SI/IRM WORK PLAN
BROWNFIELDS CLEANUP PROGRAM

for

73-79 W. Huron St. Site
Buffalo, NY 14202
(Site #C915282)

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(Revised)

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1.0 INTRODUCTION AND PURPOSE

The 73-79 West Huron St. property, owned by Hurondel I, Inc. in Buffalo, NY (see location on Figure 1), has been the subject of investigations and remedial action since 2001, along with - 181 Delaware Avenue (Former Sunoco Gas Station) to the west. The in-situ remediation systems have been in the control of Sunoco since 2003. Site assessments and remedial actions associated with this spill number spanned across three contiguous properties, including investigations and groundwater monitoring (GZA, Nature's Way and GES for Sunoco) from 2003 to 2010, remedial efforts (air sparging/soil vapor extraction, AS/SVE, by GES for Sunoco) from 2007 to 2009, and a pilot test (bioaugmentation with oxygen injection by Matrix Environmental Technologies for Sunoco) in May/June 2011.

In September 2011, the NYSDEC separated the 181 Delaware Avenue site from this group and issued Spill No. 1106834 under which all further remedial work by Sunoco has been performed, including site remediation (oxygen injection and bioaugmentation) However, the original Spill No. 0375208 from July 2003 associated with this earlier work remains associated with 77 West Huron.

This Work Plan provides details on the proposed supplemental site investigation and interim remedial action to be undertaken at the 73-79 W. Huron site under the Brownfields Cleanup Program. The site investigation is to address areas of the property not targeted in previous investigations and to assess the presence of any contamination not previously identified. The remedy will consist of, at a minimum, the removal of contaminated soil associated with past activities at the property. Following the remedial action, Hurondel I, Inc. proposes to redevelop 73-79 West Huron with its six-story building for mixed commercial/residential use.

2.0 SITE DESCRIPTION AND HISTORY

The site consists of a rectangular shaped, 0.216 acre parking lot (77-79 W Huron St.) and a rectangular shaped, six-story parking garage (73-75 W. Huron St.) as shown on the aerial photo on Figure 1. The asphalt-paved parking lot is currently being leased by auto drivers for parking spaces. The parking garage is a vacant brick structure with a basement and a 0.34-acre footprint.

The building was originally constructed around 1892-94 as a three bay Romanesque Style commercial building with a flat roof and used by C. W. Miller Livery. It uses a steel frame as structural support, and supporting truss to suspend the remaining floors. It was altered in the 1920s with ramps heavily modified for use of the building as a motor vehicle parking garage. Hurondel I, Inc. proposes to modify the basement and first floors for interior vehicular parking and the upper floors for mixed commercial/residential use. It has a freight elevator in the northeast corner (see basement layout on Figure 3). The basement has a working sump pump continuously pumping out water from an underground spring.

To the north of this Site is another asphalt parking lot which extends both west and east of 77-79 W. Huron. To the east between the vacant parking garage and N. Franklin St. is the multi-story Curtiss building. To the south is W. Huron Street and across this road is an office building at 80 W Huron St. To the west are five (5) commercial buildings. These include, from north to south, an Event Center (#199 Delaware Ave), an office building (#193), King's Court Restaurant (#189), Delaware Copy and Repo Center (#187), and Dave's Direct Performance Auto Repair shop (#181). The auto repair shop is the site of the former Sunoco Gas Station.

Over the years, several people entering the vacant parking garage reported the presence of a strong petroleum-like odor. In January 2007, GES sampled air inside the building basement and found several VOCs but concluded no air contamination as a result of petroleum products. In March 2007, IEG screened air and water in the three basement sumps and detected VOCs using a photo-ionization detector in the south section that is immediately adjacent to the area of petroleum contamination in the southern portion of the parking lot.

Between 2004 and 2008, Sunoco installed air-sparging (AS) and soil vapor extraction (SVE) points across the two sites, and converted selected monitoring wells for use as SVE points. The AS/SVE system was shut down in December 2009 after hydrocarbon vapors were detected in the on-site building and three neighboring buildings, and due to groundwater mounding that has pushed the contamination radially beyond its original boundaries, and underperformance of the treatment system. Subsequently, Matrix installed horizontal soil vapor extraction laterals, and following a pilot test, implemented an in-situ technology comprising of oxygen injection and bioaugmentation that is currently in operation at the 181 Delaware Ave site.

In October 2011, Hurondel (IEG) conducted a ground penetrating radar (GPR) survey of the 77-79 W. Huron parcel, and found most of the areas appeared to be disturbed geology, including soil excavation and backfilling. The GPR/metal detector survey and the accompanying review of historical documents did not reveal any existing USTs at 77-79 W. Huron St. as a possible source of the plumes in the parking lot. In late 2012, IEG completed a Geoprobe soil investigation of the parking lot at 77-79 W. Huron. The results of this investigation indicated soil petroleum contamination more directly related to groundwater migration than the presence of a UST source. As shown on Figure 4, this investigation revealed the southern area of the parking lot to have high level exceedances of the NYSDEC's CP-51 values for petroleum compounds, and the central portion of the parking lot to have low to medium level exceedances in the center.

As indicated in previous reports by GES and Matrix, the regional groundwater flow is from the west to the east across the former Sunoco service station at 181 Delaware and thence across 77 W. Huron. Over these years, the water table sloped gently to the east, ranging from 90.7' at MW-2 to 89.5' at MW-6. Historical groundwater flow, and hence historical contamination migration has been from the Sunoco site at 181 Delaware to 77 W. Huron. Sunoco has acknowledged that the impact identified at the southwestern portion of 77-79 W. Huron is a continuation of the contamination from the Sunoco site.

Hurondel will further investigate the 73-79 W Huron parcels and undertake appropriate remediation.

3.0 SUMMARY OF ENVIRONMENTAL CONDITIONS

Petroleum contamination was identified at 73-79 W. Huron St. as shown on Figures 4 and 5:

- Central area of parking lot: Soil contamination in this area ranged from 24 to 118 mg/Kg based on the 2012 Geoprobe Soil Investigation by IEG.

- Southern area of parking lot: Soil contamination in this area ranged from 315 to 857 mg/Kg based on the 2012 Geoprobe Soil Investigation by IEG.

In addition, the 2011 GPR survey identified several subsurface anomalies across the parking lot. These areas will be further investigated by test pitting and laboratory analysis of subsurface soils showing elevated PID readings and/or visible evidence of contamination. Those with petroleum contamination exceeding the NYSDEC's CP-51 soil cleanup criteria will be included with Area A for remediation.

4.0 WORK PLAN FOR SITE INVESTIGATION

4.1 Objectives

The site investigation will be performed to fill in data gaps and areas not previously covered so as to remediate and bring closure to this property under the Brownfields Cleanup Program. The objectives of this investigation will therefore be as follows:

- Determine the extent of on-site contamination, if any, beyond the limits of the previous investigation,
- Establish the groundwater table and obtain other hydrogeological data such as hydraulic conductivity and groundwater flow/velocity,
- Determine the presence of, if any, environmental contamination inside the parking garage,
- Qualitatively assess exposure pathways and potential risks to human health and the environment, and
- Evaluate and develop a remedy for soil and groundwater contamination in the parking lot, and other contaminated media inside the garage.

4.2 Schedule of Sampling and Analysis

The site investigation will include the sampling and analysis of soil and groundwater in the parking lot and under the basement slab, subslab soil vapor in the basement (if present), flooring material inside the building, suspect asbestos containing materials and lead paint. Table 1 shows the proposed schedule of sampling and analysis along with analytical methods for the different matrices.

The anticipated number of soil, groundwater, building floor and paint samples that will be collected are shown in Table 1. All samples will be collected in certified clean containers (see Table 2) provided by the analytical laboratory. The sampling will follow NYSDEC guidelines for sample collection, packaging and shipment (in coolers with ice), and chain of custody. The samples will be sent to Test America, Amherst, NY, an off-site laboratory that is certified by the NYSDOH Environmental Laboratory Program (ELAP) and USEPA's Contract Laboratory Program (CLP). Analytical methods and QA/QC, including

matrix duplicates and spikes, and field blanks and duplicates will be in accordance with the NYSDEC's ASP protocols and USEPA methods, as applicable.

4.3 Soil Sampling and Analysis

Subsurface soil samples will be collected from the parking lot and the basement mostly through Geoprobe borings, and if necessary, test pit trenching at select locations in the parking lot. The proposed soil boring locations are shown on Figures 3 and 4 for the garage basement and parking lot respectively.

A Geoprobe soil boring will also be completed in the northeast corner of the parking lot (i.e. outside northwest corner of garage), and additional Geoprobe locations will be field determined. The basement boring locations include the freight elevator to be tested for hydraulic fluid). All sample locations will be surveyed by a licensed land surveyor.

Soil samples for laboratory analysis will be selected based on PID readings, visual observations and prior contaminated sample locations. Table 1 shows the anticipated number of samples to be collected and analyzed for different parameters, while Figures 3 and 4 show their tentative locations in the basement and parking lot respectively. All soil samples will be analyzed for TCL volatile organics (VOCs), while a select number of samples will be analyzed for the full list of parameters including semivolatile organics (SVOCs), TAL metals (including mercury), PCBs, pesticides, and total cyanide. A select number of soil samples will also be analyzed for landfill parameters so as to obtain prior approval from the landfill for disposal.

Soil Boring Samples: Up to fifteen (15) soil boring locations in the parking lot and eight (8) in the basement will be completed and sampled. A direct push method with a tractor mounted Geoprobe or similar unit will be used for this purpose. The Geoprobe uses 4-foot long split spoons or Shelby tubes with plastic liners. The split spoon is pushed into the ground and the soil sample is collected within the plastic sleeve.

At least one sample will be collected from each soil boring location that is representative of the contamination and nature of source material. An additional soil sample will be collected where appropriate to distinguish contaminant levels by depth based on visual observations and PID measurements.

Grab samples will be collected for VOC analysis in the layer that shows elevated PID readings. Composited samples for the other parameters will be collected across soil depths with similar types of waste fill materials and/or contamination.

The following procedures will be followed for the Geoprobe soil borings:

a. All equipment will be clean and free of soil, and the Geoprobe will be stabilized and leveled prior to sampling at each location.
b. For subsurface soil sampling in the basement, a hole will first be cored through the concrete floor. The hole will be plugged immediately if a significant hydraulic head exists under the slab.
c. The split spoon or Shelby tube with the plastic sleeve inserted will be advanced into the ground to the appropriate depth. After sample extraction from the ground, the plastic sleeve with the soil sample will be removed from the split spoon or Shelby tube and placed sequentially on a folding table with disposable plastic sheets. The sleeve will be cut along its axis and opened for sample screening

with a PID and visual inspection. The PID readings and soil characterized will be recorded in a field form. The samples will be described and logged by depth intervals in accordance with the Unified Soil Classification System.

d. After screening, sample aliquots will be collected from the selected depth interval in appropriate containers provided by the laboratory for analysis. The samples will be placed in coolers containing ice bags for transport/shipment to the laboratory. Unused soil boring samples will be put back in the borehole.
e. A laboratory-provided chain of custody will be completed for all samples and included with the shipment to the laboratory. In the event a local laboratory is utilized, all sample coolers will be properly packed with ice and dropped off at the laboratory on the day of sampling. In the event an out-of-town laboratory is used, the sample coolers will be properly packed with ice, secured and shipped by overnight delivery.

4.4 Groundwater Sampling and Analysis

Only one monitoring well (MW-10) remains in the parking lot of this Site and is associated with the adjacent Sunoco site remediation and monitoring program. The other two wells in the parking lot (MW-8 and MW-9) were decommissioned by Matrix in October 2014 along with other components of the air sparging and bioremediation systems that extended into the Hurondel Site.

This one remaining monitoring well (MW-10) will be purged and sampled for VOCs, SVOCs, PCBs, pesticides, TAL metals (including mercury) and total cyanide. Field measurements during sampling will include pH, specific conductivity, ORP and temperature. In addition, groundwater samples will be collected in the basement from the sump pump and, if possible, the Geoprobe soil boring locations.

The following procedure will be followed for well purging and sampling:

a. Dedicated, clean, soil-free bailers will be used for each well.
b. The water level will be measured and recorded to the nearest 0.01."
c. Well water will be bailed and collected in a 5-gallon pail (emptied into a 55-gal drum as needed) until the turbidity criteria (50 NTU) is met, a minimum of 3 well volumes is evacuated, and/or the well does not recharge. Field parameters (turbidity, pH, specific conductance, ORP) will be measured at the beginning, at 50% of purge volume gallons and before laboratory sampling. Field measurements and observations will be recorded in a field form.
d. At the conclusion of purging, groundwater samples will be collected in appropriate containers provided by the laboratory for analysis. All sample containers for analysis will be certified clean by the laboratory. The samples will be labeled and placed in coolers containing ice bags for shipment to the laboratory.
e. A laboratory-provided chain of custody will be completed for the samples and included with the shipment to the laboratory. In the event a local laboratory is utilized, all sample coolers will be properly packed with ice, and dropped off at the laboratory on the day of sampling. In the event an out-of-town laboratory is used, the sample coolers will be properly packed with ice, secured and shipped for overnight delivery.
f. The evacuated well water will be staged in 55-gallon drums for disposal following receipt of analytical results. The drums will be drained in an

unpaved area of the site in the event the groundwater samples do not show elevated contaminant levels. Otherwise, a 5-gallon pail with granular activated carbon will be used to filter out organics and particulate from the purge water before draining it on to the unpaved area.

4.5 SUBSLAB SOIL VAPOR

The basement floor is at the level of the groundwater table around the building, and also has an underground spring running through it. It is most likely that the soil beneath the basement floor slab is saturated with groundwater. If the subsurface soil immediately beneath the basement slab is not saturated, the subslab soil vapor will be sampled at the soil boring locations using Summa Canisters obtained from the analytical laboratory in accordance with the laboratory's sampling procedure. If possible, the subslab soil vapor sampling will be attempted concurrent to repair work in the adjacent Curtiss building that requires dewatering its basement.

Four (4) subslab vapor samples will be collected in the garage basement along with ambient air and basement air samples. The locations of these grab samples will be determined based on field screening of Geoprobe subsurface soil sampling below the basement.

All six samples will be analyzed for TCL and STARs VOCs to determine if any of the activities inside the building or the petroleum plume in the parking lot has impacted the groundwater beneath the garage.

Grab samples of the subslab vapor at each location will be collected as follows:

a. A hole small enough (3/8" diameter) to tightly fit the air sampling tube will be drilled through the concrete floor using a hammer drill.
b. The subslab vapor sample will be collected using a ¼" dedicated tubing inserted into the borehole on one end and connected to dedicated summa canister on the other end.
c. Each Summa canister will be pre-evacuated to a minimum 29" Hg vacuum prior to shipment by the laboratory and field checked with a vacuum gage prior to sampling.
d. The subslab vapor will be let into the Summa canister by opening a valve until the vacuum drops to 0.
e. The valves on the canisters will be shut tight before removing the tubing.
f. All canisters will be dropped off at the analytical laboratory on the day of sampling.

4.6 BUILDING MATERIALS

The six-story building was constructed over a century ago for use as a livery, and modified in the 1920s for use as an automobile parking garage. Automobiles were thus historically parked on the all-wood floors of the building. Given its age and history and the proposed site redevelopment for commercial/residential use, lead paint and asbestos containing materials (ACM) would be a concern.

Up to four (4) surficial wood chips will be collected from the flooring inside the building and analyzed for VOCs, SVOCs, PCBs, pesticides, TAL metals (including mercury) and total cyanide. A vibrating chisel hammer will be used to peel off wood samples from the

floor surface and the samples will be collected in a zip lock bag for submittal to the analytical laboratory.

Materials inside the building such as thermal pipe insulation, roofing membrane/flashing, asphalt floor and window caulking will be sampled by an ACM professional for asbestos analysis. Samples of peeling paint inside the stairwell and other areas will be collected and analyzed for total lead.

4.7 QA/QC Plan

A site-specific Quality Assurance Project Plan (QAPP) is developed as part of this Work Plan and is included as Appendix A. The sampling will be conducted in accordance with accepted NYSDEC (May 2010 DER-10) and USEPA guidelines, and all samples will be analyzed as per NYSDEC ASP requirements.

QA/QC samples will include a field rinse blank (per event), field duplicate (one per 20 samples), and matrix spike/matrix spike duplicate (one per 20 samples). A NYSDOH ELAP-certified laboratory (Test America) will be utilized for all analysis during the supplemental investigation, remedial construction and long-term monitoring. Category B deliverables will be provided for all samples. All analytical data will be evaluated according the Division of Environmental Remediation (DER) Data Usability Summary Report (DUSR) guidelines.

4.6 Health and Safety Plan (HASP)

A site-specific Health & Safety Plan (HASP), included as Appendix B, is developed as part of this Work Plan for the protection of on-site workers and other field personnel. The H&S program includes air quality monitoring during remedial construction as per New York State Department of Health requirements and the NYSDEC's TAGM 4031 for the prevention of fugitive dust.

4.7 Report

The results of the site investigation will be compiled in a report along with data evaluation, and a qualitative risk assessment for both on-site and off-site receptors. The report will be prepared in accordance with the NYSDEC's DER-10 guidelines. All analytical data in the report will also be submitted in a NYSDEC-approved electronic deliverable format. The SI Report will include an Alternatives Analysis Report (AAR). In accordance with DER-10 guidelines, the AAR will evaluate the following criteria to select the final remedy:

1. Overall protection of human health and the environment;
2. Compliance with Standards, Criteria and Guidance (SCGs);
3. Short-term impact and effectiveness;
4. Long-term effectiveness and permanence;
5. Reduction of toxicity, mobility, or volume;
6. Implementability;
7. Cost Effectiveness; and
8. Land Use

5.0 REGULATORY CRITERIA

The NYSDEC has established goals for acceptable contamination levels in soils based on a combination of human health risk factors and potential groundwater impacts. These goals are applicable when considering the need for a remedial measure at contaminated sites.

The Brownfield Cleanup Program provides for a multi-track approach to the remediation of soil contamination. The NYSDEC has developed tables of soil cleanup goals from four tracks ranging from unrestricted use (Tracks 1) to different degrees of restricted use (Tracks 2, 3 and 4). The intent of this remedial effort is to clean up this property to restricted residential/commercial use under Track 2. Any excavation and off-site disposal of the contaminated soils will be compliant with the Resource Conservation and Recovery Act (RCRA) and the Toxic Substances Control Act (TSCA).

6.0 WORK PLAN FOR INTERIM REMEDIAL MEASURE

This preliminary approach is developed based on the results of previous investigation. It will be expanded as necessary to include additional areas of contamination that may be discovered as part of the supplemental investigation described in this Work Plan. The overall objective of this interim remedial measure is to remediate this site to the Track 2, restricted residential/ commercial requirements under the Brownfields Cleanup Program.

6.1 Extent of Contamination

The parking lot subsurface consists of a 3' to 4' layer of urban fill below the asphalt, and below it a thick layer of fine sand that extends over 30 feet to bedrock.

As described in Section 3 above and as shown on Figure 5, petroleum contamination has been identified in the central to southern portions of the parking lot, with levels ranging from 24 to 857 m/Kg total VOCs. The water table is around 11 feet below ground surface in the southern section of the parking lot. Petroleum contamination and associated blackened sand occurs mostly below the groundwater table, from a depth of 11' to 20' below ground surface. Other areas targeted by the site investigation will be included in the remedy based on the analytical results.

6.2 Description of Remedy

The remedial measure is anticipated to consist of at least the excavation of contaminated soils exceeding SCOs for Track 2 (residential/commercial use) and/or with visible contamination. Other areas will be included for excavation if necessary in incremental amounts based on additional investigations. In addition, materials inside the building that may be contaminated or contain ACMs and/or lead paint will be targeted for removal so as not to pose a health hazard to its occupants.

The excavated areas will be backfilled with clean fill meeting DER-10 requirements for off-site sources. After backfilling and compacting/grading, the parking lot will be repaved for future use.

6.3 Mobilization and Staging

MJ Brody, the selected remediation contractor, will mobilize with necessary equipment to the site and stage them for site work in the northern section of the parking lot at 77-79 West Huron. The northern half will be used to stockpile clean fill and a frac tank for excavation water. Additional staging is available inside the garage.

Contaminated soil meeting solid waste disposal criteria will be excavated and disposed at the Tonawanda Landfill, a NY State permitted solid waste facility. Analytical results from the RI Geoprobe soil sampling for landfill parameters will be used to develop the waste profile and to obtain prior approval from the landfill for at least 2,000 tons of contaminated material. Additional samples will be collected and analyzed for landfill parameters as necessary and as the excavation progresses to obtain landfill approval for additional soil disposal.

A sewer use permit will be obtained from the Buffalo Sewer Authority for the discharge of treated excavation water into a manhole just outside the northwest corner of the garage.

6.4 Soil Excavation and Off-Site Disposal

Contaminated soil (mostly fine sand) within a 11' to 20' layer below the water table in the southern half of the parking lot is targeted for excavation and off-site disposal. This layer can be identified by a visible blackening of the sand layer from petroleum products dating back several decades.

As shown on Figure 5, the area of excavation is bordered along its entire length to the east by the six-story garage which has a deep basement and foundation extending well beyond the anticipated depth of excavation. A paved section borders the northern portion of the western boundary of the excavation area, while the auto shop (concrete block building) and a commercial business (brick building) form the southern edge.

The excavation will start in the north and progressively move south. Excavated material designated for off-site disposal will be direct loaded on to waste haulers, and staged as necessary only in areas to be further excavated. Only clean fill will be stockpiled in previously excavated areas that have been backfilled. The subsurface layers will be handled as follows:

- The top asphalt layer will be removed and sent to an off-site recycling facility.
- The urban fill and remnants of previous operations at the Site and remedial activities related to the adjacent Sunoco site form a 3' to 4' deep layer below the asphalt. This layer will be excavated and disposed off-site at a solid waste facility (Tonawanda Landfill).
- The sand layer below the urban fill and up to the groundwater water is expected to be clean. This layer will be screened in the field with the PID and visually. If suitable, it will be stockpiled for use as backfill. Each stockpile will be sampled and analyzed to ensure it meets DER-10 requirements for clean fill.
- To the extent possible without impacting the adjacent buildings, contaminated soil/sand with elevated PID readings and/or visible petroleum contamination (i.e. blackened sand) will be excavated and disposed off-site. Any sand from this layer that caves into the excavation and mixes with the underlying contaminated sand will also be disposed off-site.

The soil excavation will be carried out with a backhoe large enough to reach the anticipated depths. To the extent possible the contaminated soil will be loaded directly on to dump trucks for off-site disposal. The dump truck will enter the Site from Huron street and will stage in a clean area for the loading of contaminated soils. This will prevent the trucks from tracking excavation spoils off-site. Any spills during loading will be immediately cleaned up. The sequence of operation will be such that no contaminated groundwater is drawn into areas not previously impacted.

Confirmatory soil samples will be collected from the walls and bottom of the excavation and analyzed for TCL/STARs VOCs at maximum 30-foot intervals. The excavation will continue until the walls and bottom of the excavation meet the SCOs are met.

Excavation of contaminated soil will take into consideration any potential impact on the stability of the buildings to the east and west. A Shoring Plan prepared by a qualified professional is included as Appendix E and will serve as a guideline for the excavation and soil handling.

At the anticipated depths of excavation (~ 20‘ bgs), the subsurface sand layer can easily cave-in. Therefore the excavations will be backfilled as work progresses so as to keep the excavation bottom to a minimum size. The excavation will stay a safe distance away from the building walls and the width of the excavation against the building walls will also be kept to a minimum.

To prevent nuisance odors from the work area, excavated materials will be direct loaded to the extent possible and any stockpile of contaminated soil will be minimized. Also, any such stockpile will be covered with left overnight. Open excavations with contaminated soil at the bottom will be kept to a minimum, and covered with clean soil if necessary, particularly weekends.

Clean clay fill from an off-site source will be used to backfill the excavation below the water table. A mixture of the clean on-site sand layer and clean off-site clay will be used to backfill the excavation above the water table. The bottom clay backfill under the water table will suppress groundwater flow through this area and prevent further migration of contaminants. All backfill material will be sampled and analyzed for VOCs, SVOCs, metals, pesticides/PCBS and cyanide to meet DER-10 requirements.

Historical groundwater data has established that groundwater flows west to east, from the Sunoco property towards this Site. At no time in over ten years of monitoring of the two sites has there ever been a groundwater gradient in the opposite direction. Therefore, once this Site is remediated, it is important to protect the subsurface from further easterly migration of petroleum contaminants from the adjacent Sunoco property. To achieve this, full depth of excavation at the property boundary between the two sites will be backfilled with tight clay that will serve as a barrier to groundwater flow. The entire excavation across this Site will have a clay layer from the bottom up to at least a foot above the water table. A mixture of sand and clay will be used to backfill above the water table in areas away from the property boundary with Sunoco. In addition, Sunoco is considering options to treat in-situ any groundwater leaving its site.

Sequence of Operation:

A. The asphalt layer at the surface will be first removed and taken to an off-site recycling facility.
B. Urban fill, utilities and remnants of previous activities with the 3' to 4' thick layer below the asphalt will be disposed off-site.
C. Clean sand layer within 4' (below urban fill) to 11' (above groundwater table) bgs will be stockpile, tested and reused on-site as backfill.
D. Contaminated soil/sand below the water table from 11' to 20' bgs will be excavated, loaded on to dump trucks and disposed off-site. Every effort will be made to stage the trucks so as to prevent excavation spoils from being tracked off-site. Also, any spills of contaminated materials during excavation will be immediately removed.
E. The excavated soil layers will be logged by depth intervals in accordance with the Unified Soil Classification System.
F. Water infiltrating in the excavation bottom will be pumped into a 20,000-frac tank for settling and discharge through a carbon drum into the on-site sewer.
G. The excavated area will be progressively backfilled following confirmatory sampling of the wall and bottom. Clay will be used as backfill for the bottom of the excavation to at least 1-foot above the water table. Mixture of clean on-site sand and off-site clay will then be backfilled above that. The backfill will be compacted in layers to minimize settlement.
H. The backfilled areas will be allowed to settle prior to paving. The surface of the excavated areas of the parking lot and any other areas impacted by the construction activities will be graded and re-paved to render it suitable for future use.

6.5 Dust Control and Monitoring

Air monitoring and dust control measures will be implemented in accordance with the Community Protection Plan in Section 11 of the Health & Safety Plan and the associated NYSDOH Generic Community Air Monitoring Plan.

Real-time air monitoring will include PID (MiniRae 2000) measurements of ambient air around the excavation and Site perimeter, and particulate samplers (37mm PVC cassettes, analyzed for total dust by NIOSH 0500 gravimetric method) at up to four locations around the Site perimeter. Work will be stopped if PID measurements exceed 5 ppm. Efforts will be taken to prevent nuisance odors by minimizing contaminated soil stock pile, covering it with plastic when necessary and covering open excavation bottoms with a thin layer of clean soil/sand if necessary.

6.6 Excavation Water Treatment and Disposal

The anticipated depths of soil excavation (at least to 20' bgs) will require the handling of groundwater infiltrating into the excavation since the groundwater table is at 9' to 11' at this Site. The fine sand may limit the amount of water entering the excavation, but precipitation can add to the volume.

The excavation water will be pumped into a storage tank where the suspend soil/sand will be allowed to settle, and then the settled supernatant will be treated on-site through an activated carbon drum before discharge into the sanitary sewer.

The contaminated soil at this Site will be excavated and disposed off-site. Also groundwater flow is to the east/southeast, and the garage is immediately downgradient from the parking lot being remediated. Therefore, no new monitoring wells are proposed at this time. Moreover, MW-10 is being monitored currently.

6.6 Backfill

The excavation will be backfilled with clean clay fill from a known off-site virgin source that is tested (for VOCs, SVOCS, metals, pesticides, PCBs and cyanide) as necessary to ensure it is appropriate for use at the site and meet DER-10 requirements. Clean sand excavated between 4' to 11' bgs and that is not impacted by contaminated soil will also be used as backfill above the water table. This clean on-site sand will also be sampled and analyzed to ensure it meets DER-10 requirements. After backfilling, the area will be regarded and paved for its intended use.

6.7 Engineering Evaluation of the Remedy

Besides off-site disposal, available options for remediation of the soils include in-situ (e.g., soil vapor extraction, bioaugmentation) and ex-situ (e.g., thermal desorption) on-site treatment processes. The in-situ treatment options are generally cost effective for areas with large volumes of soil and groundwater contamination and where remediation times can extend to a year or more. At times, the in-situ processes may not reach all areas of contamination which then reoccurs at one or more monitoring points.

Excavation of contaminated soils will essentially remove the source and may eliminate the need for extensive long-term monitoring. Also, by excavating first in the hot spot areas and allowing the groundwater to drain into the excavation, the surrounding areas of low level contamination can also be targeted. Confirmatory sampling would be required in these surrounding areas to ensure that the residual contamination is within acceptable levels.

Excavation/off-site disposal of contaminated soil, and pumping/treatment of groundwater from the excavation can facilitate the redevelopment and commercialization of the property more easily and sooner than the other options.

6.8 Reporting

During remedy construction, daily field reports will be developed and provided to the NYSDEC. Within 90 days after completion of remediation, a final construction report will be submitted with details of the implemented remedy, as-built drawings, and a long-term monitoring plan. The report and drawings will be certified by a professional engineer.

7.0 INSTITUTIONAL CONTROLS

The need for institutional controls will be determined following completion of additional investigations and after a final remedial measure is developed.

8.0 O&M AND LONG-TERM MONITORING

The need for long-term O&M and monitoring will be determined prior to the implementation of the interim remedial measure.

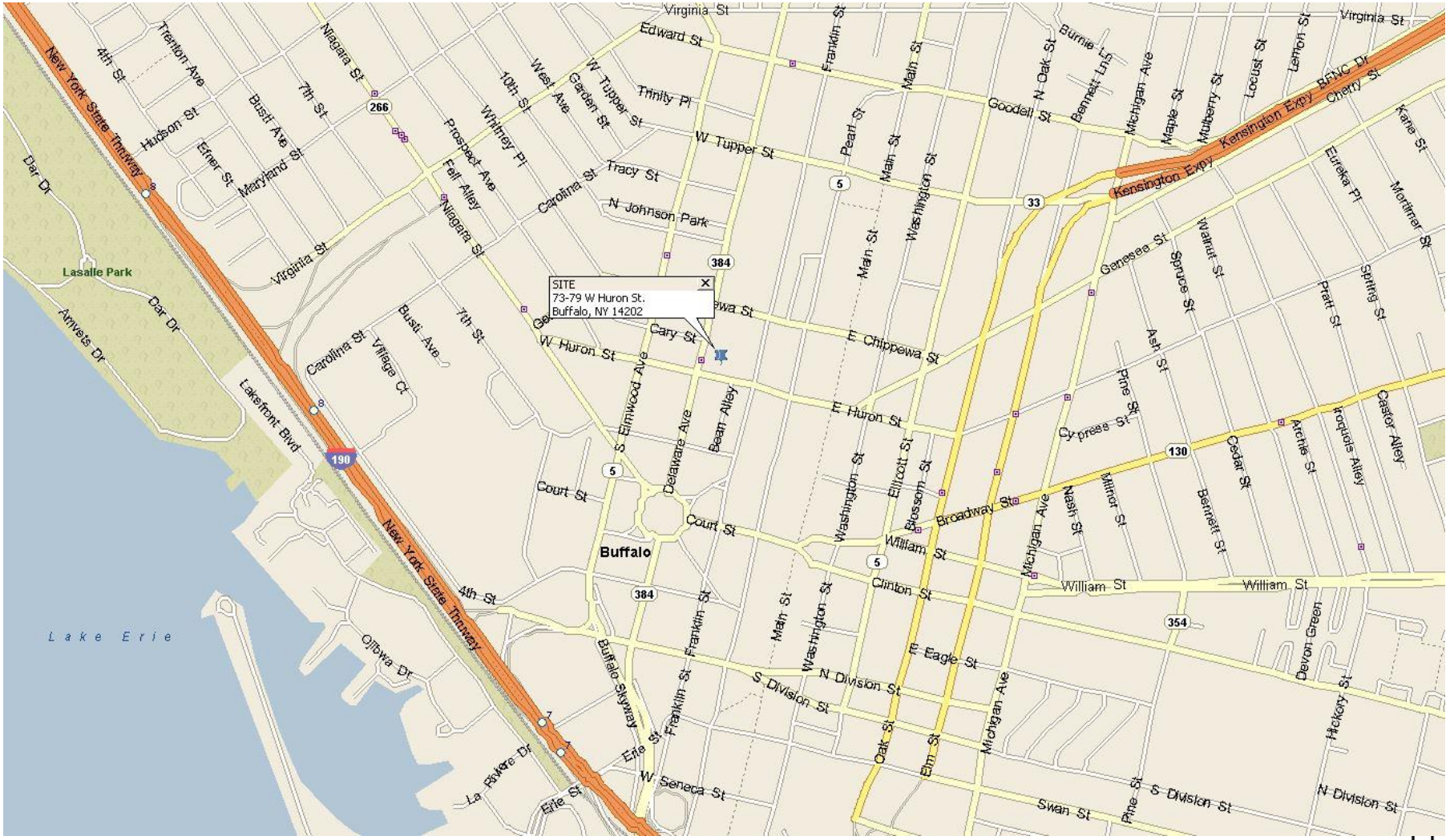
9.0 SCHEDULE

Subject to NYSDEC approval, the following is a tentative schedule for the site:

- Work Plan — November 2014
- Site Investigation — February/March 2015
- Interim Remedial Measure — Spring/Summer 2015
- Remedial Construction Report — Fall 2015

10.0 PROJECT ORGANIZATION

The proposed project organization chart is presented as Figure 6. Resumes of key personnel are included in Appendix D.



73-79 W HURON ST., BUFFALO, NY
SITE LOCATION MAP

FIGURE 1

IEG

NOTE: 73-75 W. Huron have historically been part of one multi-story building
77-79 W. Huron have historically been part of one parking lot

N

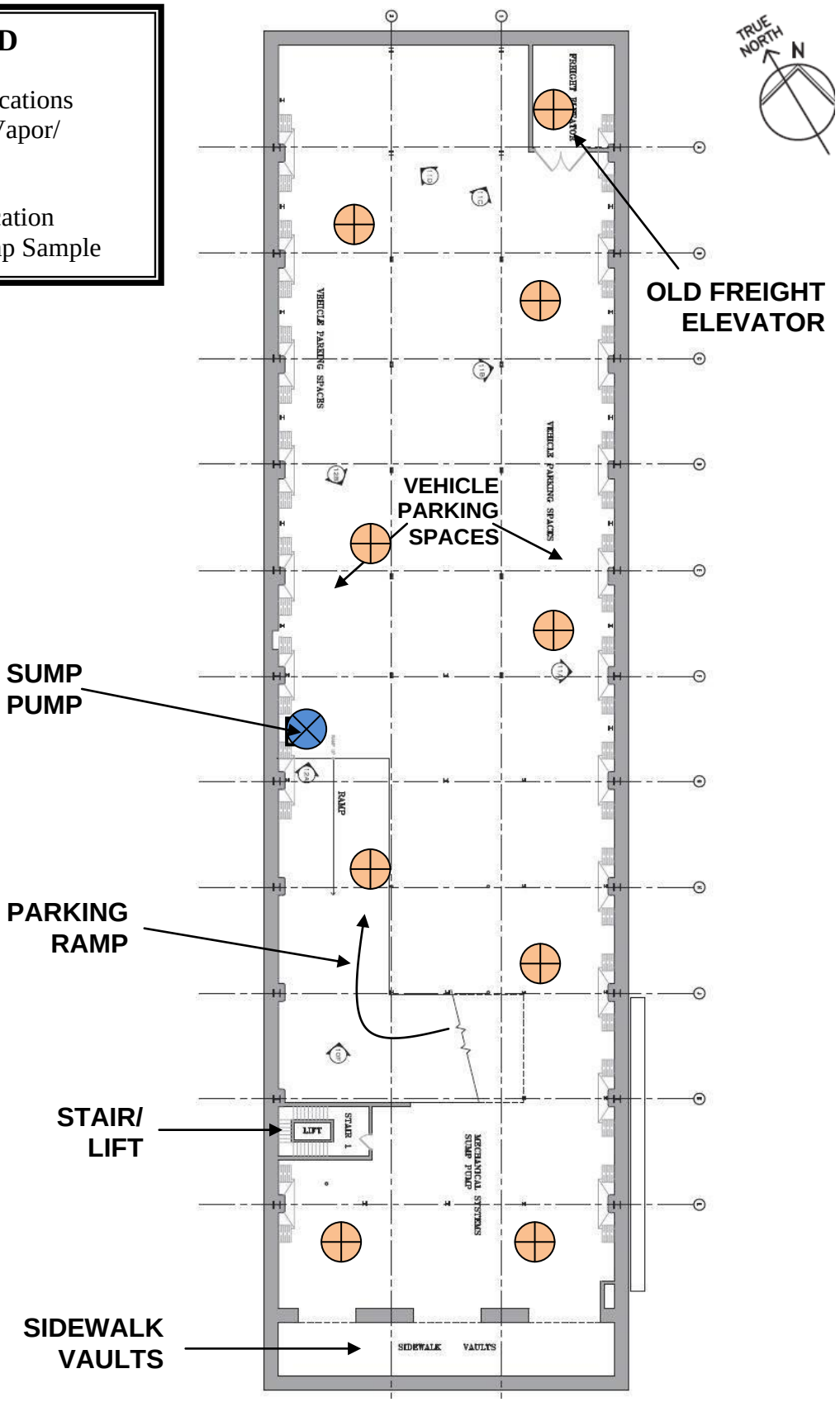
73-79 W HURON ST., BUFFALO, NY
AERIAL PHOTO

FIGURE 2

IEG

LEGEND

- Proposed BCP Locations Soil Boring/Soil Vapor/ Groundwater
- Proposed BCP location Groundwater Sump Sample



73-79 W HURON ST., BUFFALO, NY
PROPOSED BASEMENT SAMPLING

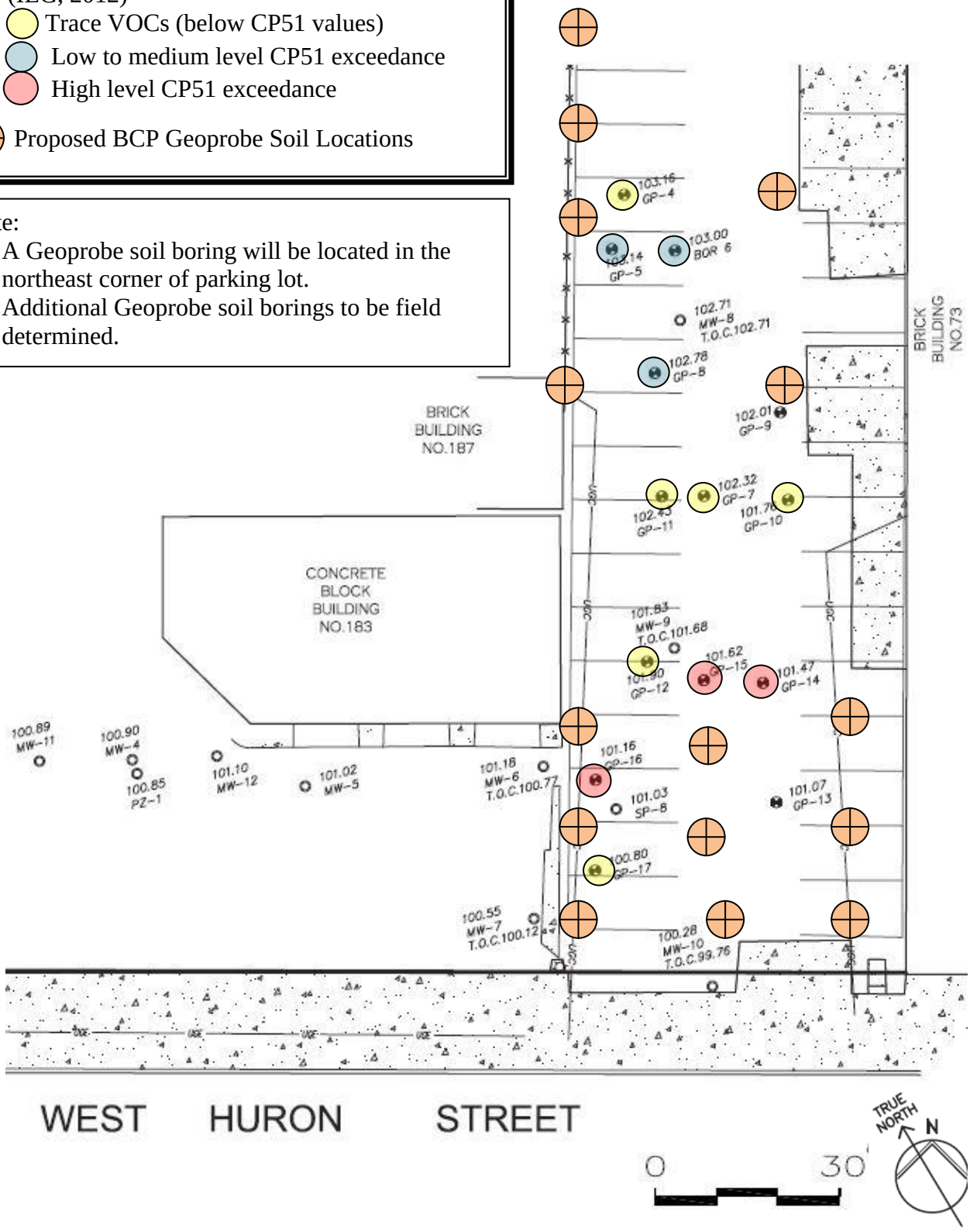
FIGURE 3

IEG

LEGEND

- Previous Geoprobe soil sample location s (IEG, 2012)
  - Trace VOCs (below CP51 values)
  - Low to medium level CP51 exceedance
  - High level CP51 exceedance
- Proposed BCP Geoprobe Soil Locations

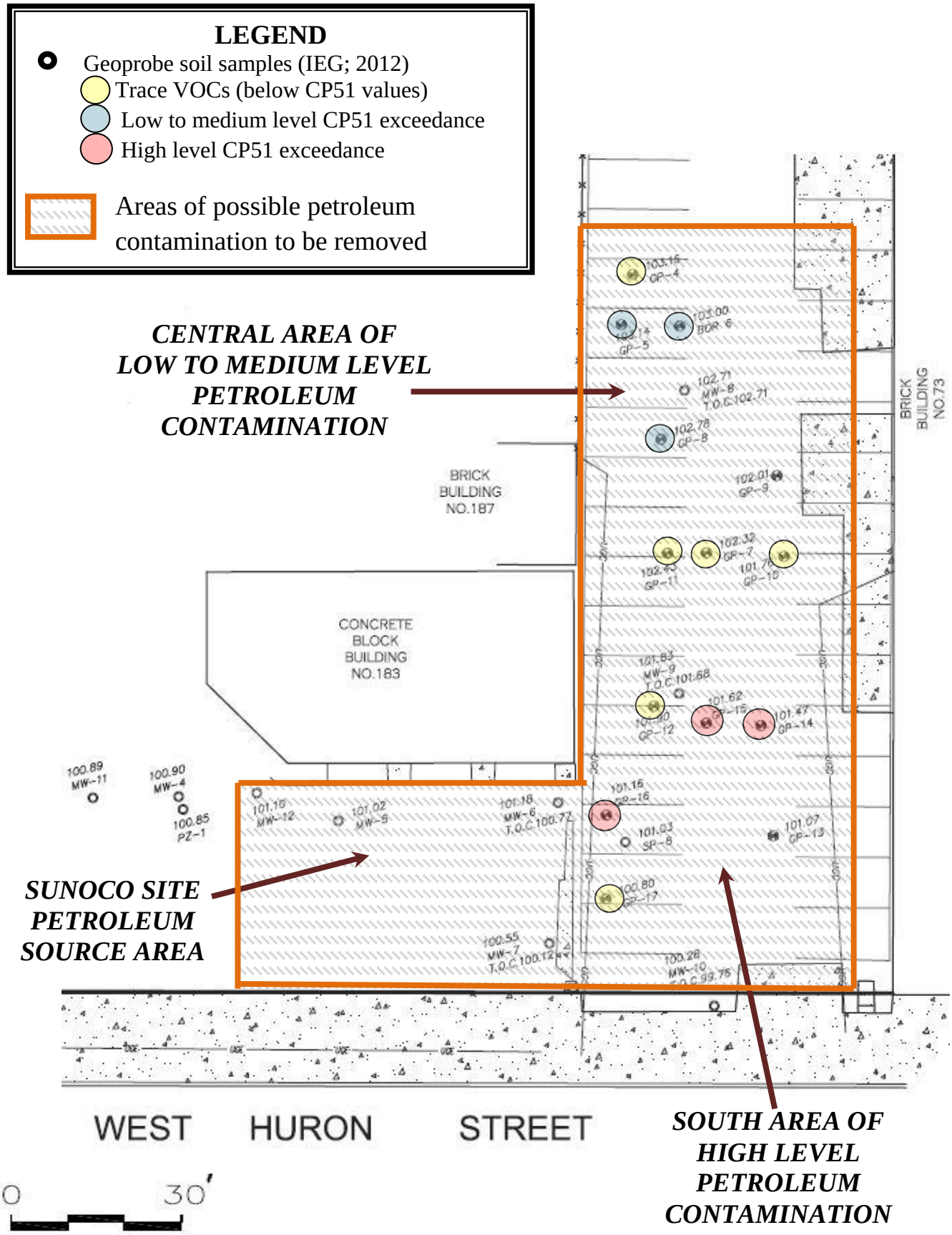
Note:
1. A Geoprobe soil boring will be located in the northeast corner of parking lot.
2. Additional Geoprobe soil borings to be field determined.



73-79 W HURON ST., BUFFALO, NY
PROPOSED PARKING LOT SAMPLING

FIGURE 4

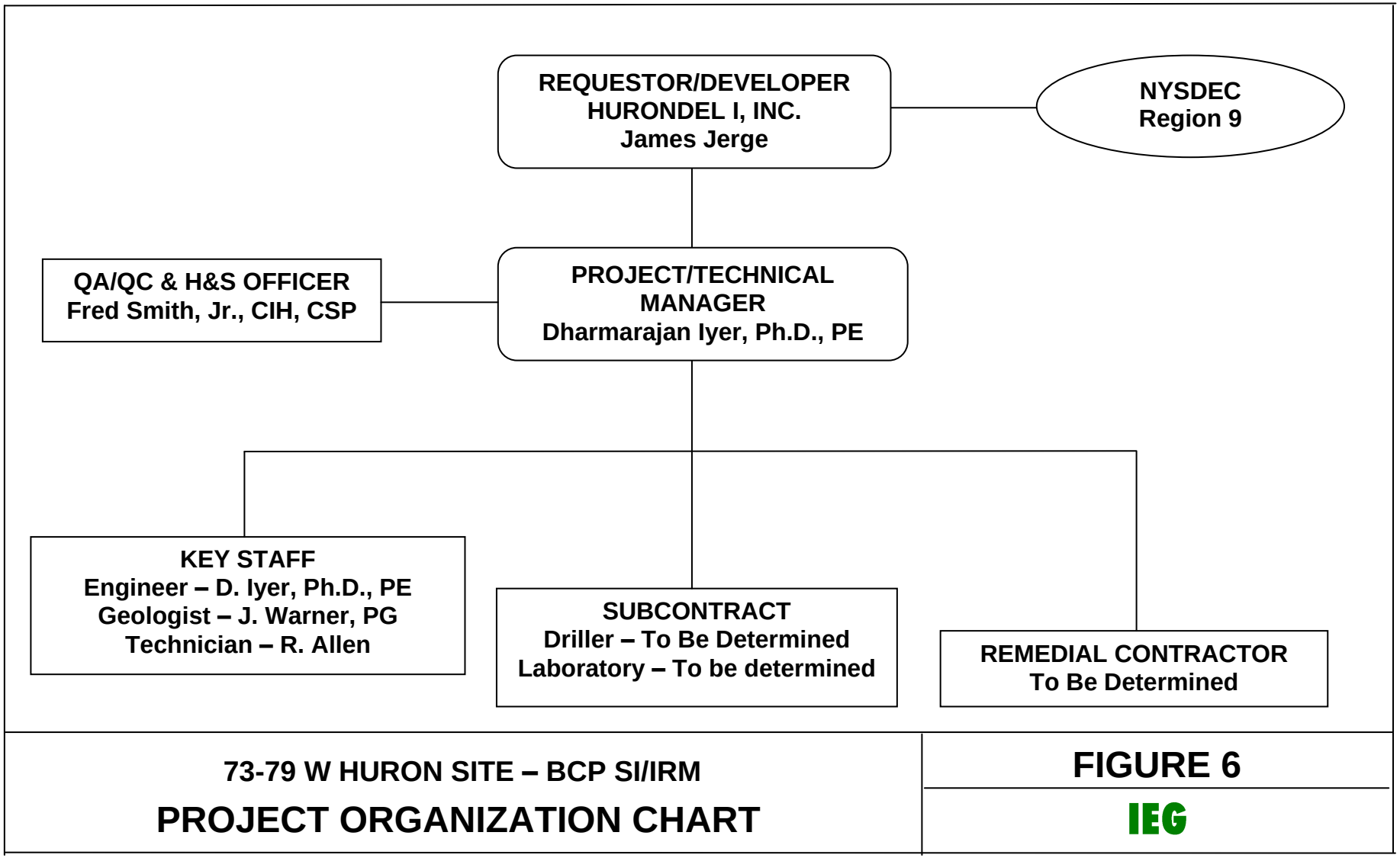
IEG



73-79 W HURON ST., BUFFALO, NY
PRELIMINARY EXTENT OF SOIL CLEANUP

FIGURE 5

IEG



73-79 W HURON SITE – BCP SI/IRM

PROJECT ORGANIZATION CHART

FIGURE 6

IEG

TABLE 1
73-79 W. HURON ST. - BCP SITE INVESTIGATION
PROPOSED SAMPLING AND ANALYSIS

ANALYTICAL PARAMETER	ANALYTICAL METHOD	SOIL SAMPLES PARKING LOT/BASEMENT GEOPROBE 10 SURFACE, 10 SUBSURFACE, 4 SUBSLAB)				GROUNDWATER SAMPLES PARKING LOT MONITORING WELL/ /BASEMENT SUMP PUMP; SUBSLAB				SOIL VAPOR SAMPLES SUBSLAB		BUILDING SAMPLES FLOOR/ACM/PAINT	
		# OF SAMPLES	FIELD DUPLICATE (1 in 20)	MS/MSD (1 in 20)	RINSE BLANK	# OF SAMPLES	FIELD DUPLICATE (1 in 20)	MS/MSD (1 in 20)	TRIP BLANK	# OF SAMPLES	FIELD DUPLICATE (1 in 20)	# OF SAMPLES	FIELD DUPLICATE (1 in 20)
TCL Volatile Organics (VOCs)	8260/ TO-15	30	2	4	2	4	1	2	1	6	1	8	1
TCL Semivolatile Organics (SVOCs)	8270	8	1	2	1	1	--	--	--	--	--	4	1
Pesticides/ PCBs	8081/ 8082	8	1	2	1	1	--	--	--	--	--	4	1
TAL Metals/ Mercury	6010/ 7470	8	1	2	1	1	--	--	--	--	--	4	1
Cyanide	9012	8	1	--	1	1	--	--	--	--	--	4	1
Asbestos	TEM/ 198.6	--	--	--	--	--	--	--	--	--	--	10	--
Lead (Paint)	6010	--	--	--	--	--	--	--	--	--	--	10	1
LANDFILL PARAMETERS (Petroleum: TCLP Benzene, TCLP Lead, TPH, IGNITABILITY, pH)	8260/6010/ 1664/1010/ 9045	6	--	--	--	--	--	--	--	--	--	--	--

TABLE 2

73-79 W. HURON ST. - BCP SITE INVESTIGATION

HOLDING TIMES AND CONTAINERS FOR SAMPLING/ANALYSIS

ANALYTICAL PARAMETER	SAMPLE HOLDING TIMES	SOIL			GROUNDWATER (GW)			SUBSLAB SOIL VAPOR		BUILDING SAMPLES	
		TOTAL # of SAMPLES, incl. QC	CONTAINER TYPE/ # per sample	TOTAL # of CONTAINERS	TOTAL # of SAMPLES, incl. QC	CONTAINER TYPE/ # per sample	TOTAL # of CONTAINERS	TOTAL # of SAMPLES, incl. QC	CONTAINER TYPE/ # per sample	TOTAL # of SAMPLES, incl. QC	CONTAINER TYPE/ # per sample
TCL Volatile Organics (VOCs)	14 days	38	2-OZ GLASS: (x 2 each)	76	8	40-ml GLASS: (x 2 each) HCl preserv.	16	4	SUMMA CANISTER (x1 each)	--	--
TCL Semivolatile Organics (SVOCs)	Soil: 14 days GW: 7 days	12	4-OZ GLASS: (x 1 each)	12	1	1 L-GLASS AMBER (x 2 each) no preserv.	2	--	--	--	--
Pesticides/ PCBs	1 year (laboratory)	12		12	1	1 L-GLASS AMBER (x 2 each) no preserv.	2	--	--	--	--
TAL Metals/ Mercury	Metals: 180 days Hg: 28 days	12	4-OZ GLASS: (x 1 each)	12	1	200-ml PLASTIC (x 1 each) HNO3 preserv.	1	--	--	--	--
Cyanide	14 days	10	4-OZ GLASS: (x 1 each)	10	1	200ml PLASTIC (x 1 each) NaOH preserv.	1	--	--	--	--
Asbestos (ACM)	--	--	--	--	--	--	--	--	--	10	8-oz ziploc bag: (x 1 each)
Lead (Paint)	180 days	--	--	--	--	--	--	--	--	11	8-OZ GLASS: (x 1 each)
LANDFILL PARAMETERS (Petroleum: TCLP Benzene, TCLP Lead, TPH, IGNITABILITY, pH)	varies	6	16-OZ GLASS: (x 2 each)	12	--	--	--	--	--	--	--

APPENDIX A

QUALITY ASSURANCE PROJECT PLAN

QUALITY ASSURANCE PROJECT PLAN

BROWNFIELDS CLEANUP PROGRAM
SITE INVESTIGATION/INTERIM REMEDIAL MEASURE
73-79 W. HURON ST. SITE, BUFFALO, NY
November 2014

1.0 INTRODUCTION

The Site located at 73-79 W. Huron St., Buffalo, NY, is being investigated and remediated by Hurondel I, Inc. under the Brownfields Cleanup Program (BCP). This Quality Assurance Project Plan (QAPP) is prepared as part of the Work Plan (WP) for Site Investigation (SI) and Interim Remedial Measure (IRM) at this Site, and provides specific methods and quality assurance procedures to be followed for the sampling and analysis of environmental media at the site.

The NYSDEC, in association with the NYSDOH, is the oversight agency for approval of work plans, remedy selection, site investigation and remediation, and ensuing reports. Key project personnel are identified in the organization chart included in the Work Plan, along with resumes. The Project Manager will be responsible for ensuring that QA procedures are followed in the field, and will be in direct contact with the analytical laboratory to ensure that the NYSDEC's analytical QA/QC requirements are met.

2.0 DATA QUALITY OBJECTIVES

Data Quality Objectives (DQOs) define the quality of analytical data required to support the SI/IRM. Surficial and subsurface soil, and groundwater are the environmental media to be sampled and analyzed at the site during the course of this SI/IRM. Volatile organics are of primary concern at this site; however other parameters (semivolatile organics, heavy metals, pesticides, PCBs, cyanide and asbestos) are included for completeness.

The proposed sampling and analysis program for the SI is presented in Table 1, including number of samples, analytical parameters and methods, and field QC requirements. A NYSDOH ELAP certified analytical laboratory will be utilized for this project. Sample containers to be provided by the analytical laboratory are listed in Table 2, and will be certified clean by the laboratory.

Project DQOs will follow the definitive data category in Guidance for the Data Quality Objectives Process, EPA QA/G-4 (September 1994). The DQOs are to:

- Assess the nature and extent of contamination in soil, groundwater and building materials across the site;
- Assess if contaminated soils and building materials are hazardous or non-hazardous for off-site disposal; and
- Determine residual contaminant concentrations in post excavation wall and bottom soil samples.

3.0 QA Objectives for Chemical Data Management

Analytical procedures for the media sampled and data deliverables (Category B deliverable) will meet the requirements in the most recent NYSDEC Analytical Services Protocol (ASP). Additional sample containers will be included at the required frequencies for site specific matrix spikes and matrix spike duplicates. The laboratory will cleanup matrix interferences to the extent practicable. Data usability summary reports (DUSRs) will be generated for each phase of sampling at the site. The data quality indicators of precision, accuracy, representativeness, comparability, and completeness will be measured during chemical analysis by the analytical laboratory.

Precision: Precision is a measure of the reproducibility of analytical results. Precision may be affected by the natural variation of the matrix or contamination within that matrix, as well as by errors made in field and/or laboratory handling procedures. Precision will be evaluated using analyses of a laboratory matrix spike/matrix spike duplicate (for organics) and matrix duplicates (for inorganics). Precision will be reported in terms of Relative Percent Difference (RPD) and compared against ASP limits for data acceptability. Precision will also be evaluated by collecting and analyzing field duplicate samples at the required frequency.

Accuracy: Accuracy measures the bias in the analytical measurement, and is the difference between the "observed" or "measured" and "true" values. Factors that can contribute to errors in accuracy include the sampling process, field contamination, preservation, sample handling, sample matrix, sample preparation and analytical techniques. Sampling bias will be evaluated using results from the analysis of equipment rinse blanks and trip blanks that will be collected for each sampling event. Equipment rinse blanks will be collected by passing distilled water over cleaned equipment used in soil sampling. Groundwater samples will be collected with dedicated, pre-cleaned bailers and therefore do not need rinse blanks. The objective of the laboratory is to equal or exceed the accuracy demonstrated for the applied analytical methods on samples of the same matrix. The percent recovery criterion is used to estimate accuracy based on recovery in the matrix spike/matrix spike duplicate and matrix spike blank samples. The spike and spike duplicate, which will give an indication of matrix effects that may be affecting target compounds is also a good gauge of method efficiency.

Representativeness: Representativeness expresses the degree to which sample data accurately and precisely represent the characteristics of a population of samples, a parameter variation at a sampling point, or environmental conditions. Representativeness is a qualitative parameter, dependent upon the proper design of the sampling program. Proper sampling procedures will be implemented with the goal of obtaining representative samples for the media of concern.

Completeness: Completeness is a measure of the amount of valid and therefore useable data obtained from the analytical measuring system compared to the amount that was expected to be obtained under normal conditions. Appropriate QA procedures are maintained by the analytical laboratory to ensure that valid data are obtained and project needs are met. A goal of 90% is required for completeness (or usability) of the analytical data. If this goal is not met, then NYSDEC and project personnel will determine whether

the deviations might cause the data to be rejected.

Comparability: Comparability is a qualitative parameter expressing the confidence with which one data set can be compared with another. The objective is to produce data with the greatest possible degree of comparability. It is achieved using standard techniques to collect, preserve, store and analyze representative samples and reporting analytical results in relevant and appropriate units. Field documentation will be complete and will support the assessment of comparability. Comparability is limited by other parameters (e.g., precision, accuracy, representativeness, completeness) because only when precision and accuracy are known can data sets be compared with confidence. For data sets to be comparable, contract-required methods and procedures will be explicitly followed.

4.0 SAMPLING LOCATIONS, CUSTODY, HOLDING TIMES, & ANALYSIS

Sampling locations and procedures are discussed in the SI/IRM Work Plan. Procedures for chain of custody, holding times, and laboratory analyses will be in accordance with NYSDEC ASP and the laboratory's internal Quality Assurance Plan. Holding times will begin with validated time of sample receipt (VTSR) at the laboratory. The laboratory will meet the required detection limits for corresponding analytical methods.

5.0 CALIBRATION PROCEDURES AND FREQUENCY

To obtain a high level of precision and accuracy during sample processing, laboratory instruments will be calibrated properly. Analytical support areas and laboratory instrument calibration procedures required to maintain the integrity of standards and reagents are discussed below.

Analytical Support Areas: Primary reference standards and secondary standard solutions will be obtained from National Institute of Standards and Technology (NIST), or other reliable commercial sources to verify the highest purity possible. The preparation and maintenance of standards and reagents will be accomplished according to the methods referenced. The laboratory will monitor the quality of the standards and reagents through well documented procedures.

Analytical balances will be calibrated and maintained in accordance with manufacturer's specifications. The laboratory will check the accuracy of the balances daily and properly document them in bound logbooks.

Refrigerator and freezer temperatures in the laboratory will be monitored and recorded daily to ensure that the quality of standards and reagents is not compromised and the integrity of the analytical samples is maintained. Appropriate acceptance ranges (2°C to 6°C for refrigerators) will be clearly posted on each unit in service.

The laboratory will maintain sufficient water supply for its analytical needs. The water will be analyte-free and of the highest quality to eliminate false-positives. Appropriate documentation of the quality of the water supply will be performed on a regular basis.

Laboratory Instruments: Instrument calibration is required to ensure that the analytical system is operating properly and at adequate sensitivity to meet established quantitation limits. Each instrument for analyses will be calibrated according to specified methods and with standards appropriate to the type of instrument and linear range established within the analytical method. The instrument calibration will be performed prior to the analysis of a batch of samples, and at periodic intervals (continuing calibration) to ensure that the calibration is maintained. Corrective action will be taken if the laboratory cannot meet the method required calibration requirements, and documented within the case narrative accompanying the analytical results.

6.0 INTERNAL QUALITY CONTROL CHECKS

Internal QC checks are required to determine if analytical operations at the laboratory are in control, and to determine the effect the sample matrix may have on analytical data being generated. Two types of internal QC checks are performed - batch QC and matrix-specific QCs. The type and frequency of QC samples will be according to the specified analytical method and project specific requirements. Acceptable criteria and target ranges for these QC samples are included with the analytical method reference.

QC results that vary from acceptable ranges will require appropriate corrective measures, potential application of qualifiers, and/or an assessment of the impact these corrective measures have on the established data quality objectives. Quality control samples including any project- specific QC will be analyzed as discussed below.

Method Blanks: A method blank is laboratory-distilled or deionized water that is carried through the entire analytical procedure. The method blank is used to determine the level of laboratory background contamination. Method blanks will be analyzed at a frequency of one per analytical batch.

Matrix Spike Blank Samples: A matrix spike blank (MSB) sample is laboratory-distilled or deionized water that is spiked (fortified) with all the elements being analyzed for calculation of precision and accuracy to verify that the analysis that is being performed is in control. A MSB is performed for each matrix and organic parameter only.

Matrix Spike Samples: Samples will be designated for matrix spike (MS) and matrix spike duplicate (MSD) at a frequency of one each per 20 samples within a matrix. Aliquots of these samples will be spiked with known concentrations of specific compounds as specified by the methodology. The MS/MSDs will be subjected to the same analytical procedure as the corresponding environmental sample to assess both accuracy and precision of the method. The percent recovery and relative percent difference of the two spiked samples are calculated for evaluation.

Matrix Duplicates: Samples will be designated for matrix (or field) duplicate (MD) at the frequency of one each per 20 samples. Duplicate samples taken from the same location provide for the evaluation of precision in the field as well as the laboratory. Duplicate soil samples will be homogenized (except for volatile organic compounds) prior to filling sample containers in order to be most representative. It is noted that due to interferences, lack of homogeneity, and the nature of some soil samples, analytical results may not

always be reproducible.

Rinse (Equipment) Blanks: Rinse blanks will be generated by passing distilled water or laboratory certified analyte-free water through and over cleaned sampling equipment. A rinse blank is used to indicate potential contamination from ambient air and from sample instruments used to collect and/or transfer samples. The rinse blank will be collected, transported and analyzed in the same manner as site samples. Rinse blanks will not be performed on samples (i.e., groundwater) where dedicated disposable equipment is used.

Trip Blanks: Trip blanks are required when collecting aqueous samples for volatile organics. They consist of a set of sample containers filled at the laboratory with laboratory certified, analyte-free water, and never to be opened in the field. These trip blanks will accompany sample containers provided by the laboratory into the field and back to the laboratory.

6.0 CALCULATION OF DATA QUALITY INDICATORS

Precision: Precision is evaluated using analyses of a field duplicate and/or a laboratory MS/MSD which not only exhibit sampling and analytical precision, but indicate analytical precision through the reproducibility of the analytical results. Precision will be determined through the use of MS/MSD (for organics) and matrix duplicates (for inorganics) analyses. RPD is used to evaluate precision by the following formula:

$$RPD = \frac{(X_1 - X_2)}{[(X_1 + X_2)/2]} \times 100\%$$

where:

X_1 = Measured value of sample or matrix spike
X_2 = Measured value of duplicate or matrix spike duplicate

Accuracy: Accuracy is the degree of difference between measured or calculated value and the value of an analytical parameter. Analytical accuracy is expressed as the percent recovery of a compound or element that has been added to the environmental sample at known concentrations before analysis. Analytical accuracy may be accessed through the use of known and unknown QC samples and spiked samples. Accuracy will be determined from matrix spike, matrix spike duplicate, and matrix spike blank samples, and surrogate compounds added to organic fractions (i.e., volatiles, semivolatiles, PCB). Accuracy will be calculated as follows:

$$Accuracy\ (\%R) = \frac{(X_s - X_u)}{K} \times 100\%$$

where:

X_s - Measured value of the spike sample
X_u - Measured value of the unspiked sample
K - Known amount of spike in the sample

Completeness: Completeness is calculated on a per matrix basis for the project and is calculated as follows:

$$Completeness\ (\%C) = \frac{(X_v - X_n)}{N} \times 100\%$$

where:

X_v - Number of valid measurements
X_n - Number of invalid measurements
N - Number of valid measurements expected to be obtained

7.0 CORRECTIVE ACTIONS

Corrective actions will be taken to resolve problems and restore proper functioning of the analytical system when errors, deficiencies or out-of-control situations occur at the laboratory. Full documentation of the corrective action procedures undertaken to resolve the problems will be included in project records, and summarized in the case narrative.

Incoming Samples: Problems observed during sample receipt will be documented by the laboratory. The Project Manager will be contacted by the laboratory as appropriate for problem resolution. All corrective actions will be properly documented.

Sample Holding Times: If any sample extraction and/or analysis exceeds the method holding time requirement, the Project Manager will be notified for problem resolution. All corrective actions will be properly documented.

Instrument Calibration: Samples will not be analyzed until initial calibrations meet the method requirements. If initial/continuing calibration standards exceed method QC limits, recalibration will be performed and, if necessary, affected samples will be reanalyzed.

Reporting Limits: The laboratory will meet the method required detection limits listed in NYSDEC ASP. If difficulties arise in achieving these limits due to a particular sample matrix, the laboratory will notify project personnel for problem resolution. In order to achieve those detection limits, the laboratory will utilize appropriate cleanup procedures in an attempt to retain the project required detection limits. When a sample requires secondary dilution due to high levels of target analytes, the laboratory will document all initial analyses and secondary dilution results. Secondary dilutions are permitted only to bring target analytes within the linear range of calibration.

Method QC: Method-specified QC samples will meet the requirements of the analytical methods. Failure of method-required QC may result in the possible qualification of affected data. If the laboratory cannot find any errors, the affected sample(s) will be reanalyzed and/or re-extracted/redigested and then reanalyzed within method-required holding times to verify the presence or absence of matrix effects.

Calculation Errors: Analytical results will be reviewed systematically for accuracy prior to submittal. The analytical laboratory will be required to reissue the analytical data report with the corrective actions appropriately documented in the case narrative in the event errors are found during data review.

8.0 DATA REDUCTION, VALIDATION, AND USABILITY

Data Reduction: Analytical data are first generated in raw form at the instrument. The raw data may then be compiled in a graphic or tabular format as specified in the method references. Identification of all analytes will be accomplished with an authentic standard of the analyte traceable to NIST or USEPA sources.

Data Validation: Analytical reports provided by the laboratory will receive a limited data review. The data validation will be limited to a review of all holding times, completeness of all required deliverables, review of all QC results (surrogates, spikes, duplicates), and a 10% check of all samples analyzed to ensure they were analyzed and quantified properly.

Data validation will follow the general guidelines presented in the USEPA Contract Laboratory Program (CLP) Organic Data Review, SOP Nos. HW-6, Revision #11, USEPA Evaluation of Metals Data for the Contract Laboratory Program based on 3/90, SOW, Revision XI. In addition, review of holding times will be in accordance with NYSDEC ASP, 10/95 edition, and review of organic calibration and QC criteria will be in accordance with NYSDEC ASP, 10/95 edition. Where possible, discrepancies will be resolved with the analytical laboratory. A complete analytical data validation is not anticipated. Data that do not meet NYSDEC ASP, 10/95 criteria will be qualified.

TABLE 1
73-79 W. HURON ST. - BCP SITE INVESTIGATION
PROPOSED SAMPLING AND ANALYSIS

ANALYTICAL PARAMETER	ANALYTICAL METHOD	SOIL SAMPLES PARKING LOT/BASEMENT GEOPROBE 10 SURFACE, 10 SUBSURFACE, 4 SUBSLAB)				GROUNDWATER SAMPLES PARKING LOT MONITORING WELL/ /BASEMENT SUMP PUMP; SUBSLAB				SOIL VAPOR SAMPLES SUBSLAB		BUILDING SAMPLES FLOOR/ACM/PAINT	
		# OF SAMPLES	FIELD DUPLICATE (1 in 20)	MS/MSD (1 in 20)	RINSE BLANK	# OF SAMPLES	FIELD DUPLICATE (1 in 20)	MS/MSD (1 in 20)	TRIP BLANK	# OF SAMPLES	FIELD DUPLICATE (1 in 20)	# OF SAMPLES	FIELD DUPLICATE (1 in 20)
TCL Volatile Organics (VOCs)	8260/ TO-15	30	2	4	2	4	1	2	1	6	1	8	1
TCL Semivolatile Organics (SVOCs)	8270	8	1	2	1	1	--	--	--	--	--	4	1
Pesticides/ PCBs	8081/ 8082	8	1	2	1	1	--	--	--	--	--	4	1
TAL Metals/ Mercury	6010/ 7470	8	1	2	1	1	--	--	--	--	--	4	1
Cyanide	9012	8	1	--	1	1	--	--	--	--	--	4	1
Asbestos	TEM/ 198.6	--	--	--	--	--	--	--	--	--	--	10	--
Lead (Paint)	6010	--	--	--	--	--	--	--	--	--	--	10	1
LANDFILL PARAMETERS (Petroleum: TCLP Benzene, TCLP Lead, TPH, IGNITABILITY, pH)	8260/6010/ 1664/1010/ 9045	6	--	--	--	--	--	--	--	--	--	--	--

TABLE 2

73-79 W. HURON ST. - BCP SITE INVESTIGATION

HOLDING TIMES AND CONTAINERS FOR SAMPLING/ANALYSIS

ANALYTICAL PARAMETER	SAMPLE HOLDING TIMES	SOIL			GROUNDWATER (GW)			SUBSLAB SOIL VAPOR		BUILDING SAMPLES	
		TOTAL # of SAMPLES, incl. QC	CONTAINER TYPE/ # per sample	TOTAL # of CONTAINERS	TOTAL # of SAMPLES, incl. QC	CONTAINER TYPE/ # per sample	TOTAL # of CONTAINERS	TOTAL # of SAMPLES, incl. QC	CONTAINER TYPE/ # per sample	TOTAL # of SAMPLES, incl. QC	CONTAINER TYPE/ # per sample
TCL Volatile Organics (VOCs)	14 days	38	2-OZ GLASS: (x 2 each)	76	8	40-ml GLASS: (x 2 each) HCl preserv.	16	4	SUMMA CANISTER (x1 each)	--	--
TCL Semivolatile Organics (SVOCs)	Soil: 14 days GW: 7 days	12	4-OZ GLASS: (x 1 each)	12	1	1 L-GLASS AMBER (x 2 each) no preserv.	2	--	--	--	--
Pesticides/ PCBs	1 year (laboratory)	12		12	1	1 L-GLASS AMBER (x 2 each) no preserv.	2	--	--	--	--
TAL Metals/ Mercury	Metals: 180 days Hg: 28 days	12	4-OZ GLASS: (x 1 each)	12	1	200-ml PLASTIC (x 1 each) HNO3 preserv.	1	--	--	--	--
Cyanide	14 days	10	4-OZ GLASS: (x 1 each)	10	1	200ml PLASTIC (x 1 each) NaOH preserv.	1	--	--	--	--
Asbestos (ACM)	--	--	--	--	--	--	--	--	--	10	8-oz ziploc bag: (x 1 each)
Lead (Paint)	180 days	--	--	--	--	--	--	--	--	11	8-OZ GLASS: (x 1 each)
LANDFILL PARAMETERS (Petroleum: TCLP Benzene, TCLP Lead, TPH, IGNITABILITY, pH)	varies	6	16-OZ GLASS: (x 2 each)	12	--	--	--	--	--	--	--

APPENDIX B

HEALTH & SAFETY PLAN

HEALTH & SAFETY PLAN

for

73-79 W. Huron St. Site, Buffalo, NY

BROWNFIELDS CLEANUP PROGRAM

SITE INVESTIGATION/INTERIM REMEDIAL MEASURE

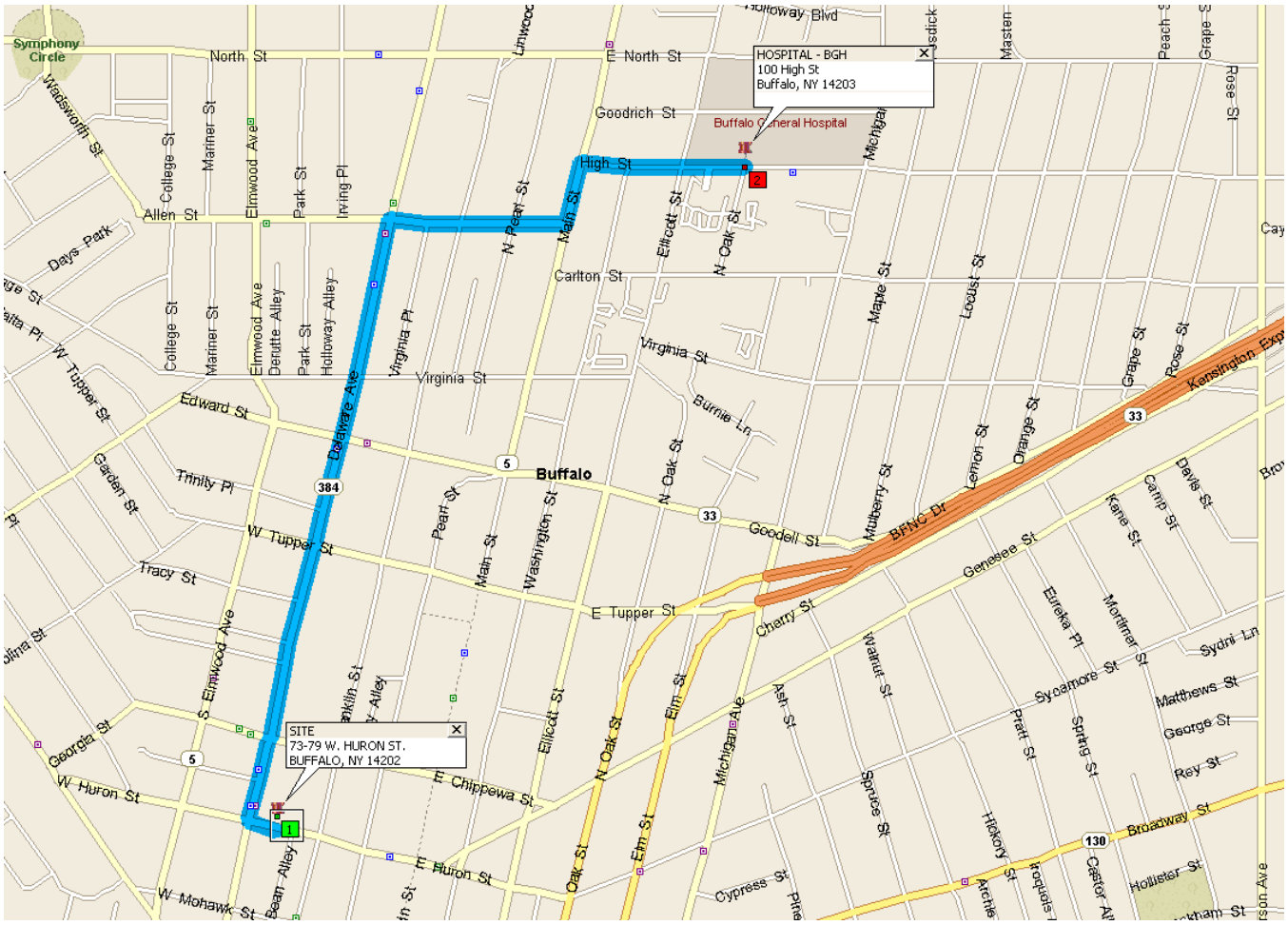
NOVEMBER 2014

PREPARED FOR

Hurondel I, Inc.,
Buffalo, NY

PREPARED BY

IYER ENVIRONMENTAL GROUP, PLLC
44 Rolling Hills Dr., Orchard Park, NY 14127

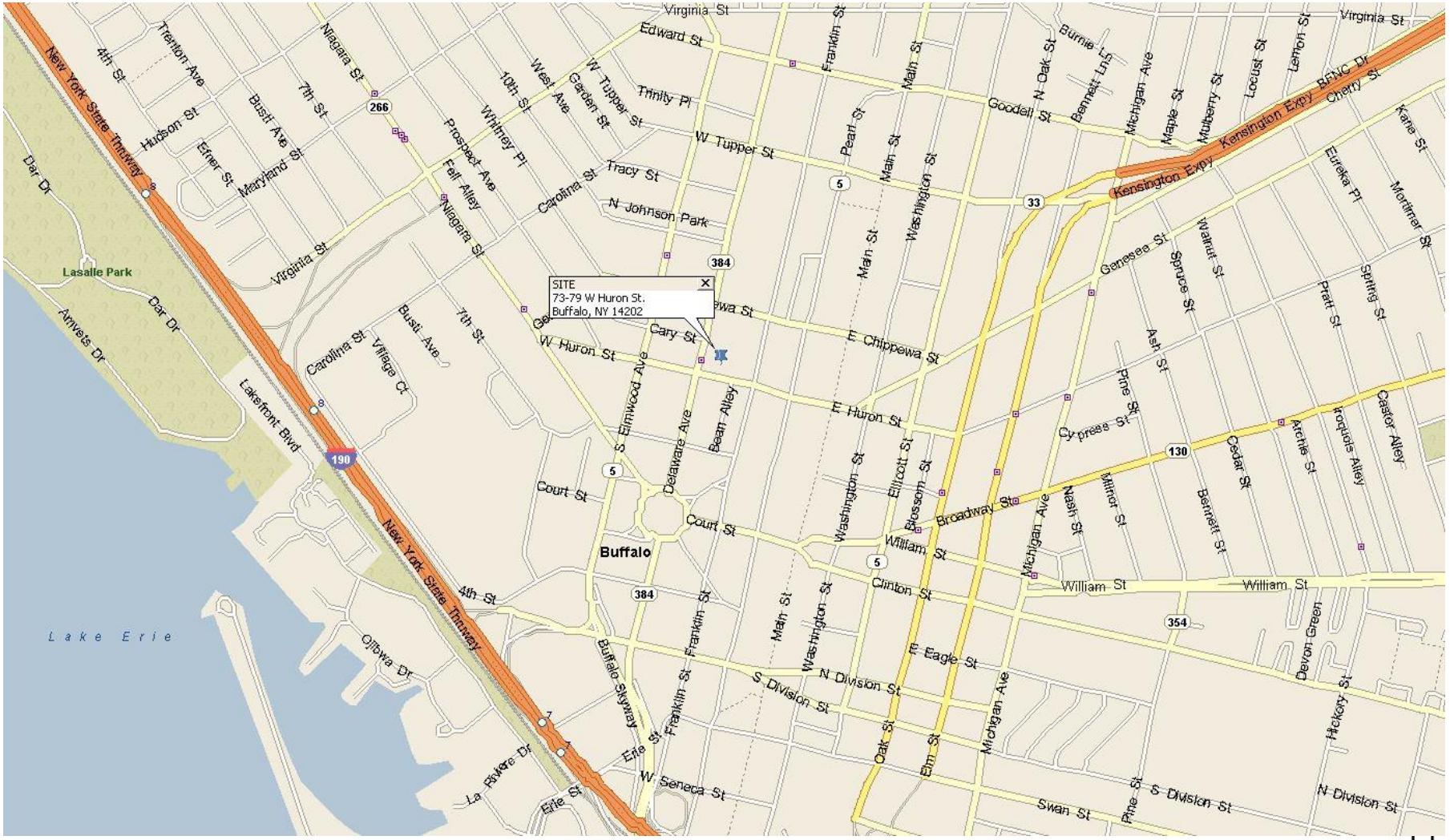


0.0	**1 Depart SITE on W Huron St (West)**	**54 yds**
0.1	Turn RIGHT (North) onto RT-384 [Delaware Ave]	0.7 mi
0.8	Turn RIGHT (East) onto Allen St	0.2 mi
1.0	Turn LEFT (North) onto RT-5 [Main St], then immediate	0.3 mi
1.2	**2 Arrive HOSPITAL - BGH [100 High St, Buffalo, NY**	

73-79 W. HURON ST. SITE – BCP SI/IRM
DIRECTIONS TO HOSPITAL

FIGURE 2

IEG



73-79 W HURON ST., BUFFALO, NY
SITE LOCATION MAP

FIGURE 1

IEG

TABLE 1
EMERGENCY NOTIFICATION TABLE

Agency	Contact	Phone Number
Police Sheriff	Emergency	911
Fire & First Aid	Emergency	911
Ambulance	Emergency	911
Hospital/ Emergency Care Facility	Buffalo General Hospital 100 High Street Buffalo, NY 14203	(716)859-5600
Poison Control Center	---	(800) 336-6997
Chemical Emergency Advise	CHEMTREC	(800) 424-9300
NYS Department of Health	Steven Karpinski NYSDOH Bureau of Env. Exposure Investigation Empire State Plaza Corning Tower Room 1787 Albany, NY 12237	(716) 847-4501
NYS Department of Environmental Conservation, Region 9	David Locey NYDEC DER 270 Michigan Avenue Buffalo, NY 14202	(716) 851-7220 - Work Hrs. (800) 342-9296 - After Hrs.
	Spill Hotline	(800) 457-7362
CONSULTANTS:	Dharma Iyer, PhD, PE, Project Manager Iyer Environmental Group, PLLC	(716) 662-4157/445-9684
DEVELOPER	James Jerge Hurondel I, Inc. 257 Franklin St. Buffalo, NY 14202	(716)853-3400
DIRECTIONS TO HOSPITAL (EMERGENCY ROUTE) *See Figure 2*	FROM THE SITE: Turn right (going west) onto W. Huron St.; Right onto Delaware Ave. (north); Right on to Allen St. (east); Left into Main St. (north); Immediate right onto High St. (east); Emergency Entrance to Buffalo General Hospital is on the left.	

HEALTH & SAFETY PLAN
BROWNFIELDS SITE SI/IRM
73-79 W. Huron St., Buffalo, NY
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SECTION 1.0
Project Description

1.0 INTRODUCTION

The health and safety protocols established in this plan are based on site conditions and chemical hazards known, anticipated or suspected to be present from available site data. The following site Health and Safety Plan (HASP) is intended solely for use during the supplemental investigations and interim remedial measure at 73-79 W. Huron St. in Buffalo, NY 14202 (see Figure 1). This Plan may be modified prior to the implementation of the interim remedial measure based on any changes to the proposed remedial action.

All activities and equipment used in association with the referenced supplemental investigation and interim measure will, at a minimum, comply with:

- 29 CFR 1910, General Industry, Occupational Safety and Health (OSHA) Safety and Health Standards;
- 29 CFR 1926, Construction Industry, OSHA Safety and Health Standards;
- 40 CFR 262, Standards Applicable to Generators of Hazardous Waste, Current Edition;
- 40 CFR 178, Shipping Container Specification, Current Edition;
- NIOSH 85-115, NIOSH/OSHA/USCG/USEPA, Occupational Safety and Health Guidance Manual for Hazardous Waste Site Activities, October 1985;
- EPA 9285.1-03, Occupational Safety and Health Guidance Manual for Hazardous Waste Site Activities (NIOSH, OSHA, USCF, and EPA), 1992;
- "Threshold Limit Values for Chemical and Physical Agents and Biological Exposure Indices," American Conference of Government Industrial Hygienists, Cincinnati, Ohio, Current Edition;
- "Guide to Occupational Exposure Values," American Conference of Governmental Industrial Hygienists, Cincinnati, Ohio, Current Edition;
- "Community Air Monitoring Plan," 93118PR00149, NYSDEC;
- NYSDOL 28.876, Article 28, Section 876 of NYS Labor Law (Right-to-Know Law), 1980; and
- Other applicable Federal, State, and Local regulations

1.0 SITE DESCRIPTION AND BACKGROUND

1.2.1 General Location

The property is located at 73-79 W. Huron Street in downtown Buffalo, NY (see site location map on Figure 1). The site is surrounded by a parking lot to the north, W. Huron Street to the south, the Curtiss building to the east, an auto service shop (former Sunoco gas station) to the west.

1.1.2 Site History

The site consists of a rectangular shaped, 0.216 acre parking lot (77-79 W Huron St.) and a rectangular shaped, six-story parking garage (73-75 W. Huron St.). The asphalt-paved parking lot is currently being leased by auto drivers for parking spaces. The parking garage is a vacant brick structure with a basement and a 0.34-acre footprint.

For more than a decade, this Site along with the adjacent Sunoco site to the west has been the subject of investigations and remediation related to petroleum contamination of the subsurface soil and groundwater.

1.3 GENERAL SUMMARY OF WORK

a) Soil sampling using a direct push method (Geoprobe), and analysis
b) Groundwater sampling using disposable bailers, and analysis
c) ACM and lead paint sampling inside the building
d) Excavation, stockpiling and off-site disposal of contaminated soils
e) Excavation water pumping, storage, treatment and discharge to sanitary sewer
f) Backfilling of excavated area with clean fill and regrading
g) Long-term OM&M

SECTION 2.0
Hazard Assessment & Risk Analysis

An assessment and analysis of chemical, physical, and biological hazards associated with this project is presented in the subsections that follow. A task-by-task risk analysis of the potential exposure to the identified hazards is provided below and in Table 3 at the end of this section.

TASK	POTENTIAL EXPOSURE RISK
Geoprobe soil sampling	Moderately high
Groundwater sampling	Moderately high
ACM and lead paint sampling	Moderately high
Soil excavation and disposal	Moderately high
Excavation water treatment/discharge	Moderately high
Backfilling and regrading	Low

Anticipated Exposure Risk Definitions:

LOW = Non-Intrusive Work – No Chance of Exposure.

SLIGHT = Non-Intrusive Work, Possible Safety Hazards with Tools - Little to No Chance of Exposure.

MODERATE = Non-Intrusive Work, Possible Safety Hazards with Powered Tools, Heavy Equipment, and/or work near or in water. Possible Exposure to Contaminants.

MODERATELY HIGH = Intrusive Work, Possible Safety Hazards with Equipment – Exposure to Contaminants Possible.

HIGH = Intrusive Work, Possible Safety Hazards with Equipment – Exposure to Contaminants Probable.

2.1 CHEMICAL HAZARDS

The primary chemical hazard substances known or suspected to exist on-site are volatile organic compounds (VOCs) that are associated with past development of this property with industrial fill and use as a warehouse with a filling station. There is also concern about the possible of other hazardous substances that may be related to its past. The hazards associated with these chemical substances are discussed in Table 2 at the end of this section.

The levels of personal protective equipment (PPE) identified in Section 6.0 of this HASP have been assigned by task, known/anticipated chemical toxicity, and potential exposure risks. Action levels for PPE upgrade (see Section 7.0) have been set conservatively to minimize the risk of exposure to field personnel.

2.2 PHYSICAL/GENERAL HAZARDS

The following general, physical, and ergonomic hazards may be associated with this project:

1. **Potential Hazard:** Dermal and inhalation hazards resulting from potential exposure to the chemical compounds identified in Table 2.

   Procedure(s) to Mitigate Hazard: Don PPE identified in Section 6.0 of this HASP. The levels of PPE identified in Section 6.0 of this HASP have been assigned by task, known/anticipated chemical toxicity, and potential exposure risks. Other means of minimizing or eliminating risk of exposure include: practicing contamination prevention including a thorough washing of hands and face when exiting the exclusion zone and prohibiting use of contact lenses during field activities.

2. **Potential Hazard:** Slips, Trips, and Falls.

   Procedure(s) to Mitigate Hazard:
   (1) Exercise extreme caution in all work areas.
   (2) Be sure of footing during equipment access/egress and when moving through the work area.
   (3) Avoid stepping or standing on uneven or unsteady surfaces.
   (4) Clearly delineate open pits, wells, and other fall hazards with orange safety fencing. Securely cover as appropriate.

3. **Potential Hazard:** Exposure to inclement weather.

   Procedure(s) to Mitigate Hazard:
   (1) Follow the procedures for the prevention and/or treatment of heat or cold stress (if ambient air temperatures exceed 70^{o}F or drop below 40^{o}F) described in Section 5.5 of this HASP.
   (2) Adhere to the emergency response procedures provided in Section 10.3 of this HASP.

4. **Potential Hazard:** Housekeeping

   Procedure(s) to Mitigate Hazard:
   (1) Store equipment property.
   (2) Remove rubbish/scrap material from work area.

5. **Potential Hazard:** Vehicle Traffic

   Procedure(s) to Mitigate Hazard: Utilize warning signs and flagman (men) as appropriate to direct traffic away from work area.

6. **Potential Hazard:** Hazardous Material Storage

   Procedure(s) to Mitigate Hazard:
   (1) Segregate flammable/combustible liquid from ignition sources.
   (2) Store in approved containers.
   (3) Keep solvent waste, oily rags, and liquids in fire resistant containers.

7. **Potential Hazard:** Electrical

   Procedure(s) to Mitigate Hazard:
   (1) Utilize approved grounding and bonding procedures.
   (2) Guard and maintain electrical lines/cords.

(3) Tag/remove damaged equipment from service.

8. **Potential Hazard:** Tools

Procedure(s) to Mitigate Hazard:
(1) Tag and remove defective tools from service.
(2) Maintain and inspect per manufacturer's recommendations.
(3) Utilize proper eye protection.

9. **Potential Hazard:** Above and/or Underground Utilities within Work Area(s)

Procedure(s) to Mitigate Hazard:
(1) Obtain a site utility plan or markout and ensure that electrical lines (if any) are not energized.
(2) Call Di-Safe-NY to locate utilities before any intrusive work.

2.3 BIOLOGICAL HAZARDS

Biological hazards which on-site personnel may encounter are considered minimal, but include animal bites or stings, contact with plants, and exposure to microbes.

Animal bites or stings are usually nuisances (localized swelling, itching, and minor pain) that can be handled by first aid treatment. The bites of certain snakes, lizards, and spiders contain sufficient poison to warrant medical attention. There also are diseases that can be transmitted by animal bites which will require professional medical attention. Examples are rabies (mainly from dogs, skunks, raccoons, and foxes), Lyme disease (from ticks [see discussion below]), and encephalitis (from mosquitoes).

The biggest hazard and most common cause of fatalities from animal bites and stings (particularly bees, wasps, and spiders) is a sensitivity reaction. Anaphylactic shock due to stings can lead to severe reactions to the circulatory, respiratory and central nervous system, and it can also result in death. Therefore, workers with known insect allergies must notify the site health and safety officer of his/her condition prior to engaging in remedial operations.

Workers who are bitten by an animal or stung by an insect must immediately notify the site safety and health officer.

Lyme disease is caused by an infectious agent, Borrelia burgdorferi. This agent is a spirochete transmitted to animals or humans via ticks. The early symptoms and signs, with one exception, are non-specific and easily attributed to other illnesses, such as the flu. They include fever, nausea, vomiting, fatigue, headache, photophobia (sensitivity to light), and, in approximately 75 percent of the cases, a rash. Over several days it enlarges, sometimes reaching a diameter of 20 centimeters. The border of the enlarging rash is red, slightly warm, but flat. Often, the center of the rash clears somewhat, so that it looks like an irregular ring. In about half of the persons with a rash, more than one circular eruption is present. The rash termed, erythema migrans, is essentially diagnostic of Lyme disease, and therefore is a very important finding.

Undiagnosed/untreated Lyme disease can lead to severe, sometimes life-threatening medical problems. The principal targets include the skin, the nervous system, the heart, and the joints. Early treatment is highly desirable since, in most cases, it prevents progression of the disease and is a less prolonged, less intense affair.

Preventative measures include protective clothing (see Section 6.0); head/hair protection; and the use of insect repellant containing DEET on all exposed areas and coveralls. Workers should check their bodies thoroughly for ticks and should bathe soon after returning home. Remove any ticks carefully, using a

gentle, firm, tugging motion with fine tweezers. Do not kill the tick before it has been removed. Workers should save the ticks and monitor their bites, checking for a rash and other symptoms (up to about eight weeks after the bite).

Toxic effects from plants are generally due to ingestion. Of more concern to on-site personnel are certain plants, including poison ivy, poison oak, and poison sumac, which produce adverse effects from direct contact. The usual effect is dermatitis inflammation of the skin. The protective clothing and decontamination procedures used for chemicals also reduce the exposure risk from the plant toxins. Cleaning the skin thoroughly with soap and water after contact will reduce the risk.

TABLE 2 : CHEMICAL HAZARD/EXPOSURE DATA SUMMARY
Brownfield Site RI/IRM for 73-79 W. Huron St. Site

Chemical of Concern	Maximum Concentration (If Known)	Potentially Contaminated Media	OSHA PEL/ ACGIH TLV/ NIOSH IDLH	Routes of Exposure	Exposure Symptoms/ Primary Hazards
Petroleum Hydrocarbons Benzene, Xylenes, Toluene, Ethyl benzene	Refer to Phase II Reports	Soil Groundwater	PEL: 1 - 10 ppm TLV: 100 ppm IDLH: 100 ppm	Inhalation Absorption	FLAMMABLE LIQUIDS/FIRE HAZARD May damage the developing fetus. They can irritate the eyes, nose and throat. High levels can cause dizziness, passing out and death. Repeated exposure may damage bone marrow causing low blood cell count. May also damage the eyes, and cause stomach problems. May cause problems with memory and concentration.
Semivolatile organics Naphthalene, benzo(a)anthracene, benzo(b)fluoranthene, benzo(k)fluoranthene, Benzo(g,h,i)perylene benzo(a)pyrene, chrysene, dibenzo(a,h)anthracene fluoranthene, indeno(1,2,3-cd)pyrene, phenanthrene, pyrene	Refer to Phase II Reports	Soil Groundwater	PEL: 0.2 mg/m^3 TLV: 0.2 mg/m^3 IDLH: 80 mg/m^3	Inhalation Ingestion	Seven polynuclear aromatic hydrocarbons in the semivolatile organics group and on the hazardous substance list are suspected/known carcinogens of various degrees. These chemical can cause tumors, and affect the skin, lungs, male reproductive organs, and respiratory tract.
Heavy Metals	Not known at this time	Soil Groundwater	PEL: 5 mg/m^3 TLV: 10 mg/m^3 IDLH: NE	Inhalation Absorption	Heavy metals can affect the skin, eyes, mucous membrane, nasal cavities, lungs liver, kidneys and heart
Polychlorinated Biphenyls (PCBs)	Not known at this time	Soil Groundwater	PEL: 1 mg/m^3 TLV: 1 mg/m^3 IDLH: NE	Absorption	Confirmed carcinogen. Moderately toxic by ingestion. Has skin effect and toxic action on the liver. Some isomers are poisonous by other routes. Symptoms of systemic intoxication are nausea, vomiting, weight loss, edema and abdominal pain.

NOTES:

OSHA PEL = Occupational Safety & Health Administration's Final Rule Limits Permissible Exposure Limit for an 8-hour, time-weighted average (TWA) from CFR 1910.1000, Tables Z-1A, Z-2, and Z-3.

ACGIH TLV = American Conference of Governmental Industrial Hygienists' Threshold Limit Value for an 8-hour, TWA.

NIOSH IDLH = National Institute of Occupational Safety and Health Level Immediately Dangerous to Life and Health.

TABLE 3 : TASK & RISK ANALYSIS TABLE
Brownfield Site SI/IRM for 73-79 W. Huron St.

Task	Sub-Tasks	Activity	Hazard	Protective Measures
Test pit excavation and Soil Borings	Excavation, backfill, field measurements, soil sampling	Use of heavy equipment, power tools, and hand tools	Potential exposure to chemicals and particulates, falls, cuts, injury from falling objects, release of kinetic or stored energy, unstable excavation walls	Engineering controls such as water for particulate control, proper work practices including proper heavy equipment operation and use of PPE.
Monitoring and Sampling	Field measurements, Water, soil sampling	Use of hand tools, direct read instruments or other equipment to gather samples for analysis	Potential chemical exposure	Use of proper techniques and PPE
Decontamination of Equipment and personnel	Cleaning contaminants off equipment and personnel;	Use of power-washer or spray bottles, and hand tools to remove contaminants	Potential chemical exposure, thermal burns	Proper operation of power washer and use of proper PPE
Soil excavation and off-site disposal	Excavation, stockpiling, loading, transportation	Use of heavy equipment, power tools, and hand tools	Potential exposure to chemicals and particulates, falls, cuts, injury from falling objects, release of kinetic or stored energy, unstable excavation walls	Engineering controls such as water for particulate control, proper work practices including proper heavy equipment operation and use of PPE.
Backfill and regrading	Wells, cap, gas probes	Use of heavy equipment, power tools, and hand tools	Potential exposure to particulates, falls, cuts, injury from falling objects, release of kinetic or stored energy, electrical hazards	Engineering controls such as water for particulate control, proper work practices including proper heavy equipment operation and use of PPE.

SECTION 3.0
Project Organization & Personnel Responsibilities

The following IEG managerial personnel are assigned to this project and will assume the job functions listed below:

- **Project Manager (IEG)** - Dharmarajan R. Iyer, Ph.D., PE;
- **Health & Safety Officer** (HSO, IEG) – Fred Smith, Jr., CIH

3.1 PERSONNEL RESPONSIBILITIES

The Project Manager will be responsible for overall administration of the project and will assume corporate QA/QC requirements. In addition, the Project Manager will oversee submittals, negotiating/securing subcontracts; scheduling, personnel management, cost tracking and reporting, etc.

The HSO will be responsible for field implementation of this HASP and for insuring the project team's compliance to the site-specific health and safety protocol established herein. The HSO will be responsible for the following:

> Implementing, enforcing, and monitoring the HASP
> Preconstruction indoctrination and periodic training of all on-site personnel with regard to this safety plan and other safety requirements to be observed during construction including:
  - Potential hazards,
  – Personal hygiene principles,
  – Personal protective equipment (PPE),
  – Respiratory protection equipment usage and fit testing,
  – Emergency procedures dealing with fire and medical situations, and
  – Conduct daily update meetings in regard to health and safety
> Evaluating monitoring data to make field decisions regarding safety and health
> Informing project personnel of NYS Labor Law Section 876 (Right-to-Know Law)
> Maintaining separation of Exclusion Zone (dirty) from the Support Zone (clean)

The HSO will have the authority to:

> Enforce this HASP and stop operations if personnel safety and health may be jeopardized, and
> Effect evacuation of the site if necessary

3.2 SURVEILLANCE & INTERNAL AUDITING RESPONSIBILITIES

The HSO will monitor job-site safety via inspection and review of records. Any safety violations will be corrected and reported to the Project Manager. Safety violations will be immediately corrected, explained to the perpetrator, and reviewed at the next safety meeting. Excessive violations of the site safety rules will be grounds for disciplinary action which could lead to termination or expulsion.

SECTION 4.0
Site Personnel Training Requirements

All personnel assigned to the site will be in compliance with the training requirements of 29 CFR 1910 and 1926 as listed below. Site personnel will have met one of the following requirements prior to the start of activities at the site:

< A 40 hour minimum hazardous materials safety and health course, as stipulated in 29 CFR 1926.65 e(3); and
< An 8 hour minimum refresher course per year after the 40 hour minimum training has occurred (29 CFR 1926.65.e[8]).

On-site managers and supervisors must be in compliance with the additional supervisory training requirements of 29 CFR 1926.65.e(4). Emergency responders must be in compliance with the additional training requirements of 29 CFR 1926.65.e(7). Personnel involved in confined space entry will have completed training in accordance with OSHA requirements.

As stipulated in 29 CFR 1910.120, all IEG and subcontractor personnel assigned to this project also will receive site-specific training in:

- Provisions of OSHA regulations and legislation under OSHA Standards 1910 and 1926;
- Provisions of NYSDOL 28.876;
- Medical monitoring per Section 5.0 of this HASP;
- Hazards of the work place (chemical/physical/biological/ergonomic);
- Standard safety operation procedures (see Attachment B);
- Decontamination procedures;
- Work zones;
- Emergency procedures and contingency plans;
- Respirator equipment training, qualitative fit testing and respirator maintenance;
- Emergency first aid procedures, blood borne pathogen program, and CPR;
- On-site communication procedures;
- Air monitoring techniques and sample taking;
- Hazardous material recognition;
- Importance of "Buddy System";
- Toxicology and basic chemistry;
- Site entry; and
- Use of emergency escape packs.

Copies of applicable training certificates (i.e., 40 hour training records, 8 hour training records, 8 hour supervisor training records, medical monitoring documentation, respirator fit test results, first aid/CPR certificates, asbestos handlers cards, confined space entry training certificates, etc.) for site personnel will be retained by the HSO.

4.1 VISITORS

Only those persons who have (1) completed the same level of training as the workers for the portion of the site they wish to enter, in addition to having received the site orientation currently outlined in this HASP, and (2) signed the Visitor's Entry Log will be permitted to enter established work areas. The HSO will establish, on a case-by-case basis, a safe location from which visitors can observe the site activity of interest.

4.2 SAFETY MEETINGS

Personnel who work on the site are required to attend Pre-Entry Site Briefing as and when it is held. It will include a review of the requirements of this HASP. On-site safety meetings will occur regularly and ***on-site personnel will be required to attend***. Attending personnel must sign an attendance sheet. Any personnel who miss the on-site safety meetings will be required to attend a review by the HSO before he/she will be allowed to work at the discretion of the HSO. Items to be considered at the safety meetings may include, but are not limited to:

- Review of relevant site data that may relate to the potential for worker exposure;
- Delegation of responsibility (i.e., field technicians, equipment operators, emergency backup personnel, competent persons, logistical and support requirements);
- Type and frequency of environmental and personal monitoring to be performed;
- Mobilization of support and decontamination equipment;
- Initial levels of protection required and the anticipated potential for upgrading;
- Decontamination requirements;
- Emergency procedures;
- Functional and interpretive problems that may have been encountered while using monitoring instrumentation, personal protective or other support equipment;
- Personal hygiene;
- Fire prevention;
- Heavy equipment operation; and
- Discussion of on-going and planned work activities.

4.3 EMERGENCY RESPONSE TRAINING

Training in site-specific emergency procedures will be provided by the site health and safety officer before work begins on-site. This training will include, but is not limited to, the following;

- Emergency chain-of-command;
- Communication methods and signals;
- Location of phones and emergency numbers;
- Use of emergency equipment;
- Evacuation and emergency procedures;
- Off-site support;
- Site-specific hazards;
- Decontamination procedures;
- Standard operating procedures; and
- Location and use of first aid equipment.

SECTION 5.0
Medical Surveillance

Medical monitoring is required by OSHA as a means of monitoring worker exposure to certain toxic substances. IEG will implement a Medical Surveillance Program (MSP) for employees engaged in on-site activities which is consistent with the requirements of 29CFR.1926.65(b). All medical records and personnel exposure monitoring data generated from the MSP will be retained per 29 CFR 1910.1020.

A baseline medical surveillance examination will be given not more than one year prior to a 40-Hour OSHA-Trained worker reporting to the job site to work in contaminated areas. Copies of the physician's statement certifying each employee's ability to work at task-specific operations, as well as their suitability for wearing respirators will be maintained by the HSO for review by involved regulatory personnel upon request. The baseline Medical Surveillance Exam will meet the requirements of 29CFR.1926.65 (b).

5.1 EPISODIC EXAMINATIONS

Non-scheduled medical examinations may be required upon acute exposure, at the discretion of the HSO, or upon receipt of a request for a medical examination from any employee with symptoms of exposure to hazardous substances, or following injuries, etc. Episodic examinations will be provided, if required, by that person's direct employer through their Medical Surveillance Program.

5.2 ANNUAL AND/OR TERMINATION EXAMINATIONS

All personnel participating in the medical monitoring program (i.e., those personnel who are 40-Hour, OSHA-Trained) will have annual re-examinations and follow-up examinations upon completion of the work. Biological monitoring for blood lead levels will be conducted as part of these examinations in accordance with 29 CFR 1926.62. Employees will be notified of their blood lead levels within five working days of receipt of biological monitoring results.

The annual and termination exams will be complementary in scope with the baseline exams to the degree sufficient to allow comparison of individual biologic parameters. Additional testing for the purpose to further diagnose occupationally induced or significant abnormalities will be at the discretion of the examining physician.

5.3 AUDIOMETRIC TESTING

In addition to the baseline physical exam, all personnel will receive an annual audiogram. This annual audiogram will be reviewed against the baseline or most current audiogram by a certified audiologist to determine if noise-induced hearing loss has occurred. If a noise-induced hearing loss is noted during the evaluation, the employee will be notified, in writing, within 21 days of the determination. This testing is performed in compliance with 29 CFR 1210.95.

5.4 ABNORMAL MEDICAL SURVEILLANCE RESULTS

In general, whenever any medical test which is of significance yields abnormal results, the test will be repeated. Whenever abnormal results are substantiated, the worker may be restricted or excluded from areas which are potentially contaminated or thought to compromise his/her safety. Employees exhibiting elevated blood lead levels will be removed from exposures. The decision of worker disposition will rest with the examining physician.

5.5 HEAT/COLD STRESS MONITORING

The following program will be implemented when the ambient air temperatures exceed 70^{o}F (heat stress monitoring) or drop below 40^{o}F (cold stress monitoring).

5.5.1 Heat Stress Monitoring

Site personnel who wear protective clothing allow body heat to be accumulated with an elevation of the body temperature. Heat cramps, heat exhaustion, and heat stroke can be experienced, which, if not remedied, can threaten life or health. Therefore, an American Red Cross Standard -First Aid book (current edition) or equivalent will be maintained on site at all times so that the HSO and site personnel will be able to recognize symptoms of heat emergencies and be capable of controlling the problem.

When protective clothing is worn (especially Levels A, B, and C) the suggested guidelines for ambient temperature and maximum wearing time per excursion are:

Ambient Temperature (ºF)	**Maximum Wearing Time Per Excursion (Minutes)**
Above 90	15
85 to 90	30
80 to 85	60
70 to 80	90
60 to 70	120
50 to 60	180

Monitoring the heart rate is one method of measuring the effectiveness of employees' rest-recovery regime:

- During a 3-minute period, count the pulse rate for the last 30 seconds of the first minute, the last 30 seconds of the second minute, and the last 30 seconds of the third minute.
- Double the count.

If the recovery pulse rate during the last 30 seconds of the first minute is at 110 beats/minute or less and the deceleration between the first, second, and third minutes is at least 10 beats/minute, the work-recovery regime is acceptable. If the employee's rate is above that specified, a longer rest period is required, accompanied by an increased intake of fluids.

In the case of heat cramps or heat exhaustion, "Gatorade" or its equivalent is suggested as part of the treatment regime. The reason for this type of liquid refreshment is that such beverages will return much-needed electrolytes to the system. Without these electrolytes, body systems cannot function properly, thereby increasing the represented health hazard. NOTE: The HSO or HSTs may weigh workers before and after entry to determine if there is excessive loss of fluid.

This liquid refreshment will be stored in a cooler at the edge of the decontamination zone in plastic squeeze bottles. The plastic bottles will be marked with individual's names. Disposable cups with lids and straws may be used in place of the squeeze bottles. Prior to drinking within the decontamination zone, the project personnel will follow the following decontamination procedures:

A. Personnel will wash and rinse their outer gloves and remove them.
B. Personnel will remove their hard hats and respirators and place on table.
C. Personnel will remove their inner gloves and place them on table.
D. Personnel will wash and rinse their face and hands.
E. Personnel will carefully remove their personal bottle or cup from the cooler to ensure that their outer clothes do not touch any bottles, cups, etc. Personnel also must ensure that their hands to not touch their outer clothes.
F. The used bottle or cups will not be returned to the cooler, but will be placed in a receptacle or container to be cleaned or disposed of.
G. Personnel will replace their respirators, hard hats, gloves and tape gloves prior to re-entering the hazardous zone.

When personnel are working in situations where the ambient temperatures and humidity are high-and especially in situations where protection Levels A, B, and C are required the HSO must:

- Assure that all employees drink plenty of fluids ("Gatorade" or its equivalent);
- Assure that frequent breaks are scheduled so overheating does not occur; and
- Revise work schedules, when necessary, to take advantage of the cooler parts of the day (i.e., 5:00 a.m. to 1:00 p.m., and 6:00 p.m. to nightfall).

5.5.2 Cold Stress Monitoring

Whole-body protection will be provided to site personnel that have prolonged exposure to cold air. The right kind of protective clothing will be provided to site personnel to prevent cold stress. The following dry clothing will be provided by IEG as deemed necessary by the HSO:

- Appropriate underclothing (wool or other);
- Outer coats that repel wind and moisture;
- Face, head, and ear coverings;
- Extra pair of socks;
- Insulated safety boots; and
- Glove liners (wool) or wind- and water-repellant gloves.

The HSO will use the equivalent chill temperature when determining the combined cooling effect of wind and low temperatures on exposed skin or when determining clothing insulation requirements.

Site personnel working continuously in the cold are required to warm themselves on a regular basis in the on-site hygiene facility. Warm, sweet drinks will also be provided to site personnel to prevent dehydration. The HSO will follow the work practices and recommendations for cold stress threshold limit values as stated by the latest edition of the Threshold Limit Values for Chemical Substances and Physical Agents and Biological Exposure Indices by the American Conference of Governmental Industrial Hygienists or equivalent cold stress prevention methods.

SECTION 6.0
Personal Protective Equipment

Based on an evaluation of potential hazards (see Section 2.0), the following levels of personal protective equipment are assigned for this project.

PLANNED WORK ACTIVITY	PLANNED LEVEL OF PROTECTION	ACTION LEVEL FOR PPE UPGRADE/DOWNGRADE
Soil and groundwater sampling	Modified Level D	Upgrade to Level C if Sustained Readings[A] of 2.5 x Background and 150 μg/m^3 are recorded or if an IDLH Condition is Probable.
Soil Excavation and offsite disposal	Modified Level D	Upgrade to Level C if Sustained Readings[A] of 2.5 x Background and 150 μg/m^3 are recorded or if an IDLH Condition is Probable.
Backfill and regrading	Level D	Upgrade to Level C if Sustained Readings[A] of 2.5 x Background and 150 μg/m^3 are recorded or if an IDLH Condition is Probable.
Decontamination of Equipment & Vehicles	Level D	Upgrade to Level C if Sustained Readings[A] of 2.5 x Background and 150 μg/m^3 are recorded or if an IDLH Condition is Probable.

NOTES:

A. For the purposes of this discussion, a *sustained reading* is defined as a consistent reading on a real-time monitoring instrument which does not vary substantially from a peak or a result which is averaged over a period of time (i.e., 5 minutes). Sustained is called out in order to avoid downgrading PPE based on a single "hit" or "miss" instead of the average concentration present. Unless a chemical has a ceiling value, the TWA and STEL values are averages for exposure over 8-hours or 15 minutes and not single peaks. The values for the above action levels are based on TWA and STEL values.

B The action levels given are based on the potential for exposure to the chemicals listed in the contract documents. These action levels may be changed based on further chemical-specific sampling.

C. The levels of PPE identified have been assigned by task (Table 3), known/anticipated chemical toxicity (Table 2), and potential exposure risks (Table 3). Action levels for PPE upgrade have been set conservatively to minimize the risk of physical injury and/or exposure to field personnel.

D. Respiratory protection will conform to OSHA 1910.134. Personnel assigned to work in the Exclusion Zone or Contamination Reduction Zone must have passed a Respirator Fit Test in accordance with OSHA 3079. Fit tests will be administered by the HSO. Respirators will be maintained and operated per the SOP set forth in Attachment D of this HASP.

E. The HSO will be responsible for determining the need for PPE upgrade or downgrade based on actual conditions encountered in the field.

PPE levels are defined in Table 4 at the end of this section. Project-specific PPE requirements are summarized below.

< The **Level D PPE ensemble** will include work clothing as dictated by weather (sleeved shirts and long pants required); a hard hat; safety glasses; and steel-toe work boots. Hearing and fall protection will be utilized as directed by the HSO or HSTs.

< The **Modified Level D PPE ensemble** will include work clothing as dictated by weather; disposable Tyvek coveralls or equivalent; disposable nitrile (NRC) or neoprene outer gloves (worn over optional inner latex or surgical gloves); a hard hat; safety glasses; steel-toe work boots; and neoprene or butyl rubber overboots. Hearing and fall protection will be utilized as directed by the HSO or HSTs.

< The **Level C PPE ensemble** will include full face air purifying respirator (MSHA/NIOSH approved) with combination organic vapor, acid gas and high efficiency particulate cartridge/filter; Saranax-laminated Tyvek or equivalent coverall; chemical-resistant outer and inner gloves; a hard hat; safety glasses; steel-toe work boots; neoprene or butyl rubber overboots; long cotton underwear (optional); and an escape air mask (readily available). Hearing and fall protection will be utilized as directed by the HSO or HSTs.

< **Level B PPE** will be worn when confined space entry is required (i.e., during tank cleaning). The Level B PPE ensemble will include a positive-pressure SCBA (MSHA/NIOSH approved) or positive-pressure air line respirator with escape bottle for IDLH or potential IDLH atmosphere (MSHA/NIOSH approved); chemical-resistant clothing (Saranax-laminated Tyvek or equivalent coverall); long cotton underwear (optional); outer and inner chemical-resistant gloves; steel-toe work boots; disposable chemical-resistant overboots; and hard hat (face shield optional). Hearing or fall protection will be utilized as directed by the HSO or HSTs.

Taping will be used between suit and gloves, and suit and boots for Levels B, C, and Modified D PPE.

The base levels of protection identified are to be considered preliminary and may change based on air monitoring information collected by the HSO or HSTs during project work. No Changes to the specified levels of protection will be made without the approval of the HSO.

TABLE 4
DESCRIPTION OF PPE LEVELS

LEVEL OF PROTECTION	EQUIPMENT	PROTECTION PROVIDED	SHOULD BE USED WHEN:	LIMITING CRITERIA
A	**Recommended** < Pressure-demand, full-facepiece SCBA or pressure-demand supplied-air respirator with escape SCBA. < Full-encapsulating, chemical-resistant suit. < Inner chemical-resistant gloves. < Chemical-resistant safety boots/shoes. < Two-way radio communications. **Optional** < Cooling Unit. < Coveralls. < Long cotton underwear. < Hard hat. < Disposable gloves and boot covers.	The highest available level of respiratory, skin, and eye protection.	< The chemical substance has been identified and requires the highest level of protection for skin, eyes, and the respiratory system based on either: - measured (or potential for) high concentration of atmospheric vapors, gases, or particulates or - site operations and work functions involving a high potential for splash, immersion, or exposure to unexpected vapors, gases, or particulates of materials that are harmful to skin or capable of being absorbed through the intact skin. < Substances with a high degree of hazard to the skin are known or suspected to be present, and skin contact is possible. < Operations must be conducted in confined, poorly ventilated areas until the absence of conditions requiring Level A protection is determined.	< Fully-encapsulating suit material must be compatible with the substances involved.

TABLE 4
DESCRIPTION OF PPE LEVELS

LEVEL OF PROTECTION	EQUIPMENT	PROTECTION PROVIDED	SHOULD BE USED WHEN:	LIMITING CRITERIA
B	**Recommended** < Pressure-demand, full-facepiece SCBA or pressure-demand supplied-air respirator with escape SCBA. < Chemical-resistant clothing (overalls and long-sleeved jacket; hooded, one- or two-piece chemical splash suit; disposable chemical resistant one-piece suit). < Inner and outer chemical-resistant gloves. < Chemical-resistant safety boots/shoes. < Hard hat. < Two-way radio communications. **Optional** < Coveralls. < Disposable boot covers. < Face shield. < Long cotton underwear.	The same level of respiratory protection but less skin protection than Level A. It is the minimum level recommended for initial site entries until the hazards have been further identified.	< The type and atmospheric concentration of substances have been identified and require a high level of respiratory protection, but less skin protection. This involves atmospheres: - with IDLH concentrations of specific substances that do not represent a sever skin hazard; or - that do not meet the criteria for use of air-purifying respirators. < Atmosphere contains less than 19.5 percent oxygen. < Presence of incompletely identified vapors or gases is indicated by direct-reading organic vapor detection instrument, but vapors and gases are not suspected of containing high levels of chemicals harmful to skin or capable of being absorbed through the skin.	< Use only when the vapor of gases present are not suspected of containing high concentrations of chemicals that are harmful to skin or capable of being absorbed through the intact skin. < Use only when it is highly unlikely that the work being done will generate either high concentrations of vapors, gases, or particulates or splashes of material that will affect exposed skin.

TABLE 4
DESCRIPTION OF PPE LEVELS

LEVEL OF PROTECTION	EQUIPMENT	PROTECTION PROVIDED	SHOULD BE USED WHEN:	LIMITING CRITERIA
C	**Recommended** < Full-facepiece, air-purifying, canister-equipped respirator. < Chemical-resistant clothing (overalls and long-sleeved jacket; hooded, one- or two-piece chemical splash suit; disposable chemical-resistant one-piece suit). < Inner and outer chemical-resistant gloves. < Chemical-resistant safety boots/shoes. < Hard hat. < Two-way radio communications. **Optional** < Coveralls. < Disposable boot covers. < Face shield. < Escape mask. < Long cotton underwear.	The same level of skin protection as Level B, but a lower level of respiratory protection.	< The atmospheric contaminants, liquid splashes, or other direct contact will not adversely affect any exposed skin. < The types of air contaminants have been identified, concentrations measured, and a canister is available that can remove the contaminant. < All criteria for the use of air-purifying respirators are met.	< Atmospheric concentration of chemicals must not exceed IDLH levels. < The atmosphere must contain at least 19.5 percent oxygen.
D	**Recommended** < Coveralls. < Safety boots/shoes. < Safety glasses or chemical splash goggles. < Hard hat. **Optional** < Gloves. < Escape mask. < Face shield.	No respiratory protection. Minimal skin protection.	< The atmosphere contains no known hazard. < Work functions preclude splashes, immersion, or the potential for unexpected inhalation of or contact with hazardous levels of any chemical.	< This level should not be worn in the Exclusion Zone. < The atmosphere must contain at least 19.5 percent oxygen.

SECTION 7.0
Air Monitoring Program

7.1 GENERAL

Personnel, work area, and perimeter monitoring strategies have been devised to ensure that the identification of areas for which PPE, engineering, and administrative controls are required. Monitoring and documentation will be conducted as necessary by the HSO or a designated field technician to confirm that the levels of PPE, engineering, and administrative controls are adequate to protect the workers, general public, and environment.

The Project Manager and HSO will ensure that an adequate supply of appropriate monitoring equipment is available prior to commencing work at the site. The instruments will be operated only by persons with appropriate training in the care, calibration, operation, and limitations of the equipment. All instruments will be inspected regularly and field calibrated to determine background concentrations prior to use.

Sampling will be performed and samples will be analyzed using published methodologies that have been validated by OSHA or NIOSH.

Action level contaminant concentrations are based on 50 percent of the OSHA PEL or ACGIH TLV for each contaminant (see Table 2). If air samples indicate that personal exposures are greater than the action levels, then personal protection, engineering, and administrative controls will be reviewed according to the procedures outlined below.

7.2 AIR MONITORING PROCEDURE

The Air Monitoring Plan will include dust control with associated dust, volatile organics and explosives (if needed) monitoring during intrusive activities at the site. Air monitoring will be conducted in accordance with Table 5, the NYSDOH's Generic Community Air Monitoring Plan (included as Appendix A), and as follows:

1. Check and record calibration before and after use each day. All instruments will be calibrated and operated in accordance with manufacturer's specifications. Equipment manuals for all monitoring instruments will be present on-site during all operations.
2. Note weather conditions.
3. Collect and record a background reading on each air monitoring instrument to be used at day's start in an area free of site-generated airborne contaminants. This area will be located upwind of the work area.
4. Prior to initiation of operations, determine and record ambient levels within the contaminated work area(s).
5. Report ambient conditions periodically.
6. Check and record breathing zone levels during remediation and/or abatement activities.
7. Check and record levels at the perimeter of the work zone if elevated concentrations are detected in the worker's breathing zone.
8. Check and record levels following completion of any intrusive work. Monitor one (1) upwind and three (3) downwind locations at the edge of the work zone.
9. Check and record airborne particulate levels periodically. Monitor one (1) upwind and three (3) downwind locations at the edge of the work zone.
10. Check and record daily (pre/post-work) outside exclusion zone ambient air readings. Monitor one (1) upwind and three (3) downwind locations at the edge of the work zone.

TABLE 5
Summary of Air Monitoring Plan* with Action Levels

Instrument	Sampling Location	Monitoring Frequency	Action Level[A]	Response Action[B]
Real Time Monitoring				
Dust Monitors – Respirable Aerosol Monitors (RAMs)	Work zone; Perimeter of Work zone	During soil excavation; backfilling; 1 reading every 15 minutes from each monitoring station	PM_{10} dust standard of 0.15 mg/m^3 above background	Work ceases until mitigated; Enhance dust control measures
Photo-ionization detector (PID) 10.6 eV	Work Zone; Perimeter of Work zone	During sampling; well repair; Soil excavation; Backfilling; 1 reading every 15 minutes from each monitoring station	50% PEL of Measured Contaminants	Work ceases until mitigated Evaluate Need for PPE Upgrade.
Explosimeter/ Oxygen Meter	At Work Zone as Applicable	Any activity which would provide a source of ignition; Periodically during such activity.	<10% LEL >10% LEL to <20% LEL >20% LEL[C] $\leq$ 19.0% & $\geq$ 23%	Complete the activity. Complete the activity with continued monitoring. Explosion hazard; evacuate the area; Notify HSO Do not enter. Notify HSO. Ventilate Area

NOTES:

A. The toxicity action levels given above are based on established OSHA PELs for the chemical compounds known and/or anticipated to be present on-site (see Table 2 of this HASP).

B. The HSO is responsible for collecting air monitoring data and notifying site personnel of required response actions (i.e., implementation of engineering controls, upgrade/downgrade to PPE, stop work orders).

SECTION 8.0
Decontamination Procedures

Personnel and equipment decontamination procedures to be employed when exiting contaminated work areas at this project site are detailed in the following subsections.

8.1 PERSONNEL DECONTAMINATION

All personnel will be made aware of any personal habit that may allow contaminants into or onto the body. All personnel will check that regularly worn PPE (e.g., hard hats and liners, eye protection, etc.) is clean and in good condition. Any products for personal consumption or application are prohibited in any work area. Break area(s) will be limited to specific areas where eating, drinking, smoking, etc. and the storage of these materials will be allowed.

No PPE will be removed from a designated work area without proper decontamination or disposal. All personnel leaving the work area will pass through a contamination reduction zone where they will remove their PPE and thoroughly wash/rinse exposed skin with water and biodegradable soap before leaving the project site per the following seven step decontamination SOP.

Step 1: Place equipment and/or samples in area(s) designated in the Equipment Drop-Off Station.

Step 2: Scrape gross contamination from boots and outer gloves, wash using soap in water solution, and rinse with water.

Step 3: Remove tape from around boots and gloves and place in plastic bag or drum provided. Remove overboots and outer gloves and place in plastic bags.

Step 4: Remove respiratory cartridges (if used) and place in plastic bag or drum provided.

Step 5: Remove disposable coveralls and place in plastic bag or drum. Remove boots and store in appropriate location. Remove disposable inner gloves (if worn) and place in plastic bag. Remove hard hat and safety glasses: decontaminate as necessary (wash with sanitizing solution [MSA sanitizing solution or equivalent], rinse with potable water, and allow to dry at the end of each day).

Step 6: Remove respirator (if used) and deposit in plastic bag or drum provided. Avoid touching face with fingers. Respirators will be washed in a sanitizing solution (MSA sanitizer or equivalent), rinsed with potable water, and allowed to air dry at the end of each day.

Step 7: Thoroughly wash/rinse exposed skin with water and biodegradable soap (i.e., trisodium phosphate). Shower and launder personal clothing as soon as possible upon completing daily activities.

Portable decontamination stations (a.k.a., “boot wash” facilities) will be set up in the CRZ adjacent to each hazardous work zone requiring decontamination for personnel. The Boot Wash facilities will be constructed to contain spent wash water, contain a reservoir of clean wash water, a power supply to operate a pump for the wash water, a separate entrance and exit to the decontamination platform with equipment being mobile, allowing easy transport for one hazardous work zone to the next. Personnel will be required to dress down and drum their used PPE in the decontamination area in accordance with the above seven step procedure.

A fixed decontamination trailer equipped with shower facilities will be located in the CRZ near the to the support zone. All personnel will be required to shower before leaving the site.

All materials generated during decontamination will be drummed for disposal in accordance with applicable local, state, and federal regulations.

8.2 EQUIPMENT DECONTAMINATION

Equipment which may have been contaminated during the course of remedial operations will be decontaminated prior to removal from the site. Generally, equipment decontamination will be performed as follows:

1. Conduct gross removal of solids at point of use (i.e., manually scrape off dirt/soil from tires, bucket, etc.).

2. Move to the temporary equipment decontamination pad in the CRZ for decontamination via pressure washing. The self-contained high pressure unit will be capable of heating wash waters to 180ºF and providing a nozzle pressure of 150 psi.

3. Perform complete detergent rinse (if necessary) using an environmentally-safe solvent (MSDSs will be provided for any materials brought on-site and will be maintained in the Contractor's field trailer).

4. Perform a final steam rinse.

The HSO will be responsible for inspecting decontaminated equipment before releasing it from the project site. The HSO will certify in writing that each piece of equipment utilized in the "dirty" area has been properly decontaminated prior to removal from the site.

SECTION 9.0
Site Standard Operating Procedures

Site personnel will observe the following Standard Operating Safety Procedures when working at the site.

1. Ensure that all safety equipment and protective clothing is kept clean and well maintained.
2. Ensure that all prescription eyeglasses in use on this project are safety glasses and are compatible with respirators. No contact lenses will be allowed on site.
3. Ensure that all disposable or reusable gloves worn on the site are approved by the HSO.
4. Change respirator filters during periods of prolonged respirator usage in contaminated areas, upon breakthrough. Respirator filters will always be changed daily.
5. Cover footwear used on site by rubber overboots or booties when entering or working in the Exclusion Zone area or CRZ. Boots or booties will be washed with water and detergents to remove dirt and contaminated sediment before leaving the Exclusion Zone or CRZ.
6. Decontaminate or dispose of all PPE used on site at the end of the work day. The HSO will be responsible for ensuring decontamination of PPE before reuse.
7. Individually assign all respirators and do not interchange them between workers without cleaning and sanitizing. Contractor, Subcontractor, and service personnel unable to pass a fit test as a result of facial hair or facial configuration will not enter or work in an area that requires respiratory protection.
8. Ensure that all project personnel have vision or corrected vision to at least 20/40 in one eye.
9. On-site personnel found to disregard any provision of this HASP may be barred from the project.
10. Do not reuse disposable outerwear such as coveralls, gloves, and boots. Used disposable outerwear will be removed upon leaving the hazardous work zone and will be placed inside disposable containers provided for that purpose. These containers will be stored at the site at the designated staging area and the Contractor will be responsible for proper disposal of these materials at the completion of the project.
11. Immediately replace protective coveralls that become torn or badly soiled.
12. Prohibit eating, drinking, chewing gum or tobacco, and smoking in the Exclusion Zone and CRZ.
13. All personnel will thoroughly cleanse their hands, face, and forearms and other exposed areas prior to eating, smoking, or drinking.
14. Workers who have worked in an Exclusion Zone will shower in the on-site decontamination trailer at the completion of the work day.
15. All personnel will wash their hands, face, and forearms before using toilet facilities.
16. Do not allow alcohol, firearms, or drugs (without prescriptions) on site at any time.
17. All personnel who are on medication should report it to the HSO who will make a determination whether or not the individual will be allowed to work and in what capacity. The HSO may require a letter from the individual's personal physician stating what limitations (if any) the medication may impose on the individual.

SECTION 10.0
Emergency Response & Contingency Plan

The following Emergency Response Plan (ERP) considers and recommends:

- Preventative Measures;
- Personnel training and regular safety meetings conducted to reduce the likelihood of accidents;
- Mitigative measures to limit the scope of any accident; and
- Contingency actions to respond to and remedy the effects of accidents.

10.1 PRE-PLANNING

All work will be coordinated with the owner, IEG, and other involved regulatory personnel. In addition, local police and fire departments, local hospital(s), and local ambulance services will be contacted by the HSO prior to initiation of site operations to inform them of scheduled remedial activities at the site. Arrangements for emergency communication will be made with these organizations prior to initiating on-site operations.

As discussed in Section 5.0 of this HASP, emergency response procedures will be covered as part of each site personnel's training. Training in site-specific emergency procedures will be provided by the site health and safety officer before work begins on-site. This training will include, but is not limited to, the following;

- Emergency chain-of-command;
- Communication methods and signals;
- Location of phones and emergency numbers;
- Use of emergency equipment;
- Evacuation and emergency procedures;
- Off-site support;
- Site-specific hazards;
- Decontamination procedures;
- Standard operating procedures; and
- Location and use of first aid equipment.

10.2 EMERGENCY CHAIN-OF-COMMAND

Personnel will immediately notify the HSO in the event of an emergency using available communications. The HSO will make a rapid assessment of the situation and take appropriate action which (depending upon emergency circumstances) can include notifying the Engineer of the situation; initiating engineering controls (i.e., dust suppression, ventilation, etc.); ordering the suspension of work; ordering evacuation of the work zone; implementing emergency altering and response procedures; requesting emergency medical treatment; and/or administering first aid.

10.3 COMMUNICATION METHODS AND SIGNALS

For emergency situations when two-way radio communication is not available or practical, oral, hand, and semaphore safety signals have been established to protect project personnel. These signals will be made available to personnel for all phases of operation before going on-site. This will ensure quick communication during adverse or emergency situations.

Examples of established signals and their meanings are provided below.

Signal	Indicates
Hand gripping throat	Out of air, can't breath
Wave hands over head from side-to-side	Attention: stand-by for next signal
Swing hand from direction of person receiving signal to directly overhead and through in a circle	Come here
Pointed finger on extended arm	Look in that direction
Grip partner's wrist or both hands around wrist	Leave the area immediately
Hands on top of head	Need assistance
Thumbs up	OK, I'm alright, I understand
Thumbs down	No, negative

Examples of audio signals include:

Signal	Indicates
Short blast of airhorn	Caution or look here
Four (4) blasts of airhorn	Leave the area

Each field team member will be assigned a buddy. Field personnel will watch for hazards or problems his/her buddy might encounter. Buddies will pre-arrange hand signals or other means of emergency signals for communication when respiratory protection or distance makes communication difficult. Communication between buddies must be maintained at all times. Visual contact must be maintained between buddies. Further, buddies must remain in close proximity to each other in order to assist in case of emergencies.

10.4 EVACUATION

Emergency escape routes will be designated by the HSO for use in situations where rapid egress from the Exclusion Zone is required. The locations of these routes will be posted in prominent location(s) on-site (i.e., personnel change trailer, office trailer, break trailer, etc.) and will be reviewed with site personnel during daily tool-box and weekly safety meetings.

An emergency evacuation alarm (i.e., air horn) will be kept on-site at all times. A series of regularly spaced, repeated blasts (four blasts) will be used to signify that all personnel should evacuate the work area. After exiting the work area, personnel will meet at an upwind location designated by the HSO. The emergency alarm will be sounded in the event of any serious problem or emergency on-site which requires the assistance of site personnel or the evacuation of work zone personnel.

In all situations when an on-site emergency results in evacuation of the Exclusion Zone, personnel will not be permitted to reenter until:

- The conditions resulting in the emergency have been corrected;
- The hazards have been reassessed;
- This HASP has been reviewed; and
- Site personnel have been briefed on any changes in the HASP.

10.5 EMERGENCY SERVICES/EMERGENCY VEHICLE ACCESS

Emergency telephone numbers (see Table 1) will be posted at each project site telephone. Directions to the local hospital (see Figure 1) also will be posted at the site.

In the event that emergency services vehicles (police, fire, ambulance) need access to a location which is blocked by the working crew operations, those operations (equipment, materials, etc.) will be immediately moved to allow those vehicles access.

Emergency crews will be briefed as to site conditions and hazards by the HSO. All vehicles and personnel will be decontaminated prior to leaving the site.

10.6 WEATHER-RELATED HAZARD RESPONSE

Threats to site personnel can arise from natural causes (i.e., lightening, high winds, etc.). In the event that severe weather is imminent, the HSO will notify field team members. As the storm approaches, all work will cease, loose objects will be secured, and site personnel will take shelter at pre-arranged locations. After the severe weather event has passed, the HSO will inspect the work area for safety hazards prior to resuming work.

10.7 SPILL CONTROL & CONTINGENCY PLAN

A standard operating procedure for responding to spills associated with planned contract operations is included in Appendix B.

10.8 PERSONAL INJURIES

In the event of personal injuries the following procedures will be enacted.

1. ***Initial alarm and first aid.*** Upon observation of an injury, site employees will quickly get the attention of other nearby workers; immediately act to protect the injured person from a life-threatening situation; render appropriate first aid; and warn unsuspecting persons of the potential hazard.

2. ***Notify the HSO and the Project Engineer.*** Utilizing available personal radio communications or other rapid communication methods, the HSO and the Project Engineer will be notified of the situation, the identity of the injured person, the type of injury, and the project site location.

3. ***Ambulance and hospital services***. The HSO will immediately assess the situation and, if necessary, notify the designated off-site hospital of the emergency situation.

4. ***Follow-up***. The HSO will determine why the injury occurred, and will take appropriate steps to prevent a similar recurrence. Events associated with the injury will be recorded in the safety officer's logbook.

An Incident Report Form must be completed by the HSO and submitted to the Project Manager within 24 hours of the injury.

10.8.1 Personnel Injury in the Exclusion Zone

Upon notification of any injury in the Exclusion Zone, the designated emergency signal will be sounded. All site personnel will assemble at a pre-arranged location. A rescue team made up of the HSO and other personnel as needed who have received property training (see Section 4.0) will enter the Exclusion Zone (if required) to remove the injured person to the boundary of the Exclusion Zone. The HSO then will evaluate the nature of the injury. The affected person will be decontaminated as necessary to the extent possible prior to movement to the Support Zone. Appropriate first aid will be initiated (see Section 10.12), and the ambulance and designated medical facility (Table 1) will be contacted if required. No persons will

reenter the Exclusion Zone until the cause of the injury or symptoms of the illness have been determined.

10.8.2 Personnel Injury in the Support Zone

Upon notification of an injury in the Support Zone, the HSO will assess the nature of the injury. If the cause of the injury or loss of the injured person does not affect the performance of site personnel, operations may continue. The appropriate first aid will be initiated (see Section 10.12) and necessary follow-up as stated in above. If the injury increases the risk to others, the designated emergency signal will be sounded and all site personnel will move a prearranged location for further instructions. Activities on site will stop until the added risk is removed or minimized.

10.9 FIRE/EXPLOSION

The following contingency plan will be implemented in the event of a fire at the project site.

1. ***Initial Alarm.*** Upon observation of any on-site fire, personnel must immediately notify the HSO (or his designated on-site representative) and the Project Engineer. No attempt will be made to extinguish the fire prior to sounding the alarm.

2. ***Control and/or extinguish small fires which can be suppressed promptly with available on-site equipment.*** Without risking personal injury, an attempt will be made to control or extinguish small fire(s) utilizing ABC-type fire extinguishers. Water will not be used except on wood or paper fires.

3. ***Notify local fire company.*** The HSO and the Project Engineer (or their designated on-site representatives) will immediately assess the situation and, if deemed necessary, notify the local Fire Department of the location and type of fire or explosion. If required, the HSO and/or the Project Engineer (or their designated on-site representatives) will immediately order the site evacuated if a fire occurs which cannot be controlled with a portable fire extinguisher.

4. ***Follow-up.*** The HSO will determine why the fire or explosion occurred, and will take appropriate steps to prevent a similar recurrence. Events associated with the fire or explosion will be recorded in the safety officer's logbook.

An Incident Report must be completed by the HSO and submitted to Corporate Management and the Project Engineer within 24 hours of the fire/explosion.

10.10 PERSONAL PROTECTIVE EQUIPMENT FAILURE

If any site worker experiences a failure or alteration of protective equipment that affects the protection factor, that person and his/her buddy immediately will leave the Exclusion Zone and notify the HSO. Reentry will not be permitted until the equipment has been replaced or repaired, and the affected areas of the person's body have been decontaminated if applicable.

10.11 OTHER EQUIPMENT FAILURE

If any on-site equipment other than PPE (see Section 10.10 above) fails to operate properly, the HSO will be notified. The HSO then will determine the effect of this failure on continuing operations on site. If the failure affects the safety of personnel or prevents the completion of the Work Plan tasks, all personnel will leave the Exclusion Zone until the situation is evaluated and all appropriate actions taken.

10.12 EMERGENCY EQUIPMENT & ON-SITE FIRST AID

Emergency and first aid equipment to be maintained on-site includes:

- The active work area will be provided with approved, portable emergency eye wash and shower units in accordance with ANSI Standard Z358.1 and minimum rating 2A-10 B:C type

dry chemical fire extinguishers.

- At least one “industrial” first aid kit and stretcher will be provided and maintained fully stocked at an easily accessible, uncontaminated location to be determined on-site by the HSO. Additional first aid kits will be provided in the event active work areas are so isolated or separated as to make use of the one first aid station impractical.

First aid/CPR kit locations will be specifically marked by the HSO and provided with adequate water and other supplies necessary to cleanse and decontaminate burns, wounds, or lesions. First aid stations will be supplied with a buffer solution for testing acid and caustic burns. NOTE: CPR should only be started if the worker is trained in CPR and the victim’s heart has stopped beating.

- At least two (2) First Aid Technicians certified by the American Red Cross or other approved agency will be on-site at all times.

- 2A-10 B:C type dry chemical fire extinguishers will be provided at all site locations where flammable materials present a fire risk.

- A minimum of two self-contained breathing apparatus (SCBAs) or lower level of protection as site conditions allow will be maintained in contaminated work areas.

Agencies and medical facilities to be contacted in the event of an on-site emergency are identified in Table 1 of this HASP. The Emergency Response Notification Table also includes the route to the nearest hospital. The table (and corresponding map) will be posted in a prominent location(s) on-site.

If a site worker becomes injured or ill, Red Cross first aid procedures and the blood borne pathogens program provided in this HASP will be followed. First aid or other appropriate initial actions will be provided by the trained first aid responders closest to the incident. NOTE: When protective clothing has been grossly contaminated during an accident/injury, contaminants may be transferred to treatment personnel or the wearer and cause injuries. Unless severe medical problems have occurred simultaneously with splashes, protective clothing should be washed off as rapidly as possible and removed. If the worker is ambulatory or can be moved, he/she will be taken to the personnel decontamination station where decontamination procedures, additional first aid, or preparation for transport to the hospital will be accomplished. In the event that the victim could not be decontaminated, the rescue service provider must be notified of that situation.

If the injury to the worker is chemical in nature, the following first aid procedures are to be instituted:

- ***Eye Exposure:*** If contaminated solids or liquids get into the eyes, wash eyes immediately at the emergency eyewash station using large amounts of water and lifting the lower and upper lids occasionally. Wash for at least 15 minutes. Obtain medical attention.

- ***Skin Exposure:*** If contaminated solids or liquids get on the skin, promptly wash the contaminated skin using soap and water. Obtain medical attention immediately when exposed to concentrated solids or liquids.

- ***Respiratory Exposure:*** Move victim to fresh air at once and begin CPR. Phone 911 to obtain immediate medical attention.

- ***Ingestion Exposure:*** For swallowed contaminants, identify the item swallowed. Follow appropriate procedures and obtain medical attention as soon as possible.

NOTE: Any person transported to the hospital for treatment related to an exposure injury will take with them the appropriate information (see Table 2) about the chemical(s) to which he/she has been exposed. MSDSs for chemicals known or suspected to exist on-site will be maintained in the Contractor’s field office by the HSO.

SECTION 11.0
Community Protection Plan

The following Community Protection Plan (CPP) has been developed to outline those steps to be implemented to protect the health and safety of surrounding human population and the environment.

11.1 AIR MONITORING

As part of its Air Monitoring Program (see Section 7.0) and if necessary, IEG will use real-time monitoring and documentation sampling to determine if off-site emissions, as a result of site work, poses a threat to the surrounding community. All readings will be recorded and be available for State (DEC & DOH) personnel to review. The NYSDOH's Generic Community Air Monitoring Plan is included as Appendix A.

11.2 VAPOR EMISSION RESPONSE

If the ambient air concentration of organic vapors exceeds 5 ppm above background in the work area activities will be halted and monitoring continued. If the organic vapor level decreases below 5 ppm above background, work activities may resume but more frequent intervals of monitoring, as directed by the HSO, will be conducted.

SECTION 12.0
Logs, Reports, & Record Keeping

The following health and safety reports will be prepared and submitted as needed and as indicated below.

Daily Safety Report
Employee Meeting Record
Exclusion Zone Log
Site Log
Confined Space Entry Permit
Air Monitoring Report
Accident/Incident Report
Health & Safety Inspection Report
Spill Report
Equipment Decontamination Verification Form

APPENDIX A

New York State Department of Health
Generic Community Air Monitoring Plan

A 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 herein require increased monitoring, corrective actions to abate emissions, and/or work shutdown. Additionally, the CAMP helps to confirm that work activities did not spread contamination off-site through the air.

The generic CAMP presented below will be sufficient to cover many, if not most, sites. Specific requirements should be reviewed for each situation in consultation with NYSDOH to ensure proper applicability. In some cases, a separate site-specific CAMP or supplement may be required. Depending upon the nature of contamination, chemical- specific monitoring with appropriately-sensitive methods may be required. Depending upon the proximity of potentially exposed individuals, more stringent monitoring or response levels than those presented below may be required. Special requirements will be necessary for work within 20 feet of potentially exposed individuals or structures and for indoor work with co-located residences or facilities. These requirements should be determined in consultation with NYSDOH.

Reliance on the CAMP should not preclude simple, common-sense measures to keep VOCs, dust, and odors at a minimum around the work areas.

Community Air Monitoring Plan

Depending upon the nature of known or potential contaminants at each site, real-time air monitoring for volatile organic compounds (VOCs) and/or particulate levels at the perimeter of the exclusion zone or work area will be necessary. Most sites will involve VOC and particulate monitoring; sites known to be contaminated with heavy metals alone may only require particulate monitoring. If radiological contamination is a concern, additional monitoring requirements may be necessary per consultation with appropriate NYSDEC/NYSDOH staff.

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

Periodic monitoring for VOCs 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 might reasonably consist of taking a reading upon arrival at a sample location, monitoring while opening a well cap or overturning soil, monitoring during well baling/purging, and taking a reading prior to leaving a sample location. In some instances, depending upon the proximity of potentially exposed individuals, continuous monitoring may be required during sampling activities. Examples of such situations include groundwater sampling at wells on the curb of a busy urban street, in the midst of a public park, or adjacent to a school or residence.

VOC Monitoring, Response Levels, and Actions

Volatile organic compounds (VOCs) must 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 should be measured at the start of each workday and periodically thereafter to establish background conditions. The monitoring work should be performed using equipment appropriate to measure the types of contaminants known or suspected to be present. The equipment should be calibrated at least daily for the contaminant(s) of concern or for an appropriate surrogate. The equipment should 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 the 15-minute average, work activities must be temporarily halted and monitoring continued. If the total organic vapor level readily decreases (per instantaneous readings) below 5 ppm over background, work activities can 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 5 ppm over background but less than 25 ppm, work activities must be halted, the source of vapors identified, corrective actions taken to abate emissions, and monitoring continued. After these steps, work activities can 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 the 15-minute average.

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

All 15-minute readings must 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 should be monitored continuously at the upwind and downwind perimeters of the exclusion zone at temporary particulate monitoring stations. The particulate monitoring should 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 must be equipped with an audible alarm to indicate exceedance of the action level. In addition, fugitive dust migration should be visually assessed during all work activities.

- If the downwind PM-10 particulate level is 100 micrograms per cubic meter (mcg/m^3) greater than background (upwind perimeter) for the 15-minute period or if airborne dust is observed leaving the work area, then dust suppression techniques must be employed. Work may continue with dust suppression techniques provided that downwind PM-10 particulate levels do not exceed 150 mcg/m^3 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 150 mcg/m^3 above the upwind level, work must be stopped and a 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/m^3 of the upwind level and in preventing visible dust migration.

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

APPENDIX B

STANDARD OPERATING PROCEDURE
SPILL CONTROL AND CONTINGENCY PLAN

MATERIAL	Contaminated soils, equipment leakage (fuel, hydraulic fluids)
REGULATIONS	Report spills, particularly petroleum, under the following circumstances: ➢ Spill on impacted land (dirt or gravel areas or parking lot) ➢ Spill on paved surface (asphalt or concrete) if one or more of these conditions are not met: less than 5 gallons; contained and under control; will not reach State's water or land; cleaned up within 2 hours
EXPOSURE	Eyes, skin and inhalation are principle routes of exposure, and can cause irritation of the eyes and respiratory tract
PPE	➢ Gloves, safety shoes (oil resistant), safety glasses, hard hats ➢ Avoid contact with skin, eyes and clothing
CONTROL & CLEANUP	➢ Eliminate source of spill (closing valves, etc.) ➢ Do not wash or flush into surface water or sanitary drain ➢ Immediately contain and control spill (within 2 hours) ➢ Soak up liquid spills with inert absorbents (sand, silica gel) ➢ Scoop up soiled areas into drum for disposal ➢ On water, skim and drum material for off-site disposal ➢ Clean soils that are contaminated may require laboratory analysis: VOAs (Method 8260+TICs) and SVOAs (Method 8270+TICs)
PREVENTION & CONTROL	➢ Service and check equipment for leaks regularly ➢ Keep equipment (with potential to leak) on paved areas ➢ Keep spill cleanup/absorbent materials at hand at all times
NOTIFICATION	Coordinate NYSDEC notification with others to avoid duplication
CONTACT	Dharma Iyer; cell: (716)445-9684; office: (716)662-4157

DECISION TREE

Petroleum/Solvent Spills

APPENDIX C

CITIZEN PARTICIPATION PLAN

New York State Department of Environmental Conservation

Brownfield Cleanup Program

Citizen Participation Plan

for

73-79 W. HURON ST. SITE

(Site #C915282)

City of Buffalo
Erie County, New York

November 2014

Contents

* * * * *

Note: The information presented in this Citizen Participation Plan was current as of the date of its approval by the New York State Department of Environmental Conservation. Portions of this Citizen Participation Plan may be revised during the site=s investigation and cleanup process.

Applicant: **Hurondel I, Inc.**
Site Name: **73-79 W. Huron St. (Site)**
Site Address: **73-79 W. Huron St., Buffalo, NY**
Site County: **Erie County**
Site Number: **C915282**

1. What is New York's Brownfield Cleanup Program?

New York's Brownfield Cleanup Program (BCP) works with private developers to encourage the voluntary cleanup of contaminated properties known as "brownfields" so that they can be reused and developed. These uses include recreation, housing, and business.

A *brownfield* is any real property that is difficult to reuse or redevelop because of the presence or potential presence of contamination. A brownfield typically is a former industrial or commercial property where operations may have resulted in environmental contamination. A brownfield can pose environmental, legal, and financial burdens on a community. If a brownfield is not addressed, it can reduce property values in the area and affect economic development of nearby properties.

The BCP is administered by the New York State Department of Environmental Conservation (NYSDEC) which oversees Applicants that conduct brownfield site investigation and cleanup activities. An Applicant is a person who has requested to participate in the BCP and has been accepted by NYSDEC. The BCP contains investigation and cleanup requirements, ensuring that cleanups protect public health and the environment. When NYSDEC certifies that these requirements have been met, the property can be reused or redeveloped for the intended use.

For more information about the BCP, go online at: http://www.dec.ny.gov/chemical/8450.html .

2. Citizen Participation Activities

Why NYSDEC Involves the Public and Why It Is Important

NYSDEC involves the public to improve the process of investigating and cleaning up contaminated sites, and to enable citizens to participate more fully in decisions that affect their health, environment, and social well being. NYSDEC provides opportunities for citizen involvement and encourages early two-way communication with citizens before decision makers form or adopt final positions.

Involving citizens affected and interest in site investigation and cleanup programs is important for many reasons. These include:

- Promoting the development of timely, effective site investigation and cleanup programs that protect public health and the environment

- Improving public access to, and understanding of, issues and information related to a particular site and that site's investigation and cleanup process

- Providing citizens with early and continuing opportunities to participate in NYSDEC's site investigation and cleanup process

- Ensuring that NYSDEC makes site investigation and cleanup decisions that benefit from input that reflects the interests and perspectives found within the affected community

- Encouraging dialogue to promote the exchange of information among the affected/interested public, State agencies, and other interested parties that strengthens trust among the parties, increases understanding of site and community issues and concerns, and improves decision making.

This Citizen Participation (CP) Plan provides information about how NYSDEC will inform and involve the public during the investigation and cleanup of the site identified above. The public information and involvement program will be carried out with assistance, as appropriate, from the Applicant.

Project Contacts

Appendix A identifies NYSDEC project contact(s) to whom the public should address questions or request information about the site's investigation and cleanup program. The public's suggestions about this CP Plan and the CP program for the site are always welcome. Interested people are encouraged to share their ideas and suggestions with the project contacts at any time.

Locations of Reports and Information

The locations of the reports and information related to the site's investigation and cleanup program also are identified in Appendix A. These locations provide convenient access to important project documents for public review and comment. Some documents may be placed on the NYSDEC web site. If this occurs, NYSDEC will inform the public in fact sheets distributed about the site and by other means, as appropriate.

Site Contact List

Appendix B contains the site contact list. This list has been developed to keep the community informed about, and involved in, the site's investigation and cleanup process. The site contact list will be used periodically to distribute fact sheets that provide updates about the status of the project. These will include notifications of upcoming activities at the site (such as fieldwork), as well as availability of project documents and announcements about public comment periods. The site contact list includes, at a minimum:

- chief executive officer and planning board chairperson of each county, city, town and village in which the site is located;
- residents, owners, and occupants of the site and properties adjacent to the site;
- the public water supplier which services the area in which the site is located;
- any person who has requested to be placed on the site contact list;
- the administrator of any school or day care facility located on or near the site for purposes of posting and/or dissemination of information at the facility;
- location(s) of reports and information.

The site contact list will be reviewed periodically and updated as appropriate. Individuals and organizations will be added to the site contact list upon request. Such requests should be submitted to the NYSDEC project contact(s) identified in Appendix A. Other additions to the site contact list may be made at the discretion of the NYSDEC project manager, in consultation with other NYSDEC staff as appropriate.

CP Activities

The table at the end of this section identifies the CP activities, at a minimum, that have been and will be conducted during the site=s investigation and cleanup program. The flowchart in Appendix D shows how these CP activities integrate with the site investigation and cleanup process. The public is informed about these CP activities through fact sheets and notices distributed at significant points during the program. Elements of the investigation and cleanup process that match up with the CP activities are explained briefly in Section 5.

- **Notices and fact sheets** help the interested and affected public to understand contamination issues related to a site, and the nature and progress of efforts to investigate and clean up a site.

- **Public forums, comment periods and contact with project managers** provide opportunities for the public to contribute information, opinions and perspectives that have potential to influence decisions about a site=s investigation and cleanup.

The public is encouraged to contact project staff at any time during the site=s investigation and cleanup process with questions, comments, or requests for information.
This CP Plan may be revised due to changes in major issues of public concern identified in Section 3 or in the nature and scope of investigation and cleanup activities. Modifications may include additions to the site contact list and changes in planned citizen participation activities.

Technical Assistance Grant

NYSDEC must determine if the site poses a significant threat to public health or the environment. This determination generally is made using information developed during the investigation of the site, as described in Section 5.

If the site is determined to be a significant threat, a qualifying community group may apply for a Technical Assistance Grant (TAG). The purpose of a TAG is to provide funds to the qualifying group to obtain independent technical assistance. This assistance helps the TAG recipient to interpret and understand existing environmental information about the nature and extent of contamination related to the site and the development/implementation of a remedy.

An eligible community group must certify that its membership represents the interests of the community affected by the site, and that its members' health, economic well-being or enjoyment of the environment may be affected by a release or threatened release of contamination at the site.

For more information about TAGs, go online at http://www.dec.ny.gov/regulations/2590.html

Note: The table identifying the citizen participation activities related to the site's investigation and cleanup program follows on the next page:

Citizen Participation Requirements (Activities)	Timing of CP Activity(ies)
Application Process:	
• Prepare site contact list • Establish document repositories	At time of preparation of application to participate in the BCP.
• Publish notice in Environmental Notice Bulletin (ENB) announcing receipt of application and 30-day public comment period • Publish above ENB content in local newspaper • Mail above ENB content to site contact list • Conduct 30-day public comment period	When NYSDEC determines that BCP application is complete. The 30-day public comment period begins on date of publication of notice in ENB. End date of public comment period is as stated in ENB notice. Therefore, ENB notice, newspaper notice, and notice to the site contact list should be provided to the public at the same time.
After Execution of Brownfield Site Cleanup Agreement:	
• Prepare Citizen Participation (CP) Plan	Before start of Remedial Investigation
Before NYSDEC Approves Remedial Investigation (RI) Work Plan:	
• Distribute fact sheet to site contact list about proposed RI activities and announcing 30-day public comment period about draft RI Work Plan • Conduct 30-day public comment period	Before NYSDEC approves RI Work Plan. If RI Work Plan is submitted with application, public comment periods will be combined and public notice will include fact sheet. Thirty-day public comment period begins/ends as per dates identified in fact sheet.
After Applicant Completes Remedial Investigation:	
• Distribute fact sheet to site contact list that describes RI results	Before NYSDEC approves RI Report
Before NYSDEC Approves Remedial Work Plan (RWP):	
• Distribute fact sheet to site contact list about proposed RWP and announcing 45-day public comment period • Public meeting by NYSDEC about proposed RWP (if requested by affected community or at discretion of NYSDEC project manager) • Conduct 45-day public comment period	Before NYSDEC approves RWP. Forty-five day public comment period begins/ends as per dates identified in fact sheet. Public meeting would be held within the 45-day public comment period.
Before Applicant Starts Cleanup Action:	
• Distribute fact sheet to site contact list that describes upcoming cleanup action	Before the start of cleanup action.
After Applicant Completes Cleanup Action:	
• Distribute fact sheet to site contact list that announces that cleanup action has been completed and that summarizes the Final Engineering Report • Distribute fact sheet to site contact list announcing issuance of Certificate of Completion (COC)	At the time NYSDEC approves Final Engineering Report. These two fact sheets are combined if possible if there is not a delay in issuing the COC.

3. Major Issues of Public Concern

This section of the CP Plan identifies major issues of public concern that relate to the site. Additional major issues of public concern may be identified during the course of the site's investigation and cleanup process.

Soil contamination in this area is associated with historical use of underground petroleum storage tanks. Previous investigations have revealed subsurface contamination with volatile organics. The presence of the volatile organic compounds in the subsurface soil does not present a significant health risk at this time to surrounding properties. These contaminants have the potential to migrate through the groundwater which is being investigated as part of this BCP project. There is a potential for worker exposure through fugitive dust emissions during investigation and remediation activities. Such exposure will be alleviated through dust control measures and a community air monitoring plan.

4. Site Information

Appendix C contains a map identifying the location of the site.

Site Description

The site consists of a rectangular shaped, 0.216 acre parking lot (77-79 W Huron St.) and a rectangular shaped, six-story parking garage (73-75 W. Huron St.) as shown on the aerial photo on Figure 1. The asphalt-paved parking lot is currently being leased by auto drivers for parking spaces. The parking garage is a vacant brick structure with a basement and a 0.34-acre footprint.

The garage was originally constructed around 1892-94 as a three bay Romanesque Style commercial building with a flat roof and used by C. W. Miller Livery. It uses a steel frame as structural support, and supporting truss to suspend the remaining floors. It was altered in the 1920s with ramps heavily modified for use of the building as a motor vehicle garage. Hurondel I, Inc. proposes to modify the basement and first floors for interior vehicular parking and the upper floors for mixed commercial/residential use. It has a freight elevator in the northeast corner (see basement layout on Figure 3). The basement has a working sump pump continuously pumping out water from an underground spring.

To the north of this Site is another asphalt parking lot which extends both west and east of 77-79 W. Huron. To the east between the vacant parking garage and N. Franklin St. is the multi-story Curtiss building. To the south is W. Huron Street and across this road is an office building at 80 W Huron St. To the west are five (5) commercial buildings. These include, from north to south, an Event Center (#199 Delaware Ave), an office building (#193), King's Court Restaurant (#189), Delaware Copy and Repo Center (#187), and Dave's Direct Performance Auto Repair shop (#181). The auto repair shop is the site of the former Sunoco Gas Station.

History of Site Use, Investigation, and Cleanup

Over the years, several people entering the vacant parking garage reported the presence of a strong petroleum-like odor. In 2007 VOCs were detected in the air inside the south section of the basement. Between 2004 and 2008, this Site and the adjacent site to the west has been the subject of investigations and remedial actions including air-sparging (AS), soil vapor extraction (SVE), and finally oxygen injection and bioaugmentation that is currently in operation at the 181 Delaware Ave site. A 2011 soil investigation indicated two distinct

soil contamination zones, one in the southern portion of the parking lot, and the other in the center. Hurondel will further investigate the 73-79 W Huron parcels and undertake appropriate remediation under this BCP.

5. Investigation and Cleanup Process

Application

The Applicant has applied for and been accepted into New York's Brownfield Cleanup Program as a volunteer. This means that the Applicant was not responsible for the disposal or discharge of the contaminants or whose ownership or operation of the site took place after the discharge or disposal of contaminants. The Volunteer must fully characterize the nature and extent of contamination onsite, and must conduct a Aqualitative exposure assessment,@ a process that characterizes the actual or potential exposures of people, fish and wildlife to contaminants on the site and to contamination that has migrated from the site.

The Applicant in its Application proposes that the site will be used for restricted commercial and/or industrial purposes.

To achieve this goal, the Applicant will conduct investigation and cleanup activities at the site with oversight provided by NYSDEC. The Brownfield Cleanup Agreement executed by NYSDEC and the Applicant sets forth the responsibilities of each party in conducting these activities at the site.

Investigation

The Applicant will conduct an investigation of the site officially called a "site investigation" (SI). This investigation will be performed with NYSDEC oversight. The Applicant must develop a site investigation work plan, which is subject to public comment.

The site investigation has several goals:

1) Determine the nature and extent of on-site contamination, supplementing the results of previous investigations;
2) Establish the groundwater table and obtain other hydrogeological data such as hydraulic conductivity and groundwater flow/velocity;
3) Qualitatively assess exposure pathways and potential risks to human health and the environment; and
4) Evaluate and develop a remedy for soil and groundwater contamination.

When the investigation is complete, the Applicant will prepare and submit a report that summarizes the results. This report also will recommend whether cleanup action is needed to address site-related contamination. The investigation report is subject to review and approval by NYSDEC.

NYSDEC will use the information in the investigation report to determine if the site poses a significant threat to public health or the environment. If the site is a Asignificant threat,@ it must be cleaned up using a remedy selected by NYSDEC from an analysis of alternatives prepared by the Applicant and approved by NYSDEC. If the site does not pose a significant threat, the Applicant may select the remedy from the approved analysis of alternatives.

Remedy Selection

When the investigation of the site has been determined to be complete, the project likely would proceed in one of two directions:

1. The Applicant may recommend in its investigation report that no action is necessary at the site. In this case, NYSDEC would make the investigation report available for public comment for 45 days. NYSDEC then would complete its review, make any necessary revisions, and, if appropriate, approve the investigation report. NYSDEC would then issue a ACertificate of Completion@ (described below) to the Applicant.

or

2. The Applicant may recommend in its investigation report that action needs to be taken to address site contamination. After NYSDEC approves the investigation report, the Applicant may then develop a cleanup plan, officially called a ARemedial Work Plan@. The Remedial Work Plan describes the Applicant=s proposed remedy for addressing contamination related to the site.

When the Applicant submits a proposed Remedial Work Plan for approval, NYSDEC would announce the availability of the proposed plan for public review during a 45-day public comment period.

Cleanup Action

NYSDEC will consider public comments, and revise the draft cleanup plan if necessary, before approving the proposed remedy. The New York State Department of Health (NYSDOH) must concur with the proposed remedy. After approval, the proposed remedy becomes the selected remedy.

The Applicant may then design and perform the cleanup action to address the site contamination. NYSDEC and NYSDOH oversee the activities. When the Applicant completes cleanup activities, it will prepare a final engineering report that certifies that cleanup requirements have been achieved or will be achieved within a specific time frame. NYSDEC will review the report to be certain that the cleanup is protective of public health and the environment for the intended use of the site.

Certificate of Completion

When NYSDEC is satisfied that cleanup requirements have been achieved or will be achieved for the site, it will approve the final engineering report. NYSDEC then will issue a Certificate of

Completion (COC) to the Applicant. The COC states that cleanup goals have been achieved, and relieves the Applicant from future liability for site-related contamination, subject to certain conditions. The Applicant would be eligible to redevelop the site after it receives a COC.

Site Management

Site management is the last phase of the site cleanup program. This phase begins when the COC is issued. Site management may be conducted by the Applicant under NYSDEC oversight, if contamination will remain in place. Site management incorporates any institutional and engineering controls required to ensure that the remedy implemented for the site remains protective of public health and the environment. All significant activities are detailed in a Site Management Plan.

An institutional control is a non-physical restriction on use of the site, such as a deed restriction that would prevent or restrict certain uses of the property. An institutional control may be used when the cleanup action leaves some contamination that makes the site suitable for some, but not all uses.

An engineering control is a physical barrier or method to manage contamination. Examples include: caps, covers, barriers, fences, and treatment of water supplies.

Site management also may include the operation and maintenance of a component of the remedy, such as a system that is pumping and treating groundwater. Site management continues until NYSDEC determines that it is no longer needed.

Appendix A
Project Contacts and Locations of Reports and Information

Project Contacts

For information about the site's investigation and cleanup program, the public may contact any of the following project staff:

New York State Department of Environmental Conservation (NYSDEC):

Mr. David Locey
Project Manager
NYSDEC Region 9
Division of Environmental Remediation
270 Michigan Avenue
Buffalo, NY 14203-2399
(716)851-7220
Email: jswalia@gw.dec.state.ny.us

Ms. Kristen Davidson
Citizen Participation Specialist
NYSDEC Region 9
Division of Public Affairs & Education
270 Michigan Avenue
Buffalo, NY 14203-2399
(716)851-7220
Email: kxdavids@gw.dec.state.ny.us

New York State Department of Health (NYSDOH):

Mr. Matt Forcucci, Public Health Specialist
NYS Dept. of Health
582 Delaware Avenue
Buffalo, NY 14202
(716)847-4501
Email: beei@health.state.ny.us

Steven Karpinski
NYSDOH - Bureau of Env. Exp. Inv.
Empire State Plaza - Corning Tower Rm 1787
Albany, NY 12237
518-402-7850
BEEI@health.ny.gov

Locations of Reports and Information

The facilities identified below are being used to provide the public with convenient access to important project documents:

NYSDEC Region 9 Offices
Division of Environmental Remediation
270 Michigan Avenue
Buffalo, NY 14203-2399
(716)823-0630
(Mon-Fri, 8:30 AM to 4.45 PM)
(Please call for appointment)

County Library – Central Branch
1 Lafayette Square
Buffalo, NY 14203
(716)858-8900
Mon – Sat: 8:30 – 6:00 pm; Thu: till 8:00 pm
Sun: 12:00 pm – 5:00 pm

(check www.buffalolib.org for hours/holidays)

Appendix B - Site Contact List

1. Federal representative

U. S. Representative Brian Higgins
Erie County Office – Larking at Exchange
726 Exchange Street, Suite 601
Buffalo, NY 14210
Ph: (716)852-3501; Fax: (716)892-3929

2. New York State Senator and Assembly member

Senator Marc Panepinto
Buffalo Office
65 Court Street, Room 213
Buffalo, NY 14202
Ph: (716)854-8705; Fax: (716)854-3051

Assembly member Crystal D. Peoples-Stokes
Buffalo District Office
792 E. Delavan Avenue
Buffalo, NY 14215
(716)897-9714

3. City of Buffalo

Honorable Byron W. Brown
Mayor – City of Buffalo
201 City Hall
Buffalo, NY 14202
(716)852-3300

Honorable Darius G. Pridgen
President, Common Council
City of Buffalo, 1315 City Hall
Buffalo, NY 14202
(716)851-5151

Planning Board
James K. Morrell - Chairman
901 City Hall
Buffalo, NY 14202
(716)851-5082

City of Buffalo Fire Department
Commissioner Garell W. Whitfield, Jr.
195 Court Street
Buffalo, NY 14202
(716)851-5333

4. Erie County

Honorable Mark Poloncarz
Rath Building – 16th Floor
95 Franklin Street
Buffalo, NY 14202
(716)858-8484

Office of the Administrator
Janet Penska
65 Niagara Square
Buffalo, NY 14202
(716)851-5922

Erie County Clerk
Christopher L. Jacobs
92 Franklin Street
Buffalo, NY 14202
(716)858-8785

Department of Health
Commissioner Gale R. Burstein, MD, MPH
95 Franklin Street, 9th Floor
Buffalo, NY 14202
(716)858-7690

Department of Environment & Planning
Commissioner Maria R. Whyte
95 Franklin Street, 10th Floor
Buffalo, NY 14202
(716)858-8390

Department of Emergency Services
Commissioner Daniel J. Neaverth, Jr.
45 Elm Street
Buffalo, NY 14202
(716)858-6578

5. Local News Media

Buffalo News
1 News Plaza
Buffalo, NY 14240
(716)849-4444

ATTN: Environment News Desk
WKBW News Channel 7
7 Broadcast Plaza
Buffalo, NY 14202
(716)845-6100

ATTN: Environment News Desk
WGRZ TV – CH. 2
259 Delaware Avenue
Buffalo, NY 14202
(716)849-2222

ATTN: Environment News Desk
WIVB – CH. 4
2077 Elmwood Avenue
Buffalo, NY 14207
(716)874-4410

6. Public Water Supply/Sewer

Buffalo Water Authority
281 Exchange Street
Buffalo, NY 14204
(716)847-1065

Buffalo Sewer Authority
1038 City Hall
Buffalo, NY 14213
(716)851-4664

7. Persons requested to be on List (to be updated)
Please contact the NYSDEC or NYSDOH if you wish to be on the mailing list

8. School/Day care facilities

None

9. Local Agencies

Community Outreach File
N.Y.S.D.E.C., Region 9
270 Michigan Avenue
Buffalo, NY 14203

Erie Co. Emergency Services
95 Franklin Street
Buffalo, NY 14202

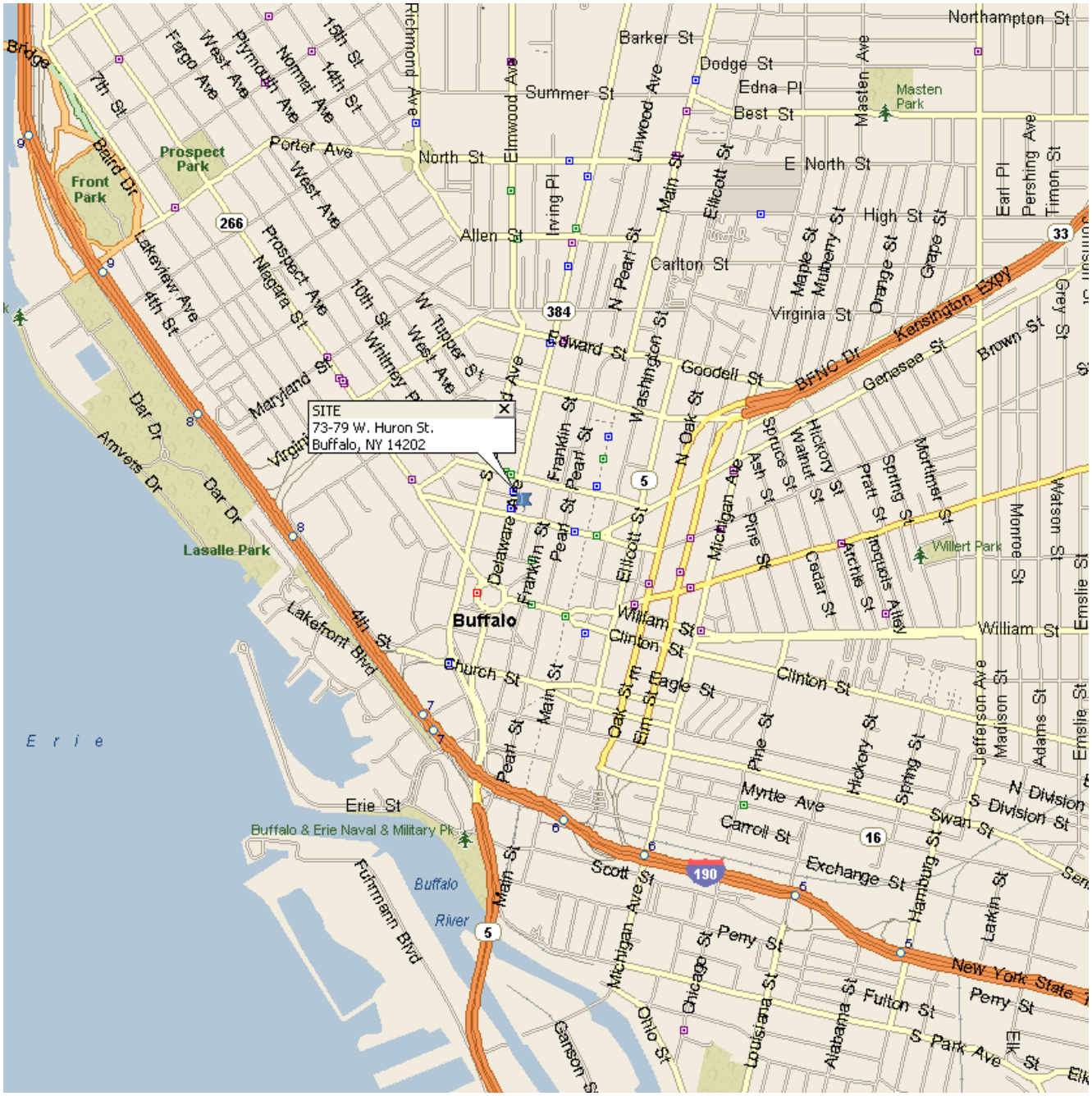
U.S.E.P.A. – Public Information Office
186 Exchange Street
Buffalo, NY 14204

Business First
465 Main Street
Buffalo, NY 14203 – 1793

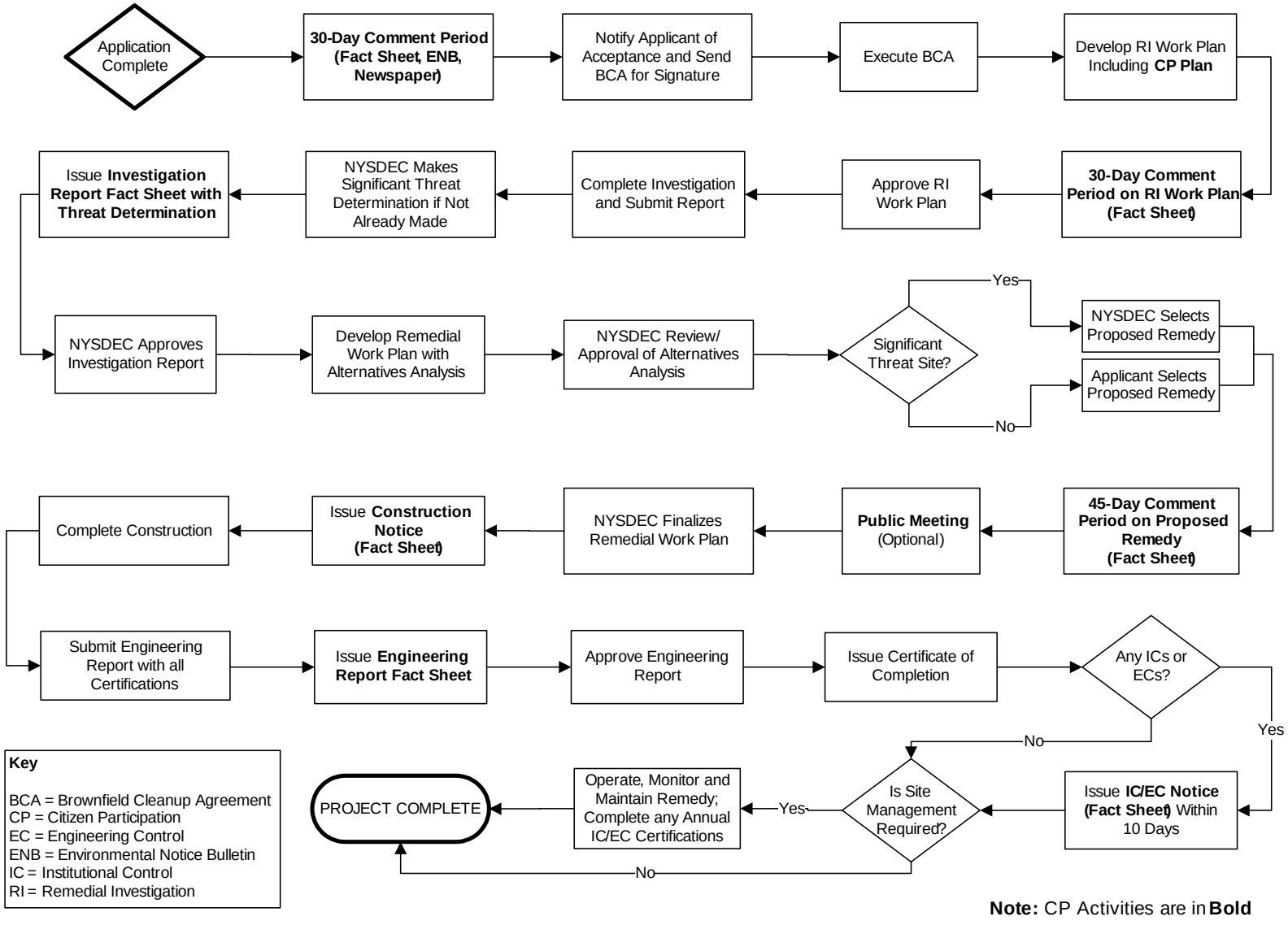
10. Surrounding Properties

Dave's Performance Auto 183 Delaware Avenue	Sidebar 189 Delaware Avenue	Vinal & Vinal, P.C. Attorneys 193 Delaware Avenue
Wallach Attorneys at Law 169 Delaware Avenue	Hawthorne & Vesper, PLLC 197 Delaware Avenue	Barcelona Night Club 199 Delaware Avenue
Allpro Parking 196 Franklin St.	Club 220 220 Franklin St.	Law Offices 80 W. Huron ST.
Domino's Pizza 187 Delaware Avenue		

Appendix C - Site Location Map



Appendix D– Brownfield Cleanup Program Process



Note: CP Activities are in **Bold**

APPENDIX D

RESUMES OF KEY PERSONNEL

IYER ENVIRONMENTAL GROUP, PLLC

DHARMARAJAN R. IYER, Ph.D., PE, CES **President/Project Manager**

Education

Ph.D., Civil/Environmental Engineering, Syracuse University, 1984
M.S., Civil/Environmental Engineering, Syracuse University, 1980
B. S., Chemical Engineering, Indian Institute of Technology, Bombay, 1976
OSHA 40-Hr Health & Safety Training/Annual Refreshers
Mediation Skills Training, Metropolitan Mediation Services, Boston, MA (2000)

Registration

Professional Engineer, New York

Professional Affiliations

American Institute of Chemical Engineers
(Past Chairman/Treasurer, Western NY and Syracuse Sections)
American Water Works Association
Water Pollution Control Federation

Employment History

Principal, Iyer Environmental Group PLLC, Orchard Park, NY (1998 - present)
Senior Project Manager, URS Greiner, Buffalo, NY (1989-1998)
Associate, Malcolm Pirnie, Buffalo, NY (1987-1989)
Sr. Project Engineer, O'Brien & Gere Engineers, Syracuse, NY (1982-1987)

Expertise

Dr. Iyer has over 25 years of hands-on project management and technical experience: Phase I/II and remedial investigations; feasibility studies; design/implementation of bench scale and pilot plant test programs; water/wastewater treatment facilities evaluation/design; technical and economic feasibility evaluations; conceptual/detailed design; construction management/inspection; operation and maintenance of treatment/remedial systems; and development of unique and advanced solutions to waste treatment problems. Also, experienced in human health/ecological risk assessments, mathematical modeling of water/wastewater treatment processes and chemical equilibrium in aqueous systems; NYS-ASP and USEPA-CLP analytical program; laboratory sample tracking and analytical data retrieval systems; and development of statistical models/programs for data evaluation.

Representative Clients

NYSDEC; VAMC; Earth Tech; O'Brien & Gere; Niagara Falls Bridge Commission; USEPA; City of Corning; Town of Amherst; NJDEP; USACOE; U.S. FWS; South Essex Sewerage District; Serafini, Serafini & Darling; Schenectady Chemicals; Chautauqua County IDA; City of Dunkirk; Chemical Process & Supply; Harrison Radiator Divn. of GM; Hercules/Aqualon; American Cyanamid; Canandaigua Wine Co.; DuPont; Harshaw/Filtrol; GE; Goulds Pumps; IBM Corporation; Johnson & Johnson; Moog Automotive; North American Philips Corporation; Norwich Pharmaceuticals; Beveridge & Diamond; Sangamo-Weston Division of Slumberger; US Chrome; and Warner-Lambert.

Environmental Services

Iyer Environmental Group provides a wide spectrum of consulting, engineering and design-build services for water, wastewater, solid waste, hazardous waste and brownfields sites, and the ability to interface effectively with regulatory agencies on the client's behalf,. in a number of areas including but not limited to the following:

- Environmental Compliance/Audits/Assessments/Permits
- Water/Waste Analyses, Compliance Testing and Monitoring
- Water/Wastewater Treatment System Evaluation/Upgrade
- Bench/Pilot Scale Evaluation of Treatment/Remedial Systems
- Solid/Hazardous Waste Site Investigations through Remediation
- Engineering Design and Construction Management/Oversight
- Operations and Maintenance of Remedial/Treatment Systems
- Mediation/Expert Witness/Litigation Support/Cost Apportionment
- Community Relations/Public Meetings

IYER ENVIRONMENTAL GROUP
Dharmarajan R. Iyer, Ph.D., P.E.

REPRESENTATIVE PROJECTS

Hazardous and Solid Wastes

Kingsbury Landfill/Leachate Treatment System , Hudson Falls, NY (*OM&M*)
Dutchess Sanitation/FICA and Kessman Landfills, Region 3, NY (*OM&M*)
Whirlpool Bridge, Niagara Falls, NY (*SI, VCP, RD, RA*)
Haight Farm Superfund Site, Clarendon, NY *{RA; Design-Build, OM&M}*
Salem Acres Superfund Site, Salem, MA *{FS/PDI/RD/RA/CM/Monitoring}*
Santi's Gas Station, East Aurora, NY *{UST Investigation/Site Remediation}*
N. Franklin St. Site, Watkins Glen, NY *{RI/FS/PDI/RD/RA/O&M}*
Busy Bee Disposal Site, Alfred, NY *{RI/FS/Leachate Management}*
Robeson Industries Site, Castile, NY *{PDI/TS/RD/RA/CM/O&M}*
Phase I/Phase II Site Investigations, NY State *{SI}*
Galena Superfund Subsite, Cherokee County, KS *{PDI/RD/CM}*
Pennsylvania Ave/Fountain Ave Landfills, New York, NY *{RD}*
PAS Site, Oswego, NY *{Long-Term Monitoring/Leachate Management}*
Gratwick Park Waste Disposal Site, Buffalo, NY *{RI/FS}*
Frontier Chemical Waste Site, Buffalo, NY *{RI/FS}*
US Chrome Groundwater Remedial Program, Batavia, NY *{Design/Build}*
Groundwater Remedial Program, Batavia, NY *{Design/Build}*
Hazardous Waste Impoundment Cleanup, Maryville, MO *{TS/Design/Build}*
IBM Manufacturing Plant, Endicott, NY *{Groundwater Monitoring}*
Crab Orchard National Wildlife Refuge, Marion, IL *{RI/FS}*
Global Landfill, Old Bridge, NJ *{RI/FS}*
Millcreek Superfund Site, Erie, PA *{PDI/RD}*
Cleve Reber Industrial Waste Landfill, LA *{RD/RA Technical Support}*

Water and Wastewater

VA Medical Center, Bath, NY *{Water Supply Design./Corrosion Control}*
City of Watertown WTP Evaluation/Upgrade, NY *{Pilot Study/Design}*
MCWA WTP Taste/Odor Control, Rochester, NY *{Ozone Pilot Scale Testing}*
City of Rome WTP Evaluation, Rome, NY *{Pilot Scale DAF Testing}*
Kodak WTP Evaluation, Rochester, NY *{Pilot Dual/Multi Media Testing}*
Town of Kirkwood Water Supply *{Air Stripper Addition}*
City of Corning Water Supply *{Air Stripper Addition}*
Allied Chemicals, Solvay, NY *{Coagulant/Bicarbonate Use Study}*
City of Syracuse WWTP, Syracuse, NY *{Evaluation/Phosphate Control}*
Kodak Park Stormwater Tunnel, Rochester, NY *{Groundwater Contamination}*
GE WW Pretreatment, Johnson City, NY *{O&M Support/Water Recyle}*
IBM WWTP Replacement/Recycle, Owego, NY *{Pilot Testing/Design}*
Lockheed Martin WWTP Operations, Owego, NY *{O&M Support}*
Schenectady Chemicals WWTP Upgrade *{SBR/Biological Treatability Study}*
Norwich Pharmaceuticals WWTP, Norwich, NY *{Evaluation/Pilot testing}*
Warner Lambert WWTP, San Juan, PR *{Evaluation/Testing}*
North American Phillips Corp., Bath NY *{Antimony Removal Study}*
Chemical Process Supply, Dunkirk, NY *{New Process WW Treatment Study}*
Hercules/Aqualon WWTP Upgrade, Hopewell, NC *{Evaluation/Pilot Plant Test}*
GM Automotive WWTP, Baltimore, MD *{Evaluation/O&M Support}*
Harrison Radiator WWTP, Lockport, NY *{Evaluation/Full Scale Testing}*
Ford Automotive Parts WWTP, Dayton, OH *{Evaluation/O&M Support}*

IYER ENVIRONMENTAL GROUP
Dharmarajan R. Iyer, Ph.D., P.E.

PROJECT SUMMARIES – SOLID/HAZARDOUS WASTES

WHIRLPOOL RAPIDS BRIDGE SOIL INVESTIGATION/REMEDIATION
Client: Niagara Falls Bridge Commission, Niagara Falls, NY

Dr. Iyer was responsible for all phases from investigation to remediation and long term O&M, and was instrumental in the successful remediation of this historical Bridge. The soils between the bridge footing and the Niagara River was contaminated with leand and other heavy metals associated with past blasting and paint removal operations. The investigation included soil sampling along an 800' width, topographic and bedrock fracture (using VLF) surveys, groundwater modeling, soil leachability testing, regulatory review and a preliminary environment/human health risk assessment. After completing the environmental assessment report, Dr. Iyer negotiated the remedial action plan with the NYSDEC and followed through with the selection of the remedial contractor and oversight during site remediation. A total of 1,037 tons of soil was excavated and disposed off site at a hazardous waste landfill, and the trail was restored with a much improved landscape. The NYSDEC, NYS Power Authority and the NYS Office of Parks, Recreation & Historical Preservation were immensely satisfied with the end result of this project.

SALEM ACRES SUPERFUND SITE, SALEM, MA {FS/TS/CADS/RD/RA/CM}
Client: South Essex Sewerage District, Salem, MA; Oversight by USEPA, MADEP

Project Manager for pilot scale treatability testing, clean area delineation study, remedial design, construction management/oversight and confirmatory soil sampling during remedial action, and monitoring of groundwater and adjacent wetland sediments/at this site for the five-borough wastewater utility with USEPA Region I/MADEP oversight. The pre- and post-construction monitoring programs included groundwater, wetland sediment and surface water. During this time, Dr. Iyer also provided technical assistance to the District's general counsel in negotiating the terms of the RD/RA consent decree and the apportionment of past investigation costs with the other two PRPs for this site. The site has been successfully remediated and returned to natural conditions. Over 90,000 tons of sludge and soil were excavated and disposed in two solid waste landfills without impacting the wetlands adjacent to the waste disposal lagoon. Wetland sediments were revegitated and returned to natural conditions.

Initially, Dr. Iyer helped bring the Remedial Investigation/Feasibility Study to a closure by developing a low-cost remedial alternative (chemical fixation with off-site disposal) for sludges and soils with high levels of petroleum and other HSL contaminants, and sliced the potential remedial cost by over 50%. Through expedited treatability studies and sludge/soil leachability tests, Dr. Iyer was instrumental in getting an unprecedented Massachusetts DEP approval for the disposal of treated sludges and soils in a lined solid waste landfill, and as a contingency measure, Maine DEP approval for the disposal of untreated sludges. During site remediation, 2000 feet of a 2" waterline along two residential streets leading to the site was replaced with a 6" line. Nearly 70 percent of this waterline was installed in bedrock which required blasting. The proactive approach with the client, agencies and local landfills enabled Dr. Iyer to bring the site remediation to completion at a construction cost of $7.5 million, well below initial estimates based on original quantities. Provided assistance to the SESD in closing out the Construction Contract, getting final certificate of completion by the regulatory agencies, performing the long-term site monitoring and getting the site delisted.

NYSDEC MULTIPLE SITES OM&M, REGION 3, NY
Client: NYSDEC, under subcontract to O'Brien & Gere, Syracuse, NY

IEG was issued a three-year standby contract work assignment for the operations, maintenance and monitoring of two remediated state superfund sites - 17-acre Dutchess Sanitation Landfill (Poughkeepsie, NY) and the 10-acre Kessman Landfill (Putnam, NY). Dutchess was remediated with a NYCRR Part 360 cap, a landfill gas collection/treatment system, and leachate collection system. Kessman had accepted solid and industrial wastes of

unknown types and quantities, and was remediated in 1995 with a Part 360 cap, passive vents and a leachate collection system following the removal of sixty industrial waste drums and contaminated soils, and restoration of the affected wetlands. IEG's services for these two sites include design, implementation and oversight of required repairs/upgrades, and operation, maintenance and monitoring of the landfills. Twenty monitoring wells, wetland sediment and surface water are sampled for field and leachate treatment parameters (for offsite disposal), VOCs, semivolatiles, pesticide/PCBs, metals and petroleum hydrocarbons. Besides pumping leachate from the landfill, IEG also completed a tracer study to assess the hydraulic connection between the landfill and the adjacent wetland.

BUSY BEE DISPOSAL SITE, ALFRED, NY {RI/FS/Leachate Management}
Client: NYSDEC, Albany, NY

Project Manager for an RI/FS at this solid/industrial waste disposal site characterized by several alternating layers of sandstone and shale units underlying the waste material. Chlorinated organics and fuel-related compounds were contaminants of concern at this site. The RI field work included a geophysical survey, an extensive soil gas survey across the site, 17 monitoring wells in multiple clusters (including triplets), 10 landfill piezometers, and on-site/residential well sampling. Cap replacement, fractured bedrock wells for contaminated groundwater collection and interceptor trenches were evaluated in the FS. Dr. Iyer also initiated an active leachate withdrawal and disposal program at the outset of the RI which was instrumental in restricting contaminant migration off-site, and supported the selection of a low-cost, limited action remedy (leachate management and groundwater monitoring) for this disposal site.

GALENA SUPERFUND SUBSITE, CHEROKEE COUNTY, KS {PDI/RD/CM}
Client: USACOE, Kansas City, MO; Oversight: USEPA, Kansas City, KS

Project Manager for pre-design investigations, design and construction oversight of the ROD-specified remedial action at the 800-acre Galena lead and zinc mining subsite, Cherokee County, Kansas. Components of this project for the U.S. Army Corps of Engineers include removal and placement of over one million cubic yards of surficial mining wastes, diversion of surface water, rechannelization of over 5,000 feet along two tributaries, recontouring and vegetation, protection of threatened and endangered species, and groundwater and surface water monitoring. Also developed and implemented a supplemental investigation program using X-ray fluorescence instrumentation for zinc, lead and cadmium in the field, which enabled the development of clearly-defined plans and specifications for competitive bidding. Received the highest praise from USACE, Kansas City District, for completing this project within a very aggressive schedule, and for the receipt of favorable bids without a single amendment during the solicitation period. Through the implementation of cost-saving alternatives for channel reconstruction and the development of a clear and precise set of design documents, the remedial construction was completed at a cost of $8.5 million or 70% below USEPA's original estimate to remediate this site.

PAS site, OSWEGO, NY {Long-Term Monitoring/Leachate Management}
Client: NYSDEC, Albany, NY

Task Manager for post-remediation operations and maintenance of this former solvent processing site in Oswego, New York. Conducted an evaluation for the hydrology within the slurry wall/cap containment system to determine the required leachate collection rate from trenches so as to develop and maintain an inward hydraulic gradient across the site. Developed implemented an O&M Manual for the NYSDEC, hauling over 10,000 gallons month of highly contaminated leachate to an off-site hazardous waste treatment facility, and performing environmental monitoring (surface water, groundwater and wetland sediments) for eight years, until the PRPs assumed responsibility for the long-term O&M.

IYER ENVIRONMENTAL GROUP
Dharmarajan R. Iyer, Ph.D., P.E.

PROJECT SUMMARIES – WATER/WASTEWATER

WATER DISTRIBUTION SYSTEM REPLACEMENT, BATH, NY {Evaluation/Modeling/Design}
Client: VA Medical Center, Bath, NY

Project Manager and environmental engineer for the evaluation of the water supply and distribution system at the 210-acre VAMC. Dr. Iyer is responsible for modeling the entire distribution system using WaterCAD, and for developing a new, and state of the art system to replace the nearly 100-year old distribution pipes currently supplying water to fifty buildings including hospital, dormitaries and administration. Prior to this project, Dr. Iyer also completed a corrosion system evaluation, and developed and installed a chemical feed system to control corrosion in the distribution pipes.

OZONATION PILOT SCALE TESTING, ROCHESTER, NY {Drinking Water Treatment}
Client: Monroe County Water Authority, Rochester, NY

Project Manager for the design, installation and operation of an oxidation/direct filtration pilot plant for taste and odor control in raw water from Lake Ontario. The pilot plant consisted of a 9" diameter, 10' high plexiglass ozonation column, an ozone generator and two parallel dual and multi media filters. Several treated water quality parameters including turbidity, trihalomethane formation potential, particle count and bacterial count were evaluated. Prepared a basis of design and cost estimates for a full-scale, 3,750-lb/day oxidation plant.

WTP UPGRADE, WATERTOWN, NY {Pilot Study/Preliminary Design}
Client: City of Watertown, Watertown, NY

Designed, built and operated a 25 gpm pilot-plant upgrade of the 80-year old water treatment plant. The study and preliminary design contributed to the development of both short-term rehabilitation and long-range treatment programs for the City of Watertown, New York, water supply. The pilot scale unit simulated existing treatment processes including flocculation and sedimentation which occurred in an upgradient section of the river where a dam had been built to provide a large retention time. Also tested were dissolved air flotation, dual and multi-media filtration, and taste and odor control for addition to the plant.

POTABLE SURFACE WATER TREATMENT, ROME, NY {Pilot Scale DAR Testing}

Responsible for the oversight and sampling/analysis for the City of Rome during the operation of a 50 gpm pilot scale dissolved air flotation unit by Krofta Engineering. DAF was being evaluated as a potential treatment process for the a proposed water treatment plant.

APPLICATION/TESTING/DESIGN OF AIR-STRIPPER MODEL
Clients: Several Municipal/Industrial clients

Project Manager responsible for design/evaluation of air-strippers FOR wastewater treatment. Installed/operated a pilot air stripper (12" dia, 10' height) for VOC removal from groundwater used as the source of drinking water by the City of Corning, New York. The pilot plant results became the basis for a 2 MGD air stripper (packed column in a square brick tower) located at the pumping well and piped into the distribution system. Responsible for preliminary design of an air stripper built at a pumping well in the Town of Kirkwood due to chlorinated organics contaminated from an adjacent waste landfill. Also evaluated water supply and treatment requirements for contaminated potable water supplies in the Ellicottville and Franklinville, NY.

INDUSTRIAL WW PRETREATMENT, JOHNSON CITY, NY {O&M Support/Water Recyle}
Client: General Electric, Johnson City, NY

Evaluated several alternatives including chemical precipitation/ reduction and ion-exchange for the removal of heavy metals and other inorganics from electroplating wastewater. Designed a 70 GPM dual ion-exchange system for water reuse that resulted in significant savings in operating costs and decreased the purchase of water. Subsequently provided operational assistance and re-piped the system for maximum resin utilization.

Kodak WTP Evaluation, Rochester, NY {Pilot Dual/Multi Media Testing}
Client: Eastman Kodak, Rochester, NY

Project Manager responsible for the pilot testing of dual and multi-media filters for the treatment of water from Lake Ontario for plant use, including feed to the de-ionization/ultra pure water system.

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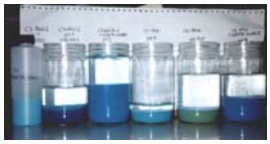
Dharmarajan R. Iyer, Ph.D., P.E.

INDUSTRIAL WWTP REPLACEMENT/OPERATION, OWEGO, NY {Pilot Testing/Design/O&M}
Client: IBM Federal Systems (now Lockheed Martin), Owego, NY/IBM, Armonk, NY



Designed, built and operated two 5 GPM on-site parallel pilot-plant units, one with dual conventional resins for water recycle, and the other a chelating cation-exchange resin for heavy metals removal prior to surface water discharge at a major electronics manufacturing facility. Performed on-site analysis for metals using AA and other parameters during the pilot study. Developed a basis of design and associated capital and operating costs for a 500 GPM dual ion-exchange system, following a technical and economic evaluation of alternatives for the treatment of general rinse waters and other wastes. Other projects at the same facility included an evaluation of operating procedures, chemical usages and a reactor-clarifier tracer study. Provided technical support during design of the new wastewater treatment system.

Industrial WWTP Operation, Arcade, NY {Troubleshooting/Operation}
Motorola, Arcade, NY

Responded to the accidental release of hydrogen cyanide into the plant wastewater which reacted with ferrous sulfate and produced ferrous ferrocyanide across the entire WWTP. Developed chemical feed requirements and treatment strategy using on-site bench scale tests to precipitate the ferrous-ferro cyanide as prussian blue. Implemented the treatment strategy through temporary reconfiguration of the WWTP piping and manual chemical feed and, over two days, successfully removed all ferrous ferro-cyanide in the treatment system.

Organic Industry WWTP Upgrade, Schenectady, NY {Pilot SBR Testing/Design}
Client: Schenectady Chemicals, Schenectady, NY

Project Manager responsible for the pilot scale testing of the sequential batch reactor (SBR) process for the biological treatment of high-strength organic chemical industry wastewater. The pilot scale testing was followed with a preliminary design and cost estimate for the addition of a full scale SBR unit to the WWTP.

Organic Industry WWTP Upgrade, Hopewell, NC {Evaluation/Pilot Plant Testing}
Client: Hercules/Aqualon, Hopewell, NC

Provided technical assistance during nine weeks of pilot plant testing of segregated cellulose derivatives and chemical cotton waste streams, and subsequent design for the expansion of the wastewater treatment system at a large industrial facility in Virginia. Biological treatment processes and secondary clarifier performance were evaluated using pilot scale units at the plant site.

Automotive Industry WWTP Evaluation, Lockport, NY {Evaluation/Full Scale testing}
Client: Harrison Radiator, Lockport, NY

Provided technical assistance during the full scale testing of coagulation/flocculation chemicals for metals precipitation and solids settleability at this automotive parts manufacturing facility in Western NY.

Industrial WWTP Evaluation, Norwich, NY {Evaluation/Pilot Scale Testing}
Client: Norwich Pharmaceuticals, Norwich, NY

Provided process and operational assistance for a pharmaceutical company in Upstate NY to solve problems associated with a two stage biological treatment system and a bank of pressure filters.

Industrial Pre-Treatment Study, Dunkirk, NY {Pilot Testing}
Client: Chemical Process Supply/City of Dunkirk, NY

Managed a feasibility study using four 20-gallon reactors to assess the impact of waste waters from a proposed pigment manufacturing facility on the City's WWTP. Similarly, conducted a pilot plant study and preliminary design of Sequential Batch Reactors for the upgrade of a wastewater treatment system to include biological treatment at a major phenol formaldehyde resin manufacturing facility.

New Inorganic Industry WWTP Study, Bath, NY {Antimony Removal}
Client: North American Phillips Corp., Mahwah, NJ

Conducted chemical equilibrium (MINEQL) modeling and bench scale testing to assess antimony removal as hydroxide and sulfide using inorganic precipitating agents. Developed a technical memorandum and successfully convinced USEPA that pre-treatment standards for antimony needed to be revised and be made specific to this industry.

PUBLICATIONS/PRESENTATIONS

Iyer, D., Iverson, S., and Sanders, S., Galena Mine Waste - Investigations through Remediation, XIV Superfund Conference, Washington, D.C., November 30 - December 3, 1993.

R. Jones, D. VanArnam and D. Iyer, “The Recourse of Closure On-Site,” in Hazardous Waste Site Remediation, The Engineer’s Perspective, O’Brien & Gere Engineers, Inc., 1988

Amend, J. and Iyer, D. R., "Treatment of High-Strength Organic Chemical Industry Wastewater in a Sequencing Batch Reactor", WPCF Fall Convention, Dallas, TX, October 6, 1988.

Iyer, D.R. and Letterman, R.D., "Modeling the Effects of Adsorbed Hydrolyzed Aluminum and Solution Chemistry on Flocculation Kinetics", Environmental Sci. & Tech., Vol. 19, No. 8, 1985.

Letterman, R.D. and Iyer, D.R., "Modeling the Effects of Adsorbed Aluminum Hydrolysis Products and Solution Chemistry on Flocculation Kinetics", 5th International Conference on Surface and Colloid Science & 59th Colloid and Surface Science Symposium, Clarkson University, Potsdam, NY, June 24-28, 1985.

"Chemical Equilibrium Model Used for Hazardous Waste Impoundment Closure", Proceedings, AIChE Diamond Jubilee/Annual Meeting, Washington, D.C., October 30-November 4, 1983.

Iyer, D.R. and Letterman, R.D., "Modeling the Effects of Adsorbed Hydrolyzed Aluminum on the Electrical Double Layer Properties of Aqueous Solutions", International Conference on Advances in Solids Separation, Society of Chemical Industry, University College, London, England, September 19-21, 1983; in Solid-Liquid Separation, Ellis Horwood Publishers, Chichester, England, 1984.

"Predicting the Effect of Hydrolyzing Salts on Flocculation Efficiency Using Computerized Chemical Equilibrium Models", Proceedings, AWWA Annual Conference, Miami, Fl, May 18, 1982.

D.R. Iyer and R.D. Letterman. Chemical Equilibrium Models. Report to Allied Chemical Corporation, Syracuse Research Laboratory, Syracuse, NY, 1980.

S.W. Effler, D.R. Iyer, R.L. Honstein, K.S. Young, G. Lorifice and B. Lingo. Water Quality Analysis of Limestone Creek. Departmental Publication, Department of Civil Engineering, Syracuse University, Syracuse, NY, 1979.

"Modeling Solid-Liquid Separation Processes for Water Treatment", AWWA New York Section Meeting, Liberty, NY, September 12, 1978.

Letterman, R.D. and Iyer, D.R., "Process Model Application in Potable Water Treatment", Proceedings, Conference on Theory, Practice and Process Principles for Physical Separation, AIChE/Engineering Foundation, Pacific Grove, California, October 30-November 4, 1977.

IYER ENVIRONMENTAL GROUP

JENNIFER W. CARTER, P.G. **Sr. Project Geologist**

Education B.S. in Geology from Skidmore College, 1979 (Dean's List 1978 and 1979)
Completed course work towards a M.S. in Hydrogeology at the University of Nevada, Reno (UNR), 1982

Professional Certifications OSHA 29 CFR 1910.120 40 Hour and yearly 8-Hour Refresher Training
State of Arkansas, Professional Geologist No. 1477
State of Pennsylvania, Professional Geologist No. PG002746G
US Department of Energy Level Q Security Clearance 1980-1984
US EPA Asbestos Handlers Certification 1987-1993

Professional Affiliations National Association of Groundwater Scientist and Engineers
National Ground Water Association
Hudson Mohawk Professional Geologist Association

PROJECT EXPERIENCE

IEG, *Albany, N Y (2001 – present)*

Environmental Property Assessments - Conducted Phase I Environmental Assessments on commercial properties in preparation for real estate transactions. Performed visual inspections of property, tested for radon and suspected asbestos containing materials, when appropriate, and researched available environmental data on property and its surrounding area for lending institutions. Findings were presented in a comprehensive report to client.

Multiple Sites O&M (NYSDEC) - Project Geologist responsible for operations and maintenance activities at the NYSDEC's remediated landfill sites, including routine groundwater, leachate, gas and wetland monitoring, and evaluation and upgrade of landfill gas collection/treatment and leachate collection systems.

Whirlpool Bridge Soils Investigation (Niagara Falls Bridge Commission) – Project geologist responsible for a bedrock survey using VLF, monitoring well installation, and sampling and evaluation of surface water, groundwater and soils contamination resulting from past painting of the bridge bordering the US and Canada.

OTHER CONSULTANT EXPERIENCE

- Conducted Phase I and Phase II Environmental Assessments on commercial properties in preparation for real estate transactions.
- Actively working on stormwater management programs for several commercial developments that are situated in New York City's Watershed area. Under New York City Department of Environmental Protection (NYCDEP) Phosphorus Offset Pilot Program (POPP), responsible for ensuring significant reduction of phosphorus into the Croton Falls Reservoir drainage basin.
- Developed groundwater monitoring networks, and planned and conducted geophysical surveys for private clients and local municipalities.
- Managed projects for contracts issued under New York State Department of Environmental Conservation's (NYSDEC) Standby Superfund program. Also handled public relations issues and acted as a liaison between clients, government agencies and local citizens.

- Performed activities for Brownfields Redevelopment Programs. Specifically created a comprehensive inventory of contaminated sites and conducted Phase I and Phase II environmental assessments of priority sites within a target area.

- Under contract to worked on the US EPA's Hudson River PCB characterization program describing, analyzing and processing sediment cores to determine the extent of PCB contamination in the river bottom sediments

- Technical project manager for community projects. Successfully performed cost-benefit analyses and critical review of data for environmental and land use planning projects. Interacted with the community on issues of concern specifically groundwater, transportation and environmental health and safety issues.

- Remedial activities include operation and maintenance of remedial/treatment systems, and long term monitoring of air quality, surface and groundwater, and other environmental media.

- Under special contract to the United Nations Environmental Program (UNEP-Nairobi, Kenya) to author papers for the environmental management guideline series. This series provided the guidance for developing nations to undertake sound environmental management of developmental activities.

- Proficient with various computer programs including Windows XP, Excel, PowerPoint, Flowlink and Surfer

PRESENTATIONS AND PAPERS

Montazar, P.M., D. Hammermister, J. B. Warner and M. S. Whitfield 1990. Geohydrologic and Drill Hole Data for Test Well USW-UZI, Nevada Test Site, Nye County: USGS Open-File Report.

Warner, J. B., 1988. Flood Plain Management. UNEP Environmental Management Guideline Series, Nairobi, Kenya.

Warner, J. B., and N. K. Ahmad, 1988. Coastal Protection Measures. UNEP Environmental Management Guidelines Series, Nairobi, Kenya.

Rudy, R. J. and J. B. Warner, 1986. Detection of Abandoned Underground Storage Tanks in Marion County, Florida Proceedings of the Second Surface and Borehole Geophysical Methods and Groundwater Instrumentation Conference, NWWA.

Waddell, R. K., J. B. Warner, and D.C. Muller, 1984. Geohydrologic and Drill Hole Data for Test Well UE-25c #1, Yucca Mountain, Nye County, Nevada, USGS Open-File Report.

Spengler, R.W., F.M. Byers, and J. B. Warner, 1981. Stratigraphy and Structure of Volcanic Rocks in Drill Hole USW-GI, Yucca Mountain, Nye County, Nevada: USGS Open-File Report.

IYER ENVIRONMENTAL GROUP

RICHARD ALLEN, JR. **Technician/Resident Engineer**

Education Environmental Restoration Training Certificate (2004)
Center for Integrated Waste Management, University at Buffalo, Buffalo, NY

Associate in Applied Science: Forestry / Surveying (1977)
Ranger School, Wanakena, NY

Affiliations Air & Waste Management Association
Buffalo Audubon Society
American Canoe Association

Certifications Hazardous Waste Operations – 40 Hr Course
Asbestos Handler Initial Certification – 32 Hr Course
Asbestos Air Sampling Sample Technician – 16 Hr Course

Expertise **Mr. Allen** has a variety of field experience ranging from environmental investigation and remediation projects to nature and wildlife preservation. In the last five years with IEG, Richard has gained valuable experience in the operation and maintenance of treatment systems as well as in construction oversight. Richard also conducts volunteer tours of nature preserves and has extensive knowledge of the outdoors.

PROJECT EXPERIENCE

Iyer Environment Group, PLLC, Orchard Park, NY *(2004 – present)*

WATER/DRAIN LINE DISTRIBUTION SYSTEM REPLACEMENT, BATH, NY {Design/Oversight}
Client: VA Medical Center, Bath, NY

Assisted in a comprehensive survey of the water distribution system and an update to the topographic survey at this 100 year old VAMC campus in the southern tier. Followed up with assisting in the development of design documents, and field oversight as necessary during replacement of 20,000 feet of water mains and associated interconnections to 47 buildings.

Mr. C's CLEANERS SITE REMEDIATION, EAST AURORA, NY {OM&M Services}
Client: Ecology & Environment/NYSDEC, Albany, NY

Currently providing OM&M services at this hazardous waste site where the groundwater was contaminated by dry cleaner operation. Make routine measurements, preventive maintenance, and trouble shoot the treatment system as necessary during alarm conditions signaled by the PLC's autodialer. Periodically, purge the pumping wells, clean the pumps, and pressure wash the air-stripper to maintain the 30 gpm groundwater treatment system operating at maximum efficiency.

WHIRLPOOL RAPIDS BRIDGE, NIAGARA FALLS, NY SOIL REMEDIATION/MONITORING
Client: Niagara Falls Bridge Commission, Niagara Falls, NY

Richard served as the field inspector during remedial activities at the site, overseeing and documenting contractor's work, conducting work zone air quality monitoring, scheduling waste haulers for the landfill, and following up with the compilation of data for a report. He continues with long-term monitoring. Over 1,000 tons of contaminated soil was excavated and disposed off-site at a hazardous waste landfill, and the trail was restored with a much improved landscape.

Rick Allen Enterprises, Clarence, NY (*1994 - 2005*)
Home repair and maintenance, residential landscaping and tree service.

Landtech Services, Inc., Clarence, NY *(1999 – 2003)*
Commercial and highway landscape grading and plantings

U.S. Census Bureau, Clarence, NY *(2000)*
Population census.

APPENDIX E

SHORING PLAN

PROFESSIONAL ENGINEERING SOLUTIONS

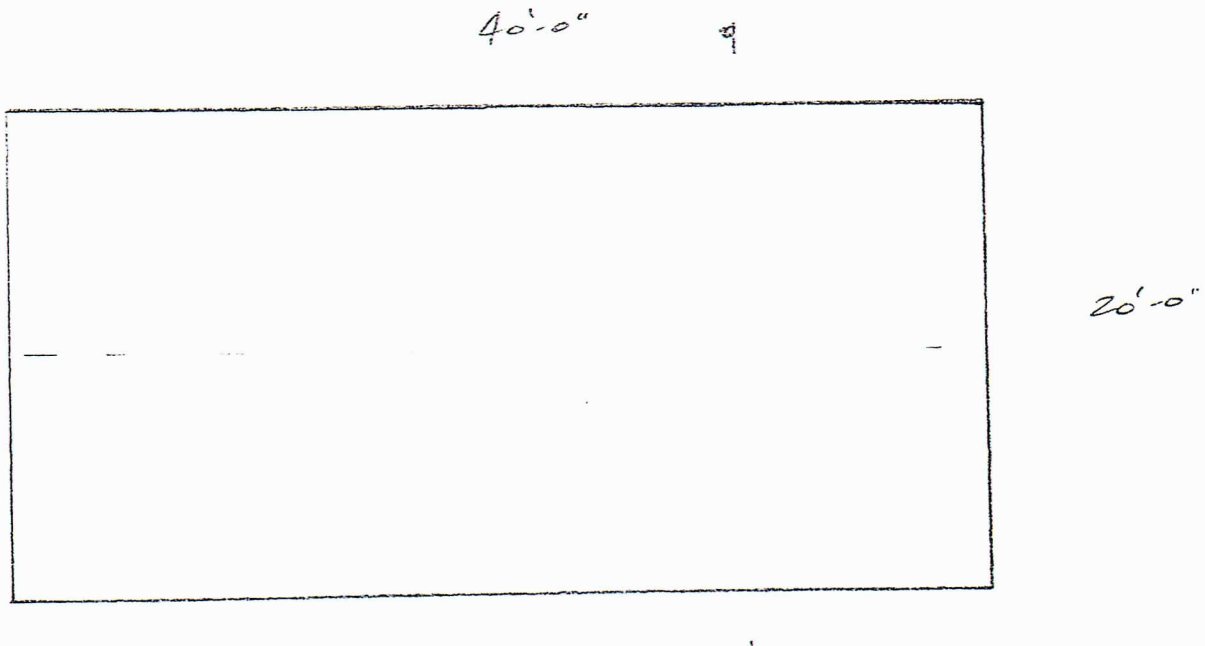
STRUCTURAL ENGINEERS

Site Shoring for 77 West Huron Street, Buffalo NY

Objective: To design an earth Retention System to allow the contractor to excavate below grade at two different depths, 10ft and 20 ft. The areas of excavation is to be in 20'x40'areas.

Assumptions: Materials is sand

Design: Internal brace cut.

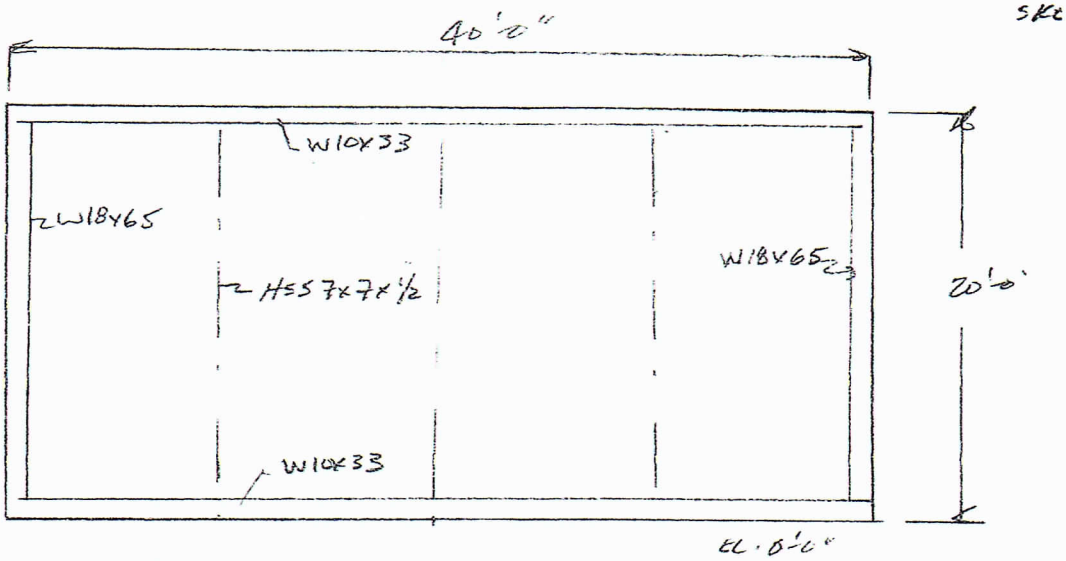


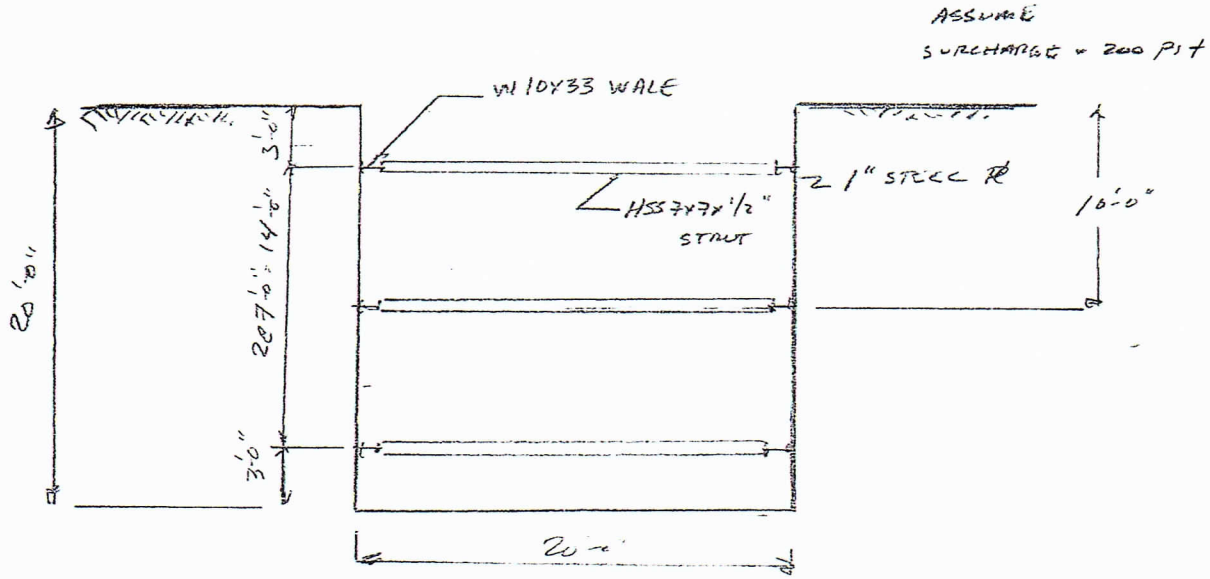
STATE OF NEW YORK
GERALD P SULLIVAN
NO. 072185
LICENSED PROFESSIONAL ENGINEER

3/31/15

Gerald P. Sullivan, P.E.
Professional Engineering Solutions

93 Knob Hill Road Orchard Park, New York 14127 716-238-0483 proengsolpe@gmail.com





TYPICAL EARTH RETENTION SHORING SYSTEM

Gerald P. Sullivan, P.E.
Professional Engineering Solutions
93 Knob Hill Road
Orchard Park, New York 14127
716-238-0483
proengsolpe@gmail.com

DATE:	April 7, 2015
SCALE:	Not to Scale
SITE:	**77 West Huron, Buffalo NY**

FIGURE 1.0

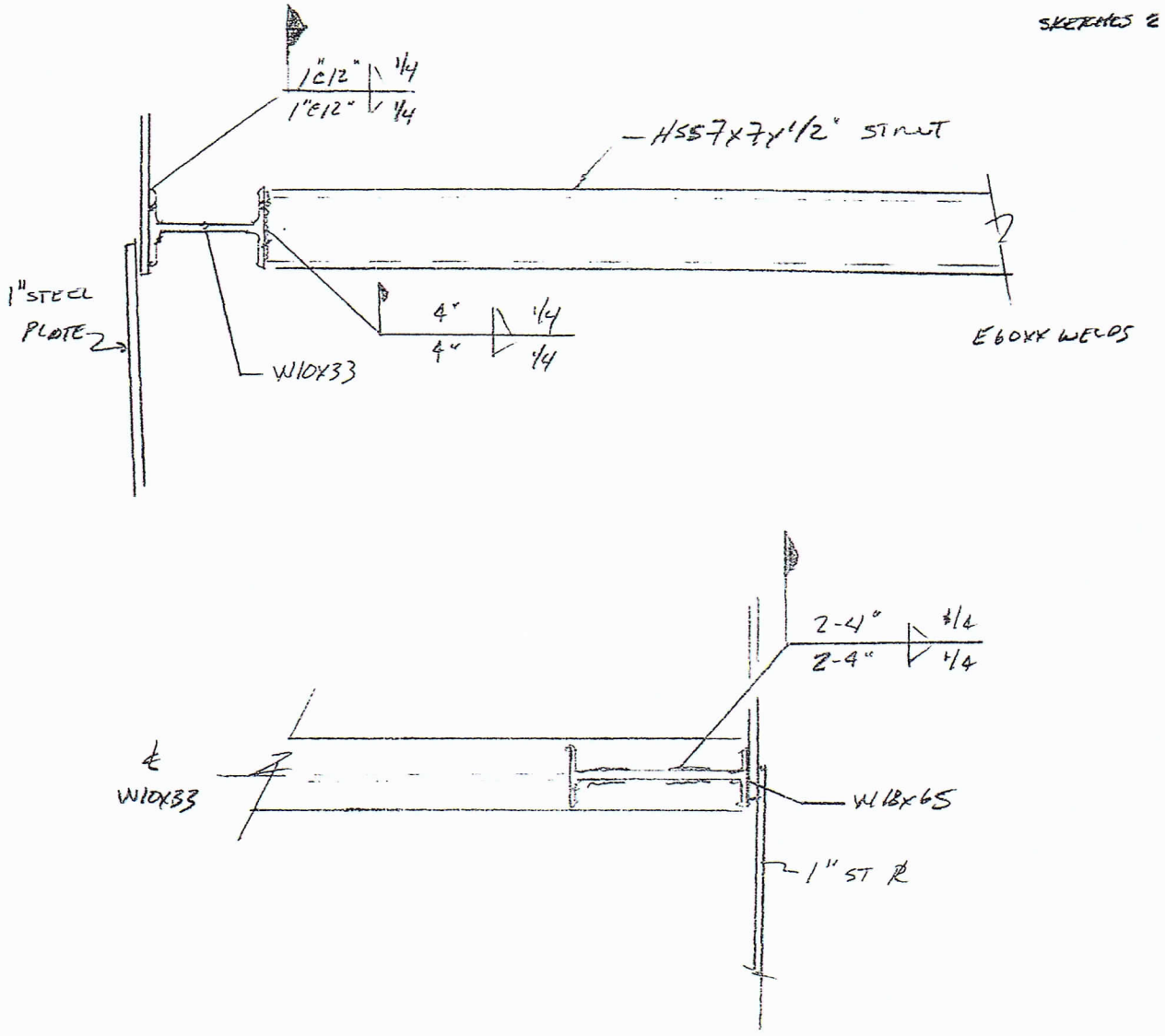


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FIGURE 1.1