavation is wide spread and would require extensive coordination with the property owner to minimize loss of use of the property during the remediation. • It would be technically and administratively difficult to implement remedial measures in the vicinity of the gas line servicing the on-site building. • Pump and treat and vapor mitigation are proven technologies that are not technically difficult to design, install and operate. • There would be no long term institutional and engineering controls needed for this alternative.	• The extent of excavation is wide spread and would require extensive coordination with the property owner to minimize loss of use of the property during the remediation. • It would be technically and difficult to implement remedial measures in the vicinity of the gas line servicing the on-site building. • Pump and treat is a proven technology that is not technically difficult to design, install and operate. • There would be no long term institutional and engineering controls needed for this alternative.	• The extent of trenching is minimal and would not require extensive coordination with the property owner to minimize loss of use of the property during the remediation. • There would be no need to remove and replace the gas line servicing the on-Site building. • Pump and treat and vapor mitigation are proven technologies that are not technically difficult to design, install and operate. • It would not be administratively burdensome to obtain the environmental easements. • Site Management Plans and Deed Restrictions are established and proven methods of minimizing exposure risks.
EVALUATION RATING[a] =	4	5	4	3	3	4

Table 1
Detailed Evaluation of Remedial Alternatives
ENRX, Inc. – Voelker Analysis
766 New Babcock Street
Buffalo, New York 14206
Site ID. C915150

EVALUATION CRITERIA	Alternative #1 No Further Action	Alternative #2 Track 4 Cleanup w/HIT Events	Alternative #3 Track 4 Cleanup w/GWP&C	Alternative #4 Track 2 Cleanup	Alternative #5 Track 1 Cleanup	Alternative #6 Track 4 Cleanup w/GWP&T
Cost[c] Criterion includes direct capital costs (equipment, labor and materials), indirect capital costs (engineering and overhead) and operations and maintenance (O&M) costs.	• No additional costs beyond what has been spent on the IRMs and Supplemental Investigation and Pumping Tests. • Total Lifecycle Costs are estimated to be $1,169,146.	• No cost for building demolition. • There are costs for a subslab depressurization system. • Minimal costs for HIT events • Total Lifecycle Costs are estimated to be $1,525,698.	• No cost for building demolition. • There are costs for a subslab depressurization system. • Minimal costs for excavation. • Total Lifecycle Costs are estimated to be $2,473,511.	• No cost for building demolition. • There are costs for a subslab depressurization system. • There are significant costs for excavation. • Total Lifecycle Costs are estimated to be $3,872,256.	• No cost for Subslab Depressurization System since the on-Site building will be demolished. • There are significant costs for excavation. • Total Lifecycle Costs are estimated to be $4,356,913.	• No cost for building demolition. • There are costs for a subslab depressurization system. • Minimal costs for excavation. • Total Lifecycle Costs are estimated to be $1,744,741.
EVALUATION RATING[a] =	5	4	3	2	1	3
Land Use Alternative coincides with current and/or anticipated future land use and all applicable deeds and restrictions.	• Alternative does not achieve RAOs and therefore does not coincide with current and/or anticipated future land use.	• Alternative is consistent with the anticipated future land use and proposed land use restrictions[b]	• Alternative is consistent with the anticipated future land use and proposed land use restrictions[b]	• Alternative is consistent with the anticipated future land use and proposed land use restrictions[b]	• Alternative is consistent with the anticipated future land use and proposed land use restrictions[b]	• Alternative is consistent with the anticipated future land use and proposed land use restrictions[b]
EVALUATION RATING[a] =	0	5	5	5	5	5
Community Acceptance Alternative is perceived positively and/or meets with the approval of the local community.	• No risks to the surrounding community would result from the implementation of Site Management Plan or additional Deed Restrictions. • The lack of mitigation of groundwater and soil vapor impacts could be negatively perceived by the community.	• No risks to the surrounding community would result from the implementation of Site Management Plan or additional Deed Restrictions. • The option's provision for mitigation of groundwater and soil vapor impacts would be positively perceived by the community. • There would be no intrusive trenching activities that would have the potential to generate nuisance odors and noise which would be positively perceived by the community	• No risks to the surrounding community would result from the implementation of Site Management Plan or additional Deed Restrictions. • The option's provision for mitigation of groundwater and soil vapor impacts would be positively perceived by the community. • There would be minimally intrusive trenching activities that would have the potential to generate nuisance odors and noise which would be positively perceived by the community	• The long term excavation activities could have the potential to generate nuisance odors and would significantly increase truck traffic and noise which could be perceived negatively by the community. • The option's provision for mitigation of groundwater and soil vapor impacts would be positively perceived by the community.	• The extensive long term excavation activities could have the potential to generate nuisance odors and would significantly increase truck traffic and noise which could be perceived negatively by the community. • The option's provision for mitigation of groundwater impacts would be positively perceived by the community.	• No risks to the surrounding community would result from the implementation of Site Management Plan or additional Deed Restrictions. • The option's provision for mitigation of groundwater and soil vapor impacts would be positively perceived by the community. • There would be minimally intrusive trenching activities that would have the potential to generate nuisance odors and noise which would be positively perceived by the community
EVALUATION RATING[a] =	1	4	4	3	2	4
TOTAL SCORE =	15	32	32	31	31	**34**

Notes:

[a] Evaluation Ratings of Criteria: 0 = Not Valid, does not satisfy any element required to meet criterion, 1 = Very Low, minimally satisfies few elements required to meet criterion, 2 = Low, satisfies few elements required to meet criterion, 3 = Moderate, satisfies some elements required to meet criterion, 4 = Good, satisfies most elements required to meet criterion, 5 = Excellent, satisfies all elements required to meet criterion

[b] It is anticipated that the Site will remain an commercial scrap facility and transfer of property ownership will be subject to proposed environmental easements.

[c] Includes incurred for implementation of IRMs and completion of Supplemental Investigation and Pumping Tests ($1,021,361)

RAO = Remedial Action Objectives
NYSDEC = New York State Department of Environmental Conservation
SCOs = Soil Cleanup Objectives
IRM = Interim Remedial Measure
VOCs = Volatile Organic Compounds
IC = Institutional Control
GW = Groundwater
TOGS = Technical and Operational Guidance Series
SVI - Soil Vapor Intrusion
SMP = Site Management Plan
EC = Engineering Control

Table 2
ESTIMATED COSTS - ALTERNATIVE #6
IC/ECs WITH GW P&T AND SUB-SLAB DEPRESSURIZATION
ALTERNATIVE ANALYSIS REPORT
766 New Babcock Street
Buffalo, New York 14206
Site # C915150

	Stone Cap
Previous IRM Costs	$823,000
Supplemental Investigation and Pumping Test Costs	$346,146
Total Costs Year One	$341,170
Net Present Operation Costs Years 2 through 30	$234,425
Total Lifecycle Costs for Remedial Alternative #3	**$1,744,741**

Year One Costs (Present Day Value)

Direct Capitol Costs

Item	Unit	Unit Cost	# of Units	Stone Cap Total Cost
Paving Entire Site 31,000 Sq ft	ls	$99,440	1	$99,440
Administractive Costs for Environmental Easement	ls	$10,000	1	$10,000
Groundwater P&T Equipment Costs	ls	$60,000	1	$60,000
Groundwater P&T Below Grade System Installation	ls	$53,980	1	$53,980
Groundwater P&T Above Grade System Installation	ls	$10,725	1	$10,725
Subslab System Equipment Costs	ls	$3,328	1	$3,328
Subslab System Installation Costs	ls	$10,725	1	$10,725
Project Management (Assume 15% of Costs)	ls	$37,230	1	$37,230
		Sub Total Direct Capitol Costs		**$285,427**

Indirect Costs

Item	Unit	Unit Cost	# of Units	Total Cost
System Start-up/Shake Down	ls	$5,005	1	$5,005
Routine O&M Visit	ls	$550	24	$13,200
Carbon Changeout O&M Visit	ls	$5,110	2	$10,220
Utilities	ls	$1,500	1	$1,500
Monthly System Sampling Lab Costs	ls	$430	12	$5,160
Quarterly BSA Discharge Permit Sampling Lab Costs	ls	$1,330	4	$5,320
Quarterly BSA Self Monitoring Report	ls	$905	4	$3,620
Annual Certification Report	ls	$5,100	1	$5,100
Project Management (Assume 15% of Costs)	ls	$6,618	1	$6,618
		Sub Total Indirect Costs		**$55,743**

Years 2 Through 30 Operation Costs (Net Present Value)

Net Present Value Variables		Year	Annual Costs w/inflation	Net Present Value
Average annual O&M costs year 2 through 5	$50,738.00	2	$52,260	$49,772
Inflation Rate	3%	3	$53,828	$48,824
Annual Discount rate	5%	4	$55,443	$47,894
Annual costs post system operation	$2,250.00	5	$57,106	$46,981
		6	$2,608	$2,044
		7	$2,687	$2,005
		8	$2,767	$1,967
		9	$2,850	$1,929
		10	$2,936	$1,892
		11	$3,024	$1,856
		12	$3,115	$1,821
		13	$3,208	$1,786
		14	$3,304	$1,752
		15	$3,403	$1,719
		16	$3,505	$1,686
		17	$3,611	$1,654
		18	$3,719	$1,623
		19	$3,830	$1,592
		20	$3,945	$1,561
		21	$4,064	$1,532
		22	$4,186	$1,502
		23	$4,311	$1,474
		24	$4,441	$1,446
		25	$4,574	$1,418
		26	$4,711	$1,391
		27	$4,852	$1,365
		28	$4,998	$1,339
		29	$5,148	$1,313
		30	$5,302	$1,288
		Total Cost	**$313,736**	**$234,425**

Table 3
Groundwater Analytical Data Summary Table
ENRX, Inc. – Voelker Analysis
766 New Babcock Street
Buffalo, New York 14206
Site ID. C915150

LOCATION SAMPLING DATE LAB SAMPLE ID	CasNum	NY-AWQS*	Units	BR-1 8/22/2014 L1419240-01	Qual	BR-2 8/22/2014 L1419240-02	Qual	BR-3 8/22/2014 L1419240-03	Qual	BR-4 8/22/2014 L1419240-04	Qual	BR-5 8/21/2014 L1419240-05	Qual	BR-6 8/22/2014 L1419240-06	Qual	BR-7 8/21/2014 L1419240-07	Qual	BR-8 8/21/2014 L1419240-08	Qual	BR-9 8/20/2014 L1419240-09	Qual	BR-10 8/21/2014 L1419240-10	Qual	BR-11 8/21/2014 L1419240-11	Qual	DUP/BR-8 8/21/2014 L1419240-12	Qual	TRIP BLANK 8/20/2014 L1419240-13	Qual	BR-12 4/13/2015 L1507448-01	Qual	BR-13 4/13/2015 L1507448-02	Qual	BR-14 4/14/2015 L1507448-03	Qual	BR-15 4/14/2015 L1507448-04	Qual	DUP/BR-12 4/13/2015 L1507448-05	Qual	TRIP BLANK 4/14/2015 L1507448-06	Qual
Volatile Organics																																									
1,1,1-Trichloroethane	71-55-6	5	ug/l	3200		380		520		2.5	U	2.5	U	64		140		46		1100		5.9		5900		63		2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U
1,1,2,2-Tetrachloroethane	79-34-5	5	ug/l	50	U	10	U	10	U	0.5	U	0.5	U	0.5	U	1	U	0.5	U	12	U	0.5	U	50	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,1,2-Trichloroethane	79-00-5	1	ug/l	150	U	30	U	30	U	1.5	U	1.5	U	1.5	U	3	U	1.5	U	38	U	1.5	U	150	U	1.5	U	1.5	U	1.5	U	1.5	U	1.5	U	1.5	U	1.5	U	1.5	U
1,1-Dichloroethane	75-34-3	5	ug/l	230	J	130		230		10		0.79	J	46		94		56		400		20		200	J	62		2.5	U	0.75	J	2.5	U	2.5	U	2.5	U	0.71	J	2.5	U
1,1-Dichloroethene	75-35-4	5	ug/l	36	J	10	U	10	U	0.5	U	0.5	U	1.1		4.3		0.35	J	12	U	0.5	U	48	J	0.5	U	0.5	U	0.38	J	0.15	J	0.5	U	0.33	J	0.34	J	0.5	U
1,2,3-Trichlorobenzene	87-61-6	5	ug/l	250	U	50	U	50	U	2.5	U	2.5	U	2.5	U	5	U	2.5	U	62	U	2.5	U	250	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U
1,2,4-Trichlorobenzene	120-82-1	5	ug/l	250	U	50	U	50	U	2.5	U	2.5	U	2.5	U	5	U	2.5	U	62	U	2.5	U	250	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U
1,2-Dibromo-3-chloropropane	96-12-8	0.04	ug/l	250	U	50	U	50	U	2.5	U	2.5	U	2.5	U	5	U	2.5	U	62	U	2.5	U	250	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U
1,2-Dibromoethane	106-93-4	0.0006	ug/l	200	U	40	U	40	U	2	U	2	U	2	U	4	U	2	U	50	U	2	U	200	U	2	U	2	U	2	U	2	U	2	U	2	U	2	U	2	U
1,2-Dichlorobenzene	95-50-1	3	ug/l	250	U	50	U	50	U	2.5	U	2.5	U	2.5	U	5	U	2.5	U	62	U	2.5	U	250	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U
1,2-Dichloroethane	107-06-2	0.6	ug/l	50	U	10	U	10	U	0.5	U	0.5	U	0.5	U	1	U	0.5	U	12	U	0.5	U	50	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,2-Dichloropropane	78-87-5	1	ug/l	100	U	20	U	20	U	1	U	1	U	1	U	2	U	1	U	25	U	1	U	100	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U
1,3-Dichlorobenzene	541-73-1	3	ug/l	250	U	50	U	50	U	2.5	U	2.5	U	2.5	U	5	U	2.5	U	62	U	2.5	U	250	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U
1,4-Dichlorobenzene	106-46-7	3	ug/l	250	U	50	U	50	U	2.5	U	2.5	U	2.5	U	5	U	2.5	U	62	U	2.5	U	250	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U
1,4-Dioxane	123-91-1	-	ug/l	25000	U	5000	U	5000	U	250	U	250	U	250	U	500	U	250	U	6200	U	250	U	25000	U	250	U	250	U	250	U	250	U	250	U	250	U	250	U	250	U
2-Butanone	78-93-3	50	ug/l	500	U	100	U	100	U	5	U	5	U	5	U	10	U	5	U	120	U	5	U	500	U	5	U	5	U	5	U	5	U	5	U	5	U	5	U	5	U
2-Hexanone	591-78-6	50	ug/l	500	U	100	U	100	U	5	U	5	U	5	U	10	U	5	U	120	U	5	U	500	U	5	U	5	U	5	U	5	U	5	U	5	U	5	U	5	U
4-Methyl-2-pentanone	108-10-1	-	ug/l	500	U	100	U	100	U	5	U	5	U	5	U	10	U	5	U	120	U	5	U	500	U	5	U	5	U	5	U	5	U	5	U	5	U	5	U	5	U
Acetone	67-64-1	50	ug/l	500	U	100	U	100	U	5	U	5	U	5	U	10	U	5	U	120	U	9.3		500	U	1.8	J	5	U	5	U	5	U	5	U	5	U	5	U	5	U
Benzene	71-43-2	1	ug/l	50	U	10	U	10	U	0.5	U	0.5	U	0.19	J	1	U	0.24	J	12	U	0.52		50	U	0.27	J	0.5	U	0.19	J	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Bromochloromethane	74-97-5	5	ug/l	250	U	50	U	50	U	2.5	U	2.5	U	2.5	U	5	U	2.5	U	62	U	2.5	U	250	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U
Bromodichloromethane	75-27-4	50	ug/l	50	U	10	U	10	U	0.5	U	0.5	U	0.5	U	1	U	0.5	U	12	U	0.5	U	50	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Bromoform	75-25-2	50	ug/l	200	U	40	U	40	U	2	U	2	U	2	U	4	U	2	U	50	U	2	U	200	U	2	U	2	U	2	U	2	U	2	U	2	U	2	U	2	U
Bromomethane	74-83-9	5	ug/l	250	U	50	U	50	U	2.5	U	2.5	U	2.5	U	5	U	2.5	U	62	U	2.5	U	250	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U
Carbon disulfide	75-15-0	60	ug/l	500	U	100	U	100	U	5	U	5	U	5	U	10	U	5	U	120	U	3	J	140	J	1.1	J	5	U	5	U	5	U	5	U	5	U	5	U	5	U
Carbon tetrachloride	56-23-5	5	ug/l	50	U	10	U	10	U	0.5	U	0.5	U	0.5	U	1	U	0.5	U	12	U	0.5	U	50	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Chlorobenzene	108-90-7	5	ug/l	250	U	50	U	50	U	2.5	U	2.5	U	2.5	U	5	U	2.5	U	62	U	2.5	U	250	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U
Chloroethane	75-00-3	5	ug/l	250	U	50	U	50	U	1.4	J	2.5	U	6		2.8	J	5.5		62	U	11		250	U	7.9		2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U
Chloroform	67-66-3	7	ug/l	250	U	50	U	50	U	2.5	U	2.5	U	2.5	U	5	U	2.5	U	62	U	2.5	U	250	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U
Chloromethane	74-87-3	-	ug/l	250	U	50	U	50	U	2.5	U	2.5	U	2.5	U	5	U	2.5	U	62	U	2.5	U	250	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U
cis-1,2-Dichloroethene	156-59-2	5	ug/l	5600		1300		760		14		2.5	U	64		150		13		1400		6.6		4000		17		2.5	U	94		27		0.87	J	35		78		1	J
cis-1,3-Dichloropropene	10061-01-5	0.4	ug/l	50	U	10	U	10	U	0.5	U	0.5	U	0.5	U	1	U	0.5	U	12	U	0.5	U	50	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Cyclohexane	110-82-7	-	ug/l	1000	U	200	U	200	U	10	U	10	U	4.3	J	20	U	1.3	J	250	U	1.2	J	1000	U	2.8	J	10	U	0.64	J	0.45	J	0.47	J	0.64	J	0.5	J	10	U
Dibromochloromethane	124-48-1	50	ug/l	50	U	10	U	10	U	0.5	U	0.5	U	0.5	U	1	U	0.5	U	12	U	0.5	U	50	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Dichlorodifluoromethane	75-71-8	5	ug/l	500	U	100	U	100	U	5	U	5	U	5	U	10	U	5	U	120	U	5	U	500	U	5	U	5	U	5	U	5	U	5	U	5	U	5	U	5	U
Ethylbenzene	100-41-4	5	ug/l	250	U	50	U	50	U	2.5	U	2.5	U	2.5	U	5	U	2.5	U	62	U	2.5	U	250	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U
Freon-113	76-13-1	5	ug/l	320		52		120		2.5	U	2.5	U	4.2		49		8.5		470		2.7		930		17		2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U
Isopropylbenzene	98-82-8	5	ug/l	250	U	50	U	50	U	2.5	U	2.5	U	2.5	U	5	U	2.5	U	62	U	2.5	U	250	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U
Methyl Acetate	79-20-9	-	ug/l	200	U	40	U	40	U	2	U	2	U	2	U	4	U	2	U	50	U	2	U	200	U	2	U	2	U	2	U	2	U	2	U	2	U	2	U	2	U
Methyl cyclohexane	108-87-2	-	ug/l	1000	U	200	U	200	U	10	U	10	U	2.4	J	20	U	10	U	250	U	0.75	J	1000	U	10	U	10	U	0.43	J	0.41	J	0.49	J	0.44	J	10	U	10	U
Methyl tert butyl ether	1634-04-4	10	ug/l	250	U	50	U	50	U	12		2.5	U	2.5	U	5	U	2.5	U	62	U	2.5	U	250	U	2.5	U	2.5	U	2.6		4.5		1.8	J	3.6		2.6		2.5	U
Methylene chloride	75-09-2	5	ug/l	250	U	50	U	50	U	2.5	U	2.5	U	2.5	U	5	U	2.5	U	62	U	2.5	U	250	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U
o-Xylene	95-47-6	5	ug/l	250	U	50	U	50	U	2.5	U	2.5	U	2.5	U	5	U	2.5	U	62	U	0.88	J	250	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U
p/m-Xylene	179601-23-1	5	ug/l	250	U	50	U	50	U	2.5	U	2.5	U	0.86	J	5	U	2.5	U	62	U	1.9	J	250	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U
Styrene	100-42-5	5	ug/l	250	U	50	U	50	U	2.5	U	2.5	U	2.5	U	5	U	2.5	U	62	U	2.5	U	250	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U
Tetrachloroethene	127-18-4	5	ug/l	470		10	U	10	U	0.5	U	0.5	U	0.5	U	4.2		0.8		12	U	0.47	J	58		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Toluene	108-88-3	5	ug/l	250	U	50	U	50	U	2.5	U	2.5	U	0.7	J	5	U	2.5	U	62	U	1.5	J	250	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U
trans-1,2-Dichloroethene	156-60-5	5	ug/l	250	U	50	U	16	J	2.5	U	2.5	U	2.5	U	5	U	2.5	U	62	U	0.91	J	250	U	2.5	U	2.5	U	13		2.5		2.5	U	4.5		12		2.5	U
trans-1,3-Dichloropropene	10061-02-6	0.4	ug/l	50	U	10	U	10	U	0.5	U	0.5	U	0.5	U	1	U	0.5	U	12	U	0.5	U	50	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Trichloroethene	79-01-6	5	ug/l	3900		40		11		0.5	U	0.5	U	11		47		0.5	U	95		2.3		2700		1.7		0.5	U	0.42	J	0.25	J	0.5	U	0.5	U	0.35	J	0.5	U
Trichlorofluoromethane	75-69-4	5	ug/l	250	U	50	U	50	U	2.5	U	2.5	U	2.5	U	5	U	2.5	U	62	U	2.5	U	250	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U
Vinyl chloride	75-01-4	2	ug/l	260		340		420		6		1	U	31		140		27		690		5.3		100	U	37		1	U	140		60		3		24		130		1	U
Total VOCs	**None**	-	**ug/l**	**14016**		**942**		**2077**		**43.4**		**0.79**	**J**	**235.8**		**631.3**		**158.3**		**4155**		**74.23**		**13976**		**211.6**		**ND**		**252.4**		**95.26**		**6.63**		**68.51**		**224.5**		**1**	**J**
Semivolatile Organics																																									
1,2,4,5-Tetrachlorobenzene	95-94-3	5	ug/l	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U	NA		10	U	10	U	10	U	10	U	10	U	NA	
2,3,4,6-Tetrachlorophenol	58-90-2	-	ug/l	5	U	5	U	5	U	5	U	5	U	5	U	5	U	5	U	5	U	5	U	5	U	5	U	NA		5	U	5	U	5	U	5	U	5	U	NA	
2,4,5-Trichlorophenol	95-95-4	-	ug/l	5	U	5	U	5	U	5	U	5	U	5	U	5	U	5	U	5	U	5	U	5	U	5	U	NA		5	U	5	U	5	U	5	U	5	U	NA	
2,4,6-Trichlorophenol	88-06-2	-	ug/l	5	U	5	U	5	U	5	U	5	U	5	U	5	U	5	U	5	U	5	U	5	U	5	U	NA		5	U	5	U	5	U	5	U	5	U	NA	
2,4-Dichlorophenol	120-83-2	1	ug/l	5	U	5	U	5	U	5	U	5	U	5	U	5	U	5	U	5	U	5	U	5	U	5	U	NA		5	U	5	U	5	U	5	U	5	U	NA	
2,4-Dimethylphenol	105-67-9	50	ug/l	5	U	5	U	5	U	5	U	5	U	5	U	5	U	5	U	5	U	13		5	U	5	U	NA		5	U	5	U	5	U	5	U	5	U	NA	
2,4-Dinitrophenol	51-28-5	10	ug/l	20	U	20	U	20	U	20	U	20	U	20	U	20	U	20	U	20	U	20	U	20	U	20	U	NA		20	U	20	U	20	U	20	U	20	U	NA	
2,4-Dinitrotoluene	121-14-2	5	ug/l	5	U	5	U	5	U	5	U	5	U	5	U	5	U	5	U	5	U	5	U	5	U	5	U	NA		5	U	5	U	5	U	5	U	5	U	NA	
2,6-Dinitrotoluene	606-20-2	5	ug/l	5	U	5	U	5	U	5	U	5	U	5	U	5	U	5	U	5	U	5	U	5	U	5	U	NA		5	U	5	U	5	U	5	U	5	U	NA	
2-Chloronaphthalene	91-58-7	10	ug/l	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.8	U	0.2	U	0.2	U	NA		0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	NA	
2-Chlorophenol	95-57-8	-	ug/l	2	U	2	U	2	U	2	U	2	U	2	U	2	U	2	U	2	U	2	U	2	U	2	U	NA		2	U	2	U	2	U	2	U	2	U	NA	
2-Methylnaphthalene	91-57-6	-	ug/l	0.14	J	0.2	U	0.2		0.2	U	0.2	U	0.63		0.2	U	0.06	J	1.8		1.2		0.38		0.06	J	NA		0.06	J	0.2	U	0.08	J	0.2	U	0.2	U	NA	
2-Methylphenol	95-48-7	-	ug/l	5	U	5	U	5	U	5	U	5	U	5	U	5	U	5	U	5	U	6.5		5	U	5	U	NA		5	U	5	U	5	U	5	U	5	U	NA	
2-Nitroaniline	88-74-4	5	ug/l	5	U	5	U	5	U	5	U	5	U	5	U	5	U	5	U	5	U	5	U	5	U	5	U	NA		5	U	5	U	5	U	5	U	5	U	NA	
2-Nitrophenol	88-75-5	-	ug/l	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U	NA		10	U	10	U	10	U	10	U	10	U	NA	
3,3'-Dichlorobenzidine	91-94-1	5	ug/l	5	U	5	U	5	U	5	U	5	U	5	U	5	U	5	U	5	U	5	U	5	U	5	U	NA		5	U	5	U	5	U	5	U	5	U	NA	
3-Methylphenol/4-Methylphenol	108-39-4	-	ug/l	5	U	5	U	5	U	5	U	5	U	5	U	5	U	5	U	2.8	J	12		5	U	5	U	NA		5	U	5	U	5	U	5	U	5	U	NA	
3-Nitroaniline	99-09-2	5	ug/l	5	U	5	U	5	U	5	U	5	U	5	U	5	U	5	U	5	U	5	U	5	U	5	U	NA		5	U	5	U	5	U	5	U	5	U	NA	
4,6-Dinitro-o-cresol	534-52-1	-	ug/l	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U	NA		10	U	10	U	10	U	10	U	10	U	NA	
4-Bromophenyl phenyl ether	101-55-3	-	ug/l	2	U	2	U	2	U	2	U	2	U	2	U	2	U	2	U	2	U	2	U	2	U	2	U	NA		2	U	2	U	2	U	2	U	2	U	NA	
4-Chloroaniline	106-47-8	5	ug/l	5	U	5	U	5	U	5	U	5	U	5	U	5	U	5	U	5	U	5	U	5	U	5	U	NA		5	U	5	U	5	U	5	U	5	U	NA	
4-Chlorophenyl phenyl ether	7005-72-3	-	ug/l	2	U	2	U	2	U	2	U	2	U	2	U	2	U	2	U	2	U	2	U	2	U	2	U	NA		2	U	2	U	2	U	2	U	2	U	NA	
4-Nitroaniline	100-01-6	5	ug/l	5	U	5	U	5	U	5	U	5	U	5	U	5	U	5	U	5	U	5	U	5	U	5	U	NA		5	U	5	U	5	U	5	U	5	U	NA	
4-Nitrophenol	100-02-7	-	ug/l	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U	NA		10	U	10	U	10	U	10	U	10	U	NA	
Acenaphthene	83-32-9	20	ug/l	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.18	J	0.2	U	0.24		0.88		0.8	U	0.24		0.22		NA		0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	NA	
Acenaphthylene	208-96-8	-	ug/l	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.8	U	0.2	U	0.2	U	NA		0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	NA	
Acetophenone	98-86-2	-	ug/l	5	U	5	U	5	U	5	U	5	U	5	U	5	U	5	U	5	U	5	U	5	U	5	U	NA		5	U	5	U	5	U	5	U	5	U	NA	
Anthracene	120-12-7	50	ug/l	0.1	J	0.2	U	0.12	J	0.2	U	0.2	U	0.09	J	0.2	U	0.2	U	0.11	J	0.8	U	0.09	J	0.2	U	NA		0.07	J	0.2	U	0.2	U	0.2	U	0.07	J	NA	
Atrazine	1912-24-9	7.5	ug/l	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U	NA		10	U	10	U	10	U	10	U	10	U	NA	
Benzaldehyde	100-52-7	-	ug/l	5	U	5	U	5	U	5	U	5	U	5	U	5	U	5	U	5	U	5	U	5	U	5	U	NA		5	U	5	U	5	U	5	U	5	U	NA	
Benzo(a)anthracene	56-55-3	0.002	ug/l	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.8	U	0.2	U	0.2	U	NA		0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	NA	
Benzo(a)pyrene	50-32-8	0	ug/l	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.09	J	0.8	U	0.2	U	0.2	U	NA		0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	NA	
Benzo(b)fluoranthene	205-99-2	0.002	ug/l	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.07	J	0.8	U	0.2	U	0.2	U	NA		0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	NA	
Benzo(ghi)perylene	191-24-2	-	ug/l	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.8	U	0.2	U	0.2	U	NA		0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	NA	
Benzo(k)fluoranthene	207-08-9	0.002	ug/l	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.8	U	0.2	U	0.2	U	NA		0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	NA	
Biphenyl	92-52-4	5	ug/l	2	U	2	U	2	U	2	U	2	U	2	U	2	U	2	U	2	U	2	U	2	U	2	U	NA		2	U	2	U	2	U	2	U	2	U	NA	
Bis(2-chloroethoxy)methane	111-91-1	5	ug/l	5	U	5	U	5	U	5	U	5	U	5	U	5	U	5	U	5	U	5	U	5	U	5	U	NA		5	U	5	U	5	U	5	U	5	U	NA	
Bis(2-chloroethyl)ether	111-44-4	1	ug/l	2	U	2	U	2	U	2	U	2	U	2	U	2	U	2	U	2	U	2	U	2	U	2	U	NA		2	U	2	U	2	U	2	U	2	U	NA	
Bis(2-chloroisopropyl)ether	108-60-1	5	ug/l	2	U	2	U	2	U	2	U	2	U	2	U	2	U	2	U	2	U	2	U	2	U	2	U	NA		2	U	2	U	2	U	2	U	2	U	NA	
Bis(2-ethylhexyl)phthalate	117-81-7	5	ug/l	3	U	15		3	U	3	U	3	U	3	U	3	U	3	U	3	U	3	U	3	U	3	U	NA		3	U	3	U	3	U	3	U	3	U	NA	
Butyl benzyl phthalate	85-68-7	50	ug/l	5	U	5	U	5	U	5	U	5	U	5	U	5	U	5	U	5	U	5	U	5	U	5	U	NA		5	U	5	U	5	U	5	U	5	U	NA	
Caprolactam	105-60-2	-	ug/l	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U	NA		10	U	10	U	10	U	10	U	10	U	NA	
Carbazole	86-74-8	-	ug/l	2	U	2	U	2	U	2	U	2	U	2	U	2	U	2	U	1.2	J	2	U	2	U	2	U	NA		2	U	2	U	2	U	2	U	2	U	NA	
Chrysene	218-01-9	0.002	ug/l	0.2	U	0.2		0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.05	J	0.8	U	0.2	U	0.2	U	NA		0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	NA	
Dibenzo(a,h)anthracene	53-70-3	-	ug/l	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.8	U	0.2	U	0.2	U	NA		0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	NA	
Dibenzofuran	132-64-9	-	ug/l	2	U	2	U	2	U	2	U	2	U	2	U	2	U	2	U	2	U	2	U	2	U	2	U	NA		2	U	2	U	2	U	2	U	2	U	NA	
Diethyl phthalate	84-66-2	50	ug/l	5	U	5	U	5	U	5	U	5	U	5	U	5	U	5	U	5	U	5	U	5	U	5	U	NA		5	U	5	U	5	U	5	U	5	U	NA	
Dimethyl phthalate	131-11-3	50	ug/l	5	U	5	U	5	U	5	U	5	U	5	U	5	U	5	U	5	U	5	U	5	U	5	U	NA		5	U	5	U	5	U	5	U	5	U	NA	
Di-n-butylphthalate	84-74-2	50	ug/l	5	U	5	U	5	U	5	U	5	U	5	U	5	U	5	U	5	U	5	U	5	U	5	U	NA		5	U	5	U	5	U	5	U	5	U	NA	
Di-n-octylphthalate	117-84-0	50	ug/l	5	U	5	U	5	U	5	U	5	U	5	U	5	U	5	U	5	U	5	U	5	U	5	U	NA		5	U	5	U	5	U	5	U	5	U	NA	
Fluoranthene	206-44-0	50	ug/l	0.2	U	0.28		0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2		0.8	U	0.2	U	0.2	U	NA		0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	NA	
Fluorene	86-73-7	50	ug/l	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.09	J	0.2	U	0.2	U	0.65		0.8	U	0.15	J	0.2	U	NA		0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	NA	
Hexachlorobenzene	118-74-1	0.04	ug/l	0.8	U	0.8	U	0.8	U	0.8	U	0.8	U	0.8	U	0.8	U	0.8	U	0.8	U	3.2	U	0.8	U	0.8	U	NA		0.8	U	0.8	U	0.8	U	0.8	U	0.8	U	NA	
Hexachlorobutadiene	87-68-3	0.5	ug/l	0.13	J	0.08	J	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	2	U	0.5	U	0.5	U	NA		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	NA	
Hexachlorocyclopentadiene	77-47-4	5	ug/l	20	U	20	U	20	U	20	U	20	U	20	U	20	U	20	U	20	U	20	U	20	U	20	U	NA		20	U	20	U	20	U	20	U	20	U	NA	
Hexachloroethane	67-72-1	5	ug/l	0.19	J	0.8	U	0.8	U	0.8	U	0.8	U	0.8	U	0.8	U	0.8	U	0.8	U	3.2	U	0.8	U	0.8	U	NA		0.8	U	0.8	U	0.8	U	0.8	U	0.8	U	NA	
Indeno(1,2,3-cd)pyrene	193-39-5	0.002	ug/l	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.14	J	0.8	U	0.2	U	0.2	U	NA		0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	NA	
Isophorone	78-59-1	50	ug/l	5	U	5	U	5	U	5	U	5	U	5	U	5	U	5	U	5	U	5	U	5	U	5	U	NA		5	U	5	U	5	U	5	U	5	U	NA	
Naphthalene	91-20-3	10	ug/l	0.18	J	0.07	J	0.23		0.2	U	0.2	U	0.48		0.07	J	0.08	J	6.3		1.1		0.86		0.09	J	NA		0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	NA	
NDPA/DPA	86-30-6	50	ug/l	2	U	2	U	2	U	2	U	2	U	2	U	2	U	2	U	2	U	2	U	2	U	2	U	NA		2	U	2	U	2	U	2	U	2	U	NA	
Nitrobenzene	98-95-3	0.4	ug/l	2	U	2	U	2	U	2	U	2	U	2	U	2	U	2	U	2	U	2	U	2	U	2	U	NA		2	U	2	U	2	U	2	U	2	U	NA	
n-Nitrosodi-n-propylamine	621-64-7	-	ug/l	5	U	5	U	5	U	5	U	5	U	5	U	5	U	5	U	5	U	5	U	5	U	5	U	NA		5	U	5	U	5	U	5	U	5	U	NA	
p-Chloro-m-cresol	59-50-7	-	ug/l	2	U	2	U	2	U	2	U	2	U	2	U	2	U	2	U	2	U	2	U	2	U	2	U	NA		2	U	2	U	2	U	2	U	2	U	NA	
Pentachlorophenol	87-86-5	1	ug/l	0.8	U	0.8	U	0.8	U	0.59	J	0.8	U	0.46	J	0.8	U	0.8	U	0.8	U	3.2	U	0.8	U	0.8	U	NA		0.8	U	0.8	U	0.8	U	0.8	U	0.8	U	NA	
Phenanthrene	85-01-8	50	ug/l	0.08	J	0.36		0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.6		0.8	U	0.3		0.2	U	NA		0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	NA	
Phenol	108-95-2	1	ug/l	5	U	5	U	6.6		5	U	5	U	5	U	5	U	5	U	3	J	5	U	5	U	5	U	NA		5	U	5	U	5	U	5	U	5	U	NA	
Pyrene	129-00-0	50	ug/l	0.2	U	0.3		0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.16	J	0.8	U	0.2	U	0.2	U	NA		0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	NA	
Total SVOCs	**None**	-	**ug/l**	**0.69**		**16.29**		**7.15**		**0.59**	**J**	**ND**		**1.93**		**0.07**	**J**	**0.38**		**18.05**		**33.8**		**2.02**		**0.37**		**NA**		**0.13**	**J**	**ND**		**0.08**	**J**	**ND**		**0.07**	**J**	**NA**	
Total Metals																																									
Aluminum, Total	7429-90-5	-	ug/l	14.2		26.1		2070		813		353		730		23.3		142		490		415		9.56	J	126		NA		NA		NA		NA		NA		NA		NA	
Antimony, Total	7440-36-0	3	ug/l	0.4	J	0.18	J	1.17	J	1.64	J	18.78		0.45	J	0.19	J	0.61	J	0.64	J	1.15	J	0.37	J	0.37	J	NA		NA		NA		NA		NA		NA		NA	
Arsenic, Total	7440-38-2	25	ug/l	0.63		0.47	J	1.91		6.36		2.81		7.08		0.33	J	0.68		5.63		4.7		0.33	J	0.6		NA		NA		NA		NA		NA		NA		NA	
Barium, Total	7440-39-3	1000	ug/l	133.6		173.3		344.4		150.9		89.36		92.84		246		204.2		262.4		104.8		258.1		205.7		NA		NA		NA		NA		NA		NA		NA	
Beryllium, Total	7440-41-7	3	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.1	J	0.5	U	0.5	U	0.5	U	NA		NA		NA		NA		NA		NA		NA	
Cadmium, Total	7440-43-9	5	ug/l	0.2	U	0.2	U	0.13	J	0.07	J	0.17	J	0.2	U	0.2	U	0.2	U	0.14	J	0.2	U	0.2	U	0.2	U	NA		NA		NA		NA		NA		NA		NA	
Calcium, Total	7440-70-2	-	ug/l	2E+05		2E+05		2E+05		2E+05		2E+05		57000		2E+05		2E+05		2E+05		1E+05		3E+05		2E+05		NA		NA		NA		NA		NA		NA		NA	
Chromium, Total	7440-47-3	50	ug/l	0.74	J	0.99	J	3.76		4.22		1.84		1.32		0.49	J	0.94	J	3.48		4.45		0.36	J	0.81	J	NA		NA		NA		NA		NA		NA		NA	
Cobalt, Total	7440-48-4	-	ug/l	0.54		0.27		1.42		2.13		0.73		0.51		0.15	J	0.27		1.36		1.02		0.13	J	0.35		NA		NA		NA		NA		NA		NA		NA	
Copper, Total	7440-50-8	200	ug/l	0.78	J	1.07		98.86		90.63		8.67		2.68		1	U	1.43		14.1		2.03		0.15	J	1.4		NA		NA		NA		NA		NA		NA		NA	
Iron, Total	7439-89-6	300	ug/l	12800		15800		28300		25800		5710		978		1460		1060		4110		1390		2080		1020		NA		NA		NA		NA		NA		NA		NA	
Lead, Total	7439-92-1	25	ug/l	0.65	J	2.39		76.25		35.41		4.23		6.85		1	U	3.16		30.5		2.97		1	U	3.02		NA		NA		NA		NA		NA		NA		NA	
Magnesium, Total	7439-95-4	35000	ug/l	41000	R	44600	R	49600	R	43000	R	44100	R	5490	R	23600	R	32700	R	42600	R	25000	R	25800	R	33000	R	NA		NA		NA		NA		NA		NA		NA	
Manganese, Total	7439-96-5	300	ug/l	651.8		452.7		305.3		691		162		52.42		929.4		778.6		558.6		115.1		1148		770		NA		NA		NA		NA		NA		NA		NA	
Mercury, Total	7439-97-6	0.7	ug/l	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	NA		NA		NA		NA		NA		NA		NA	
Nickel, Total	7440-02-0	100	ug/l	4.49		2.67		40.52		14.62		5.47		2.94		1.05		3.83		7.79		8.32		1.25		3.6		NA		NA		NA		NA		NA		NA		NA	
Potassium, Total	7440-09-7	-	ug/l	24600	R	21000	R	17000	R	18100	R	16100	R	16100	R	18700	R	19000	R	14100	R	13300	R	23400	R	17200	R	NA		NA		NA		NA		NA		NA		NA	
Selenium, Total	7782-49-2	10	ug/l	5	U	5	U	0.59	J	1.5	J	0.5	J	0.82	J	5	U	5	U	5	U	0.59	J	5	U	0.36	J	NA		NA		NA		NA		NA		NA		NA	
Silver, Total	7440-22-4	50	ug/l	0.21	J	0.4	U	0.4	U	0.4	U	0.4	U	0.4	U	0.4	U	0.4	U	0.14	J	0.4	U	0.25	U	0.4	U	NA		NA		NA		NA		NA		NA		NA	
Sodium, Total	7440-23-5	20000	ug/l	2E+05		4E+05		3E+05		3E+05		5E+05		4E+05		8E+05		8E+05		7E+05		4E+05		3E+05		9E+05		NA		NA		NA		NA		NA		NA		NA	
Thallium, Total	7440-28-0	0.5	ug/l	0.5	U	0.5	U	0.04	J	0.06	J	0.03	J	0.5	U	0.5	U	0.5	U	0.06	J	0.5	U	0.2	U	0.5	U	NA		NA		NA		NA		NA		NA		NA	
Vanadium, Total	7440-62-2	-	ug/l	0.34	J	0.58	J	4.43	J	7.89		5.36		2.64	J	0.94	J	1.57	J	7.01		87.82		0.3	J	1.42	J	NA		NA		NA		NA		NA		NA		NA	
Zinc, Total	7440-66-6	2000	ug/l	24.37		5	J	53.51		251.7		59.36		80.66		80.18		33.78		97.1		14.79		1.89	J	10.77		NA		NA		NA		NA		NA		NA		NA	
General Chemistry																																									
Chromium, Trivalent	16065-83-1	-	ug/l	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U	NA		NA		NA		NA		NA		NA		NA	
Cyanide, Total	57-12-5	200	ug/l	3	J	2	J	2	J	3	J	3	J	5		3	J	5		3	J	2	J	1	J	5		NA		NA		NA		NA		NA		NA		NA	
Chromium, Hexavalent	18540-29-9	50	ug/l	10	U	5	J	5	J	5	J	8	J	5	J	5	J	6	J	11		10	U	10	U	4	J	NA		NA		NA		NA		NA		NA		NA	
Polychlorinated Biphenyls																																									
Aroclor 1016	12674-11-2	0.09	ug/l	0.083	U	-		0.083	U	0.083	U	0.083	U	0.083	U	0.083	U	0.083	U	0.083	U	0.083	U	0.417	U	0.083	U	NA		0.083	U	0.083	U	0.083	U	0.083	U	0.083	U	NA	
Aroclor 1221	11104-28-2	0.09	ug/l	0.083	U	0.167	U	0.083	U	0.083	U	0.083	U	0.083	U	0.083	U	0.083	U	0.083	U	0.083	U	0.417	U	0.083	U	NA		0.083	U	0.083	U	0.083	U	0.083	U	0.083	U	NA	
Aroclor 1232	11141-16-5	0.09	ug/l	0.083	U	0.167	U	0.083	U	0.083	U	0.083	U	0.083	U	0.083	U	0.083	U	0.083	U	0.083	U	0.417	U	0.083	U	NA		0.083	U	0.083	U	0.083	U	0.083	U	0.083	U	NA	
Aroclor 1242	53469-21-9	0.09	ug/l	0.083	U	0.167	U	0.083	U	0.083	U	0.083	U	0.083	U	0.083	U	0.083	U	0.083	U	0.083	U	0.417	U	0.083	U	NA		0.083	U	0.083	U	0.083	U	0.083	U	0.083	U	NA	
Aroclor 1248	12672-29-6	0.09	ug/l	0.083	U	0.167	U	0.083	U	0.083	U	0.083	U	0.083	U	0.083	U	0.083	U	0.083	U	0.083	U	0.417	U	0.083	U	NA		0.083	U	0.083	U	0.083	U	0.083	U	0.083	U	NA	
Aroclor 1254	11097-69-1	0.09	ug/l	0.083	U	0.167	U	0.083	U	0.083	U	0.083	U	0.083	U	0.083	U	0.083	U	0.083	U	0.083	U	0.71	P	0.083	U	NA		0.083	U	0.083	U	0.083	U	0.083	U	0.083	U	NA	
Aroclor 1260	11096-82-5	0.09	ug/l	0.056	J	8	P	0.083	U	0.083	U	0.083	U	0.083	U	0.083	U	0.083	U	0.083	U	0.083	U	0.662	P	0.083	U	NA		0.083	U	0.083	U	0.083	U	0.083	U	0.083	U	NA	
Aroclor 1262	37324-23-5	0.09	ug/l	0.083	U	0.167	U	0.083	U	0.083	U	0.083	U	0.083	U	0.083	U	0.083	U	0.083	U	0.083	U	0.417	U	0.083	U	NA		0.083	U	0.083	U	0.083	U	0.083	U	0.083	U	NA	
Aroclor 1268	11100-14-4	0.09	ug/l	0.083	U	0.167	U	0.083	U	0.083	U	0.083	U	0.083	U	0.083	U	0.083	U	0.083	U	0.083	U	0.417	U	0.083	U	NA		0.083	U	0.083	U	0.083	U	0.083	U	0.083	U	NA	
Total PCBs	**1336-36-3**	-	**ug/l**	**0.056**	**J**	**8**		**0.083**	**U**	**0.083**	**U**	**0.083**	**U**	**0.083**	**U**	**0.083**	**U**	**0.083**	**U**	**0.083**	**U**	**0.083**	**U**	**1.37**		**0.083**	**U**	**NA**		**0.083**	**U**	**0.083**	**U**	**0.083**	**U**	**0.083**	**U**	**0.083**	**U**	**NA**	

Notes:
* Values per NYSDEC Technical and Operational Guidance Series (TOGS) 1.1.1 *Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations*
U - Not detected at the reported detection limit for the sample.
J - Presumptive evidence of compound. This represents an estimated concentration for Tentatively Identified Compounds (TICs), where the identification is based on a mass spectral library search.
P - The RPD between the results for the two columns exceeds the method-specified criteria.
R - The sample result is rejected (i.e., is unusable) due to serious deficiencies in the ability to analyze the sample and meet quality control criteria. The presence or absence of the analyte cannot be verified.
ND = Non Detect
NA = Sample was not analyzed for these parameters
"-" = No SCO available.
ug/l = micrograms per liter
Red cells indicate the concentration exceeds the SCO
Gray cells indicate the method detection limit exceeds the SCO

Table 4
GAC Usage Calculations
ENRX, Inc. – Voelker Analysis
766 New Babcock Street
Buffalo, New York 14206
Site ID. C915150

Client:	Diamond Hurwitz Scrap, LLC
Site Name:	ENRX
Street Address:	766 New Babacock Street
City, State:	Buffalo, NY
Calc. By:	S Leitten

Date: 9/30/2015

► *Instructions*

This is the primary worksheet for determining the amount of GAC required for the specified project site as well as the breakthrough time. This worksheet is intended to be used for **APPROXIMATE** GAC Unit selection and sizing and **SHOULD NOT BE USED** for determining final GAC quantities. It should be noted that the isotherms provided for each of the contaminants are general approximations and more detailed isotherm data can be found through specific analytical data. Isotherms vary greatly from carbon to carbon, therefore final GAC quantities and information should be used per manufacturer recommendations. **If no TPH-DRO or TPH-GRO values are provided on the input page, the user must select a TPH Type, which will use a multiple of the BTEX compounds inputs to determine a TPH usage rate.** If no BTEX compounds are present, the total usage rate will be based on the usage rates of MTBE, TMB, TBA, SVOCS, and the chlorinated compounds.

► *Input / Final Output - Liquid Phase GAC Usage*

	Contaminant of Concern	1/n	K	Concentration (µg/L)	Adsorptive Capacity	Effluent Limit (µg/L)
VOCs	Benzene	0.53	1.266			1
	Toluene	0.42	5.000			1
	Ethylbenzene	0.41	9.260			1
	Xylenes	0.24	35.800			3
	MTBE	0.50	0.250			NA
	TMB	0.47	0.616			200
SVOCs	Naphthalene	0.40	16.60	0	0.43	5
	Cumene/Isopropylbenzene	0.45	100.00			
	EDB	0.53	175.00			
	EDC	0.42	200.00			
	Fluorene	0.41	66.00			
	Phenanthrene	0.15	0.62	1	0.20	
Chlorinated	TCE	0.62	28.00	1,327	33.36	
	PCE	0.56	51.00	157	18.06	
	DCE	0.59	12.00	2,733	21.72	
	VC	0.42	0.20	313	0.12	
	TCA	0.70	66.00			
TBA	TBA	0.5	25.5			NA
TPH-DRO						
TPH-GRO						

► *Input - GAC Parameters*

Size of GAC Units:	500	lb
Number of Units in Series:	2	
Number of Units in Parallel:	1	
Total Pounds of Carbon:	1,000	lb

	SELECTED UNIT
	PV-500
Nominal Flow (gpm):	25
Max Pressure (psi):	75
Mass of GAC (lbs):	500
Volume (Granular Media) (ft^3):	18.5
Diameter (in.):	30
Cross Sectional Area (ft^2):	4.91
Height (in.):	67
Volume (total) (ft^3):	27.39

► *Output - Estimated Bed Contact Time Calculation*

System Flow Rate:	1.5	gpm
Transfer Pump Flow Rate:	2.0	gpm
Is Flow Divided in Parallel:	NO	
Parallel System Transfer Pump Flow Rate:		gpm
Surface Loading Rate:	0.054	cfm/ft^2
Empty Bed Contact Time (EBCT):	139.1	min

► *Output - Liquid Phase GAC Usage & Breakthrough Time*

Overall Assumed Carbon Removal Efficiency:	99.5%	
Total GAC usage:	**48.92**	**lb/day**

TIME TO BREAKTHROUGH (days):	**20.44**	**days**

Breakthrough Comment:

Less than 30 days: Consider increasing size and/or quantity

APPENDIX A

HASP

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APPENDIX A

Health & Safety Plan (HASP)

Project Location:

ENRX, Inc. – Voelker Analysis
766 New Babcock Street
Buffalo, New York 14206
Site ID. C915150

Prepared By:

AFI Environmental
PO Box 4049
Niagara Falls, New York 14304
(716) 283-7645
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Revised
November 2014

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Site Specific Health and Safety Plan for

ENRX, Inc. – Voelker Analysis

Site ID. C915150

Site Name: ENRX, Inc. – Voelker Analysis

Location: 766 New Babcock Street, Buffalo, New York

Proposed Dates of Activities: November 2014 – December 31, 2015

Type of Facility: Scrap Recycling Facility

Land Use of Area Surrounding Facility: Vacant, Industrial

Site Activities:

1. Excavation of soil containing elevated levels of volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), TSCA polychlorinated biphenyls (PCBs) and RCRA or other Potential Hazardous Materials.
2. Drilling of soil containing elevated levels of VOCs, SVOCs, TSCA PCBs and RCRA or other Potential Hazardous Materials.
3. Sampling of soil and ground water containing elevated levels of VOCs, SVOCs, TSCA PCBs and RCRA or other Potential Hazardous Materials.
4. Collection of Sub-slab Soil Vapor Samples containing elevated levels of VOCs.
5. Construction activities related to the installation of a bedrock groundwater pump and treat (GWP&T) system and vapor mitigation system.
6. Operation and Maintenance (O&M) of the bedrock GWP&T and vapor mitigation systems mitigating bedrock groundwater and sub-slab air containing elevated levels of VOCs, SVOCs, TSCA PCBs and RCRA or other Potential Hazardous Materials.
7. Complete decontamination, washing and cleaning of all equipment and tools.

Potential Site Contaminants: possible undiscovered suspect or potential Regulated, Universal, TSCA, RCRA, or other Potential Hazardous Materials

Routes of Entry: Inhalation of airborne fibers, skin contact with soil, groundwater, or sediment; incidental ingestion of soil, water, or sediment; and inhalation of airborne droplets, dusts, or vapors

Protective Measures (Level D): Hard hat, safety glasses, gloves, protective clothing, steel-toed boots.

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Protective Measures (Level C): Hard hat, safety glasses, gloves, protective clothing, steel-toed boots, disposable coveralls and respirators.

Work for this project will be conducted in Level C protection incorporating respiratory protection for all remediation work where levels of contaminates (indicated by elevated PID readings from personnel monitoring by use of Entry Rae's) and or by site conditions and Level D protection for all other work. Situations requiring Levels A or B protection are not anticipated for this project; should they occur, work will stop and the HASP will be amended, as appropriate, prior to resuming work.

1.0 INTRODUCTION

This site-specific Health and Safety Plan (HASP) addresses procedures to minimize the risk of chemical exposures, physical accidents to onsite workers, and environmental contamination. This HASP has been developed by AFI Environmental (AFI) as a Site Specific Health and Safety Plan for compliance with the requirements of the Specified Site Work for Hannah Recycling Building as part of the Brownfield Cleanup Program (BCP) Work Plan for the ENRX Inc., Voelker Analysis Site (Site ID. C915150).

1.1 Purpose & Regulatory Compliance

The HASP covers each of the required elements as specified in 29 CFR 1910.120 regulations. This HASP will be made available to all AFI personnel and subcontractors involved in field work on this project. For subcontractors, this Health and Safety Plan (HASP) represents minimum safety procedures. Subcontractors are responsible for their own safety while present onsite or conducting work for this project. Subcontractor work may involve safety and health procedures not addressed in the HASP. The HASP was originally prepared by a Certified Industrial Hygienist and has been reviewed by AFI's Health and Safety Officer. By signing the documentation form provided with this plan (Attachment 2), project workers also certify their agreement to comply with the plan. Both AFI and its subcontractors are independently responsible for the health and safety of their own employees on the project.

1.2 Chain of Command

The AFI chain of command for health and safety on this project involves the following individuals:

AFI Environmental – Project Manager: William Heitzenrater – (716) 940-2725

The Senior Environmental in conjunction with the Site Supervisor has overall responsibility for the successful outcome of the project. The Senior Environmental Professional makes final decisions regarding questions concerning the implementation of the site HASP.

AFI Environmental – Project Director: Geoffrey Heitzenrater – (716) 909-7962

Project H&S Coordinator: Elbert Benton– (716) 622-1470

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As the Project H&S Coordinator, this individual is responsible for implementing the HASP in the field. The Project H&S Coordinator informs subcontractors of the minimum requirements of this plan. This person will also assure that proper protective equipment is available and used in the correct manner, decontamination activities are carried out properly, and that employees have knowledge of the local emergency medical system.

The H&S Coordinator also has overall responsibility for preparation and modification of this HASP. In the event that health and safety issues arise during site operations, the H&S Coordinator will attempt to resolve them in discussion with the appropriate members of the project team.

Project Team Members

Project team members are responsible for understanding the H&S requirements for this project, and implementing these procedures in the field. Team members will receive technical guidance from the Project H&S Coordinator.

1.3 Site Work Activities

This HASP covers field site activities to be conducted throughout the project at **Hannah Recycling Building**. The field activities associated with the project includes:

1. Installation of a vapor mitigation system
2. Installation of a bedrock GWP&T system
3. Installation of bedrock GWP&T system below grade piping trenches
4. O&M of vapor mitigation and bedrock GWP&T systems.
5. Sampling of potentially impacted soil vapor and bedrock groundwater.
6. Loading and transportation of waste generated by the remedial systems for disposal or recycling.
7. Complete decontamination, washing and cleaning of all equipment and tools.

1.4 Site Description

The Site consists of one (1) parcel measuring approximately 0.85 acres with a street address of 766 New Babcock Street, Buffalo, Erie County, New York with Tax ID # 112.14-3-2.1. Coordinates of the property are 42° 53’ 02.08’’N, 78° 49’ 30.67’’W (WGS84). The Site consists of a warehouse/maintenance building with an attached office, fenced perimeter and parking lot, equipment storage area and two entrance driveways with electronic security gates. The Site is juxtaposed to, and across the street from, DHS’ existing operations located at 50 and 41 Hannah Street currently operating as Hannah Street Recycling.

The mixed use surrounding area is developed with Hannah Street Recycling to the west, an unpaved employee parking area once occupied by a wood frame building to the south followed by NFTA bus garages to the southeast, vacant

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lots to the east, and industrial buildings and manufacturing to the north along William Street. There are no residential structures near the Site.

2.0 HAZARD EVALUATION AND CONTROL MEASURES

2.1 Potential Site Contaminates

Based on previous assessments of the project location the following wastes are a concern:

- Soil vapor with elevated levels of chlorinated organics.
- Soils and or ground water with elevated levels of chlorinated organics, SVOCs and PCBs

2.2 Potential Exposure Routes

2.2.1 Inhalation

Inhalation of dusts or fugitive vapors generated during the installation of monitoring wells, test pits, soil excavation, removal and loading of soils. Exposure via this route could also potentially occur if chemicals are discovered during the sorting and segregating activities and vapors become airborne during site activities.

2.2.2 Skin Contact

Exposure via this route could potentially occur if impacted soil or groundwater is exposed during construction or O&M activities. Protective clothing and decontamination activities specified in this plan will minimize the potential for skin contact with the contaminants.

2.2.3 Ingestion

Exposure via this route could occur if individuals eat, drink, or perform other hand-to-mouth contact in the regulated work areas/exclusion zones. Decontamination procedures established in this plan will minimize the inadvertent ingestion of contaminants.

2.3 Heat Stress & Hypothermia

2.3.1 Heat Stress

Use of impermeable clothing reduces the cooling ability of the body due to evaporation reduction. This may lead to heat stress. If such conditions occur during site activities, appropriate work-rest cycles will be utilized and water or electrolyte-rich fluids (Gatorade or equivalent) will be made available to minimize heat stress effects.

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Also, when ambient temperatures exceed 70°F, monitoring of employee pulse rates will be conducted. Each employee will check his or her pulse rate at the beginning of each break period. Take the pulse at the wrist for 6 seconds, and multiply by 10. If the pulse rate exceeds 110 beats per minute, then reduce the length of the next work period by one-third.

Example: After a 1-hour work period at 80°F, a worker has a pulse rate of 120 beats per minute. The worker must shorten the next work period by one-third, resulting in a work period of 40 minutes until the next break.

2.3.2 Hypothermia

Hypothermia can result from abnormal cooling of the core body temperature. It is caused by exposure to a cold environment and wind-chill. Wetness or water immersion can also play a significant role.

Typical warning signs of hypothermia include fatigue, weakness, and lack of coordination, apathy, and drowsiness. A confused state is a key symptom of hypothermia. Shivering and pallor are usually absent, and the face may appear puffy and pink. Body temperatures below 90°F require immediate treatment to restore temperature to normal.

Current medical practice recommends slow re-warming as treatment for hypothermia, followed by professional medical care. This can be accomplished by moving the person into a sheltered area and wrapping with blankets in a warm room. In emergency situations, where body temperature falls below 90°F and heated shelter is not available, use a sleeping bag, blankets, and body heat from another individual to help restore normal body temperature.

2.4 Other Physical Hazards

2.4.1 Slips/Falls

As with all field work sites, caution will be exercised to prevent slips on rain slick surfaces, stepping on sharp objects, etc. Work will not be performed on elevated platforms without fall protection. At least one person with current training in first aid and CPR will be onsite at all times.

2.4.2 Machinery/Moving Parts

The site will incorporate the use of concrete saws, excavators and other machines. These present a general physical hazard from moving parts. Personnel will stand clear of machinery at all times unless specific instructions are given by the operator, or other person in authority. Steel-toed shoes or boots will be worn at all times when on the site. When possible, appropriate guards will be in place during equipment use.

Any other equipment present on site may also present a physical hazard. Field personnel should be careful to keep loose clothing, hands, and feet away from moving equipment and equipment parts.

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2.4.3 Confined Spaces

Confined space entry is not anticipated for this project. Personnel will not enter any confined space without specific approval of the Site Supervisor, Project Manager, Sr. Environmental Professional, and Project H&S Manager.

2.4.4 Noise

Appropriate hearing protection (ear muffs or ear plugs with a noise reduction rating of at least 20 dB) will be used if individuals work near high-noise generating equipment (> 85 dB). Determination of the need for hearing protection will be made by the Project H&S Coordinator.

3.0 PROTECTIVE EQUIPMENT AND AIR MONITORING

3.1 Protective Equipment

Work for this project will be conducted in Level C protection incorporating respiratory protection for all remediation work where levels of contaminates (indicated by elevated PID readings from personnel monitoring by use of Entry Rae's) and or by site conditions and Level D protection for all other work. Situations requiring Levels A or B protection are not anticipated for this project; should they occur, work will stop and the HASP will be amended, as appropriate, prior to resuming work.

Workers performing general site activities where skin contact with highly contaminated materials is unlikely and inhalation risks are not expected will wear hard hats, eye protection, gloves, and safety boots. Level D protection will consist of the following:

- Hard hats
- Safety glasses
- Steel-toed boots

Workers performing site activities where contaminated materials are present will wear hard hats, eye protection, safety boots, half-mask or full-face air-purifying respirators with P-100 HEPA and/or organic vapor cartridges, nitrile gloves and Tyvek or other disposable suits. Level C protection will consist of the following:

- Hard hats
- Safety glasses
- Steel-toed boots
- Half-mask or full-face air-purifying respirators with P-100 HEPA cartridges and organic vapor cartridges
- Nitrile gloves

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- Tyvek or other disposable suits

When performing activities in which the presence of chemicals vapors and dusts could be a concern, workers will wear half-mask or full-face air-purifying respirators with combination cartridges and nitrile or other appropriate outer and inner gloves. Cartridges should be changed on a daily basis, at a minimum. They should be changed more frequently if chemical vapors are detected inside the respirator or other symptoms of breakthrough are noted (e.g., irritation, dizziness, breathing difficulty).

3.2 Air Monitoring

Negative Exposure Assessment Air Monitoring (NEA) will be conducted for each activity during remediation activities (well installation, test pit Investigation, sampling, removal and debris segregation, loading activities). The air monitoring pumps will be calibrated prior to each day's activity according to manufacturer's instructions. Calibration will be repeated at the end of the activity and recorded in the health and safety logbook or field notes. Air sampling will be conducted that is representative of both the 8-hour time weighted average and 30-minute short-term exposures limit to indicate compliance with the permissible exposure and excursion limits. Results of personal air sample analyses shall be available, verbally, within forty-eight (48) hours of sampling completion and shall be posted upon receipt.

An NEA will also be conducted at the beginning of the job for the Truck Driver function for purposes of Transporting waste from the Project. NEA confirmatory sampling on the Truck Driver function shall also be conducted 1 month after the initial Truck Driver NEA is completed.

4.0 SAFETY EQUIPMENT LIST

The following signs will be posted on the perimeter of the site near the entrance gate:

- Brownfield Cleanup Project Sign
- "All Visitors Must Report to the Office Trailer"
- "Hard Hat Area"
- "Authorized Personnel Only"
- "Personal Protective Equipment Required Beyond this Point"
- "Fire Extinguisher"
- Emergency Information
- Emergency Route Map

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The following safety equipment will be available onsite inside the site field office:

- First aid kit
- Mobile telephone
- Disposal coveralls and gloves
- Safety glasses
- Hard hats
- Air monitoring instruments
- Half-face respirators with cartridges.
- Eye Wash station

5.0 EXCLUSION AREAS

Site control will be maintained by establishing clearly identified work zones. These will include the regulated remediation work area, exclusion zone, staging areas, and support zone, as discussed below.

5.1 Regulated Remediation Work Areas & Exclusion Zone

Regulated remediation work areas and exclusion zones will be established around each contaminated substance activity location. Only persons with appropriate training and authorization from the Project H&S Coordinator will enter this perimeter while work is being conducted. Maps for these areas will be available as these areas are established.

5.2 Contamination Reduction Zone

A contamination reduction zone will consist of a personal decontamination unit station that must be used by all remediation personnel to exit the regulated work area. A decontamination station with pad and filtration unit will be used by all vehicles prior to exiting an exclusion zone. The station will have the power washers and wash fluids necessary to decontaminate equipment leaving the exclusion zone. Care will be taken to prevent the spread of contamination from this area and all wash waters will be collected and filtered.

5.3 Support Zone

A support zone will be established outside the contamination reduction area to stage clean equipment, don protective clothing, take rest breaks, etc.

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6.0 MINIMIZATION OF CONTAMINATION

To make the work zone procedure function effectively, the amount of equipment and number of personnel allowed in contaminated areas must be minimized. Do not kneel on contaminated ground, stir up unnecessary dust, or perform any practice that increases the probability of hand-to-mouth transfer of contaminated materials. Eating, drinking, chewing gum, smoking, or using smokeless tobacco is forbidden in the regulated abatement work areas and exclusion zone.

7.0 DECONTAMINATION

Decontamination is necessary to limit the migration of contaminants from the work zone(s) onto the site or from the site into the surrounding environment. Equipment and personnel decontamination are discussed in the following sections.

In the event hazardous materials are encountered, proper decontamination procedures will be employed to ensure that contaminated materials do not contact individuals and are not spread from the site. These procedures will also ensure that contaminated materials generated during site operations and during decontamination are managed appropriately. All non-disposable equipment will be decontaminated in the contamination reduction zone.

8.0 DISPOSAL OF CONTAMINATED MATERIALS

All disposable equipment and personal protective equipment will be rinsed inside the equipment room to remove gross contamination and placed inside of a 6 mil polyethylene bag or other appropriate containers. These disposable supplies and containers will be removed from the decontamination unit and properly labeled.

9.0 SITE SECURITY AND CONTROL

Site security and control will be the responsibility of the Project H&S Coordinator. The “buddy- system” will be used when working in designated hazardous areas. Any security or control problems will be reported to the client or appropriate authorities.

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10.0 SPILL CONTAINMENT

Sources of bulk chemicals subject to spillage are not expected to be used in this project. Accordingly, a spill containment plan is not required for this project.

11.0 EMERGENCY RESPONSE PLAN

The Emergency Response Plan outlines the steps necessary for appropriate response to emergency situations. The following paragraphs summarize the key Emergency Response Plan procedures for this project.

11.1 Plan Content & Review

The principal hazards addressed by the Emergency Response Plan include the following: fire or explosion, medical emergencies, uncontrolled contaminant release, and situations such as the presence of chemicals above exposure guidelines or inadequate protective equipment for the hazards present. However, in order to help anticipate potential emergency situations, field personnel should always exercise caution and look for signs of potentially hazardous situations, including the following as examples:

- Visible or odorous chemical contaminants
- Drums or other containers
- General physical hazards (e.g., traffic, cranes, moving equipment, sharp or hot surfaces, slippery or uneven surfaces)
- Possible sources of radiation
- Live electrical wires or equipment; underground pipelines or cables; and poisonous or dangerous animals.

These and other potential problems should be anticipated and steps taken to avert problems before they occur. All personnel will certify (Attachment 2) that they are familiar with the contents of this plan and acknowledge their agreement to comply with the provisions of the plan.

The Emergency Response Plan will be reviewed during the onsite health and safety briefing so that all personnel will know what their duties are should an emergency occur.

11.2 Plan Implementation

The Project H&S Coordinator will act as the lead individual in the event of an emergency situation and evaluate the situation. This individual will determine the need to implement the emergency procedures, in concert

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with other resource personnel including client representatives, and the Project H&S Manager. Other onsite field personnel will assist the H&S Coordinator as required during the emergency.

If the Emergency Response Plan is implemented, the Project H&S Coordinator or designees are responsible for alerting all personnel at the affected area by use of a signal device (such as a hand-held air horn), visual, or shouted instructions, as appropriate.

Emergency evacuation routes and safe assembly areas will be identified and discussed in the onsite health and safety briefing, as appropriate. The buddy-system will be employed during evacuation to ensure safe escape, and the Project H&S Coordinator will be responsible for roll-call to account for all personnel.

11.3 Emergency Response Contacts

Site personnel must know whom to notify in the event of Emergency Response Plan implementation. The following information will be readily available at the site in a location known to all workers:

- Emergency Telephone Numbers: see list in Attachment 1
- Route to Nearest Hospital: see directions and map in Attachment 1
- Site Descriptions: see the description at the beginning of this plan

If a significant environmental release of contaminants occurs, the federal, state, and local agencies noted in this plan must be notified within 24 hours. Contact the Project Manager as soon as possible and he/she will be responsible for notifying agencies listed in Attachment 1. If the release to the environment includes navigable waters, also notify the National Response Center.

In the event of an emergency situation requiring implementation of the Emergency Response Plan (e.g., fire or explosion, serious injury, tank leak or other material spill, presence of chemicals above exposure guidelines, inadequate personnel protection equipment for the hazards present), cease all work immediately. Offer whatever assistance is required, but do not enter work areas without proper protective equipment. Workers not needed for immediate assistance will decontaminate per normal procedures (if possible) and leave the work area, pending approval by the Project H&S Coordinator for re-start of work. The following general emergency response safety procedures should be followed.

11.4 Fires

AFI's personnel will attempt to control only very small fires. If an explosion appears likely, evacuate the area immediately. If a fire occurs that cannot be readily controlled, then immediate intervention by the local fire department or other appropriate agency is imperative. Use these steps:

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Contact 911 if a medical emergency occurs. If a worker leaves the site to seek medical attention, another worker should accompany the patient. When in doubt about the severity of an accident or exposure, always seek medical attention as a conservative approach. Notify the Project Manager of the outcome of the medical evaluation as soon as possible. For minor cuts and bruises, an onsite first aid kit will be available.

If a worker is seriously injured or becomes ill or unconscious, immediately request assistance from the emergency contact sources noted in the site-specific plan. Do not attempt to assist an unconscious worker in an untested confined space without applying confined space entry procedures or without using proper respiratory protection, such as a self-contained breathing apparatus.

In the event that a seriously injured person is also heavily contaminated, use clean plastic sheeting to prevent contamination of the inside of the emergency vehicle. Less severely injured individuals may also have their protective clothing carefully removed or cut off before transport to the hospital. If it is deemed appropriate to transport the victim to the hospital, follow the route map on Attachment 1.

11.5 Plan Documentation & Review

The Sr. Environmental Professional/Project Manager will notify the Project H&S Manager as soon as possible after an emergency situation has been stabilized. The Project Manager will also notify the appropriate client contacts, and regulatory agencies, if applicable. If an individual is injured, the Project Manager will file a detailed Accident Report with the Project H&S Manager within 24 hours.

The Project H&S Manager will critique the emergency response action following the event. The results of the critique will be used in to improve future Emergency Response Plans and actions.

12.0 MEDICAL SURVEILLANCE

A medical surveillance program has been instituted for AFI and will also be in effect for Subcontractor employees having exposures to hazardous substances. For AFI, exams are given before employment; annually, thereafter; and upon termination. Content of exams is determined by the Occupational Medicine physician, in compliance with applicable regulations, and is detailed in the AFI Health and Safety Program.

Each team member will have under gone a physical examination as noted above in order to verify that he/she is physically able to use protective equipment, work in hot environments, and not be predisposed to occupationally induced disease. Additional exams may be needed to evaluate specific exposures or unexplainable illness.

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ATTACHMENT 1

EMERGENCY INFORMATION

HOSPITAL Buffalo General Hospital
100 High Street
Buffalo, NY 14203
(716) 859-5600

DIRECTIONS:

1. Determine your location and call 911 if the situation warrants.

2. If the situation is not an emergency, but medical attention is required, get to your vehicle parked at the site and:

1. Head northeast on New Babcock St. toward William St.
2. Turn left onto William St.
3. Turn right onto Michigan Ave.
4. Turn left onto High St. - Destination will be on the right

TELEPHONE – Cellular telephones to be carried by each team member
EMERGENCY TRANSPORTATION SYSTEMS (Fire, Police, Ambulance) - 911

EMERGENCY ROUTES – Follow above
EMERGENCY CONTACTS –

Poison Control Center	(800) 222-1222
Sr. Environmental Professional/Project Manager	
Bill Heitzenrater	(716) 940-2725
Project Director – Geoff Heitzenrater	(716) 909-7962
Project H&S Manager – Elbert Benton	(716) 622-1470
National Response Center	(800) 424-8802
NYS Spill Line	(800) 457-7632

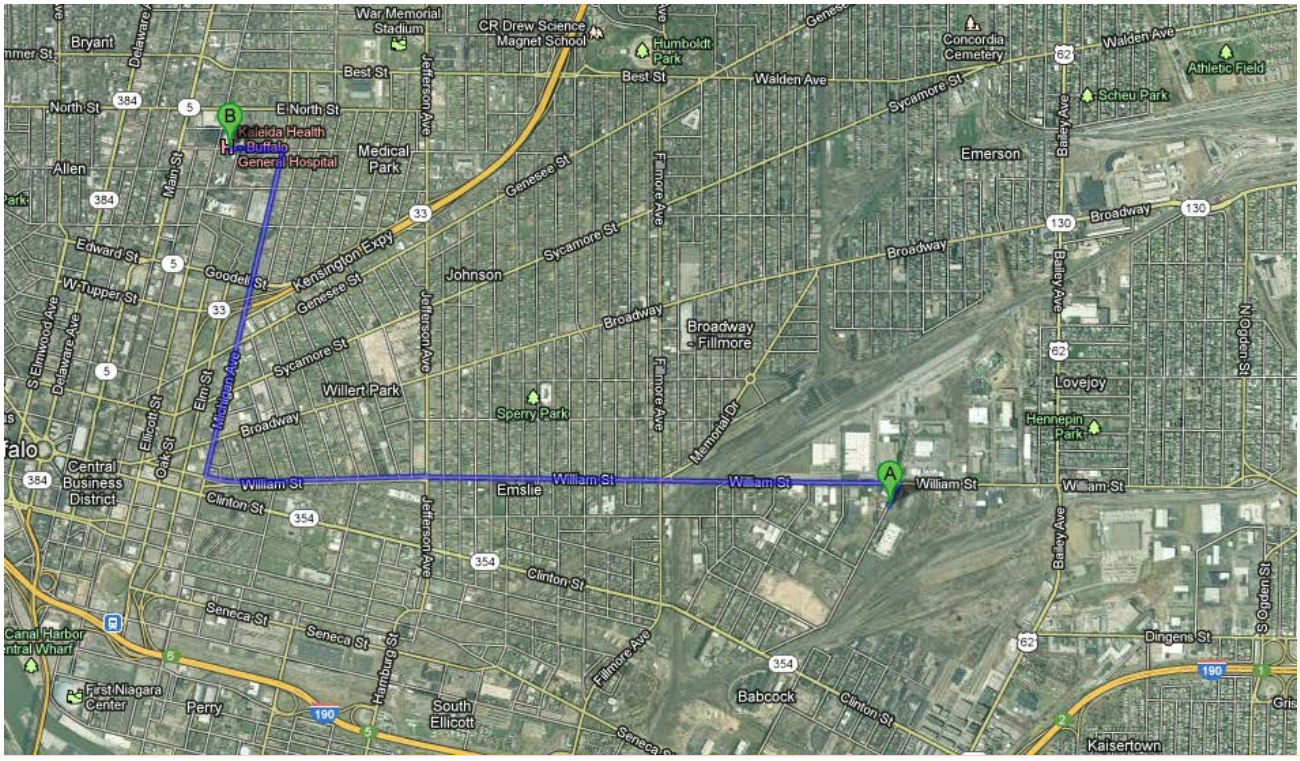
In the event of an uncontrolled emergency, call for help as soon as possible. Dial **911**; give the following information:

- WHERE the emergency is – use cross streets or landmarks
- PHONE NUMBER you are calling from
- WHAT HAPPENED – type of injury
- HOW MANY persons need help
- WHAT is being done for the victim(s)
- YOU HANG UP LAST – let the person you called hang up first.

7815 Buffalo Ave
Niagara Falls, New York 14304
www.afienviornmental.com

EMERGENCY ROUTE MAP

HOSPITAL Buffalo General Hospital
100 High Street
Buffalo, NY 14203-1154



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ATTACHMENT 2

CERTIFICATION

All field members are required to read and familiarize themselves with the contents of this Health & Safety Plan and acknowledge their agreement to comply with the provisions of the plan through the entry of a signature and date on the section below.

By my signature, I certify that:
I have read, I understand, and I will comply with this site health and safety plan for the ENRX, Inc. – Voelker Analysis Site.

Printed Name	Signature	Date	Affiliation

Personal Health & Safety Briefing Conducted By:

_____ _____ _____
Name Signature Date

Plan Prepared/Reviewed By:

_____ _____ _____
Name Signature Date

APPENDIX B

CAMP

8644 Buffalo Ave
Niagara Falls, New York 14304
www.afienvironmental.com

New York State Department of Health
Community Air Monitoring Plan

The Community Air Monitoring Plan (CAMP) requires real-time monitoring for volatile organic compounds (VOCs) and particulates (i.e., dust) at the downwind perimeter of each designated work area when certain activities are in progress at contaminated sites. The CAMP is not intended for use in establishing action levels for worker respiratory protection. Rather, its intent is to provide a measure of protection for the downwind community (i.e., off-site receptors including residences and businesses and on-site workers not directly involved with the subject work activities) from potential airborne contaminant releases as a direct result of investigative and remedial work activities. The action levels specified here in require increased monitoring, corrective actions to abate emissions, and/or work shut down. Additionally, the CAMP helps to confirm that work activities did not spread contamination off-site through the air.

Community Air Monitoring Plan

Continuous monitoring will be required for all ground intrusive activities. Ground intrusive activities include, but are not limited to, soil/waste excavation and handling, UST removal, test pitting or trenching, and the installation of soil borings or monitoring wells.

Periodic monitoring for VOC's will be required during non-intrusive activities such as the collection of soil and sediment samples or the collection of groundwater samples from existing monitoring wells. "Periodic" monitoring during sample collection will consist of taking a reading upon arrival at a sample location, monitoring while opening a well cap or over turning soil, monitoring during well baling/purging, and taking a reading prior to leaving a sample location.

VOC Monitoring, Response Levels, and Actions

VOCs will be monitored at the downwind perimeter of the immediate work area (i.e., the exclusion zone) on a continuous basis or as otherwise specified. Upwind concentrations will be measured at the start of each work day and periodically thereafter to establish background conditions. The monitoring work will be performed using equipment appropriate to measure the types of contaminants known or suspected to be present. The equipment will be calibrated at least daily for the contaminant(s) of concern or for an appropriate surrogate. The equipment will be capable of calculating 15-minute running average concentrations, which will be compared to the levels specified below.

- If the ambient air concentration of total organic vapors at the downwind perimeter of the work area or exclusion zone exceeds 5 parts per million (ppm) above background for the15-minute average, work activities will be temporarily halted and monitoring continued. If the total organic vapor level readily decreases (per instantaneous readings) below 5 ppm over background, work activities will resume with continued monitoring.

- If total organic vapor levels at the downwind perimeter of the work area or exclusion zone persist at levels in excess of 5ppm over background but less than 25ppm, work activities will be halted, the source of vapors identified, corrective actions taken to abate emissions, and monitoring continued. After these steps, work activities will resume provided that the total organic vapor level 200 feet downwind of the exclusion zone or half the distance to the nearest potential receptor or residential/commercial structure, whichever is less-but in no case less than 20 feet, is below 5 ppm over background for the15-minute average.

- If the organic vapor level is above 25ppm at the perimeter of the work area, activities must be shutdown.

All 15-minute readings will be recorded and be available for State (DEC and DOH) personnel to review. Instantaneous readings, if any, used for decision purposes should also be recorded.

Particulate Monitoring, Response Levels, and Actions

Particulate concentrations will be monitored continuously at the upwind and downwind perimeters of the exclusion zone at temporary particulate monitoring stations. The particulate monitoring will be performed using real-time monitoring equipment capable of measuring particulate matter less than 10 micrometers in size (PM-10) and capable of integrating over a period of 15 minutes (or less) for comparison to the airborne particulate action level. The equipment will be equipped with an audible alarm to indicate exceedance of the action level. In addition, fugitive dust migration will be visually assessed during all work activities.

- If the downwind PM-10 particulate level is 100 micrograms per cubic meter (mcg/m3) greater than background (upwind perimeter) for the15-minute period or if airborne dust is observed leaving the work area, then dust suppression techniques will be employed. Work may continue with dusts suppression techniques provided that downwind PM-10 particulate levels do not exceed 150 mcg/m3 above the upwind level and provided that no visible dust is migrating from the work area.

- If, after implementation of dust suppression techniques, downwind PM-10 particulate levels are greater than 150mcg/m 3 above the upwind level, work will be stopped and re-evaluation of activities initiated. Work can resume provided that dust suppression measures and other controls are successful in reducing the downwind PM-10 particulate concentration to within 150 mcg/m3 of the upwind level and in preventing visible dust migration.

All readings will be recorded and be available for State (DEC and DOH) personnel to review.