LABELLA Associates, P.C.

Engineering
Architecture
Environmental

WORK PLAN NO. 5

Post Building Demolition Design Phase Investigation

AREA OF CONCERN 1: Chemical Building 11
AREA OF CONCERN 2: Silver Wastewater Recovery System
AREA OF CONCERN 3: Eastern Portion of the Site
AREA OF CONCERN 4: Miscellaneous Areas
AREA OF CONCERN 5: Asbestos Containing Materials
AREA OF CONCERN 6: Residual Chemicals Inside Building
AREA OF CONCERN 7: Building 2 and 7 Wastewater
AREA OF CONCERN 8: Building 7 Sump and Pit
AREA OF CONCERN 9: Former Boiler House UST
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AREA OF CONCERN 11: Waste Soil Piles
AREA OF CONCERN 12: Suspect Dumping

Location:

NYSDEC ERP No. B00016
Former Photech Imaging Site
1000 Driving Park Avenue
Rochester, New York

Prepared for:

City of Rochester
Division of Environmental Quality
30 Church Street
Rochester, New York 14614

LaBella Project No. 209288
City DEQ No. 032536
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1.0 INTRODUCTION

LaBella Associates, P.C. ("LaBella") has prepared Work Plan No. 5 on behalf of the City of Rochester, Department of Environmental Services (DES), Division of Environmental Quality (DEQ) for the former Photech Imaging Systems parcel located at 1000 Driving Park Avenue, City of Rochester, Monroe County, New York, hereinafter referred to as "the site." A Project Locus Map is included as Figure 1.

The site is listed as New York State Department of Environmental Conservation (NYSDEC) Site Code B00016 and is enrolled in the NYSDEC's Environmental Restoration Program (ERP). This Work Plan is consistent with the Record of Decision (ROD) as described in the Environmental Restoration Record of Decision Former Photech Imaging Site Rochester, Monroe County, New York as developed by the NYSDEC in March 2006. The Environmental Site Investigation/Remedial Alternatives (SI/RA) Report prepared by Day Environmental, Inc. January 2006 was consulted in the development of this Work Plan.

Information and data obtained during the demolition phase, including confirmatory soil sampling and XRF meter scanning of soil samples collected after removal of floor slabs and foundations have identified newly discovered areas of soil contamination primarily in the vicinity of Buildings 1 and 2, and the silver recovery waste water system.

Additionally, field screening XRF data as well as analytical laboratory results for soil and groundwater samples were collected from work completed during the implementation of the Design Phase Investigation (DPI) for the Chemical Building 11, Silver Recovery/Concrete Vault area and the former chemical storage sheds as well as during the decommissioning and demolition of all on-site structures and sub-grade tunnels. Soil and groundwater contamination in most Areas of Concern (AOCs) have been generally defined, but data gaps exist in some locations where buildings and infrastructure prevented sampling.

This Work Plan augments existing information and fills remaining data gaps so that a final remedial plan can be developed and implemented. The activities outlined in this Work Plan will be completed in accordance with the NYSDEC's Department of Environmental Remediation (DER)-10 (*Technical Guidance for Site Investigation and Remediation*) issued May 3, 2010.

2.0 BACKGROUND

The site is currently bound by: Driving Park Avenue to the south; Holleder Industrial Park to the north; Rochester Distribution Unlimited, Inc. to the east; and Electronic Media Solutions, Inc. to the west. Directly to the south of Driving Park Avenue is the Delphi manufacturing facility. The site is approximately 1000 feet east of Mt. Read Boulevard and 2 miles east of Interstate Route 390.

The site is located in an M-1 Industrial District. An M-1 Industrial District is designed to promote the retention and growth of employment opportunities by providing areas where a broad range of industrial uses may locate and where options for complementary uses exist. Permitted uses within an M-1 District included but are not limited to; Research Laboratories; Corporate Headquarters; Manufacturing & Light Industrial; Warehouses; Vehicle Repair & Sales, etc.

The site is comprised of 12.5 acres of land. Historically, a total of 15 former buildings totaling approximately 108,000 square feet of space occupied the site. Various underground storage tanks (UST), aboveground storage tanks (AST), and a below ground silver recovery system and associated wastewater system piping were formerly used at this facility. Other features of the site include a former burn pit area, a retention pond basin, asphalt parking lots, and three wooden shed-like structures. The general layout of the site, including former buildings and other features, is depicted in Figure 2.

The site was originally developed in 1948 for manufacturing photographic film and paper. Several different companies have owned and operated the facility at the site for photographic paper and film production since its construction in 1948. The most recent owner, Photech Imaging Systems, Inc., ceased operations and abandoned the facility in 1991. Large amounts of chemicals, wastes, and various supplies and materials were left "as-is" on-site when the facility was abandoned. In 1994, the NYSDEC and the United States Environmental Protection Agency (USEPA) performed a bulk waste and chemical removal action at the site. This work successfully removed bulk chemicals from the facility; however, tanks were not certified as "clean"; small containers of chemicals were left in some of the buildings; and residual chemicals remain in some process vessels and piping. The buildings were vandalized, with ceilings, walls, piping and equipment severely damaged. As a result, asbestos and chemical residues were distributed throughout many interior areas of the buildings. Additionally, the roofs failed on several of the buildings and there was a fire in 2004 in the former warehouse portion of the facility.

During 2010, the City of Rochester demolished all of the buildings at the site including the sub grade tunnels. Prior to demolition, asbestos containing materials and residual chemicals inside the buildings were removed and disposed of. In addition, suspect building materials (e.g. concrete floors) were assessed for chemicals of concern and remediated prior to demolition.

3.0 REFERENCES

The following previous environmental assessments/investigations have been completed at the site and were relied upon for the development of this Work Plan:

- *Environmental Site Investigation/Remedial Alternatives Report Former Photech Imaging Systems, Inc., 1000 Driving Park Avenue, Rochester, New York Environmental Restoration Project #B00016-8, prepared by Day Environmental, Inc., January 2006.*
- *Environmental Restoration Record of Decision Former Photech Imaging Site, Rochester, Monroe County, New York, Site Number B-00016-8, prepared by New York State Department of Environmental Conservation, Division of Environmental Remediation, March 2006.*
- *Preliminary Design Phase Investigation AOC 2 – Silver Wastewater Recovery System completed by LaBella in April 2010.*
- *Preliminary Design Phase Investigation AOC 4 – Former Chemical Storage Shed completed by LaBella in October 2010.*
- *Building 7 and Building 2 Interim Remedial Measures (IRM) Confirmation Samples collected by LaBella in September 20, 2010.*

- *Site Audit, Rochester Film Corporation, Rochester, New York, completed by Obrien & Gere July 1986*
- *XRF Field Screening and Confirmation Analytical Sampling completed by LaBella during the building decommissioning and demolition process, June through October 2010.*

4.0 STANDARDS, CRITERIA, AND GUIDELINES

Standards, Criteria and Guidelines (SCGs) for the remedial program outlined in the SI/RA Report were established through the remedy selection process stated in 6 NYCRR Part 375-1.10. At a minimum, the remedy selected must eliminate or mitigate all significant threats to public health and/or the environment presented by the hazardous substances disposed at the site through the proper application of scientific and engineering principles. The proposed future use for the Former Photech Imaging site is commercial/industrial uses. This section identifies the SCGs for the site. The SCGs identified are used in order to quantify the extent of contamination at the site that may require remedial work. The SCGs are not intended to be the final site cleanup objectives. The SCGs for soil and groundwater are provided below.

Soil:

In accordance with site-specific goals established by the NYSDEC Project Manager, this Work Plan will adhere to the Soil Cleanup Objectives (SCOs) in 6 NYCRR Part 375-6.8(b) Restricted Use Soil Cleanup Objectives for a Commercial Site. Part 375-6.8(b) SCOs will supersede the SCOs listed in the ROD. Also, since silver and cadmium have impacted the groundwater at AOC 2, the cleanup goal for silver and cadmium will be the SCOs in 6 NYCRR Part 375-6.8(b) for the Protection of Groundwater for AOC 2.

Groundwater:

NYSDEC Division of Water Technical and Operational Guidance Series (TOGS) No. 1.1.1 - Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations.

5.0 SUMMARY AREAS OF CONCERN

Specifically this Work Plan is designed to address the following Areas of Concern (AOC) that are listed below and shown on Figure 2.

AOC 1 – Chemical Building 11
- AOC 1A – East of Chemical Building 11
- AOC 1B – Former Dry Well

AOC 2 – Silver Recovery/Concrete Vault Area

AOC 3 – Eastern Portion of the Site
- AOC 3A – Former Retention Pond
- AOC 3B – Former Concrete Dry Well Area
- AOC 3C – Former Transformers
- AOC 3D – Former Film Incinerator
- AOC 3E – Former Fuel Oil USTs
- AOC 3F - Former Fuel Oil ASTs

AOC 4 – Miscellaneous Areas

AOC 4A – Former Methanol Tanks
AOC 4B – Former Chemical Storage Sheds

AOC 5 – Asbestos Containing Materials

AOC 6 – Residual Chemicals Inside Building

AOC 7 – Building 2 and 7 Waste Water

AOC 8 – Building 7 Sump and Pit

AOC 9 – Boiler House UST

AOC 10 – Building 12 Wastewater

AOC 11 – Waste Soil Piles

AOC 12 – Suspect Dumping

The objective of this DPI will be to:

- further evaluate the nature and extent of the heavy metals, PAH SVOCs and/or VOC impacts to soils, overburden and/or bedrock groundwater;
- fill remaining data gaps and to evaluate soil and potential groundwater contamination discovered during the demolition;
- further evaluate the nature and extent of the heavy metal impacts to localized groundwater initially associated with the former silver wastewater recovery system;
- pre-characterize the impacted soil for off-site disposal;
- obtain information on the extent, magnitude and estimated quantity of contaminated media. This information will be utilized for subsequent Bid Documents associated with the implementation of the Remedial Measures for the site.

To complete the DPI associated with each of the remaining AOCs, the following scope of work will be completed:

Location	No. of Proposed Borings	No. of Proposed Test Pits	No. of Proposed Wells	Proposed Depth	Proposed Soil Samples for Lab Analysis	Proposed Analysis (soil)	Proposed Analysis (GW)
AOC 1: Chemical Building 11	0	0	0	Not Applicable	Not Applicable	Not Applicable	Not Applicable
AOC 2: Silver Recovery / Concrete Vault	15	0	6	Equipment Refusal or Bedrock	30	Cadmium and Silver	RCRA Metals
AOC 3: Eastern Portion of the Site	42	4	4	Equipment Refusal, Bedrock, or 4-ft	33	RCRA Metals, PAH SVOCs, VOCs, and/or PCBs	RCRA Metals, PAH SVOCs, and or VOCs
AOC 4: Miscellaneous Areas	3	0	0	Equipment Refusal or Bedrock	2	RCRA Metals, PAH SVOCs, VOCs, and/or Alcohols	Not Applicable

Location	No. of Proposed Borings	No. of Proposed Test Pits	No. of Proposed Wells	Proposed Depth	Proposed Soil Samples for Lab Analysis	Proposed Analysis (soil)	Proposed Analysis (GW)
AOC 5: Asbestos Containing Materials	Asbestos materials were abated during the demolition phase of the project.						
AOC 6: Residual Chemicals Inside Buildings	Residual chemicals were abated during the demolition phase of the project.						
AOC 7: Building 2 and 7 Waste Water	20	0	6	Equipment Refusal or Bedrock	40	Cadmium and Silver	RCRA Metals
AOC 8: Building 7 Sump and Pit	3	0	1	Equipment Refusal or Bedrock	2	VOCs, PAH SVOCs, and/or RCRA Metals	Not Applicable
AOC 9: Boiler House UST	5	0	1	Equipment Refusal or Bedrock	2	VOCs, PAH SVOCs, and/or RCRA Metals	Not Applicable
AOC 10: Building 12 Waste Water	1	0	0	Equipment Refusal or Bedrock	1	VOCs, PAH SVOCs, and RCRA Metals	Not Applicable
AOC 11: Waste Soil Piles	0	5	0	Through soil piles	5	VOCs, PAH SVOCs, and RCRA Metals	Not Applicable
AOC 12: Suspect Dumping	2	0	0	Equipment Refusal or Bedrock	1	VOCs, PAH SVOCs, and RCRA Metals	Not Applicable
TOTAL	**91**	**9**	**12**	**---**	**116**	**---**	**---**

Notes:

1. *VOCs denote sample will be analyzed for United States Environmental Protection Agency (USEPA) Target Compound List (TCL) or NYSDEC STARS list Volatile Organic Compounds (VOCs) using USEPA Method 8260B.*
2. *PAH SVOC denotes sample will be analyzed for Polynucleur Aromatic Hydrocarbons (PAH) or NYSDEC STARS list Semi-Volatile Organic Compounds (SVOCs) using USEPA Method 8270C.*
3. *PCBs denotes sample will be analyzed for Polychlorinated Biphenyls (PCBs) using USEPA Method 8082*
4. *RCRA Metals denotes sample will be analyzed for the Resource Conservation and Recovery Act (RCRA) Metals using USEPA Method 6010 and 7471 will be analyzed using USEPA Method 6010*
5. *Cadmium and Silver denote sample will be analyzed for cadmium and silver only using USEPA Method 6010*
6. *Alcohols denotes samples will be analyzed for Alcohols using USEPA Method 8015B*

Each AOC listed above is summarized below and the Technical Scope of Work is discussed in Section 6.0.

6.0 DESIGN PHASE INVESTIGATION – TECHNICAL SCOPE OF WORK

The Design Phase Investigation (DPI) work completed as part of this project is summarized in this section. Section 7.0 describes the various investigation methodology and sampling protocols proposed for both soil and groundwater specific to each AOC.

6.1 AOC 1 – Chemical Building 11

AOC 1 addresses two areas adjacent to Building 11. These areas have been segregated in sub AOCs as defined below:

- AOC 1 – Chemical Building 11
  - AOC 1A – East of Chemical Building 11
  - AOC 1B – Former Dry Well

For clarity, the sub set of AOCs are discussed separately below.

6.1.1 AOC 1A – East of Chemical Building 11

Concentrations of heavy metals and PAH SVOCs in subsurface soils above SCGs were identified in the Day SI/RA report at the area shown on Figures 2 and 3. The exceedances were detected at surface soil samples SS-26C and SS-26D and soil boring sample from well Well-06. Based on the presence of the heavy metals and PAH SVOCs, an Interim Remedial Measure (IRM) was conducted to excavate and dispose of these impacted soils on August 30 and 31, 2010. As a results approximately 601 tons of soil in the area shown on Figure 3 was excavated and disposed of at a NYSDEC Part 360 landfill. Twelve confirmation soil samples (AOC1A-CS-1 to AOC1A-CS-12) were collected in accordance with DER-10 to document soil conditions at the limits of the excavation, except for the west sidewall, as the excavation was completed to the eastern edge of Building 11. The locations of the confirmation soil samples are shown on Figure 3. The confirmation soil samples were analyzed for RCRA Metals and PAH SVOCs and compared to the SCGs and the results are summarized in Table 1 (RCRA Metals) and Table 2 (PAH SVOCs).

The laboratory results of the confirmation soil samples indicate the RCRA Metals and PAH SVOCs are not present at concentrations above the SCGs, except for 3 PAH SVOCs detected in confirmation sample AOC1A-CS-1. As shown on Table 2, these exceedances were detected at concentrations slightly above the SCGs. Based on this exceedances, a limited soil removal program will be conducted in the area of confirmation soil sample AOC1A-CS-1 and additional confirmation soil samples will be collected to confirm that PAH SVOCs have been removed to concentrations below the SCGs. Given the amount of existing analytical data available for this AOC, further investigation is not proposed.

6.1.2 AOC 1B – Former Dry Well

A suspect former dry well was located on the west side of Building 11 as shown on Figures 2 and 3. The DPI conducted in April 2010 did not identify suspect contaminant of concerns is soil samples collected and analyzed from the borings, however, due to the planned demolition of the buildings, and that suspect chemicals of concern may exist underneath the dry well where the DPI exploration locations were unable to be completed, an IRM was conducted on October 31, 2010. As a results approximately 95 tons of impacted soil was excavated and disposed of at a NYSDEC Part 360 landfill. Three confirmation soil samples (AOC1B-CS-1 to AOC1B-CS-3) were collected in accordance with DER-10 to document soil conditions at the limits of the excavation. The locations of the confirmation soil samples are shown on Figure 3. The confirmation soil samples were analyzed for RCRA Metals, PAH SVOCs, and VOCs and the results were compared to the SCGs and the results are summarized in Table 1 (RCRA Metals), Table 2 (PAH SVOCs), and Table 3 (VOCs).

The laboratory results of the confirmation soil samples indicate the RCRA Metals, PAH SVOCs, and VOCs are not present at concentrations above the SCGs in the confirmation soil samples. As such, further investigation is not proposed at AOC 1B.

6.2 AOC 2 – Silver Wastewater Recovery System

The underground concrete silver recovery vault associated with the facility's wastewater treatment system, located on the southeastern portion of the site, has aqueous contents that are considered a characteristic hazardous waste. The integrity of the recovery vault is suspect. Leakage from this silver recovery system appears to have resulted in release and subsequent subsurface soil and groundwater contamination on this portion of the site. Samples in proximity to the underground silver recovery vault contained concentrations of metals including Cadmium and Silver above the SCGs for soil and groundwater.

Primary contaminants of concern identified at this AOC include cadmium and silver impacting subsurface soil and groundwater. Since the SCG of cadmium is less that silver, and that these two metals have consistently been detected in soil samples collected and analyzed from AOC 2; it is logical to use cadmium as the contaminant of concern to guide the DPI. Cadmium isopleth concentration contours have been developed based on Surfer version 8.05 (Golden Software, Inc.), as shown on Figure 4A, which infers the limits of cadmium soil impacts above the SCGs. As shown on Figure 4A, data gaps are present that require additional borings to define the limits of soil contamination. In addition, XRF collected data is present on Figure 4B with the proposed additional borings, as XRF data was used in combination of analytical data to develop the DPI is this AOC.

Proposed Investigation:

The following scope of work is proposed and the proposed exploration locations are shown on Figures 4A and 4B. Groundwater monitoring wells may include both bedrock interface and/or dedicated bedrock wells.

Location	No. of Proposed Borings	No. of Proposed Test Pits	No. of Proposed Wells	Proposed Depth	Proposed Soil Samples for Lab Analysis	Proposed Analysis (soil)	Proposed Analysis (GW)
AOC 2: Silver Wastewater Recovery Area	15	0	6	Equipment Refusal or Bedrock	30	Cadmium and Silver	RCRA Metals
Investigation Method:	*Rotary Drill Rig & Hollow Stem Augers. Points may be advanced into weathered and/or competent bedrock.*						

Up to three (3) contingency borings are proposed if subsurface impacts are not defined by implementing the above proposed boring plan.

6.3 AOC 3 – Eastern Portion of the Site

The Eastern Portion of the Site was defined in the Day SI/RA report as an AOC. Day identified various historical concerns associated with the eastern portion of the site. Each of these areas has been segregated in sub AOCs as defined below:

- AOC 3 – Eastern Portion of the Site
  - AOC 3A – Former Retention Pond
  - AOC 3B – Former Concrete Dry Well Area
  - AOC 3C – Former Transformers
  - AOC 3D – Former Film Incinerator
  - AOC 3E – Former Fuel Oil USTs
  - AOC 3F - Former Fuel Oil ASTs

For clarity, the various sub set AOCs are discussed separately below.

6.3.1 AOC 3A - Former Retention Pond/Burn Pit

This area of the site is where solid waste was reportedly burned/dumped. In addition, based on the review of historical aerial photos from 1970 and 1975, this part of the site also acted as an apparent storm water retention pond. A 1975 aerial photograph of the site shows an area of disturbance and depression east of former Building 7 where solid waste was reportedly burned and dumped. The Day SI/RA report indicates that heavy metals is the primarily suspect contaminant and to a lesser extent SVOCs and VOCs. Further investigation is proposed to delineate the presence of suspect contaminants of concern.

Proposed Investigation:

The following scope of work is proposed and the proposed exploration locations are shown on Figure 5.

Location	No. of Proposed Borings	No. of Proposed Test Pits	No. of Proposed Wells	Proposed Depth	Proposed Soil Samples for Lab Analysis	Proposed Analysis (soil)	Proposed Analysis (GW)
AOC 3A: Former Retention Pond/Burn Pit	21	4	4	Equipment Refusal or Bedrock	24	RCRA Metals, PAH SVOCs, and or VOCs	RCRA Metals, PAH SVOCs, and or VOCs
Investigation Method:	*Rotary Drill Rig with Hollow Stem Augers and Test Pits*						

Up to nine (9) contingency borings are proposed if subsurface impacts are not defined by implementing the proposed boring plan as shown on Figure 5.

6.3.2 AOC 3B - Former Concrete Dry Well

The former concrete dry well is located on the eastern portion of the site as shown in Figures 2 and 6. This structure was reportedly removed in the 1990s by the City of Rochester. Suspect contaminants released at this area include heavy metals, VOCs, and SVOCs that were identified in two borings in the SI/RA report. Further investigation is proposed to determine if soil impacts are present above the SCGs.

Proposed Investigation:

The following scope of work is proposed and the proposed exploration locations are shown on Figure 6.

Location	No. of Proposed Borings	No. of Proposed Test Pits	No. of Proposed Wells	Proposed Depth	Proposed Soil Samples for Lab Analysis	Proposed Analysis (soil)	Proposed Analysis (GW)
AOC 3B: Former Concrete Dry Well	3	0	0	Equipment Refusal or Bedrock	2	RCRA Metals, PAH SVOCs, and VOCs	Not Applicable
Investigation Method:	*Rotary Drill Rig with Hollow Stem Augers.*						

6.3.3 AOC 3C – Former Transformers

Two (2) former transformers were located on the eastern portion of the site at the locations shown on Figures 2 and 6. Suspect contaminants of concern include PCBs. Further investigation is recommended to confirm if the transformers had leaked and impacted the subsurface in this area of the site.

Proposed Investigation:

The following scope of work is proposed and the proposed exploration locations are shown on Figure 6. A borings is proposed to be completed within the center of the former concrete pad associated with each transformer as well as on each side of the former transformer pad. Each boring will be advanced to an initial depth of 4 ft bgs as any potential impacts from the former transformers would be seen in the surface soils. In addition, by completing the borings to 4 ft bgs will allow penetrations to any fills that may have been placed over historical surface grades. If evidence of impairment is observed in any of the borings, the boring will be advanced to a depth where evidence of impairment is no longer observed or the top of bedrock.

Location	No. of Proposed Borings	No. of Proposed Test Pits	No. of Proposed Wells	Proposed Depth	Proposed Soil Samples for Lab Analysis	Proposed Analysis (soil)	Proposed Analysis (GW)
AOC 3C: Former Transformers	10	0	0	4 ft bgs	2	PCBs	Not Applicable
Investigation Method:	*Rotary Drill Rig with Hollow Stem Augers.*						

6.3.4 AOC 3D - Former Film Incinerator

This area is suspect to be located north of Building 5 as shown on Figures 2 and 6. Also, there was a note in the Day SI/RA report that the film incinerator was located inside the former carpenter sheds. Suspect contaminants of concern include heavy metals, VOCs, and PAH SVOCs. Further investigation is proposed to confirm the presence of the chemicals of concern.

Proposed Investigation:

The following scope of work is proposed and the proposed exploration locations are shown on Figure 6. Shallow soil, less than 4 ft bgs will be sampled in this area for chemicals of concern, as potential contamination from the former incinerator would likely be present at or near the surface. Each boring will be advanced to an initial depth of 4 ft bgs as any potential impacts from the former incinerator would be seen in the surface soils. In addition, by completing the borings to 4 ft bgs will allow penetrations to any fills that may have been placed over historical surface grades. If evidence of impairment is observed in any of the borings, the boring will be advanced to a depth where evidence of impairment is no longer observed or the top of bedrock.

Location	No. of Proposed Borings	No. of Proposed Test Pits	No. of Proposed Wells	Proposed Depth	Proposed Soil Samples for Lab Analysis	Proposed Analysis (soil)	Proposed Analysis (GW)
AOC 3D: Former Film Incinerator	5	0	0	Equipment Refusal or Bedrock	2	RCRA Metals, PAH SVOCs, and VOCs	Not Applicable
Investigation Method:	*Rotary Drill Rig with Hollow Stem Augers.*						

6.3.5 AOC 3E – Former Fuel Oil USTs

Two former fuel oil USTs were located north of Building 5 as shown of Figures 2 and 6. Borings (T-1 to T-3) completed by Obrien and Gere Site in 1986 indentified the presence of petroleum related compounds in soil samples collected from 9 to 11 ft bgs and laboratory analyzed. Further investigation is recommended to determine if petroleum related compounds are present above the SCGs.

Proposed Investigation:

The following scope of work is proposed and the proposed exploration locations are shown on Figure 6.

Location	No. of Proposed Borings	No. of Proposed Test Pits	No. of Proposed Wells	Proposed Depth	Proposed Soil Samples for Lab Analysis	Proposed Analysis (soil)	Proposed Analysis (GW)
AOC 3E: Former Fuel Oil USTs	2	0	0	Equipment Refusal or Bedrock	2	NYSDEC STARS List SVOCs and VOCs	Not Applicable
Investigation Method:	*Rotary Drill Rig with Hollow Stem Augers.*						

6.3.6 AOC 3F – Former Fuel Oil AST

The former fuel oil AST was located northeast of Building 5 as shown of Figures 2 and 6. Further investigation is present to confirm if petroleum related compounds are present in soil above the SCG.

Proposed Investigation:

The following scope of work is proposed and the proposed exploration location is shown on Figure 6. Shallow soil, less than 4 ft bgs, will be sampled in this area for chemicals of concern; as potential contamination from the former AST would likely be present at or near the surface. Each boring will be advanced to an initial depth of 4 ft bgs as any potential impacts from the former AST would be seen in the surface soils. In addition, by completing the borings to 4 ft bgs will allow penetrations to any fills that may have been placed over historical surface grades. If evidence of impairment is observed in any of the borings, the boring will be advanced to a depth where evidence of impairment is no longer observed or the top of bedrock.

Location	No. of Proposed Borings	No. of Proposed Test Pits	No. of Proposed Wells	Proposed Depth	Proposed Soil Samples for Lab Analysis	Proposed Analysis (soil)	Proposed Analysis (GW)
AOC 3F: Former Fuel Oil AST	1	0	0	4 ft bgs	1	NYSDEC STARS List SVOCs	Not Applicable
Investigation Method:	*Rotary Drill Rig with Hollow Stem Augers.*						

6.4 AOC 4 – Miscellaneous Area

The Day SI/RA report identified AOC 4 as miscellaneous areas of the site that may contain intermittent contamination and areas that did not contain significant concentrations of contaminants above SCGs. LaBella has segregated AOC 4 into sub AOCs as defined below:

- AOC 4 – Miscellaneous Areas
  - AOC 4A – Former Methanol Tanks
  - AOC 4B – Former Chemical Storage Sheds

For clarity, the sub set of AOCs are discussed separately.

6.4.1 AOC 4A – Former Methanol Tanks

Former aboveground methanol tanks were located north of Building 12 as shown on Figures 2 and 7. The methanol tanks were removed during an Interim Remedial Measure (IRM) that included the removal of 2 methanol ASTs and 1 waste methanol UST. A confirmation soil sample was collected from beneath the containment pad beneath the ASTs and analyzed for VOCs, SVOCs, Metals, and Alcohols and did not detect concentrations of the chemicals of concern above the SCGs. A confirmation soil does not appear to have been collected and analyzed beneath the waste methanol UST. Further investigation is recommended at the location of the waste methanol tank to determine of suspect chemicals of concern have impacted the subsurface.

Proposed Investigation:

The following scope of work is proposed and the proposed exploration location is shown on Figure 7.

Location	No. of Proposed Borings	No. of Proposed Test Pits	No. of Proposed Wells	Proposed Depth	Proposed Soil Samples for Lab Analysis	Proposed Analysis (soil)	Proposed Analysis (GW)
AOC 4A: Former Waste Methanol Tank	1	0	0	Equipment Refusal or Bedrock	1	TCL VOC, PAH SVOC, RCRA Metals, Alcohols	Not Applicable
Investigation Method:	*Rotary Drill Rig with Hollow Stem Augers.*						

6.4.2 AOC 4B – Former Chemical Storage Shed

Borings proposed in Work Plan No. 4 were completed in October 2010 and were designed to investigate the area of the former Chemical Storage Sheds as shown on Figures 2 and 7. No appreciable contamination was identified in the borings completed at and around the former Chemical Storage Sheds. The location of the first generation chemical storage shed, as shown on the 1950s Sanborn Fire Insurance Map versus the 1970 aerial photograph of the site is different. As a result, the borings completed in the area of the first generation Chemical Storage Shed were based on the location depicted by the Sanborn Fire Insurance Map. Subsequent analysis of the location of the first generation chemical storage shed referencing historic aerial photographs has shown a different and assumed correct location (as shown in the Figures 2 and 7). It is recommended that additional borings be completed to confirm the presence of suspect chemicals of concern.

Proposed Investigation:

The following scope of work is proposed and the proposed exploration locations are shown on Figure 7.

Location	No. of Proposed Borings	No. of Proposed Test Pits	No. of Proposed Wells	Proposed Depth	Proposed Soil Samples for Lab Analysis	Proposed Analysis (soil)	Proposed Analysis (GW)
AOC 4B: Former Chemical Storage Sheds	3	0	0	Equipment Refusal or Bedrock	1	TCL VOC, PAH SVOC, RCRA Metals	Not Applicable
Investigation Method:	*Rotary Drill Rig with Hollow Stem Augers.*						

6.5 AOC 5 – Asbestos Containing Materials

This AOC consisted of asbestos containing materials (ACMs) in the former buildings at the Site. The remedial alternative approved in the ROD was the removal and off-site disposal of all ACMs. Vandalism and theft of scrap metal from nearly every building at the site resulted in the presence of scattered asbestos debris throughout most of the former on-site the buildings. All former buildings and subgrade tunnels associated with the site were decommissioned (including all asbestos abetment) and demolished during 2010. As such, this AOC has been fully remediated and no additional action is required.

6.6 AOC 6 – Residual Chemicals in Buildings

This AOC consisted of the Residual Chemicals (i.e., waste/process materials and impacted building materials) that were documented to be present throughout the former buildings at the site. The remedial alternative approved in the ROD for this AOC was the removal and disposal (this also included recycling and treating). All former buildings and subgrade tunnels associated with the site were decommissioned and demolished during 2010. As such, this AOC has been fully remediated and no additional action is required.

6.7 AOC 7 – Building 2 and 7 Wastewater

AOC 7 was identified during building demolition using XRF analysis of sub slab soil and the collection and laboratory analysis of soil samples. The source of the impacts appear to be related to waste water collection sumps located on the south end of Building 7 and the basement in Building 2 as shown on Figures 8A and 8B. Contaminants of concern identified at this AOC include cadmium and silver impacting subsurface soil at an elevation beneath the former building slab to top of bedrock. Cadmium and silver have been the two metals that consistently been detected in soil samples collected and analyzed from AOC 7. Consistently Cadmium has been detected at higher concentrations that silver at AOC 7. Therefore cadmium appears to be the constituent of concern that will guide the DPI associated with this AOC. Cadmium isopleth concentration contours have been developed using laboratory results, as shown on Figure 8A, which infers the limits of cadmium soil impacts above the SCGs. In addition, Cadmium isopleths contours have been developed using XRF soil concentrations as shown on Figure 8B. Based on this, additional borings are proposed to define the limits of soil impacts where data gaps are present.

Proposed Investigation:

The following scope of work is proposed and the proposed exploration locations are shown on Figures 8A and 8B. Groundwater monitoring wells may include bedrock interface wells.

Location	No. of Proposed Borings	No. of Proposed Test Pits	No. of Proposed Wells	Proposed Depth	Proposed Soil Samples for Lab Analysis	Proposed Analysis (soil)	Proposed Analysis (GW)
AOC 7: Building 2 and 7 Waste Water	20	0	6	Equipment Refusal or Bedrock	40	Cadmium and Silver	RCRA Metals
Investigation Method:	*Rotary Drill Rig with Hollow Stem Augers. Points may be advanced into weathered bedrock.*						

Soil samples will be collected based on XRF analysis, from the top of bedrock, and approximately 3 ft above the top of bedrock. Up to six (6) contingency borings are proposed if subsurface impacts are not defined by implementing the proposed boring plan.

6.8 AOC 8 – Building 7 Sump and Pit

AOC 8 was identified as a waste water collection point. The sump and pit observed at the north end of Building 7 was similar to the sump observed at the south end of Building 7 that is associated with AOC 7 where there is confirmed metal contamination. Suspect contaminants of concern include heavy metals, VOCs, and PAH SVOCs. Further investigation is proposed to confirm the presence of the suspect contaminants of concern.

Proposed Investigation:

The following scope of work is proposed and the proposed exploration locations are shown on Figure 6. The groundwater monitoring well may be constructed as a bedrock interface well.

Location	No. of Proposed Borings	No. of Proposed Test Pits	No. of Proposed Wells	Proposed Depth	Proposed Soil Samples for Lab Analysis	Proposed Analysis (soil)	Proposed Analysis (GW)
AOC 8: Building 7 Sump and Pit	3	0	1	Equipment Refusal or Bedrock	2	VOCs, PAH SVOCs, and/or RCRA Metals	VOCs, PAH SVOCs, and/or RCRA Metals
Investigation Method:	*Rotary Drill Rig with Hollow Stem Augers. Points may be advanced into weathered bedrock.*						

6.9 AOC 9 – Boiler House UST

An approximate 500-gallon UST was removed from the northeast corner of Building 5 during demolition. This UST was not shown on any of the former site plans and otherwise not identified, and its former use and purpose is unknown. Slight petroleum odors were observed in the soil surrounding the tank during removal. The objective of the further investigation is to determine whether subsurface soil contamination exceeds the SCGs in the vicinity of this former UST.

Proposed Investigation:

The following scope of work is proposed and the proposed exploration locations are shown on Figure 6.

Location	No. of Proposed Borings	No. of Proposed Test Pits	No. of Proposed Wells	Proposed Depth	Proposed Soil Samples for Lab Analysis	Proposed Analysis (soil)	Proposed Analysis (GW)
AOC 9: Boiler House UST	5	0	1*	Equipment Refusal or Bedrock	2	VOCs, PAH SVOCs, and/or RCRA Metals	VOCs, PAH SVOCs, and/or RCRA Metals
Investigation Method:	*Rotary Drill Rig with Hollow Stem Augers.*						

*If evidence of impairment is observed, one well will be installed in the boring that exhibits the highest evidence of impairment.

6.10 AOC 10 – Building 12 Wastewater

A drainage structure was identified on a site plan just north of Building 12 that is located adjacent to an area inside Building 12 were chemicals were reportedly stored. Further investigation is recommended to confirm the presence of subsurface contamination.

Proposed Investigation:

The following scope of work is proposed and the proposed exploration location is shown on Figure 7.

Location	No. of Proposed Borings	No. of Proposed Test Pits	No. of Proposed Wells	Proposed Depth	Proposed Soil Samples for Lab Analysis	Proposed Analysis (soil)	Proposed Analysis (GW)
AOC 10: Building 12 Waste Water	1	0	0	Equipment Refusal or Bedrock	1	VOCs, PAH SVOCs, and RCRA Metals	Not Applicable
Investigation Method:	*Rotary Drill Rig with Hollow Stem Augers.*						

6.11 AOC 11 – Waste Soil Piles

Soil piles are located north of the fence line as the location shown on Figures 2 and 7. The source of these soil piles is unknown, but based on a review of historical aerial photographs; the soil piles may have been generated as spoils during the construction of Building 1 where historical underground waste water structures were formerly present. Based on the undocumented nature of the soil piles further investigation is proposed to confirm the presence of suspect contaminants of concern.

Proposed Investigation:

The following scope of work is proposed and the proposed exploration locations are shown on Figure 7. Investigation methods associated with AOC 11 will include the use of test pits to evaluate the soil piles. Each test pit will be advanced completely through the soil pile and into the native soils below. If evidence of impairment is observed in any of the test pits, the test pit will be advanced to a depth where evidence of impairment is no longer observed, the maximum depth of the equipment or to the top of bedrock.

Location	No. of Proposed Borings	No. of Proposed Test Pits	No. of Proposed Wells	Proposed Depth	Proposed Soil Samples for Lab Analysis	Proposed Analysis (soil)	Proposed Analysis (GW)
AOC 11: Waste Soil Piles	0	5	0	See Note*	5	VOCs, PAH SVOCs, and RCRA Metals	Not Applicable
Investigation Method:	*Excavator advanced Test Pits.*						

**Note: Test pits will be excavated through the top of the soil piles. Depths of test pits below the ground surface will be based on evidence of impairment using field investigate tools.*

6.12 AOC 12 – Suspect Dumping

Chemicals were reportedly dumped behind the north end of Building 7 prior to the construction of Building 12. Further investigation is recommended to confirm the presence of subsurface contamination in this area.

Proposed Investigation:

The following scope of work is proposed and the proposed exploration location is shown on Figure 7.

Location	No. of Proposed Borings	No. of Proposed Test Pits	No. of Proposed Wells	Proposed Depth	Proposed Soil Samples for Lab Analysis	Proposed Analysis (soil)	Proposed Analysis (GW)
AOC 12: Suspect Dumping	2	0	0	Equipment Refusal or Bedrock	1	VOCs, PAH SVOCs, and RCRA Metals	Not Applicable
Investigation Method:	*Rotary Drill Rig with Hollow Stem Augers.*						

7.0 DESIGN PHASE INVESTIGATION – METHODOLOGY

Section 7.0 that describes the various investigation methodology and sampling protocols proposed for completion of the DPI.

The DPI Work Plan is organized into the following sections:

- Section 7.1 Technical Scope of Work
- Section 7.2 Quality Assurance/Quality Control Plan
- Section 7.3 Investigative Derived Waste
- Section 7.4 Health and Safety Plan and Community Air Monitoring Plan

7.1 Technical Scope of Work

7.1.1 Rotary Drill Rig Advanced Soil Borings

a. An Underground Facilities Protection Organization stakeout will be conducted at the site to locate any subsurface utilities in the areas where the subsurface assessment and delineation will take place.

b. LaBella Associates will retain the services of a specialized rotary drilling contractor to implement soil boring program. Based on the objectives of the DPI and the localized geology all borings associated with the DPI will be completed using rotary drilling techniques. In addition to traditional split-spoon sampling, a four foot (ft) macrocore advanced with a 140 pound hammer may be utilized to collected overburden soil samples using rotary drilling techniques.

Note: As part of the site restoration activities associated with the decommissioning and demolition of all on-site buildings (including subgrade pedestrian tunnels) a significant amount of backfill was placed within the footprints of these former structures. This backfill primarily consisted of virgin imported material sampled and approved in accordance with DER-10, Brooks Landing Spoils (as approved by the NYSDEC), or recycled masonry material generated from the demolition and processing of the on-site structures. As such, at all locations where the alignment of a proposed investigation point is within the footprint of a former structure, sampling of the backfill will not conducted until the investigative point has been advanced to a depth approximately 2-feet above the interface of the recently placed backfill and the in-place native soil. Continuous soil sampling will be completed from the depth noted above to the top of bedrock

c. Prior to initiating drilling activities, the drilling rig, augers, rods, split spoons, pertinent equipment, well pipe and screens will be steam cleaned on-site. This cleaning procedure will also be used between each boring. These activities will be performed in a designated on-site decontamination area/pad. Throughout and after the cleaning processes, direct contact between the equipment and the ground surface will be avoided. Plastic sheeting and/or clean support structures (e.g., pallets, sawhorses) may be used.

d. Soil borings will be advanced to the top of rock or equipment refusal, whichever is encountered first. As dictated by the field conditions, the advancement of augers will be utilized to penetrate into the top of the weathered bedrock.

e. A LaBella Geologist will observe soils for visible impairment, olfactory indications of impairment, and/or indication of detectable volatile organic compounds (VOCs) on a Photoionization Detector (PID) and for select heavy metals using X-ray fluorescence (XRF) meter, collectively referred to as "evidence of impairment." Soil will be screened with the PID by placing soil into a Ziploc® bag and screening the headspace within the bag using the PID. Soils will also be screened using an Innov-X Systems, Inc. Omega Xpress or Delta handheld XRF meter by placing the XRF meter in front of the sample for a duration that allows the instrument to analyze the chemical composition of the soil sample with the highest degree of accuracy. The XRF will be used to screen only for the Resource Conservation and Recovery Act Metals (i.e. Arsenic, Barium, Cadmium, Chromium, Lead, Mercury, Selenium, and Silver) only.

   A hand-held XRF unit was previously used during the demolition phase of the project to screen sub slab soils. In areas where the XRF screening identified impacts, soil samples were collected and analyzed by the laboratory to correlate the results. In most cases, the XRF field readings had good correlation to the laboratory analytical data. See Appendix 1 for more information on the Innov-X Systems, Inc. Omega Xpress and Delta XRF meters.

f. Soil samples will be collected from the borings based on data from prior investigations, as well as evidence of impairment, in order to define the horizontal and vertical limits of soil impairment. The soil samples will be collected from the apparent 'worst-case' locations within the soil borings advanced in that area. In the event that evidence of impairment is not encountered, soil samples will be collected from the soil-groundwater interface (if present) and/or top of bedrock. In the event that two apparently discrete sources are identified within the same boring, a sample of each 'worst-case' source will be collected/analyzed. In addition, the soils from the borings will be screened for fill layers, buried topsoil, and confining layers that may indicate likely zones for residual contamination associated with the historical use of the Site.

g. Soil samples will be placed in pre-cleaned laboratory supplied sample jars. Samples will be preserved in a cooler with ice or refrigerator to a temperature of approximately 4°C. Samples will be submitted to Chemtech in coolers with ice under chain-of-custody procedures.

h. Each boring will be backfilled with either soil cuttings with no evidence of impairment, clean sand, or bentonite. If evidence of impairment is observed in the soil cuttings, the soil cutting will be managed as Investigative Derived Waste (IDW) as described in Section 7.3.

7.1.2 Test Pitting

a. An Underground Facilities Protection Organization stakeout will be conducted at the site to locate any subsurface utilities in the areas where the subsurface assessment and delineation will take place.

b. LaBella Associates will retain the services of a specialized contractor to implement a test pitting program at the site. Test pits will be completed with an excavator equipped to reach a depth of approximately 15 ft bgs. Between each test pit all soil adhered to the bucket will be required to be scrapped off at the location generated. Care will be taken not to transport material from one test pit location to another.

c. Test pits will be completed to the top of bedrock, equipment refusal, or through the surface soil piles at the discretion of the LaBella Geologist. Each test pits will be backfilled with excavated materials and compacted with the bucket of the excavation equipment.

d. A LaBella Geologist will observe soils for visible impairment, olfactory indications of impairment, and/or indication of detectable VOCs on a PID and for select heavy metals using XRF meter, collectively referred to as "evidence of impairment." Soil will be screened with the PID by placing soil into a Ziploc® bag and screening the headspace within the bag using the PID. Soils will also be screened using an Innov-X Systems, Inc. Omega Xpress or Delta handheld XRF meter by placing the XRF meter in front of the sample for a duration that allows the instrument to analyze the chemical composition of the soil sample with the highest degree of accuracy. The XRF will be used to screen only for the Resource Conservation and Recovery Act Metals (i.e. Arsenic, Barium, Cadmium, Chromium, Lead, Mercury, Selenium, and Silver) only.

e. Soil samples will be collected from the test pits based on data from prior investigations, as well as evidence of impairment, in order to define the horizontal and vertical limits of soil impairment. The soil samples will be collected from the apparent 'worst-case' locations within the test pits advanced in that area. In the event that evidence of impairment is not encountered, the soil samples will be collected from the soil-groundwater interface (if present) and/or the top of bedrock. In the event that two apparently discrete sources are identified within the same boring, a sample of each 'worst-case' source will be collected/analyzed. In addition, the soils from the test pits will be screened for fill layers, buried topsoil, and confining layers that may indicate likely zones for residual contamination associated with the historical use of the Site.

f. Soil samples will be placed in pre-cleaned laboratory supplied sample jars. Samples will be preserved in a cooler with ice or refrigerator to a temperature of approximately 4°C. Samples will be submitted to Chemtech in coolers with ice under chain-of-custody procedures.

7.1.3 Groundwater Monitoring Well Installation

a. Groundwater monitoring wells will be installed during the soil boring work as described in Section 5.1.1. Based on the localized site geology, it is anticipated that bedrock interface groundwater monitoring wells will be the preferred construction method to evaluate on-site groundwater associated with most AOCs. Dedicated bedrock wells are also anticipated to fully evaluate AOC 2. Overburden groundwater monitoring wells are not anticipate under the current scope of work. The NYSDEC and the City of Rochester will be consulted prior to the installation of any groundwater monitoring well not in compliance with the proposed DPI.

b. The well risers shall consist of 2-inch diameter, threaded flush-joint PVC pipe. All well risers will conform to the requirements of ASTM-D 1785 Schedule 40 pipe, and shall bear markings that will identify the material as that which is specified. All materials used to construct the wells will be NSF/ASTM approved. [*Note: Based on the long-term remedial objectives associated with AOC 2, several 8-inch diameter well structures may be constructed during the DPI completed at this location.*]

c. Wells will be constructed with 5 or 10-ft machine-slotted screens, unless otherwise specified or dictated by field conditions (i.e., screens of less than 10-ft in length may be used, depending on the characteristics of the well). The well screen slot size will be selected based on the filter pack grain size and the ability to hold back 85 percent or more of the filter pack materials. Screen and riser sections shall be joined by flush-threaded coupling to form watertight unions that retain 100% of the strength of the casing. Glue will not be used at any time in the construction of the wells. The bottom of the screen shall be sealed with a threaded cap or plug. No lead shot or lead wool is to be employed in sealing the bottom of the well or for sealant at any point in the well.

d. Granular backfill will be chemically and texturally clean, inert, siliceous, and of appropriate grain size for the screen slot size and the host environment. Sand pack grain size will be selected based on sieve analyses of formation samples. Care shall be taken installing the sand pack to minimize the tendency for particle separation and bridging. The well screen and casing will be installed, and the sand pack placed around the screen and casing to a depth extending at least 25 percent of the screen length above the top of the screen. A minimum 2-ft thick seal of tamped bentonite pellets will be placed directly on top of the sand pack, and care will be taken to avoid bridging. The seal will be measured immediately after placement, without allowance for swelling.

e. Upon completion of the bentonite seal, the well will be grouted with a non-shrinking cement grout (e.g., VolclayR) mix will be placed from the top of the bentonite seal to the ground surface. The cement grout shall consist of a mixture of Portland cement (ASTM C 150) and water, in the proportion of not more than 7 gallons of clean water per bag of cement (1 cubic foot or 94 pounds). Additionally, 3% by weight of bentonite powder shall be added, if required.

f. Permanent steel casing will be installed for dedicated bedrock wells. The steel casing will extend from the ground surface into the top two-feet of competent bedrock and grouted to the surface. The grout will set overnight for a minimum of 14-hours prior to continuing rock coring.

g. Upon completion of the well, a suitable vented cap shall be installed to prevent material from entering the well. The PVC well riser shall be surrounded by a locking, flush mount or stand up protective well box set into a concrete pad. A section of 18-inch sonotube shall be utilized to construct the concrete pad. The concrete pad, sloped away from the well, will be constructed around the protective well box.

7.1.4 Groundwater Sampling

a. Groundwater monitoring wells will be sampled using low-flow sampling methods (e.g. peristaltic pump). Low flow purging of the monitoring wells will include collection of water quality indicator parameters. Water quality indicator parameters will be recorded at three (3) or five (5)-minute intervals during the purging of the wells. These water quality indicator parameters will include:

- Water Level Drawdown
- Temperature
- pH
- Dissolved Oxygen
- Specific Conductance
- Oxidation Reduction Potential
- Turbidity

b. Groundwater sampling will commence once the groundwater quality indicator parameters have stabilized for at least three (3) consecutive readings for the following parameters:

- Water Level Drawdown <0.3'
- Temperature - +/- 3%
- pH - +/- 0.1unit
- Dissolved Oxygen - +/-10%
- Specific Conductance - +/-3%
- Oxidation Reduction Potential - +/-10 millivolts
- Turbidity - +/-10% for values greater than 1 NTU

c. At this time it is expected that one groundwater sample will be obtained for laboratory analysis from each well advanced at the site. Groundwater samples will be placed in pre-cleaned laboratory supplied sample jars. Samples will be preserved in a cooler with ice or refrigerator to a temperature of approximately 4°C. Samples will be submitted to Chemtech in coolers with ice under chain-of-custody procedures.

d. Purge water generated as part of the groundwater sampling event will be managed as IDW as described in Section 7.3.

7.1.5 Survey of DPI Points and Infrastructure

Global Positioning System technology will be utilized to record the exploration locations of the soil borings, test pits, and groundwater monitoring wells. This information will be added to the existing site mapping. In addition, an elevation survey will be completed to establish site-specific well elevations relative to the City Datum. This information will be utilized to establish localized groundwater depths, flow directions and trends.

7.2 Quality Assurance/Quality Control Plan

Quality assurance/quality control (QA/QC) samples will be submitted for the complete data set generated as part of the DPI. The QA/QC Sampling Plan presented in the table below outlines the protocol for QA/QC sample collection and submission.

QA/QC Sampling Plan

Matrix	Trip Blanks	Field Blanks	Method Blanks	Duplicates	MS/MSD
Soil and Groundwater	1 per 20 samples, or one per shipment	1 per 20 samples, or one per shipment	1 per 20 samples, or one per shipment	1 per 20 samples, or one per shipment	1 per 20 samples, or one per shipment

Chemtech Consulting Group (Chemtech) will conduct the soil and groundwater laboratory testing on the samples collected during the DPI. Chemtech is a New York State Department of Health (NYSDOH) Environmental Laboratory Approval Program (ELAP) certified laboratory. In addition, all laboratory data from the DPI will be reported in an Analytical Services Protocol (ASP) Category B Deliverables data package.

7.3 Investigative Derived Waste

Based on the nature of the site, containerization of investigation derived waste (IDW) will be managed as described below.

Soil:

Excess soil generated during the completion of the soil borings will be collected in a 55-gallon drum and labeled appropriately. If significant impacts to on-site soils are not identified either in the field or based on the subsequent analytical data from the select soil samples submitted for laboratory analysis then it is proposed that the waste soil generated during the drilling program be disposed of with the non-hazardous waste soil removed as part of future Remedial Measures. If significant, impacts are identified during the drilling program then it may be recommended to submit the IDW soil for additional waste characterization analysis prior to off-site disposal.

Groundwater:

Development/purge water will be containerized in 55-gallon drums. Waste characterization sampling will be completed on the final quantity of IDW water. All wastewater and rinsate generated as part of the DPI will be collected in the appropriate on-site container based on the volume generated. The rinsate and wastewater will then be characterized through the collection and analysis of representative samples. Based on waste characterization analytical results, wastewater and rinsate will either be discharged to the Municipal Sewer System under a Monroe County Sewer Use Permit or transported off-site for disposal in accordance with applicable regulation.

7.4 Health and Safety Plan and Community Air Monitoring Plan

Health and Safety Plan (HASP):

The Health and Safety Plan (HASP) for the site is included as Appendix 2 of this Work Plan. The Environmental Contractor selected for the project will be required to prepare and submit a site-specific Health and Safety Plan for the project. The selected contractor will be required to implement their own HASP, as well as meet all pertinent aspects of OSHA regulations.

Community Air Monitoring Plan (CAMP):

Particulate and ambient air monitoring and the availability of dust suppression measures have been required by the NYSDEC during all ground intrusive activities at the site. LaBella shall perform the particulate and ambient air monitoring during activities that affect the sub surface in accordance with the New York State Department of Health (NYSDOH) Generic Community Air Monitoring plan included as Appendix 1A in the NYSDEC Department of Environmental Remediation DER-10 guidance document. A copy of this plan is included as Appendix 3.

8.0 DESIGN PHASE INVESTIGATION DATA PACKAGE

Once the analytical data from the DPI is received by LaBella, the results will be consolidated into data tables and the soil borings and groundwater monitoring well locations will be added to the existing Site Mapping. This cumulative information will be formalized into a DPI Data Package and submitted to the NYSDEC for review and approval.

The cumulative information gathered as part of the RI/RAA, field and supplemental data collected during the building decommissioning and demolition phase and the data acquired through the DPI will be utilized to define remedial areas and develop remedial options for each AOC, including proposed remedial methods, volumes and estimated costs.

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LABELLA
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Tables

TABLE 1
Area of Concern 1A - East of Chemical Building and AOC 1B - Former Drywell
Resource Conservation and Recovery Act Metals
All Results Expressed in milligrams per kilogram (mg/kg)

Sample ID	NYCRR Part 375-6.8(b) Restricted Use Soil Cleanup Objectives for a Commercial Site	A0C1B-CS-1	A0C1B-CS-2	A0C1B-CS-3	A0C1A-CS-1	A0C1A-CS-2	A0C1A-CS-3	A0C1A-CS-4	A0C1A-CS-5	A0C1A-CS-6	A0C1A-CS-7	A0C1A-CS-8	A0C1A-CS-9	A0C1A-CS-10	A0C1A-CS-11	A0C1A-CS-12
Arsenic	16	4.46	2.93	2.56	4.83	2.33	4.26	3.98	5.1	3.03	3.14	3.5	1.93	2.33	3.3	1.94
Barium	400	20.3	16.1	16.6	39.6	19.2	46	23.7	40.4	43.5	35.8	33.1	37.5	34	27	29.5
Cadmium	9.3	0.3 U	0.28 U	0.26 U	0.29 U	0.32 U	0.32 U	0.31 U	0.34 U	0.36 U	0.33 U	0.36 U	0.27 U	0.36 U	0.27 U	0.29 U
Chromium	NA	4.82	3.82	4.14	8.32	6.5	11.2	6	10.7	8.43	9.17	9.42	6.79	6.99	7.66	6.99
Lead	1000	23.3	18.5	20.3	25	6.7	12.6	8.85	29.1	15.9	15.4	28.5	9.28	12.4	17.4	8.4
Mercury	2.8	0.031	0.011 J	0.012	0.096	0.02	0.024	0.033	0.106	0.04	0.441	0.072	0.031	0.02	0.088	0.061
Selenium	1500	1 U	0.93 U	0.85 U	0.97 U	1.08 U	1.07 U	1.04 U	1.13 U	1.21 U	1.1 U	1.21 U	0.89 U	1.18 U	0.9 U	0.97 U
Silver	1500	0.5 U	0.47 U	0.43 U	0.48 U	0.54 U	0.53 U	0.52 U	0.57 U	0.61 U	0.55 U	0.6 U	0.44 U	0.59 U	0.45 U	0.48 U

Qualifiers

U - The compound was not detected at the indicated concentration.

J - Data indicates the presence of a compound that meets the identification criteria. The result is less than the quantization limit but greater than MDL. The concentration given is an approximate value.

TABLE 2
Area of Concern 1A - East of Chemical Building and AOC 1B - Former Drywell
Polynucleur Aromatic Hydrocarbons Semi-Volatile Organic Compounds
All Results Expressed in milligrams per kilogram (mg/kg)

Sample ID	NYCRR Part 375-6.8(b) Restricted Use Soil Cleanup Objectives for a Commercial Site	A0C1B-CS-1	A0C1B-CS-2	A0C1B-CS-3	A0C1A-CS-1	A0C1A-CS-1DL	A0C1A-CS-2	A0C1A-CS-3	A0C1A-CS-4	A0C1A-CS-5	A0C1A-CS-6	A0C1A-CS-7	A0C1A-CS-8	A0C1A-CS-9	A0C1A-CS-10	A0C1A-CS-11	A0C1A-CS-12
Acenaphthene	500	0.39 U	0.4 U	0.4 U	0.89	0.94 JD	0.38 U	0.075 J	0.37 U	0.42 U	0.18 J	0.44 U	0.1 J	0.39 U	0.39 U	0.41 U	0.4 U
Acenaphthylene	500	0.39 U	0.4 U	0.4 U	0.074 J	1.9 UD	0.38 U	0.35 U	0.37 U	0.42 U	0.45 U	0.44 U	0.42 U	0.39 U	0.39 U	0.41 U	0.4 U
Anthracene	500	0.39 U	0.4 U	0.4 U	3.3 E	3.3 D	0.38 U	0.17 J	0.37 U	0.098 J	0.43 J	0.44 U	0.18 J	0.39 U	0.39 U	0.41 U	0.084 J
Benzo(a)anthracene	5.6	0.075 J	0.4 U	0.058 J	6.1 E	6.8 D	0.38 U	0.46	0.37 U	0.46	0.76	0.11 J	0.29 J	0.39 U	0.39 U	0.41 U	0.21 J
Benzo(a)pyrene	1	0.064 J	0.4 U	0.4 U	4.8 E	5 D	0.38 U	0.37	0.37 U	0.38 J	0.49	0.084 J	0.17 J	0.39 U	0.39 U	0.41 U	0.14 J
Benzo(b)fluoranthene	5.6	0.089 J	0.4 U	0.066 J	6 E	6.4 D	0.049 J	0.52	0.37 U	0.51	0.66	0.13 J	0.24 J	0.39 U	0.39 U	0.41 U	0.19 J
Benzo(g,h,i)perylene	500	0.39 U	0.4 U	0.4 U	2.5	2.5 D	0.38 U	0.22 J	0.37 U	0.2 J	0.23 J	0.44 U	0.076 J	0.39 U	0.39 U	0.41 U	0.074 J
Benzo(k)fluoranthene	56	0.39 U	0.4 U	0.4 U	2.6	2.5 D	0.38 U	0.19 J	0.37 U	0.17 J	0.26 J	0.44 U	0.074 J	0.39 U	0.39 U	0.41 U	0.079 J
Chrysene	56	0.075 J	0.4 U	0.056 J	5.3 E	5.6 D	0.38 U	0.44	0.37 U	0.4 J	0.66	0.11 J	0.24 J	0.39 U	0.39 U	0.41 U	0.18 J
Dibenz(a,h)anthracene	0.56	0.39 U	0.4 U	0.4 U	0.84	0.84 JD	0.38 U	0.062 J	0.37 U	0.064 J	0.085 J	0.44 U	0.42 U	0.39 U	0.39 U	0.41 U	0.4 U
Fluoranthene	500	0.16 J	0.4 U	0.13 J	11 E	14 D	0.1 J	1	0.37 U	0.69	1.7	0.25 J	0.63	0.055 J	0.058 J	0.41 U	0.42
Fluorene	500	0.39 U	0.4 U	0.4 U	1.2	1.2 JD	0.38 U	0.068 J	0.37 U	0.42 U	0.18 J	0.44 U	0.091 J	0.39 U	0.39 U	0.41 U	0.4 U
Indeno(1,2,3-cd)pyrene	5.6	0.39 U	0.4 U	0.4 U	2.5	2.5 D	0.38 U	0.2 J	0.37 U	0.19 J	0.23 J	0.44 U	0.082 J	0.39 U	0.39 U	0.41 U	0.07 J
Naphthalene	500	0.39 U	0.4 U	0.4 U	0.3 J	0.31 JD	0.38 U	0.35 U	0.37 U	0.42 U	0.45 U	0.44 U	0.42 U	0.39 U	0.39 U	0.41 U	0.4 U
Phenanthrene	500	0.1 J	0.4 U	0.094 J	9.9 E	11 D	0.058 J	0.76	0.37 U	0.38 J	1.7	0.2 J	0.73	0.39 U	0.39 U	0.41 U	0.37 J
Pyrene	500	0.14 J	0.4 U	0.1 J	8.7 E	11 D	0.077 J	0.8	0.37 U	0.57	1.3	0.21 J	0.49	0.05 J	0.05 J	0.41 U	0.34 J

Qualifiers

U - The compound was not detected at the indicated concentration.

J - Data indicates the presence of a compound that meets the identification criteria. The result is less than the quantization limit but greater than MDL. The concentration given is an approximate value.

B - The analyte was found in the laboratory blank as well as the sample. This indicates possible laboratory contamination of the environmental sample.

P - For dual column analysis, the percent difference between the quantitated concentrations on the two columns is greater than 40%.

* - For dual column analysis, the lowest quantitated concentration is being reported due to coeluting interference.

E (Organics) - Indicates the analyte 's concentration exceeds the calibrated range of the instrument for that specific analysis.

E (Inorganics) - The reported value is estimated because of the presence of interference.

D - The reported value is from a secondary analysis with a dilution factor. The original analysis exceeded the calibration range.

* - For dual column analysis, the lowest quantitated concentration is being reported due to coeluting interference.

NR - Not analyzed

TABLE 3
AOC 1B - Former Drywell
Volatile Organic Compounds
All Results Expressed in milligrams per kilogram (mg/kg)

Sample ID	NYCRR Part 375-6.8(b) Restricted Use Soil Cleanup Objectives for a Commercial Site	A0C1B-CS-1	A0C1B-CS-2	A0C1B-CS-3
1,1,1-Trichloroethane	500	0.0058 U	0.006 U	0.0059 U
1,1,2,2-Tetrachloroethane	NA	0.0058 U	0.006 U	0.0059 U
1,1,2-Trichloroethane	NA	0.0058 U	0.006 U	0.0059 U
1,1,2-Trichlorotrifluoroethane	NA	0.0058 U	0.006 U	0.0059 U
1,1-Dichloroethane	240	0.0058 U	0.006 U	0.0059 U
1,1-Dichloroethene	500	0.0058 U	0.006 U	0.0059 U
1,2,4-Trichlorobenzene	NA	0.0058 U	0.006 U	0.0059 U
1,2,4-Trimethylbenzene	NA	0.0058 U	0.006 U	0.0059 U
1,2-Dibromo-3-Chloropropane	NA	0.0058 U	0.006 U	0.0059 U
1,2-Dibromoethane	NA	0.0058 U	0.006 U	0.0059 U
1,2-Dichlorobenzene	500	0.0058 U	0.006 U	0.0059 U
1,2-Dichloroethane	30	0.0058 U	0.006 U	0.0059 U
1,2-Dichloropropane	NA	0.0058 U	0.006 U	0.0059 U
1,3,5-Trimethylbenzene	NA	0.0058 U	0.006 U	0.0059 U
1,3-Dichlorobenzene	280	0.0058 U	0.006 U	0.0059 U
1,4-Dichlorobenzene	130	0.0058 U	0.006 U	0.0059 U
2-Butanone	500	0.029 U	0.03 U	0.03 U
2-Hexanone	NA	0.029 U	0.03 U	0.03 U
4-Methyl-2-Pentanone	NA	0.029 U	0.03 U	0.03 U
Acetone	500	0.029 U	0.03 U	0.03 U
Benzene	44	0.0058 U	0.006 U	0.0059 U
Bromodichloromethane	NA	0.0058 U	0.006 U	0.0059 U
Bromoform	NA	0.0058 U	0.006 U	0.0059 U
Bromomethane	NA	0.0058 U	0.006 U	0.0059 U
Carbon Disulfide	NA	0.0058 U	0.006 U	0.0059 U
Carbon Tetrachloride	22	0.0058 U	0.006 U	0.0059 U
Chlorobenzene	500	0.0058 U	0.006 U	0.0059 U
Chloroethane	NA	0.0058 U	0.006 U	0.0059 U
Chloroform	350	0.0058 U	0.006 U	0.0059 U
Chloromethane	NA	0.0058 U	0.006 U	0.0059 U
cis-1,2-Dichloroethene	500	0.0058 U	0.006 U	0.0059 U
cis-1,3-Dichloropropene	NA	0.0058 U	0.006 U	0.0059 U
Cyclohexane	NA	0.0058 U	0.006 U	0.0059 U
Dibromochloromethane	NA	0.0058 U	0.006 U	0.0059 U
Dichlorodifluoromethane	NA	0.0058 U	0.006 U	0.0059 U
Ethyl Benzene	390	0.0058 U	0.006 U	0.0059 U
Isopropylbenzene	NA	0.0058 U	0.006 U	0.0059 U
m/p-Xylenes	NA	0.0052 J	0.012 U	0.012 U
Methyl Acetate	NA	0.0058 U	0.006 U	0.0059 U
Methyl tert-butyl Ether	500	0.0058 U	0.006 U	0.0059 U
Methylcyclohexane	NA	0.0058 U	0.006 U	0.0059 U
Methylene Chloride	500	0.0058 U	0.006 U	0.0059 U
n-Butylbenzene	NA	0.0058 U	0.006 U	0.0059 U
n-propylbenzene	NA	0.0058 U	0.006 U	0.0059 U
o-Xylene	NA	0.0058 U	0.006 U	0.0059 U
sec-Butylbenzene	NA	0.0058 U	0.006 U	0.0059 U
Styrene	NA	0.0058 U	0.006 U	0.0059 U
t-1,3-Dichloropropene	NA	0.0058 U	0.006 U	0.0059 U
tert-Butylbenzene	NA	0.0058 U	0.006 U	0.0059 U
Tetrachloroethene	150	0.0058 U	0.006 U	0.0059 U
Toluene	500	0.0052 J	0.006 U	0.0059 U
Total Xylenes	NA	0.0052 J	0.018 U	0.018 U
trans-1,2-Dichloroethene	500	0.0058 U	0.006 U	0.0059 U
Trichloroethene	200	0.0058 U	0.006 U	0.0059 U
Trichlorofluoromethane	NA	0.0058 U	0.006 U	0.0059 U
Vinyl Chloride	13	0.0058 U	0.006 U	0.0059 U

Qualifiers

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J - Data indicates the presence of a compound that meets the identification criteria. The result is less than the quantitation limit but greater than MDL. The concentration given is an approximate value.

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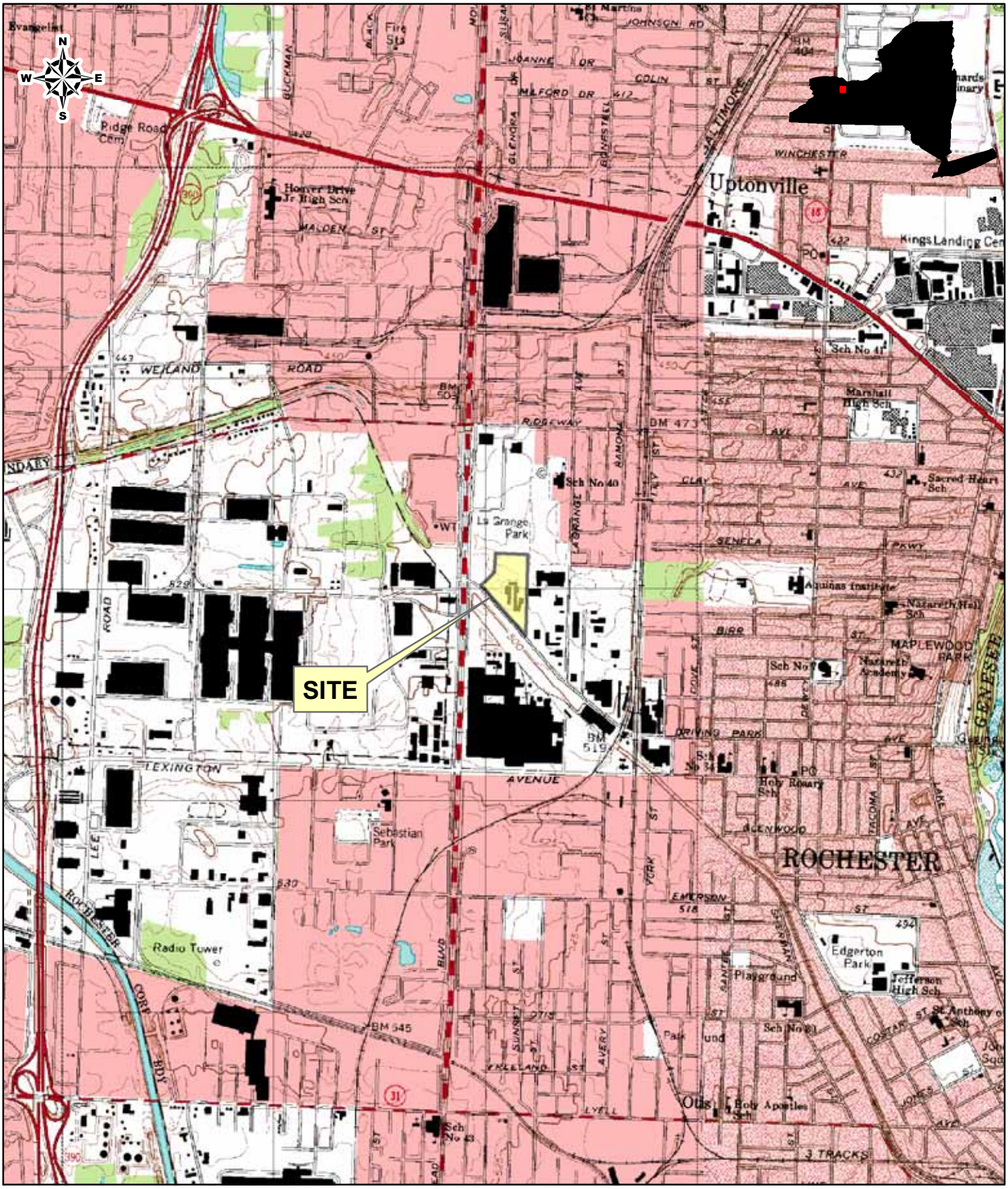
Figures



PROJECT/DRAWING NUMBER

209288

FIGURE 1

DRAWING TITLE

SITE LOCATION WITH USGS 7.5 MINUTE TOPO MAP ROCHESTER WEST QUAD

1:24,000

ISSUED FOR: REVIEW

DATE: 9/1/2009

DESIGNED BY: RCN

DRAWN BY: RCN

REVIEWED BY: DEP

PROJECT/CLIENT

CITY OF ROCHESTER DEQ

SILVER RECOVERY VAULT AREA
INTERIM REMEDIAL MEASURE
WORK PLAN

FORMER PHOTECH
IMAGING FACILITY
1,000 DRIVING PARK AVENUE
ROCHESTER, NY

LABELLA Associates, P.C.

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ROCHESTER, NY 14614
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Y:\Rochester, City\209288 PHOTECH\Drawings\AOC3 IRM\LocationMap.mxd - 9/2/2009 @ 10:50:30 AM

Legend

- Well
- Boring
- Confirmation
- Sub Slab
- Surface Sample
- Test Pit
- Former Concrete Dry Well Area
- Former Retention Pond
- Wetland
- IRM Excavation
- Former Incinerator
- Tanks/Exterior Pits
- Swale
- Former Transformer
- Tunnels Subgrade
- Parcel
- Former Building
- AOC 1A-East of Chemical Bldg #11
- AOC 1B-Former Dry Well
- AOC 2-Silver Recovery/Concrete Vault
- AOC 3-Eastern Portion of Site
- AOC 4-Former Methanol and Chemical Storage
- AOC 7-Bldg #2 and #7 Sumps and Pit
- AOC 8-Bldg #7 North Sump and Pit
- AOC 9-Boiler House UST
- AOC 10-Bldg #12 Waste Water
- AOC 11-Waste Soil Piles
- AOC 12-Suspect Dumping

Driving Park Avenue

AOC 2
Silver Recovery/Concrete Vault

AOC 1B
Former Dry Well

AOC 10
Building #12 Waste Water

AOC 4B
Former Chemical Storage Sheds

Former Building #15
Chemical Storage Shed

Former Chemcial Storage Shed

Former Building #13
Warehouse

Former Guard House

Former Building #11
Chemical Lab

Former Building #16
Process Building

AOC 1A
East of Chemical Building #11

Former Building #12
Subcoat Building

Former Tunnel

Former Building #9

Former Building #10

Former Tunnel

Former Tunnel

Former Building #17
Dryer Addition

Former Building #7
Coating Alley

Passenger Hallway

AOC 12
Suspect Dumping

AOC 4A
Former Methanol Tanks

AOC 11
Waste Soil Piles

AOC 9
Boiler House UST

AOC 3E
Former Fuel Oil USTs

AOC 8
BLDG #7 Sump and Pit

Former Building #1
Research and Development

Former Building #2
Emulsion Building

Former Building #3
Garage

Former Building #4
Maintenance Shop

Former Building #5
Boiler House

Former Carpenter Shed

Former Building #6
Stationary Engineering

AOC 3A
Former Retention Pond

Swale

Wetland

AOC 7
Building 2 and 7 Waste Water

AOC 3B
Former Concrete Dry
Well Area

AOC 3C
Former Transformers

AOC 3D
Former Film Incinerator

AOC 3F
Former Fuel Oil AST

0 70

1 inch = 70 feet

Y:\Rochester, City\209288 PHOTECH\Drawings\DPI\Work Plan 5\Figure2_AOC Map 11X17.mxd

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CITY OF ROCHESTER

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DESIGN PHASE INVESTIGATION
WORK PLAN NO. 5

AREAS OF CONCERN MAP

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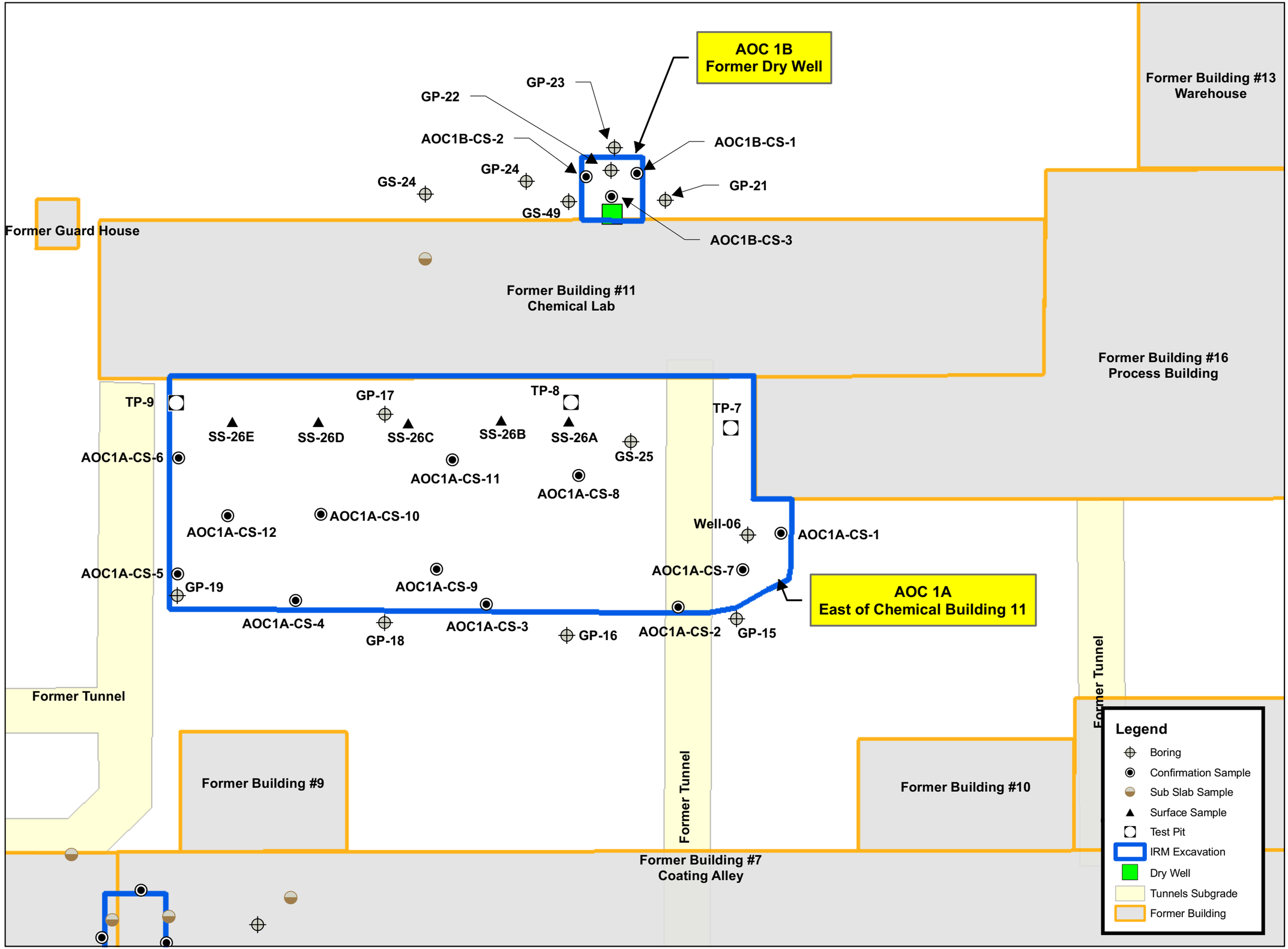
FINAL

Date: 03/16/2011

Drawn By: MFP

209288

FIGURE 2



Y:\Rochester, City\209288 PHOTECH\Drawings\DPI\Work Plan 5\Figure3_AOC 1 11x17.mxd

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DESIGN PHASE INVESTIGATION
WORK PLAN NO. 5

AREAS OF CONCERN 1
CONFIRMATION SOIL SAMPLE
LOCATIONS

0 15
1 inch = 15 feet

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Date: 03/18/2011
Drawn By: MFP

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FIGURE 3

Undergound Water Service Vault

Undergound Water Service Vault

12,000 Gallon Silver Wastewater Concrete Vault UST

5,000 Gallon Silver Recovery UST

Area of Concern 2
Silver Recovery/Concrete Vault

GP-12
Cd: 1.11

GS-42
Cd: 0

GP-08
Cd: 0.97

GS-16
Cd: 1.16

TP-03
Cd: 5.66

TP-04
Cd: 2.04

GP-06
Cd: 35

100 PPM

7.5 PPM

GS-15

Well-01
Cd: 720

GS-17
Cd: 6320

TP-02
Cd: 142

TP-05
Cd: 0

XRF10 091710
Cd: 0.289

XRF21 091610
Cd: 0.3

GP-07
Cd: 0.88

GP-04
Cd: 218

1000 PPM

TP-5
Cd: 0.64

GS-18
Cd: 3.81

TP-01
Cd: 7.26

XRF20 091610
Cd: 0.302

Former Building #1

GP-02
Cd: 0.99

7.5 PPM

NYSDEC SOIL CLEANUP OBJECTIVES			
Contaminant	Units	NYSDEC DER 6 NYCRR Part 375-6.8(b) Restricted Use Soil Cleanup Objective for a Commercial Property	NYSDEC DER 6 NYCRR Part 375-6.8(b) Restricted Use Soil Cleanup Objective for the Protection of Groundwater
Silver	mg/kg	1500	8.3
Cadmium		9.3	7.5

Sample Location
Cadmium Concentrations (mg/kg)

NOTE:

Since the SCG of cadmium is less that silver, and that these two metals have consistently been detected in soil samples collected and analyzed from AOC 2; cadmium concentrations are used to guide the Depsign Phase Investiation at AOC 2.

Legend

- Proposed Boring
- Proposed Contingency Boring
- Boring
- Confirmation
- Sub Slab
- Surface Sample
- Test Pit

Cadmium Concentrations in Soil

- 7.5 PPM
- 100 PPM
- 1000 PPM
- IRM Excavation
- Former Building
- Tanks/Exterior Pits
- Former Subgrade Tunnel
- electric
- gas
- storm water
- storm-sanitary
- water

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ROCHESTER, NEW YORK

DESIGN PHASE INVESTIGATION
WORK PLAN NO. 5

AREA OF CONCERN 2 WITH CADMIUM ISOPLETH CONTOURS AND PROPOSED EXPLORATION LOCATIONS

0 10
1 inch = 10 feet

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Date: 03/18/2011
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FIGURE 4A

W:\Rochester, City\209288 PHOTECH\Drawings\DPI\Work Plan 5\Figure4A_ AOC 2 11x17.mxd

Undergound Water Service Vault

Undergound Water Service Vault

TP-6
Ag: 0
Cd: 0

GP-11
Ag: 0
Cd: 0

GP-12
Ag: 0
Cd: 0

GP-13
Ag: 0
Cd: 0

5,000 Gallon Silver Recovery UST

12,000 Gallon Silver Wastewater Concrete Vault UST

GP-09
Ag: 0
Cd: 0

GS-42

GP-08
Ag: 0
Cd: 0

GP-10
Ag: 0
Cd: 0

GP-61
Ag: 0
Cd: 0

Area of Concern 2
Silver Recovery/Concrete Vault

GS-16

GP-14
Ag: 0
Cd: 0

Well-11

GP-06
Ag: 50
Cd: 67

GP-05
Ag: 0
Cd: 0

Well-13

TP-03
Ag: 0
Cd: 0

TP-04
Ag: 47
Cd: 0

TP-06
Ag: 47

XRF10 091710
Ag: 0
Cd: 0

XRF6 091610
Ag: 0
Cd: 0

TP-05
Ag: 0
Cd: 0

XRF21 091610
Ag: 0
Cd: 0

GS-15

TP-02
Ag: 0
Cd: 60

XRF5 091610
Ag: 0
Cd: 0

Well-01

GS-17

GP-07
Ag: 0
Cd: 0

GP-04
Ag: 167
Cd: 376

Former Buil

TP-5
Ag: 0
Cd: 0

GS-18

TP-01
Ag: 0
Cd: 0

XRF20 091610
Ag: 0
Cd: 0

TP-4
Ag: 0
Cd: 52

GP-03
Ag: 0
Cd: 0

GP-02
Ag: 0
Cd: 0

XRF18 091610
Ag: 0
Cd: 0

NYSDEC SOIL CLEANUP OBJECTIVES

Contaminant	Units	NYSDEC DER 6 NYCRR Part 375-6.8(b) Restricted Use Soil Cleanup Objective for a Commercial Property	NYSDEC DER 6 NYCRR Part 375-6.8(b) Restricted Use Soil Cleanup Objective for the Protection of Groundwater
Silver	mg/kg	1500	8.3
Cadmium		9.3	7.5

Sample Location
Silver (Ag) XRF Concentrations (mg/kg)
Cadmium (Cd) XRF Concentrations (mg/kg)

NOTE:

1. Exploration location with no silver or cadmium XRF concentration indicates an XRF was not used to screen soil during the investigation (e.g GS-15).

Legend

- Proposed Boring
- Proposed Contingency Boring
- Boring
- Sub Slab Soil Sample
- Surface Soil Sample
- Test Pit
- Sub Slab XRF Measurement
- electric
- gas
- storm water
- storm-sanitary
- water
- IRM Excavation
- Former Building
- Tanks/Exterior Pits
- Swale

W:\Rochester, City\209288 PHOTECH\Drawings\DPI\Work Plan 5\Figure4B_ AOC 2 11x17.mxd

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DESIGN PHASE INVESTIGATION
WORK PLAN NO. 5

AREA OF CONCERN 2 AND
PROPOSED EXPLORATION
LOCATIONS AND DPI
XRF SOIL CONCENTRATIONS

0 10
1 inch = 10 feet

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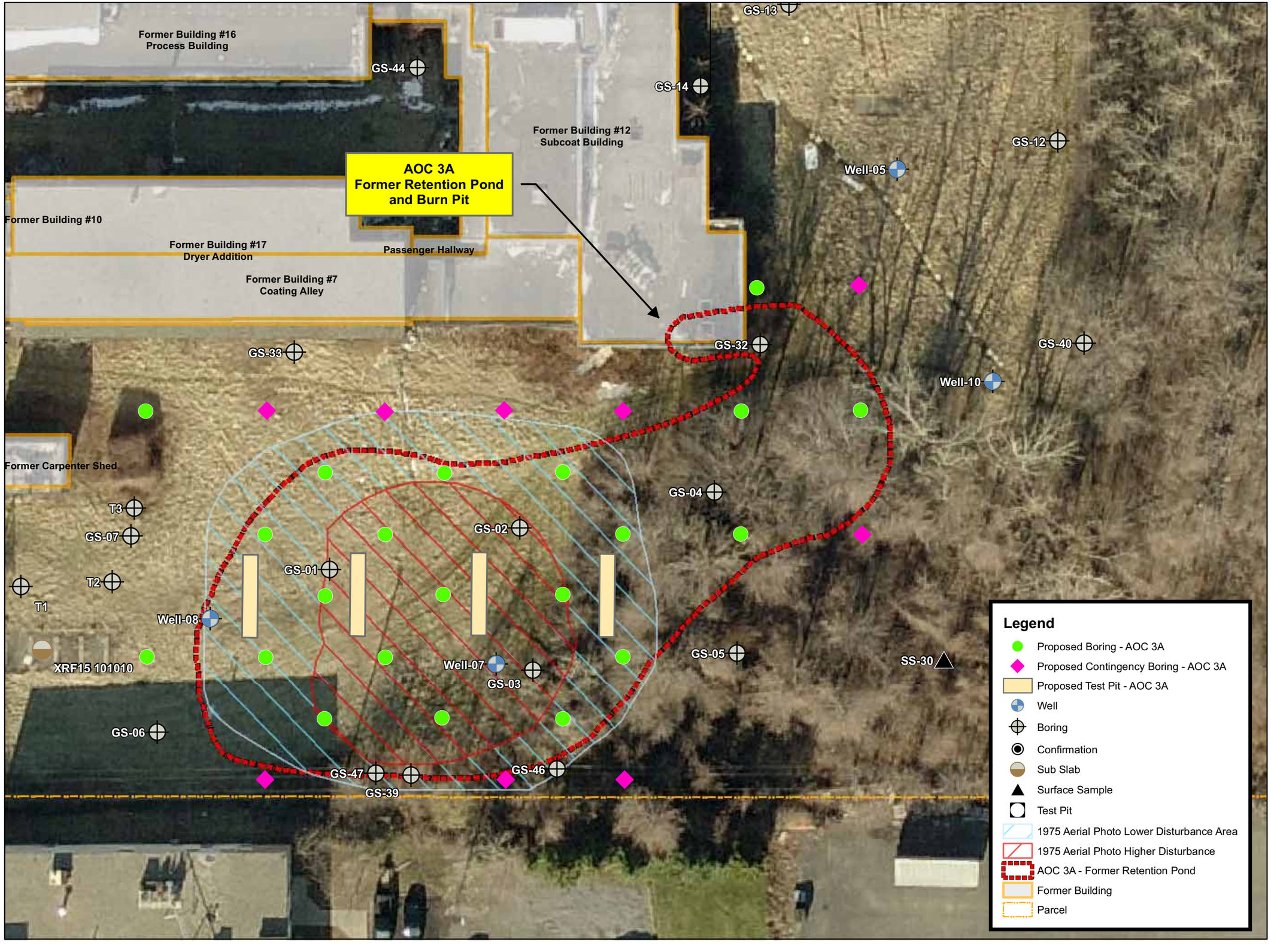
FIGURE 4B



Y:\Rochester, City\209288 PHOTECH\Drawings\DPI\Work Plan 5\Figure5 AOC 3a 11x17.mxd

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DESIGN PHASE INVESTIGATION
WORK PLAN NO. 5

AREA OF CONCERN 3A AND
PROPOSED EXPLORATION
LOCATIONS

0 30
1 inch = 30 feet

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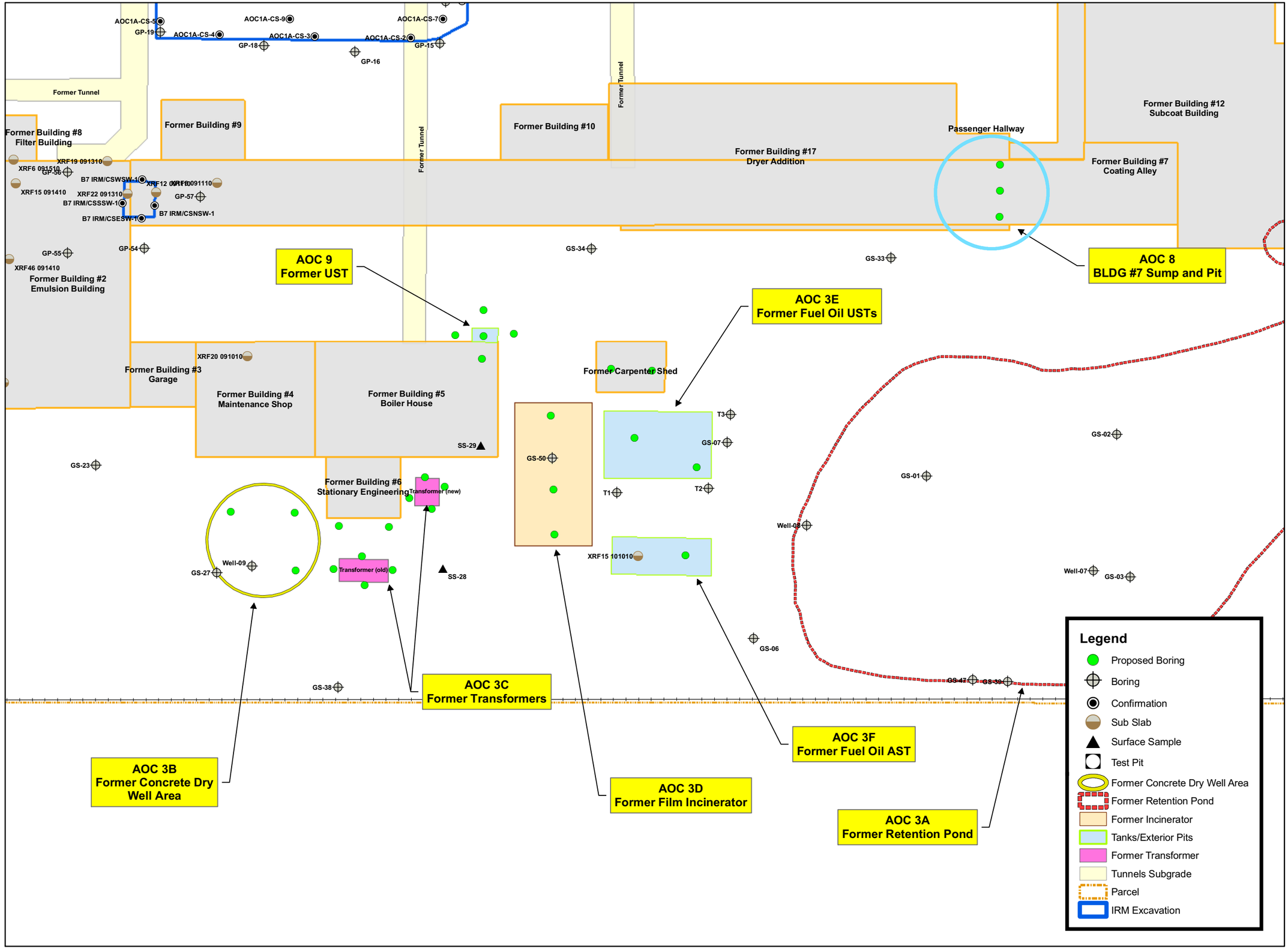
FIGURE 5



Y:\Rocheter, City\209288 PHOTECH\Dawings\DPI\Work Plan 5\Figure6 AOC 3B-F.mxd

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DESIGN PHASE INVESTIGATION
WORK PLAN NO. 5

AREAS OF CONCERN 3B-3F, 8, AND 9 AND PROPOSED EXPLORATION LOCATIONS

0 30

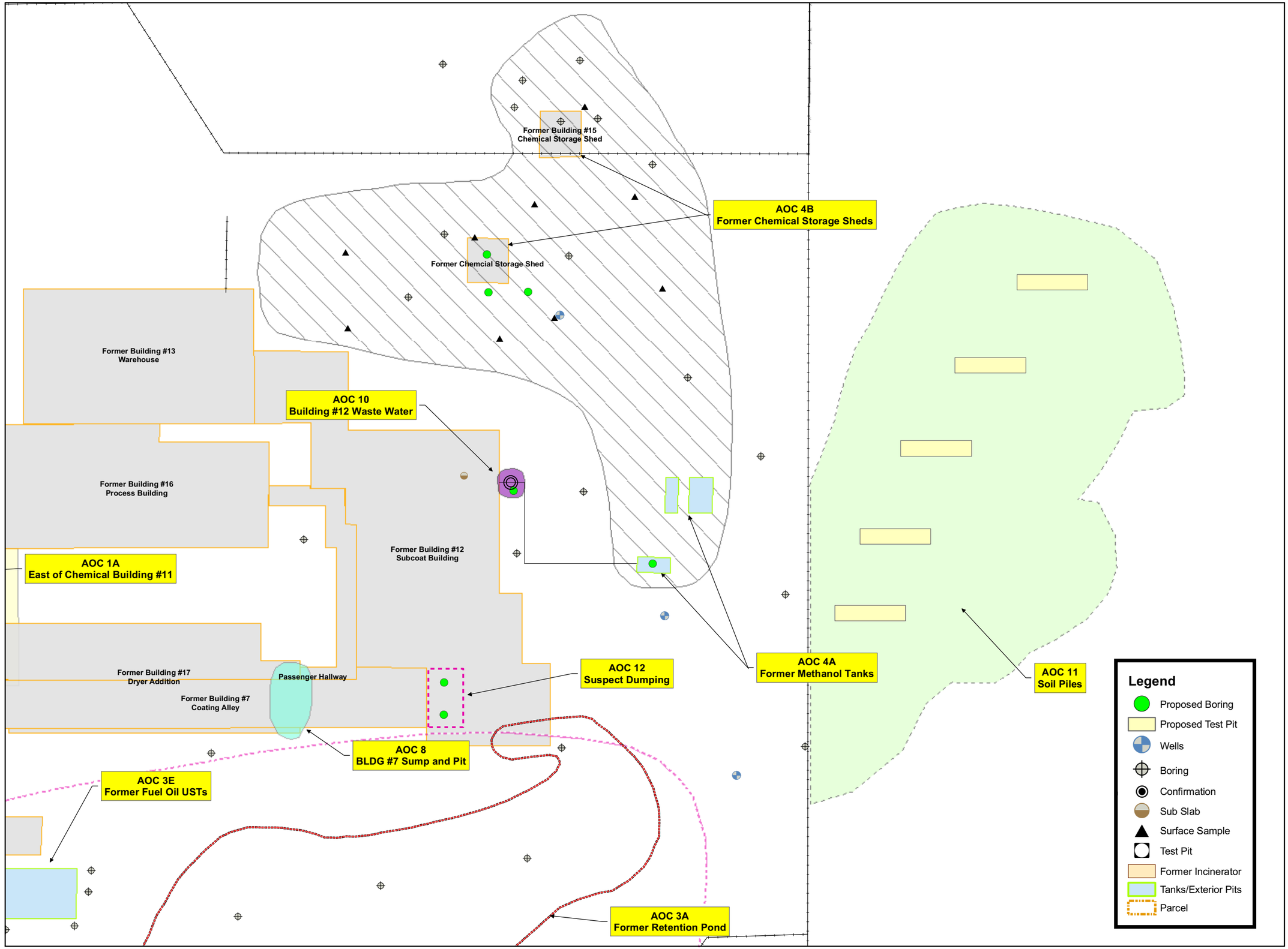
1 inch = 30 feet

Issued For:

FINAL

209288

FIGURE 6



Y:\Rochester, City\209288 PHOTECH\Drawings\DPI\Work Plan 5\Figure7 AOC4,10,11 11x17.mxd

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ROCHESTER, NEW YORK

DESIGN PHASE INVESTIGATION
WORK PLAN NO. 5

AREAS OF CONCERN 4, 10, 11, AND 12 AND PROPOSED EXPLORATION LOCATIONS

0 40
1 inch = 40 feet

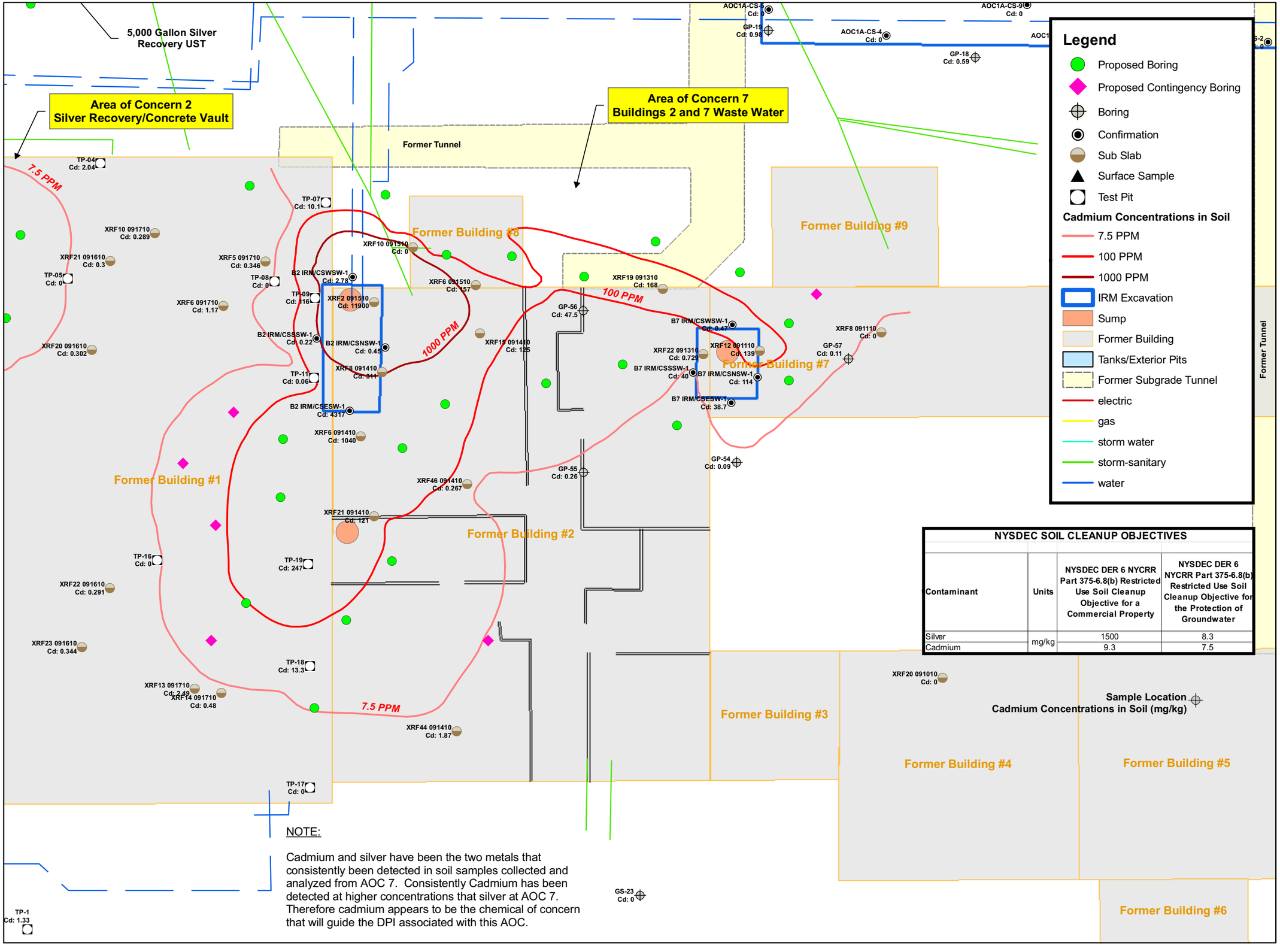
Issued For: **FINAL**

Date: 03/18/2011

Drawn By: MFP

209288

FIGURE 7



NYSDEC SOIL CLEANUP OBJECTIVES

Contaminant	Units	NYSDEC DER 6 NYCRR Part 375-6.8(b) Restricted Use Soil Cleanup Objective for a Commercial Property	NYSDEC DER 6 NYCRR Part 375-6.8(b) Restricted Use Soil Cleanup Objective for the Protection of Groundwater
Silver	mg/kg	1500	8.3
Cadmium		9.3	7.5

NOTE:

Cadmium and silver have been the two metals that consistently been detected in soil samples collected and analyzed from AOC 7. Consistently Cadmium has been detected at higher concentrations that silver at AOC 7. Therefore cadmium appears to be the chemical of concern that will guide the DPI associated with this AOC.

W:\Rochester, City\209288 PHOTECH\Drawings\DPI\Work Plan 5\Figure8A_ AOC 7 11x17.mxd

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DESIGN PHASE INVESTIGATION
WORK PLAN NO. 5

AREA OF CONCERN 7 AND
PROPOSED EXPLORATION
LOCATIONS

0 15
1 inch = 15 feet

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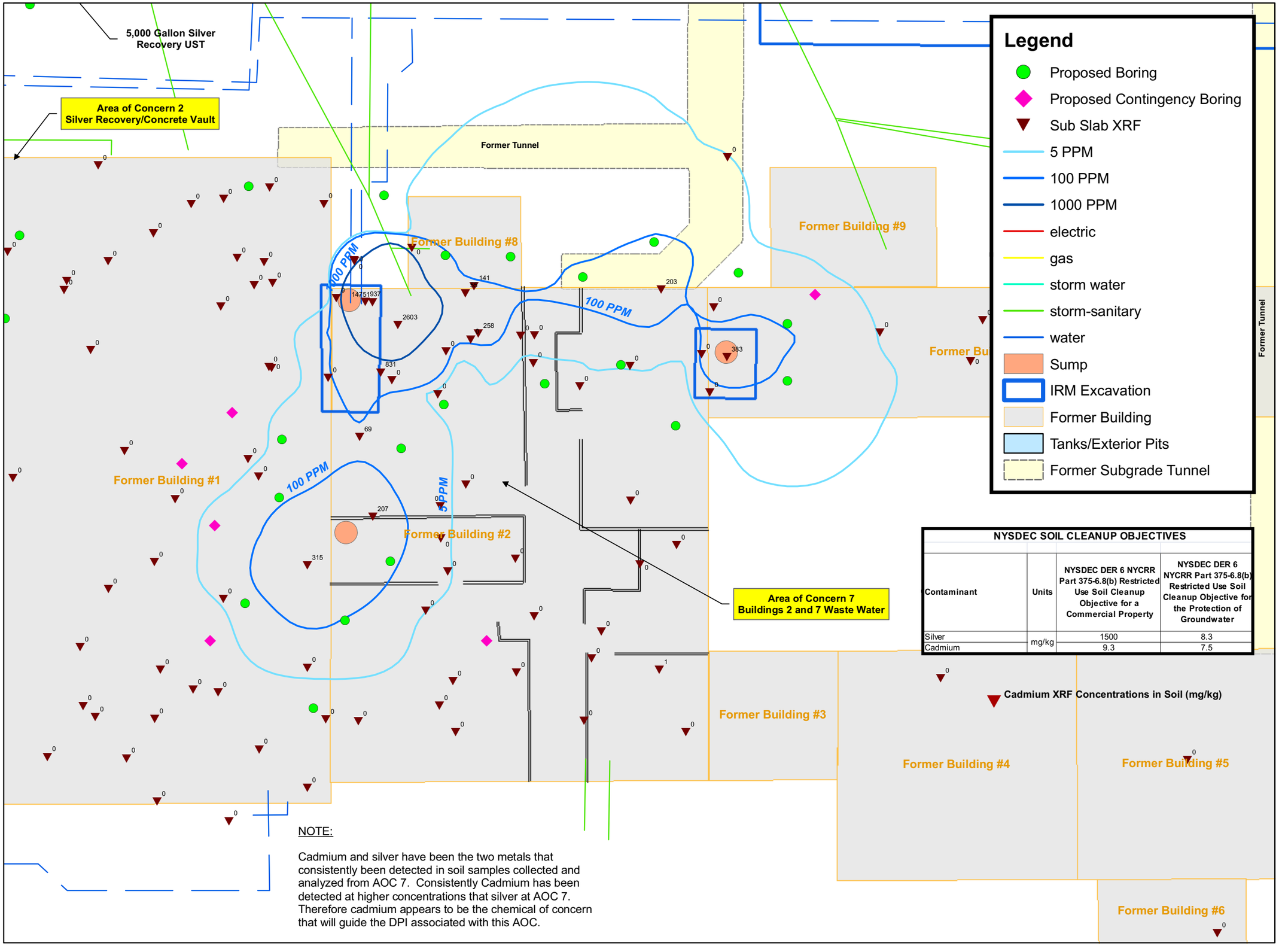
Date: 03/18/2011
Drawn By: MFP

209288

FIGURE 8A



NYSDEC SOIL CLEANUP OBJECTIVES

Contaminant	Units	NYSDEC DER 6 NYCRR Part 375-6.8(b) Restricted Use Soil Cleanup Objective for a Commercial Property	NYSDEC DER 6 NYCRR Part 375-6.8(b) Restricted Use Soil Cleanup Objective for the Protection of Groundwater
Silver	mg/kg	1500	8.3
Cadmium		9.3	7.5

NOTE:

Cadmium and silver have been the two metals that consistently been detected in soil samples collected and analyzed from AOC 7. Consistently Cadmium has been detected at higher concentrations that silver at AOC 7. Therefore cadmium appears to be the chemical of concern that will guide the DPI associated with this AOC.

LABELLA Associates, P.C.
300 STATE STREET
ROCHESTER, NY 14614
P: (585)454-6110
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CITY OF ROCHESTER

FORMER PHOTECH SITE
1000 DRIVING PARK BLVD
ROCHESTER, NEW YORK

DESIGN PHASE INVESTIGATION
WORK PLAN NO. 5

AREA OF CONCERN 7 WITH XRF CONCENTRATION ISOPLETH LINES AND PROPOSED EXPLORATION LOCATIONS

0 15
1 inch = 15 feet

Issued For: FINAL
Date: 03/18/2011
Drawn By: MFP

209288

FIGURE 8B

W:\Rochester, City\209288 PHOTECH\Drawings\DPI\Work Plan 5\Figure8B_AOC 7 11x17.mxd

LABELLA
LaBella Associates, P.C.
300 State Street
Rochester, New York 14614

Appendix 1

XRF Meter Information

■ *Technical Data*

Alpha Series™

analyzers provide on-site environmental metals testing.

For point-and-shoot simplicity Innov-X offers the smallest, fastest and most versatile handheld XRF analyzer available.

The Innov-X tube-based Alpha Series™ takes on-site environmental metals analysis to a new level. It features a miniature, rugged X-ray tube. The Alpha Series™ provides reliable analysis on RCRA, Priority Pollutant metals and other elements in soils, liquids, coatings, etc. Meets EPA Method 6200 for metals in soils, NIOSH Method 7702 for lead in air filters, OSHA Methods OSS1 and OSA1 for lead in surface wipes and air filters.

The Alpha Series™ identifies toxic metals, RCRA and other pollutants in a variety of samples.

82	80	48	35	24
2 8 18 32 18 4	2 8 18 32 18 2	2 8 18 18 2		
Pb	Hg	Cd	B	Cr
Lead	Mercury	Cadmium	Bro	Chro
207.2	200.59	112.411	79.	51.9

Docking station/test stand with safety cover for analysis of bagged and prepared samples.

INNOV-X SYSTEMS™

Innovative XRF Technologies

A summary of its testing capabilities:

- RCRA and Priority Pollutant metals analysis in a wide variety of samples.
- Metals in soil.
- Lead-based paint.
- Filter media.
- Dust wipe analysis.
- CCA (Chromated Copper Arsenate) treated wood, other construction materials or debris.
- Paints & coatings, hazardous waste classification, oils and liquids.

Innov-X Alpha Series™

The environmental analyzer for on-site, fast, confident screening of pollutants.

Rely on the Alpha Series™ for a wide variety of on-site environmental analyses. These include in-situ soil analysis for rapid site investigations and remediation projects. Operators may test directly on the ground or through bagged samples. By collecting and preparing soil samples you can achieve laboratory quality results in the field. The Alpha Series™ can be pre-calibrated for filters, coatings, CCA-treated wood and many other sample types.

The PDA Advantage.

The Alpha Series™ is driven by the HP IPAQ pocket PC.

- Upgrade to new generations as available.
- Use different PDAs and preserve personal settings.
- Wireless data transfer – ideal for remote sites.
- Easily transfer data or download software and upgrades.

Custom holster lets you take Alpha Series™ anywhere.

Bluetooth enabled PDA for remote display, printing and data transfer.

State-of-the-Art Technology.

Innov-X combines an X-ray tube source, multiple beam filtering and the HP PDA to deliver superior limits of detection, speed, precision and upgrade capability.

- Superior performance on Cr and other metals. Light Element Analysis Program (LEAP) analyzes P, S, Cl, K and Ca.
- Utilizes advanced and universal XRF data modeling:
  - Compton Normalization: "Internal Standard" provides for quantitative analysis without site-specific calibrations.
  - Fundamental Parameters: Standardless, ideal for samples with high and low concentrations of several elements.
  - Empirical Calibrations: "Calibration Curves", allows user-generated calibration curves.
- Add new elements and calibrations easily. Innov-X analyzers will meet your requirements today and in the future.
- View spectra on screen.
- Compare spectra for comparative analysis and display results versus standards.
- Stored tests can be re-run with new parameters or models.
- Data Security: stored in binary format for data integrity.

Basic Specifications.

Weight: 2.625 lbs. (base wt.) 3.375 lbs (1.6 kg) with batteries.
Excitation Source: X-ray tube, W anode, 10-40 kV, 10–50 µA, up to 5 selectable filters.
LEAP: Delivers industry-leading detection limits on critical elements Cr, Cl, P, Ba, Ti, S, Ca, K.
Detector: Si PiN diode detector, < 230 eV FWHM at 5.95 keV Mn K-alpha line. Temperature Range: -10°C to +50°C.
Operation: Trigger or Start/Stop Icon. One-touch trigger or "deadman" trigger option. Optional control from external PC.
Power: Li-ion batteries, rechargeable (charger included). Powers analyzer and iPAQ simultaneously. AC Adapter optional.
Battery Life: 8 hours (typical duty cycle) using built-in, optional multiple battery pack.
Number of Elements: Standard package includes 20 elements.
Standard Elements: Pb, Cr, Hg, Cd, Sb, Ti, Mn, Fe, Ni, Cu, Zn, Sn, Ag, As, Se, Ba, Co, Zr, Rb. Common additions: W, Br, Tl.
Display Screen: Color, high resolution touchscreen. Variable brightness provides easy viewing in all ambient lighting conditions.
Data Display: Concentrations in ppm, spectra, peak intensities (count rate) or user-specified units, depending on software mode selected.
Memory, Data Storage: 128 Mb standard memory. 20,000 test results with spectra, upgrade to >100,000 with optional 1 Gb flash card.
Processor: Intel 400 MHz StrongArm processor or higher.
Operating System: Microsoft Windows CE (portable system) or Windows (PC-based). Software Modes: Soil, Filter/Wipes, Empirical. Others available upon request.

Specifications subject to change without notice.

INNOV-X SYSTEMS™

Innovative XRF Technologies

Innov-X Systems, Inc., Worldwide Headquarters, Woburn, MA USA (781) 938-5005 (866) 4-Innov-X www.Innov-Xsys.com

INNOV-X SYSTEMS
Innovative XRF Technologies

Handheld, High-performance X-ray Fluorescence Analyzers

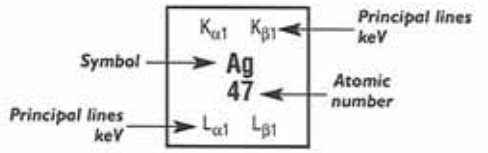
Featuring X-ray Tube Technology – No Radioactive Isotopes.

Detection Limit Guidelines

Low-Density Sample Types (Soils, powders, liquids)

Detection Limit Guidelines:

- LOD 1% – 5%
- 250 – 2,500 ppm
- 10 – 100 ppm
- 50 – 150 ppm
- Not measured



Alloy Elements and Detection Limit Guidelines:

Elements Detected Titanium (Ti, Z=22) through Plutonium (Pu, Z=94)

typically 0.1% – some elements as low as 0.01%

H 1																	He 2
	IIA											IIIA	IVA	VA	VIA	VIIA	
0.05 Li 3	0.11 Be 4											0.18 B 5	0.28 C 6	0.39 N 7	0.52 O 8	0.68 F 9	0.85 Ne 10
1.04 1.07 Na 11	1.25 1.3 Mg 12	IIIB	IVB	VB	VIB	VIIB	Group VIII			IB	IIB	1.49 1.56 Al 13	1.74 1.84 Si 14	2.01 2.14 P 15	2.31 2.46 S 16	2.62 2.82 Cl 17	2.96 3.19 Ar 18
3.31 3.59 K 19	3.69 4.01 Ca 20 0.34 0.34	4.09 4.46 Sc 21 0.4 0.4	4.51 4.93 Ti 22 0.45 0.46	4.95 5.43 V 23 0.51 0.52	5.41 5.95 Cr 24 0.57 0.58	5.9 6.49 Mn 25 0.64 0.65	6.4 7.06 Fe 26 0.71 0.72	6.93 7.65 Co 27 0.78 0.79	7.48 8.26 Ni 28 0.85 0.87	8.05 8.91 Cu 29 0.93 0.95	8.64 9.57 Zn 30 1.01 1.03	9.25 10.26 Ga 31 1.1 1.12	9.89 10.98 Ge 32 1.19 1.22	10.54 11.73 As 33 1.28 1.32	11.22 12.5 Se 34 1.38 1.42	11.92 13.29 Br 35 1.48 1.53	12.65 14.11 Kr 36 1.59 1.64
13.4 14.96 Rb 37 1.69 1.75	14.17 15.84 Sr 38 1.81 1.87	14.96 16.74 Y 39 1.92 2	15.78 17.67 Zr 40 2.04 2.12	16.62 18.62 Nb 41 2.17 2.26	17.48 19.61 Mo 42 2.29 2.39	18.37 20.62 Tc 43 2.42 2.54	19.28 21.66 Ru 44 2.55 2.68	20.22 22.72 Rh 45 2.7 2.83	21.18 23.82 Pd 46 2.84 2.99	22.15 24.94 Ag 47 2.98 3.15	23.17 26.1 Cd 48 3.13 3.32	24.21 27.28 In 49 3.29 3.49	25.27 28.49 Sn 50 3.44 3.66	26.36 29.73 Sb 51 3.6 3.84	27.47 31 Te 52 3.77 4.03	28.61 32.29 I 53 3.94 4.22	29.78 33.62 Xe 54 4.11 4.42
30.97 34.99 Cs 55 4.29 4.62	32.19 36.38 Ba 56 4.47 4.83		55.79 63.23 Hf 72 7.9 9.02	57.53 65.22 Ta 73 8.15 9.34	59.32 67.24 W 74 8.4 9.67	61.14 69.31 Re 75 8.65 10.01	63 71.41 Os 76 8.91 10.36	64.9 73.56 Ir 77 9.18 10.71	66.83 75.75 Pt 78 9.44 11.07	68.8 77.98 Au 79 9.71 11.44	70.82 80.25 Hg 80 9.99 11.82	72.87 82.58 Tl 81 10.27 12.21	74.97 84.94 Pb 82 10.55 12.61	77.11 87.34 Bi 83 10.84 13.02	79.29 89.8 Po 84 11.13 13.45	81.52 92.3 At 85 11.43 13.88	83.78 94.87 Rn 86 11.73 14.32
86.1 97.47 Fr 87 12.03 14.77	88.47 100.13 Ra 88 12.34 15.24																

Lanthanides 57-71	33.44 37.8 La 57 4.65 5.04	34.72 39.26 Ce 58 4.84 5.26	36.03 40.75 Pr 59 5.03 5.49	37.36 42.27 Nd 60 5.23 5.72	38.72 43.83 Pm 61 5.43 5.96	40.12 45.41 Sm 62 5.64 6.21	41.54 47.04 Eu 63 5.85 6.46	43 48.7 Gd 64 6.06 6.71	44.48 50.38 Tb 65 6.27 6.98	46 52.12 Dy 66 6.5 7.25	47.55 53.88 Ho 67 6.72 7.53	49.13 55.68 Er 68 6.95 7.81	50.74 57.52 Tm 69 7.18 8.1	52.39 59.37 Yb 70 7.42 8.4	54.07 61.28 Lu 71 7.66 8.71
Actinides 89-103	90.88 102.85 Ac 89 12.65 15.71	93.35 105.61 Th 90 12.97 16.2	95.87 108.43 Pa 91 13.29 16.7	98.44 111.3 U 92 13.61 17.22	101.00 114.18 Np 93 13.95 17.74	103.65 117.15 Pu 94 14.28 18.28	106.35 120.16 Am 95 14.62 18.83	109.10 123.24 Cm 96 14.96 19.39	111.90 126.36 Bk 97 15.31 19.97	114.75 129.54 Cf 98 15.66 20.56	117.65 132.78 Es 99 16.02 21.17	120.60 136.08 Fm 100 16.38 21.79	Md 101	No 102	Lr 103

Interference-free detection limits are intended as guidelines; please contact **Innov-X Systems** to discuss your specific application.

Detection limits are estimates based on 1–2 minute test times and detection confidence of 3σ (99.7% confidence).
Detection limits are a function of testing time, sample matrix and presence of interfering elements.

Innov-X Systems, Worldwide Headquarters, Woburn, MA 01801 p: 866-4-INNOV-X, p: 781-938-5005, f: 781-938-0128 info@innov-xsys.com www.innov-xsys.com
Netherlands: p: +31(0) 73-6272 590, f: +31(0) 73-6272 599 **Hong Kong:** p: 852 2 515 0999, f: 852 2 505 6129

INNOV-X SYSTEMS
Innovative XRF Technologies

Photon energies, in electron volts, of principal K- and L-shell emission lines.

Element	Symbol	Atomic #	$K_{\alpha 1}$	$K_{\beta 1}$	$L_{\alpha 1}$	$L_{\beta 1}$
Actinium	Ac	89	90.88	102.85	12.65	15.71
Aluminum	Al	13	1.49	1.56	0	0
Antimony	Sb	51	26.36	29.73	3.6	3.84
Argon	Ar	18	2.96	3.19	0	0
Arsenic	As	33	10.54	11.73	1.28	1.32
Astatine	At	85	81.52	92.3	11.43	13.88
Barium	Ba	56	32.19	36.38	4.47	4.83
Beryllium	Be	4	0.11	0	0	0
Bismuth	Bi	83	77.11	87.34	10.84	13.02
Boron	B	5	0.18	0	0	0
Bromine	Br	35	11.92	13.29	1.48	1.53
Cadmium	Cd	48	23.17	26.1	3.13	3.32
Calcium	Ca	20	3.69	4.01	0.34	0.34
Carbon	C	6	0.28	0	0	0
Cerium	Ce	58	34.72	39.26	4.84	5.26
Cesium	Cs	55	30.97	34.99	4.29	4.62
Chlorine	Cl	17	2.62	2.82	0	0
Chromium	Cr	24	5.41	5.95	0.57	0.58
Cobalt	Co	27	6.93	7.65	0.78	0.79
Copper	Cu	29	8.05	8.91	0.93	0.95
Dysprosium	Dy	66	46	52.12	6.5	7.25
Erbium	Er	68	49.13	55.68	6.95	7.81
Europium	Eu	63	41.54	47.04	5.85	6.46
Fluorine	F	9	0.68	0	0	0
Francium	Fr	87	86.1	97.47	12.03	14.77
Gadolinium	Gd	64	43	48.7	6.06	6.71
Gallium	Ga	31	9.25	10.26	1.1	1.12
Germanium	Ge	32	9.89	10.98	1.19	1.22
Gold	Au	79	68.8	77.98	9.71	11.44
Hafnium	Hf	72	55.79	63.23	7.9	9.02
Holmium	Ho	67	47.55	53.88	6.72	7.53
Indium	In	49	24.21	27.28	3.29	3.49
Iodine	I	53	28.61	32.29	3.94	4.22
Iridium	Ir	77	64.9	73.56	9.18	10.71
Iron	Fe	26	6.4	7.06	0.71	0.72
Krypton	Kr	36	12.65	14.11	1.59	1.64
Lanthanum	La	57	33.44	37.8	4.65	5.04
Lead	Pb	82	74.97	84.94	10.55	12.61
Lithium	Li	3	0.05	0	0	0
Lutetium	Lu	71	54.07	61.28	7.66	8.71
Magnesium	Mg	12	1.25	1.3	0	0
Manganese	Mn	25	5.9	6.49	0.64	0.65
Mercury	Hg	80	70.82	80.25	9.99	11.82
Molybdenum	Mo	42	17.48	19.61	2.29	2.39
Neodymium	Nd	60	37.36	42.27	5.23	5.72

Element	Symbol	Atomic #	$K_{\alpha 1}$	$K_{\beta 1}$	$L_{\alpha 1}$	$L_{\beta 1}$
Neon	Ne	10	0.85	0	0	0
Nickel	Ni	28	7.48	8.26	0.85	0.87
Niobium	Nb	41	16.62	18.62	2.17	2.26
Nitrogen	N	7	0.39	0	0	0
Osmium	Os	76	63	71.41	8.91	10.36
Oxygen	O	8	0.52	0	0	0
Palladium	Pd	46	21.18	23.82	2.84	2.99
Phosphorus	P	15	2.01	2.14	0	0
Platinum	Pt	78	66.83	75.75	9.44	11.07
Polonium	Po	84	79.29	89.8	11.13	13.45
Potassium	K	19	3.31	3.59	0	0
Praseodymium	Pr	59	36.03	40.75	5.03	5.49
Promethium	Pm	61	38.72	43.83	5.43	5.96
Protactinium	Pa	91	95.87	108.43	13.29	16.7
Radium	Ra	88	88.47	100.13	12.34	15.24
Radon	Rn	86	83.78	94.87	11.73	14.32
Rhenium	Re	75	61.14	69.31	8.65	10.01
Rhodium	Rh	45	20.22	22.72	2.7	2.83
Rubidium	Rb	37	13.4	14.96	1.69	1.75
Ruthenium	Ru	44	19.28	21.66	2.56	2.68
Samarium	Sm	62	40.12	45.41	5.64	6.21
Scandium	Sc	21	4.09	4.46	0.4	0.4
Selenium	Se	34	11.22	12.5	1.38	1.42
Silicon	Si	14	1.74	1.84	0	0
Silver	Ag	47	22.16	24.94	2.98	3.15
Sodium	Na	11	1.04	1.07	0	0
Strontium	Sr	38	14.17	15.84	1.81	1.87
Sulfur	S	16	2.31	2.46	0	0
Tantalum	Ta	73	57.53	65.22	8.15	9.34
Technetium	Tc	43	18.37	20.62	2.42	2.54
Tellurium	Te	52	27.47	31	3.77	4.03
Terbium	Tb	65	44.48	50.38	6.27	6.98
Thallium	Tl	81	72.87	82.58	10.27	12.21
Thorium	Th	90	93.35	105.61	12.97	16.2
Thulium	Tm	69	50.74	57.52	7.18	8.1
Tin	Sn	50	25.27	28.49	3.44	3.66
Titanium	Ti	22	4.51	4.93	0.45	0.46
Tungsten	W	74	59.32	67.24	8.4	9.67
Uranium	U	92	98.44	111.3	13.61	17.22
Vanadium	V	23	4.95	5.43	0.51	0.52
Xenon	Xe	54	29.78	33.62	4.11	4.42
Ytterbium	Yb	70	52.39	59.37	7.42	8.4
Yttrium	Y	39	14.96	16.74	1.92	2
Zinc	Zn	30	8.64	9.57	1.01	1.03
Zirconium	Zr	40	15.78	17.67	2.04	2.12

4 WATT X-RAY TUBE PLUS OPTIMIZED BEAM SETTINGS

TIGHT GEOMETRY FOR EXCEPTIONAL LODs AND HIGH ANALYSIS THROUGHPUT

LARGE-AREA SDD OPTION PLUS CUSTOMIZED X-RAY TUBE PROVIDES EXCEPTIONAL LIGHT ELEMENT SENSITIVITY

UNIQUE INTEGRATED VACUUM TECHNOLOGY (PATENT PENDING)

PATENT PENDING AUTOMATIC BAROMETRIC PRESSURE CORRECTION ADJUSTS CALIBRATION AS NEEDED

LIGHTNING FAST BOOT-UP & DATA ACQUISITION: FASTER TESTING, MORE RESULTS

USB INTERFACE PORT FOR HIGH SPEED DATA DOWNLOAD AND SEAMLESS PC CONTROL

FLOATING POINT PROCESSOR: MORE PROCESSING POWER FOR FASTER RESULTS AND ADVANCED ANALYTICAL POWER

HOT SWAP: REPLACE RECHARGEABLE BATTERY WITHOUT TURNING UNIT OFF

INTEGRATED BLUETOOTH FOR DATA INPUT AND OUTPUT

ERGONOMIC RUBBER HANDLE FOR ENHANCED GRIP

INCORPORATING EVERYTHING YOU NEED in handheld XRF with state-of-the-art innovations and a brand new design – *The DELTA Line from Innov-X.*

DELTA Premium Vacuum

- Large-Area Silicon Drift Detector
- Patent pending vacuum charging technology
- 4-Watt X-ray tube, application-optimized anode

This ruggedized tool is optimized for superior light-element analysis of alloys, mining samples, and various other applications. A truly unique analyzer designed for the aluminum and quality control critical industries.

DELTA Premium

- Large-Area Silicon Drift Detector
- 4-Watt X-ray tube, application-optimized anode

The Premium has tremendous speed and across-the-board low LODs for optimized sensitivity and maximized throughput as well as sensitive light-element analysis, all with the strength and durability of DELTA's robust, industrial-grade body. The ideal solution for ultra quick and analytically demanding applications.

DELTA Standard

- Silicon Drift Detector
- 4-Watt X-ray tube, application-optimized anode

Provides excellent speed and LODs as well as some light-element analysis capabilities. The standard in handheld XRF utilizing DELTA tough construction and optimized electronics for stability and dependability you can build your business around.

DELTA Classic

- Si-PiN Detector
- 4-Watt X-ray tube

Ideal solution for standard applications once thought challenging, but now considered routine for HHXRF analyzers. Cost effective, easy to use, and reliable.

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Dynamic XRF

A NEW BREED OF HANDHELD XRF

INNOV-X SYSTEMS

ADELTA
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ANALYSIS INDICATOR LIGHTS VISIBLE FROM 360°

You get it all—

Superior Analytical XRF Performance Encased in a Tight, Robust Industrialized Field Configuration

RESPONSIVE, BRIGHT COLOR TOUCH SCREEN DISPLAY

ADDITIONAL BATTERY CHARGER

DOCKING STATION WITH AUTOMATIC CALIBRATION CHECK AND CHARGING

The Ultimate Experience in Handheld XRF—

Super fast measurements with amazing accuracy, precision detection limits and light element measurement capability, all built into a compact, single-chassis frame wrapped in a robust industrial-grade body.

INNOVATIONS AND NEW FEATURES

Industrial Grade

BODY

- Compact, single chassis frame for strength and upgradeability
- Ultra-rugged, Lexan™ body
- Resistant to dust and water
- Ergonomic rubber handle for firm, secure grip
- Superior construction and unique overmold design provides exceptional shock protection

HEAT SINK

- Integrated heat sink for high power use in extreme temperatures

Redesigned Internal Configuration

OPTIMIZED OPTICAL PATH

- Close geometry enables shorter testing times with higher precision and more sensitivity
- Optimized with state of the art available tubes, detectors & filters

Energy Efficient Power Management

BATTERY

- Power saving features extends battery life; multiple sleep modes
- Hotswap battery while unit is on; retains data & calibrations

State-of-the-Art Electronics

ADVANCED CPU

- Superior digital pulse processor for fastest communication & processing
- Advanced micro memory for ease of storage & operation upgrades
- Integrated floating point processor for fast, high-volume calculations

REAL-TIME BAROMETER

- Patent Pending automatic air pressure air pressure correction for altitude changes critical for light element measurements

INTEGRATED BLUETOOTH

- Connectivity to other field portable devices

Intuitive, Interactive Display

DISPLAY & USER INTERFACE

- Bright, interactive touchscreen display
- Motion responsive accelerometer – readjusts screen for viewer
- Intuitive, easy-to-use icon based user interface

Docking Station

CHARGE & COMMUNICATION

- Recharges battery in unit and spare battery in station
- Connect to a PC for Data Download and Analyzer Interface
- Automatically runs calibration check on instrument

DELTA HHXRF Analyzers

Limits of Detection (LODs)

LODs, reported in PPM unless otherwise noted, are optimal. Measurements were taken in air for 120 seconds per beam. Standards used were in a clean, homogenous SiO_2 matrix without interfering elements.

Element of Interest	DELTA Premium 3-Beam Soil To/Au Tube, SDD	DELTA Premium 3-B Soil & 2-B Mining Rh Tube, SDD	DELTA Classic 3-Beam Soil Au Tube, SiPiN
Mg	Not Available	< 1%	Not Available
Al	Not Available	< 0.5%	Not Available
Si	Not Available	< 0.5%	Not Available
P	500 - 700	800 - 1500	1 - 5%
S	100 - 250	150 - 300	0.1 - 0.5%
Cl	60 - 100	100 - 200	500 - 1000
K	30 - 50	40 - 60	150 - 250
Ca	20 - 30	25 - 40	150 - 250
Ti	7 - 15	7 - 15	20 - 50
Cr	5 - 10	5 - 10	10 - 30
V	7 - 15	7 - 15	10 - 30
Mn	3 - 5	10	10 - 30
Fe	5	10	10 - 30
Co	10 - 20	10 - 20	20 - 40
Ni	10 - 20	10 - 20	20 - 40
Cu	5 - 7	5 - 7	15 - 30
Zn	3 - 5	3 - 5	10 - 15
Ga	3 - 5	3 - 5	10 - 15
As	1 - 3	1 - 3	4 - 8
Se	1 - 3	1 - 3	4 - 8
Br	1 - 3	1- 3	4 - 8
Rb	1	1 - 3	3 - 5
Sr	1	1 - 3	3 - 5
Zr	1	1 - 3	3 - 5
Mo	1	1 - 3	3 - 5
Ag	6 - 8	40 - 50	20 - 30
Cd	6 - 8	12 - 15	20 - 30
Sn	11 - 15	20 - 25	30 - 40
Sb	12 - 15	15 - 20	30 - 40
Ba	10 - 20	15 - 30	40 - 60
Hg	2 - 4	2 - 4	10 - 15
Tl	2 - 4	2 - 4	10 - 15
Pb	2 - 4	2 - 4	5 - 10

NOTE

Common, well-known inter-element interferences for environmental real-world soil samples are as follows:

- High levels of Fe can interfere with low levels of Cr
- High levels of Ti can interfere with low levels of Ba
- High levels of Pb can interfere with low levels of As

Limits of detection for handheld XRF instrumentation are typically determined using well defined and easily reproduced parameters.

Optimized hardware settings

- > X-ray tube target material
- > Power (kV, µA)
- > Filters
- > Background subtraction and/or normalization

Measurement times

- > 60 to 120 seconds depending on the element of interest

Interference-free standards

- > Standards used to determine instrumentation detection limits typically do not contain anything that introduces other variables, such as interfering elements, unless the hardware settings used eliminate or significantly reduce the interference.

The determination of detection limits for all methods of analysis depend on numerous factors including the instrumentation and its settings, the standards that are utilized to determine the limits of detection, and the actual working samples analyzed.

LODs reported here are based on Innov-X's DELTA Premium, with two different anode configurations, and DELTA Classic: automatically selected kV's/A-Filter settings; SiO_2 blank measurements; Compton normalization; 120 seconds measurement time; standards that are pure elemental oxides, and NIST standards with some common soil matrices. All measurements were done in air (not under vacuum).

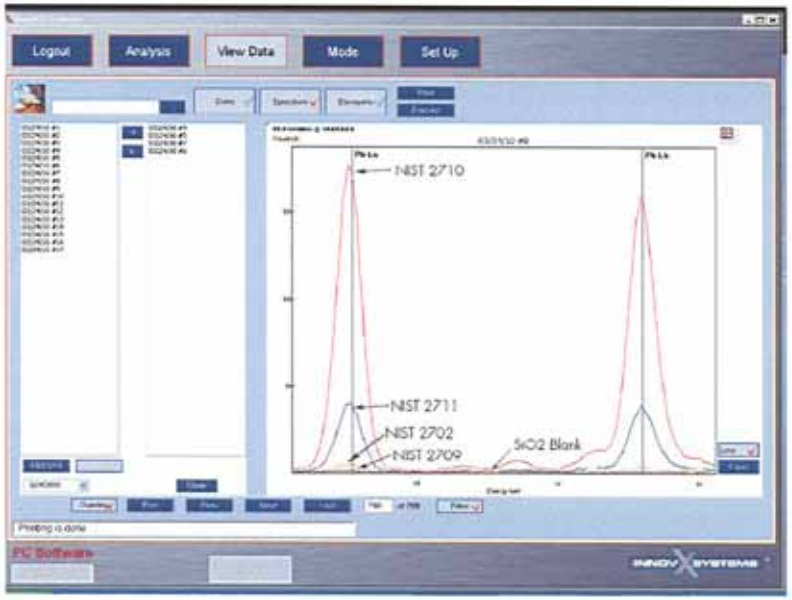
These parameters allow the determination of the best LODs for the handheld XRF being calibrated. Actual working samples may contain interfering elements that the hardware settings or selection of analyte lines do not correct for; therefore, the actual working LODs for "real-world" samples may be higher than those determined with the interference-free standards.

LIMITS OF DETECTION

LIMITS OF DETECTION

Accuracy and precision are important factors with all analysis techniques. Accuracy describes how well the measured results agree with the certified results. Precision describes how reproducible the measured results are. The following data show accuracy and precision results for Lead (Pb) measurements using the DELTA.

A DELTA handheld XRF analyzer, configured in SmartShot Soil analysis mode, was used to measure Lead (Pb) in four NIST soil matrix standards and a blank. As shown below, analysis spectra can be easily overlaid and compared using the Delta PC Software. Here the user has zoomed in on the Pb La and Lb peaks for direct comparison.



Analysis results for the NIST standards are shown at right.

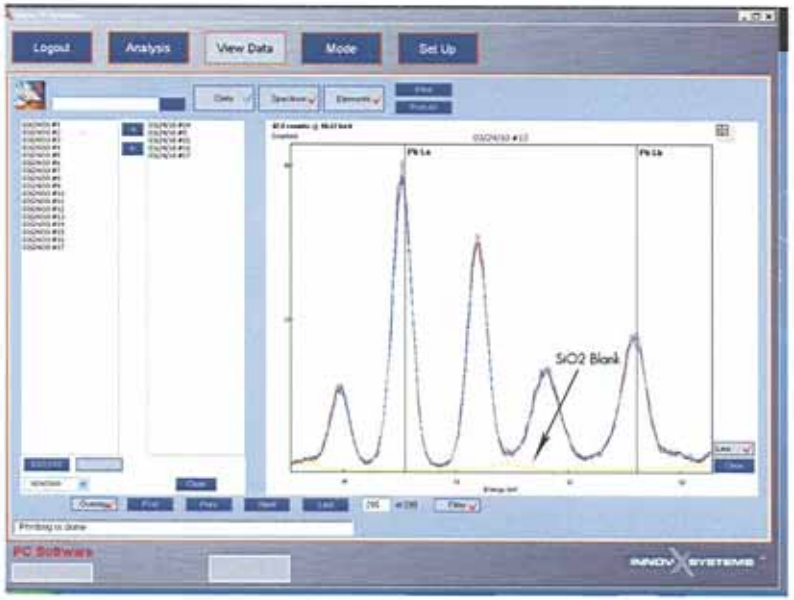
A 60 second measurement time was used

Results shown in ppm

+/- error shown is 2-sigma, 95% confidence

NIST Std	Pb Value Given	Pb Value Measured	+/- Measured
SiO_2 Blank	0	<2	-
NIST 2702	132.8	135	4
NIST 2709	18.9	20.2	1.9
NIST 2710	5525	5587	39
NIST 2711	1162	1158	11

A DELTA handheld XRF analyzer, configured in SmartShot soil analysis mode, was used to run repeat measurements on a reference soil sample, to demonstrate repeatability. As shown below, the DELTA PC Software can be used to overlay spectra from different readings for direct comparison and analysis.



A reference sample spiked with approximately 500ppm Pb (InnovX sample 408) was used for these repeat readings.

Each reading was analyzed for 60 seconds.

+/- error shown is 2-sigma, 95% confidence

Sample Run	Pb ppm Value	+/-
1	511	7
2	512	7
3	514	7
4	521	7
5	514	7
Avg	514	7

INNOV-X SYSTEMS

080-5/10

Innov-X Systems, Inc. 100 Sylvan Road, Suite 500 Woburn, MA 01801 USA T. 1-781-938-5005 F. 1-781-938-0128 info@innovx.com

LABELLA
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300 State Street
Rochester, New York 14614

Appendix 2

Health & Safety Plan

LABELLA Associates, P.C.

Engineering
Architecture
Environmental

Site Health and Safety Plan

Location:

1000 Driving Park Avenue
Rochester, New York

Prepared For:

City of Rochester
Division of Environmental Quality
30 Church Street, Room 300B
Rochester, New York 14614

LaBella Project No. 209288

March 2011

Table of Contents

SITE HEALTH AND SAFETY PLAN

Project Title:	Former Photech: NYSDEC Environmental Restoration Program
Project Number:	209288
Project Location (Site):	1000 Driving Park Ave, Rochester, New York
Environmental Director:	Gregory Senecal, CHMM
Project Manager:	Dennis Porter, CHMM
Plan Review Date:	_____
Plan Approval Date:	_____
Plan Approved By:	_____ Mr. Richard Rote, CIH
Site Safety Supervisor:	Michael Pelychaty
Site Contact:	To Be Determined
Safety Director:	Rick Rote, CIH
Proposed Date(s) of Field Activities:	To Be Determined
Site Conditions:	Generally flat, encompassing approximately 12 acres
Site Environmental Information Provided By:	Prior Environmental Reports including Site Investigation/Remedial Alternatives Analysis (SI/RA) and Record of Decision (ROD)
Air Monitoring Provided By:	LaBella Associates, P.C.
Site Control Provided By:	LeChase Construction Services

EMERGENCY CONTACTS

	Name	Phone Number
Ambulance:	As Per Emergency Service	911
Hospital Emergency:	Rochester General Hospital	585-922-4000
Poison Control Center:	Finger Lakes Poison Control	585-273-4621
Police (local, state):	Monroe County Sheriff	911
Fire Department:	Rochester Fire Department	911
Site Contact:		
Agency Contact:	NYSDEC – Todd Caffoe, P.E. Cit of Rochester – Joseph Biondolillo Finger Lakes Poison Control	585-226-5350 585-428-6649 1-800-222-1222
Environmental Director:	Greg Senecal, CHMM	Direct: 585-295-6243 Cell: 585-752-6480 Home: 585-323-2142
Project Manager:	Dennis Porter, CHMM	Direct: 585-295-6243 Cell: 585-451-4854
Site Safety Supervisor:	Michael Pelyhcaty	Direct: 585-295-6253 Cell: (585) 451-6225
Safety Director	Rick Rote, CIH	Direct: 585-295-6241

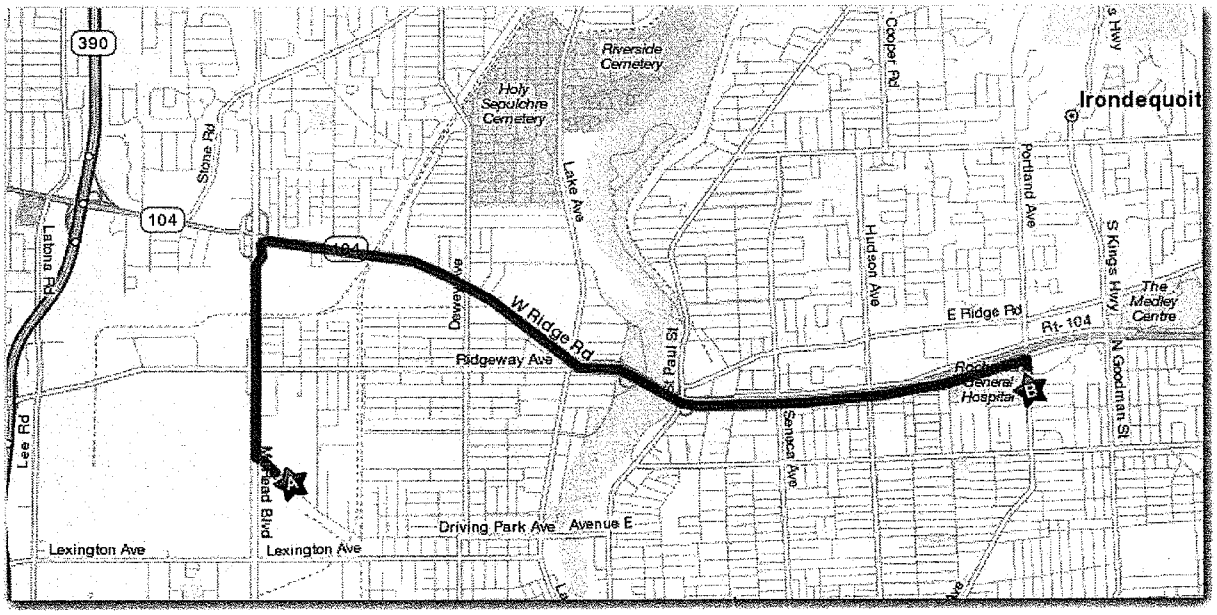
MAP AND DIRECTIONS TO THE MEDICAL FACILITY - ROCHESTER GENERAL HOSPITAL

Total Time: 10 minutes
Total Distance: 5.50 miles

Start: 1000 Driving Park, Rochester, New York

START	1. Start out going **NORTHWEST** on **DRIVING PARK AVE** toward **MT READ BLVD**.	go 0.2 mi
	2. Turn **RIGHT** onto **MT READ BLVD**.	go 1.0 mi
	3. Turn **SLIGHT LEFT** onto **ramp**.	go 0.2 mi
104	4. Merge onto **NY-104 E**.	go 3.4 mi
RAMP	5. Take the ramp toward **CARTER ST / PORTLAND AVE**.	go 0.1 mi
	6. Stay **STRAIGHT** to go onto **RT-104**.	go 0.4 mi
	7. Turn **RIGHT** onto **PORTLAND AVE / CR-114**.	go 0.2 mi
END	8. **1425 PORTLAND AVE** is on the **RIGHT**.	go 0.0 mi

End: 1425 Portland Ave, Rochester, NY 14621-3001



1.0 Introduction

The purpose of this Health and Safety Plan (HASP) it to provide guidelines for responding to potential health and safety issues that may be encountered during the Remedial Measures (RM) or Design Phase Investigation (DPI) activities at the site located at 1000 Driving Park Avenue in the City of Rochester, Monroe County, New York. This HASP only reflects the policies of LaBella Associates P.C. The requirements of this HASP are applicable to all approved LaBella personnel at the work site. This document's project specifications and the Community Air Monitoring Plan (CAMP) are to be consulted for guidance in preventing and quickly abating any threat to human safety or the environment. The provisions of the HASP were developed in general accordance with 29 CFR 1910 and 29 CFR 1926 and do not replace or supersede any regulatory requirements of the USEPA, NYSDEC, OSHA or and other regulatory body.

2.0 Responsibilities

This HASP presents guidelines to minimize the risk of injury to project personnel, and to provide rapid response in the event of injury. The HASP is applicable only to activities of approved LaBella personnel and their authorized visitors. The Project Manager shall implement the provisions of this HASP for the duration of the project. It is the responsibility of LaBella employees to follow the requirements of this HASP, and all applicable company safety procedures.

3.0 Activities Covered

The activities covered under this HASP are limited to the following:

- ❑ Management of environmental investigation and remediation activities
- ❑ Environmental Monitoring
- ❑ Collection of samples
- ❑ Management of excavated soil and fill
- ❑ The removal of subgrade structures
- ❑ Excavation Backfill

4.0 Work Area Access and Site Control

The contractor(s) will have primary responsibility for work area access and site control. However, a minimum requirement for work area designation and control will consist of:

- Drilling (Geoprobe/Rotary) – Orange cones to establish at least a 10-foot by 10-foot work area. Alternatively the contractor may elect to establish an exclusion zone that encompasses the entire vicinity of the proposed investigation activity;
- Test Pitting – Orange cones and orange temporary fencing to establish at least 10-feet of distance between test pit and fencing. Alternatively the contractor may elect to establish an exclusion zone that encompasses the entire vicinity of the proposed investigation activity;
- Soil Excavation & Backfill – Construction Fence will be utilized to prevent unauthorized entry within the area targeted for soil excavation and soil stockpiling;
- Subgrade Structure Removal – No confined space entry will be allowed. Construction Fence will be utilized to prevent unauthorized entry within the area where the structures are being removed and staged.

5.0 Potential Health and Safety Hazards

This section lists some potential health and safety hazards that project personnel may encounter at the project site and some actions to be implemented by approved personnel to control and reduce the associated risk to health and safety. This is not intended to be a complete listing of any and all potential health and safety hazards. New or different hazards may be encountered as site environmental and site work conditions change. The suggested actions to be taken under this plan are not to be substituted for good judgment on the part of project personnel. At all times, the Site Safety Officer has responsibility for site safety and his or her instructions must be followed.

5.1 Hazards Due to Heavy Machinery

Potential Hazard:
Heavy machinery including trucks, excavators, backhoes, etc will be in operation at the site. The presence of such equipment presents the danger of being struck or crushed. Use caution when working near heavy machinery.

Protective Action:
Make sure that operators are aware of your activities, and heed operator's instructions and warnings. Wear bright colored clothing and walk safe distances from heavy equipment. A hard hat, safety glasses and steel toe shoes are required.

5.2 Excavation Hazards

Potential Hazard:
Excavations and trenches can collapse, causing injury or death. Edges of excavations can be unstable and collapse. Toxic and asphyxiant gases can accumulate in confined spaces and trenches. Excavations that require working within the excavation will require air monitoring in the breathing zone (refer to Section 9.0).

Excavations left open create a fall hazard which can cause injury or death.

Protective Action:
Personnel must receive approval from the Project Manager to enter an excavation for any reason. Subsequently, approved personnel are to receive authorization for entry from the Site Safety Officer. Approved personnel are not to enter excavations over 4 feet in depth unless excavations are adequately sloped. Additional personal protective equipment may be required based on the air monitoring.

Personnel should exercise caution near all excavations at the site as it is expected that excavation sidewalls will be unstable. All excavations will be backfilled by the end of each day. Additionally, no test pit will be left unattended during the day.

Fencing and/or barriers accompanied by "no trespassing" signs should be placed around all excavations when left open for any period of time when work is not being conducted.

5.3 Cuts, Punctures and Other Injuries

Potential Hazard:
In any excavation or construction, work site there is the potential for the presence of sharp or jagged edges on rock, metal materials, and other sharp objects. Serious cuts and punctures can result in loss of blood and infection.

Protective Action:
The Project Manager is responsible for making First Aid supplies available at the work site to treat minor injuries. The Site Safety Officer is responsible for arranging the transportation of authorized on-site personnel to medical facilities when First Aid treatment in not sufficient. Do not move seriously injured workers. All injuries requiring treatment are to be reported to the Project Manager. Serious injuries are to be reported immediately to the Site Safety Officer.

5.4 Injury Due to Exposure of Chemical Hazards

Potential Hazards:
Volatile and Semi-volatile organic compounds and metal are known to be present at the site. Levels of metals at the site range from low to moderate up to hazardous waste levels (for toxicity). It is possible that petroleum or chlorinated solvents or other chemicals may be encountered at the project work site. Inhalation of high concentrations of organic vapors can cause headache, stupor, drowsiness, confusion and other health effects. Skin contact can cause irritation, chemical burn, or dermatitis. Metal compounds adhered to dust particulates could also present an inhalation hazard.

Protective Action:
The presence of organic vapors may be detected by their odor and by monitoring instrumentation. Approved employees will not work in environments where hazardous concentrations of organic vapors are present. Air monitoring (refer to Section 9.0 and to the Modified CAMP in Appendix 7) of the work area will be performed at least every 60 minutes or more often using a Photoionization Detector (PID). Personnel are to leave the work area whenever PID measurements of ambient air exceed 25 ppm consistently for a 5 minute period. In the event that sustained total volatile organic compound (VOC) readings of 25 ppm is encountered personnel should upgrade personal protective equipment to Level C (refer to Section 8.0) and an Exclusion Zone should be established around the work area to limit and monitor access to this area (refer to Section 6.0).

Dust particulates may be detected by monitoring instrumentation. Approved employees will not work in environments where hazardous concentrations of volatile organic vapors or particulates are present.

5.5 Injuries Due to Extreme Hot or Cold Weather Conditions

Potential Hazards:
Extreme hot weather conditions can cause heat exhaustion, heat stress and heat stroke or extreme cold weather conditions can cause hypothermia.

Protective Action:
Precaution measures should be taken such as dress appropriately for the weather conditions and drink plenty of fluid. If personnel should suffer from any of the above conditions, proper techniques should be taken to cool down or heat up the body and taken to the nearest hospital if needed.

5.6 Potential Exposure to Asbestos

Potential Hazards:
During ground intrusive activities (e.g., test pitting or drilling) soil containing asbestos may be encountered. Asbestos is friable when dry and can be inhaled when exposed to air.

Protective Action:
The presence of asbestos can be identified through visual observation of a white magnesium silicate material. If encountered, work should be halted and a sample of the suspected asbestos should be collected and placed in a plastic sealable bag. This sample should be sent to the asbestos laboratory at LaBella Associates for analysis.

6.0 Work Zones

In the event that conditions warrant establishing various work zones (i.e., based on hazards - Section 5.4), the following work zones should be established:

Exclusion Zone (EZ):
The EZ will be established in the immediate vicinity and adjacent downwind direction of site activities that elevate breathing zone VOC concentrations to unacceptable levels based on field screening. These site activities include contaminated soil excavation and soil sampling activities. If access to the site is required to accommodate non-project related personnel then an EZ will be established by constructing a barrier around the work area (yellow caution tape and/or construction fencing). The EZ barrier shall encompass the work area and any equipment staging/soil staging areas necessary to perform the associated work. The contractor(s) will be responsible for establishing the EZ and limiting access to approved personnel. Depending on the condition for establishing the EZ, access to the EZ may require adequate PPE (e.g., Level C).

Contaminant Reduction Zone (CRZ):
The CRZ will be the area where personnel entering the EZ will don proper PPE prior to entering the EZ and the area where PPE may be removed. The CRZ will also be the area where decontamination of equipment and personnel will be conducted as necessary.

7.0 Decontamination Procedures

Upon leaving the work area, approved personnel shall decontaminate footwear as needed. Under normal work conditions, detailed personal decontamination procedures will not be necessary. Work clothing may become contaminated in the event of an unexpected splash or spill or contact with a contaminated substance. Minor splashes on clothing and footwear can be rinsed with clean water. Heavily contaminated clothing should be removed if it cannot be rinsed with water. Personnel assigned to this project should be prepared with a change of clothing whenever on site.

Personnel will use the contractor's disposal container for disposal of PPE.

8.0 Personal Protective Equipment

Generally, site conditions at this work site require level of protection of Level D or modified Level D. However, air monitoring will be conducted to determine if up-grading to Level C PPE is required (refer to Section 9.0). Descriptions of the typical safety equipment associated with Level D and Level C are provided below:

Level D:
Hard hat, safety glasses, rubber nitrile sampling gloves, steel toe construction grade boots, etc.

Level C:
Level D PPE and full or ½-face respirator and tyvek suit (if necessary). [*Note: Organic vapor cartridges are to be changed after each 8-hours of use or more frequently.*]

9.0 Air Monitoring

According to 29 CFR 1910.120(h), air monitoring shall be used to identify and quantify airborne levels of hazardous substances and health hazards in order to determine the appropriate level of employee protection required for personnel working on-site. Air monitoring will consist at a minimum of the procedures described in the "Site Specific CAMP". Please refer to the Site Specific CAMP for further details on air monitoring at the site.

The Air Monitor will utilize a photoionization Detector (PID) to screen the ambient air in the work areas for total Volatile Organic Compounds (VOCs) and a DustTrak tm Model 8520 aerosol monitor or equivalent for measuring particulates. Work area ambient air will generally be monitored in the work area and downwind of the work area. Air monitoring of the work areas and downwind of the work areas will be performed at least every 60 minutes or more often using a PID, and the DustTrak meter.

If sustained PID readings of greater than 25 ppm are recorded in the breathing zone, then either personnel are to leave the work area until satisfactory readings are obtained or approved personnel may re-enter the work areas wearing at a minimum a ½ face respirator with organic vapor cartridges for an 8-hour duration (i.e., upgrade to Level C PPE). Organic vapor cartridges are to be changed after each 8-hours of use or more frequently, if necessary. If PID readings are sustained, in the work area, at levels above 25 ppm for a 5 minute average, work will be stopped immediately until safe levels of VOCs are encountered or additional PPE will be required (i.e., Level B).

If dust concentrations exceed the upwind concentration by 150 $\mu g/m^3$ (0.15 mg/m^3) consistently for a 10 minute period within the work area or at the downwind location, then LaBella personnel may not re-enter the work area until dust concentrations in the work area decrease below 150 $\mu g/m^3$ (0.15 mg/m^3), which may be accomplished by the construction manager implementing dust control or suppression measures.

10.0 Emergency Action Plan

In the event of an emergency, employees are to turn off and shut down all powered equipment and leave the work areas immediately. Employees are to walk or drive out of the site as quickly as possible and wait at the assigned 'safe area'. Follow the instructions of the Site Safety Officer.

Employees are not authorized or trained to provide rescue and medical efforts. Rescue and medical efforts will be provided by local authorities.

11.0 Medical Surveillance

Medical surveillance will be provided to all employees who are injured due to overexposure from an emergency incident involving hazardous substances at this site.

12.0 Employee Training

Personnel who are not familiar with this site plan will receive training on its entire content and organization before working at the site.

Individuals involved with the remedial investigation must be 40-hour OSHA HAZWOPER trained with current 8-hour refresher certification.

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Table 1
Exposure Limits and Recognition Qualities

Compound	PEL-TWA (ppm)(b)(d)	TLV-TWA (ppm)(c)(d)	STEL	LEL (%)(e)	UEL (%)(f)	IDLH (ppm)(g)(d)	Odor	Odor Threshold (ppm)	Ionization Potential
Acetone	750	500	NA	2.15	13.2	20,000	Sweet	4.58	9.69
Anthracene	0.2	0.2	NA	NA	NA	NA	Faint aromatic	NA	NA
Benzene	1	0.5	5	1.3	7.9	3000	Pleasant	8.65	9.24
Benzo (a) pyrene (coal tar pitch volatiles)	0.2	0.1	NA	NA	NA	700	NA	NA	NA
Benzo (a)anthracene	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo (b) Fluoranthene	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo (g,h,i)perylene	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo (k) Fluoranthene	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bromodichloromethane	NA	NA	NA	NA	NA	NA	NA	NA	10.88
Carbon Disulfide	20	1	NA	1.3	50	500	Odorless or strong garlic type	0.096	10.07
Chlorobenzene	75	10	NA	1.3	9.6	2,400	Faint almond	0.741	9.07
Chloroform	50	2	NA	NA	NA	1,000	ethereal odor	11.7	11.42
Chrysene	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dichloroethylene	200	200	NA	9.7	12.8	400	Acrid	NA	9.65
1,2-Dichlorobenzene	50	25	NA	2.2	9.2		Pleasant		9.07
Ethylbenzene	100	100	NA	1	6.7	2,000	Ether	2.3	8.76
Fluoranthene	NA	NA	NA	NA	NA	NA	NA	NA	NA
Fluorene	NA	NA	NA	NA	NA	NA	NA	NA	NA
Isopropylbenzene	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methylene Chloride	500	50	NA	12	23	5,000	Chloroform-like	10.2	11.35
Naphthalene	10, Skin	10	NA	0.9	5.9	250	Moth Balls	0.3	8.12
n-propylbenzene	NA	NA	NA	NA	NA	NA	NA	NA	NA
Phenanthrene	NA	NA	NA	NA	NA	NA	NA	NA	NA
Pyrene	NA	NA	NA	NA	NA	NA	NA	NA	NA
p-Isopropylbenzene	NA	NA	NA	NA	NA	NA	NA	NA	NA
sec-Butylbenzene	NA	NA	NA	NA	NA	NA	NA	NA	NA
Tetrachloroethane	NA	NA	NA	NA	NA	NA	Sweet	NA	NA
Toluene	100	100	NA	0.9	9.5	2,000	Sweet	2.1	8.82
Trichloroethylene	100	50	NA	8	12.5	1,000	Chloroform	1.36	9.45
1,2,4-Trimethylbenzene	NA	25	NA	0.9	6.4	NA	Distinct	2.4	NA
1,3,5-Trimethylbenzene	NA	25	NA	NA	NA	NA	Distinct	2.4	NA
Vinyl Chloride	1	1	NA	NA	NA	NA	NA	NA	NA
Xylenes (o,m,p)	100	100	NA	1	7	1,000	Sweet	1.1	8.56
Metals									
Arsenic	0.01	0.2	NA	NA	NA	100, Ca	Almond	NA	NA
Cadmium	0.2	0.5	NA	NA	NA	NA	NA	NA	NA
Chromium	1	0.5	NA	NA	NA	NA	NA	NA	NA
Lead	0.05	0.15	NA	NA	NA	700	NA	NA	NA
Mercury	0.05	0.05	NA	NA	NA	28	Odorless	NA	NA
Selenium	0.2	0.02	NA	NA	NA	Unknown	NA	NA	NA
Other									
Asbestos	0.1 (f/cc)	NA	1.0 (f/cc)	NA	NA	NA	NA	NA	NA

(a) Skin = Skin Absorption
(b) OSHA-PEL Permissible Exposure Limit (flame weighted average, 8-hour): NIOSH Guide, June 1990
(c) ACGIH – 8 hour time weighted average from Threshold Limit Values and Biological Exposure Indices for 2003
(d) Metal compounds in mg/m3
(e) Lower Exposure Limit (%)
(f) Upper Exposure Limit (%)
(g) Immediately Dangerous to Life or Health Level: NIOSH Guide, June 1990

Notes:
1. All values are given in parts per million (PPM) unless otherwise indicated
2. Ca = Possible Human Carcinogen, no IDLH information

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Rochester, New York 14614

Appendix 3

Community Air Monitoring Plan

LABELLA Associates, P.C.

Engineering
Architecture
Environmental

Site-Specific Community Air Monitoring Plan

Location:

1000 Driving Park Avenue
Rochester, New York

Prepared For:

City of Rochester
Division of Environmental Quality
30 Church Street, Room 300B
Rochester, New York 14614

LaBella Project No. 209288

March 2011

Site-Specific Community Air Monitoring Plan

Location:

1000 Driving Park Avenue
Rochester, New York

Prepared For:

City of Rochester
Division of Environmental Quality
30 Church Street, Room 300B
Rochester, New York 14614

LaBella Project No. 209288

March 2011

LaBella Associates, P.C.
300 State Street
Rochester, New York 14614

Table of Contents

1.0 INTRODUCTION

This Site Specific Community Air Monitoring Plan (CAMP) has been prepared by LaBella Associates, P.C. (LaBella) on behalf of the City of Rochester. This CAMP addresses potential Volatile Organic Compound (VOC) vapor and particulate emissions that may occur during implementation of the Remedial Measures at the former Photech Imaging Site located at 1000 Driving Park Avenue, Rochester, New York which encompasses approximately 12.5 acres located in a commercial/industrial zoned area in the northwest quadrant of the City of Rochester, Monroe County, New York herein after referred to as the "Site."

This CAMP is based on the air monitoring specified in the New York State Department of Health (NYSDOH) Generic CAMP (included as Appendix 1A of the Draft DER-10 NYSDEC Technical Guidance for Site Investigation and Remediation dated November 2009). However, this CAMP also includes more stringent (i.e., lower level) criteria for VOC monitoring as an added level of protection for Site occupants.

2.0 PURPOSE

Various levels of VOCs, semi-VOCs, and metals (collectively refered to as "constituents of concern" (COCs)) have been detected in the soil and groundwater at the Site or are suspected to be contained in the soil and/or groundwater at the Site. The presence of these COCs through disturbance of soil and groundwater at the Site can potentially result in nuisance odors or fugitive emissions to the neighborhood in the immediate vicinity of the Site as well as to the various occupants of the Site. However, it should be noted that this CAMP is in-place as a precautionary measure.

This CAMP is specific to activities being conducted as part of the building demolition and all ground intrusive activities at the Site. The CAMP describes the air monitoring activities to be completed in order to provide a measure of protection for any downwind receptors including Site occupants and occupants of neighboring properties. This CAMP is not intended to provide action levels for respiratory protection of workers involved with the building demolition.

3.0 METHODOLOGY

This CAMP has been designed for building demolition and all ground intrusive activities at the Site. The CAMP is arranged in the following sections:

- Section 3.1: Site Background Monitoring – This section identifies the background monitoring (VOC and fugitive dust) to be completed at the beginning of each day and periodically throughout the day when building demolition activities are being conducted. The background monitoring is used for comparing readings from the other monitoring locations.

- Section 3.2: Downwind Perimeter Monitoring – This section identifies the downwind perimeter work area monitoring (VOC and fugitive dust) to be completed continuously during the building demolition activities. Action levels are identified in this section.

- Section 3.3: Nearest Potential Receptor Monitoring – This section identifies additional VOC monitoring that will be completed during building demolition activities to provide an added measure of protection at this Site that would not normally be required by NYSDEC or NYSDOH (i.e., this is above and beyond the NYSDOH Generic CAMP). Action levels are identified in this section.

It should be noted that based on the type of work, the various monitoring locations will be moved throughout the day to comply with the appropriate testing location.

In addition to the above, this CAMP also contains a Vapor Emission to Sensitive Receptors Response Plan (Section 4.0). This includes actions to be taken in the event that sustained exceedances of the specified action levels occur.

3.1 Site Background Monitoring

At the beginning of each day of field work during the building demolition activities, a wind sock or flag will be used to monitor wind direction in the work areas. Based upon daily wind conditions, a background monitoring location will be established. [*Note: In the event that the wind direction changes, the background monitoring location will be moved to an appropriate upwind location.*] The background monitoring location will be at least 25 feet from the work area in an upwind location. Subsequent to establishing the initial background measurements (VOC and particulate, see below), background measurements will be collected every 60 minutes throughout the duration of the building demolition activities for that day. The specific background monitoring is defined below:

Background VOC Monitoring:

A photo-ionization Detector (PID) capable of data logging will be used to screen the ambient air or VOCs in the background location (i.e., upwind). The PID will be calibrated daily (in accordance with the manufacturer's specifications) prior to collecting the background readings. The background readings will be collected by a 15-minute running average which will be used for comparison to the downwind perimeter monitoring (refer to Section 3.2) and the nearest potential receptor monitoring (refer to Section 3.3). After the initial reading, periodic background readings will be collected every 60-minutes.

Background Fugitive Dust Monitoring:

A DustTrak™ Model 8520 aerosol monitor or equivalent will be used for measuring particulates. The meter must be capable of measuring matter less than 10 micrometers in size (PM-10). The dust monitor will be calibrated daily (in accordance with the manufacturer's specifications) prior to collecting the background readings. The background dust monitoring will consist of collecting measurements integrated over a 15 minute period and will be used for comparison to the downwind perimeter monitoring (refer to Section 3.2). After the initial reading, periodic background readings will be collected every 60-minutes.

3.2 Downwind Perimeter Monitoring

Subsequent to collecting the initial Background Monitoring measurements, continuous monitoring of the downwind perimeter of the work area (i.e., exclusion zone) will be conducted throughout the duration of the building demolition activities that day. The downwind perimeter will vary depending on the work; however, in general this will be approximately 30 feet from the location of the work being completed. For example, in the event a Geoprobe boring is being completed, the downwind perimeter monitoring would be conducted approximately 30-ft. from the boring location.

Downwind Perimeter VOC Monitoring:

A MiniRae Lite PID or equivalent will be used to continuously monitor for VOCs at the downwind perimeter location. The PID will be calibrated daily (in accordance with the manufacturer's specifications) at the beginning of each day. An audible alarm will be set on the PID to sound in the event that total organic vapors exceed 5 parts per million (ppm) above the background readings. For example, if the background reading is 2 ppm, then the alarm will be set for 7 ppm.

Actions for Elevated VOC Readings

1. In the event that the action level of 5 ppm above background is exceeded, then work activities will be temporarily halted and monitoring continued. If the total organic vapor level readily decreases (per instantaneous readings) below 5 ppm over background, work activities can resume with continued monitoring.

2. If total organic vapor levels at the downwind perimeter of the work area 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 (refer to Section 3.0 for engineering controls), and monitoring continued. After these steps, work activities can resume provided that the total organic vapor level 200-feet downwind of the work area 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 (background based on the 15-minute average).

3. If the organic vapor level is above 25 ppm at the perimeter of the work area, activities must be shutdown and the Vapor Emission to Sensitive Receptors Response Plan initiated, refer to Section 3.0.

All of the 15-minute readings will be recorded and will be available to NYSDEC and NYSDOH for viewing upon request. Instantaneous readings, if any, that are used for decision purposes will also be recorded.

Downwind Perimeter Fugitive Dust Monitoring:

A DustTrak™ Model 8520 aerosol monitor or equivalent will be used for measuring particulates. The dust meter must be capable of measuring matter less than 10 micrometers in size (PM-10) and be equipped with an audible alarm. The dust meter will be calibrated daily (in accordance with the manufacturer's specifications) prior to collecting readings. The dust monitoring will be conducted continuously and the measurements integrated over a 15 minute period. The results will be compared to the background monitoring (refer to Section 3.1). An audible alarm will be set on the dust meter to sound in the event that particulate levels exceed 100 micrograms per cubic meter ($\mu g/m^3$) greater than background for the 15-minute period. For example, if the background reading is 100 $\mu g/m^3$, then the alarm will be set for 200 $\mu g/m^3$.

Actions for Elevated Particulate Readings

1. If the downwind PM-10 particulate level is 100 micrograms per cubic meter (mcg/m^3) greater than background (upwind) for the 15-minute period or if airborne dust is observed leaving the work area, then Fugitive Dust Control Techniques must be employed (see below). Work may continue with dust suppression techniques provided that downwind PM-10 particulate levels do not exceed 150 $\mu g/m^3$ above the upwind level and provided that no visible dust is migrating from the work area.

2. If, after implementation of dust suppression techniques, downwind PM-10 particulate levels are greater than 150 $\mu g/m^3$ above the upwind level, work must be stopped and the Fugitive Dust Control Techniques identified below will be reevaluated. In this event the NYSDEC Project Manager will be contacted immediately. Work can resume provided that dust suppression measures and other controls are successful in reducing the downwind PM-10 particulate concentration to within 150 $\mu g /m^3$ of the upwind level and in preventing visible dust migration.

All of the 15-minute readings will be recorded and will be available to NYSDEC and NYSDOH for viewing upon request.

Fugitive Dust Control Techniques

One or more of the following dust control measures will be implemented in the event that the above action levels are exceeded:

- Apply water on exposed soils.
- Wetting equipment and test pit faces.
- Reducing test pit sizes.
- Immediately placing any investigation derived waste in drums and/or covering with plastic sheeting.

3.3 Nearest Potential Receptor Monitoring

A MiniRae Lite PID or equivalent will be used to continuously monitor for VOCs between the nearest potential receptor and the work area. Specifically, the MiniRae Lite PID or equivalent will be located half the distance between the perimeter of the work area (exclusion zone) and the nearest potential receptor, hereinafter referred to as the "Nearest Potential Receptor Monitoring Location". It should be noted that this location is not dependent on wind direction. The MiniRae Lite PID or equivalent will be calibrated daily (in accordance with the manufacturer's specifications) prior to collecting readings. The MiniRae Lite PID or equivalent will be operated in continuous mode and evaluate 15-minute running averages to account for any drift. An audible alarm will be set on the MiniRae Lite PID or equivalent to sound in the event that total organic vapors exceed 1 ppm above the background readings. For example, if the background reading is 2 ppm, then the alarm will be set for 3 ppm.

Actions for Elevated VOC Readings

1. In the event that the action level of 1 ppm above background is exceeded, then work activities will be temporarily halted and monitoring continued. If the total organic vapor level readily decreases (per instantaneous readings) below 1 ppm over background at the Nearest Potential Receptor Monitoring Location work activities can resume with continued monitoring (assuming the downwind perimeter location is also below it's action level, refer to Section 3.2).

2. If total organic vapor levels at the Nearest Potential Receptor Monitoring Location persist at levels in excess of 1 ppm over background but less than 3 ppm, work activities must be halted, the source of vapors identified, corrective actions taken to abate emissions (refer to Section 4.0 for engineering controls), and monitoring continued. After these steps, work activities can resume provided that the total organic vapor level at the Nearest Potential Receptor Monitoring Location is below 10 ppm over background (background based on the 15-minute average).

3. If the organic vapor level is above 3 ppm at the Nearest Potential Receptor Monitoring Location, activities must be shutdown and the Vapor Emission to Sensitive Receptors Response Plan initiated, refer to Section 4.0.

All of the 15-minute readings will be recorded and will be available to NYSDEC and NYSDOH for viewing upon request. Instantaneous readings, if any, that are used for decision purposes will also be recorded.

4.0 Vapor Emission to Sensitive Receptors Response Plan

Engineering controls to abate VOC emissions source will immediately be put into effect if the action levels for VOC monitoring identified in Sections 3.2 and 3.3 are exceeded. These engineering controls may include:

- Vapor suppression utilizing foam vapor suppressants, polyethylene sheeting, or water.
- Covering emission sources with stockpiled materials.

If the measures taken to abate the emission source are ineffective and the total organic vapor readings continue to be above the specified action levels for more than 15 minutes (5 ppm at the downwind perimeter monitoring location or 1 ppm at the Nearest Potential Receptor Monitoring Location), then the following actions shall be placed into effect.

- Occupants of the residential and commercial buildings will be advised to stay inside their respective structure and to close all windows.
- All personnel listed in the Emergency Contacts section of the HASP for this project will be contacted.
- The Site Safety Supervisor will immediately contact the local authorities (fire department) and advise them of the circumstances.
- Continuous air monitoring will be conducted at the Downwind Perimeter Location, the Nearest Potential Receptor Monitoring Location and within the work zone and 1 minute average measurements will be recorded every 15 minutes. Air monitoring may be halted or modified by the Site Safety Supervisor when two successive measurements are below the specified action levels.

If readings remain elevated above the specified action levels for a period of 60 minutes (5 ppm at the downwind perimeter monitoring location or 1 ppm at the Nearest Potential Receptor Monitoring Location) the Site Safety Officer will request that local authorities evacuate the occupants of the buildings.

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