62-64 Scio Street
17-19 Matthews Street
Rochester, New York
MONROE COUNTY
ROCHESTER, NEW YORK

SOIL AND GROUNDWATER MANAGEMENT PLAN

NYSDEC Spill Number: 0650898
USEPA Assistance Number: BF97219700

Prepared for:

City of Rochester
City Hall, Room 300B
30 Church Street
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December 2016; Revised July 2018

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1.0 Overview and Objectives

The Site is a vacant lot located at 62-64 Scio Street in Rochester, New York currently owned by The City of Rochester. The location of the Site is shown on Figure 1.

The objective of this Soil and Groundwater Management Plan (SGMP) is to consolidate available data and information on the environmental status of the project Site and the adjacent 17-19 Matthews Street parcel. This plan provides guidelines for management of impacted soil and groundwater that could be encountered during future development at the Site and 17-19 Matthews Street. This SGMP addresses environmental concerns related to soil and groundwater management and has been reviewed and approved by the New York State Department of Environmental Conservation (NYSDEC).

This SGMP was prepared by Lu Engineers, on behalf of The City of Rochester, in accordance with guidelines provided by NYSDEC Region 8 Spills Unit.

2.0 Site Background

2.1 Site Location and Description

The Site is located at 62-64 Scio Street in The City of Rochester, Monroe County, New York. The Site is bounded by a dry-cleaning plant (Speedy's Cleaners) and a parking lot to the south at 58 Scio Street and 17-19 Matthews Street, respectively. An imaging company (City Blue Imaging) is located north of the Site. Residential homes are located along the eastern boundary across Matthews Street and a parking garage is located to the west, across Scio Street. The surrounding land use is commercial and residential. There are currently no buildings on the property.

2.2 Site History

A 22,000 square foot, two (2)-story, brick building constructed around 1920 occupied the Site until 2002. The building was primarily used as a warehouse from the date of construction, until approximately 1990. The City of Rochester took ownership of the property in 1996, at which time the building was used for storage until it was demolished in November 2002. The Site has remained an undeveloped lot since demolition.

Several environmental assessments/investigations have been completed on behalf of the City of Rochester at the Site including:

- Rizzo Associates Inc. Preliminary Site Assessment Update/Limited Subsurface Investigation Report, dated May 1993;
- Day Environmental Inc. (DAY) Phase I Environmental Site Assessment Report, dated May 1995;
- Day Environmental Inc. (DAY) Phase II Environmental Site Assessment Report, dated August 1995;
- Day Environmental Inc. (DAY) Underground Storage Tank Closure and Limited Subsurface Study Report, dated December 2006;
- Day Environmental Inc. (DAY) Data Package Limited Groundwater Study Report dated June 2007; and
- Lu Engineers Phase I Environmental Site Assessment Report, dated October 2009.

The results of previous environmental assessments and investigations revealed the following Recognized Environmental Concerns (RECs) associated with the Site and/or adjacent properties that may have impacted the Site. These include the following:

Underground Storage Tank(s)- Two (2) underground storage tanks (USTs) were formerly used on- Site for the storage of petroleum products including gasoline and diesel fuel/fuel oil. These tanks, which had a capacity of 5,000 gallons and 2,000 gallons, were removed in 2006 and 2003, respectively. Subsurface investigations that began in 2006 showed the presence of petroleum compounds in Site soils and groundwater.

Adjacent NYSDEC Active Spills- The NYSDEC's spills database was reviewed and identified eight (8) active spills within a 0.5 mile radius of the Site. The distance and location of these spills from the Site suggest no environmental impact on the assessed properties.

Adjacent NYSDEC Inactive Spills- A UST containing gasoline was removed from the adjacent property to the east, at 68-72 Scio Street, in 1991. Soils surrounding the tank were found to be impacted (Spill Number 9105502). A soil venting system and three (3) groundwater monitoring wells were installed on the property. The only monitoring well reportedly containing a detectable level of contamination was the well closest to 62-64 Scio Street. The spill was closed by the NYSDEC in 1995.

Groundwater Contamination at Adjacent Property Monitoring Wells- Petroleum contamination was identified at an adjacent property, located at 200 East Avenue, to the east of the Site, across Matthews Street. A north/northeastward groundwater flow direction has been documented for this location. Review of the NYSDEC Petroleum Bulk Storage (PBS) database identified six (6) former storage tanks at 200 East Avenue including:

- one (1) 4,000 gallon gasoline UST installed in 1986;
- three (3) 1,000 gallon USTs with unknown contents;
- one (1) 2,000 gallon gasoline UST installed in 1987, and;
- one (1) 1,000 gallon Aboveground Storage Tank (AST) with unknown contents.

These tanks were closed and removed in 1997. A well located east/southeast of the Site contained seven (7) volatile organic compounds (VOCs) ranging in concentrations from 1.1 µg/L to 4.3 µg/L or parts per billion (ppb).

2.3 Geologic Conditions

Native soils at the Site are comprised mainly of urban soil. Urban soil consists of areas that have been so altered or obscured by urban works and structures that identification of the soils is not feasible. Characteristics of urban soil also include restricted aeration and water drainage due to modified soil structure leading to compaction.

The areas that contain urban soil are located mainly in the closely built-up parts of the City of Rochester. The bedrock in this area consists of the Paleozoic Era, Upper Silurian Series. There are no wetlands or floodplains at or in the immediate vicinity of the Site.

3.0 Summary of Investigation and Remedial Actions

3.1 Investigation

On July 27, 2012 five (5) test pits were advanced to a depth of approximately twelve (12) feet below ground surface (bgs) in areas of suspected highest contamination to obtain appropriate sample(s) for waste characterization analysis.

A MiniRAE 3000® Photoionization Detector (PID) was used to screen excavated soils. Based on the results of soil screening and other observations at each location, soil samples were collected from Test Pits 1 and 2 and submitted to Paradigm Environmental Services, Inc. (Paradigm), a New York State Department of Health (NYSDOH) Environmental Laboratory Approval Program (ELAP) certified analytical laboratory. A total of two (2) samples were analyzed for the following parameters:

- STARS Volatiles by United States Environmental Protection Agency (USEPA) Method 8260;
- Total Lead by USEPA Method 6010; and
- Flashpoint by USEPA Method 1010 or 1030.

3.2 Removal of Contaminated Materials from the Site

Approximately 700 tons of source area material consisting of soil, fill, and fractured rock was excavated and removed from the Site. Non-hazardous, petroleum-impacted soil from the Site was disposed at High Acres Landfill of Waste Management in Perinton, New York.

Excavated materials were screened with a PID and segregated based on PID readings. Soils exhibiting PID readings between 0 and 25 parts per million (ppm) were staged for on-Site re-use with NYSDEC concurrence. Soils exhibiting headspace readings between 25 and 100 ppm were staged separately, on 6-mil polyethylene (poly) sheeting, and sampled in accordance with NYSDEC Commissioner Policy (CP)-51 to determine suitability for on-Site re-use. Soils exhibiting headspace readings of greater than 100 ppm were “live-loaded” into appropriately permitted trucks for disposal at High Acres Landfill. Excavation sidewall soils were continuously screened with a PID to determine the maximum extent of soil removal. Total excavation depth varied based on the extent of impact, the depth of bedrock and accessibility to bedrock.

The excavation process was completed in stages due to close proximity of the adjacent properties to the removal area(s). Seasonally saturated soils above bedrock (lower five (5) feet) of each excavation were backfilled with 1-2 inch diameter crushed dolostone with organic content to facilitate microbial activity for in-situ groundwater treatment. Backfilling was completed in two (2) foot lifts to facilitate compaction. The upper layers were backfilled with NYSDEC approved Site soils. Compaction was verified to 95% in one (1)-foot lifts in backfilled areas.

Continuous perimeter and work zone VOC air monitoring using a PID was conducted during intrusive work, including soil removal, soil staging, loading and/ or excavation. In accordance with the New York State Department Of Health (NYSDOH)-required Community Air Monitoring Plan (CAMP), continuous particulate and VOC monitoring was conducted at upwind and downwind locations to ensure particulates and constituents were not migrating off-Site during

excavation. Groundwater was not encountered during the excavation process. Semi-saturated soils were observed on bedrock surface at approximately 10-12 feet bgs.

After impacted "source area" soils were removed, confirmatory soil samples were collected from excavation sidewalls, in accordance with NYSDEC CP-51 Soil Cleanup Guidance and Division of Environmental Remediation (DER)-10 Technical Guidance for Site Investigation and Remediation. No bottom samples were collected since excavation terminated on bedrock. Sidewall samples were collected at approximately 30 foot intervals. A total of 11 confirmatory sidewall soil samples were collected. An additional three (3) QA/QC samples were obtained for VOCs (EPA Method 8260 STARS) and semi-volatile organic compounds (SVOCs) (EPA Method 8270 B/Ns Only). Refer to Table 2 for results of confirmatory soil samples.

3.3 Site-Related Treatment Systems

Post source removal groundwater treatment was completed to reduce overburden residual groundwater constituents to concentrations below 6 New York Codes, Rules, and Regulations (6 NYCRR) Part 703.5 Class GA Ambient Water Quality Standards and Guidance Values. The selected remedial approach included the use of direct oxygen injection into overburden and shallow bedrock saturated zone by means of network of injection points, installed in 2014.

Groundwater monitoring was performed to verify groundwater remedial parameters and to confirm that remedial goals were being approached or attained. Monitoring sampling events were completed in August 2012, August 2013, September and December 2014, March, June and September of 2015 and August 2016. The oxygen injection system was decommissioned in August 2016. Analytical results are provided in the attached Table 1.

3.4 Injection Based In-Situ Remediation

To address residual subsurface impacts remaining at the southeastern portion of the Site and on 17-19 Matthews Street, a combination of Regenesis Inc. RegenOx® and Oxygen Release Compound Advanced (ORC Advanced®) was advanced into ten (10) direct-push Geoprobe points, in a pre-determined grid pattern in September 2017. Two (2) rounds of post injection groundwater sampling were completed to evaluate the effectiveness of the remedial agent in reducing residual dissolved-phase petroleum constituents (Refer to Table 1). Groundwater samples were collected via low-flow sampling methods from the three (3) remaining monitoring wells (one[1] on-Site [MW-07] and two [2] off-Site [MW-08 and MW-09]). Groundwater samples were stored on ice and submitted to Paradigm for analysis of VOCs and CP-51 by EPA Method 8260 (Refer to Appendix A for analytical results).

At MW-07 and MW-08, post-injection results indicated elevated concentrations of several VOCs including 1,2,4-trimethylbenzene, ethylbenzene, and m/p-xylenes in exceedance of 6 NYCRR Part 703.5 Class GA Ambient Groundwater Quality Standards (Table 1). The observed fluctuating concentrations of dissolved-phase petroleum constituents, in comparison to previous sampling events, may be attributed to a varying seasonal water table.

Concentrations of Total BTEX constituents have generally declined since groundwater monitoring was initiated. Observed residual dissolved phase VOCs are anticipated to decline due

to aerobic biodegradation by the indigenous microbial population, as verified through microbial analysis.

3.4 Remaining Contamination

Although the majority of impacted soil and groundwater has been remediated, future redevelopment may require excavation of areas where residual BTEX concentrations remain. If residual contamination is encountered during future construction and development activities at the Site and 17-19 Matthews Street, the NYSDEC Spills Unit will be notified.

The City of Rochester will be responsible for remediation if additional impacted subsurface material is encountered at the Site and/or 17-19 Matthews Street. Impacted material will be excavated, screened, and disposed at High Acres Landfill. In accordance to DER-10, post excavation sampling for VOCs, SVOCs, PCBs, metals and flashpoint will be obtained from sidewalls of the excavation to comply with waste handling and disposal requirements.

Figure 3 indicates the most recent groundwater conditions observed relative to the Site. Groundwater with residual impacts remains beneath the southern edge of the property and beneath the parking lot to the south of the City's property boundary at 17-19 Matthews Street.

4.0 Soil and Groundwater Management Plan

This SGMP provides procedures to identify residual subsurface petroleum contamination associated with NYSDEC Spill #0650898 that could be encountered during future subsurface activities conducted at the Site at property to the south at 17-19 Matthews Street. In addition, this SGMP provides options for the management, disposal and/or re-use of subsurface material impacted with petroleum-related constituents. The procedures presented herein are intended to reduce potential exposure to workers conducting subsurface activities at the Site should petroleum-impacted subsurface materials be encountered that require management.

4.1 Potentially Impacted Material

This section provides information on the identification, handling, analytical laboratory testing, disposal, or re-use of potentially impacted materials.

4.1.1 In-Field Identification

During past intrusive activities, petroleum-impacted subsurface soil and groundwater has been encountered. Petroleum-impacted soil may be stained gray or black, contain an oily/rainbow sheen, and emit petroleum-type odor. Petroleum-impacted groundwater may also emit a petroleum-type odor, and could contain a floating sheen. Free petroleum product, if encountered, would exhibit an oily type texture, a strong petroleum-type odor, likely amber to dark brown/black color, and would be floating on the groundwater surface. Elevated PID readings exceeding background measurements on ambient air above soil or groundwater is also indicative of the presence of VOCs associated with petroleum impacts.

4.1.2 Handling

Petroleum-impacted soil and groundwater that are encountered must be managed in accordance with applicable federal, state, and local regulations. During intrusive work,

soil and liquids (e.g., water) being disturbed or removed must be assessed for field evidence of petroleum contamination (e.g., petroleum-type odors, staining, free product, sheen). In addition, the ambient air above removed or excavated media must be screened for VOCs using a PID. The following provides general guidance for the handling of materials that are potentially impacted with residual petroleum:

Petroleum-Impacted Soil

Soil should be considered petroleum-impacted if: 1) Ambient air PID readings above a sample of soil exceed 10 ppm; or 2) the soil exhibits a petroleum odor, sheen or free product. Petroleum-impacted soil that is excavated or disturbed should be segregated from non-impacted media and handled in one (1) or more of the following methods:

- Place on, and cover with, two (2) layers of 6-mil polyethylene sheeting. Secure sheeting with sand bags or other suitable inert weights, and replace as needed if damaged by wind, Site activities or other factors.
- Place in New York State Department of Transportation (NYSDOT)-approved 55-gallon drums with secure lids. Label drums with date, contents, and generator.
- Place in one (1) or more lined roll-off with a secure cover.

Petroleum-Impacted Liquids

Petroleum-impacted groundwater, petroleum-impacted standing water, and free petroleum product (if encountered) removed from the subsurface (e.g., excavations, etc.), must be containerized (i.e., placed in sealed NYSDOT-approved 55-gallon drums, holding tanks or frac tanks) prior to characterization and disposal. Subsurface liquid or water (including groundwater, stormwater, and snow melt in excavations, trenches, boreholes, etc.) that is encountered on Site and 17-19 Matthews Scio Street must be considered petroleum-impacted unless it can be proved otherwise via appropriate analytical laboratory testing and/or other method that is acceptable to the NYSDEC.

A suitable submersible pump will be required to transfer free petroleum product and/or petroleum-impacted water from work areas (e.g., excavation) until such time that the work is completed. To the extent practicable, free petroleum product (if encountered) should be segregated/removed from petroleum-impacted water and stored/staged separately. In addition, petroleum-impacted groundwater may require treatment prior to off-Site disposal or permitted discharge.

4.1.3 Characterization

Petroleum-impacted soil and groundwater must be characterized in accordance with applicable federal, state, and local regulations and disposal facility requirements. The following is general guidance for characterizing these media.

Petroleum-Impacted Soil

Representative samples of stockpiled soil will be collected and the samples will be submitted to a NYSDOH ELAP-certified analytical laboratory for testing of appropriate waste characterization parameters. The proposed waste disposal company will identify the number of samples and the test parameters required. However, based on the

results of previous analytical laboratory testing conducted for this Site and disposal facility requirements in the Greater Rochester area, it is anticipated that the waste characterization sampling and analysis program required by the disposal facility may include, but not be limited to, one (1) or more of the following:

- One (1) sample for the first 500 tons of soil, and one (1) sample for each 1,000 tons thereafter.
- Test each sample at a NYSDOH ELAP-certified analytical laboratory for:
    - USEPA target compound list (TCL) VOCs using USEPA Method 8260;
    - USEPA TCL SVOCs using USEPA Method 8270;
    - Total lead using USEPA Method 6010; and
    - Flashpoint using USEPA Method 1010 or 1030.

Petroleum-Impacted Liquids

Representative samples of each type of liquid (e.g., water, free product) will be collected and submitted to a NYSDOH ELAP-certified analytical laboratory for testing of appropriate waste characterization parameters. The proposed waste disposal company or wastewater treatment facility will identify the number of samples and the test parameters required. However, based on the results of previous analytical laboratory testing conducted for this Site, it is anticipated that the waste characterization sampling and analysis program that is required for petroleum-impacted water and free product (if encountered) may include, but not be limited to, one (1) or more of the following:

- Collect one (1) sample for each type of liquid media (e.g., water, free product if present).
- Test each sample at a NYSDOH ELAP-certified analytical laboratory for:
    - Purgeable Organic VOCs using USEPA Method 624;
    - SVOCs using USEPA Method 625;
    - Total lead using USEPA Method 200.7; and
    - Flashpoint using USEPA Method 1010 or 1030.

4.1.4 Disposal and Re-Use Options

This section addresses disposal and re-use options for petroleum-impacted soil and liquids.

Petroleum-Impacted Soil

If petroleum-impacted soil is to be disposed of, a waste profile will be prepared and submitted to the waste disposal company (e.g. Waste Management, Inc.) to obtain approval for disposal at an appropriate waste facility (e.g., regulated landfill). Once approved, load the petroleum-contaminated soil and any plastic sheeting onto NYSDEC Part 364 permitted trucks or trailers, and transport the material to the approved waste disposal facility for disposal.

As an option, waste characterization samples can be collected and analyzed and waste profiling can be approved for a designated waste disposal facility (e.g., regulated landfill) prior to excavation so that the material can be direct-loaded onto NYSDEC Part 364 permitted trucks and transported to the designated waste disposal facility for disposal.

The NYSDEC must be notified if displaced soil is being considered for on-site or off-site re-use. In this case, the NYSDEC may require additional sampling and analytical laboratory testing of petroleum-impacted soil, and the re-use options will depend on the test results. If soil is to be re-used, its geotechnical properties should also be considered. Potential outcomes include, but may not be limited to, the following:

- With approval from the NYSDEC, displaced soil that does not exceed 6 NYCRR Part 375 Unrestricted Use SCOs or NYSDEC CP-51 SCLs may be re-used on-Site or re-used off-Site.
- With approval from the NYSDEC, soil that exceeds 6 NYCRR Part 375 Unrestricted Use SCOs, or NYSDEC CP-51 SCLs may be allowed to be re-used on-site at depths greater than four feet bgs.

Petroleum-Impacted Liquids

Options for addressing petroleum-impacted liquids (e.g., groundwater, stormwater, and snowmelt) may include:

- Discharge to a Publicly Owned Treatment Works (POTW) sanitary or combined sewer system under a Monroe County, NY sewer use permit in accordance with applicable regulations. If the water contains free product, a petroleum sheen or exceeds Monroe County sewer use limits or other criteria, it will require pre-treatment and re-testing prior to discharge under a sewer use permit.
- Off-site transport, and treatment or disposal, in accordance with applicable regulations. Although not anticipated, options for addressing free product may include off-site transport, and recycling or disposal, in accordance with applicable regulations.

2 Health and Safety

The Site owner (currently the City) is responsible for ensuring Site workers involved with intrusive activities (e.g., excavation, dewatering, etc.) are aware of potential chemical exposures that may be present in subsurface media at the Site. This SGMP should be provided to Site workers for review. The Site owner will discuss with Site workers the proper identification, handling, and disposal methods described herein and will caution Site workers to avoid or minimize disturbance of impacted material in order to reduce or eliminate exposure to contaminants. Areas that have been disturbed (e.g., excavated, etc.) that contain petroleum-impacted material should be restored (e.g., backfilled/covered with clean soil/fill cover, paved, etc.).

The entity conducting intrusive activities (e.g., excavation, dewatering, etc.) having or with potential to disturb petroleum-contaminated media must conduct its work in accordance with a NYSDEC-approved Health and Safety Plan (HASP) and CAMP. The entity can implement the attached HASP, included as an Appendix of this document or develop and implement its own HASP, which must first be accepted by the NYSDEC and the City of Rochester.

5.0 Engineering Controls

Prior to construction of enclosed structures (e.g., buildings) on the Site and 17-19 Matthews Street, the potential for soil vapor intrusion (SVI) must be evaluated and potential SVI impacts

that are identified must be mitigated. Mitigation measures may include, but are not limited to, the use of engineering controls such as a vapor barrier and sub-slab depressurization system (SSDS). Measures to be employed to mitigate potential vapor intrusion will be evaluated, selected, designed, installed, and maintained based on the NYSDOH "Guidance for Evaluating Vapor Intrusion in the State of New York" and construction details of planned enclosed structures. The City of Rochester and the NYSDEC must be notified and consulted to approve SVI evaluation and mitigation measures associated with planned enclosed structures.

6.0 Institutional Controls

As an institutional control (IC), the Site and 17-19 Matthews Street is flagged in the City Building Information System (BIS), which requires the City's Division of Environmental Quality (DEQ) to be consulted prior to issuing permits for those properties. This IC ensures that the environmental conditions at the Site are evaluated prior to planned construction. If a permit is approved that has the potential to result in encountering impacted material, City DEQ will notify the involved parties of the environmental conditions at the Site and provide a copy of this SGMP. Work will be required to be completed in accordance with the SGMP.

Chapter 59 (Health and Sanitation), Article III (Nuisances and Sanitation) § 59-27 (Water Supply) of the current Charter and Code of the City of Rochester, New York states:

A. No person shall use for drinking purposes, or in the preparation of food intended for human consumption, any water except the potable water supply authorized for public use by the City of Rochester; and

B. Other water supplies, wells or springs used for cooling and washing purposes only, where food is prepared or sold for human consumption, shall be tested and approved by the Monroe County Health Director. All auxiliary water supplies used for commercial or industrial use shall have all hydrants and faucets conspicuously posted indicating that such water is not for drinking use, and such water supplies shall not be cross-connected or interconnected with the public water supply."

This City Code has been interpreted to represent an IC that prohibits groundwater within the City limits, including the Site, from being used as a source of potable water.

7.0 Health and Safety Plan

A Site Specific Health and Safety Plan (HASP) was developed for this project and is attached as Appendix B. The NYSDOH Generic Community Air Monitoring Plan is included as Appendix C.

FIGURES

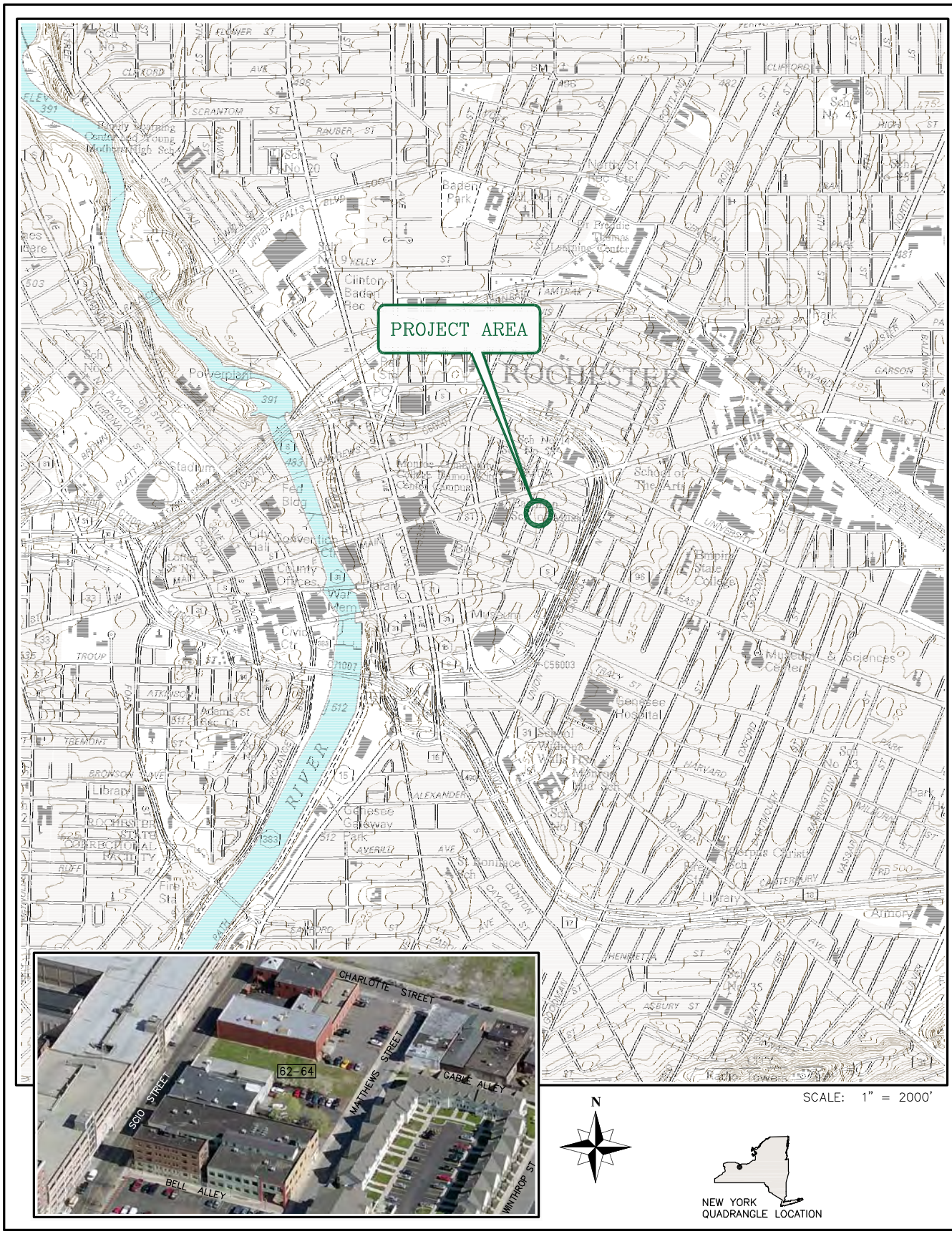

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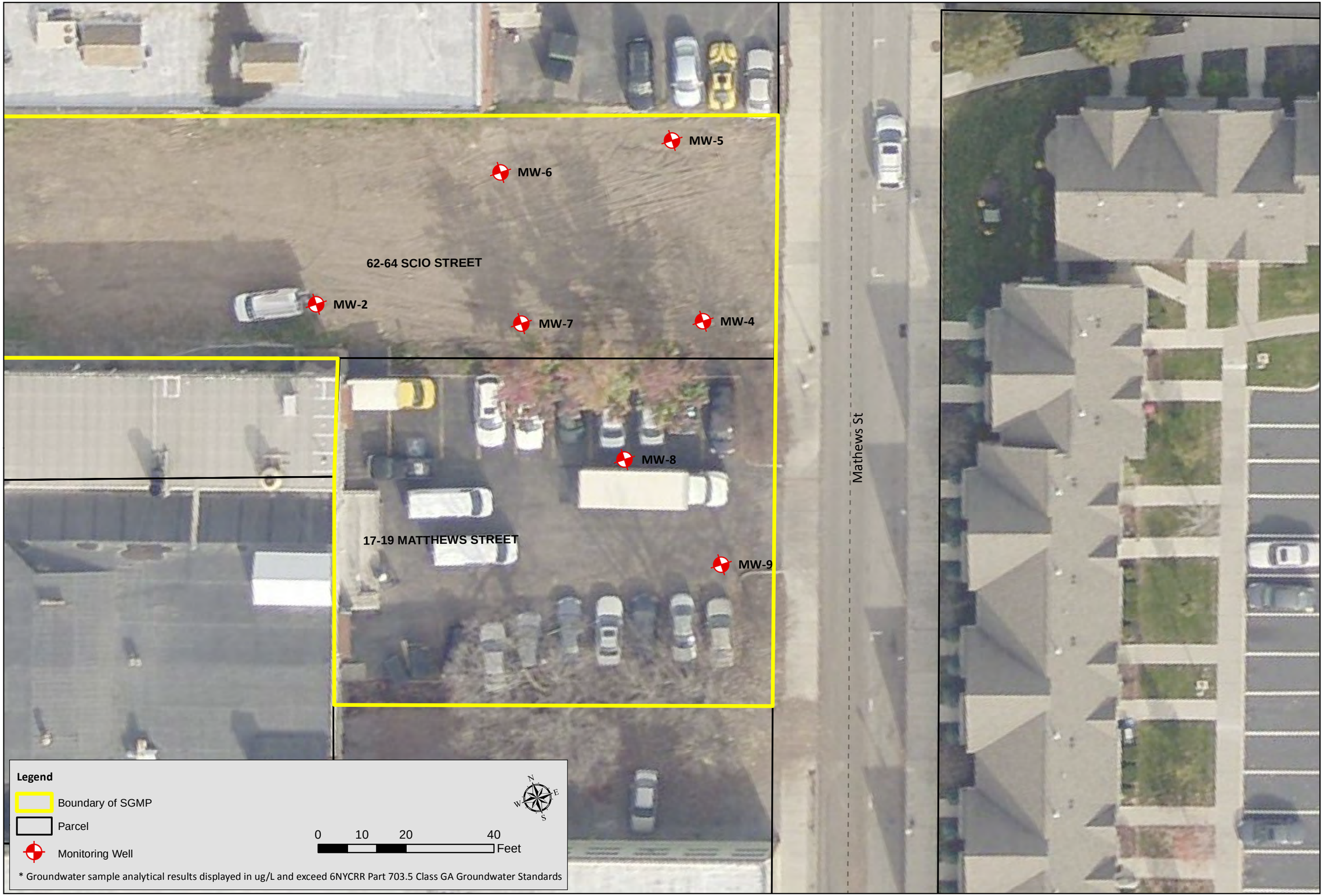
FIGURE 1. SITE LOCATION MAP

CITY OF ROCHESTER | BROWNFIELD SITE CLEAN-UP
62-64 SCIO STREET
ROCHESTER – MONROE COUNTY – NEW YORK

DATE:	JANUARY 2012
SCALE:	1:24,000
DRAWN BY:	DLS

MAP SOURCE: NYS DOT RASTER QUADRANGLES – ROCHESTER WEST & ROCHESTER EAST / NEW YORK, MONROE COUNTY DOT EDITION DATE: 1997 / USGS CONTOUR DATA: 1971. 2009 MICROSOFT CORPORATION, 2009 NAVTEQ AND 2009 PICTOMETRY INTERNATIONAL CORP.



DATE: April 2018
SCALE: 1 Inch= 20 Feet
DRAWN/CHECKED: BGS/GLA
DATA SOURCE: PICTOMETRY

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FIGURE 2
SOIL GROUNDWATER MANAGEMENET PLAN BOUNDARY
62-64 SCIO STREET BCP SITE
ROCHESTER, NY

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MM-7 (4/19/2018)
1,2,4-trimethylbenzene: 209 ug/L
1,3,5-trimethylbenzene: 43.6 ug/L
Ethylbenzene: 122 ug/L
m/p-Xylenes: 466 ug/L
Naphthalene: 54.2 ug/L
n-propylbenzene: 21.7 ug/L

MM-8 (4/19/2018)
1,2,4-trimethylbenzene: 176 ug/L
1,3,5-trimethylbenzene: 33.2 ug/L
Benzene: 14 ug/L
Ethylbenzene: 269 ug/L
Isopropylbenzene: 15.1 ug/L
m/p-xylenes: 558 ug/L
Naphthalene: 61 ug/L
n-propylbenzene: 31.1 ug/L
o-xylene: 43.2 ug/L
Toluene: 29.7 ug/L

MM-8 (4/19/2018)
No analytical exceedances

MW-2
MW-4
MW-5
MW-6
MW-7
MW-8
MW-9

512.1
512
511.9
511.8
511.7
511.6
511.5
511.4
511.3
511.2

62-64 Scio Street
17-19 Matthews Street
Matthews St

Legend

- Monitoring Well
- Groundwater Contour
- Inferred Groundwater Flow Direction
- Boundary of SGMP

0 10 20 40 Feet

* Groundwater sample analytical results displayed in ug/L and exceed 6NYCRR Part 703.5 Class GA Groundwater Standards

DATE: April 2018
SCALE: 1 Inch= 20 Feet
DRAWN/CHECKED: BGS/GLA
DATA SOURCE: PICTOMETRY

FIGURE 3
POST-INJECTION GROUNDWATER RESULTS AND CONTOUR APRIL 2018
62-64 SCIO STREET BCP SITE
ROCHESTER, NY

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TABLES

62-64 Scio Street BCP Site
City of Rochester
Groundwater Sampling Results
April 2018

Table 1- Groundwater Results - VOCs

Detected Parameters[1]	NYS GW Standard[2]	MW-07									MW-08									MW-08A	MW-09								
									*	*								*	*	*							*	*
		Aug-13	Sep-14	Dec-14	Mar-15	Jun-15	Sep-15	Jun-16	Nov-17	Apr-18	Aug-13	Sep-14	Dec-14	Mar-15	Jun-15	Sep-15	Jun-16	Nov-17	Apr-18	Apr-18	Aug-13	Sep-14	Dec-14	Mar-15	Jun-15	Sep-15	Jun-16	Nov-17	Apr-18
1,2,4-Trimethylbenzene	5	**163**	< 2.00	< 2.00	< 2.00	< 2.00	< 2.00	**312**	**42**	**209**	**97.5**	**41.8**	**118**	**549**	**400**	**848**	**232**	**100**	**176**	**69.4**	2.00	< 2.00	< 2.00	4.40	< 2.00	< 2.00	< 2.00	< 2.00	<2.00
1,3,5-Trimethylbenzene	5	**29.1**	< 2.00	< 2.00	< 2.00	< 2.00	< 2.00	**19**	**14.2**	**43.6**	**21.8**	**3.15**	**13.6**	**116**	**64.4**	**115**	**10**	**14.6**	**33.2**	**9.33**	< 2.00	< 2.00	< 2.00	< 2.00	< 2.00	< 2.00	< 2.00	< 2.00	<2.00
Benzene	1	**9.41**	< 0.700	< 0.700	< 0.700	< 0.700	< 1.00	< 5.00	< 1.00	<10.0	**60.4**	**8.74**	**25.4**	**47.0**	**35.7**	**39.1**	**13.9**	**5.93**	**14**	**29.9**	**4.11**	**1.53**	**1.75**	**1.80**	**1.68**	**1.20**	< 1.00	< 1.00	<1.00
Ethylbenzene	5	**216**	< 2.00	< 2.00	< 2.00	< 2.00	< 2.00	**468**	**9.11**	**122**	**207**	**60.8**	**163**	**677**	**568**	**1,060**	**348**	**98.6**	**269**	**153**	**15.1**	**5.99**	**7.88**	**9.74**	< 2.00	< 2.00	3.10	< 2.00	<2.00
Isopropylbenzene	5	**24.7**	< 2.00	< 2.00	< 2.00	< 2.00	< 2.00	**25.5**	1.25	<20.0	**20.7**	**6.71**	**16.2**	**36.2**	**29.9**	**62.4**	**29.4**	**18.4**	**15.1**	**20.5**	2.83	**6.05**	4.52	2.24	< 2.00	< 2.00	< 2.00	< 2.00	**2.13**
m/p-Xylenes	5	**510**	< 2.00	**6.01**	< 2.00	**5.36**	< 2.00	**357**	**60.7**	**466**	**248**	**53.7**	**182**	**1420**	**952**	**1,400**	**288**	**117**	**558**	**172**	**11.4**	1.02	2.34	**10.7**	< 2.00	< 2.00	2.00	2.41	**2.1**
Methyl-Tert-Butyl Ether	10	< 20.00	< 2.00	< 2.00	< 2.00	< 2.00	< 2.00	< 10.00	< 2.00	<20.0	< 20.0	< 2.00	<4.00	< 20.0	< 20.0	< 20.0	< 10.00	< 2.00	<4.00	<2.00	< 2.00	< 2.00	<2.00	< 2.00	< 2.00	< 2.00	< 2.00	< 2.00	<2.00
Naphthalene	10	**142**	< 5.00	< 5.00	< 5.00	< 5.00	NA	**97.5**	9.68	**54.2**	**60**	9.24	**38.1**	**182**	**139**	**266**	**72.6**	**41.9**	**61**	**25.3**	**11.7**	< 5.00	< 5.00	5.43	< 5.00	< 5.00	< 5.00	< 5.00	<5.00
n-Butylbenzene	5	< 20.00	< 2.00	< 2.00	< 2.00	< 2.00	< 2.00	< 10.00	< 2.00	<20.0	< 20.0	1.59	**5.89**	< 20.0	< 20.0	< 20.0	**6.08**	2.81	<4.00	2.87	< 2.00	1.38	<2.00	< 2.00	< 2.00	< 2.00	< 2.00	< 2.00	<2.00
n-Propylbenzene	5	**55**	< 2.00	< 2.00	< 2.00	< 2.00	< 2.00	**46.5**	1.15	**21.7**	**38.6**	**13.3**	**32.4**	**82.2**	**75.3**	**155**	**57.1**	**29.2**	**31.1**	**33**	4.93	**10.3**	**10.3**	2.94	2.04	< 2.00	< 2.00	< 2.00	<2.00
o-Xylene	5	**74.5**	< 2.00	< 2.00	< 2.00	< 2.00	< 2.00	**13.3**	< 2.00	<20.0	**16**	4.21	**16.8**	**78.2**	**46.2**	**52.2**	**17.1**	**9.28**	**43.2**	**16**	2.14	< 2.00	< 2.00	< 2.00	< 2.00	< 2.00	< 2.00	< 2.00	<2.00
p-Isopropyltoluene	5	< 20.00	< 2.00	< 2.00	< 2.00	< 2.00	< 2.00	< 10.00	< 2.00	<20.0	< 20.0	< 2.00	<4.00	< 20.0	< 20.0	< 20.0	< 10.00	1.61	<4.00	<2.00	< 2.00	< 2.00	< 2.00	< 2.00	< 2.00	< 2.00	< 2.00	< 2.00	<2.00
sec-Butylbenzene	5	< 20.00	< 2.00	< 2.00	< 2.00	< 2.00	< 2.00	< 10.00	< 2.00	<20.0	< 20.0	< 2.00	<4.00	< 20.0	< 20.0	< 20.0	< 10.00	3.45	<4.00	2.24	< 2.00	1.51	< 2.00	< 2.00	< 2.00	< 2.00	< 2.00	< 2.00	<2.00
tert-Butylbenzene	5	< 20.00	< 2.00	< 2.00	< 2.00	< 2.00	< 2.00	< 10.00	< 2.00	<20.0	< 20.0	< 2.00	<4.00	< 20.0	< 20.0	< 20.0	< 10.00	< 2.00	<4.00	<2.00	< 2.00	< 2.00	< 2.00	< 2.00	< 2.00	< 2.00	< 2.00	< 2.00	<2.00
Toluene	5	**36.2**	< 2.00	< 2.00	< 2.00	< 2.00	< 2.00	**21.8**	< 2.00	<20.0	**23.9**	4.9	**17**	**94.0**	**70.1**	**95.6**	**23.1**	**5.8**	**29.7**	**17.2**	3.18	< 2.00	< 2.00	< 2.00	< 2.00	< 2.00	< 2.00	< 2.00	<2.00
Total BTEX		**771.61**	ND	**6.01**	ND	**5.36**	ND	**846.8**	**69.81**	**588**	**539.3**	**128.14**	**387.4**	**2,238.0**	**1,625.8**	**2,594.7**	**673.0**	**227.3**	**870.7**	**372.1**	**33.79**	**8.54**	**11.97**	**22.24**	**1.68**	**1.2**	**5.1**	**2.41**	**2.1**

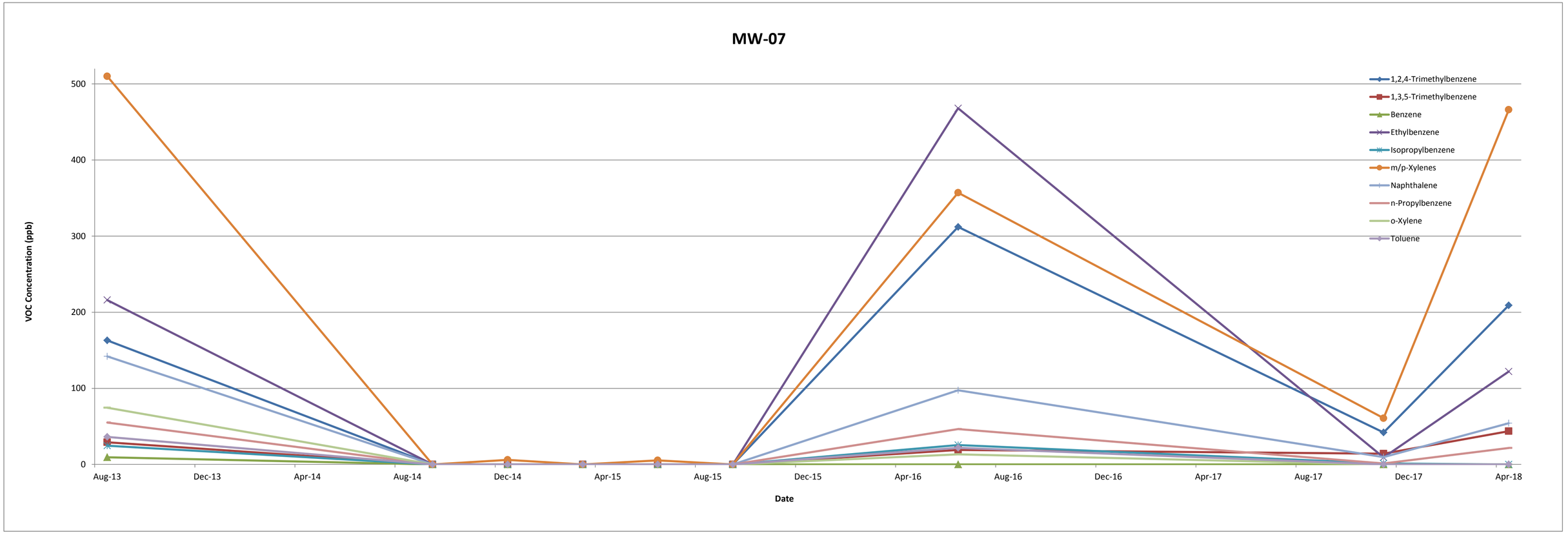
BOLD -parameter detected above NYS Ambient Groundwater Standard or applicable NYSDEC Guidance Value

-sample collected using bailer

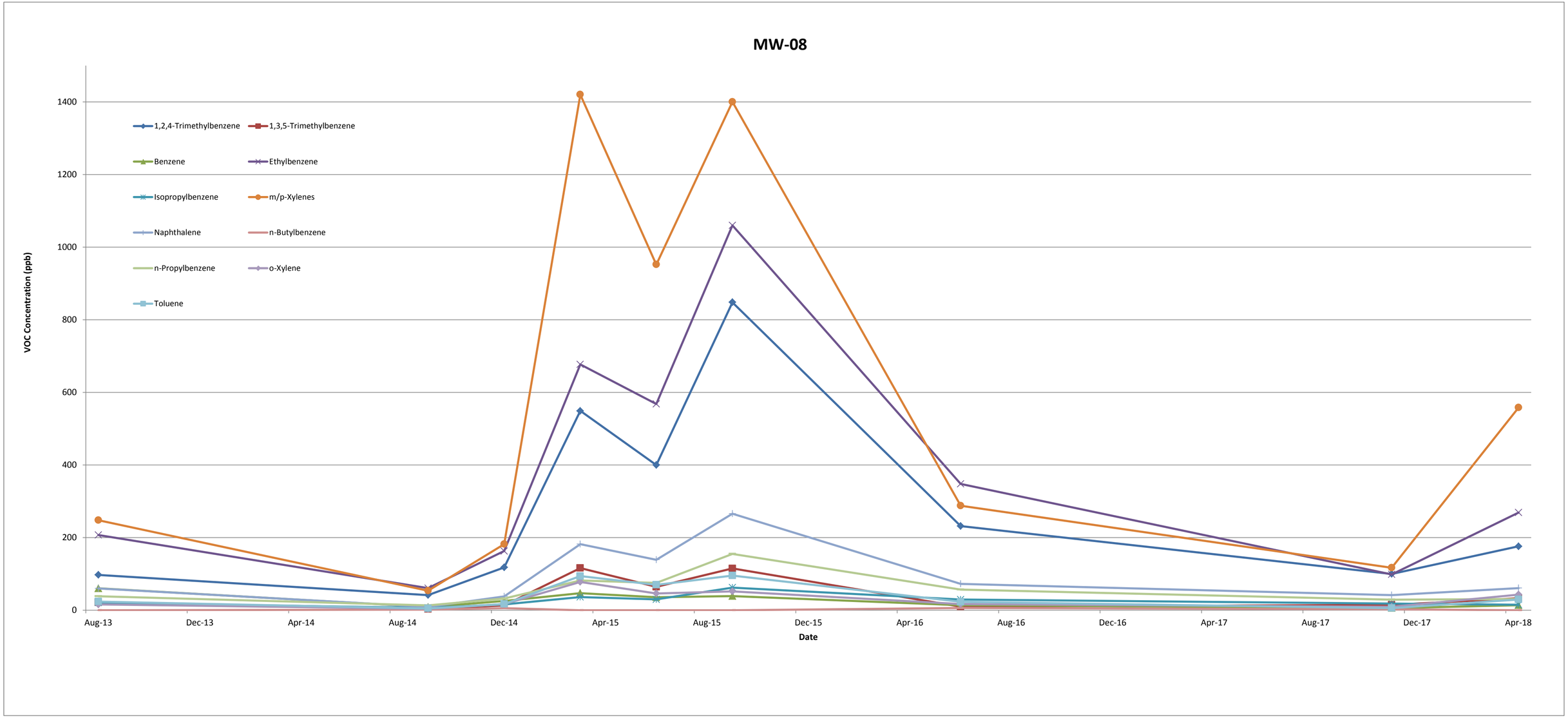
1 - Results presentend in ug/L or parts per billion (ppb)

2 - New York State Ambient Groundwater Standard (6 NYCRR Part 703.5)

* - Post September 2017 injection GW sampling results



62-64 Scio Street BCP Site
City of Rochester
Groundwater Sampling Results
April 2018



62-64 Scio Street BCP Site
City of Rochester
Groundwater Sampling Results
April 2018

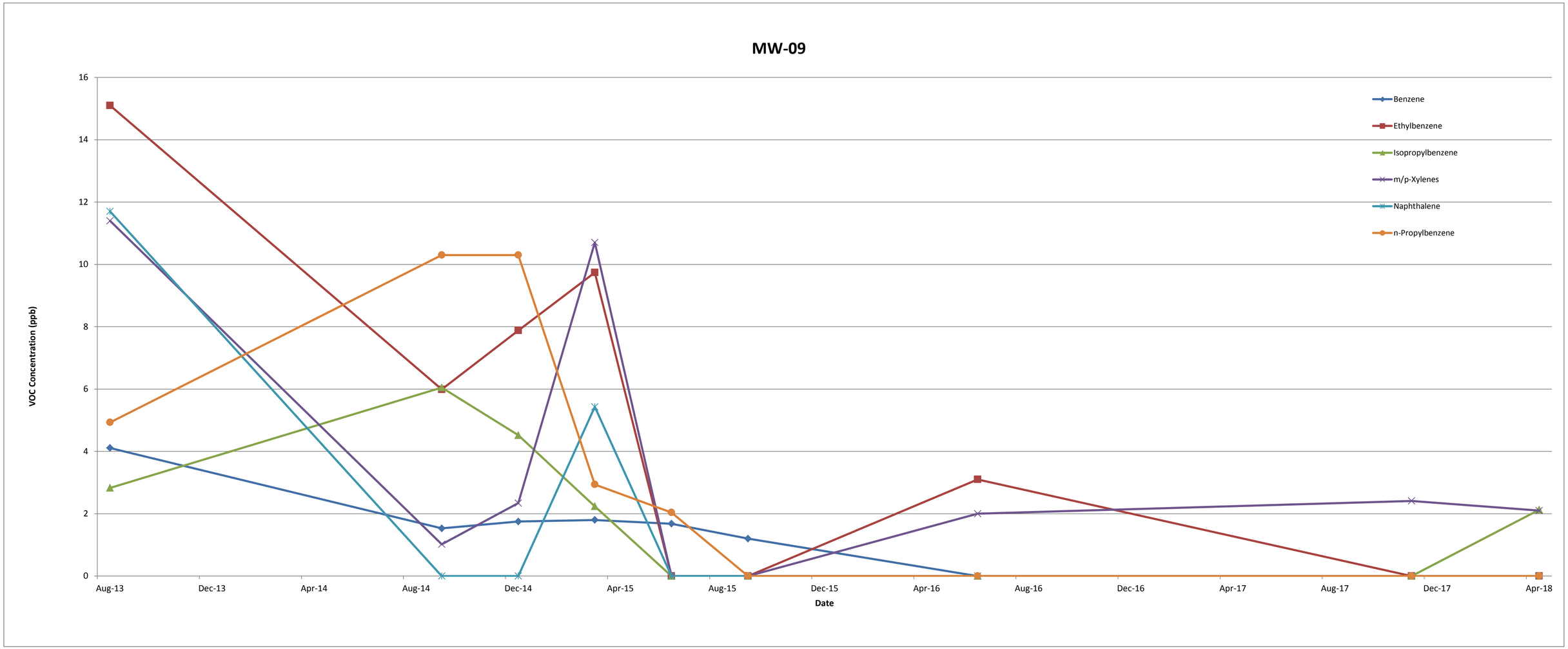


Table 2-Scio Steet BCP Project-Confirmatory Soil Sample Analytical Results

Detected Parameters	Unrestricted Use[3]	Residential Use[4]	Restricted-Residential Use[4]	Commercial Use[4]	Industrial Use[4]	CS-01(8)_08-14-12	CS-02(8.5)_08-15-12	CS-03(9)_08-16-12	CS-03(9)Dup_08-16-12	CS-04(10)_08-17-12	CS-05(10)_08-17-12	CS-06(10)_08-21-12	CS-07(11)_08-21-12	CS-08(13)_08-23-12	CS-09(11.5)_08-23-12	CS-10(13)_08-23-12
					Date Sampled:	8/14/12	8/15/12	8/16/12	8/16/12	8/17/12	8/17/12	8/21/12	8/21/12	8/23/12	8/23/12	8/23/12
Volatile Organics - NYSDEC STARS 8021[1]																
1,2,4-Trimethylbenzene	**3,600**	**47,000**	**52,000**	**190,000**	**380,000**	**5,440**	**5,330**	**50,200**	**64,000**	**55,800**	**97,000**	**14,600**	**21,800**	333	ND	ND
1,3,5-Trimethylbenzene	**8,400**	**47,000**	**52,000**	**190,000**	**380,000**	1,290	1,680	**14,600**	**20,600**	**18,100**	**26,200**	4,570	6,620	82	ND	ND
Acetone	**50**	**100,000**	**100,000**	**500,000**	**1,000,000**	ND	ND	ND	ND	ND	ND	**B 5,250**	**B 7,950**	**154**	**B 338**	**B 64.1**
Carbon disulfide	**NL**	**NL**	**NL**	**NL**	**NL**	ND	ND	ND	ND	ND	ND	ND	ND	J 2.83	ND	ND
Ethylbenzene	**1,000**	**30,000**	**41,000**	**390,000**	**780,000**	J 283	638	**5,900**	**17,600**	**10,300**	**18,500**	**3,150**	**2,120**	16.7	ND	ND
Isopropylbenzene	**NL**	**NL**	**NL**	**NL**	**NL**	J 230	J 192	J 2,280	3,150	2,830	3,950	677	842	23.2	ND	ND
2-Methylnapthalene	**NL**	**NL**	**NL**	**NL**	**NL**	642	1,770	5,040	ND	3,610	13,600	J 282	2,020	ND	ND	ND
Methylene Chloride	**50**	**51,000**	**100,000**	**500,000**	**1,000,000**	**877**	**J 537**	ND	ND	ND	ND	ND	B 2,240	ND	ND	ND
n-Butylbenzene	**12,000**	**100,000**	**100,000**	**500,000**	**1,000,000**	945	701	ND	ND	ND	ND	1,660	2,410	120	76.8	ND
n-Propylbenzene	**3,900**	**100,000**	**100,000**	**500,000**	**1,000,000**	986	671	**7,740**	**10,200**	**9,230**	**13,900**	2,210	2,990	92	73.6	ND
sec-Butylbenzene	**11,000**	**100,000**	**100,000**	**500,000**	**1,000,000**	J 235	ND	ND	ND	ND	J 1,990	J 286	J 384	34.9	101	ND
Toluene	**700**	**100,000**	**100,000**	**500,000**	**1,000,000**	ND	ND	ND	**7,890**	ND	**J 1,350**	J 221	ND	ND	ND	ND
p-Isopropyltoluene	**NL**	**NL**	**NL**	**NL**	**NL**	ND	ND	ND	ND	ND	J 1,880	J 293	J 395	ND	ND	ND
m,p-Xylene	**NL**	**NL**	**NL**	**NL**	**NL**	**668**	**2,190**	**21,300**	**70,000**	**46,500**	**72,900**	**17,200**	**9,430**	87.9	ND	ND
o-Xylene	**NL**	**NL**	**NL**	**NL**	**NL**	ND	**599**	**2,520**	**11,500**	**11,400**	**10,600**	**1,000**	**555**	17.7	ND	ND
Xylene (Total)	**260**	**100,000**	**100,000**	**500,000**	**1,000,000**	**668**	**2,858**	**23,820**	**81,500**	**57900**	**83,500**	**18200**	**9985**	105.6	ND	ND
Semi-Volatile Organics - NYSDEC STARS 8270 Base/Neutrals[1]																
Fluoranthene	**100,000**	**100,000**	**100,000**	**500,000**	**1,000,000**	ND	ND	ND	ND	J 185	ND	ND	ND	ND	ND	ND
2-Methylnapthalene	**NL**	**NL**	**NL**	**NL**	**NL**	642	1,770	5,040	5,550	3,610	13,600	J 282	2,020	ND	ND	ND
Naphthalene	**12,000**	**100,000**	**100,000**	**500,000**	**1,000,000**	ND	1,040	3,420	4,730	3,010	**13,000**	J 218	2,030	ND	ND	ND
Phenanthrene	**100,000**	**100,000**	**100,000**	**500,000**	**1,000,000**	ND	ND	ND	ND	J 188	ND	ND	ND	ND	ND	ND

1 - results presented in micrograms per kilogram (ug/Kg).

2 - results presented in milligrams per kilogram (mg/Kg).

3 - 6 NYCRR Part 375-6.8 - Table 375-6.8(a): Unrestricted Use Soil Cleanup Objectives

4 - 6 NYCRR Part 375-6.8 - Table 375-6.8(b): Restricted Use Soil Cleanup Objectives

ND- not detected above reporting limit

NL - Not listed as contaminant of concern in 6 NYCRR Part 375-6.8 - Tables 375-6.8(a)&(b)

Value Exceeds Unrestricted SCOs

Value Exceeds Residential Use SCOs

Value Exceeds Restricted-Residential SCOs

Value Exceeds Commercial Use SCOs

Value Exceeds Industrial Use SCOs

APPENDIX A
ANALYTICAL DATA

PARADIGM
ENVIRONMENTAL SERVICES, INC.

Lab Project ID: 175289

Client: **Lu Engineers, Inc.**

Project Reference: Scio St 4226

Sample Identifier: MW-07-112817
Lab Sample ID: 175289-01 **Date Sampled:** 11/28/2017
Matrix: Water **Date Received:** 11/28/2017

Volatile Organics

Analyte	Result	Units	Qualifier	Date Analyzed
1,2,4-Trimethylbenzene	**42.0**	ug/L		11/30/2017 20:10
1,3,5-Trimethylbenzene	**14.2**	ug/L		11/30/2017 20:10
Benzene	< 1.00	ug/L		11/30/2017 20:10
Ethylbenzene	**9.11**	ug/L		11/30/2017 20:10
Isopropylbenzene	**1.25**	ug/L	J	11/30/2017 20:10
m,p-Xylene	**60.7**	ug/L		11/30/2017 20:10
Methyl tert-butyl Ether	< 2.00	ug/L		11/30/2017 20:10
Naphthalene	**9.68**	ug/L		11/30/2017 20:10
n-Butylbenzene	< 2.00	ug/L		11/30/2017 20:10
n-Propylbenzene	**1.15**	ug/L	J	11/30/2017 20:10
o-Xylene	< 2.00	ug/L		11/30/2017 20:10
p-Isopropyltoluene	< 2.00	ug/L		11/30/2017 20:10
sec-Butylbenzene	< 2.00	ug/L		11/30/2017 20:10
tert-Butylbenzene	< 2.00	ug/L		11/30/2017 20:10
Toluene	< 2.00	ug/L		11/30/2017 20:10

Surrogate	Percent Recovery	Limits	Outliers	Date Analyzed
1,2-Dichloroethane-d4	**91.9**	85.9 - 118		11/30/2017 20:10
4-Bromofluorobenzene	**97.5**	69.4 - 123		11/30/2017 20:10
Pentafluorobenzene	**101**	81.6 - 114		11/30/2017 20:10
Toluene-D8	**106**	82.7 - 112		11/30/2017 20:10

Method Reference(s): EPA 8260C
EPA 5030C
Data File: x47223.D

Report Prepared Tuesday, December 5, 2017

PARADIGM
ENVIRONMENTAL SERVICES, INC.

Lab Project ID: 175289

Client: **Lu Engineers, Inc.**

Project Reference: Scio St 4226

Sample Identifier:	MW-08-112817		
Lab Sample ID:	175289-02	**Date Sampled:**	11/28/2017
Matrix:	Water	**Date Received:**	11/28/2017

Volatile Organics

Analyte	Result	Units	Qualifier	Date Analyzed
1,2,4-Trimethylbenzene	**100**	ug/L		12/4/2017 19:51
1,3,5-Trimethylbenzene	**14.6**	ug/L		12/4/2017 19:51
Benzene	**5.93**	ug/L		12/4/2017 19:51
Ethylbenzene	**98.6**	ug/L		12/4/2017 19:51
Isopropylbenzene	**18.4**	ug/L		12/4/2017 19:51
m,p-Xylene	**117**	ug/L		12/4/2017 19:51
Methyl tert-butyl Ether	< 2.00	ug/L		12/4/2017 19:51
n-Butylbenzene	**2.81**	ug/L		12/4/2017 19:51
n-Propylbenzene	**29.2**	ug/L		12/4/2017 19:51
o-Xylene	**9.28**	ug/L		12/4/2017 19:51
p-Isopropyltoluene	**1.61**	ug/L	J	12/4/2017 19:51
sec-Butylbenzene	**3.45**	ug/L		12/4/2017 19:51
tert-Butylbenzene	< 2.00	ug/L		12/4/2017 19:51
Toluene	**5.80**	ug/L		12/4/2017 19:51

Method Reference(s): EPA 8260C
EPA 5030C

Data File: x47282.D

Report Prepared Tuesday, December 5, 2017

PARADIGM
ENVIRONMENTAL SERVICES, INC.

Lab Project ID: 175289

Client: **Lu Engineers, Inc.**

Project Reference: Scio St 4226

Sample Identifier:	MW-08-112817		
Lab Sample ID:	175289-02A	**Date Sampled:**	11/28/2017
Matrix:	Water	**Date Received:**	11/28/2017

Volatile Organics

Analyte	Result	Units	Qualifier	Date Analyzed
Naphthalene	**41.9**	ug/L		12/1/2017 18:49

Surrogate	Percent Recovery	Limits	Outliers	Date Analyzed
1,2-Dichloroethane-d4	**100**	85.9 - 118		12/1/2017 18:49
4-Bromofluorobenzene	**106**	69.4 - 123		12/1/2017 18:49
Pentafluorobenzene	**102**	81.6 - 114		12/1/2017 18:49
Toluene-D8	**110**	82.7 - 112		12/1/2017 18:49

Method Reference(s): EPA 8260C
EPA 5030C

Data File: x47255.D

PARADIGM
ENVIRONMENTAL SERVICES, INC.

Lab Project ID: 175289

Client: **Lu Engineers, Inc.**

Project Reference: Scio St 4226

Sample Identifier: MW-09-112817
Lab Sample ID: 175289-03 **Date Sampled:** 11/28/2017
Matrix: Water **Date Received:** 11/28/2017

Volatile Organics

Analyte	Result	Units	Qualifier	Date Analyzed
1,2,4-Trimethylbenzene	**1.66**	ug/L	J	11/30/2017 20:34
1,3,5-Trimethylbenzene	< 2.00	ug/L		11/30/2017 20:34
Benzene	< 1.00	ug/L		11/30/2017 20:34
Ethylbenzene	**1.83**	ug/L	J	11/30/2017 20:34
Isopropylbenzene	**1.07**	ug/L	J	11/30/2017 20:34
m,p-Xylene	**2.41**	ug/L		11/30/2017 20:34
Methyl tert-butyl Ether	< 2.00	ug/L		11/30/2017 20:34
Naphthalene	< 5.00	ug/L		11/30/2017 20:34
n-Butylbenzene	< 2.00	ug/L		11/30/2017 20:34
n-Propylbenzene	**1.73**	ug/L	J	11/30/2017 20:34
o-Xylene	< 2.00	ug/L		11/30/2017 20:34
p-Isopropyltoluene	< 2.00	ug/L		11/30/2017 20:34
sec-Butylbenzene	< 2.00	ug/L		11/30/2017 20:34
tert-Butylbenzene	< 2.00	ug/L		11/30/2017 20:34
Toluene	< 2.00	ug/L		11/30/2017 20:34

Surrogate	Percent Recovery	Limits	Outliers	Date Analyzed
1,2-Dichloroethane-d4	**91.2**	85.9 - 118		11/30/2017 20:34
4-Bromofluorobenzene	**102**	69.4 - 123		11/30/2017 20:34
Pentafluorobenzene	**99.4**	81.6 - 114		11/30/2017 20:34
Toluene-D8	**103**	82.7 - 112		11/30/2017 20:34

Method Reference(s): EPA 8260C
EPA 5030C
Data File: x47224.D

Report Prepared Tuesday, December 5, 2017

Analytical Report Appendix

The reported results relate only to the samples as they have been received by the laboratory.

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All soil/sludge samples have been reported on a dry weight basis, unless qualified "reported as received". Other solids are reported as received.

Low level Volatiles blank reports for soil/solid matrix are based on a nominal 5 gram weight. Sample results and reporting limits are based on actual weight, which may be more or less than 5 grams.

The Chain of Custody provides additional information, including compliance with sample condition requirements upon receipt. Sample condition requirements are defined under the 2003 NELAC Standard, sections 5.5.8.3.1 and 5.5.8.3.2.

NYSDOH ELAP does not certify for all parameters. Paradigm Environmental Services or the indicated subcontracted laboratory does hold certification for all analytes where certification is offered by ELAP unless otherwise specified. Aliquots separated for certain tests, such as TCLP, are indicated on the Chain of Custody and final reports with an "A" suffix.

Data qualifiers are used, when necessary, to provide additional information about the data. This information may be communicated as a flag or as text at the bottom of the report. Please refer to the following list of analyte-specific, frequently used data flags and their meaning:

"<" = Analyzed for but not detected at or above the quantitation limit.
"E" = Result has been estimated, calibration limit exceeded.
"Z" = See case narrative.
"D" = Sample, Laboratory Control Sample, or Matrix Spike Duplicate results above Relative Percent Difference limit.
"M" = Matrix spike recoveries outside QC limits. Matrix bias indicated.
"B" = Method blank contained trace levels of analyte. Refer to included method blank report.
"J" = Result estimated between the quantitation limit and half the quantitation limit.
"L" = Laboratory Control Sample recovery outside accepted QC limits.
"P" = Concentration differs by more than 40% between the primary and secondary analytical columns.
"NC" = Not calculable. Applicable to RPD if sample or duplicate result is non-detect or estimated (see primary report for data flags). Applicable to MS if sample is greater or equal to ten times the spike added. Applicable to sample surrogates or MS if sample dilution is 10x or higher.
"" = Indicates any recoveries outside associated acceptance windows. Surrogate outliers in samples are presumed matrix effects. LCS demonstrates method compliance unless otherwise noted.*
"(1)" = Indicates data from primary column used for QC calculation.
"A" = denotes a parameter for which ELAP does not offer approval as part of their laboratory certification program.
"F" = denotes a parameter for which Paradigm does not carry certification, the results for which should therefore only be used where ELAP certification is not required, such as personal exposure assessment.

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LABORATORY SERVICES

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Warranty. Recognizing that the nature of many samples is unknown and that some may contain potentially hazardous components, LAB warrants only that it will perform testing services, obtain findings, and prepare reports in accordance with generally accepted analytical laboratory principles and practices at the time of performance of services. LAB makes no other warranty, express or implied.

Scope and Compensation. LAB agrees to perform the services described in the chain of custody to which these terms and conditions are attached. Unless the parties agree in writing to the contrary, the duties of LAB shall not be construed to exceed the services specifically described. LAB will use LAB default method for all tests unless specified otherwise on the Work Order.
Payment terms are net 30 days from the date of invoice. All overdue payments are subject to an interest charge of one and one-half percent (1-1/2%) per month or a portion thereof. Client shall also be responsible for costs of collection, including payment of reasonable attorney fees if such expense is incurred. The prices, unless stated, do not include any sale, use or other taxes. Such taxes will be added to invoice prices when required.

Prices. Compensation for services performed will be based on the current Lab Analytical Fee Schedule or on quotations agreed to in writing by the parties. Turnaround time based charges are determined from the time of resolution of all work order questions. Testimony, court appearances or data compilation for legal action will be charged separately. Evaluation and reporting of initial screening runs may incur additional fees.

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LAB shall have no liability, obligation, or responsibility of any kind for losses, costs, expenses, or other damages (including but not limited to any special, direct, incidental or consequential damages) with respect to LAB's services or results.
All results provided by LAB are strictly for the use of its clients and LAB is in no way responsible for the use of such results by clients or third parties. All reports should be considered in their entirety, and LAB is not responsible for the separation, detachment, or other use of any portion of these reports. Client may not assign the lab report without the written consent of the LAB.
Client covenants and agrees, at its/his/her sole expense, to indemnify, protect, defend, and save harmless the LAB from and against any and all damages, losses, liabilities, obligations, penalties, claims, litigation, demands, defenses, judgments, suits, actions, proceedings, costs, disbursements and/or expenses (including, without limitation attorneys' and experts' fees and disbursements) of any kind whatsoever which may at any time be imposed upon, incurred by or asserted or awarded against client relating to, resulting from or arising out of (a) the breach of this agreement by this client, (b) the negligence of the client in handling, delivering or disclosing any hazardous substance, (c) the violation of the Client of any applicable law, (d) non-compliance by the Client with any environmental permit or (e) a material misrepresentation in disclosing the materials to be tested.

Hazard Disclosure. Client represents and warrants that any sample delivered to LAB will be preceded or accompanied by complete written disclosure of the presence of any hazardous substances known or suspected by Client. Client further warrants that any sample containing any hazardous substance that is to be delivered to LAB will be packaged, labeled, transported, and delivered properly and in accordance with applicable laws.

Sample Handling. Prior to LAB's acceptance of any sample (or after any revocation of acceptance), the entire risk of loss or of damage to such sample remains with Client. Samples are accepted when receipt is acknowledged on chain of custody documentation. In no event will LAB have any responsibility for the action or inaction of any carrier shipping or delivering any sample to or from LAB premises.
Client authorizes LAB to proceed with the analysis of samples as received by the laboratory, recognizing that any samples not in compliance with all current DOH-ELAP-NELAP requirements for containers, preservation or holding time will be noted as such on the final report.
Disposal of hazardous waste samples is the responsibility of the Client. If the Client does not wish such samples returned, LAB may add storage and disposal fees to the final invoice. Maximum storage time for samples is 30 days after completion of analysis unless modified by applicable state or federal laws. Client will be required to give the LAB written instructions concerning disposal of these samples.
LAB reserves the absolute right, exercisable at any time, to refuse to receive delivery of, refuse to accept, or revoke acceptance of any sample, which, in the sole judgment of LAB (a) is of unsuitable volume, (b) may be or become unsuitable for or may pose a risk in handling, transport, or processing for any health, safety, environmental or other reason whether or not due to the presence in the sample of any hazardous substance, and whether or not such presence has been disclosed to LAB by Client or (c) if the condition or sample date make the sample unsuitable for analysis.

Legal Responsibility. LAB is solely responsible for performance of this contract, and no affiliated company, director, officer, employee, or agent shall have any legal responsibility hereunder, whether in contract or tort including negligence.

Assignment. LAB may assign its performance obligations under this contract to other parties, as it deems necessary. LAB shall disclose to Client any assignee (subcontractor) by ELAP ID # on the submitted final report.

Force Majeure. LAB shall have no responsibility or liability to the Client for any failure or delay in performance by LAB, which results in whole or in part from any cause or circumstance beyond the reasonable control of LAB. Such causes and circumstances shall include, but not limited to, acts of God, acts or orders of any government authority, strikes or other labor disputes, natural disasters, accidents, wars, civil disturbances, difficulties or delays in transportation, mail or delivery services, inability to obtain sufficient services or supplies from LAB's usual suppliers, or any other cause beyond LAB's reasonable control.

Law. This contract shall be continued under the laws of the State of New York without regard to its conflicts of laws provision.

179 Lake Avenue, Rochester, NY 14608 Office (585) 647-2530 Fax (585) 647-3311

PARADIGM

CHAIN OF CUSTODY

REPORT TO:		INVOICE TO:		
CLIENT: LU Engineers		CLIENT:		LAB PROJECT ID: 175289
ADDRESS: 399 East Ave Suite 200		ADDRESS:		
CITY: Rochester	STATE: NY ZIP	CITY:	STATE: ZIP:	Quotation #:
PHONE:		PHONE: SAME		Email: achermetref@luengineers.com
ATTN: Ari Chermetref		ATTN:		

PROJECT REFERENCE

Scio St 4226

Matrix Codes:

AQ - Aqueous Liquid; NQ - Non-Aqueous Liquid; WA - Water; WG - Groundwater; DW - Drinking Water; WW - Wastewater; SO - Soil; SL - Sludge; SD - Solid; PT - Paint; WP - Wipe; CK - Caulk; OL - Oil; AR - Air

REQUESTED ANALYSIS

DATE COLLECTED	TIME COLLECTED	COMPOSITE	GRAB	SAMPLE IDENTIFIER	MATRIX CODES	NUMBER OF CONTAINERS	VOA CP-51									REMARKS	PARADIGM LAB SAMPLE NUMBER
11-28-17	0900		X	MW-07-112817	WA	2	X										01
11-28-17	1000		X	MW-08-112817	WA	2	X										02
11-28-17	1100		X	MW-09-112817	WA	2	X										03

Turnaround Time		Report Supplements		
Availability contingent upon lab approval; additional fees may apply.				
Standard 5 day	X	None Required		None Required	
10 day		Batch QC		Basic EDD	
Rush 3 day		Category A		NYSDEC EDD	X
Rush 2 day		Category B	X		
Rush 1 day					
Other please indicate date needed:		Other please indicate package needed:		Other EDD please indicate EDD needed:	

Sampled By — 11-28-17 0900 (Date/Time) — Total Cost:

Relinquished By — 11-28-17 1240 (Date/Time)

Received By — 11/28/17 1240 on ice (Date/Time) — P.I.F.

Received @ Lab By — 11/28/17 12:49 (Date/Time)

8°C : cool started in field 11/28/17 12:47. Custody Seal N/A, samples delivered by client, on 11/28/17

By signing this form, client agrees to Paradigm Terms and Conditions (reverse).

See additional page for sample conditions.

Chain of Custody Supplement

Client: Lu Engineers **Completed by:** Glenn Pezzulo

Lab Project ID: 175289 **Date:** 11/28/17

Sample Condition Requirements

Per NELAC/ELAP 210/241/242/243/244

Condition	*NELAC compliance with the sample condition requirements upon receipt* Yes	No	N/A
Container Type	X		
Comments			
Transferred to method-compliant container			X
Headspace (<1 mL)	X		
Comments			
Preservation	X		
Comments			
Chlorine Absent (<0.10 ppm per test strip)			X
Comments			
Holding Time	X		
Comments			
Temperature	X		
Comments	8°C iced started in Field 11/28/17 12:47		
Sufficient Sample Quantity	X		
Comments			

PARADIGM

PARADIGM
ENVIRONMENTAL SERVICES, INC

Analytical Report For

Lu Engineers, Inc.

For Lab Project ID

181594

Referencing

Scio St. 4226

Prepared

Friday, April 27, 2018

Any noncompliant QC parameters or other notes impacting data interpretation are flagged or documented on the final report or are noted below.

Certifies that this report has been approved by the Technical Director or Designee

179 Lake Avenue • Rochester, NY 14608 • (585) 647-2530 • Fax (585) 647-3311 • ELAP ID# 10958

PARADIGM ENVIRONMENTAL SERVICES, INC.

Lab Project ID: 181594

Client: **Lu Engineers, Inc.**

Project Reference: Scio St. 4226

Sample Identifier: MW-07-041918
Lab Sample ID: 181594-01 **Date Sampled:** 4/19/2018
Matrix: Groundwater **Date Received:** 4/20/2018

Volatile Organics (Petroleum)

Analyte	Result	Units	Qualifier	Date Analyzed
1,2,4-Trimethylbenzene	**209**	ug/L		4/25/2018 18:01
1,3,5-Trimethylbenzene	**43.6**	ug/L		4/25/2018 18:01
Benzene	< 10.0	ug/L		4/25/2018 18:01
Ethylbenzene	**122**	ug/L		4/25/2018 18:01
Isopropylbenzene	< 20.0	ug/L		4/25/2018 18:01
m,p-Xylene	**466**	ug/L		4/25/2018 18:01
Methyl tert-butyl Ether	< 20.0	ug/L		4/25/2018 18:01
Naphthalene	**54.2**	ug/L		4/25/2018 18:01
n-Butylbenzene	< 20.0	ug/L		4/25/2018 18:01
n-Propylbenzene	**21.7**	ug/L		4/25/2018 18:01
o-Xylene	< 20.0	ug/L		4/25/2018 18:01
p-Isopropyltoluene	< 20.0	ug/L		4/25/2018 18:01
sec-Butylbenzene	< 20.0	ug/L		4/25/2018 18:01
tert-Butylbenzene	< 20.0	ug/L		4/25/2018 18:01
Toluene	< 20.0	ug/L		4/25/2018 18:01

Surrogate	Percent Recovery	Limits	Outliers	Date Analyzed
1,2-Dichloroethane-d4	**95.9**	77.2 - 121		4/25/2018 18:01
4-Bromofluorobenzene	**93.6**	70 - 123		4/25/2018 18:01
Pentafluorobenzene	**98.8**	85.4 - 110		4/25/2018 18:01
Toluene-D8	**100**	83.8 - 112		4/25/2018 18:01

Method Reference(s): EPA 8260C
EPA 5030C
Data File: x50055.D

PARADIGM ENVIRONMENTAL SERVICES, INC.

Lab Project ID: 181594

Client: **Lu Engineers, Inc.**

Project Reference: Scio St. 4226

Sample Identifier: MW-08-041918
Lab Sample ID: 181594-02 **Date Sampled:** 4/20/2018
Matrix: Groundwater **Date Received:** 4/20/2018

Volatile Organics (Petroleum)

Analyte	Result	Units	Qualifier	Date Analyzed
1,2,4-Trimethylbenzene	**176**	ug/L		4/26/2018 21:45
1,3,5-Trimethylbenzene	**33.2**	ug/L		4/26/2018 21:45
Benzene	**14.0**	ug/L		4/26/2018 21:45
Ethylbenzene	**269**	ug/L		4/26/2018 21:45
Isopropylbenzene	**15.1**	ug/L		4/26/2018 21:45
m,p-Xylene	**558**	ug/L		4/26/2018 21:45
Methyl tert-butyl Ether	< 4.00	ug/L		4/26/2018 21:45
Naphthalene	**61.0**	ug/L		4/26/2018 21:45
n-Butylbenzene	< 4.00	ug/L		4/26/2018 21:45
n-Propylbenzene	**31.1**	ug/L		4/26/2018 21:45
o-Xylene	**43.2**	ug/L		4/26/2018 21:45
p-Isopropyltoluene	< 4.00	ug/L		4/26/2018 21:45
sec-Butylbenzene	< 4.00	ug/L		4/26/2018 21:45
tert-Butylbenzene	< 4.00	ug/L		4/26/2018 21:45
Toluene	**29.7**	ug/L		4/26/2018 21:45

Surrogate	Percent Recovery	Limits	Outliers	Date Analyzed
1,2-Dichloroethane-d4	**103**	77.2 - 121		4/26/2018 21:45
4-Bromofluorobenzene	**98.3**	70 - 123		4/26/2018 21:45
Pentafluorobenzene	**98.3**	85.4 - 110		4/26/2018 21:45
Toluene-D8	**104**	83.8 - 112		4/26/2018 21:45

Method Reference(s): EPA 8260C
EPA 5030C
Data File: x50098.D

PARADIGM ENVIRONMENTAL SERVICES, INC.

Lab Project ID: 181594

Client: **Lu Engineers, Inc.**

Project Reference: Scio St. 4226

Sample Identifier: MW-09-041918
Lab Sample ID: 181594-03 **Date Sampled:** 4/19/2018
Matrix: Groundwater **Date Received:** 4/20/2018

Volatile Organics (Petroleum)

Analyte	Result	Units	Qualifier	Date Analyzed
1,2,4-Trimethylbenzene	< 2.00	ug/L		4/26/2018 21:21
1,3,5-Trimethylbenzene	< 2.00	ug/L		4/26/2018 21:21
Benzene	< 1.00	ug/L		4/26/2018 21:21
Ethylbenzene	< 2.00	ug/L		4/26/2018 21:21
Isopropylbenzene	**2.13**	ug/L		4/26/2018 21:21
m,p-Xylene	**2.10**	ug/L		4/26/2018 21:21
Methyl tert-butyl Ether	< 2.00	ug/L		4/26/2018 21:21
Naphthalene	< 5.00	ug/L		4/26/2018 21:21
n-Butylbenzene	< 2.00	ug/L		4/26/2018 21:21
n-Propylbenzene	< 2.00	ug/L		4/26/2018 21:21
o-Xylene	< 2.00	ug/L		4/26/2018 21:21
p-Isopropyltoluene	< 2.00	ug/L		4/26/2018 21:21
sec-Butylbenzene	< 2.00	ug/L		4/26/2018 21:21
tert-Butylbenzene	< 2.00	ug/L		4/26/2018 21:21
Toluene	< 2.00	ug/L		4/26/2018 21:21

Surrogate	Percent Recovery	Limits	Outliers	Date Analyzed
1,2-Dichloroethane-d4	**106**	77.2 - 121		4/26/2018 21:21
4-Bromofluorobenzene	**97.0**	70 - 123		4/26/2018 21:21
Pentafluorobenzene	**96.1**	85.4 - 110		4/26/2018 21:21
Toluene-D8	**100**	83.8 - 112		4/26/2018 21:21

Method Reference(s): EPA 8260C
EPA 5030C
Data File: x50097.D

PARADIGM
ENVIRONMENTAL SERVICES, INC.

Method Blank Report

Client: Lu Engineers, Inc.
Project Reference: Scio St. 4226
Lab Project ID: 181594
Matrix: Groundwater

Volatile Organics (Petroleum)

Analyte	Result	Units	Qualifier	Date Analyzed	
1,2,4-Trimethylbenzene	<2.00	ug/L		4/25/2018	14:53
1,3,5-Trimethylbenzene	<2.00	ug/L		4/25/2018	14:53
Benzene	<1.00	ug/L		4/25/2018	14:53
Ethylbenzene	<2.00	ug/L		4/25/2018	14:53
Isopropylbenzene	<2.00	ug/L		4/25/2018	14:53
m,p-Xylene	<2.00	ug/L		4/25/2018	14:53
Methyl tert-butyl Ether	<2.00	ug/L		4/25/2018	14:53
Naphthalene	<5.00	ug/L		4/25/2018	14:53
n-Butylbenzene	<2.00	ug/L		4/25/2018	14:53
n-Propylbenzene	<2.00	ug/L		4/25/2018	14:53
o-Xylene	<2.00	ug/L		4/25/2018	14:53
p-Isopropyltoluene	<2.00	ug/L		4/25/2018	14:53
sec-Butylbenzene	<2.00	ug/L		4/25/2018	14:53
tert-Butylbenzene	<2.00	ug/L		4/25/2018	14:53
Toluene	<2.00	ug/L		4/25/2018	14:53

Surrogate	Percent Recovery	Limits	Outliers	Date Analyzed	
1,2-Dichloroethane-d4	**97.4**	77.2 - 121		4/25/2018	14:53
4-Bromofluorobenzene	**94.4**	70 - 123		4/25/2018	14:53
Pentafluorobenzene	**100**	85.4 - 110		4/25/2018	14:53
Toluene-D8	**98.8**	83.8 - 112		4/25/2018	14:53

Method Reference(s): EPA 8260C
EPA 5030C
Data File: x50047.D
QC Batch ID: voaw180425
QC Number: 1

This report is part of a multipage document and should only be evaluated in its entirety. The Chain of Custody provides additional sample information, including compliance with the sample condition requirements upon receipt.

Report Prepared Friday, April 27, 2018

PARADIGM ENVIRONMENTAL SERVICES, INC.

QC Report for Laboratory Control Sample

Client: Lu Engineers, Inc.
Project Reference: Scio St. 4226
Lab Project ID: 181594
Matrix: Groundwater

Volatile Organics (Petroleum)

Analyte	Spike Added	Spike Units	LCS Result	LCS % Recovery	% Rec Limits	LCS Outliers	Date Analyzed
Benzene	20.0	ug/L	21.7	109	80.4 - 120		4/25/2018
Ethylbenzene	20.0	ug/L	19.9	99.4	75.4 - 121		4/25/2018
Toluene	20.0	ug/L	21.3	107	80.2 - 119		4/25/2018

Method Reference(s): EPA 8260C
EPA 5030C
Data File: x50046.D
QC Number: 1
QC Batch ID: voaw180425

This report is part of a multipage document and should only be evaluated in its entirety. The Chain of Custody provides additional sample information, including compliance with the sample condition requirements upon receipt.

Report Prepared Friday, April 27, 2018

PARADIGM
ENVIRONMENTAL SERVICES, INC.

Method Blank Report

Client: Lu Engineers, Inc.
Project Reference: Scio St. 4226
Lab Project ID: 181594
Matrix: Groundwater

Volatile Organics (Petroleum)

Analyte	Result	Units	Qualifier	Date Analyzed	
1,2,4-Trimethylbenzene	<2.00	ug/L		4/26/2018	12:58
1,3,5-Trimethylbenzene	<2.00	ug/L		4/26/2018	12:58
Benzene	<1.00	ug/L		4/26/2018	12:58
Ethylbenzene	<2.00	ug/L		4/26/2018	12:58
Isopropylbenzene	<2.00	ug/L		4/26/2018	12:58
m,p-Xylene	<2.00	ug/L		4/26/2018	12:58
Methyl tert-butyl Ether	<2.00	ug/L		4/26/2018	12:58
Naphthalene	<5.00	ug/L		4/26/2018	12:58
n-Butylbenzene	<2.00	ug/L		4/26/2018	12:58
n-Propylbenzene	<2.00	ug/L		4/26/2018	12:58
o-Xylene	<2.00	ug/L		4/26/2018	12:58
p-Isopropyltoluene	<2.00	ug/L		4/26/2018	12:58
sec-Butylbenzene	<2.00	ug/L		4/26/2018	12:58
tert-Butylbenzene	<2.00	ug/L		4/26/2018	12:58
Toluene	<2.00	ug/L		4/26/2018	12:58

Surrogate	Percent Recovery	Limits	Outliers	Date Analyzed	
1,2-Dichloroethane-d4	**99.5**	77.2 - 121		4/26/2018	12:58
4-Bromofluorobenzene	**96.4**	70 - 123		4/26/2018	12:58
Pentafluorobenzene	**101**	85.4 - 110		4/26/2018	12:58
Toluene-D8	**101**	83.8 - 112		4/26/2018	12:58

Method Reference(s): EPA 8260C
EPA 5030C
Data File: x50076.D
QC Batch ID: voalu180426
QC Number: 1

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PARADIGM
ENVIRONMENTAL SERVICES, INC.

QC Report for Laboratory Control Sample

Client: Lu Engineers, Inc.
Project Reference: Scio St. 4226
Lab Project ID: 181594
Matrix: Groundwater

Volatile Organics (Petroleum)

Analyte	Spike Added	Spike Units	LCS Result	LCS % Recovery	% Rec Limits	LCS Outliers	Date Analyzed
Benzene	20.0	ug/L	21.2	106	80.4 - 120		4/26/2018
Ethylbenzene	20.0	ug/L	19.4	97.1	75.4 - 121		4/26/2018
Toluene	20.0	ug/L	21.0	105	80.2 - 119		4/26/2018

Method Reference(s): EPA 8260C
EPA 5030C
Data File: x50075.D
QC Number: 1
QC Batch ID: voalu180426

This report is part of a multipage document and should only be evaluated in its entirety. The Chain of Custody provides additional sample information, including compliance with the sample condition requirements upon receipt.

Report Prepared Friday, April 27, 2018

Analytical Report Appendix

The reported results relate only to the samples as they have been received by the laboratory.

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All soil/sludge samples have been reported on a dry weight basis, unless qualified "reported as received". Other solids are reported as received.

Low level Volatiles blank reports for soil/solid matrix are based on a nominal 5 gram weight. Sample results and reporting limits are based on actual weight, which may be more or less than 5 grams.

The Chain of Custody provides additional information, including compliance with sample condition requirements upon receipt. Sample condition requirements are defined under the 2003 NELAC Standard, sections 5.5.8.3.1 and 5.5.8.3.2.

NYSDOH ELAP does not certify for all parameters. Paradigm Environmental Services or the indicated subcontracted laboratory does hold certification for all analytes where certification is offered by ELAP unless otherwise specified. Aliquots separated for certain tests, such as TCLP, are indicated on the Chain of Custody and final reports with an "A" suffix.

Data qualifiers are used, when necessary, to provide additional information about the data. This information may be communicated as a flag or as text at the bottom of the report. Please refer to the following list of analyte-specific, frequently used data flags and their meaning:

"<" = Analyzed for but not detected at or above the quantitation limit.
"E" = Result has been estimated, calibration limit exceeded.
"Z" = See case narrative.
"D" = Sample, Laboratory Control Sample, or Matrix Spike Duplicate results above Relative Percent Difference limit.
"M" = Matrix spike recoveries outside QC limits. Matrix bias indicated.
"B" = Method blank contained trace levels of analyte. Refer to included method blank report.
"J" = Result estimated between the quantitation limit and half the quantitation limit.
"L" = Laboratory Control Sample recovery outside accepted QC limits.
"P" = Concentration differs by more than 40% between the primary and secondary analytical columns.
"NC" = Not calculable. Applicable to RPD if sample or duplicate result is non-detect or estimated (see primary report for data flags). Applicable to MS if sample is greater or equal to ten times the spike added. Applicable to sample surrogates or MS if sample dilution is 10x or higher.
"" = Indicates any recoveries outside associated acceptance windows. Surrogate outliers in samples are presumed matrix effects. LCS demonstrates method compliance unless otherwise noted.*
"(1)" = Indicates data from primary column used for QC calculation.
"A" = denotes a parameter for which ELAP does not offer approval as part of their laboratory certification program.
"F" = denotes a parameter for which Paradigm does not carry certification, the results for which should therefore only be used where ELAP certification is not required, such as personal exposure assessment.

GENERAL TERMS AND CONDITIONS
LABORATORY SERVICES

These Terms and Conditions embody the whole agreement of the parties in the absence of a signed and executed contract between the Laboratory (LAB) and Client. They shall supersede all previous communications, representations, or agreements, either verbal or written, between the parties. The LAB specifically rejects all additional, inconsistent, or conflicting terms, whether printed or otherwise set forth in any purchase order or other communication from the Client to the LAB. The invalidity or unenforceability in whole or in part of any provision, term or condition hereof shall not affect in any way the validity or enforceability of the remainder of the Terms and Conditions. No waiver by LAB of any provision, term, or condition hereof or of any breach by or obligation of the Client hereunder shall constitute a waiver of such provision, term, or condition on any other occasion or a waiver of any other breach by or obligation of the Client. This agreement shall be administered and interpreted under the laws of the state which services are procured.

Warranty. Recognizing that the nature of many samples is unknown and that some may contain potentially hazardous components, LAB warrants only that it will perform testing services, obtain findings, and prepare reports in accordance with generally accepted analytical laboratory principles and practices at the time of performance of services. LAB makes no other warranty, express or implied.

Scope and Compensation. LAB agrees to perform the services described in the chain of custody to which these terms and conditions are attached. Unless the parties agree in writing to the contrary, the duties of LAB shall not be construed to exceed the services specifically described. LAB wi use LAB default method for all tests unless specified otherwise on the Work Order.
Payment terms are net 30 days from the date of invoice. All overdue payments are subject to an interest charge of one and one-half percent (1-1/2%) per month or a portion thereof. Client shall also be responsible for costs of collection, including payment of reasonable attorney fees if such expense is incurred. The prices, unless stated, do not include any sale, use or other taxes. Such taxes will be added to invoice prices when required.

Prices. Compensation for services performed will be based on the current Lab Analytical Fee Schedule or on quotations agreed to in writing by the parties. Turnaround time based charges are determined from the time of resolution of all work order questions. Testimony, court appearances or data compilation for legal action will be charged separately. Evaluation and reporting of initial screening runs may incur additional fees.

Limitations of Liability. In the event of any error, omission, or other professional negligence, the sole and exclusive responsibility of LAB shall be to re-perform the deficient work at its own expense and LAB shall have no other liability whatsoever. All claims shall be deemed waived unless made in writing and received by LAB within ninety (90) days following completion of services.
LAB shall have no liability, obligation, or responsibility of any kind for losses, costs, expenses, or other damages (including but not limited to any special, direct, incidental or consequential damages) with respect to LAB's services or results.
All results provided by LAB are strictly for the use of its clients and LAB is in no way responsible for the use of such results by clients or third parties. All reports should be considered in their entirety, and LAB is not responsible for the separation, detachment, or other use of any portion of these reports. Client may not assign the lab report without the written consent of the LAB.
Client covenants and agrees, at its/his/her sole expense, to indemnify, protect, defend, and save harmless the LAB from and against any and all damages, losses, liabilities, obligations, penalties, claims, litigation, demands, defenses, judgments, suits, actions, proceedings, costs, disbursements and/or expenses (including, without limitation attorneys' and experts' fees and disbursements) of any kind whatsoever which may at any time be imposed upon, incurred by or asserted or awarded against client relating to, resulting from or arising out of (a) the breach of this agreement by this client, (b) the negligence of the client in handling, delivering or disclosing any hazardous substance, (c) the violation of the Client of any applicable law, (d) non-compliance by the Client with any environmental permit or (e) a material misrepresentation in disclosing the materials to be tested.

Hazard Disclosure. Client represents and warrants that any sample delivered to LAB will be preceded or accompanied by complete written disclosure of the presence of any hazardous substances known or suspected by Client. Client further warrants that any sample containing any hazardous substance that is to be delivered to LAB will be packaged, labeled, transported, and delivered properly and in accordance with applicable laws.

Sample Handling. Prior to LAB's acceptance of any sample (or after any revocation of acceptance), the entire risk of loss or of damage to such sample remains with Client. Samples are accepted when receipt is acknowledged on chain of custody documentation. In no event will LAB have any responsibility for the action or inaction of any carrier shipping or delivering any sample to or from LAB premises.
Client authorizes LAB to proceed with the analysis of samples as received by the laboratory, recognizing that any samples not in compliance with all current DOH-ELAP-NELAP requirements for containers, preservation or holding time will be noted as such on the final report.
Disposal of hazardous waste samples is the responsibility of the Client. If the Client does not wish such samples returned, LAB may add storage and disposal fees to the final invoice. Maximum storage time for samples is 30 days after completion of analysis unless modified by applicable state or federal laws. Client will be required to give the LAB written instructions concerning disposal of these samples.
LAB reserves the absolute right, exercisable at any time, to refuse to receive delivery of, refuse to accept, or revoke acceptance of any sample, which, in the sole judgment of LAB (a) is of unsuitable volume, (b) may be or become unsuitable for or may pose a risk in handling, transport, or processing for any health, safety, environmental or other reason whether or not due to the presence in the sample of any hazardous substance, and whether or not such presence has been disclosed to LAB by Client or (c) if the condition or sample date make the sample unsuitable for analysis.

Legal Responsibility. LAB is solely responsible for performance of this contract, and no affiliated company, director, officer, employee, or agent shall have any legal responsibility hereunder, whether in contract or tort including negligence.

Assignment. LAB may assign its performance obligations under this contract to other parties, as it deems necessary. LAB shall disclose to Client any assignee (subcontractor) by ELAP ID # on the submitted final report.

Force Majeure. LAB shall have no responsibility or liability to the Client for any failure or delay in performance by LAB, which results in whole or in part from any cause or circumstance beyond the reasonable control of LAB. Such causes and circumstances shall include, but not limited to, acts of God, acts or orders of any government authority, strikes or other labor disputes, natural disasters, accidents, wars, civil disturbances, difficulties or delays in transportation, mail or delivery services, inability to obtain sufficient services or supplies from LAB's usual suppliers, or any other cause beyond LAB's reasonable control.

Law. This contract shall be continued under the laws of the State of New York without regard to its conflicts of laws provision.

179 Lake Avenue, Rochester, NY 14608 Office (585) 647-2530 Fax (585) 647-3311

1 of 2

CHAIN OF CUSTODY

PARADIGM

REPORT TO:		INVOICE TO:		
CLIENT:	LaBella Engineers	CLIENT:		LAB PROJECT ID: 181594
ADDRESS:	339 East Avenue, Suite 200	ADDRESS:	SAME	Quotation #:
CITY:	Rochester STATE: NY ZIP: 14604	CITY:	STATE: ZIP:	Email: gregandrus@labellengineers.com
PHONE:	585-385-7417	PHONE:		
ATTN:	Greg Andrus	ATTN:		

PROJECT REFERENCE: Scio St. 4226

Matrix Codes:
AQ - Aqueous Liquid; NQ - Non-Aqueous Liquid; WA - Water; WG - Groundwater; DW - Drinking Water; WW - Wastewater; SO - Soil; SL - Sludge; SD - Solid; PT - Paint; WP - Wipe; CK - Caulk; OL - Oil; AR - Air

REQUESTED ANALYSIS

DATE COLLECTED	TIME COLLECTED	COMPOSITE	GRAB	SAMPLE IDENTIFIER	MATRIX CODES	NUMBER OF CONTAINERS	VOCs CP-51	REMARKS	PARADIGM LAB SAMPLE NUMBER
4-19-18	8:05		✓	MW-07-041918	WG	2	X		01
4-20-18	1:35		✓	MW-08-041918	WG	2	X		02
4-19-18	2:05		✓	MW-09-041918	WG	2	X		03
								6°C iced 4/20/18 1423	

Turnaround Time		Report Supplements			
Availability contingent upon lab approval; additional fees may apply.					
Standard 5 day	☒	None Required	☐	None Required	☐
10 day	☐	Batch QC	☒	Basic EDD	☐
Rush 3 day	☐	Category A	☐	NYSDEC EDD	☒
Rush 2 day	☐	Category B	☒		
Rush 1 day	☐				
Other please indicate date needed:	☐	Other please indicate package needed:	☐	Other EDD please indicate EDD needed :	☐

Sampled By: Laura K Krieger	Date/Time: 4/19/18 / 12:00	Total Cost:
Relinquished By:	Date/Time: 4/20/18 / 14:15	
Received By:	Date/Time: 4/20/18 1417	P.I.F.
Received @ Lab By:	Date/Time: 4/20/18 1423	

By signing this form, client agrees to Paradigm Terms and Conditions (reverse).

See additional page for sample conditions.

Chain of Custody Supplement

Client: CU **Completed by:** Mollaid

Lab Project ID: 181594 **Date:** 4/20/18

Sample Condition Requirements

Per NELAC/ELAP 210/241/242/243/244

Condition	NELAC compliance with the sample condition requirements upon receipt: Yes	No	N/A
Container Type	X		
Comments			
Transferred to method-compliant container			X
Headspace (<1 mL)	X		
Comments			
Preservation	X		
Comments			
Chlorine Absent (<0.10 ppm per test strip)			X
Comments			
Holding Time	X		
Comments			
Temperature	X		
Comments	6°C ind 4/20/18 1423		
Sufficient Sample Quantity	X		
Comments			

PARADIGM

PARADIGM
ENVIRONMENTAL SERVICES, INC

Analytical Report For

Lu Engineers, Inc.

For Lab Project ID

181593

Referencing

Scio St 4226

Prepared

Friday, April 27, 2018

Any noncompliant QC parameters or other notes impacting data interpretation are flagged or documented on the final report or are noted below.

Certifies that this report has been approved by the Technical Director or Designee

179 Lake Avenue • Rochester, NY 14608 • (585) 647-2530 • Fax (585) 647-3311 • ELAP ID# 10958

PARADIGM
ENVIRONMENTAL SERVICES, INC.

Lab Project ID: 181593

Client: **Lu Engineers, Inc.**

Project Reference: Scio St 4226

Sample Identifier: MW-08A-041918
Lab Sample ID: 181593-01 **Date Sampled:** 4/20/2018
Matrix: Groundwater **Date Received:** 4/20/2018

Volatile Organics (Petroleum)

Analyte	Result	Units	Qualifier	Date Analyzed
1,2,4-Trimethylbenzene	**69.4**	ug/L		4/25/2018 17:37
1,3,5-Trimethylbenzene	**9.33**	ug/L		4/25/2018 17:37
Benzene	**29.9**	ug/L		4/25/2018 17:37
Ethylbenzene	**153**	ug/L		4/25/2018 17:37
Isopropylbenzene	**20.5**	ug/L		4/25/2018 17:37
m,p-Xylene	**172**	ug/L		4/25/2018 17:37
Methyl tert-butyl Ether	< 2.00	ug/L		4/25/2018 17:37
Naphthalene	**25.3**	ug/L		4/25/2018 17:37
n-Butylbenzene	**2.87**	ug/L		4/25/2018 17:37
n-Propylbenzene	**33.0**	ug/L		4/25/2018 17:37
o-Xylene	**16.0**	ug/L		4/25/2018 17:37
p-Isopropyltoluene	< 2.00	ug/L		4/25/2018 17:37
sec-Butylbenzene	**2.24**	ug/L		4/25/2018 17:37
tert-Butylbenzene	< 2.00	ug/L		4/25/2018 17:37
Toluene	**17.2**	ug/L		4/25/2018 17:37

Surrogate	Percent Recovery	Limits	Outliers	Date Analyzed
1,2-Dichloroethane-d4	**98.3**	77.2 - 121		4/25/2018 17:37
4-Bromofluorobenzene	**100**	70 - 123		4/25/2018 17:37
Pentafluorobenzene	**99.3**	85.4 - 110		4/25/2018 17:37
Toluene-D8	**106**	83.8 - 112		4/25/2018 17:37

Method Reference(s): EPA 8260C
EPA 5030C
Data File: x50054.D

PARADIGM
ENVIRONMENTAL SERVICES, INC.

Method Blank Report

Client: **Lu Engineers, Inc.**
Project Reference: Scio St 4226
Lab Project ID: 181593
Matrix: Groundwater

Volatile Organics (Petroleum)

Analyte	Result	Units	Qualifier	Date Analyzed
1,2,4-Trimethylbenzene	<2.00	ug/L		4/25/2018 14:53
1,3,5-Trimethylbenzene	<2.00	ug/L		4/25/2018 14:53
Benzene	<1.00	ug/L		4/25/2018 14:53
Ethylbenzene	<2.00	ug/L		4/25/2018 14:53
Isopropylbenzene	<2.00	ug/L		4/25/2018 14:53
m,p-Xylene	<2.00	ug/L		4/25/2018 14:53
Methyl tert-butyl Ether	<2.00	ug/L		4/25/2018 14:53
Naphthalene	<5.00	ug/L		4/25/2018 14:53
n-Butylbenzene	<2.00	ug/L		4/25/2018 14:53
n-Propylbenzene	<2.00	ug/L		4/25/2018 14:53
o-Xylene	<2.00	ug/L		4/25/2018 14:53
p-Isopropyltoluene	<2.00	ug/L		4/25/2018 14:53
sec-Butylbenzene	<2.00	ug/L		4/25/2018 14:53
tert-Butylbenzene	<2.00	ug/L		4/25/2018 14:53
Toluene	<2.00	ug/L		4/25/2018 14:53

Surrogate	Percent Recovery	Limits	Outliers	Date Analyzed
1,2-Dichloroethane-d4	**97.4**	77.2 - 121		4/25/2018 14:53
4-Bromofluorobenzene	**94.4**	70 - 123		4/25/2018 14:53
Pentafluorobenzene	**100**	85.4 - 110		4/25/2018 14:53
Toluene-D8	**98.8**	83.8 - 112		4/25/2018 14:53

Method Reference(s): EPA 8260C
EPA 5030C
Data File: x50047.D
QC Batch ID: voaw180425
QC Number: 1

Report Prepared Thursday, April 26, 2018

PARADIGM

QC Report for Laboratory Control Sample

Client: Lu Engineers, Inc.
Project Reference: Scio St 4226
Lab Project ID: 181593
Matrix: Groundwater

Volatile Organics (Petroleum)

Analyte	Spike Added	Spike Units	LCS Result	LCS % Recovery	% Rec Limits	LCS Outliers	Date Analyzed
Benzene	20.0	ug/L	21.7	109	80.4 - 120		4/25/2018
Ethylbenzene	20.0	ug/L	19.9	99.4	75.4 - 121		4/25/2018
Toluene	20.0	ug/L	21.3	107	80.2 - 119		4/25/2018

Method Reference(s): EPA 8260C
EPA 5030C
Data File: x50046.D
QC Number: 1
QC Batch ID: voaw180425

Report Prepared Thursday, April 26, 2018

Analytical Report Appendix

The reported results relate only to the samples as they have been received by the laboratory.

Each page of this document is part of a multipage report. This document may not be reproduced except in its entirety, without the prior consent of Paradigm Environmental Services, Inc.

All soil/sludge samples have been reported on a dry weight basis, unless qualified "reported as received". Other solids are reported as received.

Low level Volatiles blank reports for soil/solid matrix are based on a nominal 5 gram weight. Sample results and reporting limits are based on actual weight, which may be more or less than 5 grams.

The Chain of Custody provides additional information, including compliance with sample condition requirements upon receipt. Sample condition requirements are defined under the 2003 NELAC Standard, sections 5.5.8.3.1 and 5.5.8.3.2.

NYSDOH ELAP does not certify for all parameters. Paradigm Environmental Services or the indicated subcontracted laboratory does hold certification for all analytes where certification is offered by ELAP unless otherwise specified. Aliquots separated for certain tests, such as TCLP, are indicated on the Chain of Custody and final reports with an "A" suffix.

Data qualifiers are used, when necessary, to provide additional information about the data. This information may be communicated as a flag or as text at the bottom of the report. Please refer to the following list of analyte-specific, frequently used data flags and their meaning:

"<" = Analyzed for but not detected at or above the quantitation limit.
"E" = Result has been estimated, calibration limit exceeded.
"Z" = See case narrative.
"D" = Sample, Laboratory Control Sample, or Matrix Spike Duplicate results above Relative Percent Difference limit.
"M" = Matrix spike recoveries outside QC limits. Matrix bias indicated.
"B" = Method blank contained trace levels of analyte. Refer to included method blank report.
"J" = Result estimated between the quantitation limit and half the quantitation limit.
"L" = Laboratory Control Sample recovery outside accepted QC limits.
"P" = Concentration differs by more than 40% between the primary and secondary analytical columns.
"NC" = Not calculable. Applicable to RPD if sample or duplicate result is non-detect or estimated (see primary report for data flags). Applicable to MS if sample is greater or equal to ten times the spike added. Applicable to sample surrogates or MS if sample dilution is 10x or higher.
"" = Indicates any recoveries outside associated acceptance windows. Surrogate outliers in samples are presumed matrix effects. LCS demonstrates method compliance unless otherwise noted.*
"(1)" = Indicates data from primary column used for QC calculation.
"A" = denotes a parameter for which ELAP does not offer approval as part of their laboratory certification program.
"F" = denotes a parameter for which Paradigm does not carry certification, the results for which should therefore only be used where ELAP certification is not required, such as personal exposure assessment.

GENERAL TERMS AND CONDITIONS
LABORATORY SERVICES

These Terms and Conditions embody the whole agreement of the parties in the absence of a signed and executed contract between the Laboratory (LAB) and Client. They shall supersede all previous communications, representations, or agreements, either verbal or written, between the parties. The LAB specifically rejects all additional, inconsistent, or conflicting terms, whether printed or otherwise set forth in any purchase order or other communication from the Client to the LAB. The invalidity or unenforceability in whole or in part of any provision, term or condition hereof shall not affect in any way the validity or enforceability of the remainder of the Terms and Conditions. No waiver by LAB of any provision, term, or condition hereof or of any breach by or obligation of the Client hereunder shall constitute a waiver of such provision, term, or condition on any other occasion or a waiver of any other breach by or obligation of the Client. This agreement shall be administered and interpreted under the laws of the state which services are procured.

Warranty. Recognizing that the nature of many samples is unknown and that some may contain potentially hazardous components, LAB warrants only that it will perform testing services, obtain findings, and prepare reports in accordance with generally accepted analytical laboratory principles and practices at the time of performance of services. LAB makes no other warranty, express or implied.

Scope and Compensation. LAB agrees to perform the services described in the chain of custody to which these terms and conditions are attached. Unless the parties agree in writing to the contrary, the duties of LAB shall not be construed to exceed the services specifically described. LAB wi use LAB default method for all tests unless specified otherwise on the Work Order.
Payment terms are net 30 days from the date of invoice. All overdue payments are subject to an interest charge of one and one-half percent (1-1/2%) per month or a portion thereof. Client shall also be responsible for costs of collection, including payment of reasonable attorney fees if such expense is incurred. The prices, unless stated, do not include any sale, use or other taxes. Such taxes will be added to invoice prices when required.

Prices. Compensation for services performed will be based on the current Lab Analytical Fee Schedule or on quotations agreed to in writing by the parties. Turnaround time based charges are determined from the time of resolution of all work order questions. Testimony, court appearances or data compilation for legal action will be charged separately. Evaluation and reporting of initial screening runs may incur additional fees.

Limitations of Liability. In the event of any error, omission, or other professional negligence, the sole and exclusive responsibility of LAB shall be to re-perform the deficient work at its own expense and LAB shall have no other liability whatsoever. All claims shall be deemed waived unless made in writing and received by LAB within ninety (90) days following completion of services.
LAB shall have no liability, obligation, or responsibility of any kind for losses, costs, expenses, or other damages (including but not limited to any special, direct, incidental or consequential damages) with respect to LAB's services or results.
All results provided by LAB are strictly for the use of its clients and LAB is in no way responsible for the use of such results by clients or third parties. All reports should be considered in their entirety, and LAB is not responsible for the separation, detachment, or other use of any portion of these reports. Client may not assign the lab report without the written consent of the LAB.
Client covenants and agrees, at its/his/her sole expense, to indemnify, protect, defend, and save harmless the LAB from and against any and all damages, losses, liabilities, obligations, penalties, claims, litigation, demands, defenses, judgments, suits, actions, proceedings, costs, disbursements and/or expenses (including, without limitation attorneys' and experts' fees and disbursements) of any kind whatsoever which may at any time be imposed upon, incurred by or asserted or awarded against client relating to, resulting from or arising out of (a) the breach of this agreement by this client, (b) the negligence of the client in handling, delivering or disclosing any hazardous substance, (c) the violation of the Client of any applicable law, (d) non-compliance by the Client with any environmental permit or (e) a material misrepresentation in disclosing the materials to be tested.

Hazard Disclosure. Client represents and warrants that any sample delivered to LAB will be preceded or accompanied by complete written disclosure of the presence of any hazardous substances known or suspected by Client. Client further warrants that any sample containing any hazardous substance that is to be delivered to LAB will be packaged, labeled, transported, and delivered properly and in accordance with applicable laws.

Sample Handling. Prior to LAB's acceptance of any sample (or after any revocation of acceptance), the entire risk of loss or of damage to such sample remains with Client. Samples are accepted when receipt is acknowledged on chain of custody documentation. In no event will LAB have any responsibility for the action or inaction of any carrier shipping or delivering any sample to or from LAB premises.
Client authorizes LAB to proceed with the analysis of samples as received by the laboratory, recognizing that any samples not in compliance with all current DOH-ELAP-NELAP requirements for containers, preservation or holding time will be noted as such on the final report.
Disposal of hazardous waste samples is the responsibility of the Client. If the Client does not wish such samples returned, LAB may add storage and disposal fees to the final invoice. Maximum storage time for samples is 30 days after completion of analysis unless modified by applicable state or federal laws. Client will be required to give the LAB written instructions concerning disposal of these samples.
LAB reserves the absolute right, exercisable at any time, to refuse to receive delivery of, refuse to accept, or revoke acceptance of any sample, which, in the sole judgment of LAB (a) is of unsuitable volume, (b) may be or become unsuitable for or may pose a risk in handling, transport, or processing for any health, safety, environmental or other reason whether or not due to the presence in the sample of any hazardous substance, and whether or not such presence has been disclosed to LAB by Client or (c) if the condition or sample date make the sample unsuitable for analysis.

Legal Responsibility. LAB is solely responsible for performance of this contract, and no affiliated company, director, officer, employee, or agent shall have any legal responsibility hereunder, whether in contract or tort including negligence.

Assignment. LAB may assign its performance obligations under this contract to other parties, as it deems necessary. LAB shall disclose to Client any assignee (subcontractor) by ELAP ID # on the submitted final report.

Force Majeure. LAB shall have no responsibility or liability to the Client for any failure or delay in performance by LAB, which results in whole or in part from any cause or circumstance beyond the reasonable control of LAB. Such causes and circumstances shall include, but not limited to, acts of God, acts or orders of any government authority, strikes or other labor disputes, natural disasters, accidents, wars, civil disturbances, difficulties or delays in transportation, mail or delivery services, inability to obtain sufficient services or supplies from LAB's usual suppliers, or any other cause beyond LAB's reasonable control.

Law. This contract shall be continued under the laws of the State of New York without regard to its conflicts of laws provision.

179 Lake Avenue, Rochester, NY 14608 Office (585) 647-2530 Fax (585) 647-3311

PARADIGM
ENVIRONMENTAL SERVICES, INC.

CHAIN OF CUSTODY

REPORT TO:		INVOICE TO:		LAB PROJECT ID
CLIENT:	LuEngineers	CLIENT:		181593
ADDRESS:	339 E Ave	ADDRESS:	SAME	Quotation #:
CITY:	Rochester STATE: NY ZIP: 14604	CITY:	STATE: ZIP:	
PHONE:	585-385-7417	PHONE:		Email: greg.andrus@luengineers.com
ATTN:	Greg Andrus	ATTN:		

PROJECT REFERENCE

Sco St. 4226

Matrix Codes:

AQ - Aqueous Liquid	WA - Water	DW - Drinking Water	SO - Soil	SD - Solid	WP - Wipe	OL - Oil
NQ - Non-Aqueous Liquid	WG - Groundwater	WW - Wastewater	SL - Sludge	PT - Paint	CK - Caulk	AR - Air

REQUESTED ANALYSIS

DATE COLLECTED	TIME COLLECTED	COMPOSITE	GRAB	SAMPLE IDENTIFIER	MATRIX CODES	NUMBER OF CONTAINERS	VOC cP-51										REMARKS	PARADIGM LAB SAMPLE NUMBER
4/20/18	13:00			MW-08A - 041918	WG	2	X											01
																	6°C iced 4/20/18 1423	

Turnaround Time		Report Supplements			
Availability contingent upon lab approval; additional fees may apply.					
Standard 5 day	X	None Required	☐	None Required	☐
10 day	☐	Batch QC	X	Basic EDD	☐
Rush 3 day	☐	Category A	☐	NYSDEC EDD	X
Rush 2 day	☐	Category B	☐		
Rush 1 day	☐				
Other please indicate date needed:	☐	Other please indicate package needed:	☐	Other EDD please indicate EDD needed :	☐

Sampled By	4/20/18	13:00	Total Cost:
Relinquished By	4/20/18	14:15	
Received By	4/20/18	1420	P.I.F.
Received @ Lab By	4/20/18	1423	

By signing this form, client agrees to Paradigm Terms and Conditions (reverse).

See additional page for sample conditions.

Chain of Custody Supplement

Client: L4 Completed by: Molly Vail

Lab Project ID: 181593 Date: 4/20/18

Sample Condition Requirements

Per NELAC/ELAP 210/241/242/243/244

Condition	NELAC compliance with the sample condition requirements upon receipt: Yes	No	N/A
Container Type	X		
Comments			
Transferred to method-compliant container			X
Headspace (<1 mL)	X		
Comments			
Preservation	X		
Comments			
Chlorine Absent (<0.10 ppm per test strip)			X
Comments			
Holding Time	X		
Comments			
Temperature	X		
Comments	6°C iced 4/20/18 1423		
Sufficient Sample Quantity	X		
Comments			

APPENDIX B
HEALTH AND SAFETY PLAN

62-64 Scio Street
Rochester, New York
MONROE COUNTY
ROCHESTER, NEW YORK

NYSDEC Spill Number: 0650898

HEALTH AND SAFETY PLAN

Prepared For:

City of Rochester
City Hall, Room 300B
30 Church Street
Rochester, New York 14614

Prepared By:

Lu Engineers
ENVIRONMENTAL • TRANSPORTATION • CIVIL

339 East Avenue Suite 200
Rochester, New York 14604

July 2012; Revised July 2018

Lu Project No: 4226

Table of Contents

HEALTH AND SAFETY PLAN

A. GENERAL INFORMATION

Project Title: 62-64 Scio Street
Monroe County, New York
Soil and Groundwater Management Plan
Spill Number 0650898

Project Manager: Jane MH Forbes (City) Project Manager: Greg Andrus (Lu Engineers)

Location: 62-64 Scio Street
City of Rochester, Monroe County, New York

Prepared by: Lu Engineers Date Prepared: July 2012
Date Revised: July 2018
Approved by: Date Approved:

Site Safety Officer Review: Date Reviewed:

Introduction/Objective:
The objective of the Soil and Groundwater Management Plan (SGMP) is to consolidate available data and information on the environmental status of the project Site and provide guidelines for the management of soil and groundwater (on-Site and off-Site at 17-19 Matthews Street). Lu Engineers and the City of Rochester prepared this Health and Safety Plan (HASP) to outline the policies and procedures to protect workers and the public from potential environmental hazards as described in the Soil and Groundwater Management Plan (SGMP). The Site is comprised of a 0.25 acre parcel addressed as 62-64 Scio Street, City of Rochester, County of Monroe, New York (Site).

Proposed Date of Field Activities: TBD

Background Information: [X] Complete [ ] Preliminary (limited analytical data)

Overall Chemical Hazard: [ ] Serious [ ] Moderate
[X] Low [ ] Unknown

Overall Physical Hazard: [ ] Serious [ ] Moderate
[X]Low [ ] Unknown

B. SITE/WASTE CHARACTERISTICS

Waste Type(s):

[X] Liquid [X] Solid [X] Sludge [X] Gas/Vapor

Characteristic(s):

[ ] Flammable/Ignitable [X] Volatile [ ] Corrosive [ ] Acutely Toxic
[ ] Explosive (moderate) [ ] Reactive [X] Carcinogen [ ] Radioactive
Other: _____

Physical Hazards:

[X] Overhead [X] Confined Space [X] Below Grade [X] Trip/Fall
[X] Puncture [ ] Burn [X] Cut [ ] Splash
[X] Noise [X] Other: Heat Stress/Cold Stress

Site History/Description and Unusual Features:
The Site is located at 62-64 Scio Street in The City of Rochester, Monroe County, New York. The Site is bounded by a dry-cleaning plant (Speedy's Cleaners) to the South at 17-19 Matthew Street and an imaging company (City Blue Imaging) to the North. Residential homes are located along the eastern boundary across Matthews Street and a parking garage is located to the west, across Scio Street. The surrounding land use is commercial and residential. There are currently no buildings on the property.

A 22,000 square foot, two (2)-story, brick building constructed around 1920 occupied the Site until 2002. The building was primarily used as a warehouse from the date of construction, until approximately 1990. The City of Rochester took ownership of the property in 1996, at which time the building was used for storage until it was demolished in November 2002. The Site has remained an undeveloped lot since demolition.

Following removal of contaminated materials from the Site, post source groundwater treatment was completed to reduce overburden residual groundwater levels below 6 NYCRR Part 703.5 Class GA Ambient Water Quality Standards and guidance values. The selected remedial approach included the use of direct oxygen injection into overburden and shallow bedrock saturated zone by means of network of injection points, installed in 2014. Several groundwater monitoring events were completed and the oxygen injection system was decommissioned in August 2016.

To address residual subsurface impacts remaining at the southeastern portion of the Site, a combination of Regenesis Inc. RegenOx® and Oxygen Release Compound Advanced (ORC Advanced®) was advanced into ten (10) direct-push Geoprobe points, in a pre-determined grid pattern. Two (2) rounds of post injection groundwater sampling were completed to evaluate the effectiveness of the remedial agent in reducing residual dissolved-phase petroleum constituents.

At MW-07 and MW-08, post-injection results indicated elevated concentrations of several VOCs including 1,2,4-trimethylbenzene, ethylbenzene, and m/p-xylenes in exceedance of 6 NYCRR Part 703.5 Class GA Ambient Groundwater Quality Standards.

Locations of Chemicals/Wastes: Soil and groundwater.

Estimated Volume of Chemicals/Wastes: Prior to remediation, there was an estimated volume of 700 tons of petroleum impacted soil in an area encompassing approximately 5,000 square feet at depths ranging from 8-

12 feet below ground surface. Residual impacts remain at the southeastern portion of the Site and at 58 Scio Street.

Site Currently in Operation: [ ] Yes [X] No [ ] Not Applicable

C. HAZARD EVALUATION

HAZARD EVALUATION:	
HAZARD(S)	**HAZARD PREVENTION**
General physical hazards associated with soil removal operations including excavation equipment (excavator, dump trucks), excavation safety, sloping/sidewall stability, slip/trip/fall. Also well installation safety including drill rig and geoprobe operations (overhead equipment, spinning augers, noise, drill rig movement).	Hard hats, eye protection, and steel-toed boots required at all times. Keep safe distance from excavation sidewalls, heavy equipment, machines and all moving parts. Only operator and helper are to be in "work zone". Do not enter excavations to screen soil or obtain soil samples.
Contact with or inhalation of contaminants, potentially in high concentration, in subsurface media	Direct reading instruments and/or olfactory indications will be used to monitor airborne contaminants. Respiratory protection will be used as appropriate. Standard safety procedures such as restricting eating, drinking, and smoking to the support zone and utilizing proper personal decontamination procedures will minimize ingestion as a potential route of exposure. Vapor suppression techniques may be implemented, as necessary.
Utilities (above and underground)	Identify location(s) prior to start of work, maintain 25-foot minimum distance to overhead utilities.
Slip/ trip/ fall	Observe terrain and equipment while walking to minimize slips and falls. Steel-toed boots provide additional support and stability. Use adequate lighting. Wear hard hat. Inspect all lifting equipment prior to use. Be aware of open excavation areas.
Back strain and muscle fatigue, ergonomic stress due to lifting	Use proper lifting techniques and limit load to prevent back strain. Lift with legs when possible.
Noise	Engineering controls will be used to the extent possible. Hearing protection will be made available to all workers on Site. Exposure to time-weighted average levels in excess of 85 dBA is not anticipated.
Heat/Cold stress	Implement heat/cold stress management techniques such as shifting work hours, increasing fluid intake, and monitoring employees**. See Appendix A.**
Sunburn	Apply sunscreen, and wear appropriate clothing.
Weather Extremes	Establish Site-specific contingencies for severe weather situations. Discontinue work in severe weather, including lightening.
Native wildlife presents the possibility of insect bites and associated diseases	Avoid wildlife when possible. Use insect repellant.

Compound	Exposure Limits (TWA)			Dermal Hazard (Y/N)	Route(s) of Exposure	Acute Symptoms	Odor Threshold/ Description	PID	
	OSHA PEL	NIOSH REL	IDLH					Relative Response	Ioniz. Poten. (eV)
Benzene*	1 ppm	0.1 ppm	500 ppm	Y	Inh, Abs, Ing, Con	Irritation to eyes, skin, nose, respiratory system; headache, nausea, dizziness, drowsiness, unconsciousness, harmful, fatal if aspirated into lungs	Colorless to light yellow liquid, sweet aromatic odor	200	9.24
Ethylbenzene	100 ppm	---	100 ppm	Y	Inh, Ing, Con	Irritation to eyes, skin, mucous membranes; dermatitis, narcosis, , trouble breathing, paralysis, headache, nausea, headache, dizziness, coma	Colorless liquid, aromatic odor	185	8.77
n-Propylbenzene (per mfg. Recommended exposure is 100 ppm)	N/A	N/A	N/A	Y	Inh, Ing, Con	Irritation to eyes, skin, respiratory tract, mucous membranes of nose & throat, depresses CNS, vertigo, fatigue, chest constriction, may invoke aspiration if swallowed	Clear colorless liquid, mild odor	---	---
Toluene	200 ppm	100 ppm	20 ppm	Y	Inh, Abs, Ing, Con	Irritation to eyes, skin, nose; upper respiratory tract, fatigue, weak, confusion, dizziness, headache, drowsiness, abdominal spasms, dilated pupils, euphoria	Colorless liquid, sweet pungent, benzene like odor	200	8.82

Compound	Exposure Limits (TWA)			Dermal Hazard (Y/N)	Route(s) of Exposure	Acute Symptoms	Odor Threshold/ Description	PID	
	OSHA PEL	NIOSH REL	IDLH					Relative Response	Ioniz. Poten. (eV)
1,2,4-Trimethylbenzene	---	25ppm	Not Determined	Y	Inh, Ing, Con	Irritation to eyes, skin nose throat, respiratory system, hypochromic anemia, headache, drowsiness, fatigue, dizziness, nausea, in-coordination, vomiting confusion, aspiration.	Clear colorless liquid, distinctive aromatic odor		8.27
1,3,5-Trimethylbenzene	---	25ppm	Not Determined	Y	Inh, Ing, Con	Irritation to eyes, skin nose throat, respiratory system, hypochromic anemia, headache, drowsiness, fatigue, dizziness, nausea, in-coordination, vomiting confusion, aspiration.	Clear colorless liquid, distinctive aromatic odor	300	8.39
Xylene(mixed)	100 ppm	100 ppm	900 ppm	Y	Inh, Ing, Abs, Con	Irritation to eyes, nose, throat, skin; nausea, vomiting, headache, ringing in ears, severe breathing difficulties (that may be delayed in onset), substernal pain, coughing hoarseness, dizziness, excited, burning in mouth, stomach, dermatitis (removes oils from skin), corneal burns	Colorless liquid, aromatic odor (solid below 56 F	140	8.44

Compound	Exposure Limits (TWA)			Dermal Hazard (Y/N)	Route(s) of Exposure	Acute Symptoms	Odor Threshold/ Description	PID	
	OSHA PEL	NIOSH REL	IDLH					Relative Response	Ioniz. Poten. (eV)
Isopropylbenzene	50 ppm	50 ppm	50 ppm	Y	Inh, Inj, Con	Irritation, nausea, difficulty breathing, headache, drowsiness, dizziness, and loss of coordination. Skin and eye irritation. Vomiting, stomach pain, drowsiness, aspiration, and central nervous system depression.	1.2 ppm Colorless liquid, distinct odor, pungent odor	---	---
Benzo(a)anthracene	N/A	N/A	N/A	Y	Inh,Ing, Con, Abs	Irritation to eyes, skin, digestive tract, respiratory tract (prevent contact to skin and eyes)	Yellow to green	---	---
Benzo (a) pyrene*	0.2 mg/m^3	---	A2	Y	Ing, Inh, Abs, Con	Irritation to eyes, skin, lungs harmful if swallowed (all hazards and toxic properties not fully known)	Yellow green powder	---	---
Benzo(b)fluoranthene*	0.2 mg/m^3	0.1 mg/m^3	A2	Y	Inh, Ing, Con	No signs or symptoms of acute exposure to benzo(b)fluoranthene have been reported in humans	Colorless	---	---

Compound	Exposure Limits (TWA)			Dermal Hazard (Y/N)	Route(s) of Exposure	Acute Symptoms	Odor Threshold/ Description	PID	
	OSHA PEL	NIOSH REL	IDLH					Relative Response	Ioniz. Poten. (eV)
Indeno (1,2,3-cd)pyrene	0.2 mg/m^3	0.1 mg/m^3	0.1 mg/m^3	Y	Inh, Ing,	N/A	Yellow Crystals	---	---
Naphthalene	10 ppm	10 ppm	10 ppm	Y	Inh, Ing, Abs, Con	Irritation to eyes; headache, confusion, excitement, nausea, vomiting, abdominal pain, irritation to bladder, profuse sweating, jaundice, corneal injury, blurred vision, renal shutdown	Colorless to brown solid/crystals, moth ball odor	230	8.12
Lead	0.05 mg/m^3	0.05 mg/m^3	0.05 mg/m^3	Y	Inh, Ing, Con	Poison, abdominal pain, spasms, nausea, vomiting, headache, irritation to eyes; skin, weakness, metallic taste, anorexia/loss of appetite, insomnia, facial pallor, colic, anemia, tremor, "lead line" in gums, constipation, abdominal pain, paralysis in wrists and ankles, encephalopathy (inflammation of brain)	Odorless	---	---

KEY:
PEL = Permissible Exposure Limit
REL = Recommended Exposure Limit
--- = Information not available
Inh = Inhalation
Ing = Ingestion
mg/m^3 = Milligrams per cubic meter
Abs = Skin Absorption
Con = Skin and/or eye Contact
ppm = Parts per million

TLV = Threshold Limit Value(ACGIH) * = Chemical is a known or suspected carcinogen sk = Skin notation

D. SITE SAFETY WORK PLAN

Site Control:

Perimeter Identified?	**[Y]**	**Site Secured?**	**[Y]**
Work Areas Designated?	**[Y]**	**Zone(s) of contamination identified?**	**[Y]**

Anticipated Level of Protection (cross-reference task numbers in Section C):

A	B	C	D
		Available	X

Site work will be performed in Level D safety equipment (steel-toed boots, work clothes, eye protection, gloves, hard hats, and hearing protection (as necessary)) unless monitoring indicates otherwise. Gloves will be worn if contact with Site soil, sediment or water is anticipated, due to concerns of impacted subsurface material.

If conditions are encountered that require Level A or Level B Personal Protective Equipment (PPE), the work will immediately be stopped. The appropriate government agencies (i.e., City, NYSDEC, NYSDOH, MCDPH, etc.) will be notified and the proper health and safety measures will be implemented (e.g., develop and implement engineering controls, upgrade in PPE, etc.). If conditions are encountered (as indicated by PID and particulate readings) that require Level C PPE, the work will be temporarily suspended and the work Site will be evaluated to limit exposure prior to implementing Level C PPE. Engineering controls may be implemented, as necessary, in an effort to maintain Level D PPE required Site conditions.

Respiratory Protection

Any respirator used will meet the requirements of the OSHA 29 CFR 1910.134. Both the respirator and cartridges specified shall be fit-tested prior to use in accordance with OSHA regulations (29 CFR 1910). Air purifying respirators shall not be worn if contaminant levels exceed designated use concentrations. The workers will wear respirators with approval for: organic vapors <1,000 ppm; and dusts, fumes and mists with a TWA < 0.05 milligrams per cubic meter (mg/m^3).

No personnel who have facial hair, which interferes with respirator sealing surface, will be permitted to wear a respirator and will not be permitted to work in areas requiring respirator use.

Only workers who have been certified by a physician as being physically capable of respirator usage shall be issued a respirator. Personnel unable to pass a respiratory fit test or without medical clearance for respirator use will not be permitted to enter or work in areas that require respiratory protection.

Air Monitoring*:

Contaminant	Monitoring Device	Frequency
Organic Vapors	MiniRAE 3000 PID	Continuous
Ignition Sources	O2/Explosimeter	Continuous
Particulate	Dustrak	Continuous

*Continuous perimeter air monitoring for VOCs and particulates will be performed during ground intrusive activities and is described in the New York State Department of Health (NYSDOH) Generic Community Air Monitoring Plan (CAMP).

Lu will also conduct continuous air monitoring of worker breathing zone air during excavation activities. If action levels are exceeded during excavation, appropriate precautions will be taken, as described below.

VOCs

VOCs in worker's breathing zone air will be monitored with a PID during activities that have the potential to disturb contaminated material to aid in determining if respiratory protection and/or vapor suppression is necessary. This ensures that respiratory protection is adequate to protect personnel from the chemical vapors and particulates they may be exposed to. Readings will be recorded in the Site logbook or log sheets.

Action Levels:

PID readings of **25 ppm to 100 ppm** above background at breathing zone, sustained for greater than 5 minutes,
Action: Stop work and implement vapor suppression techniques, such as application of Biosolve. If vapors cannot be brought below 25 ppm, upgrade PPE to Level C.

PID readings of **>100 ppm** above background at breathing zone, sustained for greater than 5 minutes,
Action: Stop work, evaluate the use of engineering controls, upgrade PPE to Level B or Level A.

Depending on circumstances observed during excavation and related IRM activities, alternative action levels and corresponding PPE levels to those described above may be considered and implemented at the discretion of the field team leader and City project manager.

O_2

O_2 readings must remain between 19.5% and 22.0%. Explosivity must be above 10% lower explosive level (LEL). The area must be evacuated and ignition sources eliminated if levels are not within their standard. These atmosphere factors will be measured at a position that would give the earliest indication of a hazardous condition forming not at the breathing zone. Appropriate actions, initially evacuation of the immediate work area, will be taken if established action levels area exceeded.

Particulates

During activities where contaminated materials (i.e., soil, fill, etc.) may be disturbed, air monitoring will include real-time monitoring for particulates using a real-time aerosol monitor (RTAM) particulate meter at the perimeter of the work zone in accordance with the *Final DER-10 Technical Guidance for Site Investigation and Remediation* dated May 2010. DER-10 uses an action level of 100 g/m^3 (0.10 mg/m^3) over background conditions for an integrated period not to exceed 15 minutes. If the action level is exceeded, or

if visible dust leaving the Site is observed, then work shall be discontinued until corrective actions are implemented. Corrective actions may include dust suppression, change in the way work is performed, and/or upgrade of personal protective equipment. If dust suppression is deemed necessary, clean water will be applied to excavation area.

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

Action Levels:
If particulate levels exceed a level of 2.5 times background (upwind levels subtracted from downwind concentration) or a level of 150 mcg/m^3, dust control measures will be initiated and the dust generating activity suspended until levels decrease below the action level. Perimeter monitoring will be conducted if the action level is obtained at the work area. All air monitoring results as well as wind direction and speed (estimates) will be documented in the Site-specific log book or log sheets.

Decontamination Solutions and Procedures for Equipment, Sampling Gear, etc: Specified in the Work Plan.

Personnel Decon Protocol: Soap, water, and paper towels or baby wipes will be available for all personnel and will be used before eating, drinking or leaving the Site. Personnel will shower upon return to home or hotel. Disposable PPE will be rendered unusable and disposed of as stated in work plan.

Decon Solution Monitoring Procedures, if Applicable: Contractor's controlled/ decon waste container.

Special Site Equipment, Facilities or Procedures (Sanitary Facilities and Lighting Must Meet 29CFR 1910.120):
A restroom and bottled water will be available.

Site Entry Procedures and Special Considerations: Entry to the Site should be limited through west entrance located at 62-64 Scio Street. The Buddy System should be employed at all times on Site. All personnel entering the Site shall have current 40-hr OSHA HAZWOPER training.

Personnel admitted into the work zone shall be properly trained in health and safety techniques and equipment usage. No personnel shall be admitted into the work zone without the property safety equipment.

Work Limitations (time of day, weather conditions, etc.) and Heat/Cold Stress Requirements:
All work will be completed during daylights hours. Heavy equipment, including drill rigs, will not be used during electrical storms.

General Spill Control, if applicable: N/A

Investigation Derived Material (i.e., Expendables, Decon Waste, Cuttings) Disposal: Specified in the Work Plan.

Sample Handling Procedures Including Protective Wear: Sample handling will be performed while wearing chemically-resistant gloves. To minimize hazards to lab personnel, sample volumes will be no larger than necessary, and the outside of all sample containers will be wiped clean prior to shipment. Additional sampling protocols and procedures are outlined in the QAPP.

Accident and Injury Reporting: Any work-related incident, accident, injury, illness, exposure, or property loss must be immediately reported to the Lu Engineers project manager and the City of Rochester project manager. This includes:

- Accident, injury, illness, or exposure of an employee;
- Injury of a subcontractor;
- Damage, loss, or theft of property, and/or
- Any motor vehicle accident regardless of fault, which involves a company vehicle, rental vehicle, or personal vehicle while employee is acting in the course of employment.

E. TRAINING REQUIREMENTS

Personnel conducting field activities on Site are required to have completed training sessions in accordance with Occupational Safety and Health Administration (OSHA) for Parts 1926 and 1910 (Title 29 Code of Federal Regulations [CFR] Part 1926.65 and Part 1910.120 - Hazardous Waste Operations and Emergency Response- 'HazWOPER'). This training shall consist of a minimum of 40 hours of instruction off-Site and three days of actual field experience under the direct supervision of a trained, experienced supervisor. Each employer will maintain documentation stating that its on-Site personnel have complied with this regulation.

In addition, all personnel will have reviewed this HASP and received a Site-specific health and safety briefing prior to participating in field work.

Visitors entering the work area must review the HASP and be equipped with the proper PPE. All Site personnel and visitors shall sign the last page of the HASP as an acknowledgement that they have read and understand the Site health and safety requirements.

Medical Surveillance Requirements: All Lu Engineers field staff who engage in on Site activities for 30 days or more per year participate in a medical monitoring program and have completed applicable training per 29CFR 1910.120. Lu's Respiratory Protection Program meets requirements of 29CFR 1910.134.

Key Personnel and Management
The Project Manager (PM) and Site Safety Officer (SSO) are responsible for formulating health and safety requirements, and implementing the HASP.

Project Manager
The PM has the overall responsibility for the project and will coordinate with the SSO to ensure that the goals of the project are attained in a manner consistent with the HASP requirements.

Site Safety Officer
The SSO has responsibility for administering the HASP relative to Site activities, and will be in the field while activities are in progress. The SSO's operational responsibilities will be monitoring, including personal and environmental monitoring, ensuring personal protective equipment (PPE) maintenance, and identification of protection levels. The air monitoring data obtained by the SSO will be available for review by the City, regulatory agencies, and other on-Site personnel.

Employee Safety Responsibility
Each employee is responsible for personal safety as well as the safety of others in the area. The employee will use the equipment provided in a safe and responsible manner as directed by the SSO.

Key Safety Personnel

The following individuals are anticipated to share responsibility for health and safety of Lu representatives at the Site.

Team Member*	Responsibility
Gregory Andrus	Project Manager
Steven Campbell	Quality Assurance Officer/ Site Safety Officer

*Entries into the work zone require "Buddy System" use. Lu Engineers' field staff participated in a medical monitoring program and have completed applicable training per 29CFR 1910.120. Lu's Respiratory protection program meets requirements of 29CFR 1910.134.

F. EMERGENCY INFORMATION

The following telephone numbers are listed in case there is an emergency at the Site:

Fire/Police Department:	911
Poison Control Center:	(800) 222-1222
NYSDEC	
Mike Zamiarski	(585) 226-5438
Spills Hotline	(585) 226-2466
NYSDOH	
Deb McNaughton	(585) 423-8069
MCDOH	
Jeffrey Kosmala, P.E.	(585) 753-5470

City of Rochester	
Jane Forbes	(585) 428-7892; (585) 314-1719 (cell)
Joseph Biondolillo	(585) 428-6649; (585) 314-1617 (cell)
Lu Engineers	
Gregory Andrus	(585) 385-7417 x215/ (585) 732-5786 (cell)
Nearest Hospital	Highland Hospital 1000 South Avenue, Rochester, NY 14620 (585) 473-2200 (Main) (585) 341-6880 (Emergency Department)

SITE RESOURCES

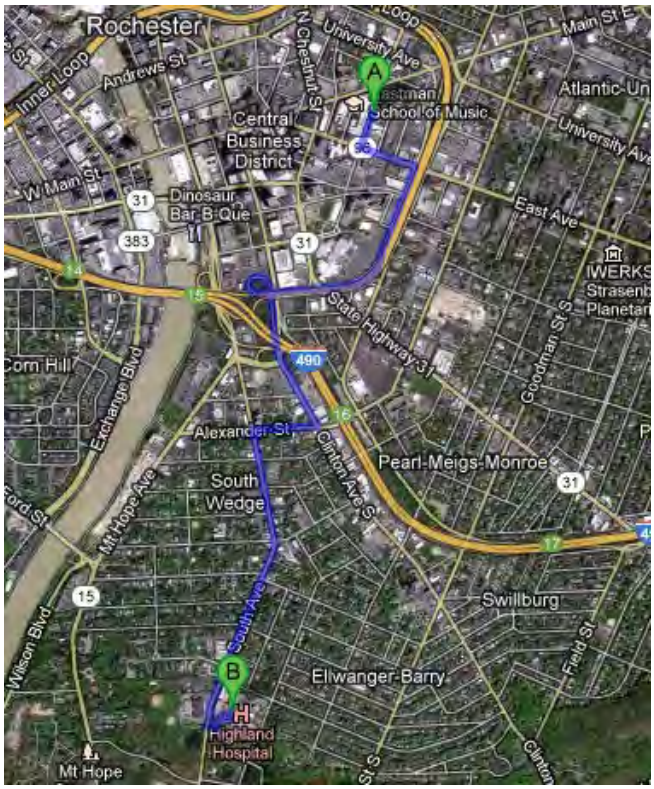
Site Emergency Evaluation Alarm Method:	Sound vehicle horn.
Water Supply Source:	Water will be available through a City issued Hydrant Permit.
Telephone Location, Number:	None available
Cellular Phone, if Available:	Greg Andrus (585) 732-5786
Radio:	TBD
Other:	TBD

EMERGENCY ROUTES

Note: Field team must know route(s) prior to start of work.

Directions from the Site to Highland Hospital:

Route is 2.4 miles, about 8 minutes. Turn left onto Scio St toward Bell Alley. Continue 0.2 miles and turn left onto East Ave. Continue 0.2 miles and turn right onto Pitkin St. Take the ramp on left onto the Inner Loop. Exit after 0.4 miles onto Clinton Ave S. Continue 0.2 miles and turn right onto Alexander St. Follow signs to Emergency Medical Services (Refer to the map shown below).



On-Site Assembly Area: At Site entry point.

Off-Site Assembly Area: 80 – 100 Charlotte Street (located 200 yards northeast of the Site).

Emergency egress routes to get off-Site: Follow Scio Street, north or south.

Personnel shall exit the Site and shall congregate in an area designated by the SSO. The SSO shall ensure that all personnel are accounted for. If someone is missing, the SSO will alert emergency personnel. The appropriate government agencies will be notified as soon as possible regarding the evacuation, and any necessary measures that may be required to mitigate the reason for the evacuation.

G. Additional Information

Contamination Emergency

It is unlikely that a contamination emergency will occur; however, if such an emergency does occur, the specific work area shall be shut down and immediately secured. If an emergency rescue is needed, notify Police, Fire Department and EMS units immediately. Advise them of the situation and request an expedient response. The appropriate government agencies shall be notified immediately. The area in which the contamination occurred shall not be entered until the arrival of trained personnel who are properly equipped with the appropriate PPE and monitoring instrumentation as outlined in Section D of this HASP.

Spill or Air Release

In the event of a spill or air release of hazardous materials on-Site, the specific area of the spill or release shall be shut down and immediately secured. The area in which the spill or release occurred shall not be entered until the cause can be determined and Site safety can be evaluated. Non-essential Site personnel shall be evacuated to a safe and secure area. The appropriate government agencies shall be notified as soon as possible. The spilled or released material shall be immediately identified and appropriate containment measures shall be implemented, if possible. Real-time air monitoring shall be implemented as outlined in Section 8.0 of this HASP. If the materials are unknown, Level B protection is mandatory. If warranted, samples of the materials shall be acquired to facilitate identification.

Locating Containerized Waste and/or Underground Storage Tanks

In the event that unanticipated containerized waste (e.g., drums) and/or USTs are located during remedial activities, the work will be stopped in the specific area until Site safety can be evaluated and addressed. Non-essential Site personnel shall not work in the immediate area until conditions including possible exposure hazards are addressed. The appropriate government agencies shall be notified as soon as possible. The SSO shall monitor the area as outlined in Section D of this HASP.

Prior to any handling, unanticipated containers will be visually assessed by the SSO to gain as much information as possible about their contents. As a precautionary measure, personnel shall assume that unlabelled containers and/or tanks contain hazardous materials until their contents are characterized. To the extent possible based upon the nature of the containers encountered, actions may be taken to stabilize the area and prevent migration (e.g., placement of berms, etc.). Subsequent to initial visual assessment and any required stabilization, properly trained personnel will sample, test, remove, and dispose of any containers and/or tanks, and their contents. After visual assessment and air monitoring, if the material remains unknown, Level B protection is mandatory.

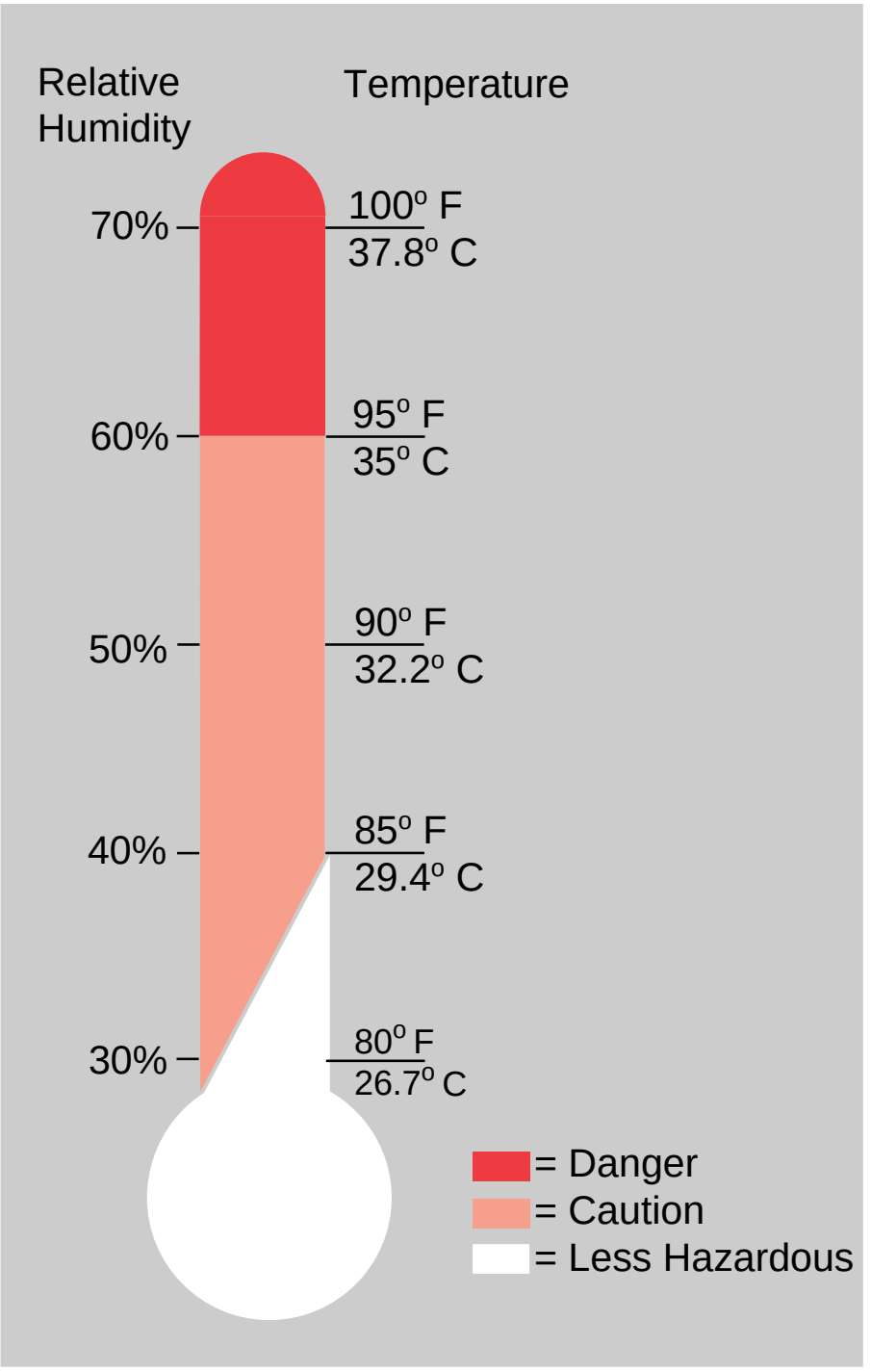
APPENDIX B-1

HEAT AND COLD STRESS INFORMATION

THE HEAT EQUATION

HIGH TEMPERATURE + HIGH HUMIDITY + PHYSICAL WORK = HEAT ILLNESS

When the body is unable to cool itself through sweating, **serious** heat illnesses may occur. The most severe heat-induced illnesses are **heat exhaustion** and **heat stroke**. If actions are not taken to treat heat exhaustion, the illness could progress to heat stroke and possible **death**.



U.S. Department of Labor
Occupational Safety and Health Administration
OSHA 3154
1998

HEAT EXHAUSTION

What Happens to the Body:

HEADACHES, DIZZINESS/LIGHT HEADEDNESS, WEAKNESS, MOOD CHANGES (irritable, or confused/can't think straight), FEELING SICK TO YOUR STOMACH, VOMITING/THROWING UP, DECREASED and DARK COLORED URINE, FAINTING/PASSING OUT, and PALE CLAMMY SKIN.

What Should Be Done:

- Move the person to a cool shaded area to rest. Don't leave the person alone. If the person is dizzy or light headed, lay them on their back and raise their legs about 6-8 inches. If the person is sick to their stomach lay them on their side.
- Loosen and remove any heavy clothing.
- Have the person drink some cool water (a small cup every 15 minutes) if they are not feeling sick to their stomach.
- Try to cool the person by fanning them. Cool the skin with a cool spray mist of water or wet cloth.
- If the person does not feel better in a few minutes call for emergency help (Ambulance or Call 911).

(If heat exhaustion is not treated, the illness may advance to heat stroke.)

HEAT STROKE—A MEDICAL EMERGENCY

What Happens to the Body:

DRY PALE SKIN (no sweating), HOT RED SKIN (looks like a sunburn), MOOD CHANGES (irritable, confused/not making any sense), SEIZURES/FITS, and COLLAPSE/PASSED OUT (will not respond).

What Should Be Done:

- Call for emergency help (Ambulance or Call 911).
- Move the person to a cool shaded area. Don't leave the person alone. Lay them on their back and if the person is having seizures/fits remove any objects close to them so they won't strike against them. If the person is sick to their stomach lay them on their side.
- Remove any heavy and outer clothing.
- Have the person drink some cool water (a small cup every 15 minutes) if they are alert enough to drink anything and not feeling sick to their stomach.
- Try to cool the person by fanning them. Cool the skin with a cool spray mist of water, wet cloth, or wet sheet.
- If ice is available, place ice packs under the arm pits and groin area.

How to Protect Workers

- Learn the signs and symptoms of heat-induced illnesses and what to do to help the worker.
- Train the workforce about heat-induced illnesses.
- Perform the heaviest work in the coolest part of the day.
- Slowly build up tolerance to the heat and the work activity (usually takes up to 2 weeks).
- Use the buddy system (work in pairs).
- Drink plenty of cool water (one small cup every 15-20 minutes)
- Wear light, loose-fitting, breathable (like cotton) clothing.
- Take frequent short breaks in cool shaded areas (allow your body to cool down).
- Avoid eating large meals before working in hot environments.
- Avoid caffeine and alcoholic beverages (these beverages make the body lose water and increase the risk for heat illnesses).

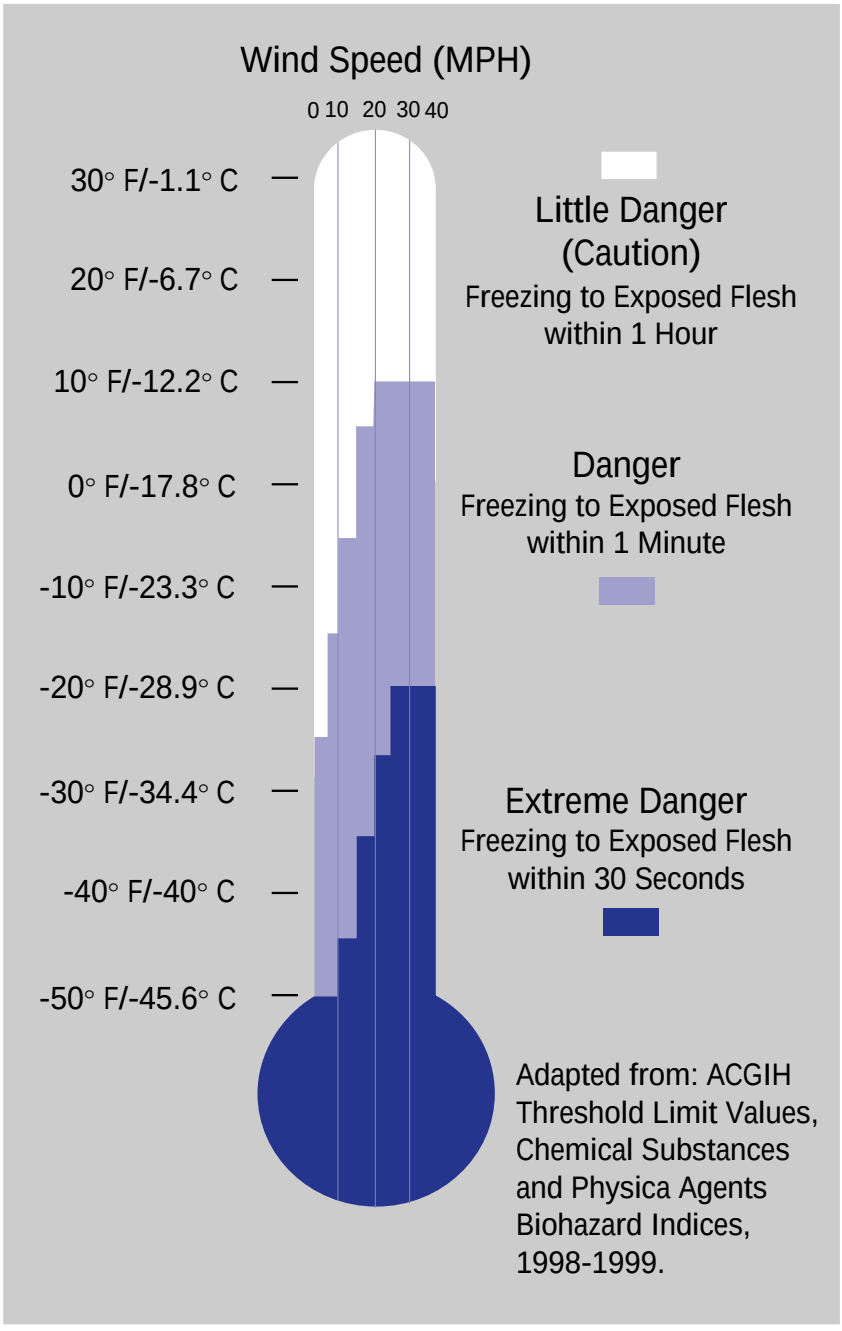
Workers Are at Increased Risk When

- They take certain medication (check with your doctor, nurse, or pharmacy and ask if any medicines you are taking affect you when working in hot environments).
- They have had a heat-induced illness in the past.
- They wear personal protective equipment (like respirators or suits).

THE COLD STRESS EQUATION

LOW TEMPERATURE + WIND SPEED + WETNESS = INJURIES & ILLNESS

When the body is unable to warm itself, serious cold-related illnesses and injuries may occur, and permanent tissue damage and death may result. **Hypothermia** can occur when *land temperatures* are **above** freezing or *water temperatures* are below 98.6°F/ 37°C. Cold-related illnesses can slowly overcome a person who has been chilled by low temperatures, brisk winds, or wet clothing.



U.S. Department of Labor
Occupational Safety and Health Administration

OSHA 3156
1998

FROST BITE

What Happens to the Body:

FREEZING IN DEEP LAYERS OF SKIN AND TISSUE; PALE, WAXY-WHITE SKIN COLOR; SKIN BECOMES HARD and NUMB; USUALLY AFFECTS THE FINGERS, HANDS, TOES, FEET, EARS, and NOSE.

What Should Be Done: (land temperatures)

- Move the person to a warm dry area. Don't leave the person alone.
- Remove any wet or tight clothing that may cut off blood flow to the affected area.
- **DO NOT** rub the affected area, because rubbing causes damage to the skin and tissue.
- **Gently** place the affected area in a warm (105°F) water bath and monitor the water temperature to **slowly** warm the tissue. Don't pour warm water directly on the affected area because it will warm the tissue too fast causing tissue damage. Warming takes about 25-40 minutes.
- After the affected area has been warmed, it may become puffy and blister. The affected area may have a burning feeling or numbness. When normal feeling, movement, and skin color have returned, the affected area should be dried and wrapped to keep it warm. **NOTE:** If there is a chance the affected area may get cold again, do not warm the skin. If the skin is warmed and then becomes cold again, it will cause severe tissue damage.
- Seek medical attention as soon as possible.

HYPOTHERMIA - (Medical Emergency)

What Happens to the Body:

NORMAL BODY TEMPERATURE (98.6° F/37°C) DROPS TO OR BELOW 95°F (35^0 C); FATIGUE OR DROWSINESS; UNCONTROLLED SHIVERING; COOL BLUISH SKIN; SLURRED SPEECH; CLUMSY MOVEMENTS; IRRITABLE, IRRATIONAL OR CONFUSED BEHAVIOR.

What Should Be Done: (land temperatures)

- Call for emergency help (i.e., Ambulance or Call 911).
- Move the person to a warm, dry area. Don't leave the person alone. Remove any wet clothing and replace with warm, dry clothing or wrap the person in blankets.
- Have the person drink warm, sweet drinks (sugar water or sports-type drinks) if they are alert. **Avoid drinks with caffeine** (coffee, tea, or hot chocolate) or alcohol.
- Have the person move their arms and legs to create muscle heat. If they are unable to do this, place warm bottles or hot packs in the arm pits, groin, neck, and head areas. **DO NOT** rub the person's body or place them in warm water bath. This may stop their heart.

What Should Be Done: (water temperatures)

- Call for emergency help (Ambulance or Call 911). Body heat is lost up to 25 times faster in water.
- **DO NOT** remove any clothing. Button, buckle, zip, and tighten any collars, cuffs, shoes, and hoods because the layer of trapped water closest to the body provides a layer of insulation that slows the loss of heat. Keep the head out of the water and put on a hat or hood.
- Get out of the water as quickly as possible or climb on anything floating. **DO NOT** attempt to swim unless a floating object or another person can be reached because swimming or other physical activity uses the body's heat and reduces survival time by about 50 percent.
- If getting out of the water is not possible, wait quietly and conserve body heat by folding arms across the chest, keeping thighs together, bending knees, and crossing ankles. If another person is in the water, huddle together with chests held closely.

How to Protect Workers

- Recognize the environmental and workplace conditions that lead to potential cold-induced illnesses and injuries.
- Learn the signs and symptoms of cold-induced illnesses/injuries and what to do to help the worker.
- Train the workforce about cold-induced illnesses and injuries.
- Select proper clothing for cold, wet, and windy conditions. Layer clothing to adjust to changing environmental temperatures. Wear a hat and gloves, in addition to underwear that will keep water away from the skin (polypropylene).
- Take frequent short breaks in warm dry shelters to allow the body to warm up.
- Perform work during the warmest part of the day.
- Avoid exhaustion or fatigue because energy is needed to keep muscles warm.
- Use the buddy system (work in pairs).
- Drink warm, sweet beverages (sugar water, sports-type drinks). Avoid drinks with caffeine (coffee, tea, or hot chocolate) or alcohol.
- Eat warm, high-calorie foods like hot pasta dishes.

Workers Are at Increased Risk When…

- They have predisposing health conditions such as cardiovascular disease, diabetes, and hypertension.
- They take certain medication (check with your doctor, nurse, or pharmacy and ask if any medicines you are taking affect you while working in cold environments).
- They are in poor physical condition, have a poor diet, or are older.

APPENDIX C
COMMUNITY AIR MONITORING PLAN

Appendix 1A
New York State Department of Health
Generic Community Air Monitoring Plan

Overview

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

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

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

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

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

Periodic monitoring for VOCs will be required during non-intrusive activities such as the collection of soil and sediment samples or the collection of groundwater samples from existing monitoring wells. “Periodic” monitoring during sample collection might reasonably consist of taking a reading upon arrival at a sample location, monitoring while opening a well cap or

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

VOC Monitoring, Response Levels, and Actions

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

1. If the ambient air concentration of total organic vapors at the downwind perimeter of the work area or exclusion zone exceeds 5 parts per million (ppm) above background for the 15-minute average, work activities must be temporarily halted and monitoring continued. If the total organic vapor level readily decreases (per instantaneous readings) below 5 ppm over background, work activities can resume with continued monitoring.

2. If total organic vapor levels at the downwind perimeter of the work area or exclusion zone persist at levels in excess of 5 ppm over background but less than 25 ppm, work activities must be halted, the source of vapors identified, corrective actions taken to abate emissions, and monitoring continued. After these steps, work activities can resume provided that the total organic vapor level 200 feet downwind of the exclusion zone or half the distance to the nearest potential receptor or residential/commercial structure, whichever is less - but in no case less than 20 feet, is below 5 ppm over background for the 15-minute average.

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

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

Particulate Monitoring, Response Levels, and Actions

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

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

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

3. All readings must be recorded and be available for State (DEC and NYSDOH) and County Health personnel to review.

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Appendix 1B
Fugitive Dust and Particulate Monitoring

A program for suppressing fugitive dust and particulate matter monitoring at hazardous waste sites is a responsibility on the remedial party performing the work. These procedures must be incorporated into appropriate intrusive work plans. The following fugitive dust suppression and particulate monitoring program should be employed at sites during construction and other intrusive activities which warrant its use:

1. Reasonable fugitive dust suppression techniques must be employed during all site activities which may generate fugitive dust.

2. Particulate monitoring must be employed during the handling of waste or contaminated soil or when activities on site may generate fugitive dust from exposed waste or contaminated soil. Remedial activities may also include the excavation, grading, or placement of clean fill. These control measures should not be considered necessary for these activities.

3. Particulate monitoring must be performed using real-time particulate monitors and shall monitor particulate matter less than ten microns (PM10) with the following minimum performance standards:

(a) Objects to be measured: Dust, mists or aerosols;
(b) Measurement Ranges: 0.001 to 400 mg/m3 (1 to 400,000 :ug/m3);
(c) Precision (2-sigma) at constant temperature: +/- 10 :g/m3 for one second averaging; and +/- 1.5 g/m3 for sixty second averaging;
(d) Accuracy: +/- 5% of reading +/- precision (Referred to gravimetric calibration with SAE fine test dust (mmd= 2 to 3 :m, g= 2.5, as aerosolized);
(e) Resolution: 0.1% of reading or 1g/m3, whichever is larger;
(f) Particle Size Range of Maximum Response: 0.1-10;
(g) Total Number of Data Points in Memory: 10,000;
(h) Logged Data: Each data point with average concentration, time/date and data point number
(i) Run Summary: overall average, maximum concentrations, time/date of maximum, total number of logged points, start time/date, total elapsed time (run duration), STEL concentration and time/date occurrence, averaging (logging) period, calibration factor, and tag number;
(j) Alarm Averaging Time (user selectable): real-time (1-60 seconds) or STEL (15 minutes), alarms required;
(k) Operating Time: 48 hours (fully charged NiCd battery); continuously with charger;
(l) Operating Temperature: -10 to 50^{o} C (14 to 122^{o} F);
(m) Particulate levels will be monitored upwind and immediately downwind at the working site and integrated over a period not to exceed 15 minutes.

4. In order to ensure the validity of the fugitive dust measurements performed, there must be appropriate Quality Assurance/Quality Control (QA/QC). It is the responsibility of the remedial party to adequately supplement QA/QC Plans to include the following critical features: periodic instrument calibration, operator training, daily instrument performance (span) checks, and a record keeping plan.

5. The action level will be established at 150 ug/m3 (15 minutes average). While conservative,

this short-term interval will provide a real-time assessment of on-site air quality to assure both health and safety. If particulate levels are detected in excess of 150 ug/m3, the upwind background level must be confirmed immediately. If the working site particulate measurement is greater than 100 ug/m3 above the background level, additional dust suppression techniques must be implemented to reduce the generation of fugitive dust and corrective action taken to protect site personnel and reduce the potential for contaminant migration. Corrective measures may include increasing the level of personal protection for on-site personnel and implementing additional dust suppression techniques (see paragraph 7). Should the action level of 150 ug/m3 continue to be exceeded work must stop and DER must be notified as provided in the site design or remedial work plan. The notification shall include a description of the control measures implemented to prevent further exceedances.

6. It must be recognized that the generation of dust from waste or contaminated soil that migrates off-site, has the potential for transporting contaminants off-site. There may be situations when dust is being generated and leaving the site and the monitoring equipment does not measure PM10 at or above the action level. Since this situation has the potential to allow for the migration of contaminants off-site, it is unacceptable. While it is not practical to quantify total suspended particulates on a real-time basis, it is appropriate to rely on visual observation. If dust is observed leaving the working site, additional dust suppression techniques must be employed. Activities that have a high dusting potential--such as solidification and treatment involving materials like kiln dust and lime--will require the need for special measures to be considered.

7. The following techniques have been shown to be effective for the controlling of the generation and migration of dust during construction activities:

(a) Applying water on haul roads;
(b) Wetting equipment and excavation faces;
(c) Spraying water on buckets during excavation and dumping;
(d) Hauling materials in properly tarped or watertight containers;
(e) Restricting vehicle speeds to 10 mph;
(f) Covering excavated areas and material after excavation activity ceases; and
(g) Reducing the excavation size and/or number of excavations.

Experience has shown that the chance of exceeding the 150ug/m3 action level is remote when the above-mentioned techniques are used. When techniques involving water application are used, care must be taken not to use excess water, which can result in unacceptably wet conditions. Using atomizing sprays will prevent overly wet conditions, conserve water, and provide an effective means of suppressing the fugitive dust.

8. The evaluation of weather conditions is necessary for proper fugitive dust control. When extreme wind conditions make dust control ineffective, as a last resort remedial actions may need to be suspended. There may be situations that require fugitive dust suppression and particulate monitoring requirements with action levels more stringent than those provided above. Under some circumstances, the contaminant concentration and/or toxicity may require additional monitoring to protect site personnel and the public. Additional integrated sampling and chemical analysis of the dust may also be in order. This must be evaluated when a health and safety plan is developed and when appropriate suppression and monitoring requirements are established for protection of health and the environment.