1200 East Main Street
Environmental Restoration Program
Monroe County, City of Rochester, New York

SITE MANAGEMENT PLAN

NYSDEC Site Number B-00129-8

Prepared for:

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Revisions to Final Approved Site Management Plan:

Revision No.	Date Submitted	Summary of Revision	NYSDEC Approval Date

November 2018

CERTIFICATION STATEMENT

I, Sean R. Carter, P.E., certify that I am currently a NYS Professional Engineer as defined in 6 NYCRR Part 375 and that this Site Management Plan was prepared in accordance with all applicable statutes and regulations and in substantial conformance with the DER Technical Guidance for Site Investigation and Remediation (DER-10).

SIGNATURE

11.29.18

DATE

STATE OF NEW YORK
SEAN ROBERT CARTER
083593
LICENSED PROFESSIONAL ENGINEER

SEAL

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List of Acronyms

AOC	Area of Concern
AS	Air Sparging
ASP	Analytical Services Protocol
BCA	Brownfield Cleanup Agreement
BCP	Brownfield Cleanup Program
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act
CAMP	Community Air Monitoring Plan
C/D	Construction and Demolition
CFR	Code of Federal Regulation
CLP	Contract Laboratory Program
COC	Certificate of Completion
CO2	Carbon Dioxide
CP	Commissioner Policy
DER	Division of Environmental Remediation
DO	Dissolved Oxygen
DUSR	Data Usability Summary Report
EC	Engineering Control
ECL	Environmental Conservation Law
ELAP	Environmental Laboratory Approval Program
ERP	Environmental Restoration Program
EWP	Excavation Work Plan
FER	Final Engineering Report
GHG	Green House Gas
GWE&T	Groundwater Extraction and Treatment
HASP	Health and Safety Plan
IC	Institutional Control
LNAPL	Light Non-Aqueous Phase Liquid
NYSDEC	New York State Department of Environmental Conservation
NYSDOH	New York State Department of Health

List of Acronyms (contd.)

NYCRR	New York Codes, Rules and Regulations
O&M	Operation and Maintenance
OM&M	Operation, Maintenance and Monitoring
ORP	Oxygen Reduction Potential
OSHA	Occupational Safety and Health Administration
OU	Operable Unit
PID	Photoionization Detector
PRP	Potentially Responsible Party
PRR	Periodic Review Report
QA/QC	Quality Assurance/Quality Control
QAPP	Quality Assurance Project Plan RAO Remedial Action Objective
RAO	Remedial Action Objective
RAWP	Remedial Action Work Plan
RCRA	Resource Conservation and Recovery Act
RI/FS	Remedial Investigation/Feasibility
ROD	Record of Decision
RP	Remedial Party
RSO	Remedial System Optimization
SAC	State Assistance Contract
SCG	Standards, Criteria and Guidelines
SCO	Soil Cleanup Objective
SMP	Site Management Plan
SOP	Standard Operating Procedures
SOW	Statement of Work
SPDES	State Pollutant Discharge Elimination System
SSDS	Sub-Slab Depressurization System
SVE	Soil Vapor Extraction
SVI	Soil Vapor Intrusion
TAL	Target Analyte List
TCL	Target Compound List
TCLP	Toxicity Characteristic Leachate Procedure
USEPA	US Environmental Protection Agency
UST	Underground Storage Tank
VCA	Voluntary Cleanup Agreement
VCP	Voluntary Cleanup Program
VEGE	Vacuum Enhanced Groundwater Extraction

EXECUTIVE SUMMARY

The following provides a brief summary of the controls implemented for the Site, as well as the inspections, monitoring, maintenance and reporting activities required by the Site Management Plan:

Site Identification:	Environmental Restoration Program Site B-00129-8 City of Rochester, 1200 East Main Street , Rochester, NY
Institutional Controls:	1. The property may be used for restricted commercial and industrial use.
	2. All ECs must be inspected at a frequency and in a manner defined in the SMP.
	3. All ECs must be operated and maintained as specified in this SMP.
	4. The use of groundwater underlying the property is prohibited without necessary water quality treatment as determined by the NYSDOH or the Monroe County Department of Public Health to render it safe for use as drinking water or for industrial purposes, and the user must first notify and obtain written approval to do so from the Department.
	5. Groundwater and other environmental or public health monitoring must be performed as defined in this SMP.
	6. Data and information pertinent to site management must be reported at the frequency and in a manner as defined in this SMP.
	7. All future activities that will disturb remaining contaminated material must be conducted in accordance with this SMP.
	8. Monitoring to assess the performance and effectiveness of the remedy must be performed as defined in this SMP.
	9. Operation, maintenance, monitoring, inspection, and reporting of any mechanical or physical component of the remedy shall be performed as defined in this SMP.
	10. Access to the site must be provided to agents, employees or other representatives of the State of New York with reasonable prior notice to the property owner to assure compliance with the restrictions identified by the Environmental Easement.
	11. The potential for vapor intrusion must be evaluated for any buildings developed in the area within the IC boundaries and any potential impacts that are identified must be monitored or mitigated.
	12. Vegetable gardens and farming on the site are prohibited.

Engineering Controls:	Remedial Systems/Vapor Mitigation Systems
Inspections:	Frequency
Engineering Control Systems	Per NYSDEC
Monitoring:	
On-Site Groundwater Monitoring Wells MW-1, MW-2, MW-3, MW-4, MW-7R, MW-8, MW-9R, MW-10, MW-11, MW-15R and MW-16.	Quarterly
Off-Site Groundwater Monitoring Wells MW-12, MW-13, MW-14.	Per NYSDEC request
Maintenance:	
Engineering Control Systems	As needed
Reporting:	
Groundwater Monitoring Report	Quarterly
Periodic Review Report	Annually

Further descriptions of the above requirements are provided in detail in the latter sections of this Site Management Plan.

1.0 INTRODUCTION

1.1 GENERAL

This Site Management Plan (SMP) is a required element of the remedial program for the 1200 East Main Street Site located in the City of Rochester, New York (hereinafter referred to as the "Site"). See Figure 1 – Project Site Map. The Site is currently in the New York State Environmental Restoration Program (ERP) Site No. B-00129-8 which is administered by New York State Department of Environmental Conservation (NYSDEC).

The City of Rochester (City) entered into a State Assistance Contract (SAC) July 23, 2007 to remediate the Site (Contract Number: C303409). A figure showing the Site location and boundaries of this Site is provided in Figure 1. The boundaries of the Site are more fully described in the metes and bounds site description that is part of the Environmental Easement provided in Appendix #1 – Environmental Easement.

After completion of the remedial work, some petroleum impacted materials remain as residual contamination left at this Site, which is hereafter referred to as "remaining contamination". Institutional and Engineering Controls (ICs and ECs) have been incorporated into the site remedy to control exposure to remaining contamination to ensure protection of public health and the environment. An Environmental Easement granted to the NYSDEC, and recorded with the Monroe County Clerk, requires compliance with this SMP and all ECs and ICs placed on the Site.

This SMP was prepared to manage remaining contamination at the Site until the Environmental Easement is extinguished in accordance with ECL Article 71, Title 36. This plan has been approved by the NYSDEC, and compliance with this plan is required by the grantor of the Environmental Easement and the grantor's successors and assigns. This SMP may only be revised with the approval of the NYSDEC.

It is important to note that:

- This SMP details the site-specific implementation procedures that are required by the Environmental Easement. Failure to properly implement the SMP is a violation of the Environmental Easement, which is grounds for revocation of the Certificate of Completion (COC);

- Failure to comply with this SMP is also a violation of Environmental Conservation Law, 6NYCRR Part 375 and the SAC (Contract No.: C303409, Site No.: B00129) for the Site, and thereby subject to applicable penalties.

All reports associated with the Site can be viewed by contacting the NYSDEC or its successor agency managing environmental issues in New York State. A list of contacts for persons involved with the Site is provided in Table A – Notification and Appendix #3 – Site Contact List.

This SMP was prepared by Bergmann Associates, Inc., on behalf of the City of Rochester, in accordance with the requirements of the NYSDEC's DER-10 ("Technical Guidance for Site Investigation and Remediation"), dated May 3, 2010. This SMP addresses the means for implementing the ICs and/or ECs that are required by the Environmental Easement for the Site.

1.2 REVISIONS

Revisions to this plan will be proposed in writing to the NYSDEC's project manager. Revisions will be necessary upon, but not limited to, the following occurring: a change in media monitoring requirements, upgrades to or shut-down of a remedial system, post-remedial removal of contaminated sediments or soil, or other significant change to the Site conditions. In accordance with the Environmental Easement for the Site, the NYSDEC will provide a notice of any approved changes to the SMP, and append these notices to the SMP that is retained in its files.

1.3 NOTIFICATIONS

Notifications will be submitted by the property owner to the NYSDEC, as needed, in accordance with NYSDEC's DER – 10 for the following reasons:

- 60-day advance notice of any proposed changes in site use that are required under the terms of the SAC, 6NYCRR Part 375 and/or Environmental Conservation Law.

- 7-day advance notice of any field activity associated with the remedial program.

- 15-day advance notice of any proposed ground-intrusive activity pursuant to the Excavation Work Plan.

- Notice within 48-hours of any damage or defect to the foundation, structures or EC that reduces or has the potential to reduce the effectiveness of an EC, and likewise, any action to be taken to mitigate the damage or defect.

- Verbal notice by noon of the following day of any emergency, such as a fire; flood; or earthquake that reduces or has the potential to reduce the effectiveness of ECs in place at the site, with written confirmation within seven (7) days that includes a summary of actions taken, or to be taken, and the potential impact to the environment and the public.

- Follow-up status reports on actions taken to respond to any emergency event requiring ongoing responsive action submitted to the NYSDEC within 45 days describing and documenting actions taken to restore the effectiveness of the ECs.

Any change in the ownership of the Site or the responsibility for implementing this SMP will include the following notifications:

- At least 60 days prior to the change, the NYSDEC will be notified in writing of the proposed change. This will include a certification that the prospective purchaser/Remedial Party has been provided with a copy of the SAC and all approved work plans, reports, including this SMP.

- Within 15 days after the transfer of all or part of the Site, the new owner's name, contact representative, and contact information will be confirmed in writing to the NYSDEC.

Table A includes contact information for the above notification. The information on this table will be updated as necessary to provide accurate contact information. A full listing of site-related contact information is provided in Appendix #3.

Table A: Notifications*

Name	Contact Information
Charlotte Theobald NYSDEC Project Manager	585-226-5354 charlotte.theobald@dec.ny.gov
Ms. Bernette Schilling, P.E. NYSDEC Regional HW Engineer	585-226-5315 bernette.schilling@dec.ny.gov
Ms. Kelly Lewandowski NYSDEC Site Control	518-402-9553 kelly.lewandowski@dec.ny.gov

* Note: Notifications are subject to change and will be updated as necessary.

2.0 SUMMARY OF PREVIOUS INVESTIGATIONS AND REMEDIAL ACTIONS

2.1 SITE LOCATION AND DESCRIPTION

The Site is located at 1200 East Main Street in the City of Rochester, Monroe County, near the northwest intersection of East Main and Laura Street (see Figure #1) and is identified as Section 106.76, Block 1, and Lot 44 on the City of Rochester Tax #106.760-0001-044.000/0000 on the City of Rochester Tax Map. The site is approximately 0.622 acres and is bounded by residential properties to the north, East Main Street to the south, a residential property to the east, and a commercial building to the west (See Figure #1 - Site Layout). The boundaries of the Site are more fully described in Appendix #1. The owner(s) of the Site at the time of the issuance of this SMP is the City of Rochester.

2.2 PHYSICAL SETTING

2.2.1 Land Use

The Site consists of a vacant grass lot, pavement and gravel roadway and undeveloped vegetated areas. The Site is zoned commercial and is currently vacant.

The properties adjoining the Site and in the neighborhood surrounding the Site primarily include residential and commercial properties. The properties immediately north and east are residential properties. Properties immediately west and south of the Site include commercial properties.

2.2.2 Geology

Soils identified at the Site during this investigation consist of heterogeneous fill material and native glacial till to depths of 11.5 to 15.5 feet below grade, overlying Lockport Dolomite bedrock. The fill material generally consists of reworked soil (i.e., silt, sand, gravel, clay) with lesser amounts of brick, glass, concrete, wood, and metal. The glacial till primarily consists of sandy silt and clay with lesser amounts of gravel as described in the boring logs in Appendix 10.

2.2.3 Hydrogeology

Groundwater was encountered at an average depth of 13 to 15 feet below the ground surface. Groundwater typically flows in a bimodal directional pattern; to the northwest in the northern portion of the site and to the southeast in the southern portion of the site (see Figure #6). The average bedrock hydraulic conductivity was calculated to be 1.338 feet/day. In June 2004, the estimated hydraulic gradient to the northwest was 0.023 feet/foot and to the southeast was 0.064 feet/foot. Using an estimated effective porosity of dolomite bedrock of 15%, groundwater velocity at the site is estimated to be 0.27 feet/day to the northwest and 0.57 feet/day to the southeast. Groundwater elevation for the nine (9) wells gauged on November 2016 was approximately 475.5 feet on average as tabulated in Table 3. There is public water serving the area and groundwater is not being utilized for drinking water purposes.

2.3 INVESTIGATION AND REMEDIAL HISTORY

The following narrative provides a remedial history timeline and a brief summary of the available project records to document key investigative and remedial milestones for the Site. Full titles for each of the reports referenced below are provided in Section 8.0 - References.

- **Previous Environmental Investigations –** An Environmental Site Assessment 1200 East Main Street Rochester, New York. Prepared for City of Rochester. Bergmann Associates, October 24, 2000. The Environmental Assessment revealed evidence of recognized environmental conditions in connection with the property as noted below:
  - The historical activities associated with the subject property and its operation as a gas station for approximately 60 years. The site is currently undergoing remedial activities.
  - The Auto Zone property located to the west of the subject property and their waste oil tank and remediation activities associated with it. This property has been submitted as a FOIL request and upon receipt and review of the information an addendum will be issued.

- **Remedial Site Investigation – Site Investigation/Remedial Alternatives Report (prepared by Bergmann Associates for the City of Rochester, dated September 29, 2005**

  The site investigation was conducted to determine the nature and extent of contamination at the Site. The site investigation occurred from June 2002 to October 2004 and included the following activities:
  - Research of historical information.
  - A magnetic locator survey to locate underground tank locations.
  - Collection of surface and subsurface soil samples from test pits and soil borings for laboratory analysis.
  - Excavation of test pits and trenches for visual evaluation of subsurface soils.
  - Installation of groundwater monitoring wells and the collection of groundwater samples for laboratory analysis.
  - Soil vapor intrusion sampling to determine off-site impact to residential property.

  Based on the site investigation results, the contaminants of concern at the Site were determined to be volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), metals and polychlorinated biphenyls (PCBs).

  The VOCs of concern are petroleum-related compounds, such as benzene, toluene, ethylbenzene, and xylenes. The SVOCs of concern are primarily petroleum-related and include polycyclic aromatic hydrocarbons (PAHs). The metals detected at the site are arsenic, lead, mercury, and silver. PCBs, primarily Aroclor 1242, was detected in one off-site surface soil sample.

  A light non-aqueous phase liquid (LNAPL) was identified on top of groundwater in four monitoring wells at the Site (MW-3, MW-4, MW-7, and MW-9) in the central to southeast portion of the Site. Laboratory analysis of the LNAPL determined the product to be gasoline. The thickness of LNAPL ranged from 0.02 to 1.46 feet.

Surface Soil

The contaminants of concern in surface soils were SVOCs [PAH – Benzo(a) Pyrene], metals [arsenic, lead, and mercury], and PCBs that exceeded the Site soil cleanup objectives (SCOs). VOCs were not detected in surface soil samples at levels above the Site SCOs.

Subsurface Soil

The contaminants of concern in subsurface soils were VOCs (mixed xylenes), SVOCs (PAH – Benzo(a) Pyrene), and metals (arsenic, lead, mercury, and silver) that exceeded the Site SCOs. PCBs were not detected in subsurface soil samples at levels above SCGs.

Groundwater

The contaminants of concern detected in groundwater are VOCs, SVOCs and lead. PCBs were not detected in groundwater samples above the State's groundwater standards and guidance values.

Soil Vapor Intrusion

Sub-slab, soil vapor, and indoor air samples were collected at an off-site residential property. The contaminants of concerns detected were petroleum related VOCs.

Tank and Soil Removal and Building Demolition

In June 2000, five (5) single-wall steel underground storage tanks (USTs) and associated piping and dispenser pumps were removed and disposed off-site to a permitted facility. The gasoline and diesel USTs consisted of one (1) 3,000-gallon tank, two (2) 4,000-gallon tanks, and two (2) 6,000-gallon tanks. Approximately 700 gallons of gasoline was removed from the USTs and disposed of off-site.

Approximately 412.5 tons of petroleum contaminated soils were excavated and disposed of off-site at a permitted landfill facility. Confirmatory soil sampling indicated evidence of petroleum impacts remaining in the excavations.

In January 2003, the City of Rochester demolished the on-site building at the site. In June 2003, a previously unknown 275-gallon single-wall steel UST was encountered at the site. Analytical results of sludge remaining in the tank indicated that it contained residual gasoline. The UST was removed and disposed at an off-site permitted disposal facility as well as two 55-gallon drums of sludge/rinse water generated as part of the removal. No soils were removed from the site in association with this tank removal. Confirmatory samples indicated chrysene above the SCOs and no VOCs exceeding the SCOs.

Mitigation measures were taken at the two-family residential building located adjacent to the east of the Site (1214/1216 East Main Street) to address soil vapor intrusion. In May 2004, a sub-slab depressurization system was installed. The system was regularly inspected and maintained to ensure a negative pressure beneath the floor slab. This residential building was demolished in December 2016 and the property at 1214/1216 is a concern for vapor intrusion in future buildings. Development of this property should be coordinated with NYSDEC, see Section 2.5.3 of this SMP.

- **Remedy Implementation - Final Engineering Report, prepared by Bergmann Associates**
  Several remedial elements were completed from 2006 to 2016 in accordance with the Site's Record of Decision.

- **Impacted Surface and Source Area Soil Removal Phase – March through April 2010**
  Impacted surface soils from Excavation Areas 1A and 1B were removed. Confirmatory soil samples were collected. The excavations were backfilled with clean Site soils from Excavation Area 4. Surface soil and source soil excavation areas are illustrated in Figure #11.

  Site soils were excavated from 0 to approximately 9 feet below ground surface (bgs) in Area 2 (dimensions: 66 feet x 33 feet x 14 feet). Soils were screened using a PID and segregated. Soils exhibiting field VOCs readings <10 ppm were stockpiled and used on-site as backfill material. Impacted subsurface soils (>100 ppm) were loaded and disposed off-site at Mill Seat landfill facility. Approximately 460 tons of soil was removed from Area 2.

  A seam of contamination which extended east, and northeast toward the property line, was left in place due to limitations of space and the proximity of the neighboring structure. The depth and location of the seam was recorded and was addressed during the groundwater treatment phase of the project.

  Confirmatory and documentation samples were collected. One (1) sample was obtained from the residual contamination on the east wall, and two (2) bottom samples from top of bedrock were collected.

  Excavation Area 4 from 4 feet to approximately 9 feet bgs was excavated, field screened for VOCs, stockpiled and samples were collected for characterization and re-use analysis. Area 4 from 9 feet to approximately 13 bgs was excavated, direct loaded and disposed at Mill Seat landfill facility. Groundwater seepage issues were addressed by excavation dewatering – 1,000 gallons of petroleum impacted excavation water was collected and disposed off-site at a permitted facility. Approximately 275 tons of soil was removed from Area 4 and disposed off-site. Confirmatory samples were collected and Area 4 was backfilled.

  Excavation of impacted soils from all AOCs was completed on April 5, 2010. 2,143 tons of contaminated soil was disposed off-site at permitted landfill facility. Approximately 1,900 tons of approved backfill material was imported to the Site from the 1315 South Plymouth Avenue soil pile and 450 tons of soil was re-used on-Site.

  Area 2 confirmatory soil samples indicated that 1,2,4-Trimethylbenzene and total Xylene were detected at concentrations above Protection of Groundwater SCOs at the "Bottom Floor Drain" sample location in Area 3. Confirmatory soil samples indicated VOC compounds consistent with gasoline contamination were detected above Protection of Groundwater SCOs from the northwest wall. The Area 4 confirmatory soil sample from the south wall indicated VOC compounds consistent with gasoline contamination were detected above Protection of Groundwater SCOs.

During the excavation activities in Area 3, monitoring well MW-7 was damaged and removed. A replacement well was installed and designated MW-7R at the approximate location of the original monitoring well.

- **<u>Backfill Characterization from Off-Site Source</u>**
  The soil test pit characterization sampling at the 1315 South Plymouth Avenue Site soil pile was completed on July 31, 2009. Six (6) Test Pits (1 test pit per 250 yd^3) were excavated from the staged soil and were field screened (odor, visual, PID) for evidence of impacts. No obvious indications of impacts were observed. Laboratory analysis of the soil samples Included ASP Category B for Metals, VOCs, SVOCs and Pesticides/PCBs. The 1315 South Plymouth Avenue borrow pile met import criteria for backfill.

- **<u>Contaminant Reduction Action in situ Chemical Oxidation</u>**
  The in-situ chemical oxidation (ISCO) fieldwork activities occurred during December 2011 to reduce soluble contaminants observed in MW-4 (0.16 ft.), MW-7 (0.12 ft.), MW-9 (0.50 ft.), and MW-15 (0.01 ft.). A total of 11 injection locations for the initial application into bedrock and 11 injection locations installed in the second application of RegenOx™ approximately 2 weeks after the initial application. The overall depth of the treatment boreholes were approximately 25 feet. The vertical injection zone ranged from 13 feet to 23 feet. A total of 5,280 lbs. of RegenOx™ was injected. Groundwater elevation data was recorded at on-site monitoring wells during injections to confirm transmission of the RegenOx™ into the bedrock fractures. An increase in the LNAPL thickness layer was observed in monitoring wells indicating desorption of petroleum contaminants from the bedrock fractures.

- **<u>Source Area Soil Removal Activities</u>**
  During installation activities associated with the VEGE/oxygen injection system, oxygen and groundwater delivery lines, an area of unknown contaminated soil was encountered north of previously excavated Areas 2 and 4 and subsequently removed. The excavation was approximately 45 feet x 35 feet with depths ranging from 8 feet to 16 feet bgs. Soil/fill material was field screened (PID, odor, and visual) and staged on poly sheeting accordingly. 865 tons of petroleum contaminated soils was excavated and disposed off-site at a permitted landfill facility. The excavation was backfilled with #2 crusher run gravel and Site soils exhibiting no evidence of impacts. Groundwater was not encountered during soil excavation. Impacted soil was left in-place at the northwest and southeast area of the excavation. Confirmatory soil samples indicate no exceedances of the Site's SCOs. Monitoring wells MW-9, MW-15, and MW-7R were removed as part of the excavation activities and re-installed within 5 ft. of their original location and designated MW-7R, MW-9R and MW-15R.

- **<u>Vacuum Enhanced Groundwater Extraction, Oxygen Injection System, Soil Vapor Extraction System Operation</u>**
  The VEGE system included a regenerative blower for vacuum enhancement, carbon vessels for air treatment, submersible pneumatic pumps for fluids pumping, and a water treatment system that included an oil-water separator and air stripper.

An array of nine (9) recovery wells were installed in bedrock to a depth of up to 25 feet bgs with a 20-foot radius of influence (ROI). Pneumatic pumps were placed to skim the LNAPL from the top of the water table.

Once LNAPL mass removal activities were complete, the Oxygen Injection System became operational. Electric service was installed at the Site to power all components of the VEGE, oxygen injection, and SVE systems. Treated water was discharged under permit to a Monroe County Pure Waters sewer lateral connection at East Main Street.

The Oxygen Injection System consists of a rotary screw air compressor, refrigerated air dryer, pressure-swing adsorption oxygen generator and automated oxygen delivery manifold. An array of nine (9) oxygen injection points were installed with a 20-foot ROI to oxygenate the groundwater VOC plume and stimulate VOC biodegradation in bedrock. A soil vapor extraction (SVE) system is operated on horizontal trenches to control vapor.

April 2016 Baseline groundwater sampling data was collected prior to the startup of the VEGE system.

The performance data collected to date during operation of the VEGE system was documented in Remediation Systems Status Reports and includes:

- VEGE Treatment System Performance Data;
- Groundwater Gauging and Drawdown Data
- VEGE extraction well flow data;
- Historical Summary of groundwater recovery data;
- Historical Summary of Vapor recovery data;
- Recovery Well PID Readings;
- Historical Summary of Groundwater Treatment System Results;
- Laboratory groundwater reports.

Remediation Systems Status Reports dated May-August 2016, September 2016 and October-November 2016 were submitted to NYSDEC and are included in the FER.

The groundwater monitoring data collected to date during operation of the VEGE system was documented in Quarterly Groundwater Monitoring reports and includes:

- Groundwater Elevation data;
- Groundwater VOC and SVOC data;
- Historic Groundwater VOC and SVOC data;
- Groundwater Potentiometric Surface Map;
- Groundwater VOC and SVOC Distribution plan; and
- Laboratory groundwater sample reports.

Quarterly Groundwater Monitoring reports were submitted to NYSDEC and are included as Appendix 6 of the FER.

2.4 REMEDIAL ACTION OBJECTIVES

The Remedial Action Objectives (RAOs) for the Site were established in the Record of Decision dated March 31, 2006. Goals for the remedial program had been established through the remedy selection process stated in 6 NYCRR Part 375-1.10. At a minimum, the remedy selected must eliminate or mitigate all significant threats to public health and/or the environment presented by the hazardous substances disposed at the site through the proper application of scientific and engineering principles.

The proposed future use for the 1200 East Main Street site is restricted commercial. The remediation goals for the Site were to eliminate or reduce to the extent practicable:

- Exposures of persons at or around the site to VOCs and SVOCs in soil and groundwater;
- The release of contaminants from soil into groundwater that may create exceedances of groundwater quality standards; and
- The release of contaminants from subsurface soil and groundwater into indoor air through soil vapor.

Further, the remediation goals for the Site included attaining to the extent practicable, SCGs for soil, groundwater, and indoor air.

2.5 REMAINING CONTAMINATION

A summary of contamination remaining at the Site is presented in the following subsections so that anyone performing future excavations or development at the Site can anticipate the environmental conditions in the subsurface they will encounter. The confirmatory soil sample results in Table #1, from the Surface and Source Area Soil Removal IRM (March 2010) and from the 2016 Source Area removal IRM, confirm that soil source areas were successfully removed. The residual petroleum VOCs, SVOCs, and metals concentrations in these areas contains residual concentrations that are generally below Commercial SCOs.

2.5.1 Soil

The conditions of the on-Site soils are presented below and represents the levels of impacts at the time of the issuance of the FER. The source of the VOCs, SVOC and metals that remain in Site soils is from the former use of the Site as a gasoline service station. The major compounds that remain are VOCs typically found in gasoline. Minor compounds that remain in Site soils are SVOCs and metals typically found in diesel fuel oil and used motor oil.

<u>Remaining VOCs in Soil</u>
Gasoline VOCs are the major compounds identified as remaining in the Site soil samples at the time of issuance of the FER. The levels of VOCs detected in confirmatory soil samples represent low levels and occasional exceedances of Unrestricted Use SCOs (Part 375-6) after implementation of the remedial actions. The following gasoline VOC chemical compounds remained on Site at the issuance of the FER that exceed Unrestricted Use SCOs and Protection of Groundwater Standards:

- Ethylbenzene
- n-Propylbenzene
- Toluene
- 1,2,4 –Trimethylbenzene
- 1,3,5 – Trimethylbenzene
- Xylene

Other gasoline VOCs were also detected at the time of issuance of the FER at levels below the Unrestricted Use SCOs and Protection of Groundwater Standards.

Remaining SVOCs in Soil

Several SVOCs remain in Site soils at low levels below Unrestricted Use SCOs and protection of groundwater standards.

Remaining Metals in Soil

Low levels of Chromium and Lead remain in Site Soils that exceed Unrestricted Use SCOs. Other metals were detected with levels below Unrestricted SCOs.

A summary of all remaining exceedances of SCGs after completion of the remedial action at the issuance of the FER is presented in Table #1 – Remaining Soil Sample Exceedances from Soil Samples. This Table includes Unrestricted Use SCOs, Commercial Use SCOs and Protection of Groundwater Standards. The locations of all remaining soil exceedances of Unrestricted Use SCOs is presented on Figure #7 – Remaining Soil Sample Levels & Exceedances. The horizontal estimated distribution of remaining contaminated and non-impacted soils are based on field observations, laboratory results and interpolations between investigation locations and non-investigated locations. The approximate estimated vertical distribution of remaining contaminated and non-impacted soils in Figures #4 and #5 are based on the same parameters noted for horizontal distribution. Figures #4 and #5 also indicate the estimated elevation of the top of remaining soil contamination and thickness.

The estimated volume of remaining soil contamination that exceeds Unrestricted SCOs is approximately 1,500 cubic yards based on the estimated horizontal and vertical distribution indicated in Figures #4, 5 and 7. Approximately 500 cubic yards of remaining contaminated soils from 4 to 10 feet below the ground surface meets commercial SCO levels and the balance of 1,000 cubic yards is anticipated from 10 to 16 feet or the bottom 6 feet of soil that overlies the top of bedrock. The remaining contaminated soils from approximately 10 to 16 feet likely have higher concentrations of petroleum VOCs and generally are anticipated to comply with commercial SCOs. It is possible that limited and isolated exceedances of commercial SCOs may occur in the bottom 6 feet in remaining contaminated soil areas. Contaminated soils are not anticipated Site-wide from the ground surface to 4 feet below ground surface and in the remediated soil removal excavations areas noted on Figure #7 from the ground surface to depths ranging from 13 feet to 16 feet.

All contaminated soils encountered in future excavations must be handled in accordance with this SMP and the Excavation Work Plan provided in Appendix #2 of this SMP. Future soil sampling during re-development for NYSDEC compliance must be completed in accordance with Appendix #5 – Quality Assurance and Quality Control and Appendix #6 – Quality Assurance Project Plan. Future soil monitoring and sampling for completion of the remedy during Operation and Maintenance of the oxygen injection system is not required. It should be noted that active subsurface utilities lines are not present at the Site at the time of the Completion of the FER. Temporary sanitary sewer lateral (4-inch PVC piping) installed for discharge of treated groundwater from the VEGE system, VEGE / oxygen injection laterals, 1-inch PVC injection wells and 2-inch PVC monitoring wells are present. The sanitary PVC sewer pipe lateral will require abandonment in accordance with City of Rochester codes and the oxygen injection wells and monitoring wells will need to be abandoned in accordance with NYSDEC CP-43 Monitoring Well Abandonment procedures.

2.5.2 Groundwater

Low levels of petroleum VOCs and SVOCs remain in Site groundwater at concentrations slightly exceeding SCGs as seen in Table #2. In addition, the LNAPL observed at the Site was removed during the 2016 groundwater remediation by means of operation of the VEGE System.

The groundwater contamination has been substantially reduced based on post–remediation groundwater monitoring. The potential for groundwater contamination migrating off-site has also been minimized. Contaminant levels should continue to decrease over time due to the source area soil removal completed during the 2016 removal action, and with the on-going groundwater remediation. Post-remediation groundwater quality will be monitored as per Section 4 of the SMP. NYSDEC approval is required to terminate or reduce the frequency of groundwater monitoring and these approvals would require an amendment to this SMP.

Remaining VOCs in Groundwater

Gasoline VOCs are the major compounds identified as remaining in the Site groundwater samples at the time of issuance of the FER. The levels of VOCs detected generally represent low levels (low parts per billion range) and occasionally exceeds NYSDEC Part 703.5 Groundwater Standards and NYSDEC T.O.G.S. 1.1.1 standards after implementation of the remedial actions. The following gasoline VOC chemical compounds remained on Site at the issuance of the FER that exceed groundwater standards:

- Benzene
- Ethylbenzene
- Isopropylbenzene
- Methyl Tertiary-butyl Ether (MTBE)
- Xylene

Other gasoline VOCs were also detected at the time of issuance of the FER, however, at levels below the groundwater standards.

Remaining detections of gasoline-related VOCs indicate that isolated impacts may exist in on-site groundwater. Additionally, it is possible for impacted groundwater to occur beneath the entire Site. The possibility of low level gasoline-related VOC impacts at down-gradient and off-site locations may exist, as depicted in Figure #6 – Groundwater Potentiometric Surface Map that indicates the groundwater flow direction towards off-site properties. Operation of the oxygen injection system has reduced and continues to reduce the remaining levels of gasoline VOCs on-site.

Remaining SVOCs in Groundwater

Naphthalene was the SVOC that remained in Site groundwater at low levels that exceeded groundwater standards. Other SVOCs were detected such as 2-Methylnaphthalene at levels below standards.

Metals are Not a COC in the Groundwater at the Site

A summary of groundwater exceedances are represented in Table #2 – Groundwater Sample Results and Remaining Exceedances. The locations and distribution of all remaining groundwater exceedances are presented on Figure #13 – Remaining Groundwater Sample Levels & Exceedances. The depth of the groundwater on site at the issuance of the FER ranged from approximately 16 to 20 feet below ground surface at elevations of 492 to 496 above sea level, see Table #3 – Groundwater Elevation Measurements. It is noted that groundwater results did not indicate exceedances above Site SCOs for metals.

All contaminated groundwater encountered in future excavations, during re-development, must be handled in accordance with this SMP and Section 9.0 in the Excavation Work Plan provided in Appendix #2 of this SMP. Groundwater monitoring is required on a quarterly sampling frequency for NYSDEC compliance during operation and maintenance of the oxygen injection system and will be completed in accordance with Appendix #5 – Quality Assurance and Quality Control and Appendix #6 – Quality Assurance Project Plan and Section 4.0 of this SMP.

2.5.3 Soil Vapor

Soil vapor (soil gas) samples have been collected and evaluated at on-Site and off-site locations during SI/RAR.

On-Site Soil Vapor

At the issuance of the FER, the entire 1200 East Main Street Site had potential for vapor intrusion into future Site buildings due to the remaining soil and groundwater contamination, see Figure #8 – Area of Vapor Concern. Future Site redevelopment will require soil vapor intrusion evaluation and will be coordinated with and submitted to NYSDEC and New York State Department of Health (NYSDOH). The SMP will be revised accordingly when the Site is re-developed to take into account any engineering controls at that time.

Off-Site Soil Vapor

A SSDS was designed and installed in accordance with the NYSDEC issued ROD, dated March 31, 2006, at 1214/1216 East Main Street to mitigate vapor intrusion into the neighboring residential building. This residential building was demolished in December 2016 (Figure #8), therefore, at the issuance of the FER the potential for a human receptor occupying the residential building has been removed.

As part of the pre-design criteria for any future construction at the 1214/1216 East Main Street parcel, soil vapor samples and a future SSDS will be required by and coordinated with NYSDEC and NYSDOH. The SMP will be revised accordingly when the 1214/1216 East Main Street property is re-developed to take into account engineering controls at that time.

3.0 INSTITUTIONAL AND ENGINEERING CONTROL PLAN

3.1 GENERAL

Since remaining contamination exists at the Site, Institutional Controls (ICs) and Engineering Controls (ECs) are required to protect human health and the environment. This IC/EC Plan describes the procedures for the implementation and management of all IC/ECs at the site. The IC/EC Plan is one component of the SMP and is subject to revision by the NYSDEC.

This plan provides:

- A description of all IC/ECs on the Site;
- The basic implementation and intended role of each IC/EC;
- A description of the key components of the ICs set forth in the Environmental Easement;
- A description of the controls to be evaluated during each required inspection and periodic review;
- A description of plans and procedures to be followed for implementation of IC/ECs, such as the implementation of the EWP (as provided in Appendix 2) for the proper handling of remaining contamination that may be disturbed during maintenance or redevelopment work on the Site; and
- Any other provisions necessary to identify or establish methods for implementing the IC/ECs required by the Site remedy, as determined by the NYSDEC.

3.2 INSTITUTIONAL CONTROLS

A series of ICs is required by the ROD to: 1) implement, maintain and monitor Engineering Control systems; 2) prevent future exposure to remaining contamination; and, 3) limit the use and development of the Site to restricted commercial or industrial uses only. Adherence to these ICs on the Site is required by the Environmental Easement and will be implemented under this SMP. ICs identified in the Environmental Easement may not be discontinued without an amendment to or extinguishment of the Environmental Easement. The IC boundaries are shown on Figure #9 – Institutional Control Boundaries. These ICs are:

- The property may be used for restricted commercial or industrial uses;
- All ECs must be operated and maintained as specified in this SMP;
- All ECs must be inspected at a frequency and in a manner defined in the SMP;
- The use of groundwater underlying the property is prohibited without necessary water quality treatment as determined by the NYSDOH or the Monroe County Department of Health to render it safe for use as drinking water or for industrial purpose, and the user must first notify and obtain written approval to do so from the NYSDEC;

- Groundwater and other environmental or public health monitoring must be performed as defined in this SMP;
- Data and information pertinent to site management must be reported at the frequency and in a manner as defined in this SMP;
- All future activities that will disturb remaining contaminated material must be conducted in accordance with this SMP;
- Monitoring to assess the performance and effectiveness of the remedy must be performed as defined in this SMP;
- Operation, maintenance, monitoring, inspection, and reporting of any mechanical or physical component of the remedy shall be performed as defined in this SMP;
- Access to the site must be provided to agents, employees or other representatives of the State of New York with reasonable prior notice to the property owner to assure compliance with the restrictions identified by the Environmental Easement;
- The potential for vapor intrusion must be evaluated for any buildings developed in the area within the IC boundaries noted on Figure #9, and any potential impacts that are identified must be monitored or mitigated;
- If parcel 1214-1216 East Main Street is developed in the future a SVI evaluation should be completed; and
- Vegetable gardens and farming on the Site are prohibited;

3.3 ENGINEERING CONTROLS

3.3.1 Oxygen Injection System and Soil Vapor Extraction System

Exposure to remaining groundwater contamination at the Site is prevented by continued operation and maintenance of an oxygen injection system and soil vapor extraction trench. The location of the oxygen injection system and soil vapor extraction trench is shown on Figure #12 – VEGE & Oxygen Injection System with SVE System As-Built Figure.

Site visits for routine O&M and optimization of the oxygen injection and soil vapor extraction systems are completed once per month. Equipment inspection and maintenance is completed quarterly, or more frequently as needed.

A modification to the VEGE well design and schedule of system operations was proposed in the April 27, 2016 addendum to the RAWP so that nine (9) separate wells were installed for the VEGE system and twelve (12) separate wells installed for the oxygen injection system. The modification allowed for (1) the VEGE wells to intercept the top of the water table with the potential to increase LNAPL and VOC vapor recovery during the initial months of operation and; (2) a decrease in the amount of time required for active remediation by expediting conversion between the two remediation methods.

The locations of the VEGE and oxygen injection wells is shown on Figure 12 – VEGE & O2 Injection with SVE Systems As-Built Figure.

Performance monitoring goals since the activation date of the system (May 23, 2016) include:

- Operate the oxygen injection system with a minimum up time of 90%.
- Produce high purity oxygen gas (>85%).
- Pulse inject the oxygen gas at optimized flow rates and frequencies resulting in DO at saturation (30-40 mg/L) in the injection wells.
- Increase dissolved oxygen concentrations in the plume to a minimum of 5 mg/L and target of 10 mg/L to create aerobic conditions to optimize biodegradation.
- Change the groundwater conditions from reducing to oxidizing and from oxygen limiting to contaminant limiting.

The oxygen injection system will be checked once per month by a qualified technician to record operating parameters and perform routine maintenance. Once each month the technician will collect performance data which includes DO and ORP readings at each injection point and designated monitoring wells. Adjustments to the injection point oxygen flow rates, and the duration and/or frequency of injection cycles, will be made to optimize oxygen transfer to groundwater and DO dispersion from the injection points. The flow meters are adjusted to the optimized flow rate during each site check and the injection points cleared as needed. Based on the depth of the injection wells below the water table and friction loss through the oxygen delivery system, the points will operate at a normal pressure of 5 PSI (±2). Variations in pressure are normal based on the groundwater elevation, length of tubing, backpressure from the formation and accumulation of fines in the injection points. It is recommended to develop the injection points, using air lifting or bailing, more frequently during the first several months of operation.

Routine maintenance is performed on the compressor and oxygen generator as detailed in Table B and Appendix 4. An Operation and Maintenance Manual is located in the trailer specifically describing the maintenance required on each component based on the running hours incurred for each particular component. Maintenance typically consists of changing oil and various filters, adjusting belt tension and inspecting components for wear. Detailed Performance Monitoring Goals are documented in Section 5.2.2.

3.3.2 Sub Slab Depressurization System

The former off-site SSDS located at 1214/1216 East Main Street was destroyed when the residential building was demolished in December 2016. The SMP will be revised accordingly when the 1214/1216 East Main Street parcel is re-developed to include any engineering control requirements at that time.

3.3.3 Criteria for Completion of Remediation/Termination of Remedial Systems

Generally, remedial processes are considered completed when monitoring indicates that the remedy has achieved the remedial action objectives identified in the ROD. For this Site, the City or its successors and assigns will petition NYSDEC to terminate the following remedial systems:

- groundwater monitoring program; and
- operation of the oxygen injection system and SVE trench

once contaminant concentrations in groundwater and/or soil have become asymptotic to a low level over an extended period of time, as accepted by the NYSDEC, or the NYSDEC has determined that the system has reached the limit of effectiveness.

3.3.3.1 Oxygen Injection System with Soil Vapor Extraction Trench

The oxygen injection system and soil vapor extraction trench are a temporary control and the quality and integrity of this systems will be inspected as per the O&M Plan presented as Appendix 4. The City will petition NYSDEC for reduction in sampling frequency after four (4) quarters of post-remediation groundwater sampling is completed. The location of the oxygen injection system and soil vapor extraction Trench are shown on Figure #12.

3.3.3.2 Groundwater Monitoring

Groundwater monitoring will be performed quarterly to assess the performance of the remedy. The City or its successor and assigns may petition the NYSDEC to terminate groundwater monitoring or reduce the frequency of monitoring events.

4.0 MONITORING AND SAMPLING

4.1 GENERAL

This Monitoring and Sampling Plan describes the measures for evaluating the overall performance and effectiveness of the remedy and may only be revised with the approval of the NYSDEC. Details regarding the sampling procedures, data quality usability objectives, analytical methods, etc. for all samples collected as part of site management for the Site are included in the Quality Assurance and Quality Control Plan in Appendix #5 and Quality Assurance Project Plan provided in Appendix #6.

This Monitoring and Sampling Plan describes the methods to be used for:

- Sampling and analysis of all appropriate media (e.g., groundwater, indoor air, soil vapor, soils);
- Assessing compliance with applicable NYSDEC standards, criteria and guidance (SCGs), particularly groundwater standards and Part 375 SCOs for soil; and
- Evaluating site information periodically to confirm that the remedy continues to be effective in protecting public health and the environment;

To adequately address these issues, this Monitoring and Sampling Plan provides information on:

- Sampling locations, protocol and frequency;
- Information on all designed monitoring systems;
- Analytical sampling program requirements;
- Inspection and maintenance requirements for monitoring wells;
- Monitoring well decommissioning procedures; and
- Annual inspection and periodic certification.

Reporting requirements are provided in Section 7.0 of this SMP.

4.2 SITE-WIDE INSPECTION

Site-wide inspections will be performed annually. Modification to the frequency or duration of the inspections will require approval from the NYSDEC. Site-wide inspections will also be performed after all severe weather conditions that may affect ECs or monitoring devices. During these inspections, an inspection form will be completed as provided in Appendix #7 – Site Management Forms. The form will compile sufficient information to assess the following:

- Compliance with all ICs, including Site usage;
- An evaluation of the condition and continued effectiveness of ECs;

- General Site conditions at the time of the inspection;
- The Site management activities being conducted including, where appropriate, confirmation sampling and a health and safety inspection; and
- Confirm that Site records are up to date.

Inspections of all remedial components installed at the Site will be conducted. A comprehensive Site-wide inspection will be conducted and documented according to the SMP schedule, regardless of the frequency of the Periodic Review Report. The inspections will determine and document the following:

- Whether ECs continue to perform as designed;
- If these controls continue to be protective of human health and the environment;
- Compliance with requirements of this SMP and the Environmental Easement;
- Achievement of remedial performance criteria; and
- If site records are complete and up to date.

Reporting requirements are outlined in Section 7.0 of this plan.

Inspections will also be performed in the event of an emergency. If an emergency, such as a natural disaster or an unforeseen failure of any of the ECs occurs that reduces or has the potential to reduce the effectiveness of ECs in place at the Site, verbal notice to the NYSDEC must be given by noon of the following day. In addition, an inspection of the Site will be conducted within 5 days of the event to verify the effectiveness of the IC/ECs implemented at the Site by a qualified environmental professional, as determined by the NYSDEC. Written confirmation must be provided to the NYSDEC within 7 days of the event that includes a summary of actions taken, or to be taken, and the potential impact to the environment and the public.

4.3 TREATMENT SYSTEM MONITORING AND SAMPLING

4.3.1 Oxygen Injection System and Soil Vapor Extraction System

Monitoring of the Oxygen Injection System and the Soil Vapor Extraction System will be performed on a routine basis, as identified in **Table B - Oxygen Injection System and Soil Vapor Extraction System Monitoring Requirements and Schedule** (see below). Modification to the frequency or sampling requirements will require approval from the NYSDEC. A visual inspection of the complete system will be conducted during each monitoring event. Unscheduled inspections and/or sampling may take place when a suspected failure of the remedial system has been reported or an emergency occurs that is deemed likely to affect the operation of the system. Remedial system components to be monitored include, but are not limited to, the components included in Table B below.

Table B – Oxygen Injection System and Soil Vapor Extraction System Monitoring Requirements and Schedule

Remedial System Component	Monitoring Parameter	Operating Range	Monitoring Schedule
Oxygen Generating System	Visual inspection	3 to 7 PSI per injection point	Monthly
Oxygen Purity (%)	Meter reading	85-95%	Monthly
Oxygen injection flow rate	Flowmeter reading	20 to 40 SCFH per injection point	Monthly
SVE motor	Visual inspection	Vacuum (negative pressure)	Monthly
PID Readings at SVE Effluent	VOC Measurement	NA	Monthly
Alarms	Function check, disconnect power	NA	Quarterly

A complete list of remedial system components to be inspected is provided in the inspection checklist as part of the Site Management Forms presented in Appendix 7. If any equipment readings are not within their specified operating range, any equipment is observed to be malfunctioning or the system is not performing within specifications; maintenance and repair, as per the Operation and Maintenance Plan, is required immediately.

4.3.2 Post Remediation Groundwater Monitoring and Sampling

Groundwater monitoring will be performed quarterly to assess the performance of the remedy. Modification to the frequency or sampling requirements will require approval from the NYSDEC.

Table C – Groundwater Monitoring / Sampling Requirements and Schedule

Sampling Location	Analytical Parameters		Schedule
	TCL VOCs	TCL SVOCs	
Monitoring Well MW-1	X	X	Quarterly
Monitoring Well MW-2	X	X	Quarterly
Monitoring Well MW-3	X	X	Quarterly
Monitoring Well MW-4	X	X	Quarterly
Monitoring Well MW-7R	X	X	Quarterly
Monitoring Well MW-8	X	X	Quarterly
Monitoring Well MW-9R	X	X	Quarterly
Monitoring Well MW-10	X	X	Quarterly
Monitoring Well MW-11	X	X	Quarterly
Monitoring Well MW-12 (off-Site)	X	X	Per NYSDEC
Monitoring Well MW-13 (off-Site)	X	X	Per NYSDEC
Monitoring Well MW-14 (off-Site)	X	X	Per NYSDEC
Monitoring Well MW-15R	X	X	Quarterly
Monitoring Well MW-16	X	X	Quarterly

Detailed sample collection and analytical procedures and protocols are provided in Section 4.3.3 below and Appendix #5 and #6. The network of monitoring wells has been installed to monitor upgradient, on-site, and downgradient groundwater conditions at the site.

Table D (Section 4.3.3) summarizes the monitoring well identification numbers, as well as the purpose, location, depths, diameter and screened intervals of the wells. As part of groundwater monitoring, one (1) upgradient well, six (6) source area wells, and four (4) downgradient wells were sampled to evaluate the effectiveness of the remedial system.

4.3.3 Groundwater Sampling

Low-flow sampling methods will be utilized for groundwater sample collection. Groundwater samples will be collected using low-flow sampling techniques in accordance with Low Stress (Low Flow) Purging and Sampling Procedure for the Collection of Groundwater Samples from Monitoring Wells (See Appendix #5). The Health & Safety plan (See Appendix #8) will be followed for all sampling events. Low flow purging and sampling procedures will be as follows:

1. Low flow purging of the monitoring wells will include collection of water quality indicator parameters. Water quality indicator parameters will be recorded at five (5)-minute intervals during the purging of the well. These water quality indicator parameters will include:
    - Water Level Drawdown
    - Temperature
    - pH
    - Dissolved Oxygen
    - Specific Conductance
    - Oxidation Reduction Potential
    - Turbidity
2. Groundwater sampling will commence once the groundwater quality indicator parameters have stabilized for at least three (3) consecutive readings for the following parameters:
    - Water Level Drawdown <0.3 feet
    - Temperature - +/- 3%
    - pH - +/- 0.1 unit
    - Dissolved Oxygen - +/-10%
    - Specific Conductance - +/-3%
    - Oxidation Reduction Potential - +/-10 millivolts
    - Turbidity - +/-10% for values greater than 1 NTU

Each groundwater sample collected for laboratory analysis will be labeled and preserved in accordance with the QAPP. Laboratory QA/QC sampling will include analysis of sample blanks as follows: one trip blank for each sampling matrix type (e.g., soil, groundwater, soil vapor). The blanks will be provided at a rate of one per 20 samples collected for each parameter group, or one per shipment, whichever is greater. Additionally, one Matrix Spike/Matrix Spike Duplicate (MS/MSD) and one duplicate sample will be collected and analyzed for each twenty samples collected for each parameter group, or one per shipment, whichever is greater. Duplicate samples will be submitted to the laboratory as blind duplicates.

The samples will be delivered under Chain of Custody procedures to a New York State Department of Health (NYSDOH) Environmental Laboratory Approval Program (ELAP)-certified laboratory. The laboratory will provide a NYSDEC ASP Category B Deliverables data package for groundwater samples. A DUSR will be completed for all ASP-B and ASP-B format laboratory data packages per DER-10. The DUSRs will include the laboratory data summary pages showing corrections made by the data validator and each page will be initialed by the data validator. The laboratory data summary pages will be included even if no changes were made.

The network of monitoring wells has been installed to monitor up gradient, on-site, and down gradient groundwater conditions at the Site. Table D summarizes the monitoring well identification numbers, as well as the purpose, location, depths, diameter and screened intervals of the wells. As part of the groundwater monitoring, up gradient wells, on-site wells and down gradient wells are sampled to evaluate the effectiveness of the remedial system.

Table D – Monitoring Well Construction Details

Monitoring Well ID	Well Location	Coordinates (Northing/ Easting)	Ground surface (elevation)	Top of casing (elevation)	Well Diameter (inches)	Top of Screen (Approx. Depth Below Ground Surface)	Bottom of Screen (Approx. Depth Below Ground Surface)
MW-1	Source area	1,153,671.52 767,732.63	493.13	495.35	2	12	22
MW-2	Cross gradient	1,153,674.03 767,600.59	493.41	496.02	2	12	22
MW-3	Source area	1,153,598.44 767,721.57	492.35	494.02	2	11	21
MW-4	Source area	1,153,634.15 767,645.59	492.55	492.00	2	12	22
MW-5	Cross gradient	1,153,586.70 767,769.74	493.26	492.70	2	10	20
MW-6	Cross gradient	1,153,663.93 767,783.04	493.13	492.65	2	10	20
MW-7R	Source Area	1,153,613.61 767,667.62	492.34	491.97	2	15	22
MW-8	Cross gradient	1,153,619.86 767,590.48	492.49	494.91	2	12	22
MW-9R	Source area	1,153,697.39 767,690.98	492.71	492.41	2	12	22
MW-10	Cross gradient	767,690.98 767,619.08	493.96	496.19	2	12	22
MW-11	Down gradient	1,153,757.31 767,721.69	493.88	495.95	2	12	22
MW-12	Down gradient	1,153,530.90 767,689.36	491.63	491.17	2	12	24
MW-13	Down gradient	1,153,819.52 767,737.54	491.10	490.53	2	12	24

MW-14	Down gradient	1,153,821.21 767,614.35	489.48	489.48	2	12	24
MW-15R	Up gradient	1,153,727.98 767,695.88	493.00	492.54	2	12	24
MW-16	Cross gradient	1,153,701.24 767,660.74	492.77	492.50	2	12	24

Monitoring well construction logs are included in Appendix #10 of this SMP.

If bio-fouling or silt accumulation occurs in the on-site and/or off-site monitoring wells, the wells will be physically agitated/surged and redeveloped. Additionally, monitoring wells will be properly decommissioned and replaced, if an event renders the wells unusable.

Repairs and/or replacement of wells in the monitoring well network will be performed based on assessments of structural integrity and overall performance.

The NYSDEC will be notified prior to any repair or decommissioning of any monitoring well for the purpose of replacement, and the repair or decommissioning and replacement process will be documented in the subsequent Periodic Review Report. Well decommissioning without replacement will be done only with the prior approval of the NYSDEC. Well abandonment will be performed in accordance with NYSDEC's guidance entitled "CP-43: Groundwater Monitoring Well Decommissioning Procedures." Monitoring wells that are decommissioned because they have been rendered unusable will be replaced in kind in the nearest available location, unless otherwise approved by the NYSDEC.

The sampling frequency may only be modified with the approval of the NYSDEC. This SMP will be modified to reflect changes in sampling plans approved by the NYSDEC.

Deliverables for the groundwater monitoring program are specified in Section 7.0– Reporting Requirements.

4.3.4 Monitoring and Sampling Protocol

All sampling activities will be recorded in a field book and associated sampling log as provided in Appendix #7 – Site Management Forms. Other observations (e.g., groundwater monitoring well integrity, etc.) will be noted on the sampling log. The sampling log will serve as the inspection form for the monitoring network. Additional detail regarding monitoring and sampling protocols are provided in the site-specific Quality Assurance/Quality Control Plan and Quality Assurance Project Plan (QAPP) included as Appendix #5 and #6, respectively, of this document. Monitoring Well Construction Log are included in Appendix #10.

5.0 OPERATION AND MAINTENANCE PLAN

5.1 GENERAL

This Operation and Maintenance Plan provides a brief description of the measures necessary to operate, monitor and maintain the mechanical components of the remedy selected for the Site.

This Operation and Maintenance Plan:

- Includes the procedures necessary to allow individuals unfamiliar with the Site to operate and maintain the oxygen injection system and SVE trench.

- Will be updated periodically to reflect changes in Site conditions or the manner in which the oxygen injection system and SVE trench are operated and maintained.

A copy of the Operation and Maintenance Manual will be maintained on-site along with this SMP. This Manual is not to be used as a stand-alone document, but as a component document of this SMP, see Appendix #4 – O&M Plan and System Operation Manual.

5.2 OPERATION AND MAINTENANCE OF OXYGEN INJECTION SYSTEM AND SVE TRENCH

The following sections provide only an outline description of the anticipated operation and maintenance of the oxygen injection system and SVE trench. Complete Remedial System Performance monitoring goals are detailed in Section 5.2.2 below.

5.2.1 Oxygen Injection System and SVE Trench Start-Up and Testing

<u>Start Up of the Kaeser Rotary Screw Compressor Package</u>
A brief description is provided here to start the Kaeser Rotary Screw Compressor. Identify the EMERGENCY STOP pushbutton on the compressor. This feature will immediately shut down the compressor in the event of an emergency. Warning, the EMERGENCY STOP pushbutton does not terminate voltage to the compressor. Caution, before servicing the compressor, the breaker for the compressor must be in the OFF position in accordance with applicable lock out/tag out procedures per OSHA CFR 29 1910.147.

The compressor should always be switched ON and OFF using keys 1 and 2 on the control panel (Sigma PLC). Do not use the breaker for turning the compressor on and off. Press the ON key and the compressor status will be displayed. The compressor can start at any moment.

Rotate the control switch to the ON position. Open the ball valve located between the compressor and wall mounted filter assembly. The compressor will load the tank to a pressure of approximately 100 PSI as displayed on the control panel.

<u>Start Up of the AirSep PSA Oxygen Generator</u>
Turn the PSA ON/OFF switch to the ON position and the Auto/Manual switch to the AUTO position. Air will exhaust from the filter drain port. The PSA will cycle at a pressure of approximately 70 PSI as shown on the cycle pressure gauge. The PSA is self-regulated and will not operate without

compressed air. Oxygen production will continue until the oxygen receiver (120-gallon tank) pressure rises to approximately 58 PSI. The compressor and PSA will automatically enter a resting mode and will not restart until the pressure drops in the oxygen receiver tank.

<u>Start Up of the Oxygen Delivery System</u>
The regulator on the oxygen receiver tank has been factory adjusted to provide sufficient pressure to the injection points without over pressurizing the oxygen delivery manifold. Adjusting this regulator is not advised. Once the oxygen receiver is full and the system is in a resting mode, open the ball valve on the oxygen receiver tank. A mechanical timer operates each bank of injection points by opening a normally closed solenoid valve. The injection cycles have been pre-set at the factory and should only be changed after consulting with a Matrix Environmental technician. Improperly set injection cycles can result in excessive motor starts on the compressor and shorten the maintenance intervals on the equipment. The normalized oxygen output (total cubic feet per hour, not flow meter rates) should not exceed 60 SCFH. Exceeding this output rate will accelerate equipment wear and may result in low oxygen output pressure.

Allow each timer to run through a complete cycle and adjust the Dwyer flow meters to 30 SCFH or other pre-determined per point flow rate. Adjusting the flow meters at each site visit is standard. Rising pressure at the delivery manifold is an indication of silt buildup in the injection points. The points should be cleared when oxygen flow decreases to 10 SCFH or pressure exceeds 15 PSI (or sooner if desired).

The oxygen injection system is now ready for unattended operation. It is strongly suggested that several complete run cycles be supervised before leaving the site. Do not forget to set the thermostat on the heater and verify that the roof-mounted ventilator is operational. Also inspect the air inlet filters on the doors of the trailer and clean or replace when dirty.

5.2.2 Oxygen Injection System and SVE Trench Routine System Operation and Maintenance

Site visits for routine O&M and optimization of the oxygen injection system will be completed two times per month. Equipment inspection and maintenance will be completed quarterly, or more frequently as needed, see Table #5 – Routine Maintenance Summary and Schedule. A site-specific Oxygen Injection System Evaluation Sheet for recording data field and system operating data is attached in Appendix #7. Oxygen injection system and SVE trench sampling requirements are presented in Table #6 – Remedial System Sampling Requirements.

Performance monitoring goals include:

- Operate the oxygen injection system with a minimum up time of 90%.
- Produce high purity oxygen gas (>85%).
- Pulse inject the oxygen gas at optimized flow rates and frequencies resulting in DO at saturation (30-40 mg/L) in the nine injection wells (IP-1 to IP-9).
- Increase dissolved oxygen concentrations in the plume to a minimum of 5 mg/L and target of 10 mg/L to create aerobic conditions to optimize biodegradation.
- Change the groundwater conditions from reducing to oxidizing and from oxygen limiting to contaminant limiting.

The oxygen injection system will be checked two times per month by a qualified technician to record operating parameters and perform routine maintenance. Once each month the technician will collect performance data, which includes DO and ORP readings at each injection point and designated monitoring wells. Adjustments to the injection point flow rates, and the duration and/or frequency of injection cycles, will be made to optimize oxygen transfer to groundwater and DO dispersion from the injection points. The flow meters are adjusted to the optimized flow rate during each site check and the injection points cleared as needed. At start-up the flow meters will be set to 30 SCFH and injection duration at 10 minutes per bank. Based on the depth of the injection wells below the water table and friction loss through the oxygen delivery system, the points will operate at a normal pressure of 5 PSI (±2). Variations in pressure are normal based on the groundwater elevation, length of tubing, backpressure from the formation and accumulation of fines in the injection points. It is recommended to develop the injection points, using air lifting or bailing, more frequently during the first several months of operation.

Routine maintenance is performed on the compressor and oxygen generator as detailed below and in the O&M Plan in Appendix #4. An Operation and Maintenance Manual is located in the trailer specifically describing the maintenance required on each component based on the running hours incurred for each particular component. This manual is also presented in Appendix #4. Maintenance typically consists of changing oil and various filters, adjusting belt tension and inspecting components for wear.

Upon each inspection/site visit, the following tasks will be performed:

- Perform general inspection of trailer/structure for unanticipated leaks, noises, observations that may indicate concerns
- Inspect HVAC units for proper operation and settings
- Check and adjust flow meters – operate points manually to check flow and pressures, adjust as necessary
- Check pressures on oxygen generator
- Incoming pressure – between 90 – 120 psi
- Cycle pressure – approximately 75 psi
- Oxygen receiver pressure – shut down target pressure – between 58 – 60 psi
- Check the cooling oil level on Kaeser Compressor
- Check the cooler filter mat on Kaeser Compressor
- Ensure automatic drain on oxygen generator functions properly (very important)
- Inspect wall filters (KRO [water separator] and KPF [particulate filter])

Monthly inspection (in addition to above actions):

- Check the air filter and change the air filter element (if necessary) on Kaeser Compressor
- Maintain the drive belts on Kaeser Compressor

- Change the cooler filter mat on Kaeser Compressor
- Monthly (at minimum) – check oxygen purity on full tank

Yearly inspection (in addition to above actions):

- Change the oil filter on Kaeser Compressor
- Change the cooling oil on Kaeser Compressor (assumes a synthetic lubricant (oil) is being used in the compressor. Change after first year of operation, then every 2 years. [Cooling oil changes will be different if non-synthetic oil is used.])
- Check that all electrical connections are tight on Kaeser Compressor
- Check performance of automatic valves and actuators on oxygen generator
- Clean and lubricate feed air regulator on oxygen generator
- Clean bowls and replace both particulate and coalescing filters on oxygen generator
- Replace wall filters (KRO and KPF filters)

Two-year inspection (in addition to above actions):

- Change the oil separator cartridge on Kaeser Compressor
- Check the pressure relief valve on Kaeser Compressor
- Replace the drive belt on Kaeser Compressor
- Replace filter on Air Dryer every two years or whenever main service for compressor is performed

Procedures for operating and maintaining the Oxygen Injection System and the SVE system are documented in the Operation and Maintenance Plan (Section 5.0 of this SMP). As built drawings, signed and sealed by a professional engineer, are included in Appendix #4 – Operations & Maintenance Plan and System Operation Manual. The locations of Engineering Controls (EC) are shown on Figure #10 – Engineering Control location

6.0 PERIODIC ASSESSMENTS/EVALUATIONS

6.1 CLIMATE CHANGE VULNERABILITY ASSESSMENT

Increases in both the severity and frequency of storms/weather events, an increase in sea level elevations along with accompanying flooding impacts, shifting precipitation patterns and wide temperature fluctuation, resulting from global climactic change and instability, have the potential to significantly impact the performance, effectiveness and protectiveness of a given site and associated remedial systems. Vulnerability assessments provide information so that the Site and associated remedial systems are prepared for the impacts of the increasing frequency and intensity of severe storms/weather events and associated flooding.

This section provides a summary of vulnerability assessments that will be conducted for the Site during periodic assessments, and briefly summarizes the vulnerability of the Site and/or engineering controls to severe storms/weather events and associated flooding.

- Flood Plain: The Site is not located within a flood plain as well as the distance from and elevation above nearby water bodies (e.g., the Genesee River), and the presence of new municipal storm water collection infrastructure, vulnerability assessment is not warranted at this time.
- Site Drainage and Storm Water Management: The Site has a pervious surface and a sufficient municipal storm water management collection system.
- Erosion: The Site has sufficient vegetation to minimize any erosional impacts to the Site during severe rain events.
- High Wind: The Site does have electrical service utility poles which under severe wind conditions may be susceptible to damage. There are also a few trees that may have the potential to be impacted during severe wind conditions.
- Electricity: The site’s remedial system (oxygen injection system) can be impacted by power loss and/or dips/surges in voltage during severe weather events, including lightning strikes.
- Spill/Contaminant Release: The Site should not be susceptible to spills or other contaminants due to storm-related damage caused by flooding, erosion, high winds, loss of power etc. as there are no storage tanks or systems present at the Site.

6.2 GREEN REMEDIATION EVALUATION

NYSDEC’s DER-31 Green Remediation requires that green remediation concepts and techniques be considered during all stages of the remedial program including site management, with the goal of improving the sustainability of the cleanup and summarizing the net environmental benefit of any implemented green technology. This section of the SMP provides a summary of any green remediation evaluations to be completed for the Site during site management, and as reported in the Periodic Review Report (PRR).

The Green Remediation Evaluation will include the following items:

- Energy usage by the SVE and the oxygen injection system;

- Fossil fuel usage associated with travel to and from the Site for sampling, monitoring, and Site inspection activities;

- Waste generation from groundwater sampling events (i.e., purge and decontamination water); and
- Water usage for decontamination of sampling equipment.

6.2.1 Timing of Green Remediation Evaluations

For major remedial system components, green remediation evaluations and corresponding modifications will be undertaken as part of a formal Remedial System Optimization (RSO), or at any time that the Project Manager feels appropriate, e.g., during significant maintenance events or in conjunction with storm recovery activities.

Modifications resulting from green remediation evaluations will be routinely implemented and scheduled to occur during planned/routine operation and maintenance activities. Reporting of these modifications will be presented in the PRR.

6.2.2 Remedial Systems

Remedial systems will be operated properly considering the current site conditions to conserve materials and resources to the greatest extent possible. Consideration will be given to operating rates and use of reagents and consumables. Spent materials will be sent for recycling, as appropriate.

The operation of the oxygen injection system and the SVE trench will be evaluated to operate in a pulse mode (on and off cycle of operation) whenever possible to conserve on electric power usage. This will allow conservation of materials and resources to the greatest extent possible. Consideration will be given to operating rates and use of reagents and consumables. Spent metals and plastic materials will be sent for recycling, as appropriate.

Structures including buildings, trailers and sheds will be operated and maintained to provide for the most efficient operation of the remedy, while minimizing energy, waste generation and water consumption. Components to be evaluated should include, but are not limited to:

- Heating/cooling systems and temperature set-points;
- Building skin, insulation and building use and occupancy;
- Ventilation;
- Lighting and plug loads; and
- Grounds and property management.

6.2.3 Frequency of System Checks, Sampling and Other Periodic Activities

Transportation to and from the Site and use of consumables in relation to visiting the Site in order to conduct system checks and/or collect samples and shipping samples to a laboratory for analyses have direct and/or inherent energy costs. The schedule and/or means of these periodic activities have been prepared so that these tasks can be accomplished in a manner that does not impact remedy protectiveness but reduces expenditure of energy or resources. The schedule and frequency detailed in Table #5 for routine maintenance may be further reduced after six months of operation to allow for possible reduction of visits to the Site and or combining visits to conserve energy. Consideration will also be given to reducing the SVE motor from 5 HP to 1 HP to save electric power. These reductions will be presented to NYSDEC for approval and the SMP will be revised, if reductions are granted.

Consideration shall be given to:

- Reduced sampling frequencies;
- Reduced site visits and system checks;
- Coordination/consolidation of activities to maximize foreman/labor time; and
- Use of mass transit for site visits, where available.

6.2.4 Metrics and Reporting

As discussed in Section 7.0 and as shown in Appendix #7 – Site Management Forms, information on energy usage, solid waste generation, transportation and shipping, water usage and land use and ecosystems will be recorded to facilitate and document consistent implementation of green remediation during site management and to identify corresponding benefits; a set of metrics has been developed.

6.3 REMEDIAL SYSTEM OPTIMIZATION

A Remedial Site Optimization (RSO) study will be conducted any time that the NYSDEC or the remedial party requests in writing that an in-depth evaluation of the remedy is needed. An RSO may be appropriate if any of the following occur:

- The remedial actions have not met or are not expected to meet RAOs in the time frame estimated in the Record of Decision;
- The management and operation of the remedial systems is exceeding the estimated costs;
- The remedial systems are not performing as expected or as designed;
- Previously unidentified source material may be suspected;
- Plume shift has potentially occurred;
- Site conditions change due to development, change of use, change in groundwater use, etc.;
- There is an anticipated transfer of the site management to another remedial party or agency; and
- A new and applicable remedial technology becomes available.

An RSO will provide a critique of a Site's conceptual model, give a summary of past performance, document current cleanup practices, summarize progress made toward the Site's cleanup goals, gather additional performance or media specific data and information and provide recommendations for improvements to enhance the ability of the present system to reach RAOs or to provide a basis for changing the remedial strategy. The RSO study report must include the sections of reporting listed in the Table of Contents, see Appendix #12 – Remedial System Optimization.

7.0 REPORTING REQUIREMENTS

7.1 SITE MANAGEMENT REPORTS

All Site management inspection, maintenance and monitoring events will be recorded on the appropriate Site Management Forms provided in Appendix # 7. These forms are subject to NYSDEC revision.

All applicable inspection forms and other records, including media sampling data and system maintenance reports, generated for the Site during the reporting period will be provided in electronic format to the NYSDEC in accordance with the requirements of Table E, below, and a more detailed Table #7 of the attachments, and summarized in the Periodic Review Report.

Table E: Schedule of Monitoring/Inspection Reports

Task/Report	Reporting Frequency*
Inspection Report	Annually
Groundwater Monitoring Report	Quarterly
Periodic Review Report	Annually, or as otherwise determined by the NYSDEC

* The frequency of events will be conducted as specified until otherwise approved by the NYSDEC.

All interim monitoring/inspections reports will include, at a minimum:

- Date of event or reporting period;
- Name, company, and position of person(s) conducting monitoring/inspection activities;
- Description of the activities performed;
- Where appropriate, color photographs or sketches showing the approximate location of any problems or incidents noted (included either on the checklist/form or on an attached sheet);
- Type of samples collected (e.g., groundwater.);
- Copies of all field forms completed (e.g., well sampling logs, chain-of-custody documentation, etc.);
- Sampling results in comparison to appropriate standards/criteria;
- A figure illustrating sample type and sampling locations;
- Copies of all laboratory data sheets and the required laboratory data deliverables required for all points sampled (to be submitted electronically in the NYSDEC-identified format);

- Any observations, conclusions, or recommendations; and
- A determination as to whether contaminant conditions have changed since the last reporting event.

Routine maintenance event reporting forms will include, at a minimum:

- Date of event;
- Name, company, and position of person(s) conducting maintenance activities;
- Description of maintenance activities performed;
- Any modifications to the system;
- Where appropriate, color photographs or sketches showing the approximate location of any problems or incidents noted (included either on the checklist/form or on an attached sheet); and,
- Other documentation such as copies of invoices for maintenance work, receipts for replacement equipment, etc., (attached to the checklist/form).

Non-routine maintenance event reporting forms will include, at a minimum:

- Date of event;
- Name, company, and position of person(s) conducting non-routine maintenance/repair activities;
- Description of non-routine activities performed;
- Where appropriate, color photographs or sketches showing the approximate location of any problems or incidents (included either on the form or on an attached sheet); and
- Other documentation such as copies of invoices for repair work, receipts for replacement equipment, etc. (attached to the checklist/form).

Data will be reported in digital format as determined by the NYSDEC. Currently, data is to be supplied electronically and submitted to the NYSDEC EQuIS database in accordance with the requirements found at this link http://www.dec.ny.gov/chemical/62440.html.

7.2 PERIODIC REVIEW REPORT

A Periodic Review Report (PRR) will be submitted to the NYSDEC beginning sixteen (16) months after the Certificate of Completion is issued. After submittal of the initial Periodic Review Report, the next PRR shall be submitted annually to the NYSDEC or at another frequency as may be required by NYSDEC. In the event that the Site is subdivided into separate parcels with different ownership, a single Periodic Review Report will be prepared that addresses the Site described in Appendix #1 - Environmental Easement. The report will be prepared in accordance with NYSDEC's DER-10 and submitted within 30 days of the end of each certification period. Media sampling results will also be incorporated into the Periodic Review Report. The report will include:

- Identification, assessment and certification of all ECs/ICs required by the remedy for the site.

- Results of the required annual Site inspections and severe condition inspections, if applicable.

- All applicable Site management forms and other records generated for the Site during the reporting period in the NYSDEC-approved electronic format, if not previously submitted.

A summary of any discharge monitoring data and/or information generated during the reporting period, with comments and conclusions.

- Data summary tables and graphical representations of contaminants of concern by media (groundwater, soil vapor, etc.), which include a listing of all compounds analyzed, along with the applicable standards, with all exceedances highlighted. These will include a presentation of past data as part of an evaluation of contaminant concentration trends.

- Results of all analyses, copies of all laboratory data sheets, and the required laboratory data deliverables for all samples collected during the reporting period will be submitted in digital format as determined by the NYSDEC. Currently, data is supplied electronically and submitted to the NYSDEC EQuISTM database in accordance with the requirements found at this link: http://www.dec.ny.gov/chemical/62440.html.

- A Site evaluation, which includes the following:
    - ➢ The compliance of the remedy with the requirements of the ROD, RAWP, or Decision Document;
    - ➢ The operation and the effectiveness of all treatment units, etc., including identification of any needed repairs or modifications;
    - ➢ Any new conclusions or observations regarding site contamination based on inspections or data generated by the Monitoring and Sampling Plan for the media being monitored;
    - ➢ Recommendations regarding any necessary changes to the remedy and/or Monitoring and Sampling Plan; and
    - ➢ Trends in contaminant levels in the affected media will be evaluated to determine if the remedy continues to be effective in achieving remedial goals as specified by the ROD.
    - ➢ The overall performance and effectiveness of the remedy.
    - ➢ A performance summary for all treatment systems at the Site during the calendar year, including information such as:
        - The number of days the system operated for the reporting period;

- The average, high, and low flows per day;
- The contaminant mass removed;
- A description of breakdowns and/or repairs along with an explanation for any significant downtime;
- A description of the resolution of performance problems;
- Alarm conditions;
- Trends in equipment failure;
- A summary of the performance, effluent and/or effectiveness monitoring; and,
- Comments, conclusions, and recommendations based on data evaluation.

7.2.1 Certification of Institutional and Engineering Controls

Following the last inspection of the reporting period, a Professional Engineer licensed to practice in New York State will prepare, and include in the Periodic Review Report, the following certification as per the requirements of NYSDEC DER-10:

"*For each institutional or engineering control identified for the site, I certify that all of the following statements are true:*

- *The inspection of the site to confirm the effectiveness of the institutional and engineering controls required by the remedial program was performed under my direction;*
- *The institutional control and/or engineering control employed at this site is unchanged from the date the control was put in place, or last approved by the NYSDEC;*
- *Nothing has occurred that would impair the ability of the control to protect the public health and environment;*
- *Nothing has occurred that would constitute a violation or failure to comply with any site management plan for this control;*
- *Access to the site will continue to be provided to the NYSDEC to evaluate the remedy, including access to evaluate the continued maintenance of this control;*
- *If a financial assurance mechanism is required under the oversight document for the site, the mechanism remains valid and sufficient for the intended purpose under the document;*
- *Use of the site is compliant with the environmental easement;*
- *The engineering control systems are performing as designed and are effective;*
- *To the best of my knowledge and belief, the work and conclusions described in this certification are in accordance with the requirements of the site remedial program and generally accepted engineering practices; and*
- *The information presented in this report is accurate and complete.*

"I certify that all information and statements in this certification form are true. I understand that a false statement made herein is punishable as a Class "A" misdemeanor, pursuant to Section 210.45 of the Penal Law. I, [name], of [business address], am certifying as [Owner/Remedial Party or Owner's/Remedial Party's Designated Site Representative]. [I have been authorized and designated by all site owners/remedial parties to sign this certification] for the site."

The signed certification will be included in the Periodic Review Report.

The Periodic Review Report will be submitted, in electronic format, to the NYSDEC Central Office, Regional Office in which the site is located and the NYSDOH Bureau of Environmental Exposure Investigation. The Periodic Review Report may need to be submitted in hard-copy format, as requested by the NYSDEC project manager.

7.3 CORRECTIVE MEASURES WORK PLAN

If any component of the remedy is found to have failed, or if the periodic certification cannot be provided due to the failure of an institutional or engineering control, a Corrective Measures Work Plan will be submitted to the NYSDEC for approval. This plan will explain the failure and provide the details and schedule for performing work necessary to correct the failure. Unless an emergency condition exists, no work will be performed pursuant to the Corrective Measures Work Plan until it has been approved by the NYSDEC.

7.4 REMEDIAL SITE OPTIMIZATION REPORT

In the event that an RSO is to be performed (see Section 6.3), upon completion of an RSO, an RSO report must be submitted to the NYSDEC for approval. A general outline for the RSO report is provided in Appendix #12 of this SMP. The RSO report will document the research/ investigation and data gathering that was conducted, evaluate the results, and facts obtained, present a revised conceptual site model and present recommendations.

RSO recommendations are to be implemented upon approval from the NYSDEC. Additional work plans, design documents, HASPs etc., may still be required to implement the recommendations, based upon the actions that need to be taken. A final engineering report and update to the SMP may also be required.

The RSO report will be submitted, in electronic format, to the NYSDEC Central Office, Regional Office in which the Site is located, Site Control and the NYSDOH Bureau of Environmental Exposure Investigation.

8.0 REFERENCES

Final Engineering Report. Prepared by Bergmann Associates, dated April 20, 2017.

NYSDEC. 6 NYCRR Part 375, Environmental Remediation Programs, dated December 14, 2006.

NYSDEC. DER-10 – "Technical Guidance for Site Investigation and Remediation", dated May 2010.

NYSDEC. Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations Division of Water Technical and Operational Guidance Series (TOGS) 1.1.1, dated June 1998 (April 2000 addendum).

Record of Decision. Prepared by NYSDEC, dated March 31, 2006.

Supplement Site Investigation Report. Prepared by Bergmann Associates, dated September 25, 2004.

Environmental Site Assessment 1200 East Main Street Rochester, New York. Prepared for City of Rochester. Bergmann Associates, October 24, 2000.

Remedial Site Investigation – Site Investigation/Remedial Alternatives Report (prepared by Bergmann Associates for the City of Rochester, dated September 29, 2005.

TABLES

TABLE 1
Remaining Soil Sample Exceedances
Site Number B-00129-8
1200 E. Main Street
Rochester, NY
Excavation Area 1A

Contaminant	CAS Number	Commercial	Protection of Groundwater	Unrestricted Use	S-1 West Wall	S-2 South Wall	S-3 North Center	S-4 West Bottom	S-5 Northeast Wall	S-6 EastWall	S-7 Northeast Bottom
Semivolatiles					**8270 STARS (ppm)**						
Acenaphthene	83-32-9	500[b]	98	20	ND (.349)	ND (.333)	ND (.330)	ND (.334)	ND (.322)	ND (.320)	ND (.326)
Acenapthylene	208-96-8	500[b]	107	100 [a]	ND (.349)	ND (.333)	ND (.330)	ND (.334)	ND (.322)	ND (.320)	ND (.326)
Anthracene	120-12-7	500[b]	1,000[c]	100 [a]	ND (.349)	ND (.333)	ND (.330)	ND (.334)	ND (.322)	ND (.320)	ND (.326)
Benz(a)anthracene	56-55-3	5.6	1[f]	1 [c]	0.188	ND (.333)	ND (.330)	ND (.334)	ND (.322)	ND (.320)	ND (.326)
Benzo(a)pyrene	50-32-8	1	22	1 [c]	ND (.349)	ND (.333)	ND (.330)	ND (.334)	ND (.322)	ND (.320)	ND (.326)
Benzo(b)fluoranthene	205-99-2	5.6	1,7	1 [c]	ND (.349)	ND (.333)	ND (.330)	ND (.334)	ND (.322)	ND (.320)	ND (.326)
Benzo(g,h,i)perylene	191-24-2	500[b]	1,000[c]	100	ND (.349)	ND (.333)	ND (.330)	ND (.334)	ND (.322)	ND (.320)	ND (.326)
Benzo(k)fluoranthene	207-08-9	56	1.7	0.8 [c]	ND (.349)	ND (.333)	ND (.330)	ND (.334)	ND (.322)	ND (.320)	ND (.326)
Chrysene	218-01-9	56	1[f]	1 [c]	0.195	ND (.333)	ND (.330)	ND (.334)	ND (.322)	ND (.320)	ND (.326)
Dibenz(a,h)anthracene	53-70-3	0.56	1,000[c]	0.33 [b]	ND (.349)	ND (.333)	ND (.330)	ND (.334)	ND (.322)	ND (.320)	ND (.326)
Fluoranthene	206-44-0	500[b]	1,000[c]	100 [a]	0.464	0.302	ND (.330)	ND (.334)	ND (.322)	ND (.320)	ND (.326)
Fluorene	86-73-7	500[b]	386	30	ND (.349)	ND (.333)	ND (.330)	ND (.334)	ND (.322)	ND (.320)	ND (.326)
Indeno(1,2,3-cd)pyrene	193-39-5	1	8.2	0.5 [c]	ND (.349)	ND (.333)	ND (.330)	ND (.334)	ND (.322)	ND (.320)	ND (.326)
Naphthalene	91-20-3	500[b]	12	12	ND (.349)	ND (.333)	ND (.330)	ND (.334)	ND (.322)	ND (.320)	ND (.326)
Phenanthrene	85-01-8	500[b]	1,000[c]	100	0.256	0.172	ND (.330)	ND (.334)	ND (.322)	ND (.320)	ND (.326)
Pyrene	129-00-0	500[b]	1,000[c]	100	0.377	0.256	ND (.330)	ND (.334)	ND (.322)	ND (.320)	ND (.326)
	Total SVOCs				1.48	0.73	ND (.330)	ND (.334)	ND (.322)	ND (.320)	ND (.326)

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Contaminant	CAS Number	Commercial	Protection of Groundwater	Unrestricted Use	TABLE 1 Remaining Soil Sample Exceedances Site Number B-00129-8 1200 E. Main Street Rochester, NY Excavation Area 1B								
					S-8 East Wall	S-9 Northeast Wall	S-10 East Bottom	S-11 North Center	S-12 West Wall	S-13 Southwest Wall	S-14 Southeast Wall	S-15 West Bottom	S-16 South-SE Wall
Semivolatiles				**8270 STARS (ppm)**									
Acenaphthene	83-32-9	500[b]	89	20	ND (.329)	ND (.322)	ND (.327)	ND (.314)	ND (.327)	ND (.322)	ND (.333)	ND (.328)	ND (.335)
Acenapthylene	208-96-8	500[b]	107	100 [a]	ND (.329)	ND (.322)	ND (.327)	ND (.314)	ND (.327)	ND (.322)	ND (.333)	ND (.328)	ND (.335)
Anthracene	120-12-7	500[b]	1,000[c]	100 [a]	ND (.329)	ND (.322)	ND (.327)	ND (.314)	ND (.327)	ND (.322)	ND (.333)	ND (.328)	ND (.335)
Benz(a)anthracene	56-55-3	5.6	1[f]	1 [c]	ND (.329)	ND (.322)	ND (.327)	ND (.314)	ND (.327)	ND (.322)	ND (.333)	0.166	ND (.335)
Benzo(a)pyrene	50-32-8	1[f]	22	1 [c]	ND (.329)	ND (.322)	ND (.327)	ND (.314)	ND (.327)	ND (.322)	ND (.333)	ND (.328)	ND (.335)
Benzo(b)fluoranthene	205-99-2	5.6	1.7	1 [c]	ND (.329)	ND (.322)	ND (.327)	ND (.314)	ND (.327)	ND (.322)	ND (.333)	0.184	ND (.335)
Benzo(g,h,i)perylene	191-24-2	500[b]	1,000[c]	100	ND (.329)	ND (.322)	ND (.327)	ND (.314)	ND (.327)	ND (.322)	ND (.333)	ND (.328)	ND (.335)
Benzo(k)fluoranthene	207-08-9	56	1.7	0.8 [c]	ND (.329)	ND (.322)	ND (.327)	ND (.314)	ND (.327)	ND (.322)	ND (.333)	ND (.328)	ND (.335)
Chrysene	218-01-9	56	1[f]	1 [c]	ND (.329)	ND (.322)	ND (.327)	ND (.314)	ND (.327)	ND (.322)	ND (.333)	0.184	ND (.335)
Dibenz(a,h)anthracene	53-70-3	5.6	1,000[c]	0.33 [b]	ND (.329)	ND (.322)	ND (.327)	ND (.314)	ND (.327)	ND (.322)	ND (.333)	ND (.328)	ND (.335)
Fluoranthene	206-44-0	500[b]	1,000[c]	100 [a]	ND (.329)	0.163	ND (.327)	0.221	0.261	ND (.322)	0.180	0.358	ND (.335)
Fluorene	86-73-7	500[b]	386	30	ND (.329)	ND (.322)	ND (.327)	ND (.314)	ND (.327)	ND (.322)	ND (.333)	ND (.328)	ND (.335)
Indeno(1,2,3-cd)pyrene	193-39-5	5.6	8.2	0.5 [c]	ND (.329)	ND (.322)	ND (.327)	ND (.314)	ND (.327)	ND (.322)	ND (.333)	ND (.328)	ND (.335)
Naphthalene	91-20-3	500[b]	12	12	ND (.329)	ND (.322)	ND (.327)	ND (.314)	ND (.327)	ND (.322)	ND (.333)	ND (.328)	ND (.335)
Phenanthrene	85-01-8	500[b]	1,000[c]	100	ND (.329)	ND (.322)	ND (.327)	ND (.314)	ND (.327)	ND (.322)	ND (.333)	ND (.328)	ND (.335)
Pyrene	129-00-0	500[b]	1,000[c]	100	ND (.329)	ND (.322)	ND (.327)	'0.201	0.213	ND (.322)	ND (.333)	0.303	ND (.335)
	Total SVOCs				ND (.329)	ND (.322)	ND (.327)	ND (.314)	ND (327)	ND (.322)	0.180	1.195	ND (.335)

All soil cleanup objectives (SCOs) are in parts per million (ppm), NS=Not specified. See Technical Support Document (TSD).
Values in **Bold** indicate contaminant concentrations above Unrestricted SCOs.
Shaded values indicate contaminant concentrations above Proteection of Groundwater SCOs.

Footnotes

a The SCOs for residential, restricted-residential and ecological resources use were capped at a maximum value of 100 ppm.
[b] The SCOs for commercial use were capped at a maximum value of 500 ppm.
[c] The SCOs for industrial use and the protection of groundwater were capped at a maximum value of 1000 ppm.
[d] The SCOs for metals were capped at a maximum value of 10,000 ppm.
[e] For constituents where the calculated SCO was lower than the contract required quantitation limit (CRQL), the CRQL is used as the SCO value.
[f] For constituents where the calculated SCO was lower than the rural soil background concentration as determined by the Department and Department of Health rural soil survey, the rural soil background concentration is used as the Track 2 SCO value for this use of the site.
[g] This SCO is derived from data on mixed isomers of BHC.
[h] The SCO for this specific compound (or family of compounds) is considered to be met if the analysis for the total species of this contaminant is below the specific SCO.
[i] This SCO is for the sum of endosulfan I, endosulfan II, and endosulfan sulfate.
[j] This SCO is the lower of the values for mercury (elemental) or mercury (inorganic salts).

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TABLE 1
Remaining Soil Sample Exceedances
Site Number B-00129-8
1200 E. Main Street
Rochester, NY
Excavation Area 2

Contaminant	CAS Number	Commercial	Protection of Groundwater	Unrestricted Use	West Wall (9')	Bottom Floor Drain	East Wall (9')	Northwest Wall (11')	Bottom North	Northeast Wall (11')	South Wall (10')
Metals					**SW846 6010 (ppm)**						
Arsenic	7440-38-2	16[f]	16[f]	13 [c]	2.65	2.29	1.74	2.25	4.15	2.02	1.72
Barium	7440-39-3	400	820	350 [c]	22.4	26.3	37.90	20.4	29.6	17.6	23.50
Beryllium	7440-43-9	590	47	7.2	< 0.441	< 0.382	< 0.503	< 0.387	< 0.564	< 0.387	< 0.408
Cadmium	7440-43-9	9.3	7.5	2.5 [c]	< 0.411	< 0.382	< 0.503	< 0.387	< 0.564	< 0.387	< 0.409
Chromium		400	19	1 [b]	**5.78**	**4.09**	**6.67**	**5.17**	**8.5**	**5.11**	**5.14**
Copper	7440-50-8	270	1,720	50	11.2	10	9.61	7.91	15.9	8.53	7.67
Lead	7439-92-1	1,000	450	63 [c]	4.58	15.4	2.95	2.02	12.9	2.28	1.99
Manganese	7439-96-5	10,000[d]	2,000[f]	1600 [c]	346	693	390	356	472	306	337
Total Mercury		2.8[j]	0.73	0.18 [c]	< 0.0053	0.0263	< 0.0076	< 0.0055	0.0083	< 0.0066	< 0.0073
Nickel	7440-02-0	310	130	30	7.35	5.62	6.88	6.03	8.67	5.13	5.29
Selenium	7782-49-2	1,500	4[f]	3.9 [c]	0.891	< 0.382	< 0.503	< 0.387	1.23	< 0.387	< 0.408
Silver	7440-22-4	1,500	8.3	2	< 0.881	< 0.762	< 1.00	< 0.775	< 1.13	< 0.774	< 0.817
Zinc	7440-66-6	10,000[d]	2,480	109 [c]	16.8	39.3	23.8	16.8	42.3	15.2	20.40

Contaminant	CAS Number	Commercial	Protection of Groundwater	Unrestricted Use	Excavation Area 2 West Wall (9')	Bottom Floor Drain	East Wall (9')	Northwest Wall (11')	Bottom North	Northeast Wall (11')	South Wall (10')
PCBs					**EPA 8082 (ppm)**						
Aroclor 1016					N/A	ND (.338)	N/A	N/A	N/A	N/A	N/A
Aroclor 1221					N/A	ND (.338)	N/A	N/A	N/A	N/A	N/A
Aroclor 1232					N/A	ND (.338)	N/A	N/A	N/A	N/A	N/A
Aroclor 1242					N/A	ND (.338)	N/A	N/A	N/A	N/A	N/A
Aroclor 1248					N/A	ND (.338)	N/A	N/A	N/A	N/A	N/A
Aroclor 1254					N/A	ND (.338)	N/A	N/A	N/A	N/A	N/A
Aroclor 1260					N/A	ND (.338)	N/A	N/A	N/A	N/A	N/A
Polychlorinated Biphenyls	1336-36-3	1	3.2		N/A	< 1.0	N/A	N/A	N/A	N/A	N/A

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TABLE 1

Remaining Soil Sample Exceedances
Site Number B-00129-8
1200 E. Main Street
Rochester, NY
Excavation Area 2

Contaminant	**CAS Number**	**Commercial**	**Protection of Groundwater**	**Unrestricted Use**	West Wall (9')	Bottom Floor Drain	East Wall (9')	Northwest Wall (11')	Bottom North	Northeast Wall (11')	South Wall (10')
					Excavation Area 2						
Semivolatiles					**EPA 8270C (ppm)**						
Acenaphthene	83-32-9	500[b]	98	20	ND (.319)	ND (.338)	ND (.323)	ND (.324)	ND (.333)	ND (.327)	ND (.320)
Acenapthylene	208-96-8	500[b]	107	100[a]	ND (.319)	ND (.338)	ND (.323)	ND (.324)	ND (.333)	ND (.327)	ND (.320)
Anthracene	120-12-7	500[b]	1,000[c]	100[a]	ND (.319)	ND (.338)	ND (.323)	ND (.324)	ND (.333)	ND (.327)	ND (.320)
Benz(a)anthracene	56-55-3	5.6	1[f]	1[c]	ND (.319)	ND (.338)	ND (.323)	ND (.324)	ND (.333)	ND (.327)	ND (.320)
Benzo(a)pyrene	50-32-8	1[f]	22	1[c]	ND (.319)	ND (.338)	ND (.323)	ND (.324)	ND (.333)	ND (.327)	ND (.320)
Benzo(b)fluoranthene	205-99-2	5.6	1.7	1[c]	ND (.319)	ND (.338)	ND (.323)	ND (.324)	ND (.333)	ND (.327)	ND (.320)
Benzo(g,h,i)perylene	191-24-2	500[b]	1,000[c]	100	ND (.319)	ND (.338)	ND (.323)	ND (.324)	ND (.333)	ND (.327)	ND (.320)
Benzo(k)fluoranthene	207-08-9	56	1.7	0.8[c]	ND (.319)	ND (.338)	ND (.323)	ND (.324)	ND (.333)	ND (.327)	ND (.320)
Chrysene	218-01-9	56	1[f]	1[c]	ND (.319)	ND (.338)	ND (.323)	ND (.324)	ND (.333)	ND (.327)	ND (.320)
Dibenz(a,h)anthracene	53-70-3	560	1,000[c]	0.33[b]	ND (.319)	ND (.338)	ND (.323)	ND (.324)	ND (.333)	ND (.327)	ND (.320)
Fluoranthene	206-44-0	500[b]	1,000[c]	100[a]	ND (.319)	ND (.338)	ND (.323)	ND (.324)	ND (.333)	ND (.327)	ND (.320)
Fluorene	86-73-7	500[b]	386	30	ND (.319)	ND (.338)	ND (.323)	ND (.324)	ND (.333)	ND (.327)	ND (.320)
Indeno(1,2,3-cd)pyrene	193-39-5	5.6	8.2	0.5[c]	ND (.319)	ND (.338)	ND (.323)	ND (.324)	ND (.333)	ND (.327)	ND (.320)
Naphthalene	91-20-3	500[b]	12	12	ND (.319)	ND (.338)	1.370	ND (.324)	ND (.333)	ND (.327)	ND (.320)
Phenanthrene	85-01-8	500[b]	1,000[c]	100	ND (.319)	ND (.338)	ND (.323)	ND (.324)	ND (.333)	ND (.327)	ND (.320)
Pyrene	129-00-0	500[b]	1,000[c]	100	ND (.319)	ND (.338)	ND (.323)	ND (.324)	ND (.333)	ND (.327)	ND (.320)
Total TICs					ND (.798)	ND (.845)	1.550	ND (.810)	ND (.832)	ND (.818)	ND (.320)

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TABLE 1
Remaining Soil Sample Exceedances
Site Number B-00129-8
1200 E. Main Street
Rochester, NY
Excavation Area 2

Contaminant	CAS Number	Commercial	Protection of Groundwater	Unrestricted Use	West Wall (9')	Bottom Floor Drain	East Wall (9')	Northwest Wall (11')	Bottom North	Northeast Wall (11')	South Wall (10')
					Excavation Area 2						
Volatiles					**EPA 8260B (ppm)**						
1,1,1-Trichloroethane	71-55-6	500[b]	0.68	0.68	ND (.00436)	ND (.158)	ND (.375)	ND (.00408)	ND (.00416)	ND (.00448)	ND (.00396)
1,1-Dichloroethane	75-34-3	240	0.27	0.27	ND (.00436)	ND (.158)	ND (.375)	ND (.00408)	ND (.00416)	ND (.00448)	ND (.00396)
1,1-Dichloroethene	75-35-4	500[b]	0.33	0.33	ND (.00436)	ND (.158)	ND (.375)	ND (.00408)	ND (.00416)	ND (.00448)	ND (.00396)
1,2-Dichlorobenzene	95-50-1	500[b]	1.1	1.1	ND (.0109)	ND (.158)	ND (.939)	ND (.0102)	ND (.0104)	ND (.0112)	ND (.00990)
1,2-Dichloroethane	107-06-2	30	0.02f	0.02 [c]	ND (.00436)	ND (.158)	ND (.375)	ND (.00408)	ND (.00416)	ND (.00448)	ND (.00396)
cis-1,2-Dichloroethene	156-59-2	500[b]	25	0.25	ND (.00436)	ND (.158)	ND (.375)	ND (.00408)	ND (.00416)	ND (.00448)	ND (.00396)
trans-1,2-Dichloroethene	156-60-5	500[b]	0.19	0.19	ND (.00436)	ND (.158)	ND (.375)	ND (.00408)	ND (.00416)	ND (.00448)	ND (.00396)
1,3-Dichlorobenzene	541-73-1	280	2.4	2.4	ND (.0109)	ND (.396)	ND (.939)	ND (.0102)	ND (.0104)	ND (.0112)	ND (.00990)
1,4-Dichlorobenzene	106-46-7	130	1.8	1.8	ND (.00436)	ND (.158)	ND (.375)	ND (.00408)	ND (.00416)	ND (.00448)	ND (.00396)
1,4-Dioxane	123-91-1	130	0.1	0.1 [b]	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Acetone	67-64-1	500[b]	0.050	0.05	0.0224	ND (792)	ND (1.880)	.0215	.0351	.0259	.0168
Benzene	71-43-2	44	0.060	0.06	\	ND (.158)	ND (.375)	ND (.00408)	ND (.00416)	ND (.00448)	ND (.00396)
Butylbenzene	104-51-8	500[b]	12	12	ND (.0218)	ND (792)	ND (1.880)	ND (.0204)	ND (.0208)	ND (.0224)	ND (.0198)
Carbon tetrachloride	56-23-5	22	0.76	0.76	ND (.0109)	ND (.396)	ND (.939)	ND (.0102)	ND (.0104)	ND (.0112)	ND (.00990)
Chlorobenzene	108-90-7	500[b]	1.1	1.1	ND (.00436)	ND (.158)	ND (.375)	ND (.00408)	ND (.00416)	ND (.00448)	ND (.00396)
Chloroform	67-66-3	250	0.37	0.37	ND (.00436)	ND (.158)	ND (.375)	ND (.00408)	ND (.00416)	ND (.00448)	ND (.00396)
Ethylbenzene	100-41-4	390	1	1	ND (.00436)	0.725	0.322	ND (.00408)	ND (.00416)	ND (.00448)	ND (.00396)
Hexachlorobenzene	118-74-1	6	3.2	0.33 [b]	N/A	N/A	N/A	N/A	N/A	N/A	N/A
MEK (2-Butanone)	78-93-3	500[b]	0.12		ND (.0218)	ND (792)	ND (1.880)	ND (.0204)	ND (.0208)	ND (.0224)	ND (.0198)
Methyl tert-butyl ether	1634-04-4	500[b]	0.930	0.93	ND (.00436)	ND (.158)	ND (.375)	ND (.00408)	ND (.00416)	ND (.00448)	ND (.00396)
Methylene chloride	75-09-2	500[b]	0.050	0.05	ND (.0109)	ND (.396)	ND (.939)	ND (.0102)	ND (.0104)	ND (.0112)	ND (.00990)
n-Propylbenzene	103-65-1	500[b]	3.9	3.9	ND (.00436)	0.753	0.426	ND (.00408)	ND (.00416)	ND (.00448)	ND (.00396)
sec-Butylbenzene	135-98-8	500[b]	11	11	ND (.00436)	0.306	0.264	ND (.00408)	ND (.00416)	ND (.00448)	ND (.00396)
tert-Butylbenzene	98-06-6	500[b]	5.9	5.9	ND (.0109)	ND (.396)	ND (.939)	ND (.0102)	ND (.0104)	ND (.0112)	ND (.00990)
Tetrachloroethene	127-18-4	150	1,3	1.3	ND (.00436)	ND (.158)	ND (.375)	ND (.00408)	ND (.00416)	ND (.00448)	ND (.00396)

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Contaminant	CAS Number	Commercial	Protection of Groundwater	Unrestricted Use	**TABLE 1** Remaining Soil Sample Exceedances Site Number B-00129-8 1200 E. Main Street Rochester, NY Excavation Area 2						
					West Wall (9')	Bottom Floor Drain	East Wall (9')	Northwest Wall (11')	Bottom North	Northeast Wall (11')	South Wall (10')
					Excavation Area 2						
Volatiles (continued)					**EPA 8260B (ppm)**						
Toluene	108-88-3	500[b]	0.7	0.7	ND (.00436)	ND (.158)	ND (.375)	ND (.00408)	ND (.00416)	ND (.00448)	ND (.00396)
Trichloroethene	79-01-6	200	0.47	0.47	ND (.00436)	ND (.158)	ND (.375)	ND (.00408)	ND (.00416)	ND (.00448)	ND (.00396)
1,2,4-Trimethylbenzene	95-63-6	190	3.6	3.6	ND (.00436)	**4.2**	2.77	ND (.00408)	ND (.00416)	ND (.00448)	ND (.00396)
1,3,5- Trimethylbenzene	108-67-8	190	8.4	8.4	ND (.00436)	0.838	0.582	ND (.00408)	ND (.00416)	ND (.00448)	ND (.00396)
Vinyl chloride	75-01-4	13	0.20	0.02	ND (.00436)	ND (.158)	ND (.375)	ND (.00408)	ND (.00416)	ND (.00448)	ND (.00396)
Xylene (mixed)	1330-20-7	500[b]	1.6	0.26	ND (.00436)	**1.832**	**0.918**	ND (.00408)	ND (.00416)	ND (.00448)	ND (.00396)
Total TICs					ND (.0218)	14.703	4.322	ND (.0204)	ND (.0208)	ND (.0224)	ND (.00396)

All soil cleanup objectives (SCOs) are in parts per million (ppm), NS=Not specified.

Values in **Bold** indicate contaminant concentrations above Unrestricted SCOs.
Shaded values indicate contaminant concentrations above Proteection of Groundwater SCOs.

Footnotes

a The SCOs for residential, restricted-residential and ecological resources use were capped at a maximum value of 100 ppm.
[b] The SCOs for commercial use were capped at a maximum value of 500 ppm.
[c] The SCOs for industrial use and the protection of groundwater were capped at a maximum value of 1000 ppm.
[d] The SCOs for metals were capped at a maximum value of 10,000 ppm.
[e] For constituents where the calculated SCO was lower than the contract required quantitation limit (CRQL), the CRQL is used as the SCO value.
[f] For constituents where the calculated SCO was lower than the rural soil background concentration as determined by the Department and Department of Health rural soil survey, the rural soil background concentration is used as the Track 2 SCO value for this use of the site.
[g] This SCO is derived from data on mixed isomers of BHC.
[h] The SCO for this specific compound (or family of compounds) is considered to be met if the analysis for the total species of this contaminant is below the specific SCO.
[i] This SCO is for the sum of endosulfan I, endosulfan II, and endosulfan sulfate.
[j] This SCO is the lower of the values for mercury (elemental) or mercury (inorganic salts).

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TABLE 1
Remaining Soil Sample Exceedances
Site Number B-00129-8
1200 E. Main Street
Rochester, NY
Excavation Area 3

Contaminant	CAS Number	Commercial	Protection of Groundwater	Unrestricted Use	East Wall (12')	Southeast Wall (12')	Northeast Wall (12')	Southwest Wall (11")	Northwest Wall (11')	West Wall (11')
Volatiles					**EPA 8260B (ppm)**					
1,1,1-Trichloroethane	71-55-6	500[b]	0.68	0.68	ND (.00426)	ND (.00417)	ND (.00421)	ND (.00415)	ND (1.810)	ND (.00412)
1,1-Dichloroethane	75-34-3	240	0.27	0.27	ND (.00426)	ND (.00417)	ND (.00421)	ND (.00415)	ND (1.810)	ND (.00412)
1,1-Dichloroethene	75-35-4	500[b]	0.33	0.33	ND (.00426)	ND (.00417)	ND (.00421)	ND (.00415)	ND (1.810)	ND (.00412)
1,2-Dichlorobenzene	95-50-1	500[b]	1.1	1.1	ND (.0106)	ND (.0104)	ND (.0105)	ND (.0104)	ND (4.530)	ND (.0103)
1,2-Dichloroethane	107-06-2	30	0.02 f	0.02 [c]	ND (.00426)	ND (.00417)	ND (.00421)	ND (.00415)	ND (1.810)	ND (.00412)
cis-1,2-Dichloroethene	156-59-2	500[b]	0.25	0.25	ND (.00426)	ND (.00417)	ND (.00421)	ND (.00415)	ND (1.810)	ND (.00412)
trans-1,2-Dichloroethene	156-60-5	500[b]	0.19	0.19	ND (.00426)	ND (.00417)	ND (.00421)	ND (.00415)	ND (1.810)	ND (.00412)
1,3-Dichlorobenzene	541-73-1	280	2.4	2.4	ND (.0106)	ND (.0104)	ND (.0105)	ND (.0104)	ND (4.530)	ND (.0103)
1,4-Dichlorobenzene	106-46-7	130	1.8	1.8	ND (.00426)	ND (.00417)	ND (.00421)	ND (.00415)	ND (1.810)	ND (.00412)
1,4-Dioxane	123-91-1	130	0.1 [c]	0.1 [b]	N/A	N/A	N/A	N/A	N/A	N/A
Acetone	67-64-1	500[b]	0.05	0.05	**.0655**	ND (.0208)	0.0338	**0.103**	ND (9.060)	**0.118**
Benzene	71-43-2	44	0.06	0.06	ND (.00426)	ND (.00417)	ND (.00421)	ND (.00415)	ND (1.810)	ND (.00412)
Butylbenzene	104-51-8	500[b]	12	12	ND (.0213)	ND (.0208)	ND (.0211)	ND (.0208)	ND (9.060)	ND (.0206)
Carbon tetrachloride	56-23-5	22	0.76	0.76	ND (.0106)	ND (.0104)	ND (.0105)	ND (.0104)	ND (4.530)	ND (.0103)
Chlorobenzene	108-90-7	500[b]	1.1	1.1	ND (.00426)	ND (.00417)	ND (.00421)	ND (.00415)	ND (1.810)	ND (.00412)
Chloroform	67-66-3	250	0.37	0.37	ND (.00426)	ND (.00417)	ND (.00421)	ND (.00415)	ND (1.810)	ND (.00412)
Ethylbenzene	100-41-4	390	1	1	ND (.00426)	0.725	ND (.00421)	ND (.00415)	**19.9**	0.00363
Hexachlorobenzene	118-74-1	6	3.2	0.33 [b]	N/A	N/A	N/A	N/A	N/A	N/A
MEK (2-Butanone)	78-93-3	500[b]	0.12	0.12	ND (.0213)	ND (.0208)	ND (.0211)	ND (.0208)	ND (9.060)	ND (.0206)
Methyl tert-butyl ether	1634-04-4	500[b]	0.93	0.93	ND (.00426)	ND (.00417)	ND (.00421)	ND (.00415)	ND (1.810)	ND (.00412)
Methylene chloride	75-09-2	500[b]	0.05	0.05	ND (.0106)	ND (.0104)	ND (.0105)	ND (.0104)	ND (4.530)	ND (.0103)
n-Propylbenzene	103-65-1	500[b]	3.9	3.9	ND (.00426)	ND (.00417)	ND (.00421)	ND (.00415)	**17.1**	ND (.00412)
sec-Butylbenzene	135-98-8	500[b]	11	11	ND (.00426)	ND (.00417)	ND (.00421)	ND (.00415)	2.17	ND (.00412)
tert-Butylbenzene	98-06-6	500[b]	5.9	5.9	ND (.0106)	ND (.0104)	ND (.0105)	ND (.0104)	ND (4.530)	ND (.0103)
Tetrachloroethene	127-18-4	150	1.3	1.3	ND (.00426)	ND (.00417)	ND (.00421)	ND (.00415)	ND (1.810)	ND (.00412)

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Contaminant	CAS Number	Commercial	Protection of Groundwater	Unrestricted Use	**TABLE 1** Remaining Soil Sample Exceedances Site Number B-00129-8 1200 E. Main Street Rochester, NY Excavation Area 3					
					East Wall (12')	Southeast Wall (12')	Northeast Wall (12')	Southwest Wall (11")	Northwest Wall (11')	West Wall (11')
					Excavation Area 3					
Volatiles (continued)					**EPA 8260B (ppm)**					
Toluene	108-88-3	500[b]	0.7	0.7	ND (.00426)	ND (.00417)	ND (.00421)	ND (.00415)	**9.58**	0.00385
Trichloroethene	79-01-6	200	0.47	0.47	ND (.00426)	ND (.00417)	ND (.00421)	ND (.00415)	ND (1.810)	ND (.00412)
1,2,4-Trimethylbenzene	95-63-6	190	3.6	3.6	0.00262	ND (.00417)	ND (.00421)	0.00236	**81.8**	0.0541
1,3,5- Trimethylbenzene	108-67-8	190	8.4	8.4	ND (.00426)	ND (.00417)	ND (.00421)	ND (.00415)	**30.6**	0.0213
Vinyl chloride	75-01-4	13	0.02	0.02	ND (.00426)	ND (.00417)	ND (.00421)	ND (.00415)	ND (1.810)	ND (.00412)
Xylene (mixed)	1330-20-7	500[b]	1.6	0	0.00325	ND (.00417)	ND (.00421)	0.00275	**108.3**	ND (0.00)
Total TICs			NA		0.02346	0.02137	0.02349	ND (.00415)	21.3	0.02713

All soil cleanup objectives (SCOs) are in parts per million (ppm), NS=Not specified.

Values in **Bold** indicate contaminant concentrations above Unrestricted SCOs.
Shaded values indicate contaminant concentrations above Proteection of Groundwater SCOs.

Footnotes

a The SCOs for residential, restricted-residential and ecological resources use were capped at a maximum value of 100 ppm.

[b] The SCOs for commercial use were capped at a maximum value of 500 ppm.

[c] The SCOs for industrial use and the protection of groundwater were capped at a maximum value of 1000 ppm.

[d] The SCOs for metals were capped at a maximum value of 10,000 ppm.

[e] For constituents where the calculated SCO was lower than the contract required quantitation limit (CRQL), the CRQL is used as the SCO value.

[f] For constituents where the calculated SCO was lower than the rural soil background concentration as determined by the Department and Department of Health rural soil survey, the rural soil background concentration is used as the Track 2 SCO value for this use of the site.

[g] This SCO is derived from data on mixed isomers of BHC.

[h] The SCO for this specific compound (or family of compounds) is considered to be met if the analysis for the total species of this contaminant is below the specific SCO.

[i] This SCO is for the sum of endosulfan I, endosulfan II, and endosulfan sulfate.

[j] This SCO is the lower of the values for mercury (elemental) or mercury (inorganic salts).

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Contaminant	CAS Number	Commercial	Protection of Groundwater	Unrestricted Use	**TABLE 1** Remaining Soil Sample Exceedances Site Number B-00129-8 1200 E. Main Street Rochester, NY Excavation Area 4					
					Southeast Wall (11')	Northeast Corner Wall (11')	North Wall (11')	Northwest Wall (11')	Southwest Wall (11')	South Wall (10')
Metals					**SW846 6010 (ppm)**					
Arsenic		16[f]	16[f]	13 [c]	2.93	N/A	N/A	3.03	1.06	5.8
Barium		400	820	350 [c]	22.9	N/A	N/A	30.1	21.4	66.1
Beryllium		590	47	7.2	< 0.310	N/A	N/A	ND	ND	0.259
Cadmium		9.3	7.5	2.5 [c]	< 0.310	N/A	N/A	ND	ND	< 0.479
Chromium		400	19	1 [b]	**5.28**	N/A	N/A	**6.25**	**5.5**	**9.02**
Copper		270	1,720	50	10.2	N/A	N/A	9.42	14.1	19.40
Lead		1,000	450	63 [c]	2.85	N/A	N/A	6.55	1.94	**83.2**
Manganese		10,000[d]	2,000[f]	1600 [c]	447	N/A	N/A	306	233	331
Total Mercury		2.8[j]	0.73	0.18 [c]	ND	N/A	N/A	ND	ND	0.0955
Nickel		310	130	30	7.31	N/A	N/A	7.09	5.54	9.15
Selenium		1,500	4[f]	3.9 [c]	ND	N/A	N/A	ND	ND	0.971
Silver		1,500	8.3	2	ND	N/A	N/A	ND	ND	ND
Zinc		10,000[d]	2,480	109 [c]	24.7	N/A	N/A	27.0	16.1	107.0

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Contaminant	CAS Number	Commercial	Protection of Groundwater	Unrestricted Use	**TABLE 1** Remaining Soil Sample Exceedances Site Number B-00129-8 1200 E. Main Street Rochester, NY Excavation Area 4					
					Southeast Wall (11')	Northeast Corner Wall (11')	North Wall (11')	Northwest Wall (11')	Southwest Wall (11')	South Wall (10')
Semivolatiles					**EPA 8270C (ppm)**					
Acenaphthene	83-32-9	500	98	20	ND	ND	ND	ND	ND	ND
Acenapthylene	208-96-8	500	107	100 [a]	ND	ND	ND	ND	ND	ND
Anthracene	120-12-7	500	1000	100 [a]	ND	ND	ND	ND	ND	ND
Benz(a)anthracene	56-55-3	5.6	1	1 [c]	ND	ND	ND	ND	ND	ND
Benzo(a)pyrene	50-32-8	1	22	1 [c]	ND	ND	ND	ND	ND	ND
Benzo(b)fluoranthene	205-99-2	5.6	1.7	1 [c]	ND	ND	ND	ND	ND	0.175
Benzo(g,h,i)perylene	191-24-2	500	1000	100	ND	ND	ND	ND	ND	ND
Benzo(k)fluoranthene	207-08-9	56	1.7	0.8 [c]	ND	ND	ND	ND	ND	ND
Chrysene	218-01-9	1	1	1 [c]	ND	ND	ND	ND	ND	ND
Dibenz(a,h)anthracene	53-70-3	0.56	1000	0.33 [b]	ND	ND	ND	ND	ND	ND
Fluoranthene	206-44-0	500	1000	100 [a]	ND	ND	ND	ND	ND	0.256
Fluorene	86-73-7	500	386	30	ND	ND	ND	ND	ND	ND
Indeno(1,2,3-cd)pyrene	193-39-5	5.6	8.2	0.5 [c]	ND	ND	ND	ND	ND	ND
Naphthalene	91-20-3	500	12	12	ND	ND	ND	ND	ND	2.0
Phenanthrene	85-01-8	500	1000	100	ND	ND	ND	ND	ND	0.207
Pyrene	129-00-0	500	1000	100	ND	ND	ND	ND	ND	0.211
Total TICs	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

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Contaminant	CAS Number	Commercial	Protection of Groundwater	Unrestricted Use	**TABLE 1** Remaining Soil Sample Exceedances Site Number B-00129-8 1200 E. Main Street Rochester, NY Excavation Area 4					
					Southeast Wall (11')	Northeast Corner Wall (11')	North Wall (11')	Northwest Wall (11')	Southwest Wall (11')	South Wall (10')
Volatiles					**EPA 8260B (ppm)**					
1,1,1-Trichloroethane	71-55-6	500	0.68	0.68	ND	ND	ND	ND	ND	ND
1,1-Dichloroethane	75-34-3	240	0.27	0.27	ND	ND	ND	ND	ND	ND
1,1-Dichloroethene	75-35-4	500	0.33	0.33	ND	ND	ND	ND	ND	ND
1,2-Dichlorobenzene	95-50-1	500	1.1	1.1	ND	ND	ND	ND	ND	ND
1,2-Dichloroethane	107-06-2	30	0.02 [c]	0.02 [c]	ND	ND	ND	ND	ND	ND
cis-1,2-Dichloroethene	156-59-2	500	0.25	0.25	ND	ND	ND	ND	ND	ND
trans-1,2-Dichloroethene	156-60-5	500	0.19	0.19	ND	ND	ND	ND	ND	ND
1,3-Dichlorobenzene	541-73-1	280	2.4	2.4	ND	ND	ND	ND	ND	ND
1,4-Dichlorobenzene	106-46-7	130	1.8	1.8	ND	ND	ND	ND	ND	ND
1,4-Dioxane	123-91-1	130	0.1 [b]	0.1 [b]	N/A	N/A	N/A	N/A	N/A	N/A
Acetone	67-64-1	500	0.05	0.05	0.0224	0.030	0.0157	ND (22.1)	0.021	ND
Benzene	71-43-2	44	0.06	0.06	ND	ND	ND	ND	ND	ND
Butylbenzene	104-51-8	500	12	12	ND	ND	ND	ND	ND	ND
Carbon tetrachloride	56-23-5	22	0.76	0.76	ND	ND	ND	ND	ND	ND
Chlorobenzene	108-90-7	500	1.1	1.1	ND	ND	ND	ND	ND	ND
Chloroform	67-66-3	250	0.37	0.37	ND	ND	ND	ND	ND	ND
Ethylbenzene	100-41-4	390	1	1	0.0623	ND	ND	ND	ND	**7.94**
Hexachlorobenzene	118-74-1	6	0.33 [b]	0.33 [b]	N/A	N/A	N/A	N/A	N/A	N/A
Methyl ethyl ketone (2-Butanone)	78-93-3	500	0.12	0.12	ND	ND	ND	ND	ND	ND
Methyl tert-butyl ether	1634-04-4	500	0.93	0.93	ND	ND	ND	ND	ND	ND
Methylene chloride	75-09-2	500	0.05	0.05	ND	ND	ND	ND	ND	ND

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TABLE 1

Remaining Soil Sample Exceedances

Site Number B-00129-8

1200 E. Main Street

Rochester, NY

Excavation Area 4

Contaminant	CAS Number	Commercial	Protection of Groundwater	Unrestricted Use	Southeast Wall (11')	Northeast Corner Wall (11')	North Wall (11')	Northwest Wall (11')	Southwest Wall (11')	South Wall (10')
n-Propylbenzene	103-65-1	500	3.9	3.9	0.0954	ND	ND	ND	ND	**6.33**
sec-Butylbenzene	135-98-8	500	11	11	ND	ND	ND	ND	ND	0.786
tert-Butylbenzene	98-06-6	500	5.9	5.9	ND	ND	ND	ND	ND	ND
Tetrachloroethene	127-18-4	150	1.3	1.3	ND	ND	ND	ND	ND	ND
Volatiles (continued)					**EPA 8260B (ppm)**					
Toluene	108-88-3	500	0.7	0.7	ND	ND	ND	ND	ND	**6.75**
Trichloroethene	79-01-6	200	0.47	0.47	ND	ND	ND	ND	ND	**ND**
1,2,4-Trimethylbenzene	95-63-6	190	3.6	3.6	0.795	ND	ND	ND	ND	**46.3**
1,3,5- Trimethylbenzene	108-67-8	190	8.4	8.4	0.243	0.00235	ND	ND	ND	**16.5**
Vinyl chloride	75-01-4	13	0.02	0.02	ND	ND	ND	ND	ND	**ND**
Xylene (mixed)	1330-20-7	500	1.6	0.26	0.179	ND	ND	ND	ND	**69.9**
Total TICs			N/A		0.0995	ND	ND	ND	ND	**10.18**

All soil cleanup objectives (SCOs) are in parts per million (ppm), NS=Not specified.

Values in **Bold** indicate contaminant concentrations above Unrestricted SCOs.

Shaded values indicate contaminant concentrations above Proteection of Groundwater SCOs.

Footnotes

a The SCOs for residential, restricted-residential and ecological resources use were capped at a maximum value of 100 ppm.

[b] The SCOs for commercial use were capped at a maximum value of 500 ppm.

[c] The SCOs for industrial use and the protection of groundwater were capped at a maximum value of 1000 ppm.

[d] The SCOs for metals were capped at a maximum value of 10,000 ppm.

[e] For constituents where the calculated SCO was lower than the contract required quantitation limit (CRQL), the CRQL is used as the SCO value.

[f] For constituents where the calculated SCO was lower than the rural soil background concentration as determined by the Department and Department of Health rural soil survey, the rural soil background concentration is used as the Track 2 SCO value for this use of the site.

[g] This SCO is derived from data on mixed isomers of BHC.

[h] The SCO for this specific compound (or family of compounds) is considered to be met if the analysis for the total species of this contaminant is below the specific SCO.

[i] This SCO is for the sum of endosulfan I, endosulfan II, and endosulfan sulfate.

[j] This SCO is the lower of the values for mercury (elemental) or mercury (inorganic salts).

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TABLE 1
Remaining Soil Sample Exceedances
Site Number B-00129-8
1200 E. Main Street
Rochester, NY
March 2016 Source Removal Excavation Area

Contaminant	CAS Number	Commercial	Protection of Groundwater	Unrestricted	NE-SW-1 (8')	E-SW-2 (8')	SE-SW-3 (8')	S-SW-5 (8')	SW-SW-6 (8')	SW-SW-7 (8')	NW-SW-8 (8')	N-SW-9 (8')	BOT-1 (16')	BOT-2 (8')
Metals					**SW846 6010 (ppm)**									
Arsenic		16[f]	16[f]	13 [c]	< 3.24	2.02	3.04	2.43	2.13	2.57	4.92	2.85	2.29	2.71
Barium		400	820	350 [c]	33.2	20.7	28.40	33.6	28.1	30.3	52.8	24.7	31.8	35.0
Beryllium		590	47	7.2	0.21	0.16	0.234	0.194	0.162	0.323	0.410	0.25	0.201	0.244
Cadmium		9.3	7.5	2.5 [c]	< 0.270	< 0.261	< 0.278	< 0.256	< 0.268	< 0.266	0.198	< 0.280	0.148	< 0.274
Chromium		400	19	1 [b]	6.01	5.79	8.78	5.6	5.77	9.97	10.7	8.24	7.68	7.85
Copper		270	1,720	50	10.2	9.03	16.60	13.40	8.8	8.0	15.5	11.8	12.4	16.40
Lead		1,000	450	63 [c]	5.13	3.40	12.00	4.93	4.92	10.9	20	7.28	29.3	29.0
Manganese		10,000[d]	2,000[f]	1600 [c]	342	376	275	322	273	350	1180	700	364	260
Total Mercury		2.8[j]	0.73	0.18 [c]	< 0.0053	0.0187	0.0258	0.00631	0.00745	0.047	0.0609	0.0188	0.0117	0.108
Nickel		310	130	30	6.97	6.06	10.30	7.47	6.19	9.68	9.74	8.88	8.44	7.56
Selenium		1,500	4[f]	3.9 [c]	0.416	0.366	< 0.556	0.256	0.558	< 0.533	< 0.554	< 0.561	0.91	< 0.548
Silver		1,500	8.3	2	< 0.541	< 0.522	< 0.556	< 0.512	< 0.537	< 0.533	< 0.554	< 0.561	< 0.538	< 0.548
Zinc		10,000[d]	2,480	109 [c]	38.2	33.9	55.8	30.1	23.7	32.4	54.0	29.5	36.9	55.40
Semivolatiles					**EPA 8270C (ppm)**									
Acenaphthene	83-32-9	500[b]	98	20	N/A	N/A	N/A	N/A	N/A	N/A	ND	N/A	N/A	N/A
Acenapthylene	208-96-8	500[b]	107	100 [a]	N/A	N/A	N/A	N/A	N/A	N/A	ND	N/A	N/A	N/A
Anthracene	120-12-7	500[b]	1000	100 [a]	N/A	N/A	N/A	N/A	N/A	N/A	ND	N/A	N/A	N/A
Benz(a)anthracene	56-55-3	5.6	1	1 [c]	N/A	N/A	N/A	N/A	N/A	N/A	0.232	N/A	N/A	N/A
Benzo(a)pyrene	50-32-8	1	22	1 [c]	N/A	N/A	N/A	N/A	N/A	N/A	0.209	N/A	N/A	N/A
Benzo(b)fluoranthene	205-99-2	5.6	1.7	1 [c]	N/A	N/A	N/A	N/A	N/A	N/A	0.223	N/A	N/A	N/A
Benzo(g,h,i)perylene	191-24-2	500[b]	1,000[c]	100	N/A	N/A	N/A	N/A	N/A	N/A	ND	N/A	N/A	N/A
Benzo(k)fluoranthene	207-08-9	56	1.7	0.8 [c]	N/A	N/A	N/A	N/A	N/A	N/A	0.179	N/A	N/A	N/A
Chrysene	218-01-9	56	1	1 [c]	N/A	N/A	N/A	N/A	N/A	N/A	0.224	N/A	N/A	N/A
Dibenz(a,h)anthracene	53-70-3	5.6	1,000[c]	0.33 [b]	N/A	N/A	N/A	N/A	N/A	N/A	ND	N/A	N/A	N/A
Fluoranthene	206-44-0	500[b]	1,000[c]	100 [a]	N/A	N/A	N/A	N/A	N/A	N/A	0.484	N/A	N/A	N/A
Fluorene	86-73-7	500[b]	386	30	N/A	N/A	N/A	N/A	N/A	N/A	ND	N/A	N/A	N/A
Indeno(1,2,3-cd)pyrene	193-39-5	5.6	8.2	0.5 [c]	N/A	N/A	N/A	N/A	N/A	N/A	ND	N/A	N/A	N/A
Naphthalene	91-20-3	500[b]	12	12	N/A	N/A	N/A	N/A	N/A	N/A	ND	N/A	N/A	N/A
Phenanthrene	85-01-8	500[b]	1,000[c]	100	N/A	N/A	N/A	N/A	N/A	N/A	0.295	N/A	N/A	N/A
Pyrene	129-00-0	500[b]	1,000[c]	100	N/A	N/A	N/A	N/A	N/A	N/A	0.378	N/A	N/A	N/A

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TABLE 1

Remaining Soil Sample Exceedances

Site Number B-00129-8

1200 E. Main Street

Rochester, NY

March 2016 Source Removal Excavation Area

Contaminant	CAS Number	Commercial	Protection of Groundwater	Unrestricted	NE-SW-1 (8')	E-SW-2 (8')	SE-SW-3 (8')	S-SW-5 (8')	SW-SW-6 (8')	SW-SW-7 (8')	NW-SW-8 (8')	N-SW-9 (8')	BOT-1 (16')	BOT-2 (8')
					Excavation 03/29/2016									
Volatiles					EPA 8260B (ppm)									
1,1,1-Trichloroethane	71-55-6	500[b]	0.68	0.68	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1-Dichloroethane	75-34-3	240	0.27	0.27	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1-Dichloroethene	75-35-4	500[b]	0.33	0.33	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichlorobenzene	95-50-1	500[b]	1.1	1.1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichloroethane	107-06-2	30	0.020	0.02[c]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
cis-1,2-Dichloroethene	156-59-2	500[b]	0.25	0.25	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
trans-1,2-Dichloroethene	156-60-5	500[b]	0.19	0.19	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,3-Dichlorobenzene	541-73-1	280	2.4	2.4	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,4-Dichlorobenzene	106-46-7	130	1.8	1.8	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,4-Dioxane	123-91-1	130	0.10	0.1[b]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Acetone	67-64-1	500[b]	0.05	0.05	0.0122	ND	0.0365	0.0238	0.0231	**0.137**	ND	ND	0.0106	ND
Benzene	71-43-2	44	0.06	0.06	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Butylbenzene	104-51-8	500[b]	12	12	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Carbon tetrachloride	56-23-5	22	0.76	0.76	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chlorobenzene	108-90-7	500[b]	1.1	1.1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chloroform	67-66-3	250	0.37	0.37	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Ethylbenzene	100-41-4	390	1	1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Hexachlorobenzene	118-74-1	6.0	3.2	0.33[b]	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
MEK (2-Butanone)	78-93-3	500[b]	0.12	0.12	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Methyl tert-butyl ether	1634-04-4	500[b]	0.93	0.93	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Methylene chloride	75-09-2	500[b]	0.05	0.05	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
n-Propylbenzene	103-65-1	500[b]	3.9	3.9	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
sec-Butylbenzene	135-98-8	500[b]	11	11	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
tert-Butylbenzene	98-06-6	500[b]	5.9	5.9	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

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Contaminant	CAS Number	Commercial	Protection of Groundwater	Unrestricted	NE-SW-1 (8')	E-SW-2 (8')	SE-SW-3 (8')	S-SW-5 (8')	SW-SW-6 (8')	SW-SW-7 (8')	NW-SW-8 (8')	N-SW-9 (8')	BOT-1 (16')	BOT-2 (8')
Tetrachloroethene	127-18-4	150	1.3	1.3										
Toluene	108-88-3	500[b]	0.7	0.7	ND	ND	0.00262	ND	ND	0.00672	0.0030	ND	ND	ND
Trichloroethene	79-01-6	200	0.47	0.47	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2,4-Trimethylbenzene	95-63-6	190	3.6	3.6	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,3,5- Trimethylbenzene	108-67-8	190	8.4	8.4	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.0158
Vinyl chloride	75-01-4	13	0.02	0.02	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Xylene (mixed)	1330-20-7	500[b]	1.6	0.26	ND	ND	0.00286	ND	ND	0.00574	0.00237	ND	ND	ND

TABLE 1
Remaining Soil Sample Exceedances
Site Number B-00129-8
1200 E. Main Street
Rochester, NY
March 2016 Source Removal Excavation Area

Notes:

All soil cleanup objectives (SCOs) are in parts per million (ppm), NS=Not specified. See Technical Support Document (TSD).

Footnotes

Shaded values indicate contaminant concentrations above Proteection of Groundwater SCOs.

Values in **Bold** indicate contaminant concentrations above Unrestricted SCOs.

a The SCOs for residential, restricted-residential and ecological resources use were capped at a maximum value of 100 ppm.

[b] The SCOs for commercial use were capped at a maximum value of 500 ppm.

[c] The SCOs for industrial use and the protection of groundwater were capped at a maximum value of 1000 ppm.

[d] The SCOs for metals were capped at a maximum value of 10,000 ppm.

[e] For constituents where the calculated SCO was lower than the contract required quantitation limit (CRQL), the CRQL is used as the SCO value.

[f] For constituents where the calculated SCO was lower than the rural soil background concentration as determined by the Department and Department of Health rural soil survey, the rural soil background concentration is used as the Track 2 SCO value for this use of the site.

[g] This SCO is derived from data on mixed isomers of BHC.

[h] The SCO for this specific compound (or family of compounds) is considered to be met if the analysis for the total species of this contaminant is below the specific SCO.

[i] This SCO is for the sum of endosulfan I, endosulfan II, and endosulfan sulfate.

[j] This SCO is the lower of the values for mercury (elemental) or mercury (inorganic salts).

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TABLE 2
Groundwater Sample Results and Remaining Exceedances
EPA Method 8260 (mg/L)

1200 East Main Street
City of Rochester
Monroe County, NY

Sample ID	**NYSDEC 703.5 Groundwater Standards**	MW-1	MW-2	MW-4	MW-7R	MW-9R	MW-11	DUP	MW-15R	MW-16
Sampling Date		8/23/2016	8/24/2016	8/24/2016	8/24/2016	8/23/2016	8/23/2016	8/23/2016	8/23/2016	8/23/2016
COMPOUND										
1,1,1-Trichloroethane	5	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1,2,2-Tetrachloroethane	5	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1,2-Trichloroethane	5	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1,2-Trichlorotrifluoroethane	5	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1-Dichloroethane	5	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1-Dichloroethene	5	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2,3-Trichlorobenzene	5	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2,4-Trichlorobenzene	5	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dibromo-3-Chloropropane	-	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dibromoethane	0.6	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichlorobenzene	3	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichloroethane	5	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichloropropane	5	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,3-Dichlorobenzene	3	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,4-Dichlorobenzene	3	ND	ND	ND	ND	ND	ND	ND	ND	ND
2-Butanone	50	ND	ND	ND	ND	ND	ND	ND	ND	ND
2-Hexanone	50	ND	ND	ND	ND	ND	ND	ND	ND	ND
4-Methyl-2-Pentanone	5	ND	ND	ND	ND	ND	ND	ND	ND	ND
Acetone	50	ND	18.3	ND	ND	ND	ND	ND	ND	ND
Benzene	0.7	**0.96**	ND	**26.9**	**44**	**1.4**	**7.7**	**8**	**0.71**	ND
Bromochloromethane	50	ND	ND	ND	ND	ND	ND	ND	ND	ND
Bromodichloromethane	50	ND	ND	ND	ND	ND	ND	ND	ND	ND
Bromoform	50	ND	ND	ND	ND	ND	ND	ND	ND	ND
Bromomethane	5	ND	ND	ND	ND	ND	ND	ND	ND	ND
Carbon Disulfide	5	ND	ND	ND	0.96	ND	ND	ND	ND	ND
Carbon Tetrachloride	5	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chlorobenzene	5	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chloroethane	5	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chloroform	7	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chloromethane	5	ND	ND	ND	ND	ND	ND	ND	ND	ND
cis-1,2-Dichloroethene	5	ND	ND	ND	ND	ND	ND	ND	ND	ND
cis-1,3-Dichloropropene	5	ND	ND	ND	ND	ND	ND	ND	ND	ND
Cyclohexane	-	16.9	ND	52	6.8	7.6	ND	ND	ND	ND
Dibromochloromethane	50	ND	ND	ND	ND	ND	ND	ND	ND	ND
Dichlorodifluoromethane	-	ND	ND	ND	ND	ND	ND	ND	ND	ND
Ethyl Benzene	5	4	ND	**110**	**44**	**37.2**	1.3	1.3	0.71	ND
Isopropylbenzene	-	1.6	ND	8.4	2.3	2.4	2.6	2.6	ND	ND
m/p-Xylenes	5	**11.7**	ND	**130**	**7.7**	**190**	**7.4**	**6.9**	3.9	ND
Methyl Acetate	-	ND	ND	ND	ND	ND	ND	ND	ND	ND
Methyl tert-butyl Ether	10	ND	2.7	ND	ND	ND	ND	ND	ND	ND
Methylcyclohexane	-	3.8	ND	31	1.3	2.3	ND	ND	0.7	ND
Methylene Chloride	-	ND	ND	ND	ND	ND	ND	ND	ND	ND
o-Xylene	5	3	ND	**14.7**	2.8	**29**	1.1	0.99	0.7	ND
Styrene	5	ND	ND	ND	ND	ND	ND	ND	ND	ND
t-1,3-Dichloropropene	5	ND	ND	ND	ND	ND	ND	ND	ND	ND
Tetrachloroethene	5	ND	ND	ND	ND	ND	ND	ND	ND	ND
Toluene	5	0.56	ND	2.4	0.86	3.2	0.83	0.81	ND	ND
Total Xylenes	5	**14.7**	ND	**144**	**10.5**	**219**	**8.5**	**7.89**	**4.6**	ND
trans-1,2-Dichloroethene	5	ND	ND	ND	ND	ND	ND	ND	ND	ND
Trichloroethene	5	ND	ND	ND	ND	ND	ND	ND	ND	ND
Trichlorofluoromethane	-	ND	ND	ND	ND	ND	ND	ND	ND	ND
Vinyl Chloride	2	ND	ND	ND	ND	ND	ND	ND	ND	ND
Total VOCs	N/A	42.52	21.0	374.7	110.72	273.1	20.93	20.6	6.72	ND
Total TICs	N/A	154.51	ND	706.2	276.52	423.95	146.08	129.36	18.0	ND
Total Concentration	N/A	197.03	21.0	1,080.9	387.24	697.05	167.01	149.96	24.72	ND

NOTES:
DUP = Duplicate
ND = Not Detected
TICs = Tentative Identified Compounds

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TABLE 2.
Groundwater Sample Results and Remaining Exceedances
EPA Method 8270D (mg/L)

1200 East Main Street
City of Rochester
Monroe County, NY

Sample ID	**NYSDEC 703.5 Groundwater Standards**	MW-1	MW-2	MW-4	MW-7R	MW-9R	MW-11	DUP	MW-15R	MW-16
Sampling Date		8/23/2016	8/24/2016	8/24/2016	8/24/2016	8/23/2016	8/23/2016	8/23/2016	8/23/2016	8/23/2016
COMPOUND										
1,1-Biphenyl	5	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2,4,5-Tetrachlorobenzene	-	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,4-Dioxane	5	ND	ND	ND	ND	ND	ND	ND	ND	ND
2,2-oxybis(1-Chloropropane)	-	ND	ND	ND	ND	ND	ND	ND	ND	ND
2,3,4,6-Tetrachlorophenol	-	ND	ND	ND	ND	ND	ND	ND	ND	ND
2,4,5-Trichlorophenol	1	ND	ND	ND	ND	ND	ND	ND	ND	ND
2,4,6-Trichlorophenol	1	ND	ND	ND	ND	ND	ND	ND	ND	ND
2,4-Dichlorophenol	1	ND	ND	ND	ND	ND	ND	ND	ND	ND
2,4-Dimethylphenol	1	ND	ND	ND	ND	**12.2**	ND	ND	ND	ND
2,4-Dinitrophenol	1	ND	ND	ND	ND	ND	ND	ND	ND	ND
2,4-Dinitrotoluene	5	ND	ND	ND	ND	ND	ND	ND	ND	ND
2,6-Dinitrotoluene	5	ND	ND	ND	ND	ND	ND	ND	ND	ND
2-Chloronaphthalene	10	ND	ND	ND	ND	ND	ND	ND	ND	ND
2-Chlorophenol	1	ND	ND	ND	ND	ND	ND	ND	ND	ND
2-Methylnaphthalene	-	ND	ND	42.3	ND	8.1	ND	ND	ND	ND
2-Methylphenol	1	ND	ND	ND	ND	ND	ND	ND	ND	ND
2-Nitroaniline	5	ND	ND	ND	ND	ND	ND	ND	ND	ND
2-Nitrophenol	1	ND	ND	ND	ND	ND	ND	ND	ND	ND
3,3-Dichlorobenzidine	5	ND	ND	ND	ND	ND	ND	ND	ND	ND
3+4-Methylphenols	-	ND	ND	ND	ND	2.5	ND	ND	ND	ND
3-Nitroaniline	5	ND	ND	ND	ND	ND	ND	ND	ND	ND
4,6-Dinitro-2-methylphenol	1	ND	ND	ND	ND	ND	ND	ND	ND	ND
4-Bromophenyl-phenylether	-	ND	ND	ND	ND	ND	ND	ND	ND	ND
4-Chloro-3-methylphenol	-	ND	ND	ND	ND	ND	ND	ND	ND	ND
4-Chloroaniline	5	ND	ND	ND	ND	ND	ND	ND	ND	ND
4-Chlorophenyl-phenylether	-	ND	ND	ND	ND	ND	ND	ND	ND	ND
4-Nitroaniline	5	ND	ND	ND	ND	ND	ND	ND	ND	ND
4-Nitrophenol	1	ND	ND	ND	ND	ND	ND	ND	ND	ND
Acenaphthene	20	ND	ND	ND	ND	ND	ND	ND	ND	ND
Acenaphthylene	-	ND	ND	ND	ND	ND	ND	ND	ND	ND
Acetophenone	-	ND	ND	ND	ND	ND	ND	ND	ND	ND
Anthracene	50	ND	ND	ND	ND	ND	ND	ND	ND	ND
Atrazine	7.5	ND	ND	ND	ND	ND	ND	ND	ND	ND
Benzaldehyde	-	ND	ND	ND	ND	ND	ND	ND	ND	ND
Benzo(a)anthracene	0.002	ND	ND	ND	ND	ND	ND	ND	ND	ND
Benzo(a)pyrene	-	ND	ND	ND	ND	ND	ND	ND	ND	ND
Benzo(b)fluoranthene	0.002	ND	ND	ND	ND	ND	ND	ND	ND	ND
Benzo(g,h,i)perylene	-	ND	ND	ND	ND	ND	ND	ND	ND	ND
Benzo(k)fluoranthene	0.002	ND	ND	ND	ND	ND	ND	ND	ND	ND
bis(2-Chloroethoxy)methane	5	ND	ND	ND	ND	ND	ND	ND	ND	ND
bis(2-Chloroethyl)ether	1	ND	ND	ND	ND	ND	ND	ND	ND	ND
Bis(2-ethylhexyl)phthalate	5	ND	ND	**5.2**	ND	ND	ND	ND	ND	ND
Butylbenzylphthalate	50	ND	ND	ND	ND	ND	ND	ND	ND	ND
Caprolactam	-	ND	ND	ND	ND	ND	ND	ND	ND	ND
Carbazole	-	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chrysene	0.002	ND	ND	ND	ND	ND	ND	ND	ND	ND
Dibenzo(a,h)anthracene	-	ND	ND	ND	ND	ND	ND	ND	ND	ND
Dibenzofuran	-	ND	ND	ND	ND	ND	ND	ND	ND	ND
Diethylphthalate	50	ND	ND	ND	ND	ND	ND	ND	ND	ND
Dimethylphthalate	50	3.1	12.3	23.5	3.6	4.9	ND	4.7	3.0	3.8

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TABLE 2.
Groundwater Sample Results and Remaining Exceedances
EPA Method 8270D (mg/L)

1200 East Main Street
City of Rochester
Monroe County, NY

Sample ID	**NYSDEC 703.5 Groundwater Standards**	MW-1	MW-2	MW-4	MW-7R	MW-9R	MW-11	DUP	MW-15R	MW-16
Sampling Date		8/23/2016	8/24/2016	8/24/2016	8/24/2016	8/23/2016	8/23/2016	8/23/2016	8/23/2016	8/23/2016
COMPOUND										
Di-n-butylphthalate	-	ND	ND	ND	ND	ND	ND	ND	ND	ND
Di-n-octyl phthalate	50	ND	ND	ND	ND	ND	ND	ND	ND	ND
Fluoranthene	50	ND	ND	ND	ND	ND	ND	ND	ND	ND
Fluorene	50	ND	ND	ND	ND	ND	ND	ND	ND	ND
Hexachlorobenzene	0.04	ND	ND	ND	ND	ND	ND	ND	ND	ND
Hexachlorobutadiene	0.5	ND	ND	ND	ND	ND	ND	ND	ND	ND
Hexachlorocyclopentadiene	5	ND	ND	ND	ND	ND	ND	ND	ND	ND
Hexachloroethane	5	ND	ND	ND	ND	ND	ND	ND	ND	ND
Indeno(1,2,3-cd)pyrene	0.002	ND	ND	ND	ND	ND	ND	ND	ND	ND
Isophorone	5	ND	ND	ND	ND	ND	ND	ND	ND	ND
Naphthalene	10	ND	ND	**51.1**	ND	**15.2**	ND	ND	ND	ND
Nitrobenzene	0.4	ND	ND	ND	ND	ND	ND	ND	ND	ND
n-Nitroso-di-n-propylamine	50	ND	ND	ND	ND	ND	ND	ND	ND	ND
n-Nitrosodiphenylamine	50	ND	ND	ND	ND	ND	ND	ND	ND	ND
Pentachlorophenol	5	ND	ND	ND	ND	ND	ND	ND	ND	ND
Phenanthrene	5	ND	ND	ND	ND	ND	ND	ND	ND	ND
Phenol	1	ND	ND	ND	ND	ND	ND	ND	ND	ND
Pyrene	5	ND	ND	ND	ND	ND	ND	ND	ND	ND
Total SVOCs		3.1	12.3	122.1	3.6	42.9	ND	4.7	3.0	3.8
Total TICs		132.4	197.7	785.6	256.2	544.1	138.6	97.9	166.6	91.4
Total Concentration		135.5	210.0	907.7	259.8	587.0	138.6	102.6	169.6	95.2

NOTES:
DUP = Duplicate
ND = Not Detected
TICs = Tentative Identified Compounds

Table 3
Groundwater Elevation Measurements
Site B-00129-8
1200 East Main Street
Rochester, New York

Monitoring Well Number	Date Gauged	Total Depth of Well (ft.)	Monitoring Well Diameter	Top of Casing Reference Elevation (ft.)	Depth to Product (ft.)	Depth to Water	Product Thickness (ft.)	Adjusted Groundwater Depth (ft.)	Calculated Groundwater Elevation (ft.)
MW-1	11/8/2016	24.08	2.00	495.35	None	19.58	0.00	19.58	475.77
MW-2	11/8/2016	24.19	2.00	496.02	None	22.34	0.00	22.34	473.68
MW-3	11/8/2016	21.79	2.00	492.02	None	16.30	0.00	16.30	475.72
MW-4	11/8/2016	21.12	2.00	492.00	None	17.19	0.00	17.19	474.81
MW-5	11/8/2016	24.51	2.00	492.70	None	NA	0.00	NA	NA
MW-6	11/8/2016	23.59	2.00	492.65	None	NA	0.00	NA	NA
MW-7R	11/8/2016	22.50	2.00	491.97	None	17.27	0.00	17.27	474.70
MW-8	11/8/2016	22.20	2.00	494.91	None	20.98	0.00	20.98	473.93
MW-9R	11/8/2016	23.47	2.00	492.41	None	13.13	0.00	13.13	479.28
MW-10	11/8/2016	26.49	2.00	496.14	None	NA	0.00	NA	NA
MW-11	11/8/2016	28.80	2.00	495.95	None	19.32	0.00	19.32	476.63
MW-12	11/8/2016	22.03	2.00	491.17	None	NA	0.00	NA	NA
MW-13	11/8/2016	22.80	2.00	490.53	None	NA	0.00	NA	NA
MW-14	11/8/2016	19.70	2.00	489.48	None	NA	0.00	NA	NA
MW-15R	11/8/2016	23.16	2.00	492.54	None	17.50	0.00	17.50	475.04
MW-16	11/8/2016	23.40	2.00	492.50	None	17.85	0.00	17.85	NA

Table 4
Monitoring Well Construction Details
Site B-00129-8
1200 East Main Street
Rochester, New York

Well Number	Date of Well Installation	Well Material	Top of Well Casing Elevation, Feet, Mean Sea Level	Approximate Depth to Groundwater	Well Screen Interval 0.010 inch slot	Length of Well Screen	Depth to Top of Bedrock
MW-1	July 6, 2000	2" PVC	495.35	15.8	7.5 - 22.5	15.0	15.5
MW-2	July 7, 2000	2" PVC	496.02	13.4	9.0-24.0	15.0	12.0
MW-3	July 10, 2000	2" PVC	492.02	15.8	8.0-23.0	15.0	13.0
MW-4	July 12, 2000	2" PVC	492.00	14.1	6.5-21.5	15.0	11.5
MW-5	Aug. 1, 2003	2" PVC	492.70	14.7	13.0-25.0	12.0	15.0
MW-6	July 30, 2003	2" PVC	492.65	12.5	12.0-24.0	12.0	14.0
MW-7R	September 28, 2016	2" PVC	491.70	17.3	8.0-23.0	18.0	13.0
MW-8	July 25, 2003	2" PVC	494.91	15.8	8.0-20.0	12.0	9.8
MW-9R	September 29, 2016	2" PVC	492.21	13.0	9.0-23.3	15.0	14.0
MW-10	July 22, 2003	2" PVC	496.19	15.2	11.0-24.0	13.0	14.0
MW-11	July 23, 2003	2" PVC	495.95	14.6	12.9-26.5	13.6	16.4
MW-12	July 29, 2003	2" PVC	491.17	16.2	10.5-22.5	12.0	12.5
MW-13	May 26, 2004	2" PVC	490.63	10.1	8.3-23.3	15.0	13.3
MW-14	May 27, 2004	2" PVC	489.48	10.0	4.7-19.7	15.0	10.0
MW-15R	September 7, 2016	2" PVC	489.48	17.5	9.0-24.0	15.0	14.0
MW-16	May 27, 2004	2" PVC	489.48	10.0	4.7-19.7	15.0	10.0

*All measurements are in feet, see Appendix 10 in the Site management plan for well logs.

Table 5
Routine Maintenance Summary and Schedule
Site B-00129-8
1200 East Main Street
Rochester, New York

Event / Activities	Scheduled Events	Routine Maintenance Summary
Routine O&M and Optimization of the O2 and SVE Trench System	Monthly	• Inspect compressor and oxygen generator • Check air filter and change air filter Kaeser Compressor • Maintain drive belts on Kaeser Compressor • Change cooler filter mat on Kaeser Compressor • Check oxygen purity on full tank • General inspection of trailer/structure • HVAC units for proper operation • Check and adjust flow meters • Check pressures on oxygen generator • Check the cooling oil level on Kaeser Compressor • Check the cooler filter mat on Kaeser Compressor • Inspect automatic drain on oxygen generator • Inspect wall filters, water separator and particulate filter
Operating Parameters	Twice Monthly	• General inspection of trailer/structure • HVAC units for proper operation • Check and adjust flow meters • Check pressures on oxygen generator • Check the cooling oil level on Kaeser Compressor • Check the cooler filter mat on Kaeser Compressor • Inspect automatic drain on oxygen generator • Inspect wall filters, water separator and particulate filter

Table 5 (Cont'd)
Routine Maintenance Summary and Schedule
Site B-00129-8
1200 East Main Street
Rochester, New York

Event / Activities	Scheduled Events	Routine Maintenance Summary
Develop Injection Points	Once	• Air lift development or hand bailer
Equipment Inspection and Maintenance	Quarterly	• Check oil filter on Kaeser Compressor • Check cooling oil on Kaeser Compressor (assumes a synthetic lubricant (oil) is being used in the compressor • Check all electrical connections are tight on Kaeser Compressor • Check performance of automatic valves and actuators on oxygen generator • Clean and lubricate feed air regulator on oxygen generator • Clean bowls and replace both particulate and coalescing filters on oxygen generator • Replace wall filters (KRO and KPF filters)
Equipment Inspection and Maintenance	Annual	• Change oil separator cartridge on Kaeser Compressor • Check the pressure relief valve on Kaeser Compressor • Replace the drive belt on Kaeser Compressor • Replace filter on air dryer

Table 6
Remedial System Sampling Requirements
Site B-00129-8
1200 East Main Street
Rochester, New York

Oxygen Injection System and Soil Vapor Extraction	System Equipment	Anticipated Date(s) of Initiation	Anticipated Date of Completion	Type of Test Required
Oxygen Injection System	Oxygen Delivery System	2/4/17	2/8/19	• Leak testing of system connections • Oxygen purity measured in the field
Oxygen Injection System	O2 Injection Points (wells)	12/14/16	12/14/16	• Development of oxygen injection points (IP-1 through IP-9) • Turbidity test of groundwater from oxygen injection points (IP-1 through IP-9)
Oxygen Injection System	O2 Injection Points (wells)	1/25/17	3/22/19	• Test flow rates of oxygen in each injection point • Test pressure of oxygen in each injection point
Oxygen Injection System	On-site Monitoring Wells and Oxygen Injection Points	3/27/17	6/14/17	• Baseline groundwater sampling data from 11 monitoring wells and oxygen injection points (IP-1 through IP-9) • Dissolved Oxygen (DO) • Oxidation-Reduction Potential (ORP)

Table 7
Reporting Summary and Schedule
Site B-00129-8
1200 East Main Street
Rochester, New York

Report	Scheduled Events	Report Summary
Baseline Groundwater Data Report	Pre-Activation of Oxygen Injection System	• Summary of groundwater sampling event of on-site wells, off-site wells and oxygen injection wells. Includes all field and laboratory parameters to evaluate the groundwater quality prior to operation of the oxygen injection system with soil vapor extraction. • pH (field) • Dissolved Oxygen (field) • Oxygen Reduction Potential (field) • Biological and Chemical Oxygen Demand (laboratory) • Presence of LNAPL • Static water level • Groundwater potentiometric contour map
Quarterly Groundwater Monitoring Event	Quarterly (8 Quarterly Events)	• Summary of groundwater sampling event of 11 on-site monitoring wells. • pH (field) • Dissolved Oxygen (field) • Oxygen Reduction Potential (field) • Biological and Chemical Oxygen Demand (laboratory) • Presence of LNAPL • Static water level • Groundwater potentiometric contour map
Periodic Review Report (PRR)	Annual (1st PRR Due 18 Months After CoC Issuance)	• PRR documents and provides recommendations for compliance with the SMP and protectiveness of the remedy. PRR also presents the remedial progress

FIGURES

CITY OF ROCHESTER

1200 East Main St.
Rochester, NY
14614

SITE MANAGEMENT PLAN NYSDEC SITE NUMBER B-00129-8

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REVISIONS

NO.	DATE	DESCRIPTION	REV.	CK'D

0 100 FT

SCALE BAR
1" = 100'

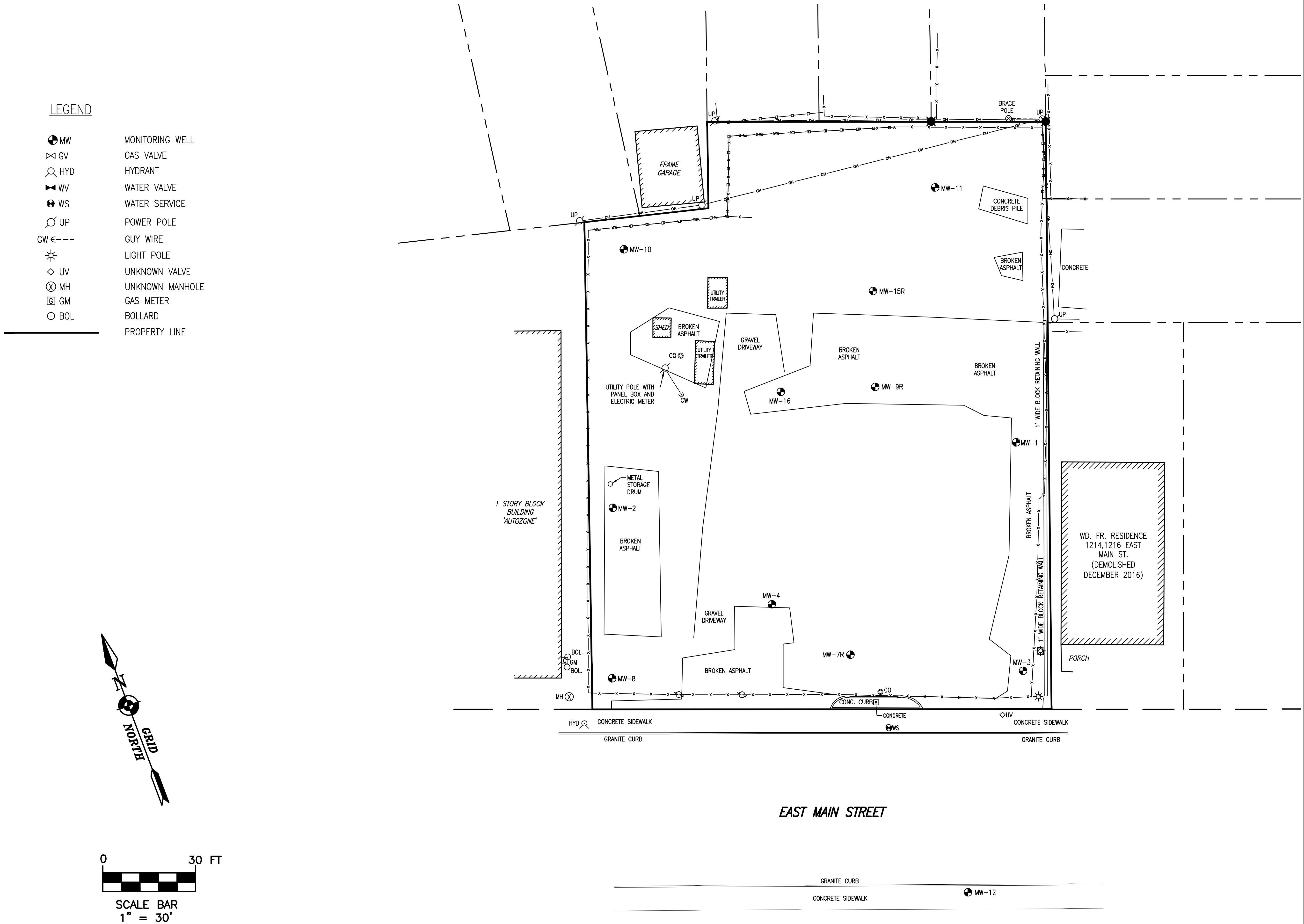
Project Manager: S. DEMEO	Checked By: S. DEMEO
Designed By:	Drawn By: C. WOOD
Date Issued: 04/06/2018	Scale: 1" = 30'
Project Number: 4453.05	

PROJECT SITE MAP

Drawing Number:

FIGURE 1

W:\Water Resources\jobs\City of Roch\1200 East Main\2018 SMP\Figures\FIGURE 1.dwg



W:\Water Resources\jobs\City of Roch\1200 East Main\2018 SMP\Figures\FIGURE 2.dwg

CITY OF ROCHESTER

1200 East Main St.
Rochester, NY
14614

SITE MANAGEMENT PLAN NYSDEC SITE NUMBER B-00129-8

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REVISIONS

NO.	DATE	DESCRIPTION	REV.	CK'D

Project Manager: S. DEMEO	Checked By: S. DEMEO
Designed By:	Drawn By: C. WOOD
Date Issued: 04/06/2018	Scale: 1" = 30'
Project Number: 4453.05	

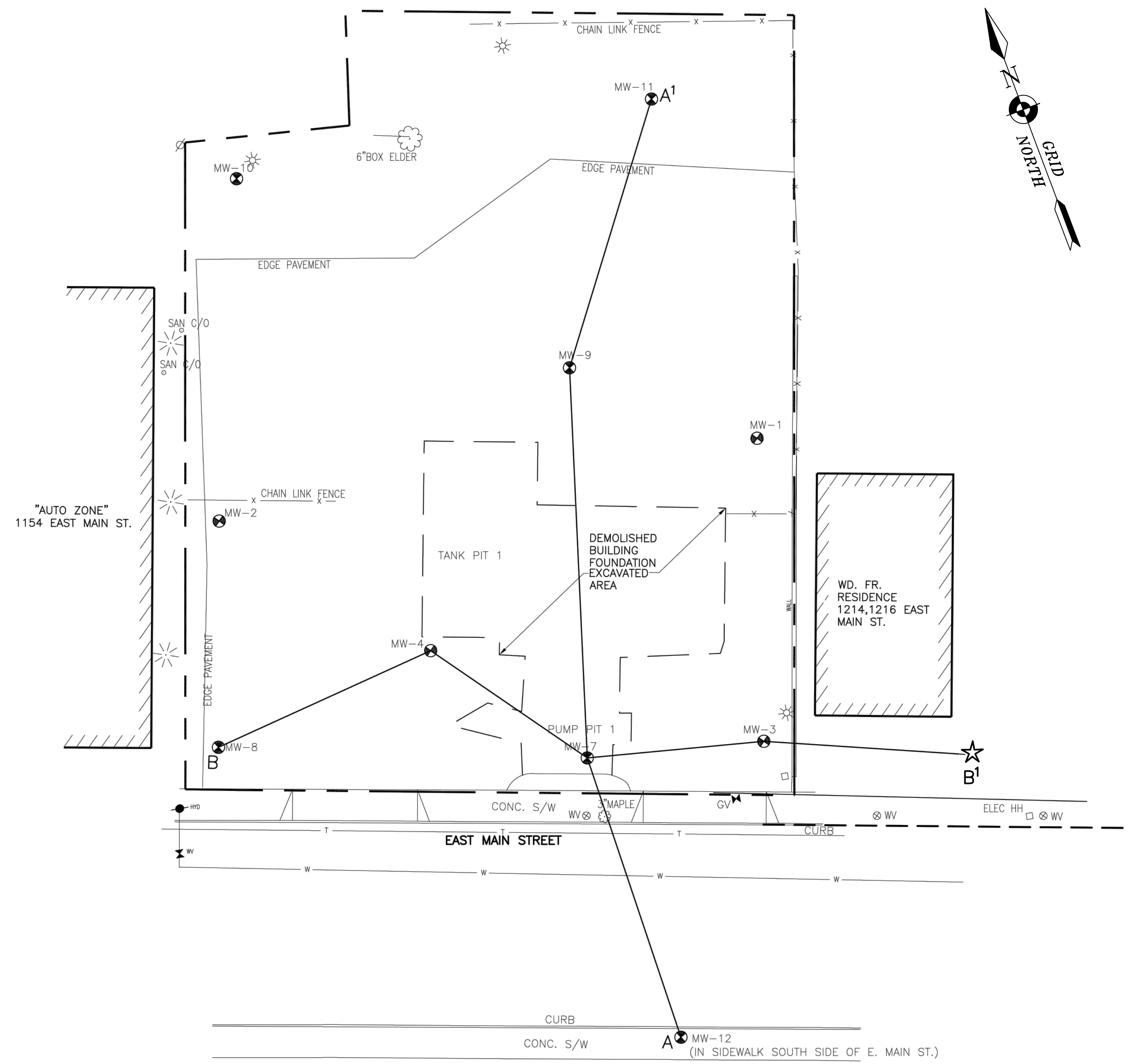
SITE LAYOUT

Drawing Number:

FIGURE 2

LEGEND

	EXISTING MONITORING WELL INSTALLED IN 2000
	SUPPLEMENTAL 2" DIA. MONITORING WELLS, INSTALLED JULY 2003 MW-5 TO MW-12
GV	GAS VALVE
	HYDRANT
WV	WATER VALVE
	LIGHT POLE
	POWER POLE
	PROPERTY LINE
	PINE TREE
A—A[1]	GEOLOGIC CROSS-SECTION A – A[1]
B—B[1]	GEOLOGIC CROSS-SECTION B – B[1]
☆ =	DATA USED IN CROSS-SECTION AT B[1] IS FROM TEST BORING/MONITORING WELL MW-5. MONITORING WELL MW-5 NO LONGER EXISTS.



WELL#	NORTHING	EASTING	ELEVATION TOP OF RISER	ELEVATION GROUND
MW-1	1,153,671.4	767,732.8	495.35	492.90
MW-2	1,153,674.2	767,600.4	496.02	493.24
MW-3	1,153,598.3	767,721.6	492.02	492.26
MW-4	1,153,634.0	767,645.6	492.00	492.51
~~MW-5~~	~~1,153,586.6~~	~~767,769.7~~	~~492.70~~	~~493.26~~
~~MW-6~~	~~1,153,663.9~~	~~767,783.0~~	~~492.65~~	~~493.13~~
MW-7	1,153,601.9	767,678.5	491.70	492.14
MW-8	1,153,620.0	767,590.4	494.91	492.32
MW-9	1,153,696.2	767,690.8	492.21	492.65
MW-10	1,153,755.7	767,618.8	496.19	493.80
MW-11	1,153,757.2	767,721.8	495.95	493.66
MW-12	1,153,530.8	767,689.2	491.17	491.63

ELEVATION VALUES RELATIVE TO MEAN SEA LEVEL

0 30 60 FT

SCALE BAR

W:\Water Resources\jobs\City of Roch\1200 East Main\2018 SMP\Figures\FIGURE 3.dwg

CITY OF ROCHESTER

1200 East Main St.
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14614

SITE MANAGEMENT PLAN NYSDEC SITE NUMBER B-00129-8

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REVISIONS

NO.	DATE	DESCRIPTION	REV.	CK'D

Project Manager: S. DEMEO	Checked By: S. DEMEO
Designed By:	Drawn By: C. WOOD
Date Issued: 04/06/2018	Scale: 1" = 30'
Project Number: 4453.05	

GEOLOGIC CROSS-SECTIONS LOCATION MAP

Drawing Number:

FIGURE 3

LEGEND

AVERAGE WATER TABLE SURFACE, SPRING

AVERAGE WATER TABLE SURFACE, SUMMER

TOP OF BEDROCK

MW–12 MONITORING WELL NUMBER

OVERBURDEN DEPOSITS –GLACIAL TILL

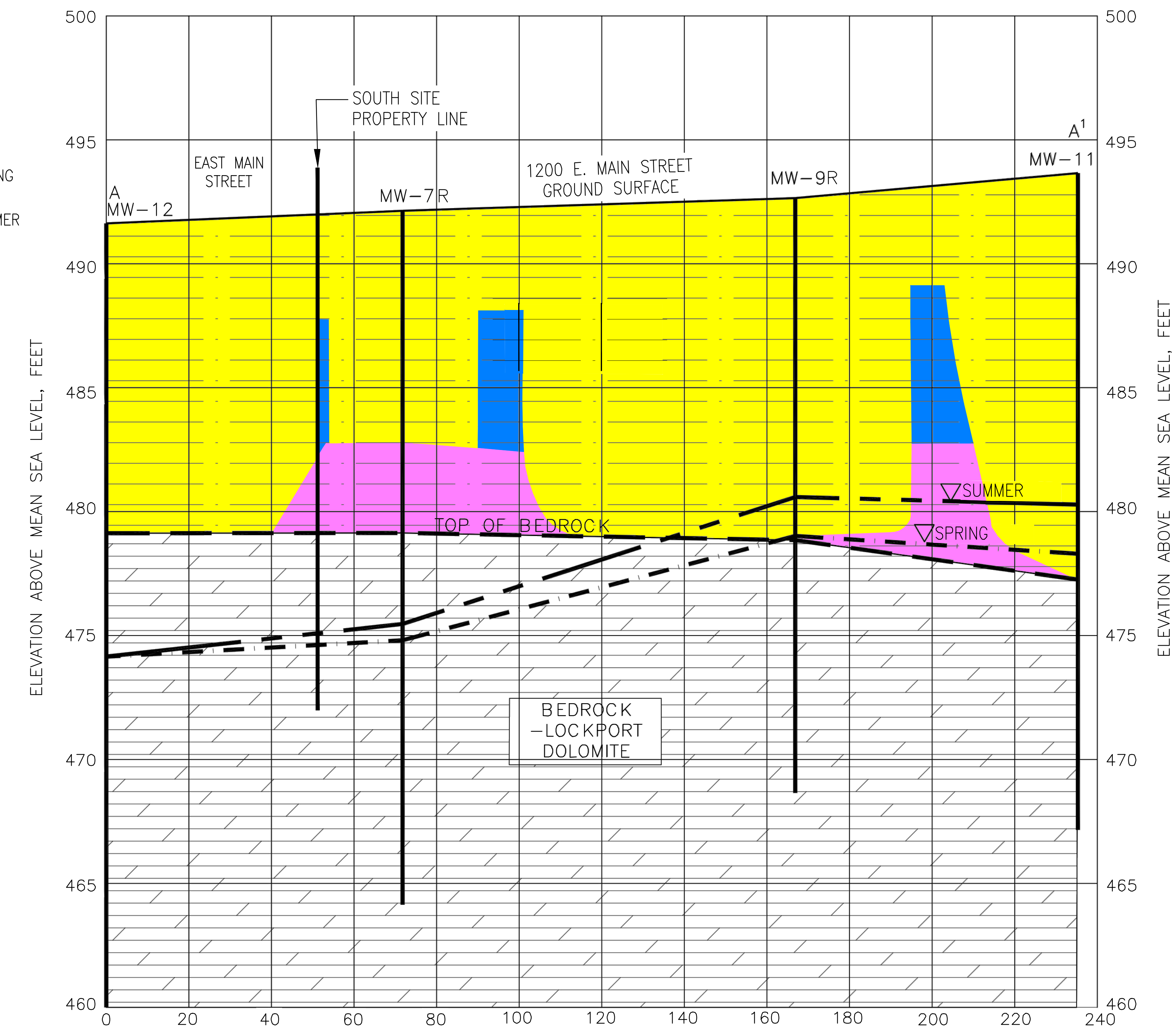
COMPENTENT BEDROCK

ALL LOCATIONS AND THICKNESS OF SOILS ARE APPROXIMATE.

REMAINING SOILS WITH POTENTIAL FOR VOC, SVOC AND METALS IMPACTS FROM APPROXIMATELY ELEVATION 477 TO 482. (5–FOOT THICKNESS)

REMAINING SOILS WITH POTENTIAL FOR VOC, SVOC AND METALS IMPACTS FROM APPROXIMATELY ELEVATION 482 TO 489. (7–FOOT THICKNESS)

REMAINING SOILS THAT COMPLY WITH COMMERCIAL USE SCO LEVELS.



CROSS SECTION A – A1

SCALE: 1" = 30' HORIZONTAL
1" = 5' VERTICAL

W:\Water Resources\jobs\City of Roch\1200 East Main\2018 SMP\Figures\FIGURE 4.dwg

CITY OF ROCHESTER

1200 East Main St.
Rochester, NY
14614

SITE MANAGEMENT PLAN NYSDEC SITE NUMBER B-00129-8

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ARCHITECTS ENGINEERS PLANNERS

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Date Issued: 04/06/2018	Scale: 1" = 30'
Project Number: 4453.05	

GEOLOGIC CROSS SECTION A - A1

Drawing Number:

FIGURE 4

LEGEND

AVERAGE WATER TABLE SURFACE, SPRING

AVERAGE WATER TABLE SURFACE, SUMMER

TOP OF BEDROCK

MW–12 MONITORING WELL NUMBER

MW–5 MONITORING WELL MW–5 NO LONGER EXISTS

OVERBURDEN DEPOSITS –GLACIAL TILL

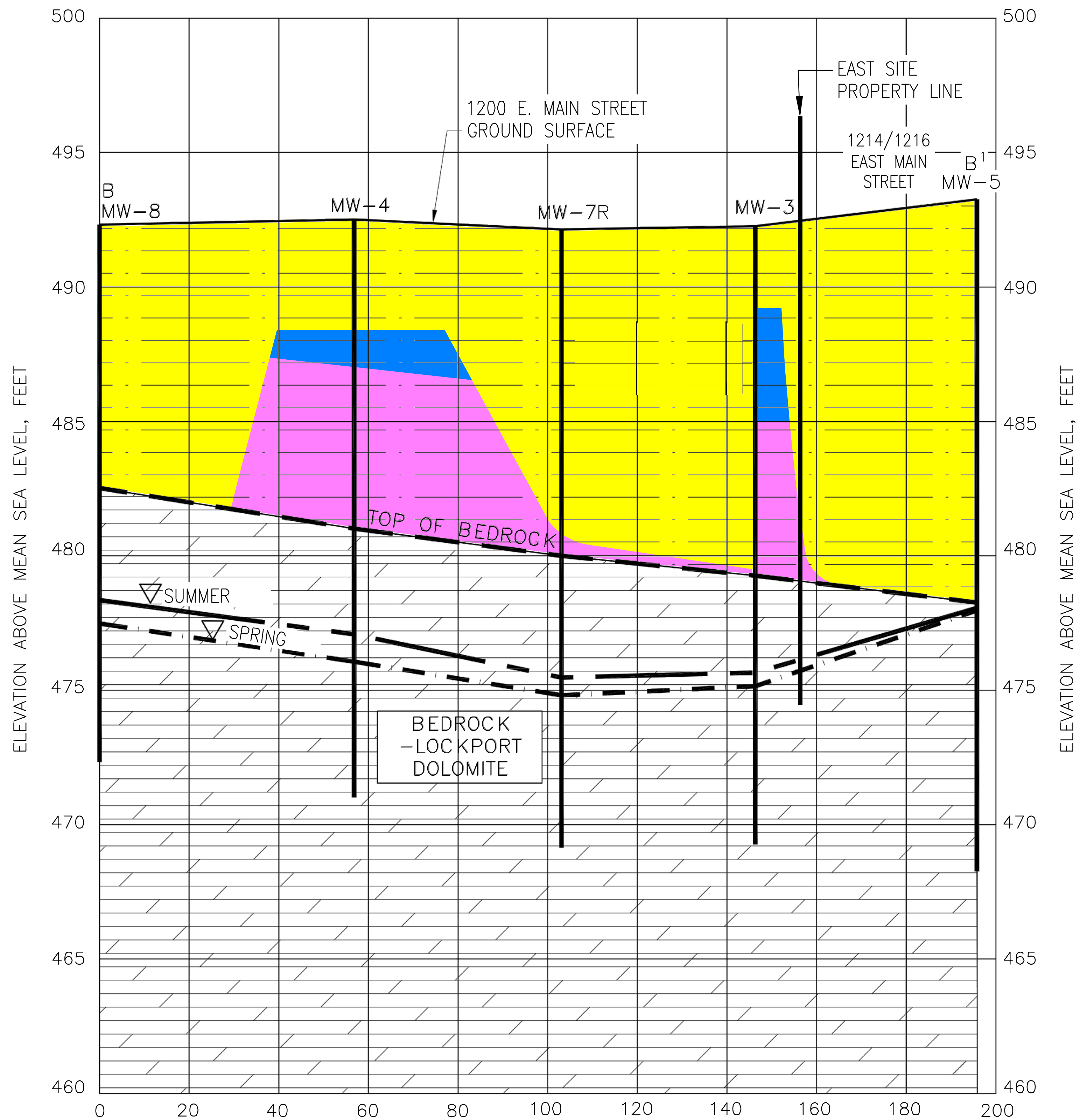
COMPENTENT BEDROCK

ALL LOCATIONS ARE APPROXIMATE.

REMAINING SOILS WITH POTENTIAL FOR VOC, SVOC AND METALS IMPACTS FROM APPROXIMATELY ELEVATION 477 TO 482.

REMAINING SOILS WITH POTENTIAL FOR VOC, SVOC AND METALS IMPACTS FROM APPROXIMATELY ELEVATION 485 TO 489.

REMAINING SOILS THAT COMPLY WITH COMMERCIAL USE SCO LEVELS.



CROSS SECTION B – B1

SCALE: 1" = 30' HORIZONTAL
1" = 5' VERTICAL

W:\Water Resources\jobs\City of Roch\1200 East Main\2018 SMP\Figures\FIGURE 5.dwg

CITY OF ROCHESTER

1200 East Main St.
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14614

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REVISIONS

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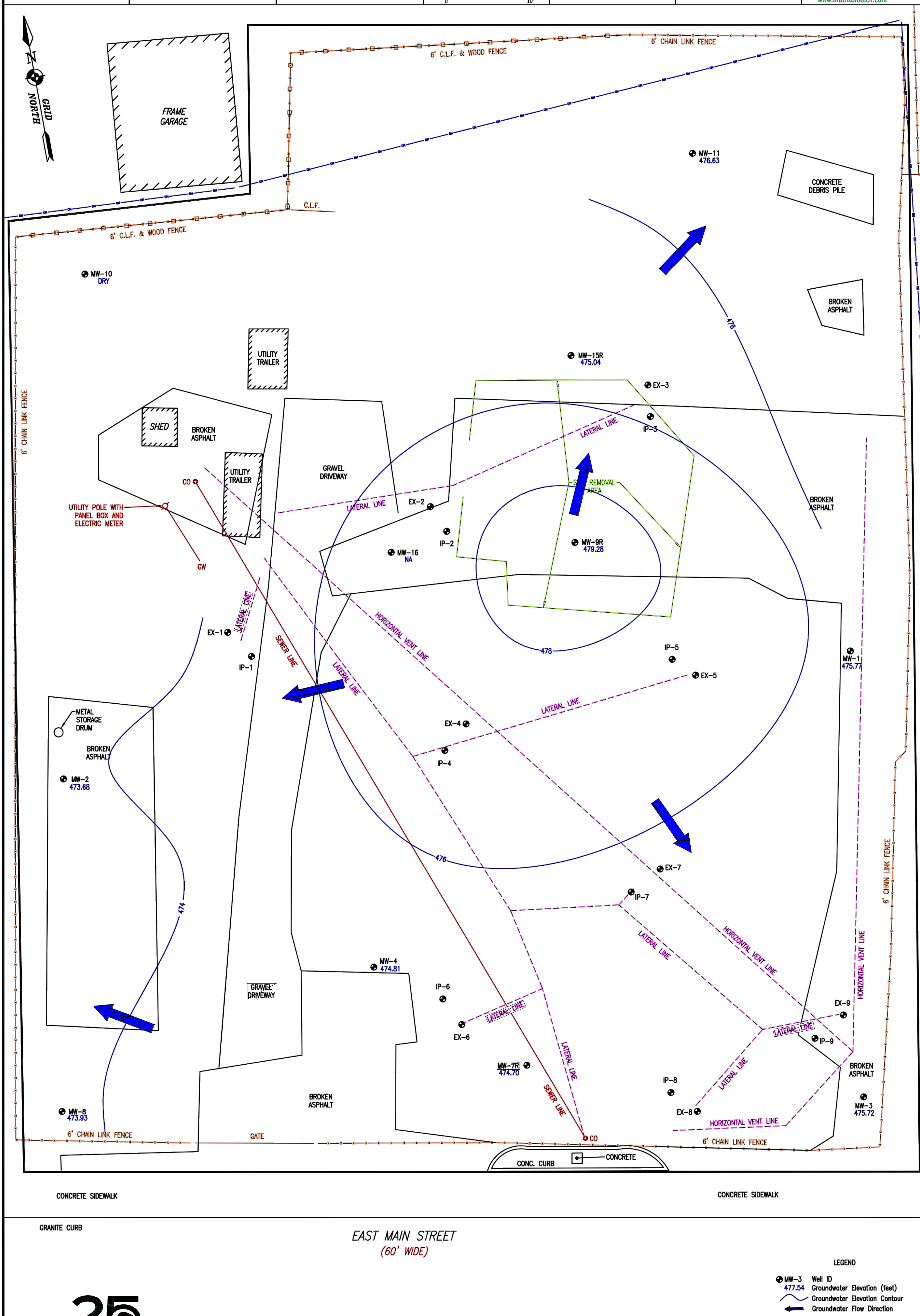
Designed By:	Drawn By: C. WOOD
Date Issued: 04/06/2018	Scale: 1" = 30'
Project Number: 4453.05	

GEOLOGIC CROSS SECTION B - B1

Drawing Number:

FIGURE 5

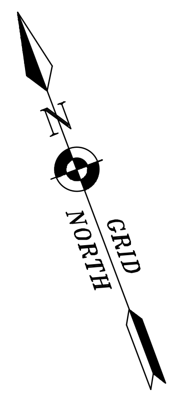
FIGURE:	TITLE:	PROJECT NAME / LOCATION:	REVISION		PROJECT MGR:	PREPARED FOR:	PREPARED BY:
1	Groundwater Potentiometric Surface Map	Site Management Plan	BY	DATE	S. Marchetti	City of Rochester	MATRIX ENVIRONMENTAL TECHNOLOGIES INC.
DATE: November 8, 2016	FIGURE 6	1200 East Main Street City of Rochester, New York	C. Curtis	12/7/16	DESIGNED BY: S. Carter		3730 California Road P.O. Box 427 Orchard Park, NY 14127 p:716.662.0745 www.matrixbiotech.com
PROJECT NO.: 12-041		NYSDEC Site Number B-00129-8	SCALE IN FEET: 1" = 10'		REVIEWED BY: S. Marchetti DRAWN BY: Bergmann Associates		



25 years dedicated to a CLEANER ENVIRONMENT 1991-2016

LEGEND

Symbol	Description
●	BOTTOM CONFIRMATORY SOIL SAMPLE
▲ S-4	CONFIRMATORY SHALLOW SOIL SAMPLE FROM AREA 1A AND AREA 1B
▲ NW SIDEWALL	CONFIRMATORY SOIL SAMPLE FROM THE SIDEWALL OF AREAS 2, 3 AND 4.
■ NE-SW-1	MARCH 2016 IRM CONFIRMATORY SOIL SAMPLE (NE=NORTHEAST, SW=SIDEWALL, BOT=BOTTOM)
	APPROXIMATE AREAS OF SOIL REMOVAL MARCH 2010
	APPROXIMATE AREAS OF SOIL REMOVAL MARCH 2016 IRM
MW	MONITORING WELL
GV	GAS VALVE
HYD	HYDRANT
WV	WATER VALVE
WS	WATER SERVICE
UP	POWER POLE
GW	GUY WIRE
	LIGHT POLE
UV	UNKNOWN VALVE
MH	UNKNOWN MANHOLE
GM	GAS METER
BOL	BOLLARD
	PROPERTY LINE



NOTES:

1) CONFIRMATORY SOIL SAMPLES TAKEN BETWEEN MARCH 9 AND APRIL 11, 2010 FOR MARCH 2010 IRM.

2) CONFIRMATORY SOIL SAMPLES TAKEN ON MARCH 27, 2016 FOR MARCH 2016 IRM.

3) ND = BELOW DETECTION LIMIT

4) ALL SAMPLE RESULTS EXPRESSED IN PARTS PER MILLION (ppm).

5) ALL SOIL SAMPLE LOCATIONS ARE APPROXIMATE.

6) VOC CHEMICAL COMPOUNDS AND METALS IN BOLD TYPE EXCEED NYSDEC PART 375 UNRESTRICTED USE SOIL CLEANUP OBJECTIVES. OTHER CHEMICAL COMPOUNDS LISTED WERE DETECTED AND ARE BELOW STANDARDS.

7) TOTAL VOCs IN THE SUM OF DETECTED VOLATILE ORGANIC COMPOUNDS. TOTAL SVOCs IS THE SUM OF DETECTED SEMI-VOLATILE ORGANIC COMPOUNDS. TICs=TENTATIVELY IDENTIFIED COMPOUNDS.
+ = EXCEEDS PROTECTION OF GROUNDWATER STANDARDS
* = EXCEEDS PART 375 UNRESTRICTED USE SOIL CLEANUP OBJECTIVES

8) THE SOIL SAMPLE RESULTS POSTED REPRESENT LEVELS AND EXCEEDANCES DETECTED IN CONFIRMATORY SOIL SAMPLES THAT REMAIN AT THE SITE AT THE TIME THE FINAL ENGINEERING REPORT WAS CERTIFIED.

9) SEE FIGURE 4 AND FIGURE 5 FOR APPROXIMATE DEPTH AND THICKNESS OF REMAINING SOILS IMPACTS.

MARCH 2016 EXCAVATION AREA

E-SW-2
MERCURY=0.0187 ppm

SE-SW-3
TOLUENE=0.00262 ppm
1,2,4-TRIMETHYLBENZENE=0.00323 ppm
XYLENES=0.00286 ppm
MERCURY=0.0258 ppm

SW-SW-7
MEK (2-BUTANONE)=0.025 ppm
TOLUENE=0.00672 ppm
XYLENES=0.00574 ppm

NW-SW-8
TOLUENE=0.0030 ppm
XYLENES=0.00237 ppm
BENZ(a)ANTHRACENE=0.232 ppm
CHRYSENE=0.224 ppm
FLUORANTHENE=0.484 ppm
BENZO(b)FLUORANTHENE=0.223 ppm
BENZO(k)FLUORANTHENE=0.179 ppm
PHENANTHRENE=0.295 ppm
PYRENE=0.378 ppm
BENZO(a)PYRENE=0.209 ppm

BOT-2
1,3,5-TRIMETHYLBENZENE=0.0158 ppm

MARCH 2010 AREA 1A

S-1
BENZ(a)ANTHRACENE=0.188 ppm
CHRYSENE=0.195 ppm
FLUORANTHENE=0.464 ppm
PHENANTHRENE=0.256 ppm
PYRENE=0.377 ppm

S-2
FLUORANTHENE=0.302 ppm
PHENANTHRENE=0.172 ppm
PYRENE=0.256 ppm

MARCH 2010 AREA 1B

S-9
FLUORANTHENE=0.163 ppm

S-11
FLUORANTHENE=0.221 ppm
PYRENE=0.201 ppm

S-12
FLUORANTHENE=0.261 ppm
PYRENE=0.213 ppm

S-14
FLUORANTHENE=0.180 ppm

S-15
BENZ(a)ANTHRACENE=0.166 ppm
BENZO(b)FLUORANTHENE=0.184 ppm
CHRYSENE=0.184 ppm
FLUORANTHENE=0.358 ppm
PYRENE=0.303 ppm

MARCH 2010 AREA 2

BOTTOM FLOOR DRAIN
ETHYLBENZENE=0.725 ppm
n-PROPYLBENZENE=0.753 ppm
sec-BUTYLBENZENE=0.306 ppm
***+ 1,2,4-TRIMETHYLBENZENE=4.2 ppm**
1,3,5-TRIMETHYLBENZENE=0.838 ppm
+ XYLENE=1.832 ppm

E-SIDEWALL
ETHYLBENZENE=0.322 ppm
n-PROPYLBENZENE=0.426 ppm
sec-BUTYLBENZENE=0.264 ppm
***+ 1,2,4-TRIMETHYLBENZENE=2.77 ppm**
1,3,5-TRIMETHYLBENZENE=0.582 ppm
*** XYLENE=0.918 ppm**
NAPHTHALENE=1.370 ppm

MARCH 2010 AREA 3

E-SIDEWALL
1,2,4-TRIMETHYLBENZENE=0.00262 ppm
XYLENE=0.00325 ppm

SE-SIDEWALL
ETHYLBENZENE=0.725 ppm

NW-SIDEWALL
***+ ETHYLBENZENE=19.9 ppm**
***+ n-PROPYLBENZENE=17.1 ppm**
sec-BUTYLBENZENE=2.17 ppm
***+ TOLUENE=9.58 ppm**
***+ 1,2,4-TRIMETHYLBENZENE=81.8 ppm**
***+ 1,3,5-TRIMETHYLBENZENE=30.6 ppm**
***+ XYLENE=108.3 ppm**

W-SIDEWALL
ETHYLBENZENE=0.00363 ppm
TOLUENE=0.00385 ppm
1,2,4-TRIMETHYLBENZENE=0.0541 ppm
1,3,5-TRIMETHYLBENZENE=0.0213 ppm
XYLENE=0.0146 ppm

MARCH 2010 AREA 4

SE-SIDEWALL
ETHYLBENZENE=0.0623 ppm
n-PROPYLBENZENE=0.0754 ppm
1,2,4-TRIMETHYLBENZENE=0.795 ppm
1,3,5-TRIMETHYLBENZENE=0.0243 ppm
XYLENE=0.179 ppm

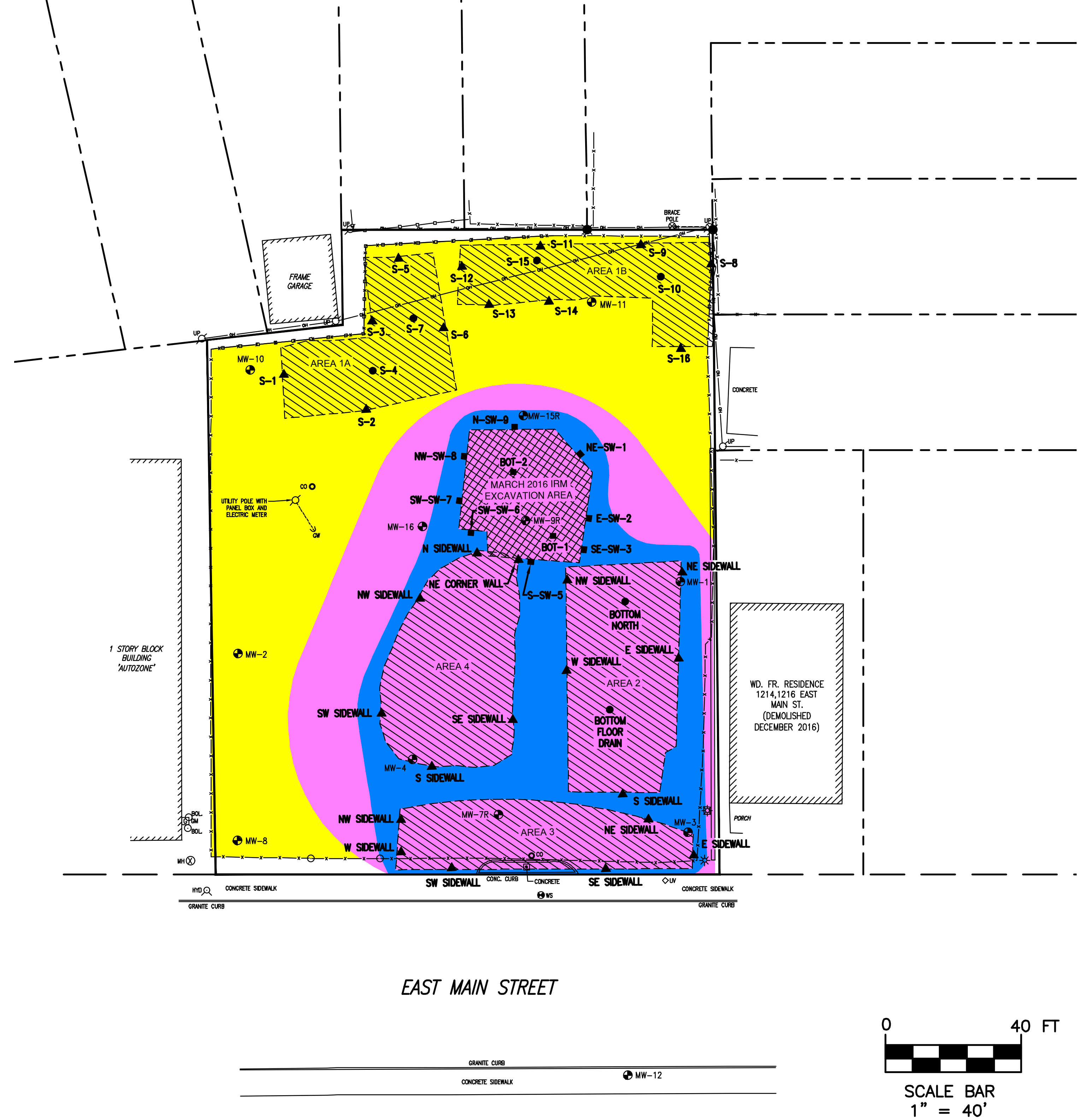
NE CORNER WALL
1,3,5-TRIMETHYLBENZENE=0.00235 ppm

S-SIDEWALL
*** LEAD=83.2 ppm**
*** ETHYLBENZENE=7.94 ppm**
*** n-PROPYLBENZENE=6.33 ppm**
sec-BUTYLBENZENE=0.786 ppm
*** TOLUENE=6.75 ppm**
***+ 1,2,4-TRIMETHYLBENZENE=48.3 ppm**
***+ 1,3,5-TRIMETHYLBENZENE=16.5 ppm**
XYLENE=69.9 ppm
BENZO(b)FLUORANTHENE=0.175 ppm
FLUORANTHENE=0.256 ppm
NAPHTHALENE=2.0 ppm
PHENANTHRENE=0.207 ppm
PYRENE=0.211 ppm

REMAINING SOILS WITH POTENTIAL FOR VOC, SVOC AND METALS IMPACTS FROM APPROXIMATELY 8 TO 15 FEET BELOW GROUND SURFACE.

REMAINING SOILS WITH POTENTIAL FOR VOC, SVOC AND METALS IMPACTS FROM APPROXIMATELY 4 TO 8 FEET BELOW GROUND SURFACE.

REMAINING SOILS THAT COMPLY WITH COMMERCIAL USE SCO LEVELS.



W:\Water Resources\jobs\City of Roch\1200 East Main\2018 SMP\Figures\FIGURE 7.dwg

CITY OF ROCHESTER

1200 East Main St.
Rochester, NY
14614

SITE MANAGEMENT PLAN
NYSDEC SITE NUMBER B-00129-8

BERGMANN
ARCHITECTS ENGINEERS PLANNERS

Bergmann Associates, Architects, Engineers, Landscape Architects & Surveyors, D.P.C.
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Suite 200
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office: 585.232.5135
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REVISIONS

NO.	DATE	DESCRIPTION	REV.	CK'D

Project Manager: S. DEMEO	Checked By: S. DEMEO
Designed By:	Drawn By: C. WOOD
Date Issued: 04/06/2018	Scale: 1" = 40'
Project Number: 4453.05	

REMAINING SOIL SAMPLE LEVELS & EXCEEDANCES

Drawing Number:

FIGURE 7

LEGEND

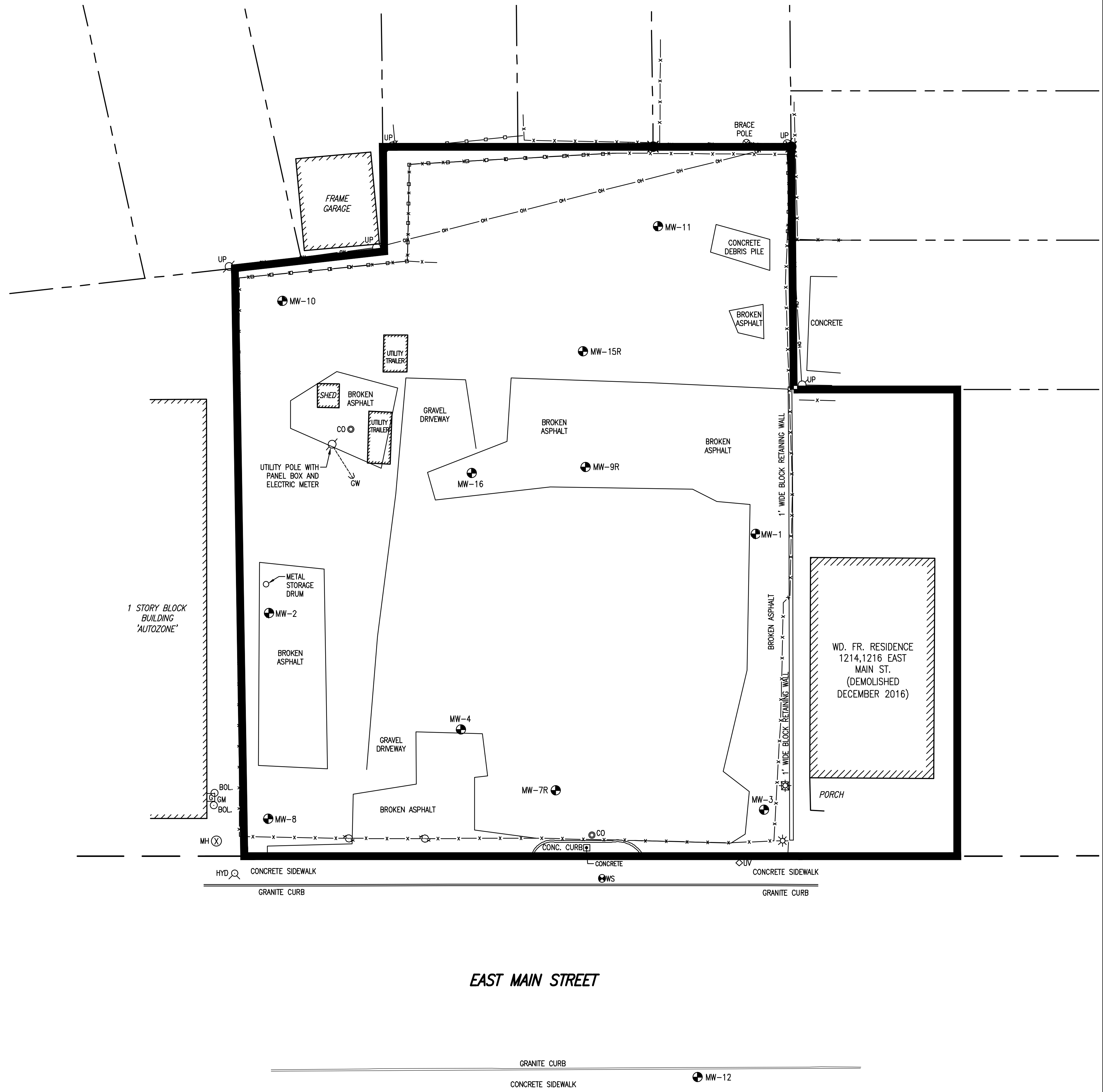
Symbol	Description
MW	MONITORING WELL
GV	GAS VALVE
HYD	HYDRANT
WV	WATER VALVE
WS	WATER SERVICE
UP	POWER POLE
GW	GUY WIRE
	LIGHT POLE
UV	UNKNOWN VALVE
MH	UNKNOWN MANHOLE
GM	GAS METER
BOL	BOLLARD
	AREA OF SOIL VAPOR CONCERN

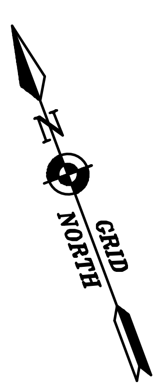
NOTES:

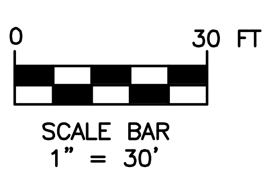
1) THE ENTIRE PROPERTY AT 1200 EAST MAIN STREET IS AN AREA OF VAPOR CONCERN.

2) THE FORMER RESIDENCE AT 1214 AND 1216 EAST MAIN STREET WAS DEMOLISHED IN DECEMBER 2016. THIS PROPERTY IS ALSO AN AREA OF VAPOR CONCERN. SEE SMP FOR FURTHER DETAILS.

3) SEE SITE MANAGEMENT PLAN (SMP) AND ENVIRONMENTAL EASEMENT FOR FURTHER DETAILS.







W:\Water Resources\jobs\City of Roch\1200 East Main\2018 SMP\Figures\FIGURE 8.dwg

CITY OF ROCHESTER

1200 East Main St.
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Project Manager: S. DEMEO	Checked By: S. DEMEO
Designed By:	Drawn By: C. WOOD
Date Issued: 04/06/2018	Scale: 1" = 30'
Project Number: 4453.05	

AREA OF SOIL VAPOR CONCERN

Drawing Number:

FIGURE 8

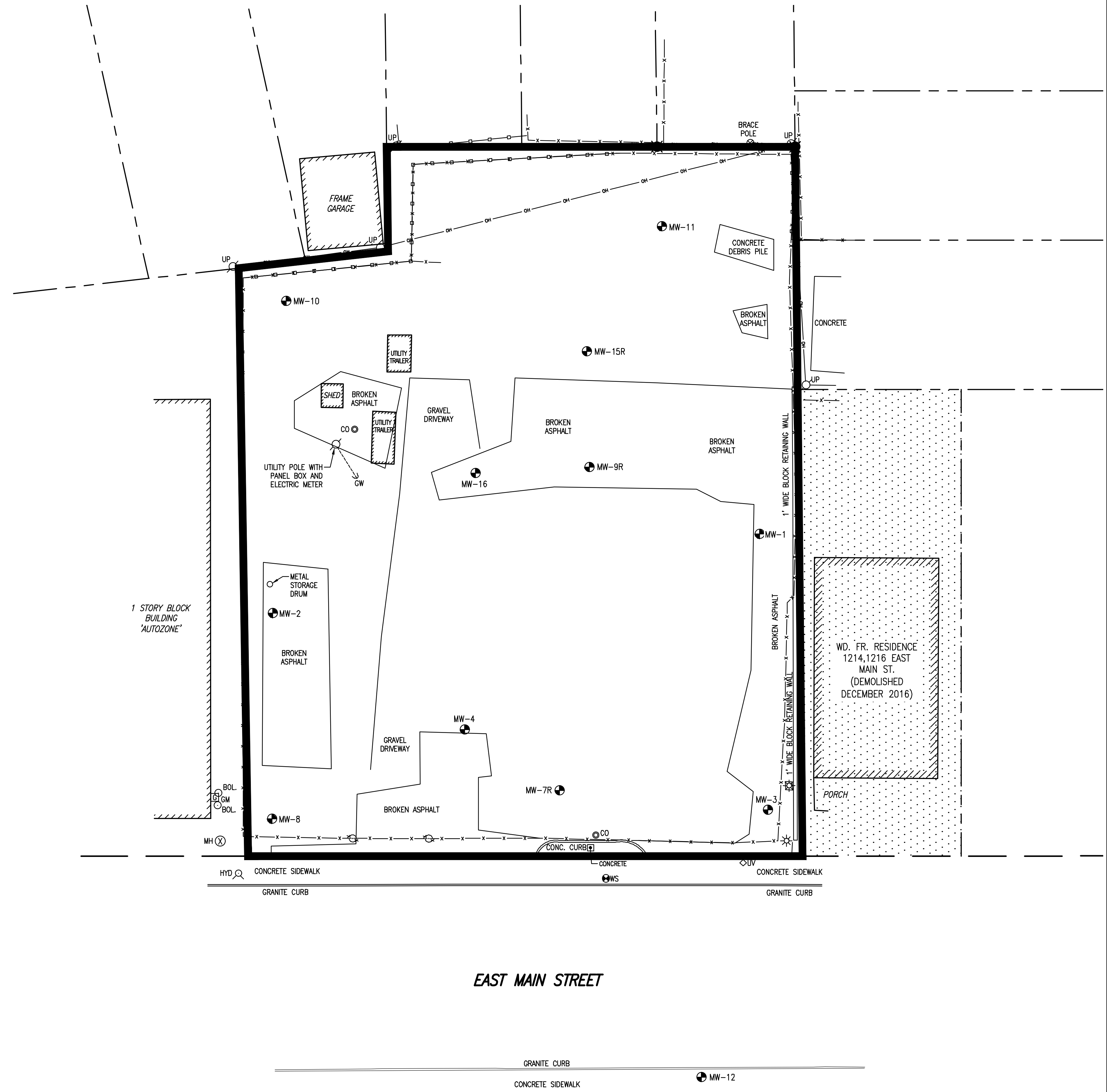
LEGEND

Symbol	Description
MW	MONITORING WELL
GV	GAS VALVE
HYD	HYDRANT
WV	WATER VALVE
WS	WATER SERVICE
UP	POWER POLE
GW ←---	GUY WIRE
	LIGHT POLE
UV	UNKNOWN VALVE
MH	UNKNOWN MANHOLE
GM	GAS METER
BOL	BOLLARD
	INSTITUTIONAL CONTROL BOUNDARIES
	PARCEL IS FLAGGED IN CITY OF ROCHESTER BUILDING INFORMATION SYSTEM.

NOTES:

1) THE ENTIRE PROPERTY AT 1200 EAST MAIN STREET IS SUBJECT TO INSTITUTIONAL CONTROLS.

2) SEE SITE MANAGEMENT PLAN AND ENVIRONMENTAL EASEMENT FOR FURTHER DETAILS.



W:\Water Resources\jobs\City of Roch\1200 East Main\2018 SMP\Figures\FIGURE 9.dwg

CITY OF ROCHESTER

1200 East Main St.
Rochester, NY
14614

SITE MANAGEMENT PLAN NYSDEC SITE NUMBER B-00129-B

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Designed By:	Drawn By: C. WOOD
Date Issued: 04/06/2018	Scale: 1" = 30'
Project Number: 4453.05	

INSTITUTIONAL CONTROL BOUNDARIES

Drawing Number:

FIGURE 9

LEGEND

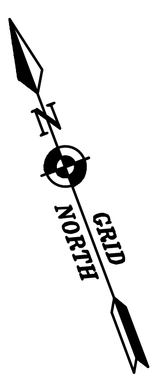
EX-1	VEGE SYSTEM EXTRACTION WELL
IP-1	O_2 SYSTEM INJECTION POINT
MW	MONITORING WELL
GV	GAS VALVE
HYD	HYDRANT
WV	WATER VALVE
WS	WATER SERVICE
UP	POWER POLE
GW ←---	GUY WIRE
	LIGHT POLE
UV	UNKNOWN VALVE
MH	UNKNOWN MANHOLE
GM	GAS METER
BOL	BOLLARD
	PROPERTY LINE

NOTES:

1) THE RED HIGHLIGHTED AREAS FOR THE OXYGEN INJECTION SYSTEM, EQUIPMENT SHED, SOIL VAPOR EXTRACTION SYSTEM, MONITORING WELLS AND ELECTRIC UTILITY POLE ARE THE ENGINEERING CONTROLS (EC). THESE EC TO REMAIN AFTER DECEMBER 31, 2016. NYSDEC APPROVAL REQUIRED FOR REMOVAL OF EC.

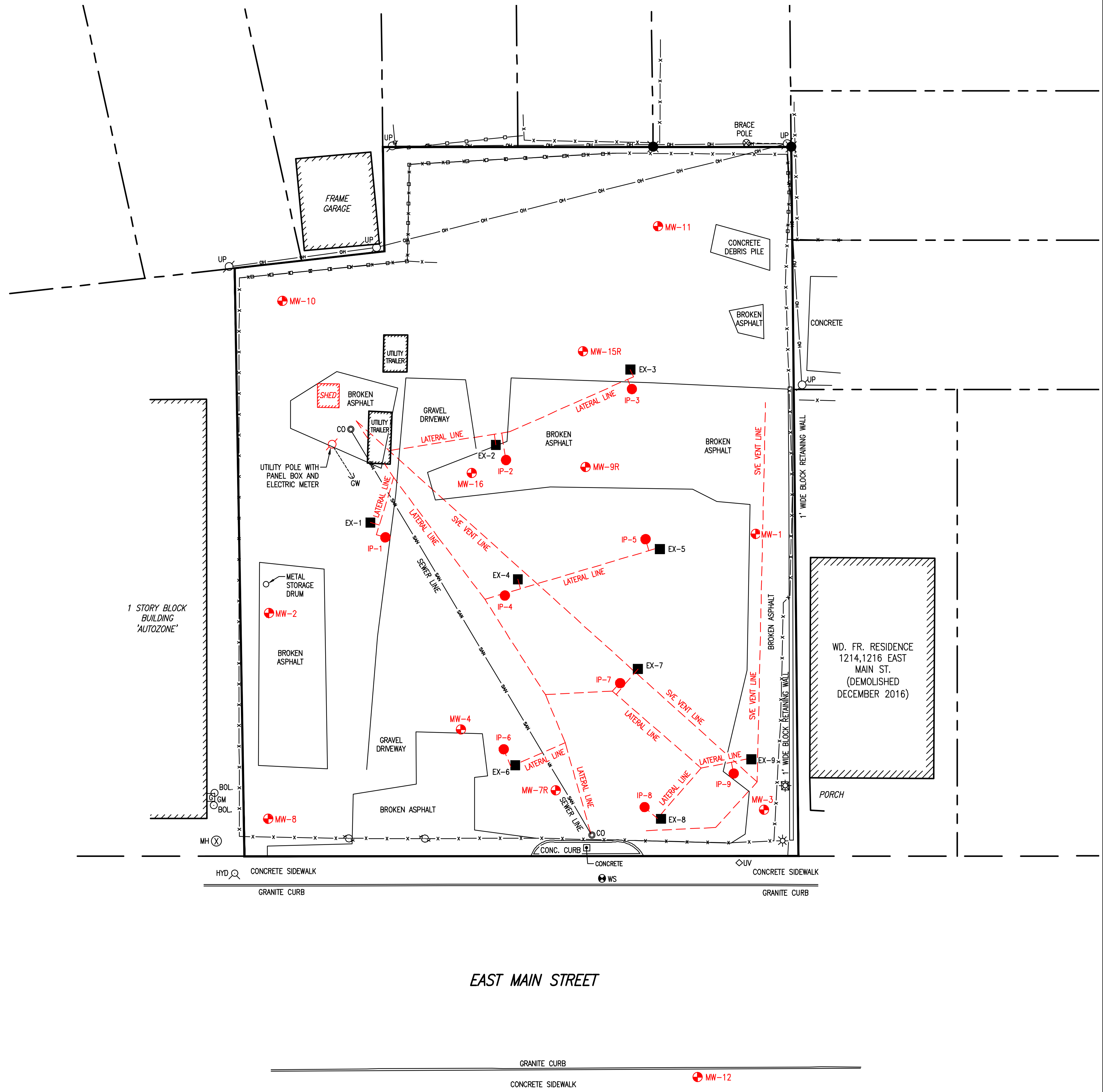
2) SEE SITE MANAGEMENT PLAN (SMP) AND ENVIRONMENTAL EASEMENT FOR FURTHER DETAILS AND DESCRIPTIONS OF ENGINEERING CONTROLS AT THE SITE.

3) VEGE SYSTEM UNDERGROUND LINES AND SEWER LATERAL TO BE ABANDONED IN-PLACE. VEGE EXTRACTION WELLS TO BE ABANDONED PER NYSDEC DER 43 GUIDANCE.



0 30 FT

SCALE BAR
1" = 30'



CITY OF ROCHESTER
1200 East Main St.
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SITE MANAGEMENT PLAN
NYSDEC SITE NUMBER B-00129-8

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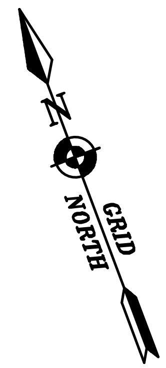
Date Issued: 04/06/2018	Scale: 1" = 30'
Project Number: 4453.05	

ENGINEERING CONTROLS LOCATION

Drawing Number:

FIGURE 10

W:\Water Resources\jobs\City of Roch\1200 East Main\2018 SMP\Figures\FIGURE 10.dwg



LEGEND

MARCH 2010 EXCAVATION AREA

MARCH 2016 EXCAVATION AREA

NOTES:

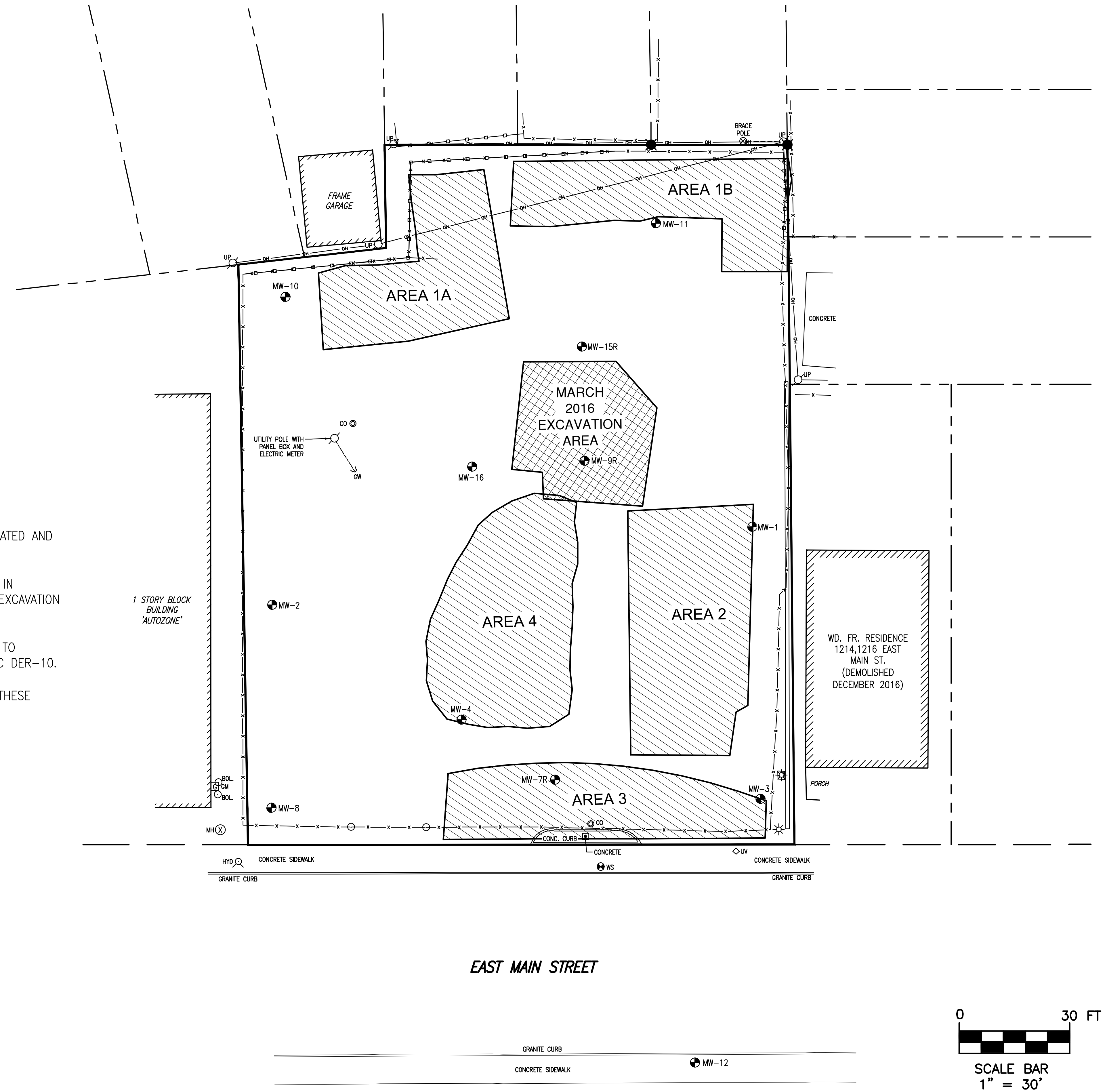
1) SOILS FROM PETROLEUM IMPACTED SOURCE AREAS WERE EXCAVATED AND TRANSFERRED OFF-SITE FOR DISPOSAL.

2) CONFIRMATORY SOIL SAMPLES WERE COLLECTED AND ANALYZED IN ACCORDANCE WITH NYSDEC DER-10 PRIOR TO BACKFILLING EACH EXCAVATION TO GROUND SURFACE.

3) THE BACKFILL FOR EACH EXCAVATION AREA WAS TESTED PRIOR TO NYSDEC APPROVAL AS SITE BACKFILL IN ACCORDANCE WITH NYSDEC DER-10.

4) SEE FIGURE 7 FOR REMAINING SOIL SAMPLE EXCEEDANCES AT THESE EXCAVATION AREAS.

N.Y.S.P.E.



W:\Water Resources\jobs\City of Roch\1200 East Main\2018 SMP\Figures\FIGURE 11.dwg

CITY OF ROCHESTER

1200 East Main St.
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SITE MANAGEMENT PLAN NYSDEC SITE NUMBER B-00129-8

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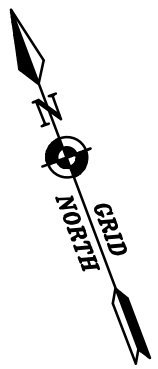
Project Number: 4453.05	

SOIL EXCAVATION AS-BUILT FIGURE MARCH 2010 & 2016

Drawing Number:

FIGURE 11



LEGEND

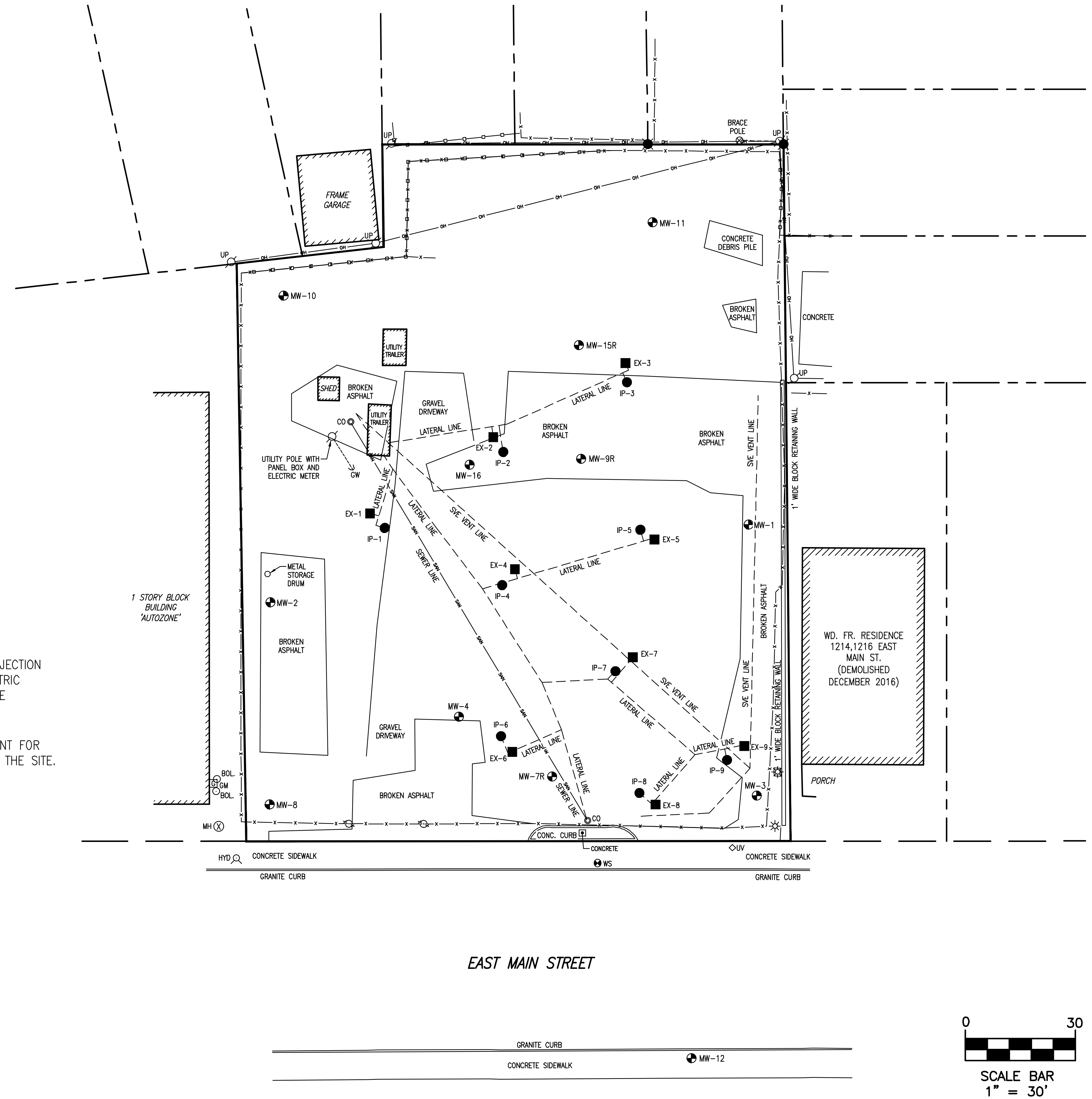
EX-1	VEGE SYSTEM EXTRACTION WELL
IP-1	O_2 SYSTEM INJECTION POINT
MW	MONITORING WELL
GV	GAS VALVE
HYD	HYDRANT
WV	WATER VALVE
WS	WATER SERVICE
UP	POWER POLE
GW ←---	GUY WIRE
	LIGHT POLE
UV	UNKNOWN VALVE
MH	UNKNOWN MANHOLE
GM	GAS METER
BOL	BOLLARD
	PROPERTY LINE

NOTES:

1) THE RED HIGHLIGHTED AREAS FOR THE VEGE SYSTEM, OXYGEN INJECTION SYSTEM, SOIL VAPOR EXTRACTION SYSTEM, MONITORING WELLS, ELECTRIC UTILITY POLE, SEWER LATERAL AND PROPERTY LINE FENCING ARE THE ENGINEERING CONTROLS (EC).

2) SEE SITE MANAGEMENT PLAN (SMP) AND ENVIRONMENTAL EASEMENT FOR FURTHER DETAILS AND DESCRIPTIONS OF ENGINEERING CONTROLS AT THE SITE.

N.Y.S.P.E.



W:\Water Resources\jobs\City of Roch\1200 East Main\2018 SMP\Figures\FIGURE 12.dwg

CITY OF ROCHESTER

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NO.	DATE	DESCRIPTION	REV.	CK'D

Project Manager: S. DEMEO	Checked By: S. DEMEO
Designed By:	Drawn By: C. WOOD
Date Issued: 04/06/2018	Scale: 1" = 30'
Project Number: 4453.05	

VEGE & O2 INJECTION WITH SVE SYSTEMS AS-BUILT FIGURE

Drawing Number:

FIGURE 12

LEGEND

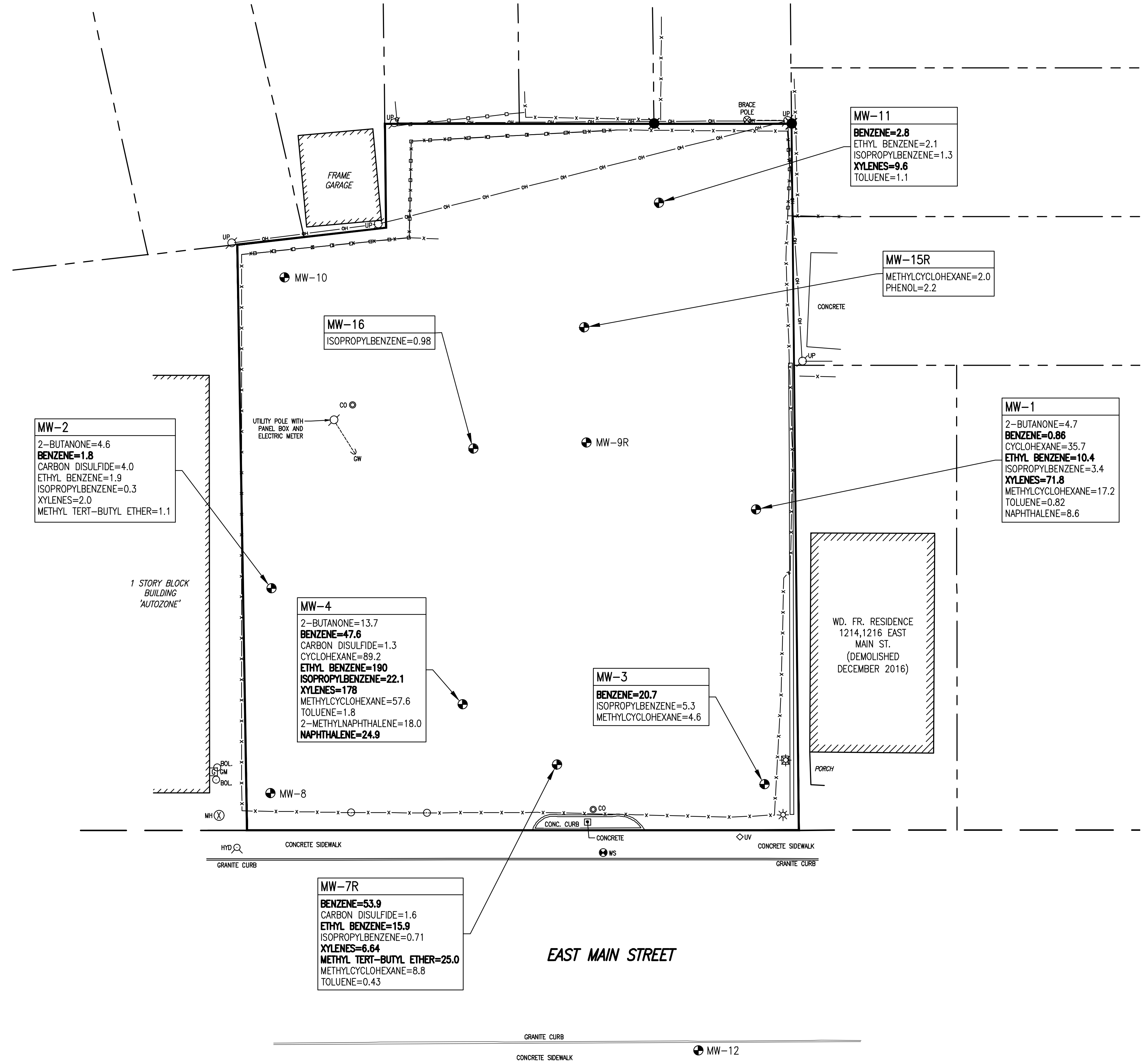
MW	MONITORING WELL
GV	GAS VALVE
HYD	HYDRANT
WV	WATER VALVE
WS	WATER SERVICE
UP	POWER POLE
GW ←---	GUY WIRE
	LIGHT POLE
UV	UNKNOWN VALVE
MH	UNKNOWN MANHOLE
GM	GAS METER
BOL	BOLLARD
	PROPERTY LINE

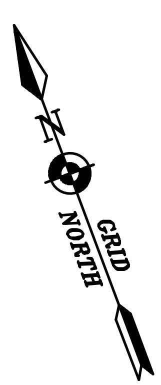
NOTES:

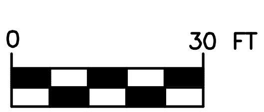
1) ND = BELOW DETECTION LIMIT

2) ALL VOLITILE CHEMICAL COMPOUNDS (VOCs), SEMI-VOCs AND METALS SAMPLE RESULTS ARE EXPRESSED IN PARTS PER BILLION (ppb).

3) VOC CHEMICAL COMPOUNDS IN BOLD TYPE EXCEED NYSDEC PART 703.5 GROUNDWATER STANDARDS AND NYSDEC T.O.G.S.1.1.1 STANDARDS. OTHER VOC/SVOC CHEMICAL COMPOUNDS AND METALS LISTED WERE DETECTED AND ARE BELOW STANDARDS ON THE DATE OF SAMPLE COLLECTION (NOVEMBER 8, 2016).







SCALE BAR
1" = 30'

W:\Water Resources\jobs\City of Roch\1200 East Main\2018 SMP\Figures\FIGURE 13.dwg

CITY OF ROCHESTER

1200 East Main St.
Rochester, NY
14614

SITE MANAGEMENT PLAN NYSDEC SITE NUMBER B-00129-8

BERGMANN
ARCHITECTS ENGINEERS PLANNERS

Bergmann Associates, Architects, Engineers, Landscape Architects & Surveyors, D.P.C.

280 East Broad Street
Suite 200
Rochester, NY 14604

office: 585.232.5135
fax: 585.232.4652

www.bergmannpc.com

REVISIONS

NO.	DATE	DESCRIPTION	REV.	CK'D

Project Manager: S. DEMEO	Checked By: S. DEMEO
Designed By:	Drawn By: C. WOOD
Date Issued: 04/06/2018	Scale: 1" = 30'
Project Number: 4453.05	

REMAINING GROUNDWATER SAMPLE LEVELS & EXCEEDANCES

Drawing Number:

FIGURE 13

APPENDICES

APPENDIX 1
ENVIRONMENTAL EASEMENT

City of Rochester
Office of the Commissioner
Department of Environmental Services
City Hall Room 300B, 30 Church Street
Rochester, New York 14614-1290
www.cityofrochester.gov

Division of
Environmental Quality

June 28, 2016

Andrew Gugliemi, Esq.
New York State Department of Environmental Conservation
Office of General Counsel
625 Broadway, 14th Floor
Albany, New York 12233-1500

Re: City of Rochester – 1200 East Main Street, Rochester, NY 14609
Environmental Easement
NYSDEC Site No. B00129-8
State Assistance Contract No. C303

Dear Mr. Gugliemi:

Per your request, please find enclosed a copy of the recorded easement marked by the County Clerk's Office with the date and location of the recording as well as a certified copy of the municipal notice, for the above referenced site.

If any additional documentation is required, or if you have any questions or comments regarding this matter, please do not hesitate to contact me.

Very truly yours,

Jane MH Forbes
Environmental Specialist

City of Rochester
Division of Environmental Quality
30 Church Street – Room 300B
Rochester, New York 14614
(585) 428-7892
(585) 428-6010 (fax)

G:\ENVQUAL\JANE\PROJECTS\1200 EAST MAIN STREET\Cleanup 2016\Easement Docs_2016\Gugliemi-NYSDEC_Recorded_Easementtransmittal_June-28-2016.doc

DER: COMPLETE THIS SECTION

mplete items 1, 2, and 3. Also complete
n 4 if Restricted Delivery is desired.
int your name and address on the reverse
that we can return the card to you.
ttach this card to the back of the mailpiece,
on the front if space permits.

ticle Addressed to:

Hon. Lovely A. Warren, Mayor
City of Rochester
City Hall
30 Church Street
Rochester, New York 14614

COMPLETE THIS SECTION ON DELIVERY

A. Signature

X

☐ Agent
☐ Addressee

B. Received by (Printed Name)

C. Date of Delivery
6/23/16

D. Is delivery address different from item 1? ☐ Yes
If YES, enter delivery address below: ☐ No

ROCHESTER NY 14603
JUN 2 3 2016
USPS

3. Service Type
☑ Certified Mail ☐ Express Mail
☐ Registered ☐ Return Receipt for Merchandise
☐ Insured Mail ☐ C.O.D.

4. Restricted Delivery? (Extra Fee) ☐ Yes

ticle Number
ransfer from service label) 7005 0390 0002 4727 1267

S Form 3811, August 2001 Domestic ... 102595-02-M-1540

UNITED STATES POSTAL SERVICE

ROCHESTER
NY 144
23 JUN '16

First-Class Mail
Postage & Fees Paid
USPS
Permit No. G-10

• Sender: Please print your name, address, and ZIP+4 in this box •

Department of Environmental Services
City Hall, Room 300B
30 Church Street
Rochester, NewYork 14614

Attn. Jane Forbes

City of Rochester
Office of the Commissioner
Department of Environmental Services
City Hall Room 300B, 30 Church Street
Rochester, New York 14614-1290
www.cityofrochester.gov

one city

Division of
Environmental Quality

Notice to Municipality

June 21, 2016

Hon. Lovely A. Warren, Mayor
City of Rochester
City Hall
30 Church Street
Rochester, New York 14614

Re: Environmental Easement

Dear Mayor Warren:

Attached please find a copy of an environmental easement granted to the New York State Department of Environmental Conservation ("Department")

On: June 1, 2016
By: the City of Rochester,
For property at: 1200 East Main Street,
Tax Map No.: 106.76-1-44,
DEC Site No: B00129-8.

This Environmental Easement restricts future use of the above-referenced property to restricted commercial or industrial uses. Any on-site activity must be done in accordance with the Environmental Easement and the Site Management Plan which is incorporated into the Environmental Easement. Department approval is also required prior to any groundwater use.

Article 71, Section 71-3607 of the New York State Environmental Conservation Law requires that:

1. Whenever the department is granted an environmental easement, it shall provide each affected local government with a copy of such easement and shall also provide a copy of any documents modifying or terminating such environmental easement.

2. Whenever an affected local government receives an application for a building permit or any other application affecting land use or development of land that is subject to an environmental easement and that may relate to or impact such easement, the affected local government shall notify the department and refer such application to the department. The department shall evaluate whether the application is consistent with the environmental easement and shall notify the affected local government of its determination in a timely fashion, considering the time frame for the local government's

review of the application. The affected local government shall not approve the application until it receives approval from the department.

An electronic version of every environmental easement that has been accepted by the Department is available to the public at: http://www.dec.ny.gov/chemical/36045.html. Please forward this notice to your building and/or planning departments, as applicable, to ensure your compliance with these provisions of New York State Environmental Conservation Law. If you have any questions or comments regarding this matter, please do not hesitate to contact me.

Very truly yours,

Mark D. Gregor – Manager
City of Rochester
Division of Environmental Quality
30 Church Street – Room 300B
Rochester, New York 14614
(585) 428-5978
(585) 428-6010 (fax)

MONROE COUNTY CLERK'S OFFICE

ROCHESTER, NY

THIS IS NOT A BILL. THIS IS YOUR RECEIPT

Receipt # 1422816

Index DEEDS

Book 11705 Page 44

No. Pages : 10

Instrument EASEMENT AGREEMENT

Date : 06/01/2016

Time : 03:17:55PM

Control # 201606010740

TT # TT0000017002

Ref 1 #

Employee : JoanM

Return To:
BOX 36
SCS

ROCHESTER CITY OF
MONROE COUNTY OF

ROCHESTER CITY OF
MONROE COUNTY OF

COUNTY FEE TP584	$	5.00
COUNTY FEE NUMBER PAGES	$	45.00
RECORDING FEE	$	45.00
STATE FEE TRANSFER TAX	$	0.00
Total	$	95.00

TRANSFER AMT

TRANSFER AMT	$1.00

State of New York

MONROE COUNTY CLERK'S OFFICE

WARNING - THIS SHEET CONSTITUTES THE CLERKS ENDORSEMENT, REQUIRED BY SECTION 317-a(5) & SECTION 319 OF THE REAL PROPERTY LAW OF THE STATE OF NEW YORK. DO NOT DETACH OR REMOVE.

ADAM J BELLO

MONROE COUNTY CLERK

PI182-201606010740-10

9

ENVIRONMENTAL EASEMENT GRANTED PURSUANT TO ARTICLE 71, TITLE 36 OF THE NEW YORK STATE ENVIRONMENTAL CONSERVATION LAW

Box 36 SCS

THIS INDENTURE made this 25th day of March, 2016, between Owner(s) City of Rochester, having an office at 30 Church Street, Rochester, New York 14614-1290, County of Monroe, State of New York (the "Grantor"), and The People of the State of New York (the "Grantee."), acting through their Commissioner of the Department of Environmental Conservation (the "Commissioner", or "NYSDEC" or "Department" as the context requires) with its headquarters located at 625 Broadway, Albany, New York 12233,

WHEREAS, the Legislature of the State of New York has declared that it is in the public interest to encourage the remediation of abandoned and likely contaminated properties ("sites") that threaten the health and vitality of the communities they burden while at the same time ensuring the protection of public health and the environment; and

WHEREAS, the Legislature of the State of New York has declared that it is in the public interest to establish within the Department a statutory environmental remediation program that includes the use of Environmental Easements as an enforceable means of ensuring the performance of operation, maintenance, and/or monitoring requirements and the restriction of future uses of the land, when an environmental remediation project leaves residual contamination at levels that have been determined to be safe for a specific use, but not all uses, or which includes engineered structures that must be maintained or protected against damage to perform properly and be effective, or which requires groundwater use or soil management restrictions; and

WHEREAS, the Legislature of the State of New York has declared that Environmental Easement shall mean an interest in real property, created under and subject to the provisions of Article 71, Title 36 of the New York State Environmental Conservation Law ("ECL") which contains a use restriction and/or a prohibition on the use of land in a manner inconsistent with engineering controls which are intended to ensure the long term effectiveness of a site remedial program or eliminate potential exposure pathways to hazardous waste or petroleum; and

WHEREAS, Grantor, is the owner of real property located at the address of 1200 E. Main Street in the City of Rochester, County of Monroe and State of New York, known and designated on the tax map of the County Clerk of Monroe as tax map parcel numbers: Section 106.76 Block 1 Lot 44, being the same as that property conveyed to Grantor by deed dated April 29, 1998 and recorded in the Monroe County Clerk's Office in Liber and Page 09003/0351. The property subject to this Environmental Easement (the "Controlled Property") comprises approximately 0.622 +/- acres, and is hereinafter more fully described in the Land Title Survey dated February 1, 2016 prepared by Kevin M. Sullivan, L.S., which will be attached to the Site Management Plan. The Controlled Property description is set forth in and attached hereto as Schedule A; and

WHEREAS, the Department accepts this Environmental Easement in order to ensure the protection of public health and the environment and to achieve the requirements for remediation established for the Controlled Property until such time as this Environmental Easement is extinguished pursuant to ECL Article 71, Title 36; and

NOW THEREFORE, in consideration of the mutual covenants contained herein and the terms and conditions of State Assistance Contract Number: C303409, Grantor conveys to Grantee a permanent Environmental Easement pursuant to ECL Article 71, Title 36 in, on, over, under, and upon the Controlled Property as more fully described herein ("Environmental Easement").

1. Purposes. Grantor and Grantee acknowledge that the Purposes of this Environmental Easement are: to convey to Grantee real property rights and interests that will run with the land in perpetuity in order to provide an effective and enforceable means of encouraging the reuse and redevelopment of this Controlled Property at a level that has been determined to be safe for a specific use while ensuring the performance of operation, maintenance, and/or monitoring requirements; and to ensure the restriction of future uses of the land that are inconsistent with the above-stated purpose.

2. Institutional and Engineering Controls. The controls and requirements listed in the Department approved Site Management Plan ("SMP") including any and all Department approved amendments to the SMP are incorporated into and made part of this Environmental Easement. These controls and requirements apply to the use of the Controlled Property, run with the land, are binding on the Grantor and the Grantor's successors and assigns, and are enforceable in law or equity against any owner of the Controlled Property, any lessees and any person using the Controlled Property.

A. (1) The Controlled Property may be used for:

Commercial as described in 6 NYCRR Part 375-1.8(g)(2)(iii) and Industrial as described in 6 NYCRR Part 375-1.8(g)(2)(iv)

(2) All Engineering Controls must be operated and maintained as specified in the Site Management Plan (SMP);

(3) All Engineering Controls must be inspected at a frequency and in a manner defined in the SMP;

(4) The use of groundwater underlying the property is prohibited without necessary water quality treatment as determined by the NYSDOH or the Monroe County Department of Health to render it safe for use as drinking water or for industrial purposes, and the user must first notify and obtain written approval to do so from the Department;

(5) Groundwater and other environmental or public health monitoring must be performed as defined in the SMP;

(6) Data and information pertinent to Site Management of the Controlled Property must be reported at the frequency and in a manner defined in the SMP;

(7) All future activities on the property that will disturb remaining contaminated material must be conducted in accordance with the SMP;

(8) Monitoring to assess the performance and effectiveness of the remedy must be performed as defined in the SMP;

(9) Operation, maintenance, monitoring, inspection, and reporting of any mechanical or physical components of the remedy shall be performed as defined in the SMP;

(10) Access to the site must be provided to agents, employees or other representatives of the State of New York with reasonable prior notice to the property owner to assure compliance with the restrictions identified by this Environmental Easement.

B. The Controlled Property shall not be used for Residential or Restricted Residential purposes as defined in 6NYCRR 375-1.8(g)(2)(i) and (ii), and the above-stated engineering controls may not be discontinued without an amendment or extinguishment of this Environmental Easement.

C. The SMP describes obligations that the Grantor assumes on behalf of Grantor, its successors and assigns. The Grantor's assumption of the obligations contained in the SMP which may include sampling, monitoring, and/or operating a treatment system, and providing certified reports to the NYSDEC, is and remains a fundamental element of the Department's determination that the Controlled Property is safe for a specific use, but not all uses. The SMP may be modified in accordance with the Department's statutory and regulatory authority. The Grantor and all successors and assigns, assume the burden of complying with the SMP and obtaining an up-to-date version of the SMP from:

Site Control Section
Division of Environmental Remediation
NYSDEC
625 Broadway
Albany, New York 12233
Phone: (518) 402-9553

D. Grantor must provide all persons who acquire any interest in the Controlled Property a true and complete copy of the SMP that the Department approves for the Controlled Property and all Department-approved amendments to that SMP.

E. Grantor covenants and agrees that until such time as the Environmental Easement is extinguished in accordance with the requirements of ECL Article 71, Title 36 of the ECL, the property deed and all subsequent instruments of conveyance relating to the Controlled Property shall state in at least fifteen-point bold-faced type:

This property is subject to an Environmental Easement held by the New York State Department of Environmental Conservation pursuant to Title 36 of Article 71 of the Environmental Conservation Law.

F. Grantor covenants and agrees that this Environmental Easement shall be incorporated in full or by reference in any leases, licenses, or other instruments granting a right to use the Controlled Property.

G. Grantor covenants and agrees that it shall, at such time as NYSDEC may require, submit to NYSDEC a written statement by an expert the NYSDEC may find acceptable certifying under penalty of perjury, in such form and manner as the Department may require, that:

(1) the inspection of the site to confirm the effectiveness of the institutional and engineering controls required by the remedial program was performed under the direction of the individual set forth at 6 NYCRR Part 375-1.8(h)(3).

(2) the institutional controls and/or engineering controls employed at such site:

(i) are in-place;

(ii) are unchanged from the previous certification, or that any identified changes to the controls employed were approved by the NYSDEC and that all controls are in the Department-approved format; and

(iii) that nothing has occurred that would impair the ability of such control to protect the public health and environment;

(3) the owner will continue to allow access to such real property to evaluate the continued maintenance of such controls;

(4) nothing has occurred that would constitute a violation or failure to comply with any site management plan for such controls;

(5) the report and all attachments were prepared under the direction of, and reviewed by, the party making the certification;

(6) to the best of his/her knowledge and belief, the work and conclusions described in this certification are in accordance with the requirements of the site remedial program, and generally accepted engineering practices; and

(7) the information presented is accurate and complete.

3. Right to Enter and Inspect. Grantee, its agents, employees, or other representatives of the State may enter and inspect the Controlled Property in a reasonable manner and at reasonable times to assure compliance with the above-stated restrictions.

4. Reserved Grantor's Rights. Grantor reserves for itself, its assigns, representatives, and successors in interest with respect to the Property, all rights as fee owner of the Property, including:

A. Use of the Controlled Property for all purposes not inconsistent with, or limited by the terms of this Environmental Easement;

B. The right to give, sell, assign, or otherwise transfer part or all of the underlying fee interest to the Controlled Property, subject and subordinate to this Environmental Easement;

5. Enforcement

A. This Environmental Easement is enforceable in law or equity in perpetuity by Grantor, Grantee, or any affected local government, as defined in ECL Section 71-3603, against the owner of the Property, any lessees, and any person using the land. Enforcement shall not be defeated because of any subsequent adverse possession, laches, estoppel, or waiver. It is not a defense in any action to enforce this Environmental Easement that: it is not appurtenant to an interest in real property; it is not of a character that has been recognized traditionally at common law; it imposes a negative burden; it imposes affirmative obligations upon the owner of any interest in the burdened property; the benefit does not touch or concern real property; there is no privity of estate or of contract; or it imposes an unreasonable restraint on alienation.

B. If any person violates this Environmental Easement, the Grantee may revoke the Certificate of Completion with respect to the Controlled Property.

C. Grantee shall notify Grantor of a breach or suspected breach of any of the terms of this Environmental Easement. Such notice shall set forth how Grantor can cure such breach or suspected breach and give Grantor a reasonable amount of time from the date of receipt of notice in which to cure. At the expiration of such period of time to cure, or any extensions granted by Grantee, the Grantee shall notify Grantor of any failure to adequately cure the breach or suspected breach, and Grantee may take any other appropriate action reasonably necessary to remedy any breach of this Environmental Easement, including the commencement of any proceedings in accordance with applicable law.

D. The failure of Grantee to enforce any of the terms contained herein shall not be deemed a waiver of any such term nor bar any enforcement rights.

6. Notice. Whenever notice to the Grantee (other than the annual certification) or approval from the Grantee is required, the Party providing such notice or seeking such approval shall identify the Controlled Property by referencing the following information:

County, NYSDEC Site Number, NYSDEC Brownfield Cleanup Agreement, State Assistance Contract or Order Number, and the County tax map number or the Liber and Page or computerized system identification number.

Parties shall address correspondence to:

Site Number: B00129
Office of General Counsel
NYSDEC
625 Broadway
Albany New York 12233-5500

With a copy to:

Site Control Section
Division of Environmental Remediation
NYSDEC
625 Broadway
Albany, NY 12233

All notices and correspondence shall be delivered by hand, by registered mail or by Certified mail and return receipt requested. The Parties may provide for other means of receiving and communicating notices and responses to requests for approval.

7. Recordation. Grantor shall record this instrument, within thirty (30) days of execution of this instrument by the Commissioner or her/his authorized representative in the office of the recording officer for the county or counties where the Property is situated in the manner prescribed

by Article 9 of the Real Property Law.

8. Amendment. Any amendment to this Environmental Easement may only be executed by the Commissioner of the New York State Department of Environmental Conservation or the Commissioner's Designee, and filed with the office of the recording officer for the county or counties where the Property is situated in the manner prescribed by Article 9 of the Real Property Law.

9. Extinguishment. This Environmental Easement may be extinguished only by a release by the Commissioner of the New York State Department of Environmental Conservation, or the Commissioner's Designee, and filed with the office of the recording officer for the county or counties where the Property is situated in the manner prescribed by Article 9 of the Real Property Law.

10. Joint Obligation. If there are two or more parties identified as Grantor herein, the obligations imposed by this instrument upon them shall be joint and several.

IN WITNESS WHEREOF, Grantor has caused this instrument to be signed in its name.

CITY OF ROCHESTER:

By: [signature]

Print Name: MARK D GREGOR

Title: MANAGER DEQ Date: 2-26-2016

Grantor's Acknowledgment

STATE OF NEW YORK)
) ss:
COUNTY OF Monroe)

On the 26th day of February, in the year 20 16, before me, the undersigned, personally appeared Mark D. Gregor, personally known to me or proved to me on the basis of satisfactory evidence to be the individual(s) whose name is (are) subscribed to the within instrument and acknowledged to me that he/she/they executed the same in his/her/their capacity(ies), and that by his/her/their signature(s) on the instrument, the individual(s), or the person upon behalf of which the individual(s) acted, executed the instrument.

Vicki Brawn
Notary Public - State of New York

VICKI BRAWN
Notary Public In the State of New York
MONROE COUNTY
Commission Expires August 18, 20 18
01BR4868858

THIS ENVIRONMENTAL EASEMENT IS HEREBY ACCEPTED BY THE PEOPLE OF THE STATE OF NEW YORK, Acting By and Through the Department of Environmental Conservation as Designee of the Commissioner,

By: ______________________________
Robert W. Schick, Director
Division of Environmental Remediation

Grantee's Acknowledgment

STATE OF NEW YORK)
) ss:
COUNTY OF ALBANY)

On the 25th day of March, in the year 2016 before me, the undersigned, personally appeared Robert W. Schick, personally known to me or proved to me on the basis of satisfactory evidence to be the individual(s) whose name is (are) subscribed to the within instrument and acknowledged to me that he/she/ executed the same in his/her/ capacity as Designee of the Commissioner of the State of New York Department of Environmental Conservation, and that by his/her/ signature on the instrument, the individual, or the person upon behalf of which the individual acted, executed the instrument.

____
Notary Public - State of New York

David J. Chiusano
Notary Public, State of New York
No. 01CH5032146
Qualified in Schenectady County
Commission Expires August 22, 2018

SCHEDULE "A" PROPERTY DESCRIPTION

All that tract or parcel of land situate in the City of Rochester, County of Monroe, and State of New York, know and distinguished as Lot No. 17 of the Beechwood Tract, a subdivision of part of Town Lot No. 50 of the Town of Brighton, now in the City of Rochester, as shown on a map made by R.J. Smith for Minges and Williams, filed in the Monroe County Clerk's Office in Liber 7 of Maps, Page 22.

Said Lots 1, 2, and 3 front 36.3 feet on the north side of Main Street East and extend back 140 feet, said Lot 4 being in the rear of said Lots 1, 2, and 3 and being 108.90 feet, more or less on the south line, 50 feet on its east and west lines and 109.7 on the north line

Also all that tract or parcel of land in the City of Rochester, County of Monroe, State of New York, and being Lots 1, 2, 3 and 4 as laid down on a map of H. C. Heath Subdivision recorded in the Monroe County Clerk's Office in Liber 6 of Maps, Page 86, said Heath's Subdivision being a Resubdivision of Lot 14 of Klem's Subdivision according to a map recorded in the Monroe County Clerk's Office in Liber 178 of Deeds, Page 509.

Said Lot No. 17 fronts 39.54 feet in the north side of East Main Street, in the City, and extends back 157.61 feet on the west side and 162 feet on the east side according to said map including all the title and interest of the parties in the first part in and to the land in the streets opposite the premises hereby conveyed.

Being and Intending to describe the same premises referenced above (and recorded respectively in Liber 2717 of Deeds, Page 225 and Liber 2546 of Deeds, Page 190 in the Monroe County Clerk's Office) in an updated description based on a field survey by Bergmann Associates on February 1, 2016 and described as follows:

Commencing at the intersection of the northerly right of way line of East Main Street (aka Schanck Avenue - 60' wide) with the westerly right of way line of Laura Street (60' wide), thence, North 79°41'08" West, on the said northerly right of way line of East Main Street, a distance of 127.50 feet to the Point of Beginning. Thence,

North 79°41'08" West, continuing on the said northerly right of way line of East Main Street, a distance of 148.44 feet to a point on the division between the said lands of the City of Rochester on the east, and lands now or formerly of AutoZone, Inc. (T.A. No. 106.76-1-45) on the west; thence,

North 09°24'00" East, on the said division line, a distance of 157.55 feet to a point on the division line between the said lands of the City of Rochester on the south and lands now or formerly of Ricky C. Williams (T. A. No. 106.76-1-30) on the north; thence,

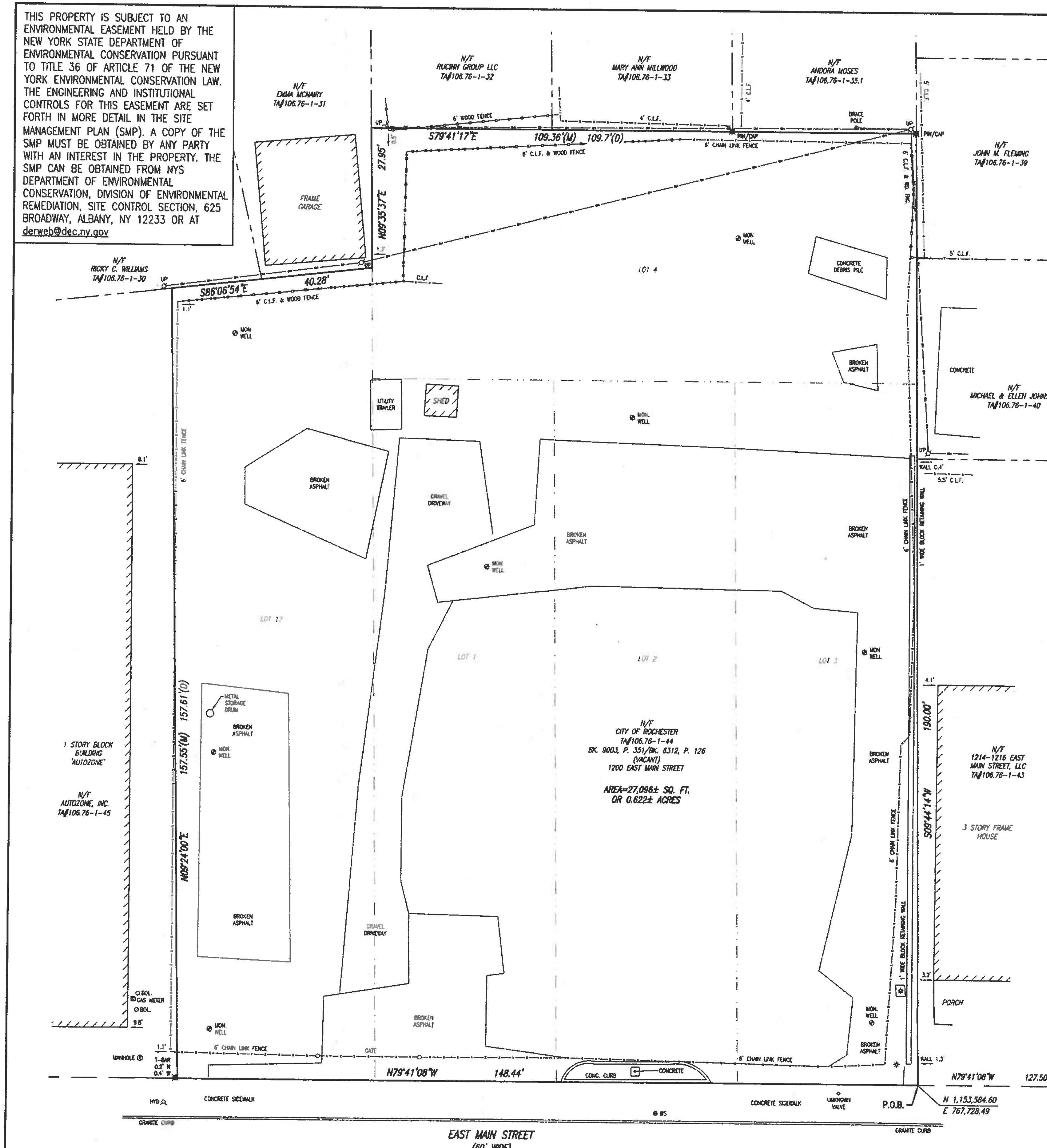
South 86°06'54" East, on the said division line and the division line between the said lands of the City of Rochester on the south and lands now or formerly of Emma McNairy (T.A. No. 106.76-1-31) on the north, a distance of 40.28 feet to a point; thence,

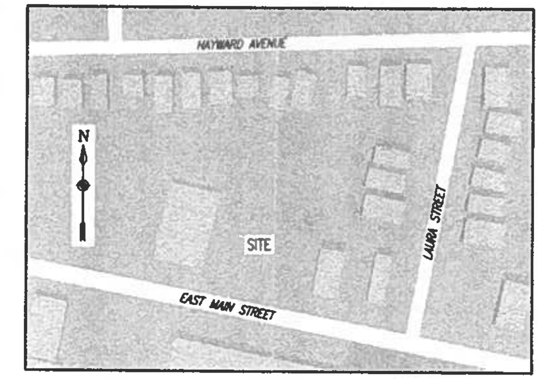
North 09°35'37" East, continuing on the said division line, a distance of 27.95 feet to a point on the division line between the said lands of the City of Rochester on the south and lands now or formerly of Rucinn Group LLC (T.A. No. 106.76-1-32) on the north; thence, South 79°41'17" East, continuing on the said division line and on the division line between the said lands of the City of Rochester on the south and lands now or formerly of: Mary Ann Millwood (T.A. No. 106.76-1-33); and Andora Moses (T.A. No. 106.76-1-35.1) on the north, a distance of 109.36 feet to a pin w/cap found on the division line between the said lands of the City of Rochester on the west and lands now or formerly of John M. Fleming (Tax Map No. 106.76-1-39) on the east; thence,

South 09°44'14" West, continuing on the said division line and on the division line between the said lands of the City of Rochester on the west, and lands now of formerly of: Michael & Ellen Johnson (Tax Map No. 106.76-1-40); and lands now or formerly of 1214-1216 East Main Street LLC (Tax Map No. 106.76-1-43) on the east, a distance of 190.00 feet to the Point of Beginning.

Said parcel containing 0.622 acres, more or less, as shown on a map prepared by Bergmann Associates entitled "Instrument Survey 1200 East Main Street", Project No. 4453.05, Drawing No. ISM-01, dated February 1, 2016.

THIS PROPERTY IS SUBJECT TO AN ENVIRONMENTAL EASEMENT HELD BY THE NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION PURSUANT TO TITLE 36 OF ARTICLE 71 OF THE NEW YORK ENVIRONMENTAL CONSERVATION LAW. THE ENGINEERING AND INSTITUTIONAL CONTROLS FOR THIS EASEMENT ARE SET FORTH IN MORE DETAIL IN THE SITE MANAGEMENT PLAN (SMP). A COPY OF THE SMP MUST BE OBTAINED BY ANY PARTY WITH AN INTEREST IN THE PROPERTY. THE SMP CAN BE OBTAINED FROM NYS DEPARTMENT OF ENVIRONMENTAL CONSERVATION, DIVISION OF ENVIRONMENTAL REMEDIATION, SITE CONTROL SECTION, 625 BROADWAY, ALBANY, NY 12233 OR AT derweb@dec.ny.gov





SITE LOCATION MAP
NOT TO SCALE

LEGEND

- PIN OR REBAR FOUND
- RCS MONUMENT FOUND
- BOL BOLLARD OR POST
- MONITORING WELL
- GAS METER
- LIGHT POLE
- UTILITY POLE
- BRACE POLE
- HYD FIRE HYDRANT
- WV WS WATER VALVE OR SERVICE
- MH UNKNOWN MANHOLE
- CHAIN LINK FENCE
- WOOD FENCE
- OVERHEAD UTILITY WIRE
- PROPERTY LINE
- ADJOINING PROPERTY LINE
- EASEMENT LINE
- RIGHT OF WAY LINE
- OLD LOT LINE
- 190.38' (M) MEASURED DISTANCE
- 190.7' (D) DEED DISTANCE

REFERENCES:

1) THE FOLLOWING MAPS FILED IN THE MONROE COUNTY CLERK'S OFFICE.
BOOK 6, PAGE 88
BOOK 7, PAGE 22

2) THE FOLLOWING DEEDS FILED IN THE MONROE COUNTY CLERK'S OFFICE.
BOOK 9003, PAGE 351
BOOK 6312, PAGE 126

3) CITY OF ROCHESTER DISTRICT 18, MAP 1.

4) ABSTRACT No. 57707 PREPARED BY INDEPENDENT TITLE AGENCY, LLC, DATED JANUARY 30, 2016.

NOTES:

1) HORIZONTAL DATUM IS REFERENCED TO THE NEW YORK STATE PLANE COORDINATE SYSTEM, WEST ZONE (NAD 27) THROUGH SURVEY CONTROL TIES TO MONUMENTS:

BEECHWOOD 1925 N=1,153,437.23 E=768,533.95
GOODMAN 1925 N=1,153,780.78 E=768,726.39

2) PROPERTY MAY BE SUBJECT TO A GARAGE ENCROACHMENT AGREEMENT AND LICENSE IN LIBER 6059 OF DEEDS, PAGE 125 FOR THE PROPERTY AT TAX ACCOUNT No. 106.76-1-40. IT APPEARS THAT THE GARAGE HAS BEEN REMOVED FROM THE PROPERTY AND THIS AGREEMENT MAY NOT BE IN EFFECT ANY LONGER.

EASEMENT DESCRIPTION:

All that tract or parcel of land situate in the City of Rochester, County of Monroe, and State of New York, know and distinguished as Lot No. 17 of the Beechwood Tract, a subdivision of part of Town Lot No. 50 of the Town of Brighton, now in the City of Rochester, as shown on a map made by R.J. Smith for Minges and Williams, filed in the Monroe County Clerk's Office in Liber 7 of Maps, Page 22.

Said Lots 1, 2, and 3 front 38.3 feet on the north side of Main Street East and extend back 140 feet, said Lot 4 being in the rear of said Lots 1, 2, and 3 and being 108.90 feet, more or less on the south line, 50 feet on its east and west lines and 109.7 on the north line

Also all that tract or parcel of land in the City of Rochester, County of Monroe, State of New York, and being Lots 1, 2, 3 and 4 as laid down on a map of H. C. Heath Subdivision recorded in the Monroe County Clerk's Office in Liber 6 of Maps, Page 88, said Heath's Subdivision being a Resubdivision of Lot 14 of Klem's Subdivision according to a map recorded in the Monroe County Clerk's Office in Liber 178 of Deeds, Page 509.

Said Lot No. 17 fronts 39.54 feet in the north side of East Main Street, in the City, and extends back 157.61 feet on the west side and 162 feet on the east side according to said map including all the title and interest of the parties in the first part in and to the land in the streets opposite the premises hereby conveyed.

Being and intending to describe the same premises referenced above (and recorded respectively in Liber 2717 of Deeds, Page 225 and Liber 2546 of Deeds, Page 190 in the Monroe County Clerk's Office) in an updated description based on a field survey by Bergmann Associates on February 1, 2016 and described as follows:

Commencing at the intersection of the northerly right of way line of East Main Street (aka Schenck Avenue – 60' wide) with the westerly right of way line of Laura Street (60' wide), thence, North 79°41'08" West, on the said northerly right of way line of East Main Street, a distance of 127.50 feet to the Point of Beginning. Thence,

North 79°41'08" West, continuing on the said northerly right of way line of East Main Street, a distance of 148.44 feet to a point on the division between the said lands of the City of Rochester on the east, and lands now or formerly of AutoZone, Inc. (T.A. No. 106.76–1–45) on the west; thence,

North 09°24'00" East, on the said division line, a distance of 157.55 feet to a point on the division line between the said lands of the City of Rochester on the south and lands now or formerly of Ricky C. Williams (T. A. No. 106.76–1–30) on the north; thence,

South 86°06'54" East, on the said division line and the division line between the said lands of the City of Rochester on the south and lands now or formerly of Emma McNairy (T.A. No. 106.76–1–31) on the north, a distance of 40.28 feet to a point; thence,

North 09°35'37" East, continuing on the said division line, a distance of 27.95 feet to a point on the division line between the said lands of the City of Rochester on the south and lands now or formerly of Rucinn Group LLC (T.A. No. 106.76–1–32) on the north; thence,

South 79°41'17" East, continuing on the said division line and on the division line between the said lands of the City of Rochester on the south and lands now or formerly of: Mary Ann Millwood (T.A. No. 106.76–1–33); and Andora Moses (T.A. No. 106.76–1–35.1) on the north, a distance of 109.36 feet to a pin w/cap found on the division line between the said lands of the City of Rochester on the west and lands now or formerly of John M. Fleming (Tax Map No. 106.76–1–39) on the east; thence,

South 09°44'14" West, continuing on the said division line and on the division line between the said lands of the City of Rochester on the west, and lands now of formerly of: Michael & Ellen Johnson (Tax Map No. 106.76–1–40); and lands now or formerly of 1214–1216 East Main Street LLC (Tax Map No. 106.76–1–43) on the east, a distance of 190.00 feet to the Point of Beginning.

Said parcel containing 0.622 acres, more or less.

WE, BERGMANN ASSOCIATES, DO HEREBY CERTIFY THAT THIS MAP WAS MADE FROM THE NOTES OF AN INSTRUMENT SURVEY LAST DATED 2/1/16 AND FROM THE REFERENCES LISTED HEREON.

Kevin M. Sullivan 2/25/2016

KEVIN M. SULLIVAN, L.S. No. 049983 DATE

CITY OF ROCHESTER

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Rochester, NY 14609

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REVISIONS

NO.	DATE	DESCRIPTION	REV.	CK'D

EASEMENT TO N.Y.S.D.E.C.

NOTE:
Unauthorized alteration or addition to this drawing is a violation of the New York State Education Law Article 145, Section 7209.

STATE OF NEW YORK KEVIN M. SULLIVAN 049983 LICENSED LAND SURVEYOR
2/25/2016
Date

Project Manager: K. SULLIVAN
Designed by:
Drawn by: C. WOOD
Checked by: K. SULLIVAN
Date Issued: FEBRUARY 1, 2016
Scale: 1" = 10'

Project Number: 4453.05
File Name: I:\City of Rochester\004453.05\4.0\4.2\Carlson2015\dwg\4453.05 base.dwg

Drawing Number:

ISM-01

1 of 1

APPENDIX 2
EXCAVATION WORK PLAN

BERGMANN
ARCHITECTS ENGINEERS PLANNERS

Appendix 2

Excavation Work Plan

City of Rochester

1200 East Main Street
Environmental Restoration Program
Site B-00129-8
Rochester, New York

www.bergmannpc.com

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1.0 Notification

At least fifteen (15) days prior to the start of any activity, that is anticipated to encounter remaining contamination, the site owner or their representative will notify the NYSDEC. Below presents the contact information for the above notification. The information will be updated as necessary to provide accurate contact information. A full listing of site-related contact information is provided in Appendix 3.

Ms. Charlotte Theobald
Division of Environmental Remediation Project Manager
New York State Department of Environmental Conservation
6225 East Avon Lima Road
Avon, NY 14414
(585) 226-5354
charlotte.theobald@dec.ny.gov

Jane Forbes, Project Manager
City of Rochester
Division of Environmental Quality
30 Church Street, City Hall, RM 300B
Rochester, New York 14614
(585) 428-5978
jane.forbes@cityofrochester.gov

* Note: Notifications are subject to change and will be updated as necessary.

This notification will include:

1. A detailed description of the work to be performed, including the location and areal extent of excavations, plans/drawings for Site re-grading, intrusive elements or utilities to be installed below the soil cover, estimated volumes of contaminated soil to be excavated and any work that may impact an engineering control.
2. A summary of environmental conditions anticipated in the work areas, including the nature and concentration levels of contaminants of concern, potential presence of grossly contaminated media, and plans for any pre- construction sampling.
3. A schedule for the work, detailing the start and completion of all intrusive work.
4. A summary of the applicable components of this EWP.
5. A statement that the work will be performed in compliance with this EWP and 29 Code of Federal Regulations (CFR) 1910.120.
6. A copy of the contractor's health and safety plan (HASP), in electronic format, if it differs from the HASP provided in Appendix 8 of this SMP.
7. Identification of disposal facilities for potential waste streams.
8. Identification of sources of any anticipated backfill, along with all required chemical testing results.

2.0 Soil Screening Methods

Visual, olfactory and instrument-based soil screening (e.g., photoionization detector [PID]) will be performed by a qualified environmental professional during all excavations into known or potentially contaminated material (remaining contamination). Soil screening will be performed when invasive work is done and will include all excavation and invasive work performed during development, such as excavations for foundations and underground utility work after issuance of the Certificate of Completion (COC).

Soils will be segregated based on previous environmental data and screening results into material that requires off-site disposal, material that requires testing to determine if the soil/fill material can be reused on-site. A PID screening level of 10 parts per million (PPM) will be used to segregate excavated soil/fill material. Further discussion of off-site disposal of materials and on-site reuse is provided in Section 7 of this Appendix.

3.0 Soil Staging

Soil stockpiles of excavated materials will be placed on 12 mil plastic sheeting and will be continuously encircled with a berm and/or silt fence. Hay bales will be used as needed near catch basins, surface waters, and other discharge points.

Stockpiles will be kept covered at all times with appropriately anchored tarps or 12 mil plastic sheeting. Stockpiles will be routinely inspected and damaged tarp covers will be promptly replaced.

Stockpiles will be inspected at a minimum once each week and after every storm event. Results of inspections will be recorded in a logbook and maintained at the Site and available for inspection by NYSDEC.

4.0 Materials Excavation and Load Out

A qualified environmental professional or person under their supervision will oversee all invasive work and the excavation and load-out of all excavated material.

The owner of the property and remedial party (if applicable) and its contractors are solely responsible for safe execution of all invasive work and other work performed under this SMP.

The presence of utilities and easements on the Site will be investigated by the qualified environmental professional. It will be determined whether a risk or impediment to the planned work under this SMP is posed by utilities or easements on the Site.

Loaded vehicles leaving the Site will be appropriately lined, tarped, securely covered, manifested, and placarded in accordance with appropriate Federal, State, local, and New York State Department of Transportation (NYSDOT) requirements (and all other applicable transportation requirements).

A truck wash will be operated on-Site, as appropriate. The qualified environmental professional will be responsible for ensuring that all outbound trucks will be inspected, washed at the truck wash before leaving the Site until the activities performed under this section are complete. Truck wash waters will be collected and disposed off-site in an appropriate manner and in accordance with all applicable local, State, and

Federal regulations.

If a truck wash area is not appropriate then a decontamination area will be established of sufficient size to accommodate all equipment (e.g., haul trucks) involved in the excavation activities. All equipment will enter the decontamination area prior to exiting the Site. The equipment will have all soil/fill material removed from the equipment. At the end of the excavation activities, the decontamination area and all material accumulated will be removed and disposed off-site in accordance with all applicable local, State, and Federal regulations.

Locations where vehicles enter or exit the Site shall be inspected daily for evidence of off-site soil tracking.

The qualified environmental professional will be responsible for ensuring that all egress points for truck and equipment transport from the Site are clean of dirt/soils and other materials derived from the Site during intrusive excavation activities. Cleaning of the adjacent streets will be performed as needed to maintain a clean condition with respect to site-derived materials.

5.0 Materials Transport Off-Site

All transport of materials will be performed by licensed haulers in accordance with appropriate local, State, and Federal regulations, including 6 New York Codes, Rules, and Regulations (NYCRR) Part 364. Haulers will be appropriately licensed and trucks properly placarded.

Material transported by trucks exiting the Site will be secured with tight-fitting covers. Loose-fitting canvas-type truck covers will be prohibited. If loads contain wet material capable of producing free liquid, truck liners will be used.

All trucks loaded with Site materials will exit the vicinity of the Site using the approved truck route shown on Figure 1 – Truck Route. This is the most appropriate route and takes into account: (a) limiting transport through residential areas and past sensitive sites; (b) use of city mapped truck routes; (c) prohibiting off-site queuing of trucks entering the facility; (d) limiting total distance to major highways; (e) promoting safety in access to highways; (f) overall safety in transport; and (g) community input (where necessary).

Trucks will be prohibited from stopping and idling in the neighborhood outside the project Site. Egress points for truck and equipment transport from the Site will be kept clean of dirt/soil and other materials during Site remediation and development. Queuing of trucks will be performed on-site in order minimize off-site disturbance. Off-site queuing will be prohibited.

6.0 Materials Disposal Off-Site

All material excavated and removed from the Site will be treated as contaminated and regulated material and will be transported and disposed of in accordance with all local, State (including 6NYCRR Part 360) and Federal regulations. If disposal of material from this Site is proposed for unregulated off-site disposal (i.e. clean soil removed for development purposes), a formal request with an associated plan will be made to the NYSDEC. Unregulated off-site management of materials from this Site will not occur without formal NYSDEC approval.

Off-site disposal locations for excavated soils will be identified in the pre-excavation notification. This will include estimated quantities and a breakdown by class of disposal facility if appropriate, i.e., hazardous waste disposal facility, solid waste landfill, petroleum treatment facility, Construction/Demolition recycling facility, etc. Actual disposal quantities and associated documentation will be reported to the NYSDEC in the Periodic Review Report. This documentation will include: waste profiles, test results, facility acceptance letters, manifests, bills of lading and facility receipts.

Non-hazardous historic fill and contaminated soils taken off-site will be handled, at minimum, as a Municipal Solid Waste per 6NYCRR Part 360-1.2. Material that does not meet Unrestricted Soil Clean-up Objectives (SCOs) is prohibited from being taken to a New York State recycling facility (6NYCRR Part 360-16 Registration Facility).

7.0 Materials Reuse On-Site

Soil which exists at a site must meet the requirements of DER-10, Section 5.4 (e) and Appendix 14 of this SMP, Allowable Constituent Levels for Imported Fill or Soil Subdivision 5.4 (e). Soil/fill material excavated at the Site will be screened and staged in accordance with Section 2 and 3 of this EWP. The sampling of soil/fill material to be re-used on-site will be analyzed for the full suite of analytical parameters unless Department approval is obtained for a reduced analyte list. The full suite of analytical parameters includes TCL VOCs plus TICs, TCL SVOCs plus TICs, TAL metals, Cyanide, PCBs, and Pesticides. The number of soil/fill material samples to be collected for laboratory analysis see Table A-1 below.

If laboratory analytical data indicates that soil constituent levels meet unrestricted, restricted, restricted-residential, or commercial soil cleanup objectives for all compounds presented in Appendix 14 of this SMP then, those soils can be used on Site anywhere.

If laboratory analytical data indicates that soil constituent levels exceed commercial SCOs for any of the compounds presented in Appendix 14 then those soils will be disposed at a permitted landfill facility.

The qualified environmental professional will ensure that procedures defined for materials reuse in this SMP are followed and that unacceptable material does not remain on-site. Soil/fill material, including historic fill material, can be reused on-site if laboratory analysis indicates that the soil/fill material meets the Commercial SCO for all constituents listed in Appendix 14 of the SMP (DER-10, Appendix 5) and field screening indicates no impacts present such as no visual impacts, no odor impacts, and no PID readings greater than 10 ppm.

Table A-1
Soil/Fill Sampling Frequency

Recommended Number of Soil Samples			
Contaminant	VOCs	SVOCs, Inorganics & PCBs/Pesticides	
Soil Quantity (Cubic yards)	Discrete Samples	Composite	Discrete Samples/Composite
0-50	1	1	3-5 discrete samples from different locations in the fill being provided will comprise a composite sample for analysis.
50-100	2	1	
100-200	3	1	
200-300	4	1	
300-400	4	2	
400-500	5	2	
500-800	6	2	
800-1000	7	2	
➢ 1000	Add additional 2 VOC and 1 composite for each additional 1000 cubic yards or consult with the DER project manager.		

Any demolition material proposed for reuse on-site will be sampled for asbestos and the results will be reported to the NYSDEC for acceptance. Concrete crushing or processing on-site will not be performed without prior NYSDEC approval. Organic matter (wood, roots, stumps, etc.) or other solid waste derived from clearing and grubbing of the site will not be reused on-site.

8.0 Fluids Management

All liquids to be removed from the Site, including but not limited to excavation dewatering, decontamination waters, groundwater from monitoring well purge and development waters, will be handled, transported, and disposed in accordance with applicable local, State, and Federal regulations. Dewatering, purge and development fluids will not be recharged back to the land surface or subsurface of the Site and will be managed off-site, unless prior approval is obtained from NYSDEC.

Discharge of water generated during large-scale construction activities to surface waters (i.e. a local pond, stream or river) will be performed under a SPDES permit.

9.0 Backfill from Off-Site Sources

All materials proposed for import onto the site will be approved by the qualified environmental professional and will be in compliance with provisions in this SMP prior to receipt at the site. A Request to Import/Reuse Fill or Soil form, which can be found at http://www.dec.ny.gov/regulations/67386.html, will be prepared and submitted to the NYSDEC project manager allowing a minimum of 5 business days for review.

Material from industrial sites, spill sites, or other environmental remediation sites or potentially contaminated sites will not be imported to the site.

All imported soils will meet the backfill and cover soil quality standards established in 6NYCRR 375-6.7(d). Based on an evaluation of the land use, protection of groundwater and protection of ecological resources criteria, the resulting soil quality standards are listed in Table A-2. Soils that meet 'exempt' fill requirements under 6 NYCRR Part 360, but do not meet backfill or cover soil objectives for this site, will not be imported onto the site without prior approval by NYSDEC. Solid waste will not be imported onto the site.

Table A-2
Criteria for Imported Soil and Non-Soil Material

Proposed Use	Criteria
Soil	Must meet Commercial SCOs for all constituents listed in Appendix 14 of the SMP (DER-10, Appendix 5).
Non-Soil Material	May be imported without chemical testing provided it contains less than 10% by weight material that would pass through a size 80 sieve and consists of gravel, rock, or stone consisting of virgin material from permitted mine or quarry; or recycled concrete or brick from a NYSDEC registered facility.**

** See DER-10 Section 5.4(e)5 for additional details.

Soil material to be imported to the Site must be sampled and analyzed in accordance with Section 7 of this EWP.

Trucks entering the Site with imported soils will be securely covered with tight fitting covers. Imported soils will be stockpiled separately from excavated materials and covered to prevent dust releases.

10.0 Storm Water Pollution Prevention

Any future excavations and/or development will comply with New York State Division of Water guidelines and New York State regulations. In the event that the area of disturbance exceeds the acreage criteria for New York (currently 1-acre) or the local municipality criteria, a Storm Water Pollution Prevention Plan (SWPPP) will be prepared. The storm water practices to be implemented are summarized below.

Barriers and hay bale checks will be installed and inspected once a week and after every storm event. Results of inspections will be recorded in a logbook and maintained at the Site and available for inspection by NYSDEC. All necessary repairs shall be made immediately.

Accumulated sediments will be removed as required to keep the barrier and hay bale check functional.

All undercutting or erosion of the silt fence toe anchor shall be repaired immediately with appropriate backfill materials.

Manufacturer's recommendations will be followed for replacing silt fencing damaged due to weathering.

Erosion and sediment control measures identified in the SMP shall be observed to ensure that they are operating correctly. Where discharge locations or points are accessible, they shall be inspected to ascertain whether erosion control measures are effective in preventing significant impacts to receiving waters.

Silt fencing or hay bales will be installed around the entire perimeter of the construction area.

11.0 Excavation Contingency Plan

If underground tanks or unidentified contaminant sources are found during post-remedial subsurface excavations or future development related construction, excavation activities will be suspended until NYSDEC and owner is notified, health and safety plan is modified, and sufficient equipment is mobilized to address the condition.

Sampling will be performed on product, sediment, and surrounding soils, etc. as necessary to determine the nature of the material and proper disposal method. Chemical analysis will be performed for a full list of analytes (Target Analyte List [TAL] metals; Target Compound List [TCL] volatiles and semi-volatiles, TCL Pesticides/PCBs) unless Site history and previous sampling results that provide sufficient justification to limit the list of analytes. In this case, a reduced list of analytes will be proposed to the NYSDEC for approval prior to sampling.

Identification of unknown or unexpected contaminated media identified by screening during invasive site work will be promptly communicated by phone to NYSDEC’s Project Manager. Reportable quantities of petroleum product will also be reported to the NYSDEC spills hotline. These findings will also be included in the Periodic Review Reports.

12.0 Community Air Monitoring Plan

A Community Air Monitoring Plan (CAMP) will be implemented during all intrusive activities. The applicable CAMP is provided in the Appendix 9 of this SMP.

A figure showing the location of air sampling stations based on generally prevailing wind conditions is shown in Figure 2 – Air Monitoring Station Locations. These locations will be adjusted on a daily or more frequent basis based on actual wind directions to provide an upwind and at least two downwind monitoring stations. If a sensitive receptor, such as a school, day care or residential area is adjacent to the site, fixed monitoring station(s) will be located at that site perimeter, regardless of wind direction.

Exceedances of action levels listed in the CAMP will be reported to NYSDEC and New York State Department of Health (NYSDOH) Project Managers.

13.0 Odor Control Plan

This odor control plan is capable of controlling emissions of nuisance odors off-site and on-site, if there are residents or tenants on the property. Specific odor control methods to be used on a routine basis will include:

- Performing activities that may generate odors during normal working hours.
- Covering vehicles transporting materials on-site when possible and in accordance with Department of Transportation requirements when transporting materials offsite.
- Maintaining covered/tarped stockpiles on site with covering at the end of each work shift, at a minimum.
- Loading trucks such that material will not be dropped from heights above the truck body.
- Cleaning excavated material spills immediately.
- Reporting and addressing odor complaints accordingly with appropriate follow- up.

If nuisance odors are identified at the Site boundary or if odor complaints are received, work will be halted and the source of odors will be identified and corrected. Work will not resume until all nuisance odors have been abated. NYSDEC and NYSDOH will be notified of all odor events and of any other complaints about the project. Implementation of all odor controls, including the halt of work, is the responsibility of the Remedial Party Remediation Engineer, and any measures that are implemented will be discussed in the Periodic Review Report.

All necessary means will be employed to prevent onsite and offsite nuisances. At a minimum, these measures will include: (a) limiting the area of open excavations and size of soil stockpiles; (b) shrouding open excavations with tarps and other covers; and (c) using foams to cover exposed odorous soils. If odors develop and cannot be otherwise controlled, additional means to eliminate odor nuisances will include: (d) direct load-out of soils to trucks for offsite disposal; (e) use of chemical odorants in spray or misting systems; and, (f) use of staff to monitor odors in surrounding neighborhoods.

If nuisance odors develop during intrusive work that cannot be corrected, or where the control of nuisance odors cannot otherwise be achieved due to on-site conditions or close proximity to sensitive receptors, odor control will be achieved by sheltering the excavation and handling areas in a temporary containment structure equipped with appropriate air venting/filtering systems.

14.0 Dust Control Plan

A dust suppression plan that addresses dust management during invasive on-site work will include, at a minimum, the items listed below:

1. Dust suppression will be achieved through the use of a dedicated on-site water truck for road wetting. The truck will be equipped with a water cannon capable of spraying water directly onto off-road areas including excavations and stockpiles.
2. Clearing and grubbing of larger sites will be done in stages to limit the area of exposed, un-vegetated soils vulnerable to dust production.
3. Gravel will be used on roadways to provide a clean and dust-free road surface.
4. On-site roads will be limited in total area to minimize the area required for water truck sprinkling.
5. Implement the CAMP.

15.0 Other Nuisances

A plan for rodent control will be developed and utilized by the contractor prior to and during site clearing and site grubbing, and during all remedial work.

A plan will be developed and utilized by the contractor for all remedial work to ensure compliance with local noise control ordinances.

APPENDIX 3
SITE CONTACT LIST

BERGMANN
ARCHITECTS ENGINEERS PLANNERS

APPENDIX 3 - Site Contact List

Ms. Charlotte Theobald
NYSDEC Project Manager
(585)-226-5354
charlotte.theobald@dec.ny.gov

Ms. Bernette Schilling, P.E.
NYSDEC Regional HW Engineer
(585)-226-5315
bernette.schilling@dec.ny.gov

Ms. Kelly Lewandowski
NYSDEC Site Control
(518)-402-9553
kelly.lewandowski@dec.ny.gov

Ms. Jane Forbes
City of Rochester
Division of Environmental Quality Project Manager
585-428-5978
Jane.forbes@cityofrochester.gov

Mr. Stephen DeMeo
Bergmann Associates
(585) 498-7805
sdemeo@bergmannpc.com

APPENDIX 4
OPERATION & MAINTENANCE PLAN
AND
SYSTEM OPERATION MANUALS

Operation & Maintenance of the Oxygen Injection System

Site visits for routine O&M and optimization of the oxygen injection (O2) system will be completed monthly. Equipment inspection and maintenance will be completed quarterly, or more frequently as needed. A site-specific Oxygen Injection System Evaluation Sheet for recording data field and system operating data is attached.

Performance monitoring goals include:

- Operate the oxygen injection system with a minimum up time of 90%.
- Produce high purity oxygen gas (>85%).
- Pulse inject the oxygen gas at optimized flow rates and frequencies resulting in DO at saturation (30-40 mg/L) in the nine injection wells (IP-1 to IP-9).
- Increase dissolved oxygen concentrations in the plume to a minimum of 5 mg/L and target of 10 mg/L to create aerobic conditions to optimize biodegradation.
- Change the groundwater conditions from reducing to oxidizing and from oxygen limiting to contaminant limiting.

Start Up of the Kaeser Rotary Screw Compressor Package

Please refer to Section 2A, Chapter 8, page 27 of this manual for the detailed Kaeser compressor start up procedures. A brief description is provided here but the Kaeser manual should be reviewed and completely understood before operating the system. Identify the EMERGENCY STOP pushbutton on the compressor. This feature will immediately shut down the compressor in the event of an emergency. **Warning, the EMERGENCY STOP pushbutton does not terminate voltage to the compressor. Caution, before servicing the compressor, the breaker for the compressor must be in the OFF position in accordance with applicable lock out/tag out procedures per OSHA CFR 29 1910.147**.

The compressor should always be switched ON and OFF using keys 1 and 2 on the control panel (Sigma PLC). Do not use the breaker for turning the compressor on and off. Press the ON key and the compressor status will be displayed. The compressor can start at any moment.

Please refer to Section 2D, Chapter 8 of this manual for the detailed Kaeser air dryer start up procedures. Rotate the control switch to the ON position. Open the ball valve located between the compressor and wall mounted filter assembly. The compressor will load the tank to a pressure of approximately 100 PSI as displayed on the control panel.

Start Up of the AirSep PSA Oxygen Generator

Please refer to Section 2G Chapter 5 of this manual for the detailed AirSep PSA oxygen generator start up procedures. The AirSep manual provides instruction for the various models of oxygen generators. The start up and operating procedures are the same for all models. However, please refer to the AS-80/AS-D specifications for parts and service that apply to this system.

Turn the PSA ON/OFF switch to the ON position and the Auto/Manual switch to the AUTO position. Air will exhaust from the filter drain port. The PSA will cycle at a pressure of approximately 70 PSI as shown on the cycle pressure gauge. The PSA is self-regulated and will not operate without compressed air. Oxygen production will continue until the oxygen receiver (120-gallon tank) pressure rises to approximately 58 PSI. The compressor and PSA will automatically enter a resting mode and will not restart until the pressure drops in the oxygen receiver tank.

Start Up of the Oxygen Delivery System

The regulator on the oxygen receiver tank has been factory adjusted to provide sufficient pressure to the injection points without over pressurizing the oxygen delivery manifold. Adjusting this regulator is not advised. Once the oxygen receiver is full and the system is in a resting mode, open the ball valve on the oxygen receiver tank. A mechanical timer operates each bank of injection points by opening a normally closed solenoid valve. The injection cycles have been pre-set at the factory and should only be changed after consulting with a Matrix Environmental technician. Improperly set injection cycles can result in excessive motor starts on the compressor and shorten the maintenance intervals on the equipment. The normalized oxygen output (total cubic feet per hour, not flow meter rates) should never exceed 60 SCFH. Exceeding this output rate will accelerate equipment wear and may result in low oxygen output pressure.

Allow each timer to run through a complete cycle and adjust the Dwyer flow meters to 30 SCFH or other pre-determined per point flow rate. Adjusting the flow meters at each site visit is standard. Rising pressure at the delivery manifold is an indication of silt buildup in the injection points. The points should be cleared when oxygen flow decreases to 10 SCFH or pressure exceeds 15 PSI (or sooner if desired).

The oxygen injection system is now ready for unattended operation. It is strongly suggested that several complete run cycles be supervised before leaving the site. Do not forget to set the thermostat on the heater and verify that the roof-mounted ventilator is operational. Also inspect the air inlet filters on the doors of the trailer and clean or replace when dirty.

Routine O&M

The oxygen injection system will be checked at least monthly by a qualified technician to record operating parameters and perform routine maintenance. Once each month the technician will collect performance data, which includes DO and ORP readings at each injection point and designated monitoring wells. Adjustments to the injection point flow rates, and the duration and/or frequency of injection cycles, will be made to optimize oxygen transfer to groundwater and DO dispersion from the injection points. The flow meters are adjusted to the optimized flow rate during each site check and the injection points cleared as needed. At startup the flow meters will be set to 30 SCFH and injection duration at 10 minutes per bank. Based on the depth of the injection wells below the water table and friction loss through the oxygen delivery system, the points will operate at a normal pressure of 5 PSI ($\pm$2). Variations in pressure are normal based on the groundwater elevation, length of tubing, backpressure from the formation and accumulation of fines in the injection points. It is recommended to develop the injection points, using air lifting or bailing, more frequently during the first several months of operation.

Routine maintenance is performed on the compressor and oxygen generator as detailed below. An Operation and Maintenance Manual is located in the trailer specifically describing the maintenance required on each component based on the running hours incurred for each particular component. Maintenance typically consists of changing oil and various filters, adjusting belt tension and inspecting components for wear.

Upon each inspection/site visit, the following tasks will be performed:

- Perform general inspection of trailer/structure for unanticipated leaks, noises, observations that may indicate concerns
- Inspect HVAC units for proper operation and settings
- Check and adjust flow meters – operate points manually to check flow and pressures, adjust as necessary
- Check pressures on oxygen generator

  Incoming pressure – between 90 – 120 psi

  Cycle pressure – approximately 75 psi

  Oxygen receiver pressure – shut down target pressure – between 58 – 60 psi
- Check the cooling oil level on Kaeser Compressor
- Check the cooler filter mat on Kaeser Compressor
- Ensure automatic drain on oxygen generator functions properly (very important)
- Inspect wall filters (KRO [water separator] and KPF [particulate filter])

Monthly inspection (in addition to above actions):

- Check the air filter and change the air filter element (if necessary) on Kaeser Compressor
- Maintain the drive belts on Kaeser Compressor
- Change the cooler filter mat on Kaeser Compressor
- Monthly (at minimum) – check oxygen purity on full tank

Yearly inspection (in addition to above actions):

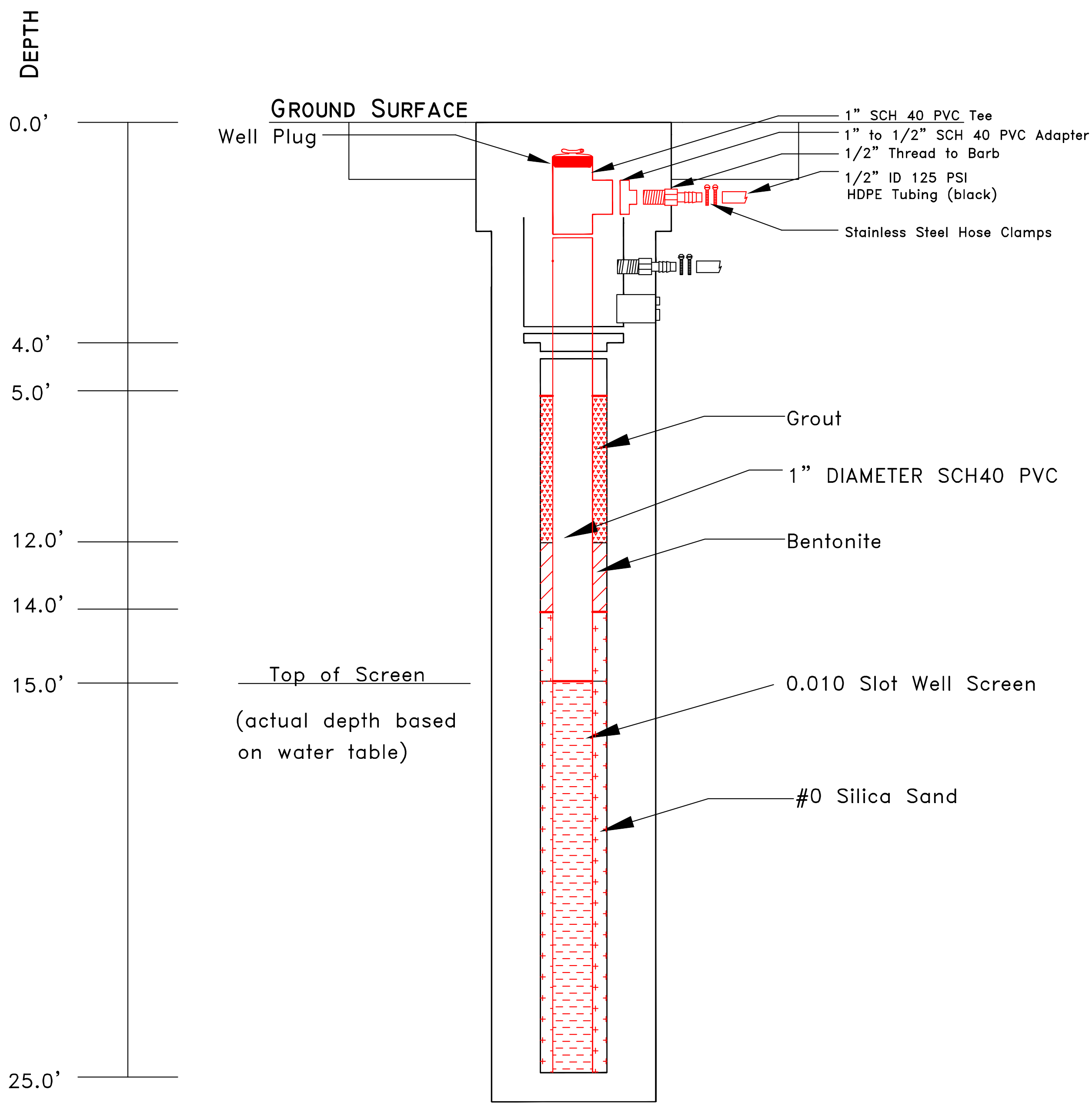
- Change the oil filter on Kaeser Compressor
- Change the cooling oil on Kaeser Compressor (assumes a synthetic lubricant (oil) is being used in the compressor. Change after first year of operation, then every 2 years. [Cooling oil changes will be different if non-synthetic oil is used.])
- Check that all electrical connections are tight on Kaeser Compressor
- Check performance of automatic valves and actuators on oxygen generator
- Clean and lubricate feed air regulator on oxygen generator
- Clean bowls and replace both particulate and coalescing filters on oxygen generator
- Replace wall filters (KRO and KPF filters)

Two-year inspection (in addition to above actions):

- Change the oil separator cartridge on Kaeser Compressor

- Check the pressure relief valve on Kaeser Compressor
- Replace the drive belt on Kaeser Compressor
- Replace filter on Air Dryer every two years or whenever main service for compressor is performed

O2 INJECTION WELL



NOT TO SCALE

FIGURE 1 A
O2 INJECTION
WELL DETAIL

I:\City of Rochester\004453.05 CITY OF ROCH-1200 E MAIN ST ERP -C303409\3.0 Design\3.8 Reports\Final FER May 2017\Figure 1.dwg

Operation & Maintenance of VEGE System

Activation of the vacuum enhanced groundwater extraction (VEGE) system will consist of testing and monitoring all of the electrical and mechanical components until the system is operating within a defined set of parameters. The pneumatic pumps in RW-1 to RW-9 will be brought on line one at a time and allowed to cycle before vacuum is applied to the wells. The discharge lines associated with the submersible pumps will be equipped with valves to regulate the flow into the treatment system to less than 50 GPM. After the wells have cycled and the system is operating under steady conditions, it is expected that the sustained hydraulic flow of the system will be less than 15 GPM. Reaching this condition is site specific and can take several days. Seasonal changes in the flow to the system are expected and thus the system is sized to handle peak flow rates.

This sequential startup procedure will be observed each time that the system is restarted to prevent overloading the treatment system. The system will be checked on a weekly basis by a qualified technician to record operating parameters, perform routine maintenance and collect compliance data as required for the discharge of air and groundwater.

To evaluate system operation and quantify hydrocarbon recovery, monthly groundwater influent (pre-treatment) and effluent (post-treatment) samples will be collected and submitted for VOC analysis using EPA Method 8260 STARS. Air samples will be collected for laboratory analysis, for BTEX and gasoline range organics-total petroleum hydrocarbons (GRO-TPH) using EPA Method TO-3, from the carbon influent (pre-carbon), between the carbon vessels (mid-carbon) and the final effluent (post-carbon). Liquid levels will be gauged in the recovery wells and Site monitoring wells on at least a monthly basis (more frequently during startup) to measure LNAPL (if any) and drawdown of the piezometric surface. Well head vacuum readings will also be measured in monitoring wells to evaluate vacuum influence in the subsurface. This data will be used to optimize the remedial system operation.

It is expected that the VEGE system will be in operation until LNAPL is no longer measurable on the water table and dissolved phase VOCs are significantly reduced. Operation of the SVE system will not be required during the VEGE phase of remediation.

The remediation equipment will be inspected and maintained as recommended by the manufacturers and described in the Operation and Maintenance (O&M) manual, which will be located in the trailer along with the site-specific Health and Safety Plan (HASP). Daily site visits will be completed during the first week of operation to optimize recovery of LNAPL, collect performance data and insure reliable operation of the system. A site-specific VEGE system evaluation form is included.

Once the system is operating reliably, site visits will be reduced to weekly for three months and twice per month thereafter. During these site visits the carbon vessels will be monitored for VOC breakthrough with PID measurements, visually inspected and changed if necessary. Data collected during site visits will include the following:

- Depth to groundwater and LNAPL thickness from all wells;
- Cumulative and real time flow rates from all recovery wells and the combined influent flow;
- LNAPL thickness in oil-water separator and drum;
- Gauge readings from the air compressor, air stripper blower and transfer pumps;
- PID measurement from the vacuum enhancement blower, pre-carbon, mid-carbon and post-carbon;
- Vacuum measurements from the blower and select monitoring wells (at well head);
- Equipment maintenance performed during the visit;
- Individual PID leg test (as needed) to balance system;
- On a quarterly basis the air stripper and all down well extraction pumps will be inspected and cleaned, if necessary.

Liquid from the blower knockout will be transferred to the oil-water separator as needed. LNAPL from the oil-water separator will automatically drain into a DOT rated 55 gallon drum for future off-site disposal.

Routine maintenance is performed on the compressed air system as detailed below. Upon each inspection/site visit, the following tasks will be performed:

- Perform general inspection of trailer/structure for unanticipated leaks, noises, observations that may indicate concerns
- Inspect HVAC units for proper operation and settings

- Check the cooling oil level on Kaeser Compressor
- Check the cooler filter mat on Kaeser Compressor
- Inspect wall filters (KRO [water separator] and KPF [particulate filter])

The following maintenance tasks will be performed on the compressor on a monthly basis:

- Check the air filter and change the air filter element (if necessary)
- Maintain the drive belts
- Change the cooler filter mat

During the first year or as needed, the following maintenance tasks will be performed on the compressor:

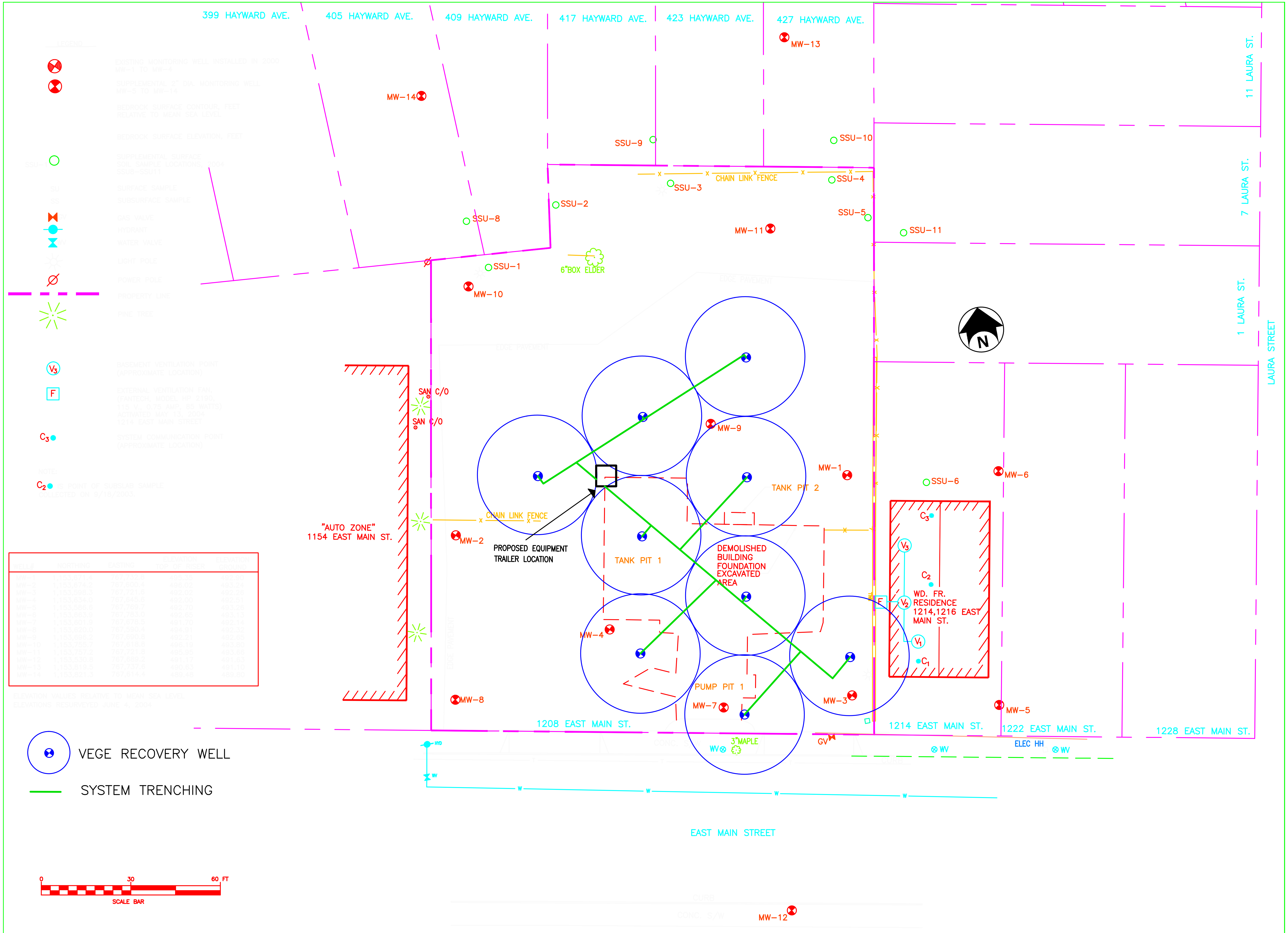
- Change the oil filter
- Change the cooling oil (assumes a synthetic lubricant (oil) is being used in the compressor). Change after first year of operation, then every 2 years. Note: cooling oil changes will be different if non-synthetic oil is used.
- Check that all electrical connections are tight

Two year inspection (in addition to above actions):

- Change the oil separator cartridge on compressor
- Check the pressure relief valve on compressor
- Replace the drive belt on compressor
- Replace filter on air dryer every two years or whenever main service for compressor is performed.

Treated water discharge sampling, including the frequency and analytical method, will be based on the permit requirements for Monroe County Pure Waters. More frequent sampling may be required during the first days/weeks following startup. Monthly discharge sampling and reporting of totals gallons discharged is a normal permit requirement. Monthly water sampling will include the air stripper influent and effluent for analysis for BTEX and MTBE using EPA Method 624. The air stripper effluent will also be analyzed for PAHs using EPA Method 625. The analytical results will be used to calculate mass of VOCs recovered from groundwater, air discharge rates and for compliance with the discharge permit.

To calculate the mass of VOCs removed as vapor, monthly air samples will be collected using a Tedlar bag before carbon treatment and analyzed for BTEX via EPA Method TO-3. Total contaminant recovery from the site will include calculations for aqueous and vapor phase, plus volume of LNAPL recovered, if any.



CITY OF ROCHESTER

1200 EAST MAIN ST.
ROCHESTER, NY
14614

SITE INVESTIGATION REMEDIAL ALTERNATIVES REPORT

BERGMANN associates
Engineers / Architects / Surveyors

REVISIONS

NO.	DATE	DESCRIPTION	REV.	CK'D

NOTE:
Unauthorized alteration or addition to this drawing is a violation of the New York State Education Law Article 145, Section 7209.

FIGURE 2
VEGE RECOVERY WELL AND TRENCHING LAYOUT

Project Manager: GF
Designed by: EJJ
Drawn by: TSB
Checked by: GF
Date Issued: SEPTEMBER 30, 2005
Scale: AS SHOWN
Date
Project Number: 4453.03
File Name: I:\SUR\ENV\EMAIN\FIG\FIG21.DWG
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of

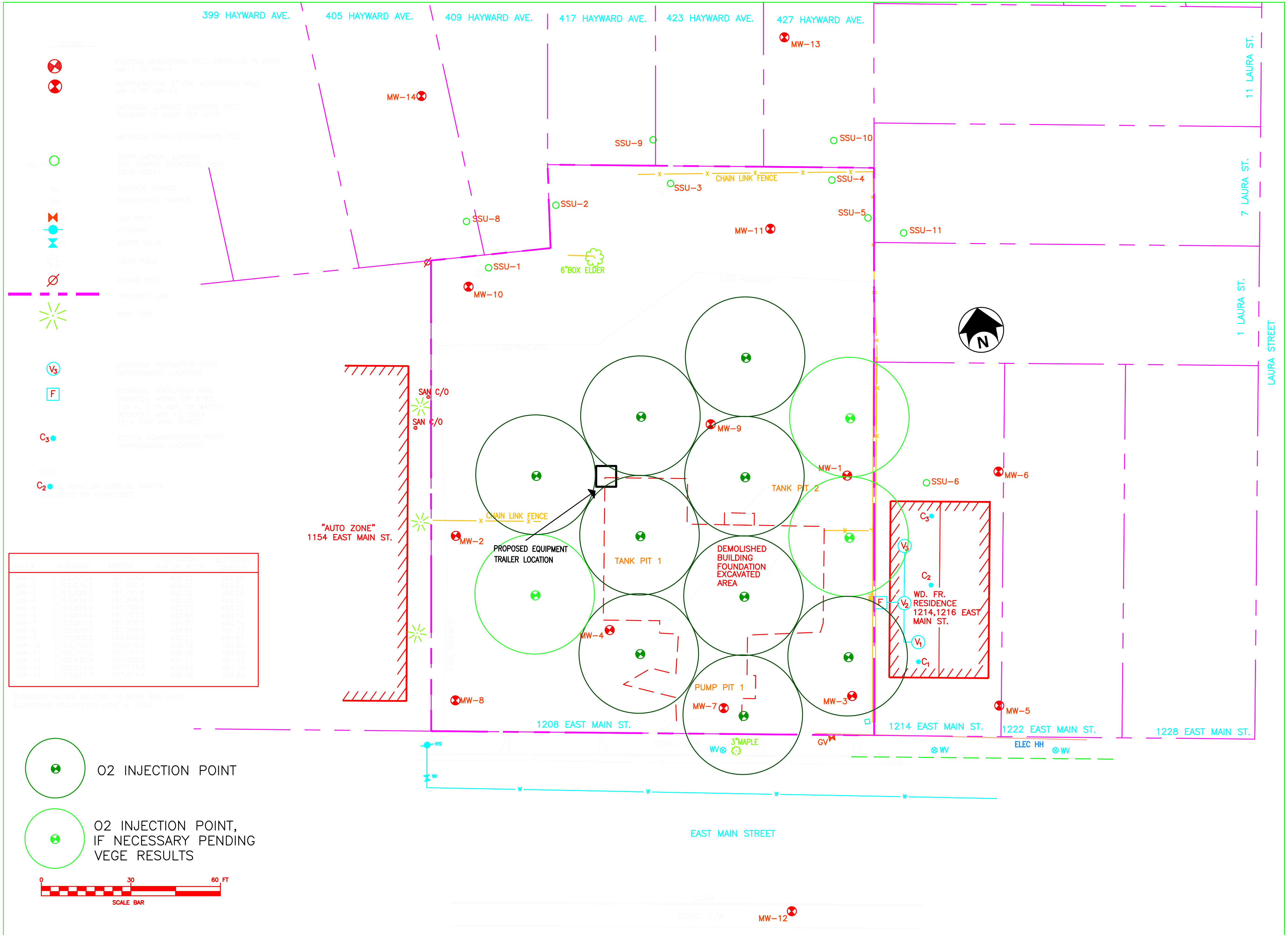

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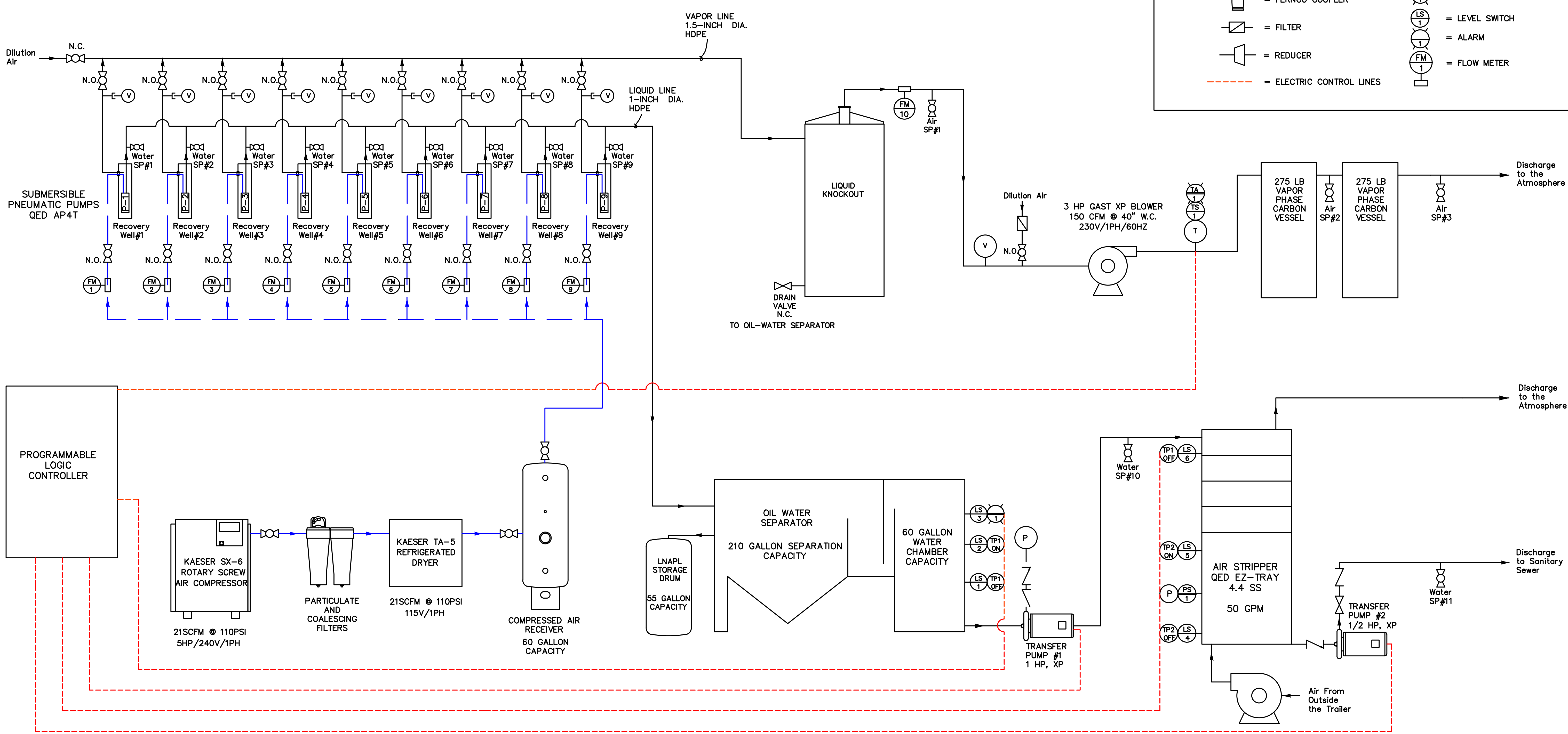
FIGURE 3
O2 INJECTION WELL LAYOUT

Project Manager: GF
Designed by: EJJ
Drawn by: TSB
Checked by: GF
Date Issued: SEPTEMBER 30, 2005
Scale: AS SHOWN
Date
Project Number: 4453.03
File Name: I:\SUR\ENV\EMAIN\FIG\FIG21.DWG
Drawing Number:
of



LEGEND

= GATE VALVE	= TEMPERATURE GAUGE
= CHECK VALVE	= VACUUM GAUGE
= BALL VALVE	= PRESSURE GAUGE
= QUICK DISCONNECT	= TRANSFER PUMP SWITCH
= FERNCO COUPLER	= TRANSFER PUMP ALARM
= FILTER	= LEVEL SWITCH
= REDUCER	= ALARM
= ELECTRIC CONTROL LINES	= FLOW METER

FIGURE 4
VEGE P&ID

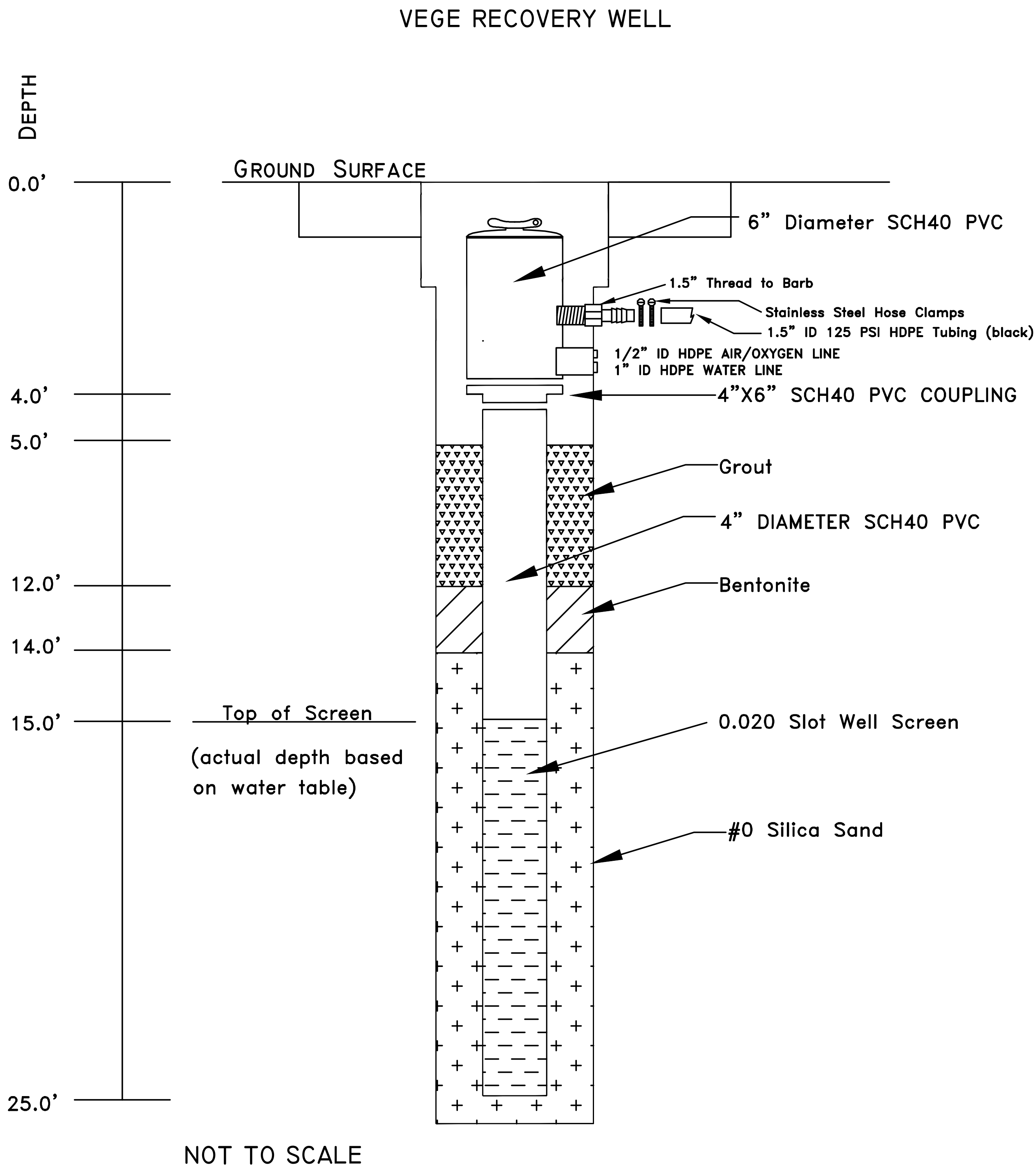


FIGURE 5
O2 INJECTION WELL DETAIL

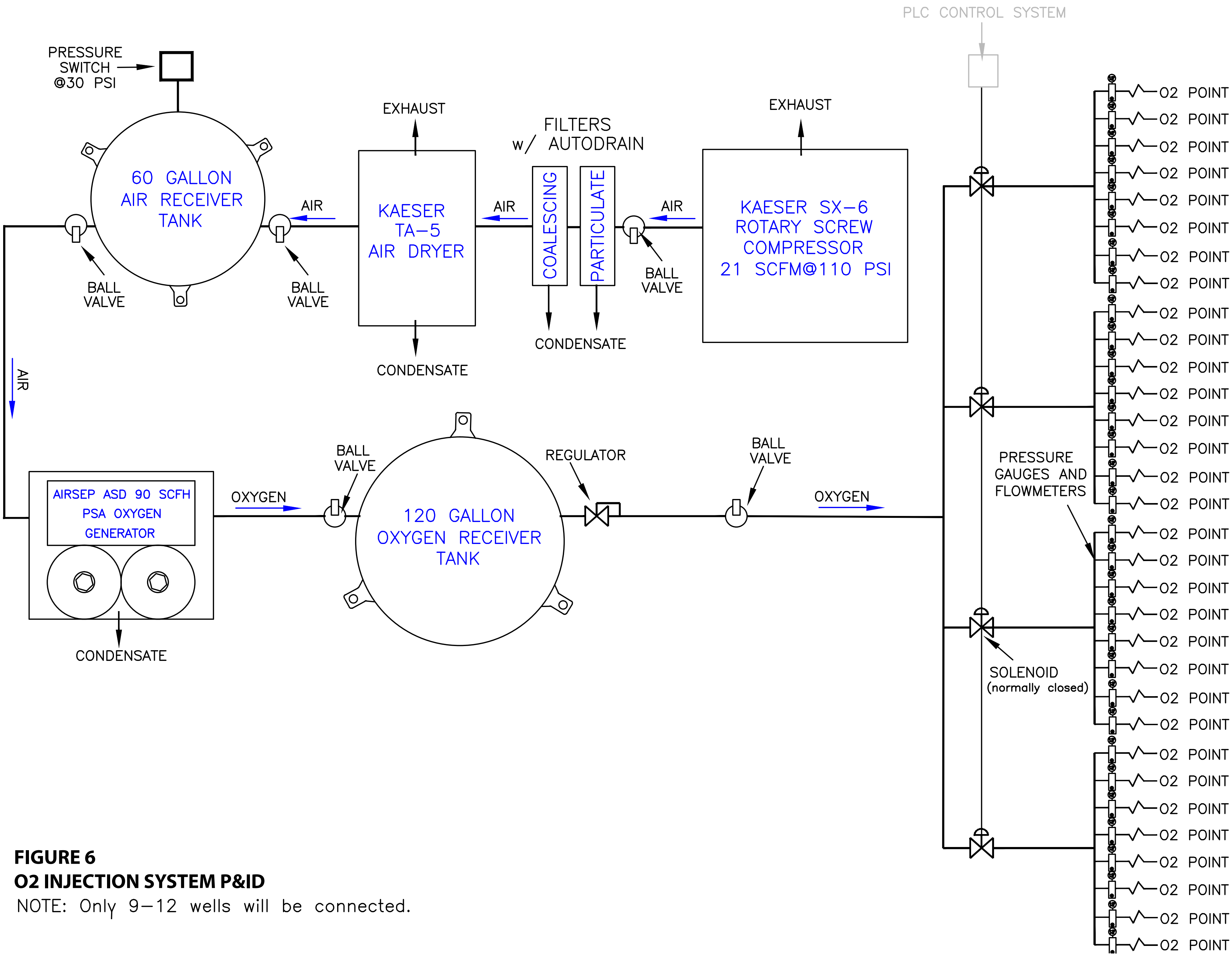


FIGURE 6
O2 INJECTION SYSTEM P&ID
NOTE: Only 9–12 wells will be connected.

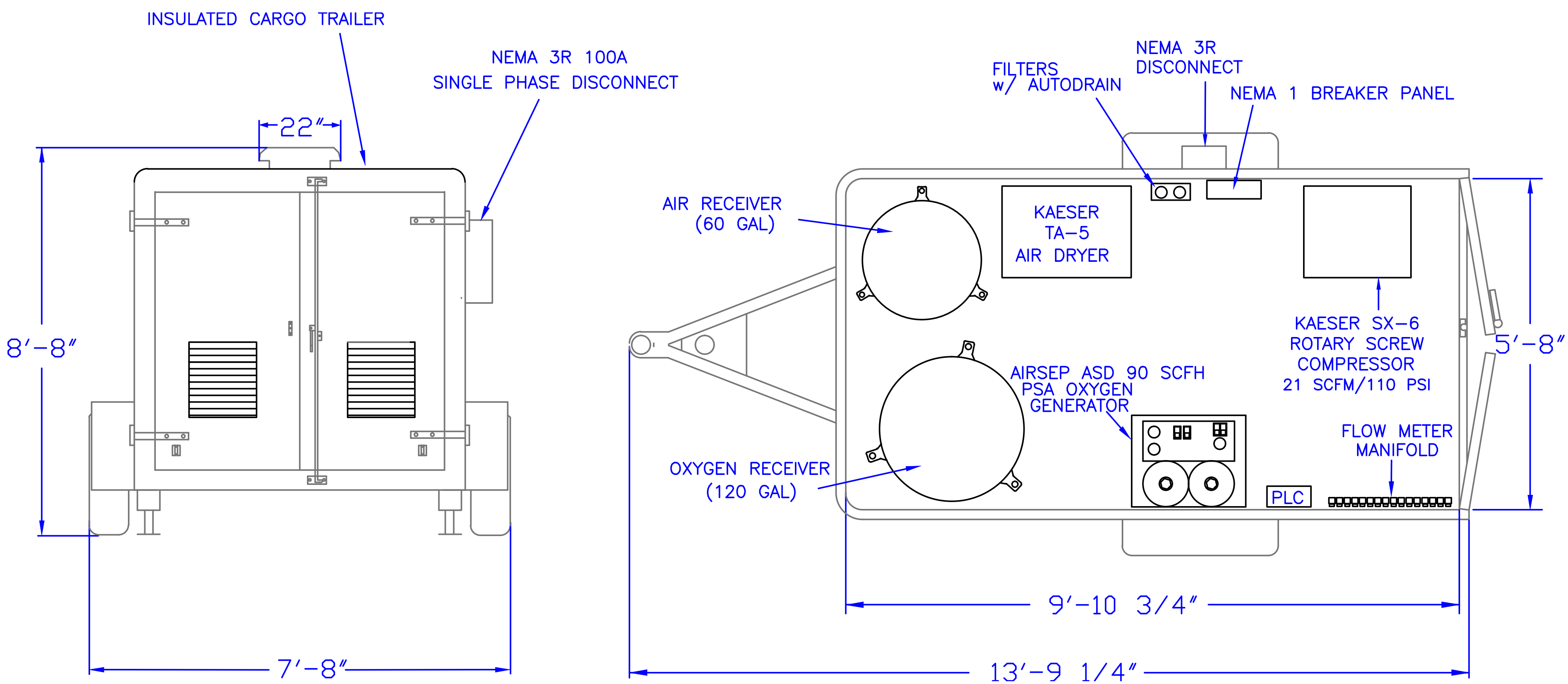


FIGURE 7
O2 INJECTION
SYSTEM SCHEMATIC

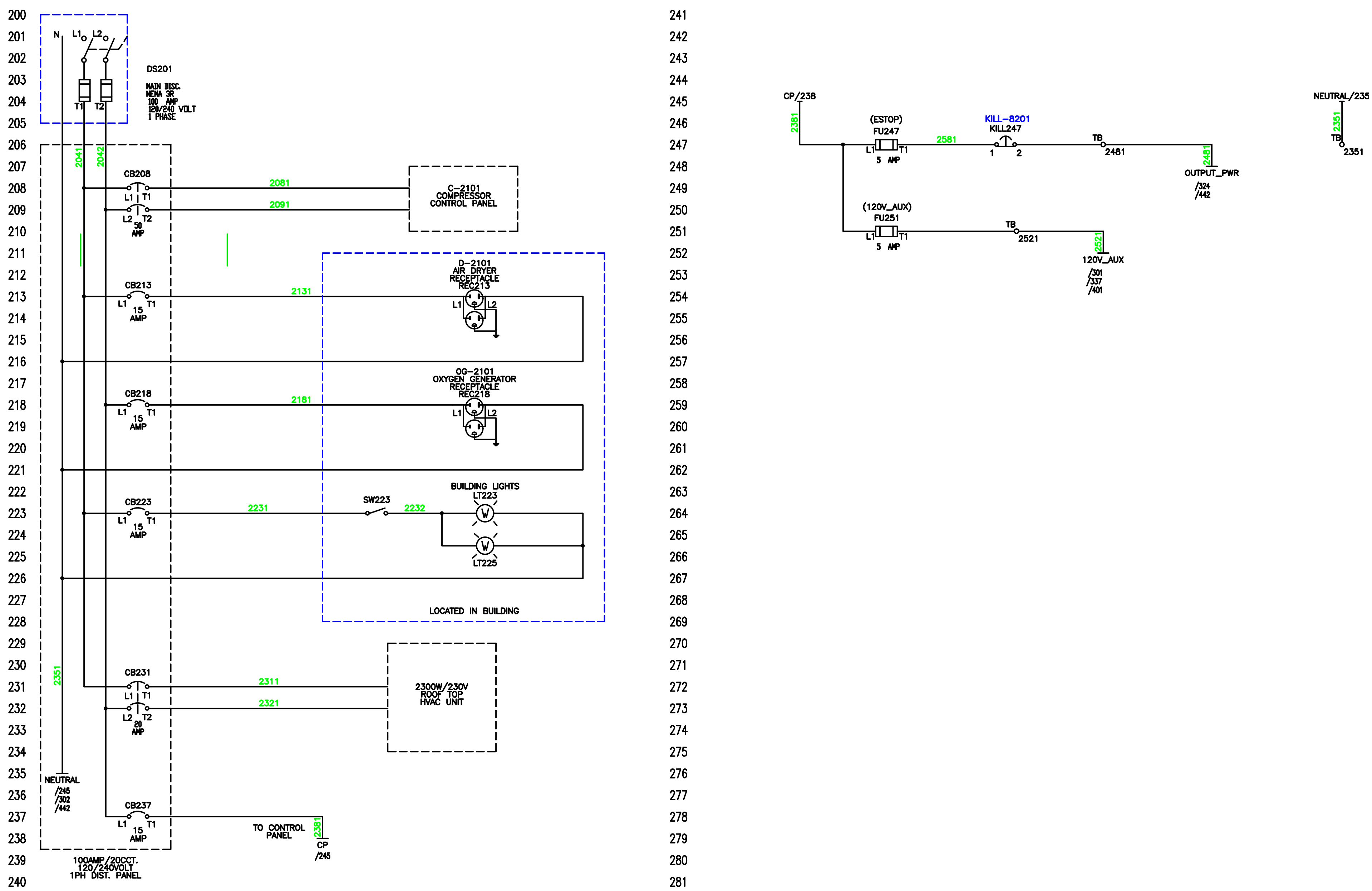
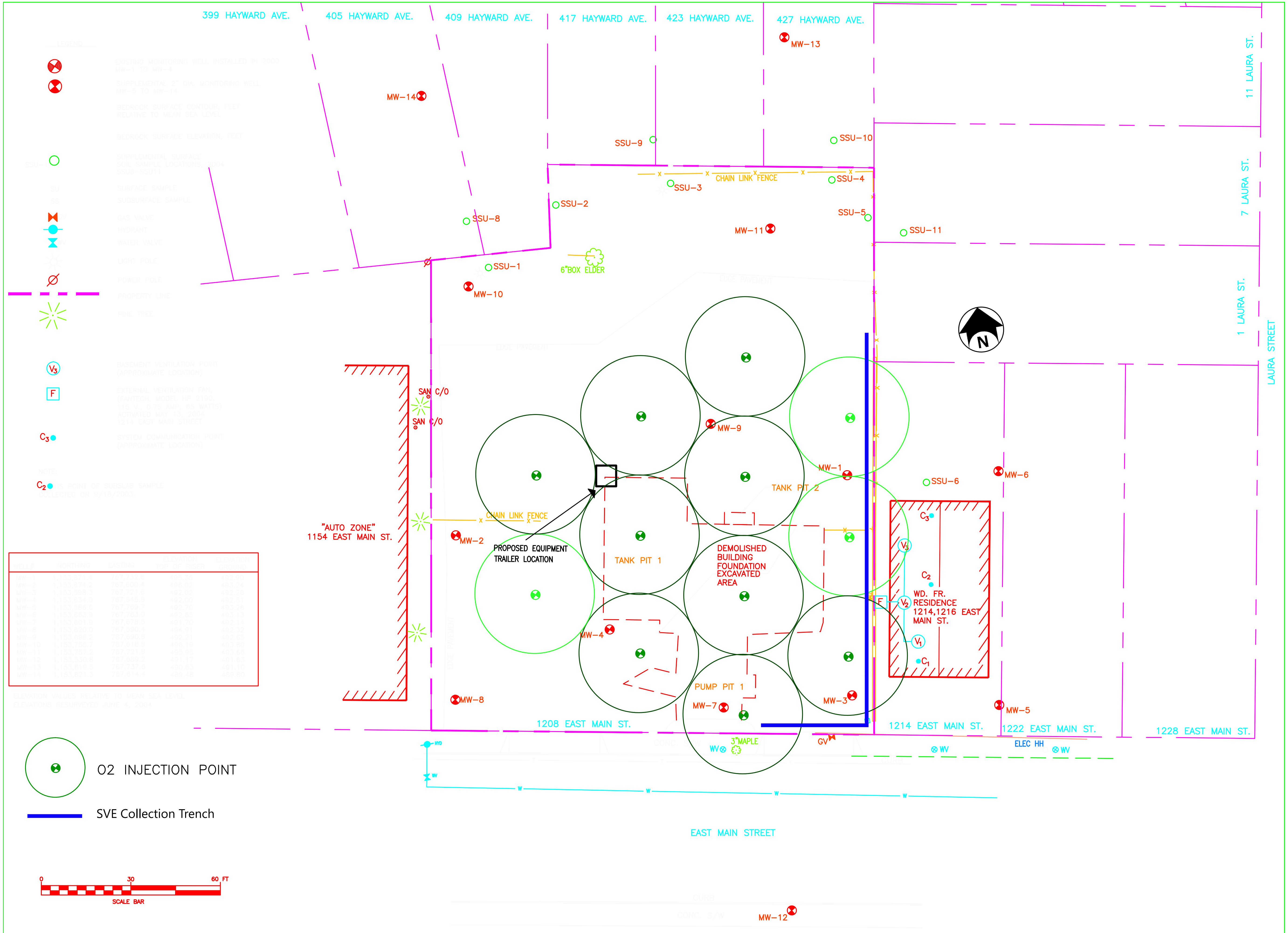


FIGURE 8
ELECTRICAL
SCHEMATIC



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NO.	DATE	DESCRIPTION	REV.	CK'D

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FIGURE 9
SVE System Layout

Project Manager: GF
Designed by: EJJ
Drawn by: TSB
Checked by: GF
Date Issued: SEPTEMBER 30, 2005
Scale: AS SHOWN
Date
Project Number: 4453.03
File Name: I:\SUR\ENV\EMAIN\FIG\FIG21.DWG
Drawing Number:
of

APPENDIX 5
QUALITY ASSURANCE / QUALITY CONTROL PLAN

APPENDIX 5 - Quality Assurance and Quality Control

Quality Assurance and Quality Control

Media monitoring (e.g., soil, groundwater, soil vapor) and waste characterization sampling (e.g., soil, groundwater, decontamination fluids) and any additional sample analysis required in accordance with the Site Management Plan and the Excavation Work Plan and NYSDEC DER-10 will be collected by or under the supervision of a professional engineer (PE) or qualified environmental professional (QEP) designated by the City of Rochester or Site owner, and collection will follow the guidelines presented in this section.

Sample Collection

Quality Assurance/Quality Control (QA/QC) samples will be collected with for any post-certificate of completion (COC) sampling activities. QA/QC samples will be collected at the Site in order to: (1) check sample bottle preparation; (2) evaluate contamination introduced during transport; (3) evaluate the effectiveness of field decontamination procedures; and (4) evaluate the "reproducibility and accuracy of the laboratory analytical procedures. QA/QC samples will be collected as specified in NYSDEC's DER-10. QA/QC samples will consist of a trip blank per shipment of samples for VOC analysis, temperature blanks in each cooler, field blanks of distilled water collected off of decontaminated field equipment, and duplicate sample sets. One field blank and one duplicate sample will be collected for every 20 grab samples collected.

Labeling of Samples

After collection of appropriate samples, the following information shall be legibly and indelibly written on the sample labels:

1. Site name.
2. Sample date.
3. Time of collection.
4. Sample location.
5. Sample identification number.
6. Type of sample.
7. Sample collector's initials.
8. Preservatives used, if any.
9. Analysis to be performed.

Each sample shall be given a unique sample number. This system will provide a tracking number to allow for identification of the sample location and date of collection and to allow for cross-referencing of sample information.

Quality Control (QC) samples and duplicate samples will also be numbered in accordance with the numbering system.

Equipment Decontamination

To avoid cross contamination, sampling equipment (defined as any piece of equipment which may contact a sample) will be decontaminated according to the procedures outlined below.

Non-Dedicated Reusable Equipment

Non-dedicated reusable equipment such as hand augers, stainless steel mixing bowls and spoons, pumps used for groundwater evacuation and sampling, will require field decontamination. Acids and solvents will not be used in the field decontamination of such equipment. Decontamination will be accomplished by scrubbing/washing with a laboratory grade detergent (e.g., Alconox™ or equivalent) to remove visible contamination, followed by potable (tap) water and analyte-free water rinses. Tap water may be used from any treated municipal water system. The use of an untreated potable water supply is not an acceptable substitute. Equipment will be allowed to dry prior to use. Steam cleaning or high pressure hot water cleaning may be used in the initial removal of gross, visible contamination.

Disposable Sampling Equipment

Disposable sampling equipment includes polyethylene sampling spatulas and disposable bailers, string, tubing associated with groundwater sampling/purging pumps (if applicable). Such equipment will not be field-decontaminated and will be disposed of as non-hazardous solid waste in accordance with all applicable local, State, and Federal regulations.

Chain of Custody and Shipping

Project personnel receiving the sample containers from the laboratory will check each cooler for the condition and integrity of the bottles prior to field work. Chain-of-custody forms to trace the path of sample containers from the collection site to the laboratory will be utilized throughout the Project. The Project manager will notify the laboratory of upcoming field sampling events and the subsequent transfer of samples. This notification will include information concerning the number and type of samples and the anticipated date of arrival. Once the sample containers are filled, they will be immediately placed in the cooler with ice (in Ziploc plastic bags to prevent leaking) or synthetic ice packs to maintain the samples at 4°C. The field sampler will indicate the sample designation/location number in the space provided on the chain-of-custody form for each sample. Insulated sample shipping containers (typically coolers) will be provided by the laboratory for shipping samples. All sample bottles within each shipping container will be individually labeled with an adhesive identification label provided by the laboratory. The chain of custody forms will be signed and placed in a sealed plastic Ziploc bag in the cooler. The completed shipping container will be closed for transport with nylon strapping or a shipping tape of similar strength. One paper custody seal will be affixed to the lid. This seal must be placed such that it is broken when the cooler is opened and will indicate tampering if the seal is broken before receipt at the laboratory. A label may be affixed identifying the cooler as containing "Environmental Samples" and the cooler will be picked up from the Site by the courier supplied by the laboratory or shipped by an overnight delivery service to the laboratory. When the laboratory receives the coolers, the custody seals will be checked and lab personnel will sign the chain-of-custody form. The following typical Chain-Of-Custody procedures will be implemented during the soil sampling:

A. The samples are under custody of the field personnel if:

1. They are in his/her possession;
2. They are in view after being in possession;
3. They are locked up or sealed securely to prevent tampering; or
4. They are in a designated secure area.

B. The original of the chain-of-custody form must accompany the samples at all times after collection until receipt at the analytical laboratory. A copy of the chain-of-custody form will be kept by the sampling collector until it is filed in the Project file.

C. When the possession of samples is transferred, the individuals relinquishing and receiving the samples will sign, date, and note the time on the Chain-Of-Custody form.

D. When samples are shipped, the courier name and air bill number, if applicable, will be noted on the Chain-Of-Custody form. Prior to shipping, coolers will be secured with signed custody seals so the laboratory may confirm coolers were not opened during shipping. The chain-of-custody form will contain information to distinguish each sample from any other sample. This information will include:

- ❖ Project name and address for which sampling is being conducted;
- ❖ Name(s) and signature(s) of sampler(s);
- ❖ Sample identifier;
- ❖ Matrix being sampled (sludge, groundwater, soil, etc.);
- ❖ Sampling date and time;
- ❖ Number of containers and the volume of sample collected; and
- ❖ Analytical method to be performed.

The chain-of-custody form record is a color-coded, three copy form. Chain-of-custody copies are distributed as follows:

1. White Copy, Original: Accompanies samples
2. Yellow Copy: Maintained by the Laboratory
3. Pink Copy: Retained by the Sample Collector

<u>Groundwater Level Measurement Procedures</u>

I. <u>Introduction</u>

Water levels will be measured using an electronic well probe. Water level readings will be made twice at each location to verify accuracy.

II. <u>Materials</u>

- Photoionization detector (PID).
- Appropriate health and safety equipment as specified in the Health and Safety Plan.

- Water level probe with 0.01-inch gradations.
- Laboratory-type non-phosphate detergent (Alconox or equivalent).
- Distilled water.
- Plastic sheeting (optional).

III. <u>Procedures</u>

A. A detailed procedure for obtaining water levels will be as follows:

1. Identify the site and well number, the date, time, personnel, and weather conditions in the bound field book.
2. Use safety equipment as specified in the Health and Safety Plan.
3. Clean the water level probe tape with a detergent (Alconox) water rinse followed by a distilled water rinse. All decontamination waste and/or wastewater generated at the Site will be containerized and characterized for disposal purposes.
4. Put clean plastic sheeting on the ground next to the well if necessary to prevent the probe tape from contacting the ground.
5. Establish a background reading with the PID.
6. Open the well cover while standing up-wind from the well. Place the well cap on the plastic sheeting. Monitor the air in the breathing zone above the well casing with the PID. If the PID meter reads greater than 1 ppm meter units, move up wind from the well and allow the air inside the casing to vent for approximately 5 minutes. Repeat PID reading. If above 1 ppm, follow instructions in the Health and Safety Plan.
7. The measurement reference point is the PVC well casing. All down hole measurements will be taken from the top of the PVC well casing.
8. Lower the water level indicator probe until it indicates the top of water. Measure to the nearest 0.01-foot and record the depth to water from the reference point.
9. Lower the water level probe to the bottom of the well. Measure to the nearest hundredth of a foot and record the depth of the well from the reference point.
10. Remove probe from the well.
11. Repeat Step 8 and record.
12. Clean the water level probe and cable that extended into the well with a detergent (Alconox or equivalent) water rinse followed by a distilled water rinse. Discard rinse water on the ground adjacent to the well unless contamination is evident.
13. Compare depth of well to previous records.
14. Place the cap on the well and lock or bolt roadway cover into place when all activities are completed.

<u>Low-Flow Groundwater Sampling Procedures</u>

I. <u>Introduction</u>

This protocol describes the procedures to be used to collect groundwater samples. During heavy precipitation events, groundwater sampling will be discontinued until precipitation ceases.

II. Materials

The following materials, as required, shall be available during groundwater sampling:

- Photoionization detector (PID)
- Appropriate health and safety equipment as specified in the Health and Safety Plan.
- Plastic sheeting (for each sampling location)
- New dedicated, disposable, translucent bailers
- Polypropylene line
- Buckets to measure purge water volume
- Water level probe
- Horiba U-10 Water Quality Checker (meter for pH, temperature, electrolytic conductivity, and turbidity)
- Low-flow submersible, peristaltic or bladder pump
- Polyethylene tubing
- Oil-water interface probe
- Glass bowl
- Laboratory-supplied sample jars
- Appropriate transport containers (coolers) with ice and labeling, packing, and shipping materials.
- Chain of custody forms
- Indelible ink pens
- Site map showing well locations
- Well keys

III. Procedures

Low-flow procedures will be used to both purge and sample the Site monitoring wells. The appropriate protocol is as follows:

1. Review materials check list (Part II) to ensure the appropriate equipment has been acquired.
2. Record the following information:
   - Project name and number
   - Date and time
   - Sampling personnel
   - Well number
   - Weather conditions
3. Label all sample containers in accordance with the procedures listed above in Labeling of Samples section.
4. Place plastic sheeting adjacent to well to use as a clean work area.
5. Establish background reading with the PID.
6. Remove lock from well and, if rusted or broken, replace.
7. Unlock and open the well cover while standing upwind of the well. Remove well cap and place on plastic sheeting. Insert PID probe in the breathing zone above the well casing. Proceed if PID reading is below 1 ppm. If PID reading is above 1 ppm, move upwind from well 5 minutes to allow the well headspace volatiles to dissipate. Repeat PID reading. If above 1 ppm, follow instructions in the Health and Safety Plan.

8. Lay the sample collection and field parameter measurement equipment out on the plastic sheeting.
9. Obtain water level and bottom of well depth measurements using an electric interface probe. Clean the probe after each use. (Note: liquid levels should be measured at all wells prior to initiating any sampling activities).
10. Obtain depth of LNAPL and DNAPL layers using a translucent bailer. LNAPL is measured before sampling by lowering a clean, translucent bailer carefully into the water column and removing a sample of standing water. Pour the sample into a glass bowl. Observe the sample and note the sample turbidity and the presence or absence of a sheen. An assessment of DNAPL presence is made after sampling is complete by carefully lowering the translucent bailer to the bottom of the well and repeating the procedure.
11. Calculate the number of gallons of water in the well using the length of water column (in feet).
12. Check the calibration of the water quality meter and then measure and record pH, temperature, conductivity, and turbidity of the sample following the manufacturer's procedures for operation of the Horiba U-10 Water Quality Checker.
13. Using a low-flow pump, purge water from the well and monitor groundwater parameters for each liter of water removed. The following parameters (with their associated guidelines) will be measured in the field using appropriate equipment such as a water level meter and Horiba U10 or equivalent. Parameter measurements shall be obtained after each purge of one liter of groundwater, or more frequently, up to ten liters.
    - Drawdown not to exceed 3.9 inches.
    - Turbidity: three (3) successive readings ± 10% and a final value between 5 and 10 NTUs.
    - Specific Conductance: three (3) successive readings ± 3%.
    - pH: three (3) successive readings ± 0.1 pH units.
    - Temperature: three (3) successive readings ± 3%.
    - Dissolved Oxygen: three (3) successive readings ± 10%.
    - Oxidation Reduction Potential: three (3) successive readings ± 10 mv.

    The purge water for the monitoring wells, and disposal sampling equipment/material and PPE will be containerized in NYSDOT-approved, 55-gallon drums for characterization prior to disposal. The purge and decontamination water will be disposed off-site in accordance with all applicable local, State, and Federal regulations.

14. After the stabilization of field parameters, obtain the groundwater sample needed for analysis with the pump directly from the pump discharge into the appropriate sampling containers and tightly screw on the caps. The preferred order of sample collection after purging is as follows: TCL volatile organics, TCL SVOCs, and TAL metals.
15. Check for the presence of DNAPL as explained in item 10.
16. Replace the well cap and lock well.
17. Record the sampling time.
18. Clean the non-dedicated sampling equipment in the Equipment Cleaning Section above. Place all disposable sampling materials (plastic sheeting and health and safety equipment) in a garbage bag for appropriate disposal following completion of the field activities.
19. Complete sample packaging, shipping, handling, and chain-of-custody procedures.
20.

Handling of Field Work Generated Wastes

Field work-generated wastes generally fall within the categories of drilling wastes (drilling fluids, soil and rock cuttings, drilling equipment decontamination wastes), well development waste fluids, sampling equipment decontamination waste fluids, abandoned well casings and related material, and personal protective clothing waste. The general requirements for handling (containment and disposal) of these categories of waste are discussed below.

Waste Containment

1. Drilling Fluids

Drilling re-circulating fluid will be changed and disposed after each day of drilling. This procedure is followed to avoid groundwater contamination by the drilling fluid as the borehole is advanced. The waste drilling fluid will be collected in an appropriate container, such as D.O.T. 55-gallon drums, and will be characterized based upon analytical data. Environmental contractors will transport the containers (drums), when full, to the appropriate disposal facility in accordance with local, State and Federal laws.

2. Drilling Equipment Decontamination Wastes

The decontamination wastes will be contained in appropriate containers (D.O.T. 55-gallon drums). The collected decontamination wastes will be characterized when the containers are full based upon analytical data and will be disposed according to disposal facility requirements and in accordance with local, State and Federal laws.

3. Soil and Rock Cuttings

The soil and rock cuttings from the drilling procedures will be collected in D.O.T. 55-gallon drums. The containers will be characterized prior to transportation for storage and disposal according to disposal facility requirements and in accordance with local, State and Federal laws. Boreholes not used for the installation of groundwater monitoring wells will be grouted to the surface. Investigation-derived soils may be returned to the Site upon the NYSDEC's approval. NYSDEC approval must be obtained prior to returning soils to the Site.

4. Well Development Waste Fluids

Groundwater and waste fluids generated by well development activities, including wastewaters generated by slug tests, will be collected in appropriate containers (D.O.T.-approved, 55-gallon drums). The contents of the containers will be characterized based upon analytical data. The containers will be transported for disposal according to disposal facility requirements and in accordance with local, State and Federal laws. NYSDEC approval must be obtained prior to any discharged adjacent to the well locations.

5. Sampling Equipment Decontamination Waste Fluids

Waste fluids generated by decontamination of soil/sediment or groundwater/surface water sampling equipment will be collected in appropriate containers (D.O.T.-approved, 55-gallon drums). The contents of the containers will be characterized prior to transportation for disposal according to disposal facility requirements and in accordance with local, State and Federal laws.

6. Abandoned Well Casings and Related Material

Abandoned well casings and related well construction materials will be cut and/or dismantled and collected in appropriate containers. At the end of each workday, the containers will be transported for disposal according to disposal facility requirements and in accordance with local, State and Federal laws.

7. Personal Protective Clothing Waste

The waste personal protective clothing worn during field operations (the level of protection to be determined by specifications in the Health and Safety Plan) will be disposed daily in D.O.T. 55-gallon drums or other appropriate containers. The containers will be transported for disposal facility requirements and in accordance with local, State and Federal laws.

Waste Disposal

Selection of appropriate procedures for disposal of wastes generated as part of fieldwork activities will depend upon analytical laboratory results for soil and groundwater derived wastes. If a waste fluid is generated, the contractor executing the specific work will contain the waste as described in the Excavation Work Plan. Prior to disposal of a generated waste, a Waste Profile will be completed and approved by the generator of the waste (Client representative). The waste profile information will be submitted to the waste disposal facility. Waste disposal will be disposed pf at a permitted landfill.

Subsurface soils and materials or other solid waste material generated at the Site will be contained by the contractor according to procedures described above, and will be disposed by the Client in a manner to be determined on a case-by-case basis by the Client. A waste profile must be completed for solid waste material, and the waste profile information will be submitted to the waste disposal facility. Solid waste material generated by field activities will be transported off-site for disposal according to all applicable local, State and Federal regulations.

All hazardous waste fluids and solid waste materials generated by field activity will be manifested according to federal regulations described in 40 CFR 262.20 and 40 CFR 262.30. These regulations state the manifest requirements for a generator who transports, or offers for transportation of, hazardous waste for off-site treatment, storage, or disposal. The generator (Client) must prepare a Uniform Hazardous Waste Manifest on EPA form 8700-22, and, if necessary, EPA form 8700-22A, according to the instructions included in the Appendix to 40 CFR Part 262.

New York State regulations (described in 6 NYCRR Part 364) apply when the generated hazardous wastes are treated, stored, or disposed within New York State. In these situations, a NYSDEC Hazardous Waste Manifest (Form 48-14-1 (3/89)-7f, modified from EPA Form 8700-22) will be used to the exclusion of the EPA Uniform Hazardous Waste Manifest.

APPENDIX 6
QUALITY ASSURANCE PROJECT PLAN

Appendix 6

Quality Assurance Project Plan
(QAPP)

Quality Assurance Project Plan

Title: Site Management Plan- Quality Assurance Project Plan (QAPP) Environmental Restoration Program (ERP) Site No. B-00129-8

Project Name/Property Name: 1200 E. Main Street Environmental Restoration Program (ERP) Site No. B-00129-8
Property/Site Location: 1200 East Main Street Rochester, NY

Revision Number: **Rev. 0**
Revision Date: **December 20, 2016**

BCP Agreement Number: C303409

City of Rochester, New York

Brownfield Cleanup Recipient

Stephen DeMeo, Bergmann Associates, 280 E. Broad Street, Suite 200, Rochester, New York 14604, 585-498-7805, sdemeo@bergmannpc.com

Preparer's Name and Organizational Affiliation
Preparer's Address, Telephone Number, and E-mail Address

December 20, 2016

Preparation Date (Day/Month/Year)

Brownfield Cleanup Manager: ____________________

Anne Spaulding / City of Rochester Div. Environ. Quality – Dec 20, 2016

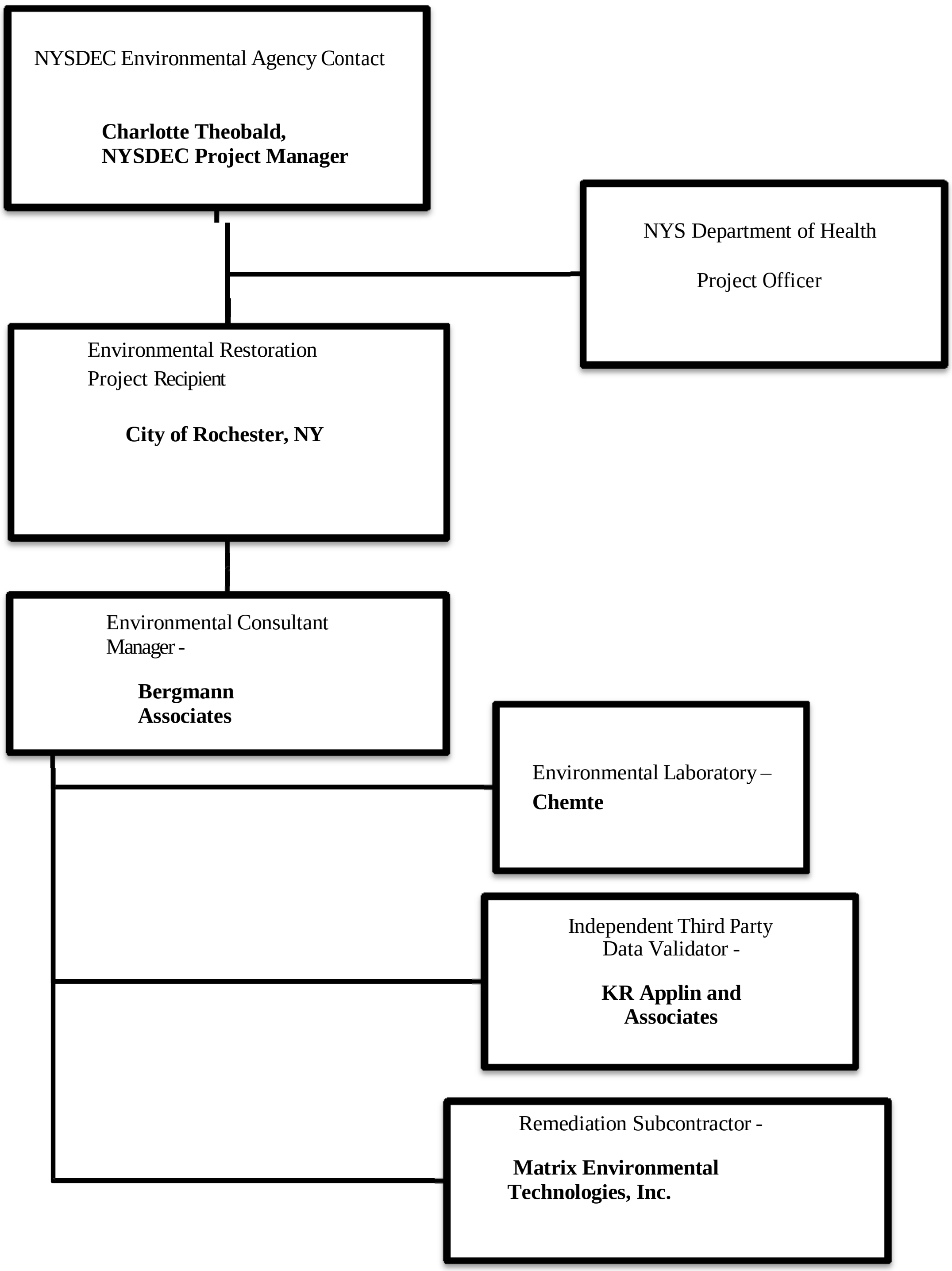
Printed Name/Organization/Date

Environmental Consultant Quality Assurance Officer:
(QAO) ____________________

Stephen DeMeo– December 20, 2016

Printed Name/Organization/Date

Project Organizational Chart



Brownfields QAPP Template #2b

Personal Responsibilities

Name	Title	Telephone Number	Organizational Affiliation	Responsibilities[1]
Mr. Gary Flisnik	Environmental Consultant Project Manager	585-413-5266	Bergmann Associates	Oversight of execution of all project elements and preparation of all project deliverables.
Mr. Stephen DeMeo, P.G.	Sampling Assistance(s)	585-413-5301	Bergmann Associates	Management of field sampling program and subcontractors, data management and report preparation.
Ms. Anne Spaulding	Brownfields Recipient Program Manager	585- 428-7474	City of Rochester, NY	Administration of Environmental Restoration Projects (ERP)
Mr. Jane Forbes	Project Manager	585-428-6649	City of Rochester, NY	Overall management of Brownfield projects
Ms. Charlotte Theobald	State Brownfields Contact	585-226-5354	New York State Department of Environmental Conservation	Oversight of remediation under ERP.
Mr. Steven Kim	Environmental Laboratory Contact	413-789-9018	CHEM tech, Inc.	Analytical Laboratory services coordination and reporting.
Mr. Ken Applin	Third Party Data Validator	518-251-4429	KR Applin and Associates	All data validation DUSR-related services
Mr. Sean Carter, P.E.	Remediation	518-251-4429	Matrix Environmental	All remediation / operation &

Problem Definition/Project Description

I. PROBLEM DEFINITION

This QAPP is appended the Site Management Plan (SMP) as a required element of the remedial program for the 1200 East Main Street Site located in the City of Rochester, New York (hereinafter referred to as the "Site"). The Site is currently in the New York State Environmental Restoration Program (ERP) Site No. B-00129-8 which is administered by New York State Department of Environmental Conservation (NYSDEC).

The City of Rochester (City) entered into a State Assistance Contract (SAC) July 23, 2007 to remediate the Site (Contract Number: C303409). The boundaries of the Site are more fully described in the metes and bounds site description that is part of the Environmental Easement provided in Appendix 1 of the SMP.

After completion of the remedial work that is documented in the FER, some petroleum impacted materials remain as residual contamination was left at this Site, which is hereafter referred to as "remaining contamination". The remaining contamination is addressed in the SMP that begins after the FER is approved by NYSDEC. Institutional and Engineering Controls (ICs and ECs) have been incorporated into the site remedy to control exposure to remaining contamination to ensure protection of public health and the environment as per the SMP. An Environmental Easement granted to the NYSDEC, and recorded with the Monroe County Clerk, requires compliance with this SMP and all ECs and ICs placed on the Site.

The SMP was prepared to manage remaining contamination at the Site until the Environmental Easement is extinguished in accordance with ECL Article 71, Title 36. This plan has been approved by the NYSDEC, and compliance with this plan is required by the grantor of the Environmental Easement and the grantor's successors and assigns. This SMP may only be revised with the approval of the NYSDEC.

The goal of the project is to remediate subsurface petroleum impacts sufficiently to facilitate closure of the ERP Site, and to facilitate future sale and re-development of the property for commercial or industrial uses only.

II. PROJECT DESCRIPTION

A. <u>Site Location and Description</u>

The site is located in the City of Rochester, Monroe County, and is identified as Section 106.76 Block 1 and Lot 44 on the Monroe County Tax Map (See Figure ISM-01 in Appendix 1). The Site is approximately 0.622 acres area and is bounded by residential properties to the north and east with commercial buildings to the west and south (See Figure 2 - Site Layout Map). The boundaries of the Site are more fully described in Appendix 1 – Environmental Easement. The owner(s) of the site parcel(s) at the time of the issuance of this SMP is the City of Rochester.

B. Implementation of the SMP and Sampling Considerations

This SMP details the site-specific implementation procedures that are required by the Environmental Easement. Failure to properly implement the SMP is a violation of the Environmental Easement, which is grounds for revocation of the Certificate of Completion (COC);

Failure to comply with this SMP is also a violation of Environmental Conservation Law, 6NYCRR Part 375 and the SAC (Contract No.: C303409, Site No.: B00129-8) for the Site, and thereby subject to applicable penalties.

All reports associated with the Site can be viewed by contacting the NYSDEC or its successor agency managing environmental issues in New York State. A list of contacts for persons involved with the Site is provided in Appendix 3 – Site Contact List of this SMP.

This SMP was prepared by Bergmann Associates, Inc., on behalf of the City of Rochester, in accordance with the requirements of the NYSDEC's DER-10 ("Technical Guidance for Site Investigation and Remediation"), dated May 3, 2010. This SMP addresses the means for implementing the ICs and/or ECs that are required by the Environmental Easement for the Site.

Successful implementation of these project elements will result in issuance by NYSDEC of Site closure.

Soil and groundwater samples will be submitted to a laboratory accredited through the New York State Department of Health Environmental Laboratory Accreditation Program (ELAP). Specific analyses to be used are listed in the sections below.

Sampling Considerations:

1. Future Site Excavations

Prior to performing excavations during future re-development all of the conditions in the Excavation Work Plan provided in Appendix 2 of the SMP should be reviewed. During excavation, soil will be screened with a calibrated photoionization detector (PID). The required soil samples will be collected and submitted for laboratory analysis for:

- Part 375 and NYSDEC CP-51 List volatile organic compounds (VOCs) plus Tentatively Identified Compounds (TICs), USEPA Method 8260C; and
- PART 375 and NYSDEC CP-51 List Semi Volatile Organic Compounds (SVOCs) plus TICs, USEPA Method 8270D.

2. Groundwater Sampling

The future sampling will be performed using low-flow methodology to facilitate accurate measurement of the field parameters dissolved oxygen (DO) and temperature, specific conductance, and turbidity. Samples will be submitted to an ELAP-certified laboratory for the following analyses:

- Part 375 and CP-51 List VOCs plus TICs, USEPA Method 8260C;
- Part 375 and CP-51 List SVOCs plus TICs, USEPA Method 8270D; and
- TPH, USEPA Method 8015D.

A DUSR will only be generated for the final round of groundwater sampling.

3. Groundwater Elevation Measurement

After water levels have equilibrated, static water levels will be measured in each well with an electronic water level indicator to the nearest 0.01 ft. The potential presence of petroleum product will also be monitored with an interface probe.

4. Survey of Exploration and Sample Locations

Horizontal coordinates of excavations, test borings, monitoring wells and relevant Site features have been established with GPS equipment. The relative elevation of the top of each monitoring well casing has been established by a licensed surveyor using City of Rochester datum on the Site.

5. Decontamination

Sampling methods and equipment have been chosen to minimize the need for decontamination. All non-dedicated or non-disposable equipment will be decontaminated prior to and following each use. Decontamination of soil sampling equipment will consist of a wash with Alconox (or equivalent) solution and a potable water rinse. Following decontamination, direct contact between sampling equipment and the ground surface will not be permitted. Decontamination fluids will be managed as IDW (see discussion, next section).

C. Project Decision Statements

Future development of the Site is uncertain. The property is likely to remain zoned for mixed Commercial.

The criteria to be used to compare analytical results for soil samples will established based on the future re-use for soil cleanup objectives (SCOs) that will include: Unrestricted use, Restricted residential use, Commercial use and Protection of Groundwater contained in NYSDEC's 6NYCRR Part 375 regulations.

Project "If/Then" statements:

1. If confirmatory sample results for future excavations indicate residual soil contamination is present at levels above applicable SCOs for Site re-use, then the excavation will be expanded to the extent practicable to remove the residual impacts, See Appendix 2- Excavation work plan in the SMP.

2. If, after the prescribed time period for post-remedial groundwater monitoring, contaminant concentrations exceed the groundwater standards contained in NYSDEC's TOGS 1.1.1 Guidance Document, then it will be proposed to conduct groundwater monitoring until asymptotic conditions for VOCs are attained for a one-year period. At that time, it would also be proposed that the institutional and engineering controls be used to provide conditions protective of public health and the environment for the intended and reasonably anticipated use of the Site.

Project Quality Objectives/Systematic Planning Process Statements

Overall Project Quality Objectives (PQO) include:

The primary objectives of the soil management and groundwater monitoring are to:

- Excavate (if encountered) and dispose / re-use remaining Site soils that are impacted with petroleum-related contaminants in excess of applicable SCOs during future redevelopment or maintenance to underground utilities and/or soils which exhibit nuisance characteristics;
- Remove (if encountered), treat, and or discharge residually impacted groundwater to the combined sewer from excavations; and
- Perform groundwater monitoring and achieve groundwater quality sufficient for regulatory closure of this ERP site.

Soil will be analyzed for:

- Part 375 and NYSDEC CP-51 List volatile organic compounds (VOCs) plus Tentatively Identified Compounds (TICs), USEPA Method 8260C; and
- PART 375 and NYSDEC CP-51 List Semivolatile Organic Compounds (SVOCs) plus TICs, USEPA Method 8270D.
- Target Analyte List [TAL] metals, Methods EPA 6010C, EPA 7471B and EPA 3050B TAL Metals.

Groundwater will be analyzed for:

- Part 375 and NYSDEC CP-51 List volatile organic compounds (VOCs) plus Tentatively Identified Compounds (TICs), USEPA Method 8260C; and
- PART 375 and NYSDEC CP-51 List Semivolatile Organic Compounds (SVOCs) plus TICs, USEPA Method 8270D.

Who will use the data?

The data will be used by The City of Rochester, which is the current owner and NYSDEC ERP

Recipient, and NYSDEC.

What will the data be used for?

The data will determine whether groundwater has been remediated sufficiently to allow closure by NYSDEC.
Soil sample data from future re-development of the Site will be used as required in the SMP and Excavation Work Plan (EWP).

What types of data are needed?

- Laboratory Analytical Data for both soil and groundwater will include:

- Part 375 and NYSDEC CP-51 List volatile organic compounds (VOCs) plus Tentatively Identified Compounds (TICs), USEPA Method 8260C; and
- PART 375 and NYSDEC CP-51 List Semivolatile Organic Compounds (SVOCs) plus TICs, USEPA Method 8270D.
- EPA 6010C, EPA 7471B and EPA 3050B TAL Metals (for soil samples only).

- Field Data include:
    - Requirements for collection of soil samples in the SMP and EWP.
    - Excavation limits (X, Y, Z coordinates) of future excavations were impacted soils are removed.
    - For groundwater sampling, each sample will be collected using the EPA low flow sampling SOP; Field parameters to be measured during purging would include pH, temperature, specific conductance, oxidation reduction potential and dissolved oxygen.
    - Groundwater levels will be measured in monitoring wells to the nearest 0.01 ft using an electronic water level indicator.

How much data are needed?

Including the five QA/QC samples, it is currently estimated that up to approximately 20 total analyses will be performed for each future quarterly groundwater monitoring event.

Where, when, and how should the data be collected/generated?

- Soil waste pre-characterization samples will be obtained from areas of soil that may need to be removed from the Site during future re-development or maintenance for underground utilities;
- Confirmation soil samples will be obtained from each excavation sidewall and each excavation bottom;
- Groundwater samples will be collected from each of the monitoring wells (MW-1 through MW-6, MW-7R, MW-8, MW-9R, MW-10 through MW-14, MW-15R and MW-16 will remain after completion of the FER.

Who will collect and generate the data?

Bergmann Associates and or City of Rochester DEQ will collect all samples, perform all field screening for soils using a calibrated PID, and measure field parameters while sampling groundwater during future quarterly monitoring events and final round of sampling.

How will the data be reported?

- Field data will be recorded in a field book, on field diagrams, and on Groundwater Sampling Reports.
- Laboratory data will be reported by the laboratory in "Category B" deliverables. In addition, electronic data deliverables (EDDs) will be provided by the laboratory in a format compatible with NYSDEC's requirements for EDDs. All laboratory-generated soil and groundwater data will undergo independent review by an experienced data validator who will prepare Data Usability Summary Reports (DUSRs) for each sample delivery group. For groundwater, a DUSR will be generated only for the final groundwater monitoring sampling round.

How will the data be archived?

- As discussed above, all future groundwater data will be included in quarterly groundwater monitoring reports to the City of Rochester and NYSDEC. These reports will be provided in electronic format to both parties, and in hard copies, if requested. The future Site owners must submit soil and groundwater laboratory analytical data to NYSDEC.
- The laboratory analytical data will also be provided in electronic data deliverable format. The EDD file will be compatible with NYSDEC EDD requirements as detailed in its Electronic Data Deliverable Manual (April 2013). Once the SMP and FER are finalized the EDD file will be uploaded to NYSDEC's Environmental Information Management System for permanent archiving.

Project Schedule/Timeline

List all project activities that will be performed during the course of the project. Include the anticipated start and completion dates.

Activities	Organization	Dates (MM/DD/YY) Anticipated Date(s) of Initiation	Dates (MM/DD/YY) Anticipated Date of Completion	Deliverable	Estimated Deliverable Due Date
	NYSDEC		12/31/16	Written Approval by NYSDEC	12/31/16
Procurement of Equipment	Bergmann Associates	1/4/17	1/8/17	N/A	
Laboratory Request	Bergmann Associates	1/11/17	1/15/17	N/A	
Collection of Field Samples	Bergmann Associates	1/25/17	2/22/17	N/A	
Laboratory Package Received	Bergmann Associates	1/27/17	3/14/17	Unvalidated data package, Preliminary EDD[2]	3/14/17
DUSR (Validation) of Laboratory Results	KR Applin and Associates	3/15/17	4/5/17	Validated data Packages, Updated EDD	4/5/17
Data Evaluation/ Preparation of Groundwater Monitoring Reports	Bergmann Associates	1/17/17	4/31/17	Final Report	4/31/17

Data validation to be performed by third party – independent to project (can be within Environmental Consulting firm or subcontracted to data validation firm).

EDD = Electronic Data Deliverable

Sampling Methods and Locations

Matrix	Sampling Location(s)	Depth (ft)	Analytical Group[1]	No. of Samples[2]	Sampling SOP Reference	Rationale for Sampling Location
Soil	Unknown Possible future Site location	Unknown	VOCs	Unknown Number Dup + MS/MSD	SMP and EWP (Appendix 2 in SMP)	Actual number of samples and locations to be determined based on observations, excavation limits and field screening results. Confirm the number of samples required with NYSDEC.
Soil	Unknown Possible future Site location	Unknown	SVOCs	Unknown Number Dup + MS/MSD		
Soil	Unknown Possible future Site location	Unknown	Metals	Unknown Number Dup + MS/MSD		
Groundwater	Wells MW-1 through MW-6, MW-7R, MW-8, MW-9R, MW-10 through MW-14, MW-15R, and MW-16 See Figure 2 in SMP.	See Appendix 10 in the SMP for well depths.	VOCs	3 + Field Dup + MS/MSD + trip blank	EPA Low Flow Sampling SOP	Sample all monitoring wells as required for Quarterly groundwater monitoring. -
Groundwater	Wells MW-1 through MW-6, MW-7R, MW-8, MW-9R, MW-10 through MW-14, MW-15R, and MW-16 See Figure 2 in SMP.	See Appendix 10 in the SMP for well depths.	SVOCs	3 + Field Dup + MS/MSD+ trip blank		-

[1] Analytical Groups include: volatiles, semi volatiles, total metals for future soil samples.

[2] The number of groundwater samples will include 16 from the monitoring wells and 5 QA/QC samples.

[3] Metals to be analyzed only in future soil samples.

Analytical Methods and Requirements

Matrix	**Analytical Group**	**[1]Concentration Level**	**Analytical & Preparation Method/ SOP Reference**	**Sample Volume**	**Containers (*number, size, type*)**	**Preservation Requirements (*chemical, temperature, light protected)***	**Maximum Holding Time (*preparation/ analysis)***
Groundwater	VOCs	Low	SW-846 Method 8260	80 ml	(2) 40 ml VOA vials w/Teflon lined septum	1:1 HCl to pH<2; cool to 4°C	14 days
Groundwater	SVOCs	Low	SW-846 Method 8270	2000 ml	(2) 1000 ml glass bottles with w/Teflon lined cap	cool to 4°C	7 days to extraction, 40 days to analysis
Soil	VOCs	Low	SW-846 Method 8260	10 g	4oz glass jar with Teflon lined cap	cool to 4°C	14 days
Soil	SVOCs	Low	SW-846 Method 8270	30 g	8 oz glass jar w/Teflon lined cap	cool to 4°C	14 days until extraction, 40 days until analysis
Soil	Metals & mercury	Low	SW-846 Method 6010/7471	5 g	4 oz glass jar w/Teflon lined cap	cool to 4°C	180 days (28 days for mercury)

[1]Concentration Level refers to Trace; Low; Medium; High of the sample.

Reference Limits and Evaluation Table

GROUNDWATER

Matrix *Aqueous*	
Analytical Group ***<u>VOCs – SW-846 8260</u>***	
Concentration Level *Low*	

Analyte	CAS Number	NYSDEC TOGS 1.1.1 Groundwater Standards (µg/L)	Achievable Lab Method Detection Limit (µg/L)	Achievable Lab Reporting Limit µg/L)
1,1,1-Trichloroethane	71-55-6	5	0.5	5
1,1,2,2-Tetrachloroethane	79-34-5	5	0.42	5
1,1,2-Trichloroethane	79-00-5	1	0.38	5
1,1-Dichloroethane	75-34-3	5	0.25	5
1,1-Dichloroethene	75-35-4	5	0.39	5
1,2,3-Trichlorobenzene	87-61-6	5	0.33	5
1,2,4-Trichlorobenzene	120-82-1	5	0.26	5
1,2-Dibromo-3-chloropropane	96-12-8	0.04	0.75	5
1,2-Dibromoethane	106-93-4	ns	0.5	5
1,2-Dichlorobenzene	95-50-1	3	0.33	5
1,2-Dichloroethane	107-06-2	0.6	0.41	5
1,2-Dichloropropane	78-87-5	1	0.61	5
1,3-Dichlorobenzene	541-73-1	3	0.29	5
1,4-Dichlorobenzene	106-46-7	3	0.4	5
2-Butanone	78-93-3	50	2.1	5
2-Hexanone	591-78-6	ns	1.7	5
4-Methyl-2-pentanone	108-10-1	ns	0.82	5
Acetone	67-64-1	50	2.2	5
Benzene	71-43-2	1	0.33	5
Bromochloromethane	74-97-5	ns	0.43	5
Bromodichloromethane	75-27-4	50	0.26	5
Bromoform	75-25-2	50	0.77	5
Bromomethane	74-83-9	5	0.8	5
Carbon disulfide	75-15-0	60	0.34	5
Carbon tetrachloride	56-23-5	5	0.54	5
Chlorobenzene	108-90-7	5	0.26	5
Chloroethane	75-00-3	5	0.48	5
Chloroform	67-66-3	7	0.33	5
Chloromethane	74-87-3	5	0.26	5
cis-1,2-Dichloroethene	156-59-2	5	0.48	5
cis-1,3-Dichloropropene	10061-01-5	0.4	0.45	5
Dibromochloromethane	124-48-1	50	0.57	5

Dichlorodifluoromethane	75-71-8	5	0.66	5
Ethylbenzene	100-41-4	5	0.35	5
Isopropylbenzene	98-82-8	5	0.38	5
m,p-Xylene	179601-23-1	5	0.77	5
Methyl tert-butyl ether	1634-04-4	10	0.24	5
Methylene chloride	75-09-2	5	0.41	5
o-Xylene	95-47-6	5	0.36	5
Styrene	100-42-5	5	0.5	5
Tetrachloroethene	127-18-4	5	0.65	5
Toluene	108-88-3	5	0.32	5
trans-1,2-Dichloroethene	156-60-5	5	0.65	5
trans-1,3-Dichloropropene	10061-02-6	0.4	0.48	5
Trichloroethene	79-01-6	5	0.36	5
Trichlorofluoromethane	75-69-4	5	0.54	5
Vinyl chloride	75-01-4	2	0.5	5
1,1,2-Trichloro-1,2,2-trifluoroethane	76-13-1	ns	0.82	5
1,4-Dioxane	123-91-1	ns	34	100
Cyclohexane	110-82-7	ns	0.71	5
Methyl acetate	79-20-9	ns	0.29	5
Methylcyclohexane	108-87-2	ns	0.76	5

Matrix *Aqueous*
Analytical Group *SVOCs - <u>SW-846 8270</u>*
Concentration Level *Low*

Analyte	CAS Number	NYSDEC TOGS 1.1.1 Groundwater Standards (µg/L)	Achievable Lab Method Detection Limit (µg/L)	Achievable Lab Reporting Limit µg/L)
2,2´-oxybis(1-Chloropropane)	108-60-1	ns	0.78	10
2,4-Dichlorophenol	120-83-2	5	0.57	10
2,4-Dimethylphenol	105-67-9	50	1.8	10
2,4-Dinitrophenol	51-28-5	10	3.5	20
2,4-Dinitrotoluene	121-14-2	5	0.41	10
2,6-Dinitrotoluene	606-20-2	5	0.52	10
2-Chloronaphthalene	91-58-7	10	0.81	10
2-Chlorophenol	95-57-8	ns	0.61	10
2-Methylnaphthalene	91-57-6	ns	0.94	10
2-Methylphenol	95-48-7	ns	0.96	10
2-Nitroaniline	88-74-4	5	0.71	20
2-Nitrophenol	88-75-5	ns	0.6	10
3,3´-Dichlorobenzidine	91-94-1	5	1.7	10
3-Nitroaniline	99-09-2	5	0.97	20
4,6-Dinitro-2-methylphenol	534-52-1	ns	0.79	20
4-Bromophenyl-phenylether	101-55-3	ns	0.54	10
4-Chloro-3-methylphenol	59-50-7	ns	0.6	10
4-Chloroaniline	106-47-8	5	2	10
4-Chlorophenyl-phenylether	7005-72-3	ns	0.41	10
4-Methylphenol	106-44-5	ns	1.4	10

4-Nitroaniline	100-01-6	5	0.96	20
4-Nitrophenol	100-02-7	ns	0.53	20
Acenaphthene	83-32-9	20	0.65	10
Acenaphthylene	208-96-8	ns	0.42	10
Anthracene	120-12-7	50	0.48	10
Benzo(a)anthracene	56-55-3	0.002	0.4	10
Benzo(a)pyrene	50-32-8	ns	1.2	10
Benzo(b)fluoranthene	205-99-2	0.002	0.94	10
Benzo(g,h,i)perylene	191-24-2	ns	0.39	10
Benzo(k)fluoranthene	207-08-9	0.002	1.2	10
Bis(2-chloroethoxy)methane	111-91-1	5	1.1	10
Bis(2-chloroethyl)ether	111-44-4	1	0.75	10
Bis(2-ethylhexyl)phthalate	117-81-7	5	1.3	10
Butylbenzylphthalate	85-68-7	50	0.32	10
Carbazole	86-74-8	ns	0.64	10
Chrysene	218-01-9	0.002	0.42	10
Di-n-butylphthalate	84-74-2	50	0.48	10
Di-n-octylphthalate	117-84-0	ns	0.47	10
Dibenzo(a,h)anthracene	53-70-3	ns	0.44	10
Dibenzofuran	132-64-9	ns	0.52	10
Diethylphthalate	84-66-2	50	0.45	10
Dimethylphthalate	131-11-3	50	0.37	10
Fluoranthene	206-44-0	50	0.33	10
Fluorene	86-73-7	0.04	0.44	10
Hexachlorobenzene	118-74-1	0.04	0.44	10
Hexachlorobutadiene	87-68-3	0.5	0.75	10
Hexachlorocyclopentadiene	77-47-4	5	1	10
Hexachloroethane	67-72-1	5	0.55	10
Indeno(1,2,3-cd)pyrene	193-39-5	0.002	0.38	10
Isophorone	78-59-1	50	0.47	10
N-Nitroso-di-n-propylamine	621-64-7	ns	0.63	10
N-Nitrosodiphenylamine	86-30-6	50	1.1	10
Naphthalene	91-20-3	10	0.96	10
Nitrobenzene	98-95-3	0.4	1.6	10
Pentachlorophenol	87-86-5	1	1.7	20
Phenanthrene	85-01-8	50	0.45	10
Phenol	108-95-2	1	0.75	10
Pyrene	129-00-0	50	0.44	10
1,1´-Biphenyl	92-52-4	5	0.65	10
2,4,5-Trichlorophenol	95-95-4	ns	0.26	20
2,4,6-Trichlorophenol	88-06-2	ns	0.53	10
1,2,4,5-Tetrachlorobenzene	95-94-3	ns	0.92	10
2,3,4,6-Tetrachlorophenol	58-90-2	ns	0.65	25
Acetophenone	98-86-2	ns	0.51	10
Atrazine	1912-24-9	ns	1.3	10
Benzaldehyde	100-52-7	ns	0.51	10
Caprolactam	105-60-2	ns	1.1	10

Matrix *Soil*				
Analytical Group ***<u>VOCs – SW-846 8260</u>***				
Concentration Level *Low*				
Analyte	**CAS Number**	**NYSDEC Part 375 Soil Cleanup Objectives for Protection of Groundwater (µg/kg)**	**Achievable Lab Method Detection Limit (µg/kg)**	**Achievable Lab Reporting Limit (µg/kg)**
1,1,1-Trichloroethane	71-55-6	680	0.53	5
1,1,2,2-Tetrachloroethane	79-34-5	1,000,000	0.68	5
1,1,2-Trichloroethane	79-00-5	1,000,000	0.48	5
1,1-Dichloroethane	75-34-3	270	0.67	5
1,1-Dichloroethene	75-35-4	330	0.95	5
1,2,3-Trichlorobenzene	87-61-6	ns	0.64	5
1,2,4-Trichlorobenzene	120-82-1	1,000,000	0.63	5
1,2-Dibromo-3-chloropropane	96-12-8	ns	1.3	5
1,2-Dibromoethane	106-93-4	ns	0.74	5
1,2-Dichlorobenzene	95-50-1	1,100	0.62	5
1,2-Dichloroethane	107-06-2	20	0.54	5
1,2-Dichloropropane	78-87-5	1,000,000	0.69	5
1,3-Dichlorobenzene	541-73-1	2,400	0.7	5
1,4-Dichlorobenzene	106-46-7	1,800	0.8	5
2-Butanone	78-93-3	120	2	5
2-Hexanone	591-78-6	1,000,000	0.83	5
4-Methyl-2-pentanone	108-10-1	ns	0.73	5
Acetone	67-64-1	50	1.6	5
Benzene	71-43-2	60	0.61	5
Bromochloromethane	74-97-5	ns	0.76	5
Bromodichloromethane	75-27-4	1,000,000	0.97	5
Bromoform	75-25-2	1,000,000	2	5
Bromomethane	74-83-9	1,000,000	1.1	5
Carbon disulfide	75-15-0	1,000,000	0.3	5
Carbon tetrachloride	56-23-5	760	0.33	5
Chlorobenzene	108-90-7	1,100	0.51	5
Chloroethane	75-00-3	1,000,000	1	5
Chloroform	67-66-3	370	0.64	5
Chloromethane	74-87-3	1,000,000	0.8	5
cis-1,2-Dichloroethene	156-59-2	250	0.75	5
cis-1,3-Dichloropropene	10061-01-5	1,000,000	0.67	5
Dibromochloromethane	124-48-1	1,000,000	0.65	5
Dichlorodifluoromethane	75-71-8	ns	0.98	5
Ethylbenzene	100-41-4	1,000	0.5	5
Isopropylbenzene	98-82-8	1,000,000	0.58	5
m,p-Xylene	179601-23-1	1,600	1.6	5
Methyl tert-butyl ether	1634-04-4	930	0.61	5
Methylene chloride	75-09-2	50	1.3	5
o-Xylene	95-47-6	1,600	0.47	5

Styrene	100-42-5	1,000,000	0.52	5
Tetrachloroethene	127-18-4	1,300	0.62	5
Toluene	108-88-3	700	0.47	5
trans-1,2-Dichloroethene	156-60-5	190	0.53	5
trans-1,3-Dichloropropene	10061-02-6	1,000,000	0.68	5
Trichloroethene	79-01-6	470	0.62	5
Trichlorofluoromethane	75-69-4	ns	0.42	5
Vinyl chloride	75-01-4	20	0.63	5
1,1,2-Trichloro-1,2,2-trifluoroethane	76-13-1	ns	3	5
1,4-Dioxane	123-91-1	100	61	100
Cyclohexane	110-82-7	ns	1.7	5
Methyl acetate	79-20-9	ns	1.4	5
Methylcyclohexane	108-87-2	ns	1.8	5

Matrix *Soil*				
Analytical Group ***<u>SVOCs – SW-846 8270</u>***				
Concentration Level *Low*				
Analyte	**CAS Number**	**NYSDEC Part 375 Soil Cleanup Objectives for Protection of Groundwater (µg/kg)**	**Achievable Lab Method Detection Limit (µg/kg)**	**Achievable Lab Reporting Limit (µg/kg)**
2,2´-oxybis(1-Chloropropane)	108-60-1		51	330
2,4-Dichlorophenol	120-83-2	1,000,000	38	330
2,4-Dimethylphenol	105-67-9	1,000,000	36	330
2,4-Dinitrophenol	51-28-5	1,000,000	180	670
2,4-Dinitrotoluene	121-14-2	1,000,000	23	330
2,6-Dinitrotoluene	606-20-2	1,000,000	28	330
2-Chloronaphthalene	91-58-7	1,000,000	38	330
2-Chlorophenol	95-57-8	1,000,000	41	330
2-Methylnaphthalene	91-57-6	1,000,000	42	330
2-Methylphenol	95-48-7	1,000,000	38	330
2-Nitroaniline	88-74-4	1,000,000	21	670
2-Nitrophenol	88-75-5	1,000,000	36	330
3,3´-Dichlorobenzidine	91-94-1	1,000,000	35	330
3-Nitroaniline	99-09-2	1,000,000	24	670
4,6-Dinitro-2-methylphenol	534-52-1	ns	25	670
4-Bromophenyl-phenylether	101-55-3	ns	32	330
4-Chloro-3-methylphenol	59-50-7	1,000,000	26	330
4-Chloroaniline	106-47-8	1,000,000	24	330
4-Chlorophenyl-phenylether	7005-72-3	1,000,000	40	330
4-Methylphenol	106-44-5	ns	35	330
4-Nitroaniline	100-01-6	1,000,000	25	670
4-Nitrophenol	100-02-7	1,000,000	22	670
Acenaphthene	83-32-9	98,000	39	330
Acenaphthylene	208-96-8	107,000	37	330
Anthracene	120-12-7	1,000,000	27	330
Benzo(a)anthracene	56-55-3	1000	33	330

Benzo(a)pyrene	50-32-8	22,000	31	330
Benzo(b)fluoranthene	205-99-2	1,700	40	330
Benzo(g,h,i)perylene	191-24-2	100,000	38	330
Benzo(k)fluoranthene	207-08-9	1,700	43	330
Bis(2-chloroethoxy)methane	111-91-1	1,000,000	39	330
Bis(2-chloroethyl)ether	111-44-4	1,000,000	42	330
Bis(2-ethylhexyl)phthalate	117-81-7	1,000,000	29	330
Butylbenzylphthalate	85-68-7	1,000,000	26	330
Carbazole	86-74-8	1,000,000	28	330
Chrysene	218-01-9	1,000	29	330
Di-n-butylphthalate	84-74-2	1,000,000	28	330
Di-n-octylphthalate	117-84-0	1,000,000	28	330
Dibenzo(a,h)anthracene	53-70-3	1,000,000	35	330
Dibenzofuran	132-64-9	210,000	36	330
Diethylphthalate	84-66-2	1,000,000	24	330
Dimethylphthalate	131-11-3	1,000,000	30	330
Fluoranthene	206-44-0	1,000,000	29	330
Fluorene	86-73-7	386,000	33	330
Hexachlorobenzene	118-74-1	3,200	32	330
Hexachlorobutadiene	87-68-3	1,000,000	45	330
Hexachlorocyclopentadiene	77-47-4	1,000,000	96	330
Hexachloroethane	67-72-1	1,000,000	35	330
Indeno(1,2,3-cd)pyrene	193-39-5	8,200	37	330
Isophorone	78-59-1	1,000,000	34	330
N-Nitroso-di-n-propylamine	621-64-7	1,000,000	32	330
N-Nitrosodiphenylamine	86-30-6	1,000,000	29	330
Naphthalene	91-20-3	12,000	41	330
Nitrobenzene	98-95-3	1,000,000	38	330
Pentachlorophenol	87-86-5	800	140	670
Phenanthrene	85-01-8	1,000,000	26	330
Phenol	108-95-2	330	37	330
Pyrene	129-00-0	1,000,000	32	330
1,1´-Biphenyl	92-52-4	ns	42	330
2,4,5-Trichlorophenol	95-95-4	1,000,000	37	670
2,4,6-Trichlorophenol	88-06-2	1,000,000	39	330
1,2,4,5-Tetrachlorobenzene	95-94-3	ns	59	330
2,3,4,6-Tetrachlorophenol	58-90-2	ns	31	330
Acetophenone	98-86-2	ns	31	330
Atrazine	1912-24-9	ns	47	330
Benzaldehyde	100-52-7	ns	44	330
Caprolactam	105-60-2	ns	21	330

Analytical Laboratory Sensitivity and Project Criteria

Matrix Aqueous	
Analytical Group VOCs	
Concentration Level Low	

Analytical Method/SOP	Data Quality Indicators[1]	Performance Criteria (related to analytical method)	QC Sample such as Duplicate, Matrix Spike, Surrogates etc.) Used To Assess Performance Criteria	QC Sample Assesses Error for Sampling (S), Analytical (A) or both (S&A)
8260 90.0012	Precision	RPD <20	Field Duplicate	S & A
	Accuracy / Representativeness	<=10 degrees C	Cooler Temperature	S
	Accuracy / Contamination	Analytes < = QL	Field Equipment Blank	S
	Accuracy / Contamination	Analytes < = QL, or less than 1/10 sample concentration, common lab contaminants <=2X QL	Method Blank	A
	Accuracy	Laboratory In-house Limits	Laboratory Control Sample	A
	Accuracy / Precision	Laboratory In-house Limits, 40% RPD	Matrix Spike / Matrix Spike Duplicate	A
	Accuracy	Factor of two (-50% to +100%) from most recent calibration	Internal Standards	A
	Accuracy	Laboratory In-house Limits	Surrogate Standards	A

[1]Defined as Precision; Accuracy/Bias; Sensitivity/Quantitation Limits, Representativeness; Comparability, Completeness

Matrix Soil
Analytical Group VOCs
Concentration Level Low

Analytical Method/SOP	**Data Quality Indicators[1]**	**Performance Criteria (related to analytical method)**	**QC Sample such as Duplicate, Matrix Spike, Surrogates etc.) Used To Assess Performance Criteria**	**QC Sample Assesses Error for Sampling (S), Analytical (A) or both (S&A)**
8260 90.0012	Precision	RPD <20	Field Duplicate	S & A
	Accuracy / Representativeness	<=10 degrees C	Cooler Temperature	S
	Accuracy / Contamination	Analytes < = QL	Field Equipment Blank	S
	Accuracy / Contamination	Analytes < = QL, or less than 1/10 sample concentration, common lab contaminants <=2X QL	Method Blank	A
	Accuracy	Laboratory In-house Limits	Laboratory Control Sample	A
	Accuracy / Precision	Laboratory In-house Limits, 40% RPD	Matrix Spike / Matrix Spike Duplicate	A
	Accuracy	Factor of two (-50% to +100%) from most recent calibration	Internal Standards	A
	Accuracy	Laboratory In-house Limits	Surrogate Standards	A

[1]Defined as Precision; Accuracy/Bias; Sensitivity/Quantitation Limits, Representativeness; Comparability, Completeness

Matrix Aqueous
Analytical Group SVOCs
Concentration Level Low

Analytical Method/SOP	**Data Quality Indicators**[1]	**Performance Criteria (related to analytical method)**	**QC Sample such as Duplicate, Matrix Spike, Surrogates etc.) Used To Assess Performance Criteria**	**QC Sample Assesses Error for Sampling (S), Analytical (A) or both (S&A)**
8270 70.0011	Precision	RPD <20	Field Duplicate	S & A
	Accuracy / Representativeness	<=10 degrees C	Cooler Temperature	S
	Accuracy / Contamination	Analytes < = QL	Field Equipment Blank	S
	Accuracy / Contamination	Analytes < = QL, or less than 1/10 sample concentration, Common lab contaminants <=5X QL	Method Blank	A
	Accuracy	Laboratory In-house Limits	Laboratory Control Sample	A
	Accuracy / Precision	Laboratory In-house Limits, RPD 40%	Matrix Spike / Matrix Spike Duplicate	A
	Accuracy	Factor of two (-50% to +100%) from most recent calibration	Internal Standards	A
	Accuracy	Laboratory In-house Limits	Surrogate Standards	A

[1]Defined as Precision; Accuracy/Bias; Sensitivity/Quantitation Limits, Representativeness; Comparability, Completeness

Matrix Soil	
Analytical Group SVOCs	
Concentration Level Low	

Analytical Method/SOP	Data Quality Indicators[1]	Performance Criteria (related to analytical method)	QC Sample such as Duplicate, Matrix Spike, Surrogates etc.) Used To Assess Performance Criteria	QC Sample Assesses Error for Sampling (S), Analytical (A) or both (S&A)
8270 70.0011	Precision	RPD <20	Field Duplicate	S & A
	Accuracy / Representativeness	<=10 degrees C	Cooler Temperature	S
	Accuracy / Contamination	Analytes < = QL	Field Equipment Blank	S
	Accuracy / Contamination	Analytes < = QL, or less than 1/10 sample concentration, Common lab contaminants <=5X QL	Method Blank	A
	Accuracy	Laboratory In-house Limits	Laboratory Control Sample	A
	Accuracy / Precision	Laboratory In-house Limits, RPD 40%	Matrix Spike / Matrix Spike Duplicate	A
	Accuracy	Factor of two (-50% to +100%) from most recent calibration	Internal Standards	A
	Accuracy	Laboratory In-house Limits	Surrogate Standards	A

[1]Defined as Precision; Accuracy/Bias; Sensitivity/Quantitation Limits, Representativeness; Comparability, Completeness

Matrix Soil	
Analytical Group Metals	
Concentration Level Low	

Analytical Method/SOP	**Data Quality Indicators**[1]	**Performance Criteria (related to analytical method)**	**QC Sample such as Duplicate, Matrix Spike, Surrogates etc.) Used To Assess Performance Criteria**	**QC Sample Assesses Error for Sampling (S), Analytical (A) or both (S&A)**
Method 6010/7471	Precision	RPD <20	Field Duplicate	S & A
	Accuracy / Representativeness	<=10 degrees C	Cooler Temperature	S
	Accuracy / Contamination	Analytes < = QL	Field Equipment Blank	S
	Accuracy / Contamination	Analytes < = QL, or less than 1/10 sample concentration, Common lab contaminants <=5X QL	Method Blank	A
	Accuracy	Laboratory In-house Limits	Laboratory Control Sample	A
	Accuracy / Precision	Laboratory In-house Limits, RPD 40%	Matrix Spike / Matrix Spike Duplicate	A
	Accuracy	Factor of two (-50% to +100%) from most recent calibration	Internal Standards	A
	Accuracy	Laboratory In-house Limits	Surrogate Standards	A

[1]Defined as Precision; Accuracy/Bias; Sensitivity/Quantitation Limits, Representativeness; Comparability, Completeness

Secondary Data Criteria and Limitations Table

Secondary Data	Data Source (Originating Organization, Report Title, and Date)	Data Generator(s) (Originating Org., Data Types, Data Generation/ Collection Dates)	How Data Will Be Used	Limitations on Data Use
Site Environmental History	Bergmann Associates – Phase I Environmental Site Assessment (ESA), 1200 E. Main Street, Rochester, NY,	Bergmann Associates – Site historical environmental records, Sanborn maps, spill files, aerial photos, etc.;	Site information relative to features and locations that may be source areas of contamination.	No soil or groundwater sampling results.
Site-Specific Environmental Conditions	Bergmann Associates – Phase II ESA, 1200 E. Main Street Rochester, NY, July 8, 2001.	Bergmann Associates – Soil and Groundwater analytical data	Site information relative to features and locations that may be source areas of contamination.	
Site-Specific Environmental Conditions	Bergmann Associates – Supplemental Phase II ESA, 1200 E. Main Street Rochester, NY, October 3, 1999.	Bergmann Associates – Additional Soil and Groundwater	Site information relative to features and locations that may be source areas, and extent of contamination.	

Project Specific Method and Standard Operating Procedures (SOPs) Reference Table

ANALYTICAL METHOD REFERENCE (*Include document title, method name/number, revision number, date)*
1a. SW846 Method 8260C GCMS Volatiles, August 2006
2a. SW846 Method 8270D GCMS Semi volatiles, August 2006
3a. SW846 Method 6010C, ICP TAL Metals, November, 2000
ANALYTICAL LABORATORY SOPs (*Include document title, date, revision number, and originator=s name)*
1b. 90.0012, Revision 13, 9/7/12
2b. 70.0011, Revision 11, 7/18/12
3b. 60.0050, Revision 15, 5/27/15
FIELD SAMPLING SOPs[1] (*Include document title, date, revision number, and originator=s name)*
1c. USEPA Region II Low Flow Groundwater Sampling Procedure, March 16, 1998
2c. *Site Management Plan, 1200 E. Main Street, Rochester, NY,* by Bergman Associates, dated December 2016

[1] Project Sampling SOPs include sample collection, sample preservation, equipment decontamination, preventive maintenance, etc.

Field Equipment Calibration, Maintenance, Testing, and Inspection

Field Equipment	Calibration Activity	Maintenance Activity	Testing/ Inspection Activity	Frequency	Acceptance Criteria		Corrective Action	SOP Reference
YSI (or equivalent) flow-through cell	Calibrate with standard solutions	NA	NA	Prior to day's activities; end of day's activities; anytime anomaly suspected	pH Meter	+/- 0.1 units	Clean probe, replace battery, replace membrane, replace probe	EPA Region II Low Flow Ground-water Sampling Procedure, March 16, 1998
					Dissolved Oxygen	± 3%		
					Specific Conductivity	± 1%		
					Temperature	± 0.1 °C		
					Turbidity	± 2 NTU		
MiniRAE 2000 Photoionization Detector	Calibrate with isobutylene	Charge the monitor before use	NA	Prior to day's activities	0-2000 ppm: ± 2 ppm or 10% of reading 2000 ppm: ± 20% of reading		Charge or replace battery, clean sensor module or lamp housing, replace water trap filter	MiniRAE 2000 Operation and Maintenance Manual

Analytical Laboratory Instrument and Equipment Maintenance, Testing, and Inspection

Instrument/ Equipment	Maintenance Activity	Testing/Inspection Activity	Frequency	Acceptance Criteria	Corrective Action	Responsible Person	Analytical SOP Reference
GCMS- VOC, SVOC	Check for leaks, replace gas line filters, recondition or replace trap, replace column, clean injection port/liner and replace septum as needed, replace Electron Mulitplier	Tune (BFB or DFTPP), Continuing Calibration Verification	Tune, CCV after every 12 hours of operation	Ion abundance within acceptance limits for tune, CCV %D ≤20%	As needed, replace connections, gas line filters, trap, or GC column. Clip column, replace injection port liner, clean injection port, clean source. Repeat tune, calibration or CCV and any affected samples. See Attachment in SOP for more details.	Chemtech Department Supervisor	90.0012; 70.0011
GC/FID -	Check for leaks, replace gas line filters, clip end of column, recondition or replace column, clean injection port/liner, replace septum	Continuing Calibration Verification	Daily, after every 20 Samples	%D <20%	As needed, check GC conditions, check for leaks, clip column, clean/replace injection port/ liner. Repeat calibration or CCV and affected samples. See Attachment 1 of SOP for more details.	Chemtech Department Supervisor	60.0050

Instrument/ Equipment	Calibration Procedure	Frequency of Calibration	Acceptance Criteria	Corrective Action	Responsible Person	Analytical SOP Reference
GC/MS – VOCs, SVOCs	ICAL - 5-point calibration	Instrument receipt, instrument change (new column, source cleaning, etc.), when CCV is out of criteria.	%RSD <20% with a maximum of 10% of the target analytes and/or surrogate compounds allowed %RSD <50%. Relative Retention Times must meet ±0.06 RRT units for each compound and surrogate. Minimum RRFs are suggested in Table 4 of the method (and SOP).	Recalibrate and/or perform the necessary equipment maintenance. Check the calibration standards. Reanalyze data.	Chemtech Department Supervisor	90.0012, 70.0011
GC/MS – VOCs, SVOCs	ICV (Second Source)	Once after each ICAL.	The %R must be within 70-130% for all target compounds.	Correct problem and verify second source standard. Rerun second source verification. If that fails, correct problem and repeat ICAL unless problem can be verified as due to ICV solution and not ICAL.	Chemtech Department Supervisor	90.0012, 70.0011

GC/MS – VOCs, SVOCs	CCV	Analyze a standard at the beginning of each 12-hour shift after tune.	%D <20% with a maximum of 20% of the target analytes and/or surrogate compounds allowed %D < 50% D. Minimum RRFs are suggested in Table 4 of the method.	Correct problem, then rerun calibration verification. If that fails, then repeat ICAL. Reanalyze all samples since last acceptable CCV.	Chemctech Department Supervisor	90.0012, 70.0011
GC/MS – VOCs, SVOCs	Instrument Tune (BVB for VOCs, DFTPP for SVOCs)	Prior to ICAL and every 12 hours.	Criteria listed in Section 8.2.2, of current revision of SOPs 90.0012 and 70.0011.	Retune and/or clean source.	Chemtech Department Supervisor	90.0012, 70.0011

Sample Handling System

SAMPLE COLLECTION, PACKAGING, AND SHIPMENT
Sample Collection (Personnel/Organization): Bergmann Environmental Technician or City of Rochester DEQ
Sample Packaging (Personnel/Organization): Bergmann Environmental Technician or City of Rochester DEQ
Sample Packaging (Personnel/Organization): Bergmann Environmental Technician or City of Rochester DEQ
Type of Shipment/Carrier: Fed Ex ground or Private Courier
SAMPLE RECEIPT AND ANALYSIS
Sample Receipt (Personnel/Organization): Sample receiving staff/Chemtech
Sample Custody and Storage (Personnel/Organization): Sample receiving staff/Chemtech
Sample Preparation (Personnel/Organization): Sample Preparation Technicians (Organics, Inorganics)/Chemtech
Sample Determinative Analysis (Personnel/Organization): Instrument Lab Staff (Organics, Inorganics)/Chemtech
SAMPLE ARCHIVING
Field Sample Storage (No. of days from sample collection): Samples to be shipped at the end of each sampling day, and arrive at laboratory within 48 hours (2 days) of sample shipment.
Sample Extract/Digestate Storage (No. of days from extraction/digestion): Six months from delivery of final laboratory report.
SAMPLE DISPOSAL
Personnel/Organization: Sample receiving staff/Chemtech
Number of Days from Analysis: 30 days from delivery of final laboratory report.

Sample Custody Requirements

Sample Identification Procedures:

Sample identification documents include field records, sample labels, custody seals, and chain-of-custody records. The sample labels are placed on the bottles so as not to obscure any QA/QC lot numbers on the bottles. Sample information is printed in a legible manner using waterproof ink. To minimize handling of sample containers, labels will be filled out prior to sample collection to the extent possible. The sample label will be firmly affixed to the sample containers and will include information of the name or initials of sampler, date (and time if possible) of collection, sample number, intended analysis, and preservation performed.

Each sample will have a unique ID number that will refer to the sample location, media type, and depth interval (if applicable).

Each sample shall be given a unique sample number. This system will provide a tracking number to allow for identification of the sample location and date of collection and to allow for cross- referencing of sample information. The sample numbering system is described as follows:

Example: S-101001-AA-XXX

Where: S = Designates sample type

(S = Soil, SS = surface soil, GW = groundwater, SS = surface water sample)

101001: Sample Date (month/day/year)
AA: Initials of the sampler
XXX: Unique sample number

Quality Control (QC) samples and duplicate samples will also be numbered in accordance with the numbering system.

Field Sample Custody/Tracking Procedures (sample collection, packaging, shipment, and delivery to laboratory):

Field quality control samples will be collected to verify reproducibility of the sampling and analytical methods. Field duplicates will be obtained at a rate of one per 20 original field samples. Trip blanks will be used to assess whether groundwater has been exposed to volatile constituents during sample storage and transport. The trip blanks will remain unopened throughout the sampling event and will only be analyzed for volatile organics. Sample bottles will be obtained pre-cleaned by the laboratory and shipped to the sampling personnel in charge of the field activities. Coolers or boxes containing cleaned bottles should be sealed with a custody tape seal during transport to the field or while in storage prior to use. Transportation and handling of samples must be accomplished in a manner that not only protects the integrity of the sample, but also prevents any detrimental effects due to the possible hazardous nature of samples.

Laboratory Sample Custody/Tracking Procedures (receipt of samples, archiving, and disposal):

Laboratory sample custody procedures (receipt of samples, archiving, and disposal) will be used according Chemtech standard procedures. Coolers are received and checked for proper temperature. A sample cooler receipt form will be filled out to note conditions and any discrepancies. The chain-of-custody form will be checked against the sample containers for accuracy. Samples will be logged into the laboratory information management system and given a unique log number which can be tracked through processing. The laboratory project manager will notify the client verbally or via email immediately if any problems are identified. Discrepancies and resolutions will be documented on the sample receiving checklist. Samples will remain under custody until the completion of analysis, and following analysis until sample remnants are ultimately disposed. The Chem Tech Analytical laboratory facility is a secured, limited access facility.

Chain-of-Custody Procedures:

After samples have been obtained, chain-of-custody procedures will be followed to establish a written record concerning sample movement between the sampling site and the testing laboratory. Each shipping container will have a chain-of-custody form completed in triplicate by the site sampling personnel preparing the samples for shipment. The chain-of-custody form for each shipping container will be completed and sealed in the container. The sampler will maintain one (1) copy of this form, and the other two (2) copies will accompany the samples. One of the laboratory copies will become a part of the permanent record for the sample and will be returned with the sample analysis, and the third copy will be maintained on file at the laboratory.

The following packaging and labeling requirements for the sample materials are appropriate for shipping the samples to the testing laboratory.

1. Place samples in a cooler.
2. Preserve samples with ice or "blue ice" type coolers. No dry ice will be used.
3. Package samples so that they do not leak, spill or vaporize from its packaging.
4. Attach completed chain-of-custody forms inside the sample shipment cooler.
5. Seal the cooler with tape.
6. Label the cooler with the following information:

- Sample collector's name, address and telephone number;
- Laboratory name, address and telephone number;
- Description of samples;
- Quantity of samples; and
- Date of Shipment.

After collection, each sample will be maintained in the sampler's custody until formally transferred to another party (e.g., Fed Ex or Private Courier). For all samples collected, chain-of-custody forms will document the date and time of sample collection, the sampler's name, and the names of all others who subsequently held custody of the sample. Specifications for chemical analyses will also be documented on the chain-of-custody form. After collection, each sample will be maintained in the sampler's custody until formally transferred to another party (e.g., FedEx).

Field and Analytical Laboratory Quality Control Summary

Matrix	**Groundwater**
Analytical Group	**VOCs**
Concentration Level	Low/Medium - mg/kg (ppm)
Sampling SOP(s)	EPA Region 2 Low Flow Groundwater Sampling Procedure
Analytical Method/SOP Reference	EPA Method 8260 / 90.0012
Sampler's Name	Bergmann Associates Environmental Technician and or City of Rochester DEQ
Field Sampling Organization	Bergmann Associates or City of Rochester DEQ
Analytical Organization	Chemtech
No. of Sample Locations	16 Groundwater Monitoring Wells

Quality Control (QC) Sample:	Frequency/ Number	Method/SOP QC Acceptance Limits	Corrective Action	Person(s) Responsible for Corrective Action	Data Quality Indicator (DQI)	Measurement Performance Criteria
Field Duplicate		RPD <20			Precision	RPD <20
Cooler Temperature	1 per shipping cooler	<=10 deg. C	Note in report		Accuracy / Representativeness	<=10 deg. C
Field Equipment Blank		Analytes < = QL			Accuracy / Contamination	Analytes < = QL
Method Blank	One per batch of <=20 samples	Analytes < = QL, or less than 1/10 sample concentration, common lab contaminants <=2X QL	If sufficient holding time remains, reanalyze batch. If insufficient holding time, flag result, note in narrative	Chem Tech Department Supervisor	Accuracy / Contamination	Analytes < = QL, or less than 1/10 sample concentration, common lab contaminants <=2X QL

Laboratory Control Sample	One per batch of <=20 samples	Laboratory In-house Limits	If sufficient holding time remains, reanalyze batch. If insufficient holding time, flag result, note in narrative	Chem Tech Department Supervisor	Accuracy	Laboratory In-house Limits
Matrix Spike / Matrix Spike Duplicate	One set per 20 samples, as determined by sampler	Laboratory In-house Limits, 40% RPD	flag result, note in narrative	Chem Tech Department Supervisor	Accuracy / Precision	Laboratory In-house Limits, 40% RPD
Internal Standards	Every sample, standard, QC sample	Factor of two (-50% to +100%) from most recent calibration	Reanalyze sample. If determined to be matrix interference, note in narrative.	Chem Tech Department Supervisor	Accuracy	Factor of two (-50% to +100%) from most recent calibration
Surrogate Standards	Every sample, standard, QC sample	Laboratory in-house limits. No exceedances for MB or LCS, one exceedance allowed for field samples	Flag result, note in narrative	Chem Tech Department Supervisor	Accuracy	Laboratory in-house limits. No exceedances for MB or LCS, one exceedance allowed for field samples

Matrix	**Soil**
Analytical Group	**VOCs**
Concentration Level	Low/Medium - mg/kg (ppm)
Sampling SOP(s)	*Site Management Plan, 1200 E. Main Street Rochester, NY,* by Bergmann
Analytical Method/SOP Reference	EPA Method 8260 / 90.0012
Sampler's Name	Bergmann Environmental Technician or City of Rochester DEQ
Field Sampling Organization	Bergman Associates or City of Rochester DEQ
Analytical Organization	Chemtech
No. of Sample Locations	Unknown (future Site re-development)

Quality Control (QC) Sample:	**Frequency/ Number**	**Method/SOP QC Acceptance Limits**	**Corrective Action**	**Person(s) Responsible for Corrective Action**	**Data Quality Indicator (DQI)**	**Measurement Performance Criteria**
Field Duplicate		RPD <20			Precision	RPD <20
Cooler Temperature	1 per shipping cooler	<=10 deg. C	Note in report		Accuracy / Representa-tiveness	<=10 deg. C
Field Equipment Blank		Analytes < = QL			Accuracy / Contamina-tion	Analytes < = QL
Method Blank	One per batch of <=20 samples	Analytes < = QL, or less than 1/10 sample concentration, common lab contaminants <=2X QL	If sufficient holding time remains, reanalyze batch. If insufficient holding time, flag result, note in narrative	Chemtech Department Supervisor	Accuracy / Contamina-tion	Analytes < = QL, or less than 1/10 sample concentration, common lab contaminants <=2X QL
Laboratory Control Sample	One per batch of <=20 samples	Laboratory In-house Limits	If sufficient holding time remains, reanalyze batch. If insufficient holding time, flag result, note in narrative	Chemtech Department Supervisor	Accuracy	Laboratory In-house Limits
Matrix Spike / Matrix Spike Duplicate	One set per 20 samples, as determined by sampler	Laboratory In-house Limits, 40% RPD	flag result, note in narrative	Chemtech Department Supervisor	Accuracy / Precision	Laboratory In-house Limits, 40% RPD

Internal Standards	Every sample, standard, QC sample	Factor of two (-50% to +100%) from most recent calibration	Reanalyze sample. If determined to be matrix interference, note in narrative.	Chemtech Department Supervisor	Accuracy	Factor of two (-50% to +100%) from most recent calibration
Surrogate Standards	Every sample, standard, QC sample	Laboratory in-house limits. No exceedances for MB or LCS, one exceedance allowed for field samples	Flag result, note in narrative	Chemtech Department Supervisor	Accuracy	Laboratory in-house limits. No exceedances for MB or LCS, one exceedance allowed for field samples

Matrix	**Groundwater**
Analytical Group	**Semi-volatile Organic Compounds**
Concentration Level	Low/Medium - mg/kg (ppm)
Sampling SOP(s)	EPA Region 2 Low Flow Groundwater Sampling Procedure
Analytical Method/SOP Reference	EPA Method 8270 / 70.0011
Sampler's Name	Bergmann Environmental Technician or City of Rochester DEQ
Field Sampling Organization	Bergmann Associates
Analytical Organization	Chemtech
No. of Sample Locations	16 Groundwater Monitoring Wells

Quality Control (QC) Sample:	Frequency/ Number	Method/SOP QC Acceptance Limits	Corrective Action	Person(s) Responsible for Corrective Action	Data Quality Indicator (DQI)	Measurement Performance Criteria
Field Duplicate		RPD <20			Precision	RPD <20
Cooler Temperature	1 per shipping cooler	<=10 deg. C	Note in report		Accuracy / Representativeness	<=10 deg. C
Field Equipment Blank		Analytes < = QL			Accuracy / Contamination	Analytes < = QL
Method Blank	One per preparation batch of <=20 samples	Analytes < = QL, or less than 1/10 sample concentration, common lab contaminants <=5X QL	If sufficient holding time remains, reprepare batch. If insufficient holding time, flag result, note in narrative	Chemtech Department Supervisor	Accuracy / Contamination	Analytes < = QL, or less than 1/10 sample concentration, common lab contaminants <=5X QL
Laboratory Control Sample	One per preparation batch of <=20 samples	Laboratory In-house Limits	If sufficient holding time remains, reprepare batch. If insufficient holding time, flag result, note in narrative	Chemtech Department Supervisor	Accuracy	Laboratory In-house Limits
Matrix Spike / Matrix Spike Duplicate	One set per 20 samples, as determined by sampler	Laboratory In-house Limits, 40% RPD	flag result, note in narrative	Chemtech Department Supervisor	Accuracy / Precision	Laboratory In-house Limits, 40% RPD

Internal Standards	Every sample, standard, QC sample	Factor of two (-50% to +100%) from most recent calibration, unless obvious matrix interference	Reanalyze sample. If determined to be matrix interference, note in narrative.	Chemtech Department Supervisor	Accuracy	Factor of two (-50% to +100%) from most recent calibration, unless obvious matrix interference
Surrogate Standards	Every sample, standard, QC sample	Laboratory in-house limits. No exceedances for MB or LCS, one acid and one base/neutral exceedance allowed for field samples, unless obvious matrix interference	Flag result, note in narrative	Chemtech Department Supervisor	Accuracy	Laboratory in-house limits. No exceedances for MB or LCS, one acid and one base/neutral exceedance allowed for field samples, unless obvious matrix interference

Matrix	**Soil**
Analytical Group	**Semi-volatile Organic Compounds**
Concentration Level	Low/Medium - mg/kg (ppm)
Sampling SOP(s)	*Site Management Plan, 1200 E. Main Street Rochester, NY,* by Bergmann
Analytical Method/SOP Reference	EPA Method 8270
Sampler's Name	Bergmann Associates Environmental Technician or City of Rochester DEQ
Field Sampling Organization	Bergmann Associates or City of Rochester DEQ
Analytical Organization	Chemtech
No. of Sample Locations	16

Quality Control (QC) Sample:	Frequency/ Number	Method/SOP QC Acceptance Limits	Corrective Action	Person(s) Responsible for Corrective Action	Data Quality Indicator (DQI)	Measurement Performance Criteria
Field Duplicate		RPD <20			Precision	RPD <20
Cooler Temperature	1 per shipping cooler	<=10 deg. C	Note in report		Accuracy / Representa-tiveness	<=10 deg. C
Field Equipment Blank		Analytes < = QL			Accuracy / Contamina-tion	Analytes < = QL
Method Blank	One per preparation batch of <=20 samples	Analytes < = QL, or less than 1/10 sample concentration , common lab contaminants <=5X QL	If sufficient holding time remains, reprepare batch. If insufficient holding time, flag result, note in narrative	Chemtech Department Supervisor	Accuracy / Contamina-tion	Analytes < = QL, or less than 1/10 sample concentration, common lab contaminants <=5X QL
Laboratory Control Sample	One per preparation batch of <=20 samples	Laboratory In-house Limits	If sufficient holding time remains, reprepare batch. If insufficient holding time, flag result, note in narrative	Chemtech Department Supervisor	Accuracy	Laboratory In-house Limits
Matrix Spike / Matrix Spike Duplicate	One set per 20 samples, as determined by sampler	Laboratory In-house Limits, 40% RPD	flag result, note in narrative	Chemtech Department Supervisor	Accuracy / Precision	Laboratory In-house Limits, 40% RPD

Internal Standards	Every sample, standard, QC sample	Factor of two (-50% to +100%) from most recent calibration, unless obvious matrix interference	Reanalyze sample. If determined to be matrix interference, note in narrative.	Chemtech Department Supervisor	Accuracy	Factor of two (-50% to +100%) from most recent calibration, unless obvious matrix interference
Surrogate Standards	Every sample, standard, QC sample	Laboratory in-house limits. No exceedances for MB or LCS, one acid and one base/neutral exceedance allowed for field samples, unless obvious matrix interference	Flag result, note in narrative	Chemtech Department Supervisor	Accuracy	Laboratory in-house limits. No exceedances for MB or LCS, one acid and one base/neutral exceedance allowed for field samples, unless obvious matrix interference

Matrix	**Soil**
Analytical Group	Metals
Concentration Level	Low to medium
Sampling SOP	*Site Management Plan, 1200 E. Main Street Rochester, NY,* by Bergmann
Analytical Method/SOP Reference	Methods 6010/7471
Sampler's Name	Bergmann Associates Environmental
Field Sampling Organization	Bergmann Associates or City of Rochester
Analytical Organization	Chemtech
No. of Sample Locations	Unknown – possible during future re-

Quality Control (QC) Sample:	Frequency/Number	Method/SOP QC Acceptance Limits	Corrective Action	Person(s) Responsible for Corrective Action	Data Quality Indicator (DQI)	Measurement Performance Criteria
Field Duplicate		RPD <20			Precision	RPD <20
Cooler Temperature	1 per shipping cooler	<=10 degree C	Note in report		Accuracy / Representativeness	<=10 degree C
Field Equipment Blank		Analytes < = QL			Accuracy / Contamination	Analytes < = QL
Method Blank	One per preparation batch of <=20 samples	Analytes < = QL, or less than 1/10 sample concentration	If sufficient holding time remains, reprepare batch. If insufficient holding time, flag result, note in narrative	Chemtech Department Supervisor	Accuracy / Contamination	Analytes < = QL, or less than 1/10 sample concentration
Laboratory Control Sample	One per preparation batch of <=20 samples	60% - 140%	If sufficient holding time remains, re-prepare batch. If insufficient holding time, flag result, note in narrative	Chemtech Department Supervisor	Accuracy	Laboratory In-house Limits

Matrix Spike / Matrix Spike Duplicate	One set per 20 samples, as determined by sampler	50% - 150%, 40% RPD	flag result, note in narrative	Chemtech Department Supervisor	Accuracy / Precision	Laboratory In-house Limits, 30% RPD
Surrogate Standards	Every sample, standard, QC sample	Laboratory in-house limits.	Flag result, note in narrative	Chemtech Department Supervisor	Accuracy	Laboratory in-house limits. One surrogate must be within limits on at least one GC column for all field samples, otherwise reanalyze

Data Management and Documentation

Field Sample Collection Documents and Records	Analytical Laboratory Documents and Records	Data Assessment Documents and Records	Project File
• Site and field logbooks • Boring logs • Well construction diagrams • Chain-of-Custody (COC) forms • Well Sampling Forms • Field Data Sheets • Photographs	• Sample receipt logs • Internal and external COC forms • Equipment calibration logs • Sample preparation worksheets/logs • Sample analysis worksheets/run logs • Telephone/email logs • Photo documentation	• Data Usability Summary Reports • Review forms for electronic entry of data into database • Documentation of internal technical review of report(s) • Corrective action documentation	• The laboratory will maintain its project files for a minimum of 10 years • Bergmann Associates will maintain its project files for a minimum of 10 years • The City of Rochester will maintain its project files for a minimum of 10 years

Project Reports

Type of Report	Frequency	Projected Delivery Date(s)	Person(s) Responsible for Report Preparation	Report Recipient(s)
Status reports	Monthly	January - March 2017	Stephen DeMeo, Sr. Geologist, Bergmann Associates	Jane Forbes Environ. Specialist, City of Rochester DEQ
Data Usability Summary Report (DUSR)	Per sample	April 5, 2017	Ken Applin- Data Validation Services	Jane Forbes – Sr. Environ. Specialist, City of Rochester DEQ; Charlotte Theobald, - Engineer, NYSDEC
Remedial Construction/ Closure Report	One Time	April 31, 2015	Stephen DeMeo – Sr. Geologist, Bergmann Associates	Jane Forbes – Sr. Environ. Specialist, City of Rochester DEQ; Charlotte Theobald, - Engineer, NYSDEC

Planned Project Assessments Table

Assessment Type	Frequency	Internal or External	Organization Performing Assessment	Person(s) Responsible for Performing Assessment (Title and Organizational Affiliation)	Person(s) Responsible for Responding to Assessment Findings (Title and Organizational Affiliation)	Person(s) Responsible for Identifying and Implementing Corrective Actions (Title and Organizational Affiliation)	Person(s) Responsible for Monitoring Effectiveness of Corrective Actions (Title and Organizational Affiliation)
Due to the short time frame for project completion, these types of assessments are not applicable.							

Assessment Findings and Corrective Action Responses

Assessment Type	Nature of Deficiencies Documentation	Individual(s) Notified of Findings (Name, Title, Organization)	Timeframe of Notification	Nature of Corrective Action Response Documentation	Individual(s) Receiving Corrective Action Response (Name, Title, Org.)	Timeframe for Response
Due to the short time frame for project completion, these types of assessments are not applicable.						

Project Data Verification Process (Step I) [1]

Verification Input	Description	Internal/ External[2]	Responsible for Verification
Site/Field Logbooks	Field notes will be prepared daily by the Environmental Consultant Field Personnel and will be complete, appropriate, legible and pertinent. Upon completion of field work, logbooks will be placed in the project files.	I	Stephen DeMeo - Bergmann
Chains of custody	COC forms will be reviewed against the samples packed in the specific cooler prior to shipment. The reviewer will initial the form. An original COC will be sent with the samples to the laboratory, while copies are retained for (1) the Sampling Trip Report and (2) the project files.	I	Stephen DeMeo - Bergmann
Laboratory analytical data package	Data packages will be reviewed/verified internally by the laboratory performing the work for completeness and technical accuracy prior to submittal.	I	Chemtech
Laboratory analytical data package	Data packages will be reviewed as to content and sample information upon receipt by the Environmental Consultant Project Manager and the Third Party Data Validation Personnel.	I/E	Stephen DeMeo - Bergmann Associates; Ken Applin - Data Validation Services[2]
Remedial Construction/ Completion Report	The project data results will be compiled in a summary report for the project. Entries will be reviewed/verified against hardcopy information.	I	Stephen DeMeo - Bergmann

[1]Step I – Completeness Check

[2]Internal or External is in relation to the data generator.

Project Data Validation Process (Steps IIa and IIb) [1]

Step IIa/IIb[1]	Validation Input	Description	Responsible for Validation (Name, Organization)
IIa	SOPs	Ensure that the sampling methods/procedures outlined in QAPP were followed, and that any deviations were noted/approved.	Steve DeMeo – Bergmann Associates
IIb	SOPs	Determine potential impacts from noted/approved deviations, in regard to PQOs.	Stephen DeMeo - Bergmann Associates
IIa	Chains of custody	Examine COC forms against QAPP and laboratory contract requirements (e.g., analytical methods, sample identification, etc.).	Ken Applin - Data Validation Services
IIa	Laboratory data package	Examine packages against QAPP and laboratory contract requirements, and against COC forms (e.g., holding times, sample handling, analytical methods, sample identification, data qualifiers, QC samples, etc.).	Ken Applin - Data Validation Services
IIb	Laboratory data package	Determine potential impacts from noted/approved deviations, in regard to PQOs. Examples include PQLs and QC sample limits (precision/accuracy).	Stephen DeMeo, P.G. - Bergmann Associates
IIb	Field duplicates	Compare results of field duplicate (or replicate) analyses with RPD criteria	Stephen DeMeo, P.G. - Bergmann Associates

[1]Step IIa – Compliance with Methods, Procedures, and Contracts

[1]Step IIb – Comparison with Performance Criteria in QAPP

Project Matrix and Analytical Validation (Steps IIa and IIb) [1] Summary

Step IIa/IIb[1]	Matrix	Analytical Group	Concentration Level	Validation Criteria	Data Validator (title and organizational affiliation)
IIa / IIb	Soil/Sediment/ Aqueous	VOCs, SVOCs, TPH	Low and Medium	USEPA Contract Laboratory Program (CLP) National Functional Guidelines for Organic Data Review (October 1999)	Ken Applin, Data Validation Services

[1]Step IIa – Compliance with Methods, Procedures, and Contracts

[1]Step IIb – Comparison with Performance Criteria in QAPP

Usability Assessment (Step III) [1]

Summarize the usability assessment process and all procedures, including interim steps and any statistics, equations, and computer algorithms that will be used:

Determine if any detectable amounts of contaminant(s) are present. If no detectable amounts are indicated and all data are acceptable for the verification and validation, then the data is usable.
If verification and validation are not acceptable then take corrective action (determine cause, data impact, evaluate the impact and document the rationale for resampling).

Describe the evaluative procedures used to assess overall measurement error associated with the project:

Determine if the quality control data is within the performance criteria (precision, accuracy, etc.) through validation process IIb (Validation Activities).

Identify the personnel responsible for performing the usability assessment:

Project Management Team – Consisting of the Environmental Consultant Project Manager (Steve DeMeo); Data Validator (Ken Applin – Data Validation Services; Brownfields Recipient Project Manager (Jane Forbes – City of Rochester).

Describe the documentation that will be generated during usability assessment and how usability assessment results will be presented so that they identify trends, relationships (correlations), and anomalies:

The Data Usability Summary Report (DUSR) will describe the rationale for the data and the presentation of any data limitations. For example, if the performance criteria are not usable to address the regulatory requirements or support the project-decision for the ERP Recipient, then the Owner will address how this problem will be resolved and discuss any alternative approaches.

[1] Step III – Usability Assessment

Table
13d-1
Data Elements for Data Review Process

Item	Step I - Data Verification	Step IIa - Data Validation Compliance	Step IIb - Data Validation Comparison	Step III -Data Usability
Planning Documents				
Evidence of approval of QAPP	X			Use outputs from previous steps
Identification of personnel	X			
Laboratory name	X			
Methods (sampling & analytical)	X	X	X	
Performance requirements (including QC criteria)	X	X		
Project quality objectives	X		X	
Reporting forms	X	X		
Sampling plans – locations, maps grids, sample ID numbers	X	X		
Site identification	X			
SOPs (sampling & analytical)	X	X		
Staff training & certification	X			
List of project-specific analytes	X	X		
Analytical Data Package				
Case narrative	X	X	X	Use outputs from previous steps
Internal lab chain of custody	X	X		
Sample condition upon receipt, & storage records	X	X		
Sample chronology (time of receipt, extraction/digestion, analysis)	X	X		
Identification of QC samples (sampling /lab)	X	X		
Associated PE sample results	X	X	X	
Communication Logs	X	X		
Copies of lab notebook, records, prep sheets	X	X		
Corrective action reports	X	X		
Definition of laboratory qualifiers	X	X	X	
Documentation of corrective action results	X	X	X	
Documentation of individual QC results (e.g., spike, duplicate, LCS)	X	X	X	
Documentation of laboratory method deviations	X	X	X	
Electronic data deliverables	X	X		
Instrument calibration reports	X	X	X	
Laboratory name	X	X		
Laboratory sample identification no.	X	X		

QC sample raw data	X	X	X	
QC summary report	X	X	X	

Data Elements for Data Review Process				
Raw data	X	X	X	Use outputs from previous steps
Reporting forms, completed with actual results	X	X	X	
Signatures for laboratory sign-off (e.g., laboratory QA manager)	X	X		
Standards traceability records (to trace standard source form NIST, for example)	X	X	X	
Sampling Documents				
Chain of custody	X	X		Use outputs from previous steps
Communication logs	X	X		
Corrective action reports	X	X	X	
Documentation of corrective action results	X	X	X	
Documentation of deviation from methods	X	X	X	
Documentation of internal QA review	X	X	X	
Electronic data deliverables	X	X		
Identification of QC samples	X	X	X	
Meteorological data from field (e.g., wind, temperature)	X	X	X	
Sampling instrument decontamination records	X	X		
Sampling instrument calibration logs	X	X		
Sampling location and plan	X	X	X	
Sampling notes & drilling logs	X	X	X	
Sampling report (from field team leader to project manager describing sampling activities)	X	X	X	
External Reports				
External audit report	X	X	X	Use outputs from previous steps
External PT sample results	X	X		
Laboratory assessment	X	X		
Laboratory QA plan	X	X		
MDL study information	X	X	X	
NELAP accreditation	X	X		

Quality assurance glossary. Quality assurance terms and definitions presented in this subdivision must be used in preparing all documents related to quality assurance or control.

1. "Alteration" means altering a sample collected for analysis in any way other than by adding a preservative, such as nitric acid to lower pH. Examples of alteration include, but are not limited to: filtering, settling and decanting, centrifuging and decanting and acid extracting.

2. A Analytical Services Protocol or "ASP" means DEC’s compilation of approved EPA laboratory methods for sample preparation, analysis and data handling procedures.
3. A Correlation sample@ means a sample taken, when using a field-testing technology, to be analyzed by an ELAP-certified laboratory to determine the correlation between the laboratory and field analytical results.
4. "Effective solubility" means the theoretical aqueous solubility of an organic constituent in groundwater that is in chemical equilibrium with a separate-phase (NAPL) mixed product (product containing several organic chemicals). The effective solubility of a particular organic chemical can be estimated by multiplying its mole fraction in the product mixture by its pure-phase solubility.
5. An Environmental Laboratory Accreditation Program@ or AELAP@ means a program conducted by the NYSDOH which certifies environmental laboratories through on-site inspections and evaluation of principles of credentials and proficiency testing. Information regarding ELAP is available at the NYSDOH Wadsworth Laboratory website.
6. "Filtration" means the filtering of a groundwater or surface water sample, collected for metals analysis, at the time of collection and prior to preservation. Filtering includes but is not limited to the use of any membrane, fabric, paper or other filter medium, irrespective of pore size, to remove particulates from suspension.
7. A Final delineation sample@ means a sample taken to make a decision regarding the extent of contamination at a site during the investigation and the design of the remedy or confirmation/documentation sampling during remedial construction, which is to be analyzed by an ELAP-certified laboratory.
8. An Intermediate sample@ means a sample taken during the investigation or remediation process that will be followed by another sampling event to confirm that remediation was successful or to confirm that the extent of contamination has been defined to below a level of concern.
9. "Method detection limit" or "MDL" means the minimum concentration of a substance that can be measured and reported with a 99 percent confidence that the analyte concentration is greater than zero and is determined from the analysis of a sample in a given matrix containing the analyte.
10. A Minimum reporting limit@ means the lowest concentration at which an analyte can be detected and which can be reported with a reasonable degree of accuracy. It is the lowest concentration that can be measured, a lab-specific number, developed from minimum detection limits, and is also referred to as the practical quantitation limit (PQL).
11. A Nephelometric Turbidity Unit@ or "NTU" is the unit by which turbidity in a sample is measured.
12. "Preservation" means preventing the degradation of a sample due to precipitation, biological action, or other physical/chemical processes between the time of sample collection and analysis. The most common examples involve refrigeration at 4 degrees Celsius and lowering sample pH by the addition of acid to keep dissolved metals in solution or to reduce the biodegradation of dissolved organic analytes. Final DER-10 Page 53 of 226 Technical Guidance for Site Investigation and Remediation May 2010

13. "Target analyte list" or "TAL" means the list of inorganic compounds/elements designated for analysis as contained in the version of the *EPA Contract Laboratory Program Statement of Work for Inorganics Analysis, Multi-Media, Multi-Concentration* in effect as of the date on which the laboratory is performing the analysis. For the purpose of this chapter, a Target Analyte List scan means the analysis of a sample for Target Analyte List compounds/elements.
14. "Targeted compound" means a contaminant for which a specific analytical method is designed to detect that potential contaminant both qualitatively and quantitatively.
15. "Target compound list plus 30" or "TCL+30" means the list of organic compounds designated for analysis (TCL) as contained in the version of the EPA *Contract Laboratory Program Statement of Work for Organics Analysis, Multi-Media, Multi-Concentration* in effect as of the date on which the laboratory is performing the analysis, and up to 30 non-targeted organic compounds (plus 30) as detected by gas chromatography/mass spectroscopy (GC/MS) analysis.
16. "Tentatively identified compound or TIC" means a chemical compound that is not on the target compound list but is detected in a sample analyzed by a GC/MS analytical method. TICs are only possible with methods using mass spectrometry as the detection technique. The compound is tentatively identified using a mass spectral instrumental electronic library search and the concentration of the compound estimated.

APPENDIX 7
SITE MANAGEMENT FORMS

OXYGEN INJECTION SYSTEM EVALUATION SHEET

Date Work Performed:____________

Project No.________________Project Name___________________________Performed By_______
Bi-Weekly__________Monthly ___________Quarterly___________Maintenance/Repairs ______

System Status on Arrival: ON OFF
If OFF probable cause: ____
____

AIRSEP Unit

FEED (psi) ____
CYCLE (psi) ______________________________________
RECIEVER (psi) ____________________________________
RUN TIME (hours) __________________________________
OXYGEN PURITY (%) ______________________________

COMPRESSOR Unit

Air Supply (psi)__________________
Run Hours ___________________
Load Hours ___________________
System Starts ___________________
Regular Hours ___________________

OIL Level: GOOD LOW
amount added: ___________________

COOLER FILTER MAT: GOOD or CHG.

BELTS: GOOD or ADJ.

INJECTION BANK

Point ID	IP-1	IP-2	IP-3	IP-4	IP-5	IP-6
SCFH						
PSI						
Point ID	IP-7	IP-8	IP-9	IP-10	IP-11	IP-12
SCFH						
PSI						

Timer/PLC injection duration ___________ minutes
Points set to ____________________ SCFH on departure.

REGULAR MAINTENANCE TASKS:

	Service Run Hours	Parts Lifetime Hours	Service Required Yes/No
OIL		4000	
OIL FILTER		4000	
AIR FILTER		4000	
AIR/OIL SEPARATOR		4000	

COMMENTS:____
____
____

MONTHLY MAINTENANCE TASKS

√ Completed	Task
	Check air filter on compressor. Change air filter element if necessary.
	Check drive belts on compressor.
	Change cooler filter mat on compressor.

YEARLY MAINTENANCE TASKS

√ Completed	Task
	Change oil filter on compressor.
	Change cooling oil on compressor.
	Check electrical connections on compressor for tightness.

TWO YEAR INSPECTION

√ Completed	Task
	Change oil separator cartridge on compressor.
	Check pressure relief valve on compressor.
	Replace drive belt on compressor.
	Replace filter on air dryer.

MONITORING WELL/O2 POINT DATA SHEET

Date Work Performed:____________

Project No.________________Project Name___________________________Performed By_______

WELL ID	Depth to LNAPL/Depth to Water (feet)	D.O. (mg/L)	ORP	TEMP (°C)	pH
MW-1					
MW-2					
MW-3					
MW-4					
MW-5					
MW-6					
MW-7R					
MW-8					
MW-9R					
MW-10					
MW-11					
MW-12					
MW-13					
MW-14					
MW-15R					
MW-16					
RW-1 / IP-1					
RW-2 / IP-2					
RW-3 / IP-3					
RW4 / IP-4					
RW-5 / IP-5					
RW-6 / IP-6					
RW-7 / IP-7					
RW-8 / IP-8					
RW-9 / IP-9					
IP-10					
IP-11					
IP-12					

COMMENTS:____

1200 East Main Street - City of Rochester
Community Air Monitoring Daily Log
Date: ____________________

			Time	
Site Representative:			**On-Site:**	**Off-Site:**
Appr. Wind Direction:		**Appr. Wind Speed:**	**On-Site:**	**Off-Site:**
Weather Conditions:			**On-Site:**	**Off-Site:**

Description of Daily Work Tasks:

Action Level Exceedance:	**None**	**Yes**: (description)

Notes:
Readings to be taken at 15 minute intervals.

	Particulates (ug/m^{3})					**Volatile Organic Compounds (VOCs) (ppm)**			
	Perimeter Monitoring		Work Zone Monitoring			Perimeter Monitoring		Work Zone Monitoring	
Time									

Action Level: Downwind particulate level that exceeds the upwind particulate level by 100 ug/m3.
If the action level is exceeded, the Site Representative will imediately notify the Site Safety Officer.

Meter ID:
Daily Background:

Action Level: Downwind VOC levels exceed upwind VOC levels. If action level exceeded, the Site Representative will immediately notify the Site Safety Officer implement minor or major emission monitoring.

Meter ID:
Calibration Time:
Background Reading

United States Environmental Protection Agency | Office of Research and Development | Office of Solid Waste and Emergency Response | EPA/540/S-95/504 April 1996

Ground Water Issue

LOW-FLOW (MINIMAL DRAWDOWN) GROUND-WATER SAMPLING PROCEDURES

by Robert W. Puls[1] and Michael J. Barcelona[2]

Background

The Regional Superfund Ground Water Forum is a group of ground-water scientists, representing EPA's Regional Superfund Offices, organized to exchange information related to ground-water remediation at Superfund sites. One of the major concerns of the Forum is the sampling of ground water to support site assessment and remedial performance monitoring objectives. This paper is intended to provide background information on the development of low-flow sampling procedures and its application under a variety of hydrogeologic settings. It is hoped that the paper will support the production of standard operating procedures for use by EPA Regional personnel and other environmental professionals engaged in ground-water sampling.

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I. Introduction

The methods and objectives of ground-water sampling to assess water quality have evolved over time. Initially the emphasis was on the assessment of water quality of aquifers as sources of drinking water. Large water-bearing units were identified and sampled in keeping with that objective. These were highly productive aquifers that supplied drinking water via private wells or through public water supply systems. Gradually, with the increasing awareness of subsurface pollution of these water resources, the understanding of complex hydrogeochemical processes which govern the fate and transport of contaminants in the subsurface increased. This increase in understanding was also due to advances in a number of scientific disciplines and improvements in tools used for site characterization and ground-water sampling. Ground-water quality investigations where pollution was detected initially borrowed ideas, methods, and materials for site characterization from the water supply field and water analysis from public health practices. This included the materials and manner in which monitoring wells were installed and the way in which water was brought to the surface, treated, preserved and analyzed. The prevailing conceptual ideas included convenient generalizations of ground-water resources in terms of large and relatively homogeneous hydrologic *units*. With time it became apparent that conventional water supply generalizations of *homogeneity* did not adequately represent field data regarding pollution of these subsurface resources. The important role of *heterogeneity* became increasingly clear not only in geologic terms, but also in terms of complex physical,

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chemical and biological subsurface processes. With greater appreciation of the role of heterogeneity, it became evident that subsurface pollution was ubiquitous and encompassed the unsaturated zone to the deep subsurface and included unconsolidated sediments, fractured rock, and *aquitards* or low-yielding or impermeable formations. Small-scale processes and heterogeneities were shown to be important in identifying contaminant distributions and in controlling water and contaminant flow paths.

It is beyond the scope of this paper to summarize all the advances in the field of ground-water quality investigations and remediation, but two particular issues have bearing on ground-water sampling today: aquifer heterogeneity and colloidal transport. Aquifer heterogeneities affect contaminant flow paths and include variations In geology, geochemistry, hydrology and microbiology. As methods and the tools available for subsurface investigations have become increasingly sophisticated and understanding of the subsurface environment has advanced, there is an awareness that in most cases a primary concern for site investigations is characterization of contaminant flow paths rather than entire aquifers. In fact, in many cases, plume thickness can be less than well screen lengths (e.g., 3-6 m) typically installed at hazardous waste sites to detect and monitor plume movement over time. Small-scale differences have increasingly been shown to be important and there is a general trend toward smaller diameter wells and shorter screens.

The hydrogeochemical significance of colloidal-size particles in subsurface systems has been realized during the past several years (Gschwend and Reynolds, 1987; McCarthy and Zachara, 1989; Puls, 1990; Ryan and Gschwend, 1990). This realization resulted from both field and laboratory studies that showed faster contaminant migration over greater distances and at higher concentrations than flow and transport model predictions would suggest (Buddemeier and Hunt, 1988; Enfield and Bengtsson, 1988; Penrose et al., 1990). Such models typically account for interaction between the mobile aqueous and immobile solid phases, but do not allow for a mobile, reactive solid phase. It is recognition of this third *phase* as a possible means of contaminant transport that has brought increasing attention to the manner in which samples are collected and processed for analysis (Puts et al., 1990; McCarthy and Degueldre, 1993; Backhus et al., 1993; U. S. EPA, 1995). If such a phase is present In sufficient mass, possesses high sorption reactivity, large surface area, and remains stable In suspension, it can serve as an important mechanism to facilitate contaminant transport in many types of subsurface systems.

Colloids are particles that are sufficiently small so that the surface free energy of the particle dominates the bulk free energy. Typically, in ground water, this includes particles with diameters between 1 and 1000 nm. The most commonly observed mobile particles include: secondary clay minerals; hydrous iron, aluminum, and manganese oxides; dissolved and particulate organic materials, and viruses and bacteria. These reactive particles have been shown to be mobile under a variety of conditions in both field studies and laboratory column experiments, and as such need to be included in monitoring programs where identification of the *total* mobile contaminant loading (dissolved + naturally suspended particles) at a site is an objective. To that end, sampling methodologies must be used which do not artificially bias *naturally* suspended particle concentrations.

Currently the most common ground-water purging and sampling methodology is to purge a well using bailers or high speed pumps to remove 3 to 5 casing volumes followed by sample collection. This method can cause adverse impacts on sample quality through collection of samples with high levels of turbidity. This results in the inclusion of otherwise immobile artifactual particles which produce an overestimation of certain analytes of interest (e.g., metals or hydrophobic organic compounds). Numerous documented problems associated with filtration (Danielsson, 1982; Laxen and Chandler, 1982; Horowitz et al., 1992) make this an undesirable method of rectifying the turbidity problem, and include the removal of potentially mobile (contaminant-associated) particles during filtration, thus artificially biasing contaminant concentrations low. Sampling-induced turbidity problems can often be mitigated by using low-flow purging and sampling techniques.

Current subsurface conceptual models have undergone considerable refinement due to the recent development and increased use of field screening tools. So-called hydraulic *push* technologies (e.g., cone penetrometer, Geoprobe®, QED Hydro Punch®) enable relatively fast screening site characterization which can then be used to design and install a monitoring well network. Indeed, alternatives to conventional monitoring wells are now being considered for some hydrogeologic settings. The ultimate design of any monitoring system should however be based upon adequate site characterization and be consistent with established monitoring objectives.

If the sampling program objectives include accurate assessment of the magnitude and extent of subsurface contamination over time and/or accurate assessment of subsequent remedial performance, then some information regarding plume delineation in three-dimensional space is necessary prior to monitoring well network design and installation. This can be accomplished with a variety of different tools and equipment ranging from hand-operated augers to screening tools mentioned above and large drilling rigs. Detailed information on ground-water flow velocity, direction, and horizontal and vertical variability are essential baseline data requirements. Detailed soil and geologic data are required prior to and during the installation of sampling points. This includes historical as well as detailed soil and geologic logs which accumulate during the site investigation. The use of borehole geophysical techniques is also recommended. With this information (together with other site characterization data) and a clear understanding of sampling objectives, then appropriate location, screen length, well diameter, slot size, etc. for the monitoring well network can be decided. This is especially critical for new in situ remedial approaches or natural attenuation assessments at hazardous waste sites.

In general, the overall goal of any ground-water sampling program is to collect water samples with no alteration in water chemistry; analytical data thus obtained may be used for a variety of specific monitoring programs depending on the regulatory requirements. The sampling methodology described in this paper assumes that the monitoring goal is to sample monitoring wells for the presence of contaminants and it is applicable whether mobile colloids are a concern or not and whether the analytes of concern are metals (and metalloids) or organic compounds.

II. Monitoring Objectives and Design Considerations

The following issues are important to consider prior to the design and implementation of any ground-water monitoring program, including those which anticipate using low-flow purging and sampling procedures.

A. Data Quality Objectives (DQOs)

Monitoring objectives include four main types: detection, assessment, corrective-action evaluation and resource evaluation, along with *hybrid* variations such as site assessments for property transfers and water availability investigations. Monitoring objectives may change as contamination or water quality problems are discovered. However, there are a number of common components of monitoring programs which should be recognized as important regardless of initial objectives. These components include:

1) Development of a conceptual model that incorporates elements of the regional geology to the local geologic framework. The conceptual model development also includes initial site characterization efforts to identify hydrostratigraphic units and likely flow-paths using a minimum number of borings and well completions;

2) Cost-effective and well documented collection of high quality data utilizing simple, accurate, and reproducible techniques; and

3) Refinement of the conceptual model based on supplementary data collection and analysis.

These fundamental components serve many types of monitoring programs and provide a basis for future efforts that evolve in complexity and level of spatial detail as purposes and objectives expand. High quality, reproducible data collection is a common goal regardless of program objectives.

High quality data collection implies data of sufficient accuracy, precision, and completeness (i.e., ratio of valid analytical results to the minimum sample number called for by the program design) to meet the program objectives. Accuracy depends on the correct choice of monitoring tools and procedures to minimize sample and subsurface disturbance from collection to analysis. Precision depends on the repeatability of sampling and analytical protocols. It can be assured or improved by replication of sample analyses including blanks, field/lab standards and reference standards.

B. Sample Representativeness

An important goal of any monitoring program is collection of data that is truly representative of conditions at the site. The term *representativeness* applies to chemical and hydrogeologic data collected via wells, borings, piezometers, geophysical and soil gas measurements, lysimeters, and temporary sampling points. It involves a recognition of the statistical variability of individual subsurface physical properties, and contaminant or major ion concentration levels, while explaining extreme values. Subsurface temporal and spatial variability are facts. Good professional practice seeks to maximize representativeness by using proven accurate and reproducible techniques to define limits on the distribution of measurements collected at a site. However, measures of representativeness are dynamic and are controlled by evolving site characterization and monitoring objectives. An evolutionary site characterization model, as shown in Figure 1, provides a systematic approach to the goal of consistent data collection.

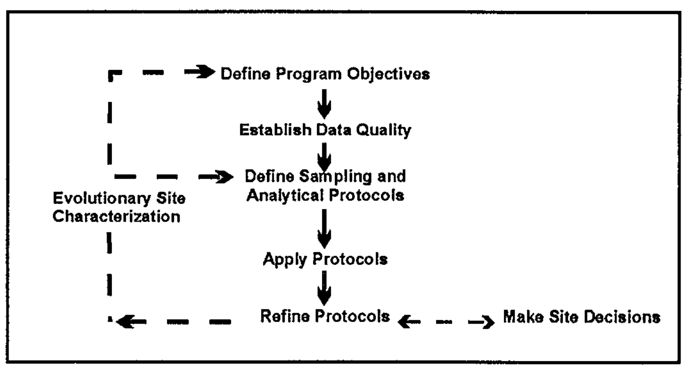

Figure 1. Evolutionary Site Characterization Model

The model emphasizes a recognition of the causes of the variability (e.g., use of inappropriate technology such as using bailers to purge wells; imprecise or operator-dependent methods) and the need to control avoidable errors.

1) Questions of Scale

A sampling plan designed to collect representative samples must take into account the potential scale of changes in site conditions through space and time as well as the chemical associations and behavior of the parameters that are targeted for investigation. In subsurface systems, physical (i.e., aquifer) and chemical properties over time or space are not statistically independent. In fact, samples taken in close proximity (i.e., within distances of a few meters) or within short time periods (i.e., more frequently than monthly) are highly auto-correlated. This means that designs employing high-sampling frequency (e.g., monthly) or dense spatial monitoring designs run the risk of redundant data collection and misleading inferences regarding trends in values that aren't statistically valid. In practice, contaminant detection and assessment monitoring programs rarely suffer these *over-sampling* concerns. In corrective-action evaluation programs, it is also possible that too little data may be collected over space or time. In these cases, false interpretation of the spatial extent of contamination or underestimation of temporal concentration variability may result.

2) Target Parameters

Parameter selection in monitoring program design is most often dictated by the regulatory status of the site. However, background water quality constituents, purging indicator parameters, and contaminants, all represent targets for data collection programs. The tools and procedures used in these programs should be equally rigorous and applicable to all categories of data, since all may be needed to determine or support regulatory action.

C. Sampling Point Design and Construction

Detailed site characterization is central to all decision-making purposes and the basis for this characterization resides in identification of the geologic framework and major hydro-stratigraphic units. Fundamental data for sample point location include: subsurface lithology, head-differences and background geochemical conditions. Each sampling point has a proper use or uses which should be documented at a level which is appropriate for the program’s data quality objectives. Individual sampling points may not always be able to fulfill multiple monitoring objectives (e.g., detection, assessment, corrective action).

1) Compatibility with Monitoring Program and Data Quality Objectives

Specifics of sampling point location and design will be dictated by the complexity of subsurface lithology and variability in contaminant and/or geochemical conditions. It should be noted that, regardless of the ground-water sampling approach, few sampling points (e.g., wells, drive-points, screened augers) have zones of influence in excess of a few feet. Therefore, the spatial frequency of sampling points should be carefully selected and designed.

2) Flexibility of Sampling Point Design

In most cases *well-point* diameters in excess of 1 7/8 inches will permit the use of most types of submersible pumping devices for low-flow (minimal drawdown) sampling. It is suggested that *short* (e.g., less than 1.6 m) screens be incorporated into the monitoring design where possible so that comparable results from one device to another might be expected. *Short*, of course, is relative to the degree of vertical water quality variability expected at a site.

3) Equilibration of Sampling Point

Time should be allowed for equilibration of the well or sampling point with the formation after installation. Placement of well or sampling points in the subsurface produces some disturbance of ambient conditions. Drilling techniques (e.g., auger, rotary, etc.) are generally considered to cause more disturbance than *direct push* technologies. In either case, there may be a period (i.e., days to months) during which water quality near the point may be distinctly different from that in the formation. Proper development of the sampling point and adjacent formation to remove fines created during emplacement will shorten this water quality *recovery* period.

III. Definition of Low-Flow Purging and Sampling

It is generally accepted that water in the well casing is non-representative of the formation water and needs to be purged prior to collection of ground-water samples. However, the water in the screened interval may indeed be representative of the formation, depending upon well construction and site hydrogeology. Wells are purged to some extent for the following reasons: the presence of the air interface at the top of the water column resulting in an oxygen concentration gradient with depth, loss of volatiles up the water column, leaching from or sorption to the casing or filter pack, chemical changes due to clay seals or backfill, and surface infiltration.

Low-flow purging, whether using portable or dedicated systems, should be done using pump-intake located In the middle or slightly above the middle of the screened interval. Placement of the pump too close to the bottom of the well will cause increased entrainment of solids which have collected in the well over time. These particles are present as a result of well development, prior purging and sampling events, and natural colloidal transport and deposition. Therefore, placement of the pump in the middle or toward the top of the screened interval is suggested. Placement of the pump at the top of the water column for sampling is only recommended in unconfined aquifers, screened across the water table, where this is the desired sampling point. Low-flow purging has the advantage of minimizing mixing between the overlying stagnant casing water and water within the screened interval.

A. Low-Flow Purging and Sampling

Low-flow refers to the velocity with which water enters the pump intake and that is imparted to the formation pore water in the immediate vicinity of the well screen. It does not necessarily refer to the flow rate of water discharged at the surface which can be affected by flow regulators or restrictions. Water level drawdown provides the best indication of the stress imparted by a given flow-rate for a given hydrological situation. The objective is to pump in a manner that minimizes stress (drawdown) to the system to the extent practical taking into account established site sampling objectives. Typically, flow rates on the order of 0.1 - 0.5 L/min are used, however this is dependent on site-specific hydrogeology. Some extremely coarse-textured formations have been successfully sampled in this manner at flow rates to 1 L/min. The effectiveness of using low-flow purging is intimately linked with proper screen location, screen length, and well construction and development techniques. The reestablishment of natural flow paths in both the vertical and horizontal directions is important for correct interpretation of the data. For high resolution sampling needs, screens less than 1 m should be used. Most of the need for purging has been found to be due to passing the sampling device through the overlying casing water which causes mixing of these stagnant waters and the dynamic waters within the screened interval. Additionally, there is disturbance to suspended sediment collected in the bottom of the casing and the displacement of water out into the formation immediately adjacent to the well screen. These disturbances and impacts can be avoided using dedicated sampling equipment, which precludes the need to insert the sampling device prior to purging and sampling.

Isolation of the screened interval water from the overlying stagnant casing water may be accomplished using low-flow minimal drawdown techniques. If the pump intake is located within the screened interval, most of the water pumped will be drawn in directly from the formation with little mixing of casing water or disturbance to the sampling zone. However, if the wells are not constructed and developed properly, zones other than those intended may be sampled. At some sites where geologic heterogeneities are sufficiently different within the screened interval, higher conductivity zones may be preferentially sampled. This is another reason to use shorter screened intervals, especially where high spatial resolution is a sampling objective.

B. Water Quality Indicator Parameters

It is recommended that water quality indicator parameters be used to determine purging needs prior to sample collection in each well. Stabilization of parameters such as pH, specific conductance, dissolved oxygen, oxidation-reduction potential, temperature and turbidity should be used to determine when formation water is accessed during purging. In general, the order of stabilization is pH, temperature, and specific conductance, followed by oxidation reduction potential, dissolved oxygen and turbidity. Temperature and pH, while commonly used as purging indicators, are actually quite insensitive in distinguishing between formation water and stagnant casing water; nevertheless, these are important parameters for data interpretation purposes and should also be measured. Performance criteria for determination of stabilization should be based on water-level drawdown, pumping rate and equipment specifications for measuring indicator parameters. Instruments are available which utilize in-line flow cells to continuously measure the above parameters.

It is important to establish specific well stabilization criteria and then consistently follow the same methods thereafter, particularly with respect to drawdown, flow rate and sampling device. Generally, the time or purge volume required for parameter stabilization is independent of well depth or well volumes. Dependent variables are well diameter, sampling device, hydrogeochemistry, pump flow rate, and whether the devices are used in a portable or dedicated manner. If the sampling device is already in place (i.e., dedicated sampling systems), then the time and purge volume needed for stabilization is much shorter. Other advantages of dedicated equipment include less purge water for waste disposal, much less decontamination of equipment, less time spent in preparation of sampling as well as time in the field, and more consistency in the sampling approach which probably will translate into less variability in sampling results. The use of dedicated equipment is strongly recommended at wells which will undergo routine sampling over time.

If parameter stabilization criteria are too stringent, then minor oscillations in indicator parameters may cause purging operations to become unnecessarily protracted. It should also be noted that turbidity is a very conservative parameter in terms of stabilization. Turbidity is always the last parameter to stabilize. Excessive purge times are invariably related to the establishment of too stringent turbidity stabilization criteria. It should be noted that natural turbidity levels in ground water may exceed 10 nephelometric turbidity units (NTU).

C. Advantages and Disadvantages of Low-Flow (Minimum Drawdown) Purging

In general, the advantages of low-flow purging include:

- samples which are representative of the *mobile* load of contaminants present (dissolved and colloid-associated);
- minimal disturbance of the sampling point thereby minimizing sampling artifacts;
- less operator variability, greater operator control;

- reduced stress on the formation (minimal drawdown);
- less mixing of stagnant casing water with formation water;
- reduced need for filtration and, therefore, less time required for sampling;
- smaller purging volume which decreases waste disposal costs and sampling time;
- better sample consistency; reduced artificial sample variability.

Some disadvantages of low-flow purging are:

- higher initial capital costs,
- greater set-up time in the field,
- need to transport additional equipment to and from the site,
- increased training needs,
- resistance to change on the part of sampling practitioners,
- concern that new data will indicate a *change in conditions* and trigger an *action*.

IV. Low-Flow (Minimal Drawdown) Sampling Protocols

The following ground-water sampling procedure has evolved over many years of experience in ground-water sampling for organic and inorganic compound determinations and as such summarizes the authors' (and others) experiences to date (Barcelona et al., 1984, 1994; Barcelona and Helfrich, 1986; Puls and Barcelona, 1989; Puls et. al. 1990, 1992; Puls and Powell, 1992; Puls and Paul, 1995). High-quality chemical data collection is essential in ground-water monitoring and site characterization. The primary limitations to the collection of *representative* ground-water samples include: mixing of the stagnant casing and *fresh* screen waters during insertion of the sampling device or ground-water level measurement device; disturbance and resuspension of settled solids at the bottom of the well when using high pumping rates or raising and lowering a pump or bailer; introduction of atmospheric gases or degassing from the water during sample handling and transfer, or inappropriate use of vacuum sampling device, etc.

A. Sampling Recommendations

Water samples should not be taken immediately following well development. Sufficient time should be allowed for the ground-water flow regime in the vicinity of the monitor ing well to stabilize and to approach chemical equilibrium with the well construction materials. This lag time will depend on site conditions and methods of installation but often exceeds one week.

Well purging is nearly always necessary to obtain samples of water flowing through the geologic formations in the screened interval. Rather than using a general but arbitrary guideline of purging three casing volumes prior to sampling, it is recommended that an in-line water quality measurement device (e.g., flow-through cell) be used to establish the stabilization time for several parameters (e.g., pH, specific conductance, redox, dissolved oxygen, turbidity) on a well-specific basis. Data on pumping rate, drawdown, and volume required for parameter stabilization can be used as a guide for conducting subsequent sampling activities.

The following are recommendations to be considered before, during and after sampling:

- use low-flow rates (<0.5 L/min), during both purging and sampling to maintain minimal drawdown in the well;
- maximize tubing wall thickness, minimize tubing length;
- place the sampling device Intake at the desired sampling point;
- minimize disturbances of the stagnant water column above the screened interval during water level measurement and sampling device insertion;
- make proper adjustments to stabilize the flow rate as soon as possible;
- monitor water quality indicators during purging;
- collect unfiltered samples to estimate contaminant loading and transport potential in the subsurface system.

B. Equipment Calibration

Prior to sampling, all sampling device and monitoring equipment should be calibrated according to manufacturer's recommendations and the site Quality Assurance Project Plan (QAPP) and Field Sampling Plan (FSP). Calibration of pH should be performed with at least two buffers which bracket the expected range. Dissolved oxygen calibration must be corrected for local barometric pressure readings and elevation.

C. Water Level Measurement and Monitoring

It is recommended that a device be used which will least disturb the water surface in the casing. Well depth should be obtained from the well logs. Measuring to the bottom of the well casing will only cause resuspension of settled solids from the formation and require longer purging times for turbidity equilibration. Measure well depth after sampling is completed. The water level measurement should be taken from a permanent reference point which is surveyed relative to ground elevation.

D. Pump Type

The use of low-flow (e.g., 0.1-0.5 L/min) pumps is suggested for purging and sampling all types of analytes. All pumps have some limitation and these should be investigated with respect to application at a particular site. Bailers are inappropriate devices for low-flow sampling.

1) General Considerations

There are no unusual requirements for ground-water sampling devices when using low-flow, minimal drawdown techniques. The major concern is that the device give consistent results and minimal disturbance of the sample across a range of *low* flow rates (i.e., < 0.5 L/min). Clearly, pumping rates that cause minimal to no drawdown in one well could easily cause *significant* drawdown in another well finished in a less transmissive formation. In this sense, the pump should not cause undue pressure or temperature changes or physical disturbance on the water sample over a reasonable sampling range. Consistency in operation is critical to meet accuracy and precision goals.

2) Advantages and Disadvantages of Sampling Devices

A variety of sampling devices are available for low-flow (minimal drawdown) purging and sampling and include peristaltic pumps, bladder pumps, electrical submersible pumps, and gas-driven pumps. Devices which lend themselves to both dedication and consistent operation at definable low-flow rates are preferred. It is desirable that the pump be easily adjustable and operate reliably at these lower flow rates. The peristaltic pump is limited to shallow applications and can cause degassing resulting in alteration of pH, alkalinity, and some volatiles loss. Gas-driven pumps should be of a type that does not allow the gas to be in direct contact with the sampled fluid.

Clearly, bailers and other *grab* type samplers are ill-suited for low-flow sampling since they will cause repeated disturbance and mixing of *stagnant* water in the casing and the *dynamic* water in the screened interval. Similarly, the use of inertial lift foot-valve type samplers may cause too much disturbance at the point of sampling. Use of these devices also tends to introduce uncontrolled and unacceptable operator variability.

Summaries of advantages and disadvantages of various sampling devices are listed in Herzog et al. (1991), U. S. EPA (1992), Parker (1994) and Thurnblad (1994).

E. Pump Installation

Dedicated sampling devices (left in the well) capable of pumping and sampling are preferred over <u>any</u> other type of device. Any portable sampling device should be slowly and carefully lowered to the middle of the screened interval or slightly above the middle (e.g., 1-1.5 m below the top of a 3 m screen). This is to minimize excessive mixing of the stagnant water in the casing above the screen with the screened interval zone water, and to minimize resuspension of solids which will have collected at the bottom of the well. These two disturbance effects have been shown to directly affect the time required for purging. There also appears to be a direct correlation between size of portable sampling devices relative to the well bore and resulting purge volumes and times. The key is to minimize disturbance of water and solids in the well casing.

F. Filtration

Decisions to filter samples should be dictated by sampling objectives rather than as a *fix* for poor sampling practices, and field-filtering of certain constituents should not be the default. Consideration should be given as to what the application of field-filtration is trying to accomplish. For assessment of truly dissolved (as opposed to operationally *dissolved* [i.e., samples filtered with 0.45 µm filters]) concentrations of major ions and trace metals, 0.1 µm filters are recommended although 0.45 µm filters are normally used for most regulatory programs. Alkalinity samples must also be filtered if significant particulate calcium carbonate is suspected, since this material is likely to impact alkalinity titration results (although filtration itself may alter the CO_2 composition of the sample and, therefore, affect the results).

Although filtration may be appropriate, filtration of a sample may cause a number of unintended changes to occur (e.g. oxidation, aeration) possibly leading to filtration-induced artifacts during sample analysis and uncertainty in the results. Some of these unintended changes may be unavoidable but the factors leading to them must be recognized. Deleterious effects can be minimized by consistent application of certain filtration guidelines. Guidelines should address selection of filter type, media, pore size, etc. in order to identify and minimize potential sources of uncertainty when filtering samples.

In-line filtration is recommended because it provides better consistency through less sample handling, and minimizes sample exposure to the atmosphere. In-line filters are available in both disposable (barrel filters) and non-disposable (in-line filter holder, flat membrane filters) formats and various filter pore sizes (0.1-5.0 Fm). Disposable filter cartridges have the advantage of greater sediment handling capacity when compared to traditional membrane filters. Filters must be pre-rinsed following manufacturer's recommendations. If there are no recommendations for rinsing, pass through a minimum of 1 L of ground water following purging and prior to sampling. Once filtration has begun, a filter cake may develop as particles larger than the pore size accumulate on the filter membrane. The result is that the effective pore diameter of the membrane is reduced and particles smaller than the stated pore size are excluded from the filtrate. Possible corrective measures include prefiltering (with larger pore size filters), minimizing particle loads to begin with, and reducing sample volume.

G. Monitoring of Water Level and Water Quality Indicator Parameters

Check water level periodically to monitor drawdown in the well as a guide to flow rate adjustment. The goal is minimal drawdown (<0.1 m) during purging. This goal may be difficult to achieve under some circumstances due to geologic heterogeneities within the screened interval, and may require adjustment based on site-specific conditions and personal experience. In-line water quality indicator parameters should be continuously monitored during purging. The water quality indicator parameters monitored can include pH, redox potential, conductivity, dissolved oxygen (DO) and turbidity. The last three parameters are often most sensitive. Pumping rate, drawdown, and the time or volume required to obtain stabilization of parameter readings can be used as a future guide to purge the well. Measurements should be taken every three to five minutes if the above suggested rates are used. Stabilization is achieved after all parameters have stabilized for three successive readings. In lieu of measuring all five parameters, a minimum subset would include pH, conductivity, and turbidity or DO. Three successive readings should be within ± 0.1 for pH, ± 3% for conductivity, ± 10 mv for redox potential, and ± 10% for turbidity and DO. Stabilized purge indicator parameter trends are generally obvious and follow either an exponential or asymptotic change to stable values during purging. Dissolved oxygen and turbidity usually require the longest time for stabilization. The above stabilization guidelines are provided for rough estimates based on experience.

H. Sampling, Sample Containers, Preservation and Decontamination

Upon parameter stabilization, sampling can be initiated. If an in-line device is used to monitor water quality parameters, it should be disconnected or bypassed during sample collection. Sampling flow rate may remain at established purge rate or may be adjusted slightly to minimize aeration, bubble formation, turbulent filling of sample bottles, or loss of volatiles due to extended residence time in tubing. Typically, flow rates less than 0.5 L/min are appropriate. The same device should be used for sampling as was used for purging. Sampling should occur in a progression from least to most contaminated well, if this is known. Generally, volatile (e.g., solvents and fuel constituents) and gas sensitive (e.g., Fe^{2+}, CH_4, H_2S/HS^-, alkalinity) parameters should be sampled first. The sequence in which samples for most inorganic parameters are collected is immaterial unless filtered (dissolved) samples are desired. Filtering should be done last and in-line filters should be used as discussed above. During both well purging and sampling, proper protective clothing and equipment must be used based upon the type and level of contaminants present.

The appropriate sample container will be prepared in advance of actual sample collection for the analytes of interest and include sample preservative where necessary. Water samples should be collected directly into this container from the pump tubing.

Immediately after a sample bottle has been filled, it must be preserved as specified in the site (QAPP). Sample preservation requirements are based on the analyses being performed (use site QAPP, FSP, RCRA guidance document [U. S. EPA, 1992] or EPA SW-846 [U. S. EPA, 1982]). It may be advisable to add preservatives to sample bottles in a controlled setting prior to entering the field in order to reduce the chances of improperly preserving sample bottles or introducing field contaminants into a sample bottle while adding the preservatives.

The preservatives should be transferred from the chemical bottle to the sample container using a disposable polyethylene pipet and the disposable pipet should be used only once and then discarded.

After a sample container has been filled with ground water, a Teflon™ (or tin)-lined cap is screwed on tightly to prevent the container from leaking. A sample label Is filled out as specified in the FSP. The samples should be stored inverted at 4EC.

Specific decontamination protocols for sampling devices are dependent to some extent on the type of device used and the type of contaminants encountered. Refer to the site QAPP and FSP for specific requirements.

I. Blanks

The following blanks should be collected:

(1) field blank: one field blank should be collected from each source water (distilled/deionized water) used for sampling equipment decontamination or for assisting well development procedures.

(2) equipment blank: one equipment blank should be taken prior to the commencement of field work, from each set of sampling equipment to be used for that day. Refer to site QAPP or FSP for specific requirements.

(3) trip blank: a trip blank is required to accompany each volatile sample shipment. These blanks are prepared in the laboratory by filling a 40-mL volatile organic analysis (VOA) bottle with distilled/deionized water.

V. Low-Permeability Formations and Fractured Rock

The overall sampling program goals or sampling objectives will drive how the sampling points are located, installed, and choice of sampling device. Likewise, site-specific hydrogeologic factors will affect these decisions. Sites with very low permeability formations or fractures causing discrete flow channels may require a unique monitoring approach. Unlike water supply wells, wells installed for ground-water quality assessment and restoration programs are often installed in low water-yielding settings (e.g., clays, silts). Alternative types of sampling points and sampling methods are often needed in these types of environments, because low-permeability settings may require extremely low-flow purging (<0.1 L/min) and may be technology-limited. Where devices are not readily available to pump at such low flow rates, the primary consideration is to avoid dewatering of the well screen. This may require repeated recovery of the water during purging while leaving the pump in place within the well screen.

Use of low-flow techniques may be impractical in these settings, depending upon the water recharge rates. The sampler and the end-user of data collected from such wells need to understand the limitations of the data collected; i.e., a strong potential for underestimation of actual contaminant concentrations for volatile organics, potential false negatives for filtered metals and potential false positives for unfiltered metals. It is suggested that comparisons be made between samples recovered using low-flow purging techniques and samples recovered using passive sampling techniques (i.e., two sets of samples). Passive sample collection would essentially entail acquisition of the sample with no or very little purging using a dedicated sampling system installed within the screened interval or a passive sample collection device.

A. Low-Permeability Formations (<0.1 L/min recharge)

1. Low-Flow Purging and Sampling with Pumps

a. “portable or non-dedicated mode” - Lower the pump (one capable of pumping at <0.1 L/min) to mid-screen or slightly above and set in place for minimum of 48 hours (to lessen purge volume requirements). After 48 hours, use procedures listed in Part IV above regarding monitoring water quality parameters for stabilization, etc., but do not dewater the screen. If excessive drawdown and slow recovery is a problem, then alternate approaches such as those listed below may be better.

b. “dedicated mode” - Set the pump as above at least a week prior to sampling; that is, operate in a dedicated pump mode. With this approach significant reductions in purge volume should be realized. Water quality parameters should stabilize quite rapidly due to less disturbance of the sampling zone.

2. Passive Sample Collection

Passive sampling collection requires insertion of the device into the screened interval for a sufficient time period to allow flow and sample equilibration before extraction for analysis. Conceptually, the extraction of water from low yielding formations seems more akin to the collection of water from the unsaturated zone and passive sampling techniques may be more appropriate in terms of obtaining “representative” samples. Satisfying usual sample volume requirements is typically a problem with this approach and some latitude will be needed on the part of regulatory entities to achieve sampling objectives.

B. Fractured Rock

In fractured rock formations, a low-flow to zero purging approach using pumps in conjunction with packers to isolate the sampling zone in the borehole is suggested. Passive multi-layer sampling devices may also provide the most “representative” samples. It is imperative in these settings to identify flow paths or water-producing fractures prior to sampling using tools such as borehole flowmeters and/or other geophysical tools.

After identification of water-bearing fractures, install packer(s) and pump assembly for sample collection using low-flow sampling in “dedicated mode” or use a passive sampling device which can isolate the identified water-bearing fractures.

VI. Documentation

The usual practices for documenting the sampling event should be used for low-flow purging and sampling techniques. This should include, at a minimum: information on the conduct of purging operations (flow-rate, drawdown, water-quality parameter values, volumes extracted and times for measurements), field instrument calibration data, water sampling forms and chain of custody forms. See Figures 2 and 3 and “Ground Water Sampling Workshop -- A Workshop Summary” (U. S. EPA, 1995) for example forms and other documentation suggestions and information. This information coupled with laboratory analytical data and validation data are needed to judge the “useability” of the sampling data.

VII. Notice

The U.S. Environmental Protection Agency through its Office of Research and Development funded and managed the research described herein as part of its in-house research program and under Contract No. 68-C4-0031 to Dynamac Corporation. It has been subjected to the Agency's peer and administrative review and has been approved for publication as an EPA document. Mention of trade names or commercial products does not constitute endorsement or recommendation for use.

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Figure 2. **Ground Water Sampling Log**

Project ______________ **Site** ______________ **Well No.** ______________ **Date** ______________

Well Depth ______________ **Screen Length** ______________ **Well Diameter** ______________ **Casing Type** ______________

Sampling Device ______________ **Tubing type** ______________ **Water Level** ______________

Measuring Point ______________ **Other Infor** ______________

____

Sampling Personnel ____

Time	pH	Temp	Cond.	Dis.O_2	Turb.	[ ]Conc			Notes

Type of Samples Collected

____

Information: 2 in = 617 ml/ft, 4 in = 2470 ml/ft: $Vol_{cyl} = \pi r^2 h$, $Vol_{sphere} = 4/3\pi r^3$

Figure 3. **Ground Water Sampling Log** (with automatic data logging for most water quality parameters)

Project ______________ **Site** ______________ **Well No.** ____________ **Date** ______________________

Well Depth ___________ **Screen Length** _________ **Well Diameter** ________ **Casing Type** __________

Sampling Device ______________ **Tubing type** ___________________ **Water Level** ______________

Measuring Point __________________ **Other Infor** ____

____

Sampling Personnel ____

Time	Pump Rate	Turbidity	Alkalinity	[ ] Conc	Notes

Type of Samples Collected

____

Information: 2 in = 617 ml/ft, 4 in = 2470 ml/ft: $Vol_{cyl} = \pi r^2 h$, $Vol_{sphere} = 4/3\pi\ r^3$

United States
Environmental Protection Agency
National Risk Management
Research Laboratory, G-72
Cincinnati, OH 45268

Please make all necessary changes on the below label, detach or copy, and return to the address in the upper left-hand corner.

If you do not wish to receive these reports CHECK HERE ~; detach, or copy this cover, and return to the address in the upper left-hand corner.

BULK RATE
POSTAGE & FEES PAID
EPA
PERMIT No. G -35

Official Business
Penalty for Private Use
$300

EPA/540/S-95/504

INSPECTOR'S DAILY REPORT

Date: ______________________

JOB:

Construction Activities:

Day of Week: | S | M | T | W | T | F | S |

Project: ______________________

Sheet No. __________ of __________

If pertinent to the Construction Operation		
	AM	PM
Weather		
Temperature		

DESCRIPTION OF WORK PERFORMED AND INSPECTED

Specify for Each Operation: Item No., Subcontractor (if any), Location and Nature of Work

Contractor Activities:

ITEM NO.	FS	ES	INTERIM QUANT.	FINAL QUANT.	QUANT. CHK.	DESCRIPTION OF WORK	COMPUTER ENT	COMPUTER CHK

The work described was incorporated
into this project and was inspected by:

______________________________ Reviewed by: ______________________ ______________

Inspector's Signature

☐ Engineer-in-Charge Date

☐ Resident Engineer

☐ Reverse side used for additional remarks and sketches.

Fax or

E-Mail cc's: __________ File

____

____

Remarks, Extra Work, Visitors, Comments, Work Stoppages, etc.

MANPOWER						EQUIPMENT					
Type	Prime	Sub	Sub	Sub	Sub	Type	Prime	Sub	Sub	Sub	Sub
Foreman -											
Operators -											
Laborers -											
Mechanical -											
Electrical -											
Drillers -											
Inspector-											

Fax or
E-Mail cc's: __________ File
____
____

O2 Injection System ***2 visits per month***
City of Rochester
E. Main Street

Visit one - beginning of month: 2 Hours per month - general system maintenance and check O2 point injection pressures.

Visit two - at the end of the month: 8 Hours per month - general system maintenance and inspect O2 point injection pressures/clean points.

Emergency Maintenance: 30 Hours/Year - Slush fund for down time and repair
Matrix Yearly Maintenance: $ +Parts

General System Maintenance ***(Lockout and Depressurize Unit prior to performing Maint.)***	**Bi Monthly**	**Monthly**	**Annual**
Check trouble light indicator on outside of trailer	X		
Check system trailer security	X		
Replace the trailer air filters	X		
Confirm exhaust fan operation	X		
Confirm heater operation	X		
Look and listen for leaks outside of the trailer	X		
Atlas-Copco Compressor			
Check message center for possible problems noted on screen	X		
Look and listen for leaks Oil and Air	X		
Check running system oil level	X		
Check for visible signs of compressor belt wear/rubber dust or particles	X		
Shutdown system and check belt tension and wear		X	
Check for visible signs of oil in and around the compressor cabinet		X	
Add oil as needed		X	
Clean Float Valve of the Moisture Trap		X	
Check Air Filter Element		X	
Operate safety Shutdown		X	
Performed by MATRIX - complete system review.			X
Auto Drain for Compressor Receiver and Drying System			
Check Auto Drain and Compressor condensate bucket for proper drainage	X		
Check Auto Drain and Compressor condensate bucket for the presence of oil on the water surface	X		
Clean solenoid inlet and outlet		X	
Remove Strainer plug-clean filter sump		X	
Air Sep Oxygen Generator			
Observe that the green operation light is on	X		
Each visit Observe the filter port drain is not plugged	X		
Press manual drain to test the operation of the Filter Drain Solenoid Valve	X		
discharge free flowing and free of oil.			
Check Filter Bowls		X	
Check Filter Elements - Prefilters and Coalescing Elements		X	
Observe for unusual operating pressures and leaks.		X	
Performed by MATRIX - complete system review.			X

O2 Points

Monitor O2 levels in the groundwater by collection readings in the surrounding wells		X	
Run the O2 system - observe and record all operational data		X	
observe and record all O2 point pressures and flows		X	
Record O2 Points with low to now flow and high pressure		X	
Clean O2 points that are not working	X		
Clean all points with no or low flow and high pressure - shut down system first		X	

SVE/Sparge System **<u>*2 visits per month*</u>**

City of Rochester

E. Main Street **Visit one - beginning of month:** 2 Hours per month - general system maintenance and check sparge point injection pressures.

Visit two - at the end of the month: 6 Hours per month - general system maintenance and inspect sparge point injection pressures/clean points.

Emergency Maintenance: 30 Hours/Year - Slush fund for down time and repair

Matrix Yearly Maintenance: $ +Parts

General System Maintenance ***(Lockout and Depressurize Unit prior to performing Maint.)***

	Bi Monthly	Monthly	Annual
Check system trailer security	X		
Replace the trailer air filters	X		
Confirm exhaust fan operation	X		
Confirm heater operation	X		
Look and listen for leaks outside of the trailer	X		
Compressor			
Look and listen for leaks Oil and Air	X		
Check running system oil level	X		
Check for visible signs of compressor belt wear/rubber dust or particles	X		
Shutdown system and check belt tension and wear		X	
Check for visible signs of oil in and around the compressor cabinet		X	
Add oil as needed		X	
Clean Float Valve of the Moisture Trap		X	
Check Air Filter Element		X	
Operate safety Shutdown		X	
Auto Drain for Compressor Receiver and Drying System			
Check Auto Drain and Compressor condensate bucket for proper drainage	X		
Check Auto Drain and Compressor condensate bucket for the presence of oil on the water surface	X		
Clean solenoid inlet and outlet		X	
Remove Strainer plug-clean filter sump		X	
Blower System			
Check control panel			
Each visit Observe the filter port drain is not plugged	X		
Press manual drain to test the operation of the Filter Drain Solenoid Valve	X		
Check Filter Bowls		X	
Check Filter Elements - Prefilters and Coalescing Elements		X	
Observe for unusual operating vacuum and leaks.		X	
Check silencer			X
Check heat exchanger	X		
Replace drive belt			X
Check tubes for obstruction	X		
Flush tubes			X

Sparge Points			
Monitor PSI levels at each point		X	
Run the SVE system - observe and record all operational data		X	
Record Sparge Points with low to now flow and high pressure		X	
Clean Sparge points that are not working	X		
SVE Points			
Monitor vacuum levels at each point (2)	X		
Run the SVE system - observe and record all operational data		X	
Check SVE points that are not working	X		

GROUNDWATER SAMPLING WORKSHEET

Bergmann associates
architects // engineers // planners

PROJECT NAME: ________________________
Project Number: ________________
Site Location: ____
Sample Date: ________________________
Weather: ________________________
Personnel: ________________

GROUNDWATER SAMPLE POINT

Well Number: ________________
Location: ____
Casing Diameter: ________________

Well Dia.	Volume/Foot
1" =	0.041 gal/foot
2" =	0.163 gal/foot
4" =	0.653 gal/foot
6" =	1.469 gal/foot
8" =	2.611 gal/foot

Depth to water, below top of casing: ________________
Depth to bottom of the well: ________________
Length of water column in well: ________________

Volume of water in well casing, gallons: ________________
3 Well volumes (= length water column X gal/foot X 3): ________________
Actual volume purged prior to sampling: ________________________
Sampling Methodology: ____
Sampling Equipment: ____
____
Well Recharged? ____
Required Analysis: ____

FIELD PARAMETER MEASUREMENTS

	Accumulated Volume Purged in Gallons									
Parameter:										
Turbidity										
Temperature										
pH										
Conductivity										
Oxygen										
Salinity										

Time sample was collected: ________________

COMMENTS ____
____
____
____

APPENDIX 8
HEALTH AND SAFETY PLAN

APPENDIX 8
HEALTH AND SAFETY PLAN
1200 EAST MAIN STREET

Prepared for:

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

Prepared by:
Bergmann Associates
280 East Broad Street
Suite 200
Rochester, New York 14604

Bergmann Project No. 4453.05

December 21, 2016

HEALTH AND SAFETY PLAN
1200 East Main Street

TABLE OF CONTENTS

List of Tables

Attachments:

1.0 INTRODUCTION

This Health and Safety Plan (HSP) provides procedures to promote workers and community health and safety during execution of the project.

1.1 Scope of Work

The Scope of Work involves implementation of the Site Management Plan (SMP) that includes: operation and maintenance (O&M) of the Oxygen Injection System (O2) and Soil Vapor Extraction System (VES) with groundwater monitoring as part of compliance with the SMP. Detailed information on the scope of work is in the SMP.

The SMP includes the following tasks will be addressed in this HSP:

a) Operation and Maintenance –o2 and VES

-

b) Groundwater Sampling

b) Well Abandonment and System Decommissioning

Table 1 in Section 1.4 provides a Site Specific Hazard Evaluation for these tasks.

1.2 Project Responsibilities

Bergmann Associates Project Manager	Gary Flisnik Phone: (585) 498-7818
City of Rochester Project Manager	Jane Forbes Phone: (585) 428-7892
Bergmann Associates Site Investigation Task Leader	Gary Flisnik Phone: (585) 498-7818
Bergmann Associates Site Safety Officer	Steve DeMeo Phone: (585) 498-7805

1.2.1 Site Sign Off Sheet

This plan will be used to assess the potential hazards and prepare/implement appropriate health and safety procedures to protect the health and well-being of Bergmann's employees and the environment during execution of the tasks described in the Remedial Action Work Plan.

Each member of the project team will sign off prior to the commencement of any work that they are in agreement with and will follow this Health and Safety Plan.

The site safety officer assigned to the East Main Street project is Megan Borruso. The SSO has authority to stop project work at any time they feel it is necessary.

Bergmann Project Manager ______________________________
Signature

Site Safety Officer ______________________________
Signature

Task Leaders ______________________________
Signature

____
Signature

1.3 Emergency Response Plan

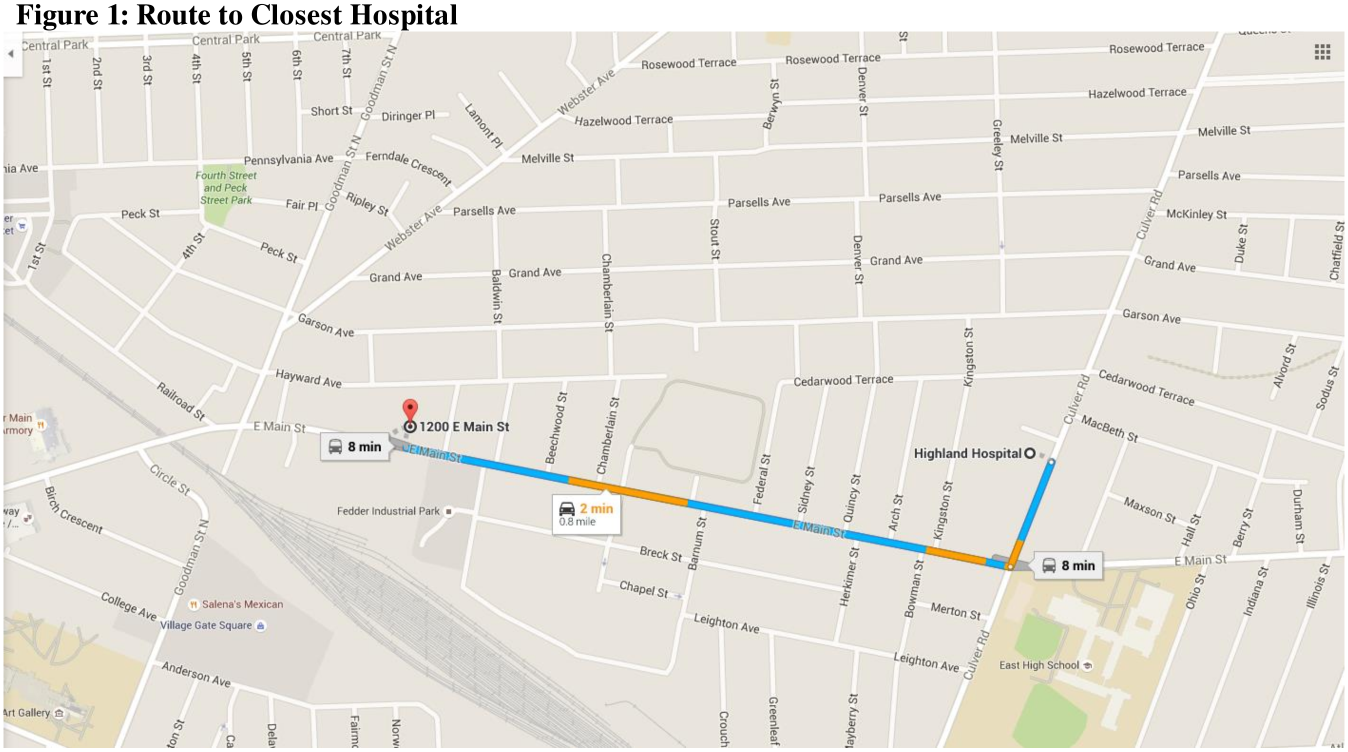
The purpose of this plan is to activate the Emergency Response Plan by calling the appropriate agency listed below. Bergmann Associates personnel will be responsible as First Responders in the event of an emergency, until professional emergency services arrive. At which time, Bergmann Associates will offer assistance and direction as required.

The following is a list of Emergency Numbers and Contacts:

Monroe County Emergency Services	**911**
Ambulance Service	**911**
Fire Department	**911**
Police Department	**911**
Monroe County Health Department	**(585) 274-6067**
Richard Elliott	
City of Rochester Department of Environmental Services	**(585) 428-7892**
Jane Forbes	
New York State Department of Environmental Conservation	
Region 8	**(585) 226-2466**

Figure 1 of this HSP shows the route from the site to the nearest hospital.

Figure 1: Route to Closest Hospital



1.4 Site Specific Hazard Evaluation Table

TABLE 1

Task	Physical Hazards	Chemical Hazards	Possible Hazard Forms	Protective Measures	
				Engineering	PPE
Well Abandonment Activities System Decommissioning Soil Sampling	Underground utilities Overhead utilities Noise Dust Particulate Electrical Drill Rig	Aromatic Hydro-Carbons PCB Methanol Nitric acid	Organic Constituents in Groundwater and on soil	Obtain Utility clearance Delineate work area with caution tape Post work/warning Signs. Make use of GFCI Fire extinguisher First Aid Kit Safety training Protective barriers	Level D to include: Safety glasses Chemical resistant gloves Ear protection Steel toe boots Hard hat Respirator available
O&M for O2 and VES System	Underground utilities Noise Dust Particulate Explosion Electrical Heavy machinery Open excavations	Aromatic Hydro-Carbons PCB	Solid/Dust Liquid/Vapors/ Fumes Organic Constituents in soil and ground water	Obtain Utility clearance Delineate work area with caution tape Post work/warning signs Make use of GFCI Protective barriers Safety Training Fire extinguisher First Aid Kit Implement tank removal procedures in Appendix 4 of Work Plan	Level D to include: Safety glasses Chemical resistant gloves Ear protection Steel toe boots Hard hat Respirator available
Operation and Maintenance Testing and Performance monitoring Groundwater Sampling	Fluids	Aromatic Hydro-Carbons Methanol Nitric acid	Vapors/Fumes Organize Constituents in ground water	Delineate area with tape or cones Post work/warning Signs	Level D to include: Safety glasses Chemical resistant Gloves Steel toe boots Respirator available

1.5 Site Specific Work Site Access Control

For work activities requiring Level D personal protective equipment (see Section 2.3.1), access to the work site will be controlled as appropriate by means of temporary barriers such as flagging tape or fencing. The temporary barriers will be placed in a manner such that personnel not familiar with the project will be aware that work area is to be entered by authorized personnel only.

If upgrade to Level C or above personal protective equipment is required based on site monitoring data, the area of work operations will be subdivided into an Exclusion Zone, Contamination Reduction Zone, and a Support Zone. Detailed definitions of these zones are provided in Section 2.4.1. Site-specific implementation of these zones will be as follows:

Exclusion Zone/Contamination Reduction Zone: Will be defined as a 25-foot radius around the work site or the radius at which contaminant concentrations drop below action levels, whichever is greater. Exception to this will be required for UST excavation along the south portion of the property, wherein the zone will extend to the property line. The Zone will be delineated in the field with warning tape. The Contamination Reduction Zone will be situated near the outside perimeter of this taped area, and contaminant concentrations in the Contamination Reduction Zone shall be below action levels. For mobile work activities (such as drilling) the zones will travel with the equipment (i.e. drill rig) used to perform the work.

Support Zone: Will be defined as other areas outside the perimeter of the warning tape.

1.6 Site Specific Decontamination Procedures

The following presents site-specific decontamination procedures for the project. Refer to Section 2.8 for additional general information on decontamination procedures.

1.6.1 Required Equipment

Tap water
Plastic sheeting
Disposal bags
Wash tub
Steam cleaner
Paper Towels

1.6.2 Site Specific Procedures

For Level D work activities, decontamination at each work site will consist of cleaning up water, soil, and other debris from the work and containerizing in 55-gallon drums or other containers from the remedial action. Containers will be transported, staged, and managed by Bergmann's contractors in accordance with federal, state, and local waste management regulations. A decontamination area for the drill rig, large equipment and tools will be set up in an area approved by the Site Safety Officer. Drilling equipment may be decontaminated by steam cleaning.

For Level C work activities, the following procedures shall be implemented:

Exclusion Zone/Contamination Reduction Zone: Set up a decontamination for rinsing hand tools and gloves in the Exclusion Zone and Contamination Reduction Zone area. Equipment such as drill bits, augers, and hand tools will be staged on polyethylene for reuse. Contamination at each individual work site (such as well location) shall be controlled to below action levels before demobilization from the site.

Support Zone: Decontamination is not required in the Support Zone.

Level B and above activities are not included in the scope of this plan. Supplemental procedures shall be developed if Level B or above work is required.

2.0 GENERAL HEALTH AND SAFETY PROCEDURES

2.1 Air Monitoring

2.1.1 Air Monitoring Scope

The Site Safety Officer will conduct periodic air monitoring during site operations. Should any monitoring indicate concentrations in excess of established action levels (located in Table 2), the Site Safety Officer will notify Contractors/Consultants and will implement appropriate action to protect project personnel, and the adjoining community, See Attachment 1 – Community Air Monitoring Plan (CAMP).

Periodic air monitoring for volatile compounds will be performed during the activities for which inhalation has been identified as a potential exposure route. These activities include, but are not limited to:

- Drilling and recovery well installation.
- Excavation of contaminated soil from trench locations.
- Well sampling and well development by hand bailing.

The Site Safety Officer will make use of real time direct reading instruments. Specific equipment is described in Section D in Section 3.8 of these Requirements.

2.1.2 Sample Locations

1. Personal Monitoring

   Personal monitoring will take place at times proposed by the Site Safety Officer or On Site Task Leaders. In scheduling personal monitoring, consideration will be given to monitoring at times of maximum potential exposure. Samples will be collected in the employees' breathing zone (9-inch radius hemisphere centered at the nose and forward of the shoulders) utilizing direct reading instruments such as a photo ionization detector. Emphasis should be placed on sampling employees in the exclusion zone, however employees involved in decontamination procedures will be sampled as well. All monitoring will be conducted using a portable meter only.

TABLE 2

POTENTIAL CHEMICAL HAZARDS

CHEMICAL COMPOUNDS PRESENT IN GROUNDWATER:	ROUTE OF EXPOSURE (SEE NOTE)	OSHA PEL (PPM) (1)	ACGIH TLV (PPM) (2)	IDLH (PPM) (4)
Benzene	INH, ABS, CON	1	10	500
Toluene	INH, ABS, CON	100	100	500
Ethylbenzene	INH, CON	100	100	800
Xylene	INH, CON	100	100	900
MTBE	INH, CON	N/R	40	N/R
Petroleum Distillate	INH, ABS, ING, CON	300	300	N/R
Lead	INH, ABS, ING, CON	0.05 mg/m3	0.05 mg/m3	100 mg/m3
PCB	INH, ABS, ING, CON	0.5 mg/m3	0.5 mg/m3	N/R
Methanol	INH, ABS, ING, CON	200	200	6000
Nitric Acid	INH, ABS, ING, CON	2	2	25

***Indicates a primary contaminant (i.e. is present in the highest concentration).**

(1) OSHA permissible Exposure Limit: AM. Ind. Hyg. Assoc. J. (50), April 1989, 8 hr. Time Weighted Average.
(2) ACGIH TLV from Threshold Limit Valves and Biological Exposure Indices for 1998 - 8 hr. TWA.
(3) Immediately dangerous to life or health: NIOSH Guide: June 1997

NOTE:
INH = Inhalation
ABS = Skin Absorption
CON = Skin or Eye Contact
ING = Ingestion

Signs/Symptoms of Overexposure: IRRITATION, GI DISTURBANCES, NAUSEA, VOMITING, DIARRHEA, EXCITATION, EUPHORIA, HEADACHE, DIZZINESS, DROWSINESS, BLURREDVISION, FATIGUE, TREMORS, CONVULSIONS, LOSS OF CONSCIOUSNESS, COMA, DEFATTING, REDNESS, ITCHING, CRACKING OF SKIN, BURNS, SWOLLEN & DISCOLOREDTISSUE, PAIN, LACRIMATION, INFLAMMATION

TABLE 3

HAZARD GUIDELINES AND ACTION RESPONSE LEVELS

TYPE OF INSTRUMENT	TYPE OF HAZARD	ACTION RESPONSE LEVEL [1]	ACTION RESPONSE
OVA HNU Photoionizer [2]	Organic Vapor/Glasses (ppm)	< 1 ppm 1 ppm - 5 ppm > 5 ppm	Level D Level C Withdraw and evaluate project conditions Evaluate hazard control methodologies.
Combustible Gas Indicator [3]	Explosive Atmosphere (% LEL)	< 5% scale reading 5-10% scale reading Greater than 10% scale reading	Proceed with work Monitor atmosphere continuously Evacuate from work zone immediately. Withdraw and evaluate project conditions. Evaluate hazard control methodologies.
Oxygen Meter [40]	Oxygen Deficient Atmosphere (% 0_2)	Less than 19.5% 0_2 19.5-22% 0_2 Greater than 22% 0_2	Terminate work: 0_2 deficient atmosphere Proceed with work Terminate work: 0_2 enriched atmosphere

NOTES:

1. Monitored in the breathing zone. These are general guidelines provided PPE affords adequate protection at these action levels.
2. Some inorganic species can also be ionized with this analyzer.
3. LEL - Lower explosive limit where the (scale) range is 0-100%.
4. 0_2 - Normal atmospheric oxygen concentration at sea level is approximately 20.8% oxygen by volume.

2. Perimeter Monitoring

Real-time air monitoring for volatile organic compounds will also be conducted on a regular basis (e.g., hourly) downwind of the exclusion zone perimeter (exclusion/contamination reduction zone as described in Section 2.4.1). If total organic vapor concentrations attributable to excavation, drilling or other activities conducted at the site, continuously exceed the most stringent permissible exposure limit, found on Table 3, for a period greater than five minutes, emission reduction activity will be attempted. If greater than 10 minutes, then work will be halted and PPE upgraded. If organic vapor concentrations remain sustained at the perimeter, work activities will remain halted, the exclusion zone will be expanded to the point where vapor concentrations are less than the OSHA PEL for the constituent in question, and air samples taken to determine the chemical species present. Work activities at the site will proceed only after the following conditions are met:

Sustained organic vapor levels at the perimeter fall below the triggering concentration, or

The concentrations of the organic compounds obtained from the air sampling are within their TLV's.

2.1.3 Sample Methods

1. Real Time Sampling

Real time monitoring will be conducted with a photoionization detector equipped with an 10.2 eV lamp or a flame ionization detector as specified in the in Table 3 of this document titled Hazard Guidelines and Action Response Levels. These instruments are capable of detecting the volatile organic chemical compounds identified in Table 2 of this document titled Potential Chemical Hazards to an approximate lower detection limit of 1 ppm. The OSHA TLV's for the compounds listed in Table 2 are at or above the detection limit of the proposed equipment. The rapid response of these instruments allows for quick determination of airborne concentrations and therefore, subsequent changes in the safety procedures can be implemented if needed.

2. Integrated Sampling

The Site Safety Officer will determine if there is a project specific need for integrated sampling. Integrated sampling is not expected to be needed for this project.

2.1.4 Air Monitoring Equipment

1. Direct Reading Instruments

   The instruments used for air monitoring activities may include, but are not limited to, those listed below. The Site Safety Officer will make the decision as to which instruments will be used on a project specific basis.

   A flame ionization detector (FID) equal or superior to Foxboro organic vapor analyzer (OVA) Model 128.

   A photoionization detector (PID) equal or superior to HNU 101.

   A combustible gas indicator/oxygen meter equal or superior to MSA Model 260 or 360.

   Note: During environmental activities, the potential for creating a flammable atmosphere will be monitored, (e.g., prior to confined space entry, initial operations with atmospheres having the potential to exceed IDLH.) Please refer to Table 3 of this HSP for Action Levels.

   Each instrument will be intrinsically safe where warranted. Each will be calibrated and maintained in accordance with the manufacturer's recommendations. Calibration records will be maintained in a daily field logbook.

   Direct Reading Instruments will be used during drilling, excavating, and tank removal activities. Those activities are outlined in Sections 2.6 and 2.7 as well as Table 1 of Section 1.4.

2. Spare Monitoring Equipment

   Appropriate spare monitoring equipment will be made available either on the Project Site or at a location in the project area, as determined by the Site Safety Officer. Field activities will be suspended if the properly calibrated field monitoring instrumentation is not available.

2.1.5 Record Keeping

A Field Logbook will be maintained by the Site Safety Officer or On Site Task Leaders. It will be updated daily. The entries will include:

Task description and date

Location of work site

Personnel involved:

Name
Function

Level of personal protection (any change in level of protection will be recorded at the time of implementation)

Health and Safety instrumentation calibration:

Instrument name (OVA, LEL, etc.)
Serial number
Calibration information (i.e. calibration gas)
Instrument setting (OVA span set)
Time of calibration

Meteorological information

Type of day (sunny, cloudy, rain, etc.)
Wind speed and direction (estimate)
Temperature

Events of the day in chronological order.

Health and safety instrumentation readings

Breathing zone concentrations
Time
Sample concentration with corresponding identification number

Any unusual occurrences, problems or observations

Signature of recorder

2.1.6 Action Levels

Project action levels will be determined by the Site Safety Officer based upon site conditions and information and will be presented in Table 3 of this document.

2.2 Heat and Cold Stress

2.2.1 Heat Stress

Heat stress occurs in several forms. By order of increasing severity, they are:

1. Heat Rash
2. Heat Cramps
3. Heat Exhaustion
4. Heat Stroke

The potential for a worker to develop heat stress is related to the ambient temperature, relative humidity, and the nature of the work being performed. The Site Safety Officer will provide project specific information on heat stress identification, care and prevention procedures as necessary.

2.2.2 Cold Stress

Cold stress, as well as heat stress, occurs in different forms. By order of increasing severity, they are:

1. Trench Foot
2. Frostbite
3. Hypothermia

The potential for a worker to develop cold stress is related to the ambient temperature, wind chill, protective clothing, and the nature of the work being performed. The Site Safety Officer will provide project specific information on cold stress identification, care and prevention procedures as necessary.

2.3 Personal Protective Equipment

Protective clothing and respiratory protection help protect workers from chemical hazards. Personal protective equipment is the least preferred method for health and safety protection, but it may be necessary if engineering controls and work practices are inadequate in preventing workers from coming in contact with potential hazards. Personal Protective Equipment (PPE) will be selected for the potential hazards anticipated and are detailed in the site specific hazard evaluation table, located in Section 1.4.

Safety equipment and protective clothing will be used as directed by the Site Safety Officer. The non-disposable equipment and clothing will be kept clean and maintained in proper condition. Contractors and their subcontractors will be responsible for providing their personnel with the proper PPE. Bergmann Associates will only provide PPE to Bergmann employees. The contractors and subcontractors will be responsible for training their personnel in the use of the required protective equipment and the equipment will be properly fitted.

The levels of protection to be used on-site will be based on applicable OSHA and Environmental Protection Agency (EPA) regulations, environmental sampling data, site conditions, and other factors. It will be the responsibility of the Site Safety Officer to select the most effective PPE based on the anticipated hazards of the task.

2.3.1 Levels of Protection

The following is a description of the specific requirements of various levels of PPE in conformance with EPA nomenclature.

1. Level A Protection

   Level A provides the highest level of respiratory and skin protection. Based on site contaminants, historical sampling, and operational data, utilization of this level of protection is not anticipated. This level of protection is anticipated only in extreme situations beyond the scope of this document, (i.e., HazMat Response).

2. Level B Protection

   Level B should be worn when the highest level of respiratory protection, but a lesser level of skin protection is required. Once sampling data (soil, water, or air) has been collected and analyzed, the necessity of this level of protection may be re-evaluated.

   <u>Level B Personal Protective Equipment</u> (not limited to the following):

   Supplied-air respirator (MSHA/NIOSH approved):

   a) Pressure-demand, self-contained breathing apparatus
   or
   b) Pressure-demand, airline respirator with escape bottle.

   Chemical protective clothing: Chemically resistant to anticipated contaminants, (e.g. Saranex or polyethylene coated Tyvek, Chemrel, or Chem-Tuff).

   Gloves (outer): Chemically resistant to anticipated contaminants.

   Gloves (inner)

   Boots (outer): Chemically resistant to anticipated contaminants.

   Hard hat*

   2-Way radio communications* (intrinsically safe).

Joints between gloves, boots, and suit must be taped to ensure an adequate seal.

* The need for these items is dependent upon the work to be performed and will be chosen by the Site Safety Officer.

3. Level C Protection

Level C protection with an air-purifying respirator should be worn routinely in an atmosphere only after the air contaminant(s) is (are) identified, concentrations measured and the criteria for wearing air-purifying respirator met. Generally, Level C provides the same level of skin protection as Level B, but a lesser degree of respiratory protection.

Level C Personal Protective Equipment:

Air-purifying respirators, full-face, (half-face with appropriate safety glasses or goggles when potential for liquid splashes is low), canister or cartridge equipped (MSHA/NIOSH approved).

Chemical protective clothing: Chemically resistant to anticipated contaminants, e.g. Saranex or polyethylene coated Tyvek, Chemrel, or Chem-Tuff.

Gloves (outer): Chemically resistant to anticipated contaminants.

Gloves (inner).

Boots (outer): Chemically resistant to anticipated contaminants.

Hard hat*

2-Way radio communications* (or cell phones).

Joints between gloves, boots, and suit must be taped to ensure an adequate seal.

* The need for these items is dependent upon the work to be performed and will be chosen by the Site Safety Officer.

Criteria for Selection of Level C:

Meeting all of the following criteria permits use of Level C protection:

Oxygen concentrations not less than 19.5% or no greater than 22% by volume.

Personnel inhalation exposure will be reduced by the respirator below the substance's Threshold Limit Value (TLV)/Permissible Exposure Limit (PEL) or XEL, whichever is lowest and the concentration is within the service limit of the canister/cartridge.

Atmospheric contaminant concentrations do not exceed IDLH levels, (See Table 1).

Atmospheric contaminants, splashes, or other direct contact will not adversely affect any body area left unprotected by chemically resistant clothing.

Job functions do not require self-contained breathing apparatus.

Atmospheric contaminant concentrations are not in excess of Level C action criteria, (See Table 2).

4. Level D Protection

Level D is the minimum level of protection to be used during any site activities and provides no respiratory and nominal skin protection.

Level D Personnel Protective Equipment:

Coveralls or work uniform that includes long sleeved shirt.

Gloves*

Substantial leather chemical-resistant boots or shoes (steel toe and shank).

ANSI Z87 safety glasses

Chemical splash goggles*

Hard hat*

Disposable/reusable footwear covers*

* The need for these items is dependent upon the work to be performed and will be chosen by the Site Safety Officer.

Criteria For Selection of Level D:

Meeting any of these criteria allows use of Level D protection:

No contaminants are present or contaminant levels are substantially below action levels.

Work functions preclude splashes, immersion, or potential for unexpected inhalation of any hazardous chemicals.

Level D protection is a minimum work uniform. It can be worn only in areas where the possibility of contact with contamination is minimal.

2.3.2 Personal Protective Equipment (PPE) Selection

PPE selection will be based on the task and the nature of hazards (type of contaminants, duration of exposure), engineering controls, and the work practices that are anticipated. The selected equipment will provide protection from the chemicals suspected to be present and which demonstrate the potential for skin exposure. The PPE chosen for each task will be specified in the site specific hazard evaluation table, located in section 1.4.

2.3.3 Changes in PPE

The Site Safety Officer will make the decision to upgrade or downgrade the levels of protection. The decision will be primarily based on the results of the air monitoring performed during site activity.

2.4 Site Controls

2.4.1 Work Site Access Control

Access to the Site is dependent upon site-specific conditions and will be controlled by the Bergmann Associates Project Manager, with permission from the City of Rochester. It will be the Project Manager's responsibility to control access to a site by means of temporary barriers such as flagging tape or fencing. The barrier will be inspected daily for integrity and adequacy by the On Site Task Leaders.

For sites requiring Level C to Level A PPE the area of field operations will be subdivided into three distinct areas. The extent of these areas is task and location specific. Access to each zone will be controlled with fencing and/or plastic flagging tape. The three areas are defined as:

Exclusion Zone

The exclusion zone is the area where the highest potential for exposure by dermal or inhalation routes exists. Personal protective equipment is required and a daily log will be kept of personnel entering this zone. The exclusion zone will be marked off with barricades or barrier tape, which will be placed a minimum of 25 feet from the active work area. This 25-foot minimum may be altered in the site specific hazard evaluation table in Section 1.4 depending upon actual site layout. During field operations this boundary may be expanded by the Site Safety Officer based upon observations and/or monitoring measurements. Whenever possible, associated fieldwork should be performed upwind from potential contaminant sources.

Contamination Reduction Zone

The contamination reduction zone is the area immediately adjacent to the exclusion zone and is an area with a probability of dermal and inhalation exposure is lower than in the exclusion zone. Typically, contamination reduction zones include facilities for personnel or equipment decontamination. Personal protective equipment worn in the exclusion zone may not be worn outside the contamination reduction zone except during emergencies.

Support Zone

Support zones cover all areas outside the contamination reduction zone. Typically, the support area includes facilities for a lunch area, office spaces, and clean equipment and material storage. Protective clothing worn in the exclusion zone may not be worn in a support zone except in emergencies. Emergency contacts are listed in Section 1.3 of this document.

2.4.2 Visitors

Visitors and subcontractors entering the site are subject to the same requirements as contractor and consultant personnel and will only be permitted in the immediate area of active operations (i.e., exclusion zone) after receiving written approval from the Bergmann Associates Project Manager, and supplying a written agreement to comply with this HSP.

A visitors log will be kept by the Bergmann Associates Site Coordinator or other designated person.

Visitor vehicles are restricted to support zones.

2.4.3 Unauthorized Personnel

These procedures and actions are designed to prohibit unauthorized entry to the work sites. However, if security is violated, the following actions will be taken:

Unauthorized personnel found within any active site will be reported to the Bergmann Associates Project Manager and Site Safety Officer.

Unauthorized personnel found in the exclusion zone will be escorted through the contamination reduction zone and will be subject to all decontamination procedures established in the project-specific HSP.

The Bergmann Associates Project Manager and/or Site Safety Officer will escort any unauthorized personnel, entering an active site, away from the facility. No re-entry will be permitted.

Site security arrangements will be made to prevent unauthorized access to the site during non-working hours.

2.5 Engineering Controls

Engineering controls will be the method of preference to control health and safety hazards. Examples of engineering controls are:

The use of excavation equipment to take samples from trenches;

The use of cover material (soil) to suppress vapor emissions;

The use of air conditioning in heavy equipment cabs to mitigate operator heat stress; and

Administrative controls and personal protective equipment will be used where engineering controls are not feasible or are inadequate. Administrative controls include the exclusion of unnecessary personnel from hazardous areas. It should be noted that scheduled job rotation is not an acceptable administrative control to reduce employee exposure to airborne chemicals.

The hazard control methods have been established and can be found in Section 1.4 those as the project progresses, changes to these methods may be necessary. Any major changes will be documented as addenda to the site-specific health and safety plan.

2.5.1 Standard Safe Work Practices

Standard safe work practices applicable to most site activities are listed below. Additional safe work practices unique to specific site tasks are located in Section 1.4.

1. Field personnel must inform the Site Safety Officer, On Site Task Leader or designated representative before entering work areas so that their presence can be recorded.

2. Workers must utilize the "buddy system": at least two members of the field crew (including subcontractor personnel) must be in visual contact with each other on-site whenever work is to be performed. If this is not possible, two-way radios will be used.

3. Eating, drinking, chewing gum or tobacco, smoking, or any other activity that increases the probability of hand-to-mouth transfer of contaminated material will not be permitted at the work site.

4. Personal safety equipment and protective clothing will be worn in conformance with Section 2.3 of this HSP.

5. Disposable outer coveralls, boots and gloves will be secured at the wrists and legs, and there will be closure of the suit around the neck.

6. Individuals getting wet to the skin with chemically contaminated liquids must remove clothing and wash the affected area immediately at a location to be identified in the task-specific health & safety requirements. Clothes wet with such liquids must be changed. Any skin contact with such liquids, whether considered safe or not, will be dealt with immediately and as completely as possible. Medical attention should be sought as necessary.

7. Hands must be washed before eating, drinking, smoking and before using toilets at the facilities provided.

8. Avoid contact with surfaces either suspected or known to be contaminated, such as puddles, mud, or other discolored surfaces. Store equipment on elevated or protected surfaces to reduce the potential of incidental contamination.

9. Only remove personal protective equipment in the contamination reduction zone per Section 2.4.1.

10. Place all disposable coveralls, gloves, and cartridges in appropriate receptacles at the end of every shift or sooner, as directed by the Site Coordinator.

11. Inspect all non-disposable clothing (i.e. hard hat liner, work gloves, cotton overalls) for contamination in the contamination reduction zone. Any clothing found to be contaminated will be decontaminated or disposed of in a manner approved by the Site Coordinator.

12. Report any injuries to the Bergmann Associates Site Safety. An accident report or equivalent must be completed by the Site Safety Officer and submitted to the Project Manager for appropriate follow-up.

13. The presence or consumption of alcoholic beverages or illicit drugs on the project property or during the workday is strictly forbidden.

14. Spillage or splashing of contaminated materials must be prevented. Spills must be contained and follow up calls made as appropriate for the release.

15. Be alert to unsafe conditions or acts and notify the Site Safety Officer.

16. Workers need to be familiar with the work area and surroundings, including:

    Wind direction in relation to the work area;
    Accessibility of associates, equipment, vehicles;
    Available communications;
    Hot zone (areas of known or suspected contamination);
    Site access;
    Nearest water sources.

17. The number of personnel and equipment in the exclusion zone must be kept to a minimum.

18. Wastes generated during work activities must be disposed of in accordance with state, federal, and local regulations.

2.5.2 Safe Work Permits/Hot Work Permits

Safe Work Permits will be obtained from the Site Safety Officer before any work is done listed below. Items anticipated for this project have been highlighted in bold lettering.

Entering vessels, tanks, pits, trenches, manholes, or other confined spaces.

Exposure to toxic or infectious material or to abnormal temperatures or pressures when such exposures are outside the employee's daily routine.

Using flammable or combustible coatings inside buildings. Application of combustible paints by brush or roller is excluded.

Excavating and trenching.

Using temporary heating devices.

Working in designated safe work permit areas.

Hot Work Permits or other applicable permits are to be obtained from the Fire Marshall before any work is done that involves:

Operating gasoline powered vehicles or equipment inside buildings.

Cutting, welding, lead burning, tar kettles, or similar work involving open flames or very high temperatures. In explosion prone areas, this includes any potential source of ignition, such as electric hand tools.

2.5.3 Working in Confined Spaces

A confined space, as defined by OSHA, is any space having a limited means of egress that is subject to the accumulation of toxic or flammable contaminants or has an oxygen deficient atmosphere. No confined space work activities are anticipated for this specific project.

Confined spaces are also areas where occupants are rendered isolated from help in case of need. Confined spaces include, but are not limited to: Ovens, tanks, vessels, bins, boilers, ducts, sewers, pipe chases, manholes, underground utility vaults, tunnels, pipelines, excavations, and trenches.

If waste activities require entrance into a confined space, strict Health and Safety protocol must be followed. Confined Space work activities are not planned for this project. However, should this task become a part of this project then the following requirements will be implemented. Prior to any confined space work activities, authorization must be obtained from the Project Manager and Site Safety Officer.

1. Confined Space Entry

   A Safe Work Permit will be issued by Bergmann Associates prior to entry into the confined space. This permit must be completed including the signatures of the Site Safety Officer.

   Only authorized, trained personnel may enter a confined space.

Open flame devices will not be used to open frozen or otherwise shut manhole covers, hatches or doors. Hot water or steam will be used to remove ice and snow holding such openings closed.

2. Confined Space Ventilation

The confined space will be ventilated to prevent the accumulation of:

Flammable vapors above 10% of the Lower Explosive Limit.

Concentrations of combustible dust.

Toxic and other contaminants in the atmosphere above one half of the TLV.

3. Safety Concerns

A standby employee will be stationed outside the entrance to the confined space to observe or communicate with the employee at all times. Communications (visual, voice, or signal line) will be maintained between the employees present. The standby employee will be trained and equipped to initiate rescue operation.

2.5.4 Utility Clearance

Utility clearance will be obtained by the Bergmann Associates contractors from the local Underground Facilities Protective Organization and the appropriate City authority before the start of any drilling or excavation conducted at the site.

Other local utility clearance can be obtained by calling the toll-free hotline Dig Safe NY at (800) 962-7962 and record the "reference number" for possible future use.

Utilities in the work area should be staked at least one week prior to the start of work.

The project activities will be explained in detail to the respective utility by the Project Site Coordinator.

2.6 Drilling Safety

Drilling and sampling activities present several potential hazards. Minimizing these hazards requires strict adherence to safe operating procedures.

2.6.1 Drill Crews

Drillers will be responsible for the safe operation of the drill rig as well as their crew's adherence to the requirements of this site specific HSP (see Attachment A). The driller will provide their own Health and Safety Plan relative to drilling operations. The driller will be responsible for the condition and proper use of the safety equipment. The members of the drill crew will follow the instructions of the driller, wear the appropriate personal protective equipment, and be aware of the hazards and applicable control procedures.

2.6.2 Rig Inspection

Each day, prior to the start of work, the driller will inspect the drill rig and associated equipment. The following checks will be made:

<u>Vehicle condition:</u> Check proper operation of brakes, lights, steering mechanism, and horn.

<u>Equipment storage:</u> Equipment such as auger flights, split spoon samplers, hammers, hand tools, etc. will be properly stored in an appropriate location and will be secured before moving the rig.

<u>Wire rope, Cat Line:</u> All wire rope, cable and Cat Line will be inspected for signs of wear such as broken wires, a reduction in rope diameter, abrasion, or signs of rust. Worn, frayed, or otherwise damaged wire, rope or cable will be replaced.

<u>Safety equipment:</u> Each rig will have at least one fire extinguisher (Type B/C) and one First Aid Kit.

2.6.3 Rig Set-Up

Each drill rig will be properly blocked and leveled prior to raising the derrick. The rig will be moved only after the derrick has been lowered. The leveling jacks will not be raised until the derrick has been lowered.

Blocking provides a more stable drilling structure by evenly distributing the weight of the rig. Proper blocking ensures that a differential settling of the rig does not occur. Wooden blocks, at least 12 by 12 inches and four to eight inches thick, are recommended and should be placed between the jack swivels and the ground. The emergency brake will be engaged and the wheels that are on the ground chocked.

Site drilling will comply with the following rules:

Before drilling, the Site Coordinator will provide an adequate safety zone around the drill rig and associated operations.

Before drilling, the existence of underground utilities in the work area will be determined and conspicuously marked.

If drilling is conducted in the vicinity of overhead power lines, proper distance will be maintained between the drill rig and the lines as per OSHA 29 CFR 1926, Subpart N.

2.6.4 General Operating Procedures

To reduce noise impact on neighboring residences aesthetic value of life, all drilling and excavation operations will take place between the hours of 8:00AM and 8:00PM.

The operator of the drill rig will only operate from the position of the controls. If the operator must leave this position, the transmission must be in neutral.

When working on the derrick platform, the drill crew should not guide drill rods or pipe into racks by taking hold of a moving line. Materials should not be stored or transported within the derrick. Pipe, drill rods, auger flights, hammers, and other drilling tools should be stored in racks and chained in place. During drilling, penetration hammers will be placed at a safe location on the ground.

2.6.5 Emergency Procedure for Electrical Contact

If a drill rig contacts an electrical line, it may or may not be insulated from the ground by its tires. Death or serious injury will result if a person touches the rig and the ground simultaneously.

Under most circumstances, the operator and other personnel on the seat of the vehicle should remain seated and not leave the vehicle. Do not move or touch any part, particularly a metallic part, of the vehicle or drill rig.

If it is determined that the rig should be vacated, the operator should jump clear and as far as possible from the rig. Do not step off, jump off, and do not hang on the vehicle or any part of the rig when jumping clear.

If you are on the ground, stay away from rig and do not let others get near the vehicle. Seek assistance immediately by calling the appropriate emergency agency. Emergency phone numbers are listed in Section 1.3.

2.7 Excavation Safety

2.7.1 Excavation Crews

The excavation subcontractor will be responsible for the safe operation of the excavator as well as their crew's adherence to the requirements of this site specific HSP (see Attachment A). The excavation subcontractor will provide their own Construction Health and Safety Plan (CHASP) relative to drilling and excavation operations. The excavation subcontractor will be responsible for the condition and proper use of the safety equipment. The members of the drilling and excavation crews will wear the appropriate personal protective equipment, and be aware of the hazards and applicable control procedures.

2.7.2 General Excavation Safety

The following is a list of minimum requirements for excavating. Each excavation/trench/shoring project is different, therefore the Excavation subcontractor is responsible for evaluating site specific conditions and making appropriate provisions in the site specific CHASP in conformance with 29 CFR 1926 Subpart P - Excavations.

Contact the proper utilities to obtain clearance. Prior to work, review the utilities in the area and be sure they have been staked properly.

Be aware that excavations deeper than four feet are considered confined spaces and require additional safety precautions, such as shoring. If an excavation exceeds four feet in depth, contact the Site Safety Officer to review the excavation and make the necessary adjustments.

The walls and faces of all excavations more than four feet deep, in which an employee is exposed to danger from moving ground, will be guarded by a shoring system, sloping of the ground, or some other equivalent means. The design of shoring systems must be done by a registered Professional Engineer as per 29 CFR 1926 Subpart P.

For excavations in which an employee may be required to enter, excavated or other material will be effectively stored and retained at least two feet or more from the edge of the excavation or trench.

Daily inspections of all excavations will be made by the Site Safety Officer. If evidence of possible cave-ins or slides is apparent, all work in the excavation will cease until the necessary precautions have been taken to safeguard employees.

Excavations more than four feet deep will have ladders or steps located so as to require no more than 25 feet of lateral travel for exit.

Hard hats and other personal protective equipment will be worn during any type of excavating or trenching operation.

Determine soil composition (e.g., through soil sampling, soil maps, etc.) and other relevant site conditions, with special emphasis on conditions conducive to cave-ins.

Monitor the atmosphere in and around excavations on a regular basis to check for explosive, toxic or otherwise dangerous gases and vapors.

The Project Manager will verify that the employees involved in the excavation activity have appropriate training in safe trenching practices, with emphasis on factors such as:

- utility line identification
- cave-in prevention measures
- recognition of conditions which may cause cave-ins
- means of egress from trench

Water will not be allowed to accumulate in any excavation. Utilize ditches, dikes, pumps, or other means to keep surface water out of trenches.

Open excavations must be well marked and barricaded.

2.7.3 Cave-In Hazards

The following conditions increase the likelihood of cave-in:

Soil materials composed of unconsolidated, uncompacted, and/or rounded particles (See 29 CFR 1926 Subpart P - Excavation Standard). Special care must be used when trenching in areas that have previously been excavated and backfilled.

Soils which have a high water content, or have been subjected to freeze-thaw or frost-heaving.

Loading of trench walls by adjacent equipment, supplies, structures, "back-dirt" piles, etc.

Vibration due to equipment operating near excavations.

Trench walls that are steeper than the angle of repose of the material composing the walls.

Deep trenches (i.e., high trench walls).

The following precautions should be used to prevent cave-ins in trenches in excess of 4 ft. deep. These precautions should also be used in trenches less than 4 ft. deep whenever those site conditions just listed indicate the likelihood of a cave-in:

Sloping: Trench walls should be sloped to the correct angle of repose.

Shoring: Vertical trench walls (unless composed of solid rock) must be shored and braced, or restrained with movable trench boxes, to prevent cave-in. Shoring systems must be designed by a registered professional engineer and meet accepted engineering requirements.

2.8 Decontamination

Personnel and equipment are subject to decontamination procedures when exiting the exclusion zone. No contaminated material will be removed from the exclusion zone without undergoing proper decontamination procedures.

2.8.1 Personnel Decontamination

No personal protective equipment will be removed from the exclusion zone without proper decontamination or placement in a disposal receptacle.

The following are guidelines for developing personnel decontamination procedures contained in the site specific HASP:

1. Tools, etc. will be dropped off onto a plastic sheet in the exclusion zone for subsequent re-use or decontamination.

2. The boot wash station will consist of a plastic or metal tub and a boot brush.

3. The outer layer of disposable protective clothing will be removed by removing outer boots, outer gloves, hood, tape, etc., and placed in a receptacle for disposal. Clothing will be removed by "peeling" off while turning it inside-out. This will minimize contact with possible contamination on the outer surface.

4. Respirators will be removed and cartridges placed in a receptacle for disposal.

5. Inner gloves will be removed by rolling off the hand while turning them inside-out and placed in a receptacle for disposal.

6. If highly toxic, skin-corrosive or skin-absorbable materials are known or suspected (none are suspected during these activities) to be present, personnel must shower before exiting the site.

NOTE: The Site Safety Officer will oversee personnel decontamination procedures.

2.8.2 Equipment Decontamination

Equipment, including drill rigs, will arrive at the site free of debris and contamination. Equipment will be cleaned and decontaminated before departure from the site. Decontaminating chemically contaminated equipment will be performed at a minimum of Level C protection for steam cleaning and hydro-washing.

Specific equipment decontamination procedures will be based upon the type of work being performed and anticipated levels of contamination. The following items are guidelines for the establishment of equipment decontamination procedures to be implemented as site-specific conditions warrant:

1. All equipment that has been in the exclusion zone or the contamination reduction zone will be visually inspected and/or wipe sampled to assess the extent of contamination.

2. Sensitive instrumentation should be handled in a manner that will minimize the potential of exposure to hazardous soils and liquids. This care in handling will greatly reduce the amount of decontamination required. Should the conditions in the exclusion zone present an extreme potential for contamination, instrumentation may be wrapped in plastic.

3. All hand tools, safety equipment, and heavy equipment will be decontaminated before leaving the site. (e.g., high pressure, low volume hot water washed, steam cleaned, brushed with low phosphate detergent, and water rinsed.)

4. Heavy equipment must have visible residues removed in the exclusion zone. Wheels, wheel wells and cabs of vehicles must be cleaned before equipment is removed from the exclusion zone. The equipment may then be moved to a more centrally located decontamination pad for more extensive decontamination. This move must be accomplished in a manner that will prevent the spread of contamination along the travel path.

5. If warranted and required by the Project Work Plan, samples such as equipment blanks will be taken and submitted for project related analysis to confirm the decontamination procedures.

2.8.3 Location of Decontamination Areas

Decontamination areas for project equipment and personnel will be designated by the Bergmann Associates Project Manager by the following guidelines:

Each decontamination area will be sited to have access to water and electrical (GFCI protected) supplies as necessary for the decontamination process.

Access to the decontamination area(s) will be limited and controlled.

Each contractor will be responsible for constructing their own decontamination pad.

2.9 Health and Safety Training Program

2.9.1 Initial Health and Safety Training

Personnel will not be permitted to participate in or supervise field activities until they have been trained to a level required by their job function and responsibility. Bergmann Associates employees, contractors, subcontractors, and consultants who have the potential to be exposed to contaminated materials or physical hazards must complete the training described in the following sections.

2.9.2 40-Hour Health and Safety Training

This basic course provides instruction on the nature of hazardous waste work, protective measures, proper use of personal protective equipment, recognition of signs and symptoms which might indicate exposure to hazardous substances, and decontamination procedures. It is required for any personnel working on-site, such as equipment operators, general laborers, electricians, plumbers, supervisors, management, etc. who may be potentially exposed to hazardous substances, health hazards, or safety hazards consistent with 29 CFR 1910.120. The course must be conducted by a qualified instructor in accordance with 29 CFR 1910.120.

2.9.3 8-hour Annual Refresher Training

Personnel with 40-hour health and safety training are required to attend an annual 8-hour refresher course to remain current in their training. This course must also be conducted by a qualified instructor in accordance with 29 CFR 1910.120.

2.9.4 8-Hour Supervisor Training

On-site management and supervisors directly responsible for or who supervise employees engaged in hazardous waste operations must have eight additional hours of Supervisor training in accordance with 29 CFR 1910.120. This course includes, but is not limited to, elements appropriate to supervising hazardous waste related projects (e.g., accident reporting/investigation, regulatory compliance, work practice observations, auditing, emergency response procedures, etc.).

2.9.5 Additional Training for Specific Projects

Contractors will confirm that their employees have received additional training on specific instrumentation, equipment, confined space entry, construction hazards, etc., as necessary to perform their duties. This specialized training will be provided to personnel before engaging in the specific work activities.

2.9.6 Documentation of Training

The Bergmann Associates Project Manager will be responsible for maintaining and providing documentation of its employees' compliance with required training. Bergmann Associates will only allow properly trained/certified and qualified personnel to perform work at the site.

2.10 Medical Surveillance Program

2.10.1 Purpose

The Medical Surveillance Program is conducted to provide an initial baseline of the worker's health. Subsequent medical exams are used to monitor the worker's continued well being. The implementation of a medical surveillance program is the responsibility of the contractor/subcontractor employer.

2.10.2 Requirements

Medical surveillance is required by the Occupational Safety and Health Administration (OSHA) 29 CFR 1910.120 (f): Hazardous Waste Site Operations and Emergency Response. The Contractor/Consultant's medical surveillance program must meet or exceed these regulatory requirements.

These regulatory requirements include the determination by a physician that the individual being examined is physically able to use respiratory protection and is able to perform the work defined within the specific job description. The capability of an individual to perform the specified work will be determined from examinations that may include:

Medical and occupational history, and past gastrointestinal, hematological, renal, cardiovascular, reproductive, immunological, and neurological problems as well as a history of respiratory disease and personal smoking habits;

Physical examination, including blood pressure measurements;

Pulmonary function test (FVC and FEV1);

Chest x-ray;

ECG (Electrocardiogram);

Eye examination and visual acuity;

Audiometry;

Urinalysis; and

Blood chemistry: Hematology, serum analyses, heavy metals toxicology.

2.10.3 Periodic Monitoring

Personnel are required to have a physical examination within the 12 months prior to the beginning of their work on-site. This period may be shortened if the Contractor/Consultant Medical Consultant deems this appropriate. The physician performing the physical will be responsible for the requirements of 29 CFR 1910.120(f). Documentation attesting to current medical monitoring compliance must be maintained on-site by the Site Safety Officer.

3.0 COMMUNITY HEALTH AND SAFETY PLAN

3.1 Acknowledgment of Hazards

It is understood that the hazards that may exist for the workers on site may also impact the community. This plan addresses this issue and recommends engineering controls in an effort to protect community residents from exposure to these hazards.

The hazards that exist for off-site individuals include but are not limited to the following:

- Exposure to harmful vapors that migrated off-site
- Explosion of flammable vapors during UST evacuation and removal tasks
- Interruption of utilities during ground penetrating investigations and UST removal
- The attractive hazard and potential fall hazard associated with open excavations

3.2 Air Monitoring

The Site Safety Officer will conduct periodic air monitoring as required in the Community air Monitoring plan (CAMP) during site operations to determine that vapor generated onsite, is not migrating offsite in concentrations that may affect the community’s health and safety

The Site Safety Officer will make use of real-time, direct reading instruments. Specific equipment is described in CAMP, see Appendix D – CAMP in the Remedial Action Plan.

3.3 Utility Clearance

Utility clearance will be obtained by the Bergmann’ subcontractor from the local Underground Facilities Protective Organization and the appropriate City authority before the start of any drilling or excavation conducted at the site.

Other local utility clearance can be obtained by calling the toll-free hotline Dig safe NY at (800) 962-7962 and record the "reference number" for possible future use.

Utilities in the work area should be staked no greater than one week prior to the start of work.

3.4 Site Control of Attractive Hazards

The attractive hazard is one that, by curiosity or mischief, lures a person to a location that poses a hazard to them. Attractive hazards at this work site are, but not limited to, potential fall hazard associated with open excavations and heavy machinery.

Every effort will made to complete excavation work and fill the excavation prior to the end of the workday. In the event that this is not possible, soil will be placed back into the excavation to cover all hazards with the exception to falling. An orange polyethylene security fence will then be installed completely around, and 6 feet away from, the edge of the excavation to detour persons from venturing too close to the excavation.

Site security arrangements will be made to prevent unauthorized access to the site.

ATTACHMENT A

Under a prime contract with the City of Rochester (client), ________________________, Bergmann Associates has developed a Site Specific Health and Safety Plan (HASP) and specifically to satisfy the requirements of its prime contract and its responsibility to protect the health and well-being of its employees. Bergmann has provided a copy of the HASP to its subcontractors, ____, (under Bergmann subcontract number _______________, dated ____________, 19___), for informational purposes only to assist the subcontractors and cooperating firms in assessing potential hazards and planning for the protection of the health and well-being of its own employees. Upon transmittal of this informational copy of the HASP to the subcontractors and cooperating firms, Bergmann disclaims all liability whatsoever to the subcontractors and cooperating firms resulting in any way from the subcontractor's and cooperating firms use or reliance upon the HASP. Likewise, upon receipt by the subcontractors and cooperating firms of this informational copy of the HASP, the subcontractors and cooperating firms waives, releases, and promises not to sue Bergmann as a result of the subcontractors and cooperating firms use or reliance upon the HASP. This waiver is granted in recognition of the subcontractor's acceptance of sole responsibility for assessing potential hazards and preparing/implementing an appropriate subcontractor firm Construction Health and Safety Plan (CHASP) which will protect the health and well-being of its own employees.

PROPRIETARY INFORMATION

This HASP is the sole and exclusive property of Bergmann Associates. It is not to be copied or distributed for any use except that for which it was intended (as described above).

Understood and Accepted:

Bergmann Associates	Subcontractor:_______________
BY: ___________________	BY: ___________________
Name: ___________________	Name: ___________________
Title: ___________________	Title: ___________________
Date: ___________________	Date: ___________________

APPENDIX 9
COMMUNITY AIR MONITORING PLAN

COMMUNITY AIR MONITORING PLAN (CAMP)

Remedial Design/ Remedial Action

City of Rochester
Environmental Restoration Project
1200 East Main Street – Rochester,
Monroe County, New York

Prepared By:

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

May 29, 2018

Table of Contents

Page

1.0 Introduction

This Community Air Monitoring Plan (CAMP) has been prepared by the City of Rochester. This CAMP addresses potential volatile organic compound (VOC) and particulate air quality issues which may arise during planned Remedial Design/ Remedial Action (RD/RA) activities at the 1200 East Main Street Site, Rochester, New York. This CAMP and the monitoring, response and action levels presented herein are adapted from the New York State Department of Health (NYSDOH) *Generic Community Air Monitoring Plan* presented in the New York State Department of Environmental Conservation (NYSDEC) Division of Environmental Remediation *DRAFT DER-10 Technical Guidance for Site Investigation and Remediation, December 2002* (DER-10). The generic NYSDOH CAMP is presented for reference as Exhibit A.

The RD/RA activities planned during the portion of the project covered by this CAMP include free product removal, contaminated soil excavation and disposal, remedial system installation, and groundwater sampling.

Based on previous studies completed at the Site and the Site's history, the primary chemicals of concern at the subject site are various volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), polychlorinated bi-phenyls (PCBs), and metals. Disturbance of soils and/or groundwater could result in volatilization of the organic compounds and fugitive dust releases to the ambient air creating possible nuisance or health threats to the neighborhood.

This CAMP details real-time monitoring activities to be carried out during the remedial action activities, to minimize the potential for neighborhood exposure to airborne hazards resulting from fugitive emissions during field work.

Air monitoring and response actions for VOCs and particulates are included in this CAMP. VOC and particulate monitoring of the work areas will also be conducted as part of the Health and Safety Plan (HASP) that will be implemented during RD/ RA activities by Bergmann Associates (Bergmann). The following monitoring, response levels and actions are adapted from DER-10 NYSDOH Generic Community Air Monitoring Plan.

2.0 Methodology

The intrusive RD/ RA activities at the Site will consist primarily of free product removal, contaminated soil excavation and disposal, remedial system installation, and groundwater sampling. The following programs will be implemented to monitor and, if necessary, control the potential migration of fugitive VOCs and particulates on the property.

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

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 wells. Periodic monitoring during sampling may reasonably consist of taking a reading upon arrival at a sample location, monitoring while opening a well cap or overturning soil, monitoring during well bailing/purging, and taking a reading prior to leaving a sample location.

2.1 Perimeter Monitoring

For each day of intrusive field work, a wind sock or flag will be used to monitor wind direction in the area of the work zone. Based upon the daily wind direction, two (2) temporary monitoring points will be identified, one (1) upwind and one (1) downwind of the work area, at the perimeter of the site or field work location.

VOC monitoring will be done with a photoionization detector (PID-MiniRAE Model 2000 or its equivalent) fitted with a 10.6 eV lamp. Prior to the commencement of field work each day, background measurements of VOC concentrations will be logged at the upwind and downwind locations. Thereafter, readings will be recorded at approximate 15-minute intervals. These readings will be used to observe the difference between upwind and downwind VOC levels. If at any time, the downwind VOC levels exceed upwind levels (adjusted for engine exhaust) by 5 ppm (sustained), the work will be temporarily halted. The Contractor will then be required to implement the means necessary to control VOCs and explosive gases, similar to those discussed in Section 2.3.

Monitoring for explosivity using an explosive gas meter will be routinely conducted during site activities as a precautionary measure to ensure site personnel are not subjected to any dangerous conditions.

Particulate monitoring will be done with a real time particulate meter (Mini Ram) capable of monitoring particulate matter less than 10 microns in size (PM-10). Prior to the commencement of field work each day, background measurements of particulate levels will be logged at the upwind and downwind locations. Thereafter, readings and visual observations will be recorded at approximate 15-minute intervals. If the downwind PM-10 particulate level is 100 micrograms per cubic meter (mcg/m3) greater than background (upwind perimeter) for the 15-minute period or if airborne dust is observed leaving the work area, then dust suppression techniques must be employed.

Work may continue with dust suppression techniques provided that downwind PM-10 particulate levels do not exceed 150 mcg/m^3 above the upwind level, and provided that no visible dust is migrating from the work area. If, after implementation of dust suppression techniques, downwind PM-10 particulate levels are greater than 150 mcg/m^3 above upwind level, work must be stopped and a re-evaluation of activities initiated. Work can resume provided 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.

2.2 Work Area Monitoring

In addition to perimeter monitoring, monitoring for VOCs, particulates and explosive gases will be carried out continuously within the work area to monitor personal exposures and to compare work area readings with downwind and upwind readings. The first readings of the day will be obtained prior to the commencement of work to obtain daily background readings. Readings will be logged along with the perimeter measurements. Specific monitoring procedures to be used in the work zone can be found in the Health and Safety Plan (HASP) prepared for this site.

2.3 Fugitive Dust Control

If the monitoring described in Sections 2.1 or 2.2 results in fugitive particulate levels exceeding 100 $\mu g/m^3$ above background, then the Contractor will implement fugitive dust control measures which may include one or more of the following:

- Using water spray or other dust suppression measures;
- Establishing wind shielding;
- Slowing down the field work speed; and/or
- Stopping the field work activities.

2.4 Minor Vapor Emissions Response Plan

If the ambient air concentration of total organic vapors exceeds 5 ppm(sustained) above the background at the perimeter of the work area, activities will be halted and monitoring continued.

If the total organic vapor level decreases below 5 ppm above background, work activities can resume, with emphasis given to observing spikes in levels. If the total organic vapor levels are greater than 5 ppm over background but less that 25 ppm over background at the perimeter of the work area, activities can resume provided the organic level 200 ft. downwind of the work area or <u>half the distance to the nearest residential or commercial structure</u>, whichever is less, is below 5 ppm over the background. (The locations of structures in the subject neighborhood may not allow the 200 ft. buffer zone to be used).

If the organic vapor level is above 25 ppm at the perimeter of the work area, activities must be shutdown. When work shutdown occurs, downwind air monitoring as directed by the Safety Officer will be implemented to evaluate if the vapor emission levels exceed those specified in Section 2.4, Major Vapor Emission Response Plan.

2.5 Major Vapor Emission Response Plan

If total organic vapor levels greater than 5 ppm over background are identified 200 ft. downwind from the work area or <u>half the distance to the nearest residential or commercial structure</u>, whichever is less, all work activities must be halted.

If, following the cessation of the work activities, or as the result of an emergency, total organic vapor levels greater than 5 ppm above background persist 200 ft. downwind or <u>half the distance to the nearest residential or commercial structure</u>, then the air quality must be monitored within 20 ft. of the perimeter of the nearest residential or commercial structure (20-foot zone).

If efforts to abate the emission source area are unsuccessful and if the organic vapor levels continue to persist at or near 5 ppm above background for more than 30 minutes in the 20-foot zone, then the Major Vapor Emission Response Plan shall automatically be placed into effect.

The Major Vapor Emission Response Plan shall also be immediately placed into effect if organic vapor levels are greater than 10 ppm above background at the 20-foot zone.

Upon activation, the following activities will be undertaken:

1. All Site work activities will cease.

2. All Emergency Response Contacts, including the NYSDEC and NYSDOH Site representatives, as listed in the Health and Safety Plan will be contacted.
3. The local police authorities will immediately be contacted by the Safety Officer and advised of the situation. Evacuation or neighborhood notification plans can be discussed at that time.
4. Air monitoring will be conducted at 15-minute intervals within the 20-foot Zone. If two successive readings below action levels are measured, air monitoring may be halted or modified by the Safety Officer.

3.0 Record Keeping and Quality Control

For the duration of the field activities, a monitoring log book will be kept to record calibration, operational notes and monitoring readings. All readings must be recorded and available for State review. Instantaneous readings, if any, used for decision purposes should also be recorded. The results of the Community Air Monitoring Program will be incorporated by Bergmann into all required reports.

Instrumentation will be calibrated and/or operationally checked, either daily or at intervals recommended by the manufacturer. Only approved calibration gases will be used. All operators will have been trained in the proper use, maintenance, limitation, and interpretation of results of the monitoring equipment. A copy of the Daily Community Air Monitoring Log is included as Attachment 1 of this Community Air Monitoring Plan.

Exhibit A

NYSDOH Generic Community Air Monitoring Plan

New York State Department of Health
Generic Community Air Monitoring Plan

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

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

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

Communitv Air Monitoring Plan

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

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

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

VOC Monitoring, Response Levels, and Actions

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

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

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

- If the organic vapor level is above 25 ppm at the perimeter of the work area, activities must be shutdown. All 15-minute readings must be recorded and be available for State (DEC and DOH) personnel to review. Instantaneous readings, if any, used for decision purposes should also be recorded.

<u>Particulate monitoring, Response Levels, and Actions</u>

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

- If the downwind PM-I0 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-I0 particulate levels do not exceed 150 mcg/m^3 of the upwind level and provided that no visible dust is migrating from the work area.

- If, after implementation of dust suppression techniques, downwind PM-10 particulate levels are greater than 150 mcg/m^3 of 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 concentrations to within 150 mcg/m^3 of the upwind level, and in preventing visible dust migration.

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

Special Requirements for Work Within 20 Feet of potentially Exposed Individuals or Structures

When work areas are within 20 feet of potentially exposed populations or occupied structures, the continuous monitoring locations for VOCs and particulates must reflect the nearest potentially exposed individuals and the location of ventilation system intakes for nearby structures. The use of engineering controls such as vapor dust barriers, temporary negative-pressure enclosures, or special ventilation devices should be considered to prevent exposures related to the work activities and to control dust and odors. Consideration should be given to implementing the planned activities when potentially exposed populations are at a minimum, such as during weekends or evening hours in non-residential settings.

- If total VOC concentrations opposite the walls of occupied structures or next to intake vents exceed I ppm, monitoring should occur within the occupied structure(s). Depending upon the nature of contamination, chemical-specific colorimetric tubes of sufficient sensitivity may be necessary for comparing the exposure point concentrations with appropriate pre-determined response levels (response actions should also he predetermined). Background readings in the occupied spaces must be taken prior to commencement of the planned work. Any unusual background readings should he discussed with NYSDOH prior to commencement of the work.

- If total particulate concentrations opposite the walls of occupied structures or next to intake vents exceed 150 mcg/m3, work activities should he suspended until controls are implemented and are successful in reducing the total particulate concentration to 150 mcg/m3 or less at the monitoring point.

- Depending upon the nature of contamination and remedial activities, other parameters (e.g., explosivity, oxygen, hydrogen sulfide, carbon monoxide) may also need to be monitored, Response levels and actions should be pre-determined, as necessary, for each site.

Special Requirements for Indoor Work With Co-Located Residences or Facilities

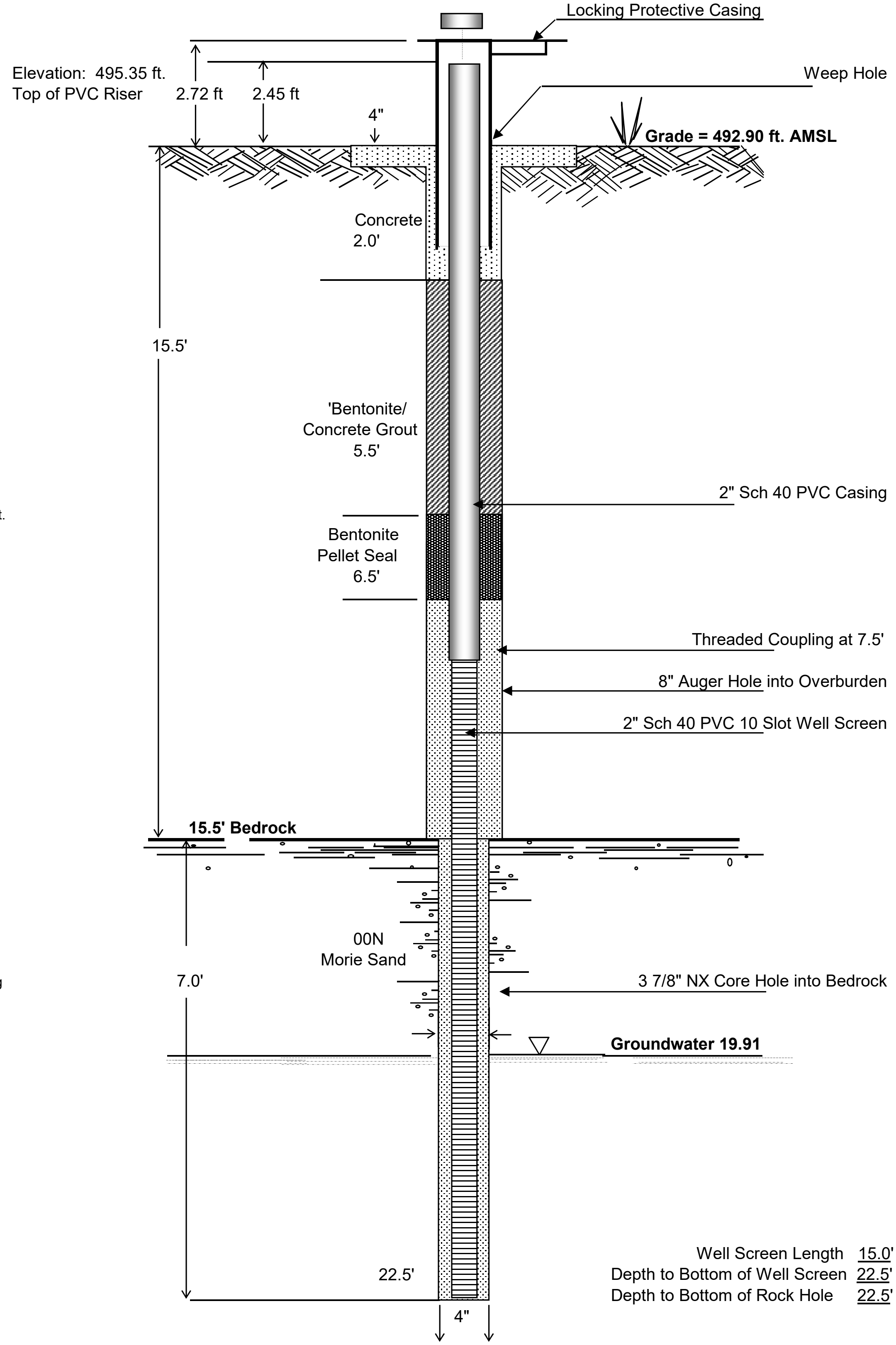
Unless a self-contained, negative-pressure enclosure with proper emission controls will encompass the work area, all individuals not directly involved with the planned work must be absent from the room in which the work will occur. Monitoring requirements shall he as stated above under "Special Requirements for Work Within 20 Feet of Potentially Exposed Individuals or Structures" except that in this instance "nearby1 occupied structures" would he adjacent occupied rooms. Additionally, the location of all exhaust vents in the room and their discharge points, as well as potential vapor pathways (openings, conduits, etc.) relative to adjoining rooms, should be understood and the monitoring locations established accordingly. In these situations, it is strongly recommended that exhaust fans or other engineering controls he used to create negative air pressure within the work area during remedial activities. Additionally, it is strongly recommended that the planned work be implemented during hours (e.g. weekends or evenings) when building occupancy is at a minimum.

Exhibit B

Community Air Monitoring Daily Log

APPENDIX 10
BORING LOGS & WELL CONSTRUCTION LOGS

STICKUP MONITORING WELL
MW-1



Profile Description

2.0' to 4.0'
Brown sandy silty Clay
no gravel, homogenous,
moist.

4.0' to 6.0'
sandy Clay.
rock in the end of spoon.

6.0' to 8.0'
Brown sandy silty Clay,
trace gravel, moist.

8.0' to 10.0'
Brown sandy Clay,
trace gravel some silt, wet.

10.0' to 12.0'
Brown sandy Clay,
trace gravel, wet.

12.0' to 14.0'
Brown sandy Clay,
trace gravel,wet.
Some Discoloration.

14.0' to 15.5'
Some clay, silt, gravel
and wet.
Discoloration.

15.5; to 18.0'
Decent Core sample.
Little verticle fracturing.

18.0' to 20.0'
Some horizontal fracturing

Core Recovery
76"/84"=90%

RQD
51.75"/84"=62%

20.0' to 22.5'
Smooth surfaced
laminated bedding
medium hard rock.

Bottom of Core at 22.5'.

NOT TO SCALE

BERGMANN associates

1200 East Main Street
City of Rochester, Monroe County, NY

OVERBURDEN / BEDROCK INTERFACE
MW-1 MONITORING WELL CONSTRUCTION

Date Installed 6-Jul-00
Figure Well MW-1

STICKUP MONITORING WELL
MW-2

Profile Description

2.0' to 4.0'
sandy Silt, with
cobbles.
No odor or staining.

4.0' to 6.0'
silty Sand.
No odor or staining.

6.0' to 8.0'
Sandy material
No odor or staining.

8.0' to 10.0'
Sand, with gravel, wet.
No odor or staining.

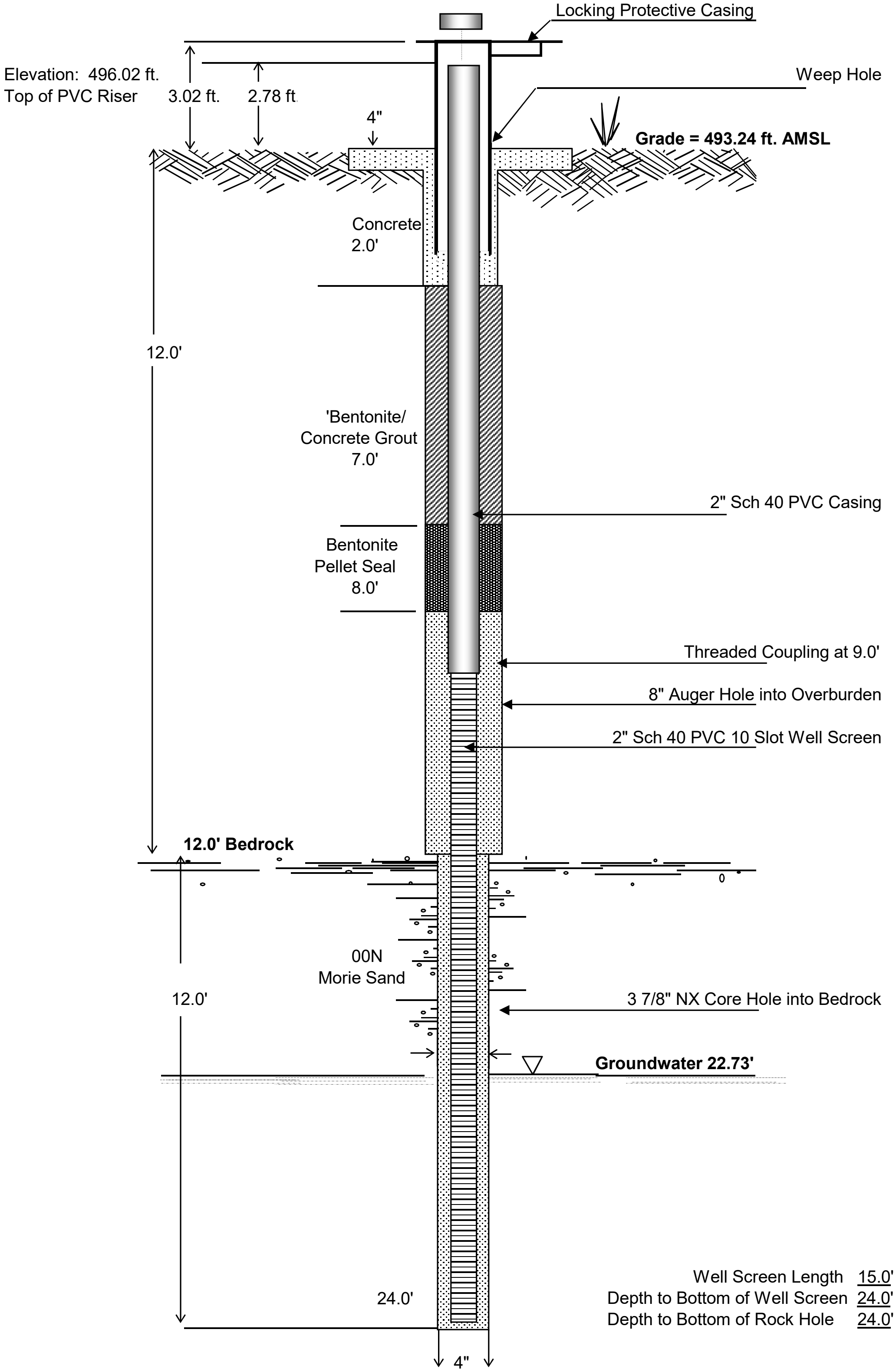
10.0' to 12.0'
Sand, with gravel, wet.

12.0' to 24.0'
No visible signs of
weekness or deteriation.
Except in the 17.9' to 18.0'
range, rock is crumbled.

No visible signs of verticle
stressing or cracking.

Core shows no signs of
discoloration.

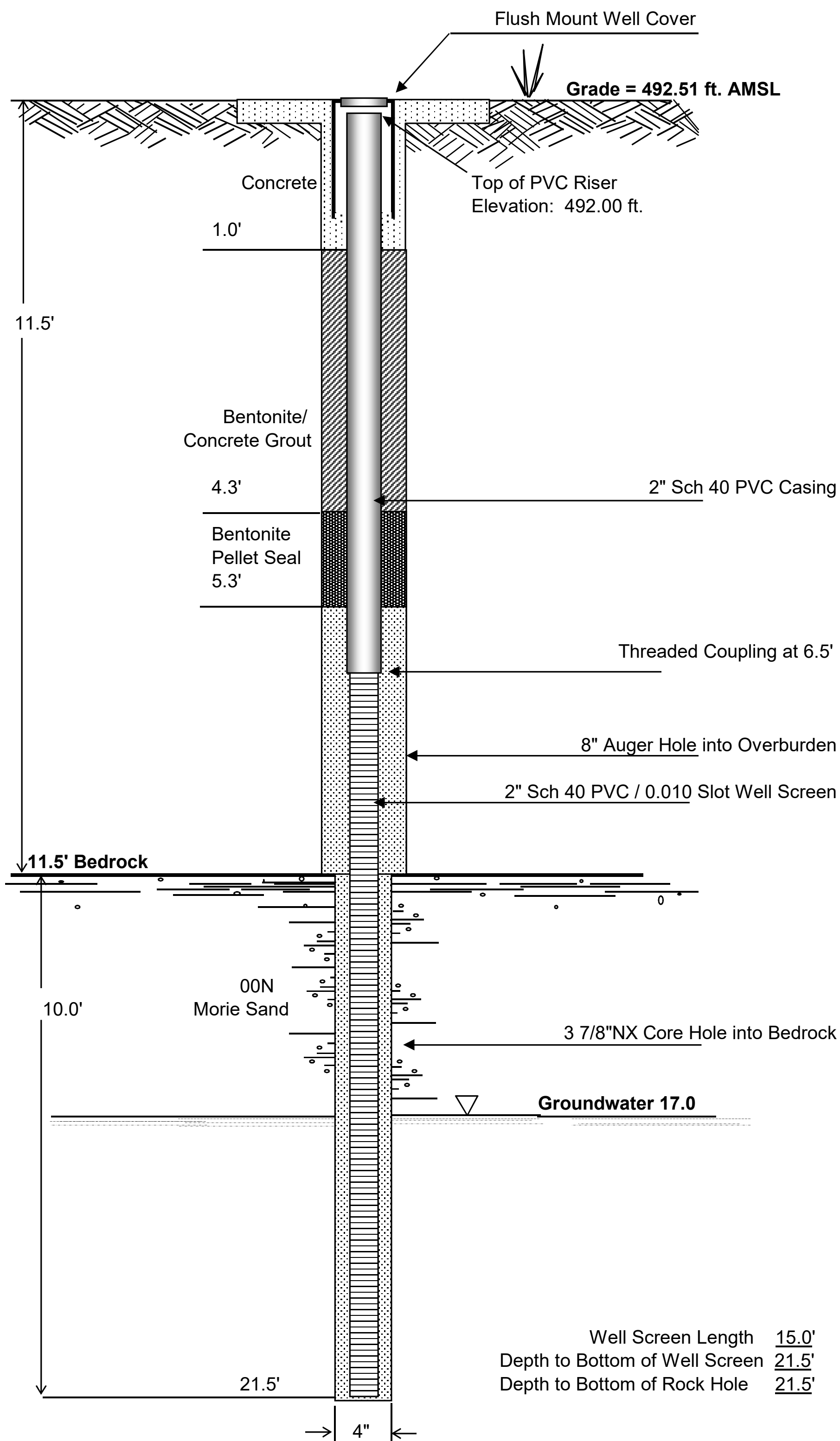
Bottom of core at 24.0'.



NOT TO SCALE

BERGMANN associates	**1200 East Main Street** **City of Rochester, Monroe County, NY** **OVERBURDEN / BEDROCK INTERFACE** **MW-2 MONITORING WELL CONSTRUCTION**	**Date Installed** **7-Jul-00** **Figure** **Well MW-2**

FLUSHMOUNT MONITORING WELL
MW-4



Profile Description

2.0' to 13.0'
Brown mostly sandy Silt,
trace gravel. Moist.
Homogenous to interface.

11.5' to 17.5'
Poor rock
Much vertical fracturing.
Horizontal fracturing.

Core Recovery
109"/120"=90%

RQD
52.5"/120"=44%

17.5' to 21.5'
Smooth surfaced
laminated bedding
medium hard rock.

Bottom of core at 21.5'

NOT TO SCALE

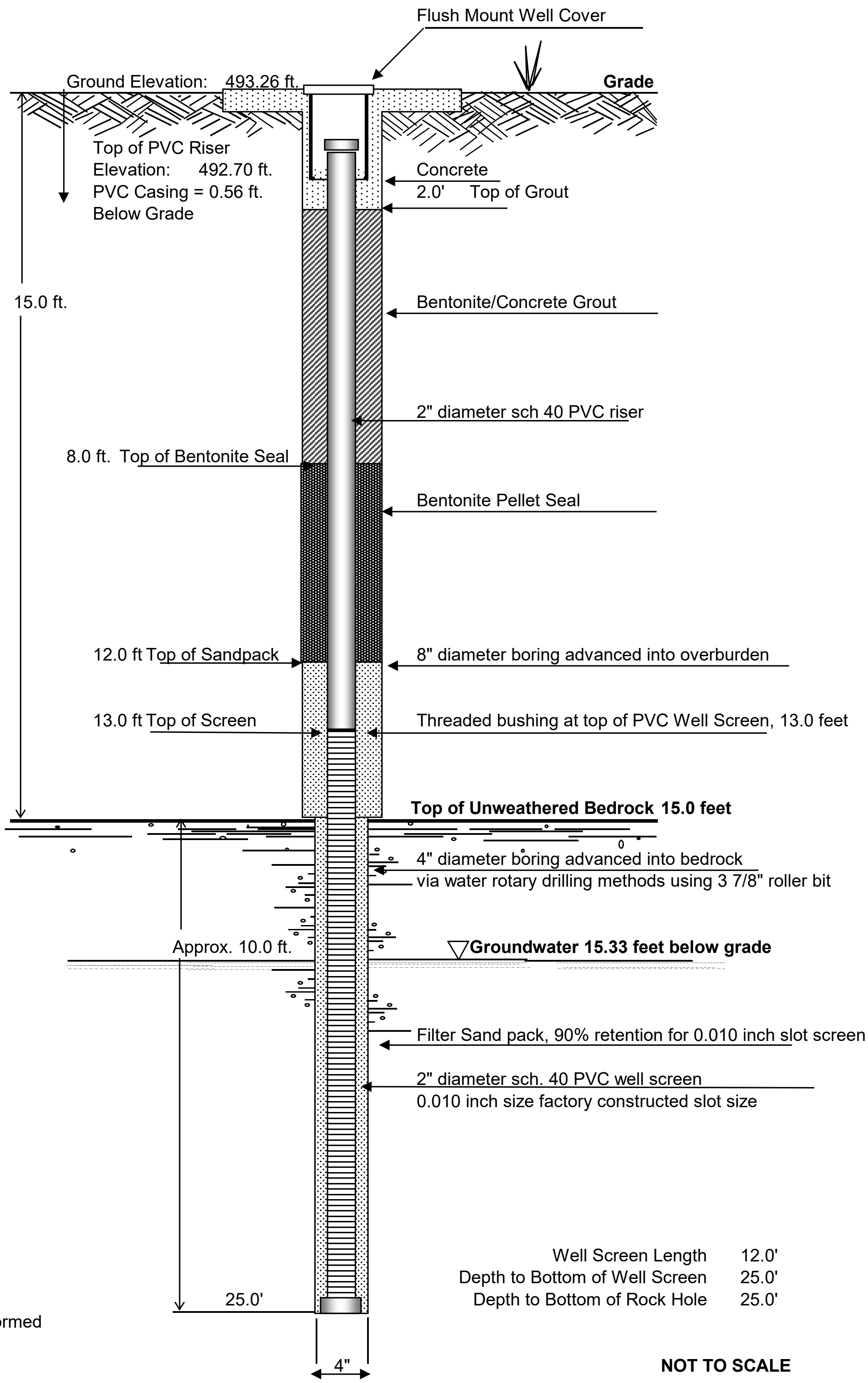
BERGMANN associates

1200 East Main Street
City of Rochester, Monroe County, NY

OVERBURDEN / BEDROCK INTERFACE
MW-4 MONITORING WELL CONSTRUCTION

Date: 12-Jul-00
Figure: Well MW-4

MONITORING WELL MW-5



Advanced boring into bedrock
using tri-cone roller bit. No coring performed

Well Screen Length	12.0'
Depth to Bottom of Well Screen	25.0'
Depth to Bottom of Rock Hole	25.0'

NOT TO SCALE

BERGMANN associates

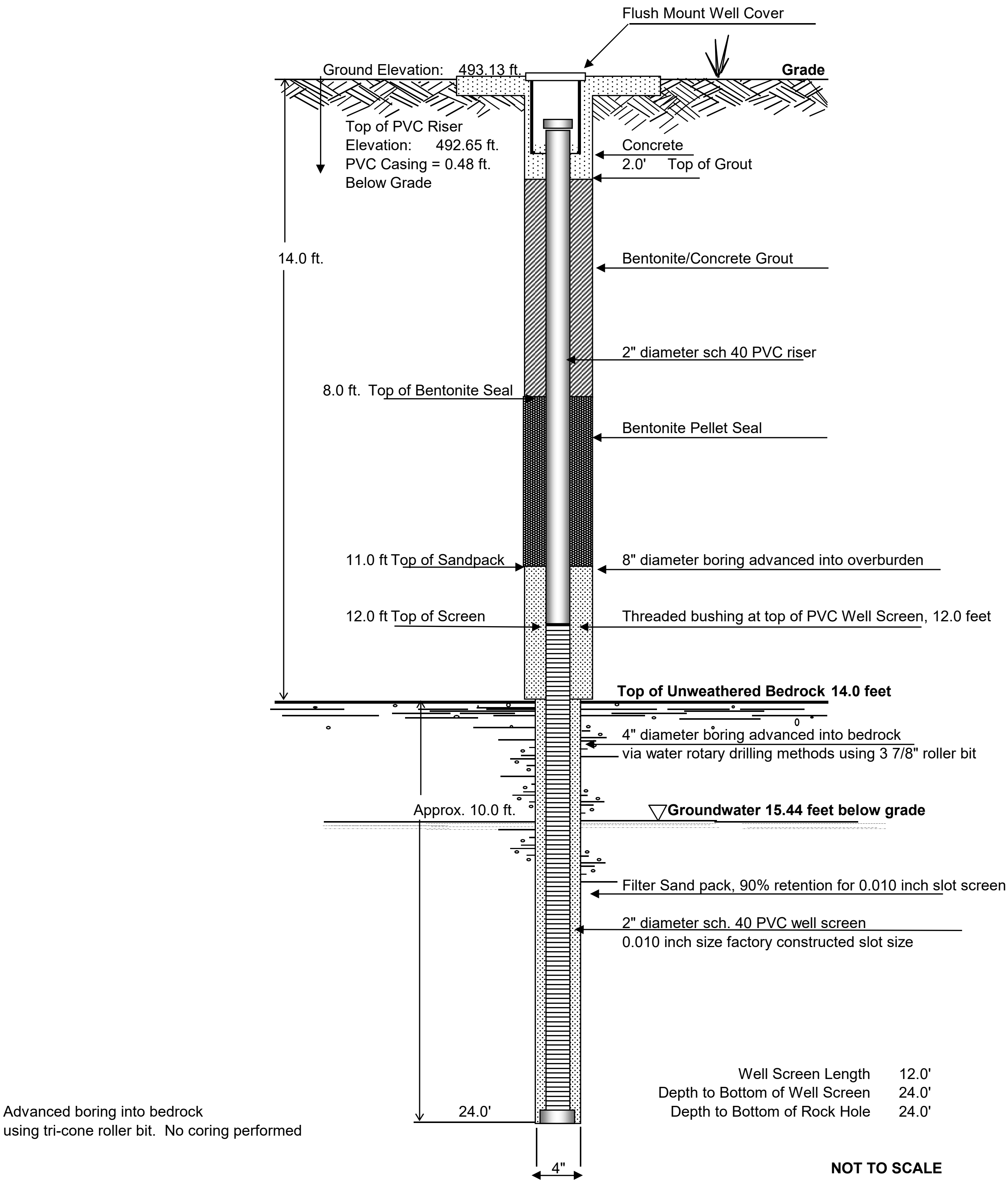
1200 East Main Street
City of Rochester, Monroe County, New York
Supplemental Site Investigation

MW-5 MONITORING WELL CONSTRUCTION

Date Installed: 1-Aug-03

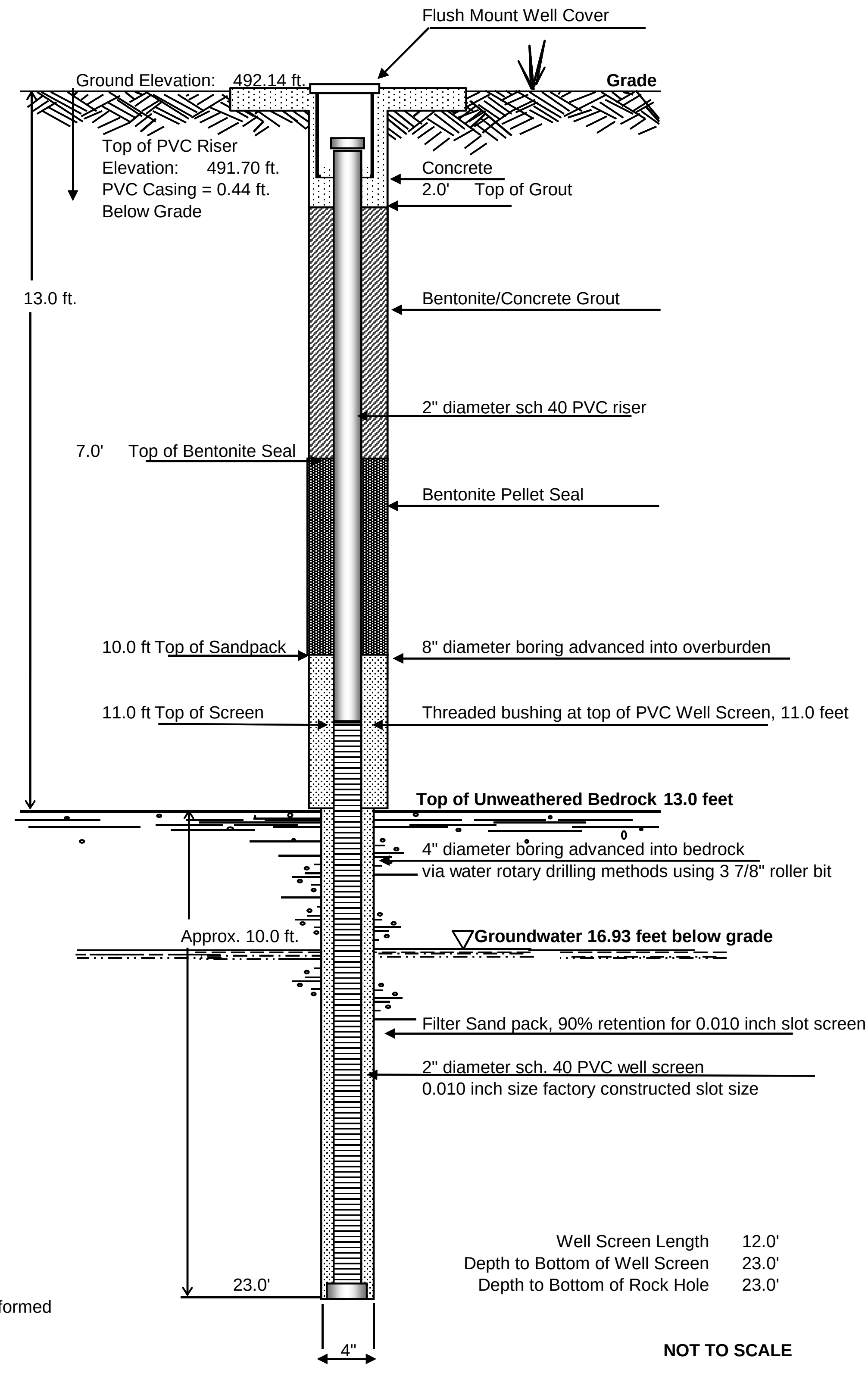
Figure: Well MW-5

MONITORING WELL MW-6



BERGMANN associates	1200 East Main Street City of Rochester, Monroe County, New York Supplemental Site Investigation MW-6 MONITORING WELL CONSTRUCTION	Date Installed 30-Jul-03 Figure Well MW-6

MONITORING WELL MW-7

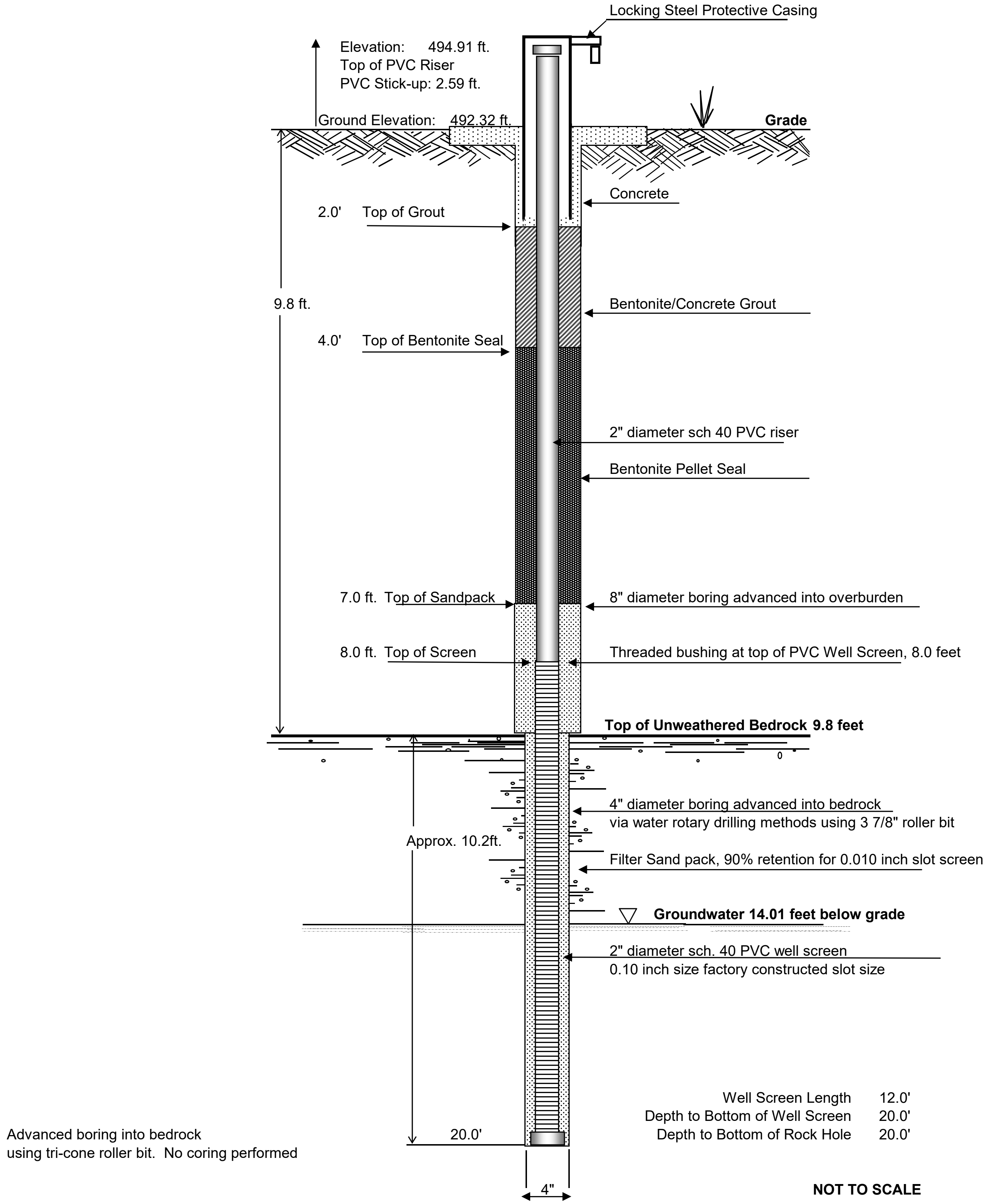


Advanced boring into bedrock
using tri-cone roller bit. No coring performed

NOT TO SCALE

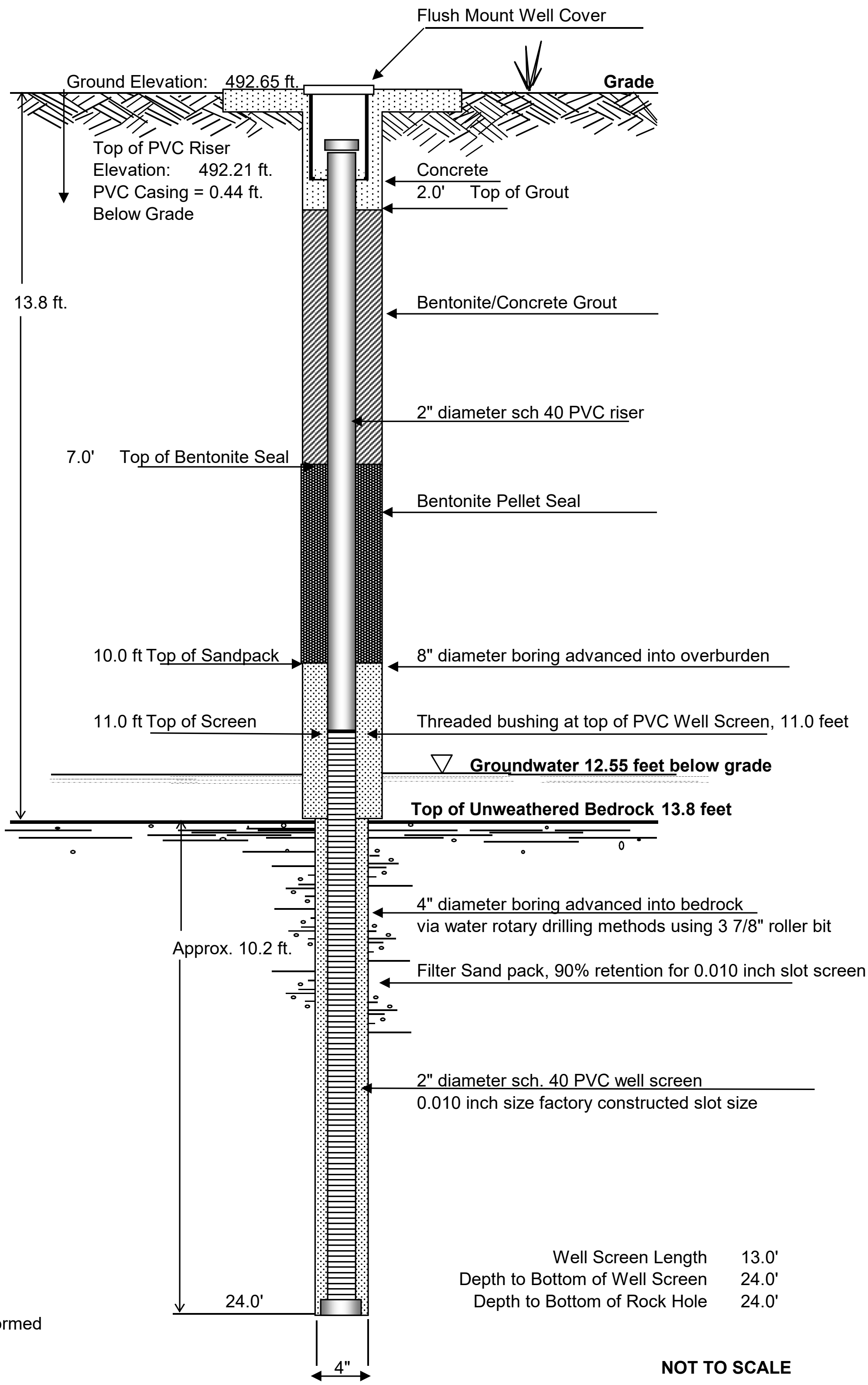
BERGMANN associates	**1200 East Main Street** **City of Rochester, Monroe County, New York** **Supplemental Site Investigation** **MW-7 MONITORING WELL CONSTRUCTION**	**Date Installed** **28-Jul-03** **Figure** **Well MW-7**

MONITORING WELL MW-8



BERGMANN associates	**1200 East Main Street** **City of Rochester, Monroe County, New York** **Supplemental Site Investigation** **MW-8 MONITORING WELL CONSTRUCTION**	**Date Installed** **25-Jul-03** **Figure** **Well MW-8**

MONITORING WELL MW-9



Well Screen Length	13.0'
Depth to Bottom of Well Screen	24.0'
Depth to Bottom of Rock Hole	24.0'

Advanced boring into bedrock
using tri-cone roller bit. No coring performed

NOT TO SCALE

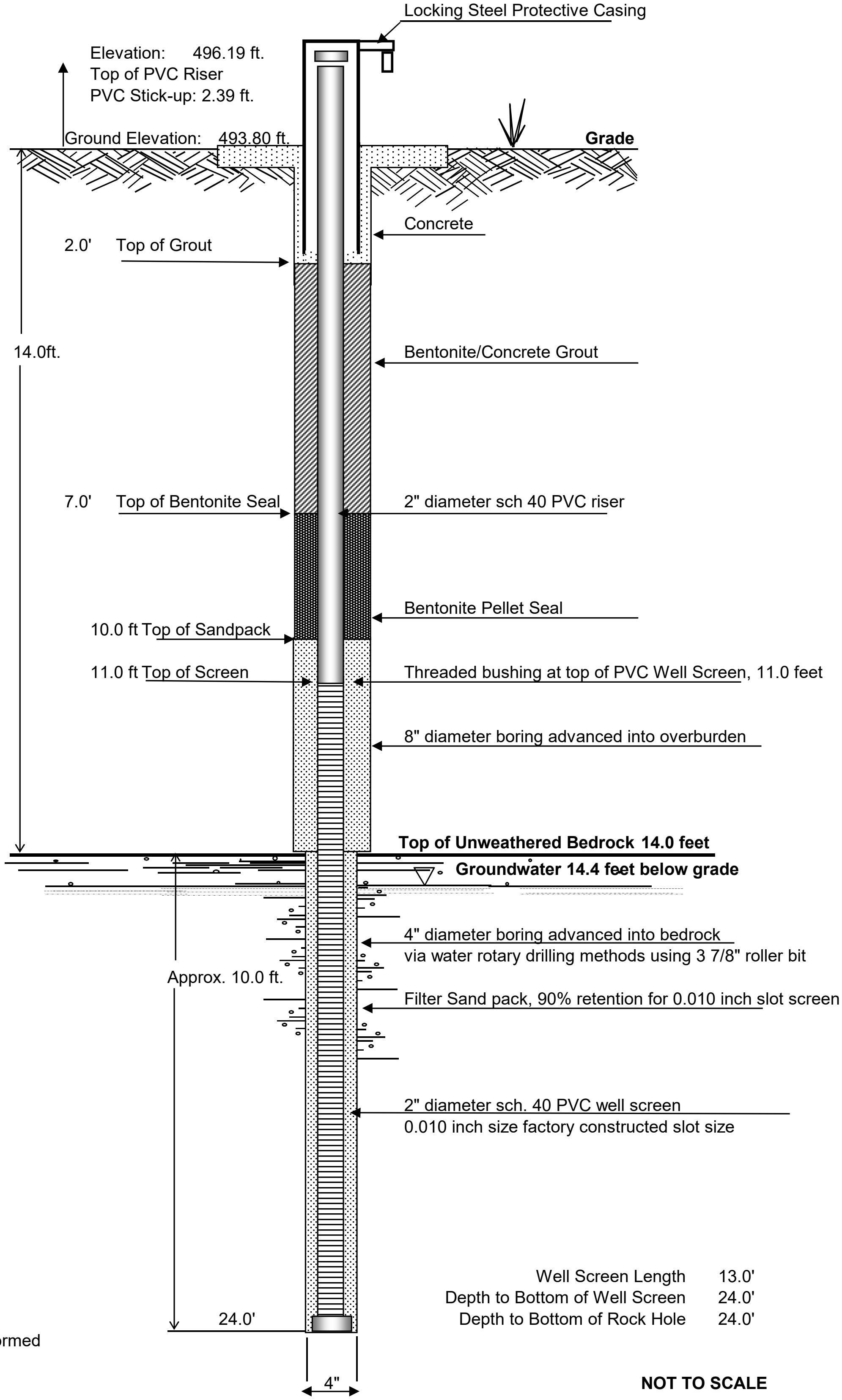
BERGMANN associates

1200 East Main Street
City of Rochester, Monroe County, New York
Supplemental Site Investigation

MW-9 MONITORING WELL CONSTRUCTION

Date Installed	24-Jul-03
Figure	Well MW-9

MONITORING WELL MW-10



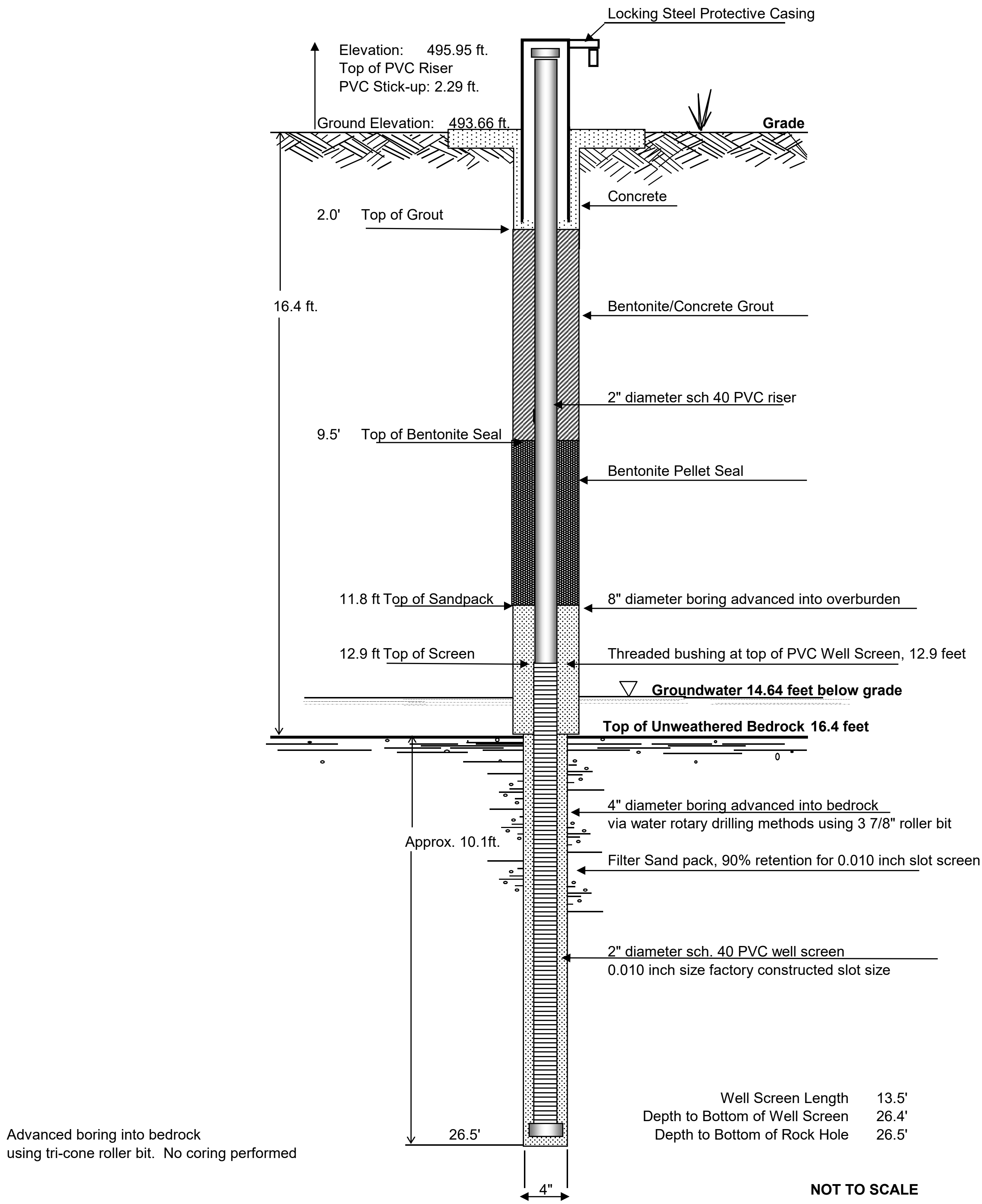
Well Screen Length 13.0'
Depth to Bottom of Well Screen 24.0'
Depth to Bottom of Rock Hole 24.0'

Advanced boring into bedrock
using tri-cone roller bit. No coring performed

NOT TO SCALE

BERGMANN associates	**1200 East Main Street** **City of Rochester, Monroe County, New York** **Supplemental Site Investigation** **MW-10 MONITORING WELL CONSTRUCTION**	**Date Installed** 22-Jul-03 **Figure** **Well MW-10**

MONITORING WELL MW-11



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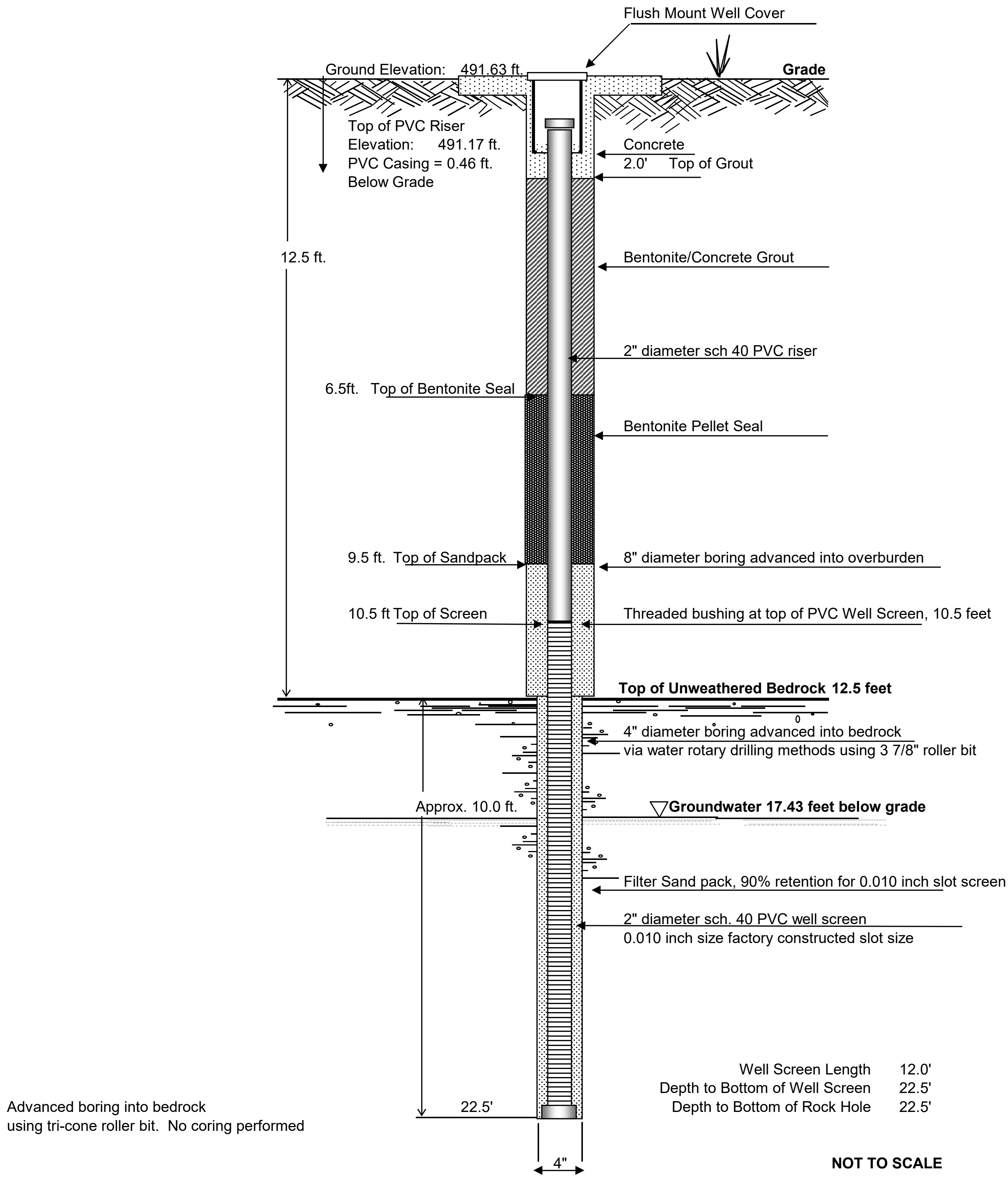
1200 East Main Street
City of Rochester, Monroe County, New York
Supplemental Site Investigation

MW-11 MONITORING WELL CONSTRUCTION

Date Installed
23-Jul-03

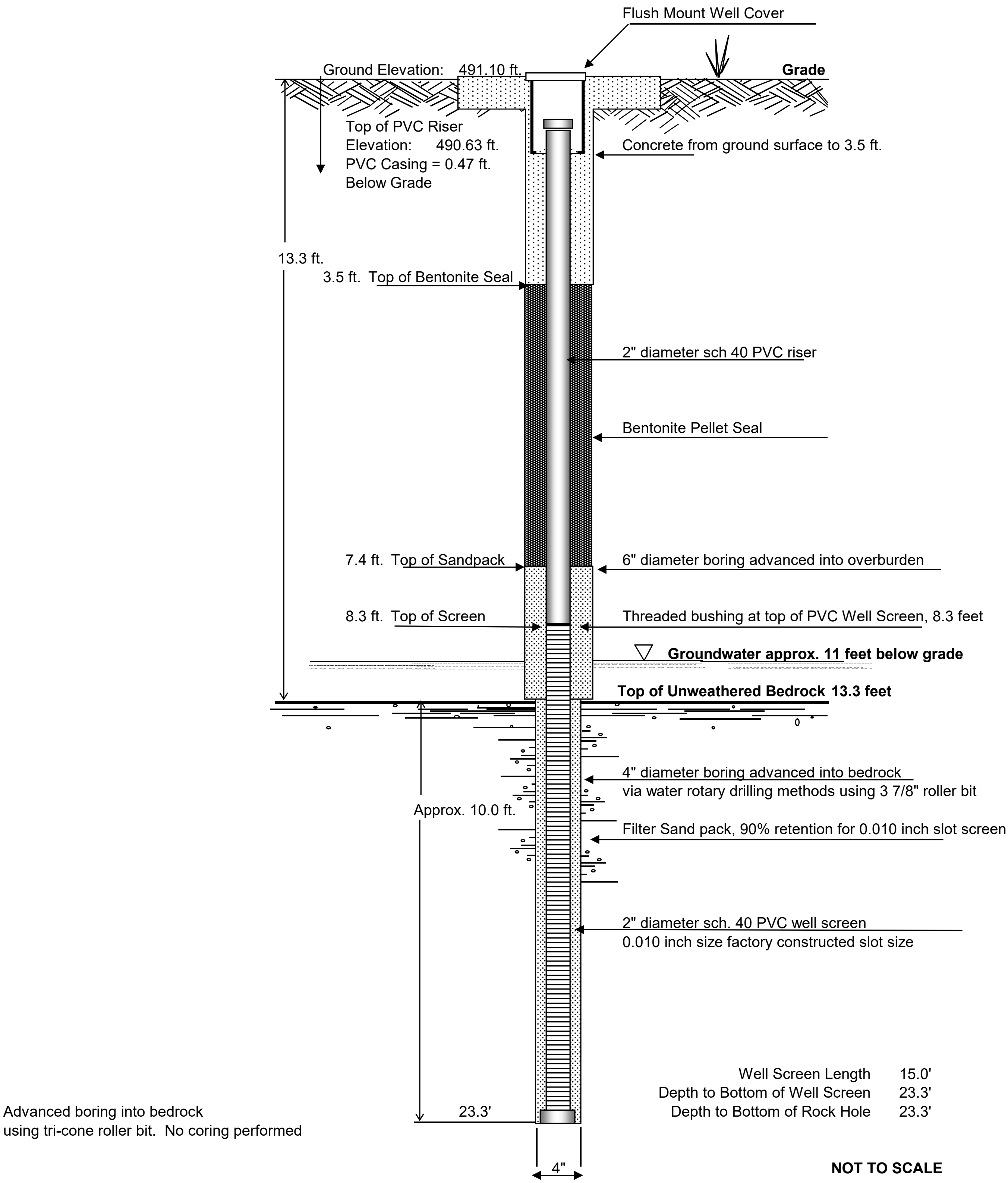
Figure
Well MW-11

MONITORING WELL MW-12



BERGMANN associates	**1200 East Main Street** **City of Rochester, Monroe County, New York** **Supplemental Site Investigation** **MW-12 MONITORING WELL CONSTRUCTION**	**Date Installed** 29-Jul-03 **Figure** **Well MW-12**

MONITORING WELL MW-13



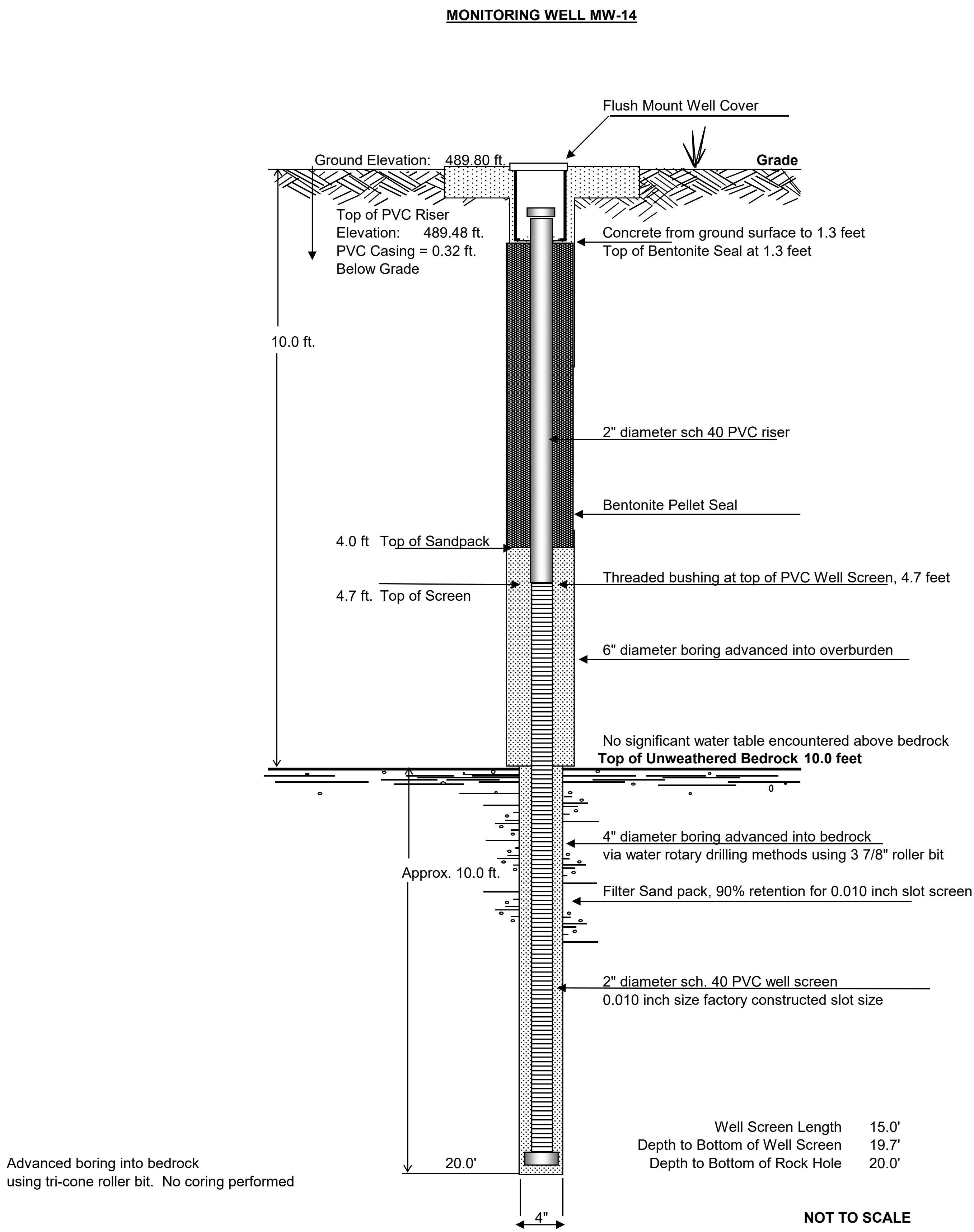
BERGMANN associates

1200 East Main Street
City of Rochester, Monroe County, New York
Supplemental Site Investigation

MW-13 MONITORING WELL CONSTRUCTION

Date Installed
26-May-04

Figure
Well MW-13



BERGMANN associates	**1200 East Main Street** **City of Rochester, Monroe County, New York** **Supplemental Site Investigation** **MW-14 MONITORING WELL CONSTRUCTION**	**Date Installed** 27-May-04 **Figure** Well MW-14

DRILLING LOG

BERGMANN associates

BORING/WELL NUMBER: **Monitoring Well MW-5**

PROJECT: 1200 East Main Street Rochester, NY Project No: 4453.02 Page No. 1 of 1
Start Date: 07/31/2003 Finish Date: 08/01/2003 Top of Well: N/A Boring No: MW-5
Driller: Joe Gardner, Buffalo Drilling Boring Location: In front of house at 1216 East Main Street
Inspector: Edward Jones, Bergmann Associates Water Level (During Drilling): Not encountered above bedrock
Drilling Method: 4-1/4 inch HAS Augers, Mobil B-61 truck rig Water Level (Post Drilling): Approximately 15.39 feet below grade
Remarks: Advanced test borings via Hollow Stem Augers. Monitoring well installed through augers via pull back method.
Screened Interval: 25.0 ft. to 13.0 ft. Slot Size: 0.010 inch Well Type: 2" dia. PVC Sandpack: 25.0 ft to 12.0 ft
Seal: 12.0 feet to 8.0 feet Weather Conditions: Sunny, 72 degrees in the morning
Flush to grade roadway box installed over the monitoring well.

DEPTH	BLOWS ON SAMPLER				SAMPLE					SOIL AND ROCK INFORMATION	Field Screening for VOCs, ppm, using PID
0	0"/6"	6"/12"	12"/18"	18"/24"	N	NO.	Depth	Type	Recovery		
	-	5			9	1	0-2'	soil	42%	Concrete sidewalk surface, fill to 1.0-	ND
			4	4						Damp Br. F. SAND and Silt, tr. Gravel	
	4	3			6	2	2'-4'	soil	67%	V. Moist Br. Loost F. SAND	ND
			3	5						and Silt, Some Gravel	
5	4	10			24	3	4'-6'	soil	71%	Damp Br. M. Dense F SAND	ND
			14	14						and Silt, Some Gravel	
	27	22			52	4	6'-8'	soil	88%	Damp Br. V. Dense F SAND and Silt	ND
			30	25						Some Gravel	
	12	16			25	5	8'-10'	soil	92%	Same, M. Dense, V. Moist at 10'	ND
10			9	19							
	16	24			48	6	10'-12'	soil	63%	Moist Dense F-M SAND, Some Silt,	ND
			24	28						Some Gravel	
	19	18			40	7	12'-14'	soil	50%	Same, M. Dense, moist	ND
			22	20							
15	47	50/5"			50+	8	14'-16'	soil	83%	Damp Br. Dense F-M SAND and Gravel	ND
										some Silt. Rock in split spoon 15'	
										Auger refusal at 15'. Inferred as bedrock	
										Spun casing into bedrock, to 15.0 ft.	
20										Advanced boring through bedrock	
										using 3 7/8" diameter roller bit.	
										No rock core samples collected.	
										Rock cuttings consist of	
										fine grained grey limestone.	
25										25'	
										Boring terminated at 25 feet	
										2" dia. monitoring well installed in boring	
											H NU PID with
30											10.6 ev lamp

N=No. of Blows to Drive 2" Spoon 12" with 140 lb wt. Hammer 30" Each Blow

DRILLING LOG

BERGMANN associates

BORING/WELL NUMBER: Monitoring Well MW-6

PROJECT: 1200 East Main Street Rochester, NY Project No: 4453.02 Page No. 1 of 1
Start Date: 07/30/2003 Finish Date: 07/30/2003 Top of Well: N/A Boring No: MW-6
Driller: Joe Gardner, Buffalo Drilling Boring Location: In the backyard of the house at 1216 East Main St.
Inspector: James marscher, Bergmann Associates Water Level (During Drilling): Not encountered above bedrock
Drilling Method: 4-1/4 inch HAS Augers, Mobil B-61 truck rig Water Level (Post Drilling): Approximately 15.4 feet below grade
Remarks: Advanced test borings via Hollow Stem Augers. Monitoring well installed through augers via pull back method.
Screened Interval: 24.0 ft. to 14.0 ft. Slot Size: 0.010 inch Well Type: 2" dia. PVC Sandpack: 24.0 ft to 11.0 ft
Seal: 11.0 feet to 8.0 feet Weather Conditions: Sunny, upper 70s, lower 80s
Flush to grade roadway box installed over the monitoring well.

DEPTH	BLOWS ON SAMPLER				SAMPLE					SOIL AND ROCK INFORMATION	Field Screening for VOCs, ppm, using PID
0	0"/6"	6"/12"	12"/18"	18"/24"	N	NO.	Depth	Type	Recovery		
	3	9			22	1	0-2'	soil	38%	Brown Damp V. Stiff SILT with F. Sand	ND
			13	17						with Gravel	
	14	19			38	2	2'-4'	soil	71%	Same, becomes Hard	ND
			19	22							
5	20	20			43	3	4'-6'	soil	50%	Same, Hard	ND
			23	16							
30	30	50/5"			50+	4	6'-8'	soil	91%	Same, becomes Very Hard	ND
	18	20			48	5	8'-10'	soil	88%	Damp Brown Hard SILT, Some Gravel	ND
10			28	18						with F. Sand	
	15	17			36	6	10'-12'	soil	50%	Same, Moist	ND
			19	20							
	11	17				67+	12'-14'	soil	25%	Br Moist V. Hard Silt with Gravel	ND
			50/4"							Trace F. Sand. Auger refusal 14' 14.0'	
15						8	14'-16'	soil	83%		ND
										Auger refusal at 14'. Inferred as bedrock	
										Advanced boring through bedrock	
20										using 3 7/8" diameter roller bit.	
										No rock core samples collected.	
										Rock cuttings consist of	
										fine grained grey limestone.	
										24'	
25											
										Boring terminated at 24 feet	
										2" dia. monitoring well installed in boring	
											H NU PID with
30											10.6 ev lamp

N=No. of Blows to Drive 2" Spoon 12" with 140 lb wt. Hammer 30" Each Blow

DRILLING LOG

BERGMANN associates

BORING/WELL NUMBER: **Monitoring Well MW-7**

PROJECT: 1200 East Main Street Rochester, NY Project No: 4453.02 Page No. 1 of 1
Start Date: 07/28/2003 Finish Date: 07/28/2003 Top of Well: N/A Boring No: MW-7
Driller: Joe Gardner, Buffalo Drilling Boring Location: at 1200 East. Main St., along south propery line
Inspector: James Marschner, Bergmann Associates Water Level (During Drilling): Not encountered above bedrock
Drilling Method: 4-1/4 inch HAS Augers, Mobil B-61 truck rig Water Level (Post Drilling): Approximately 16.9 feet below grade
Remarks: Advanced test borings via Hollow Stem Augers. Monitoring well installed through augers via pull back method.
Screened Interval: 23.0 ft. to 11.0 ft. Slot Size: 0.010 inch Well Type: 2" dia. PVC Sandpack: 23.0 ft to 10.0 ft
Seal: 10.0 feet to 7.0 feet Weather Conditions: Sunny, mid-70 degrees
Flush to grade roadway box installed over the monitoring well.

DEPTH	BLOWS ON SAMPLER				SAMPLE					SOIL AND ROCK INFORMATION	Field Screening for VOCs, ppm, using PID
0	0"/6"	6"/12"	12"/18"	18"/24"	N	NO.	Depth	Type	Recovery		
	-	4			12	1	0-2'	soil	N/A	Concrete surface	ND
			8	32						Brown Moist Stiff SILT, Trace F. Sand	
	1	1			3	2	2'-4'	soil	N/A	Same to 2.4', then	0.9 ppm
			2	3						BR-Gray Moist Soft SILT, Trance F. Sand	petroleum odor
5	1	7			18	3	4'-6'	soil	N/A	Same, becomes V. Stiff, petroleum odor	23.3 ppm
			11	50/2"							petroleum odor
30	12	14			27	4	6'-8'	soil	67%	Brown moist V. Stiff SILT with F. Sand	48.1 ppm
			13	13						and Gravel	
	12	14			27	5	8'-10'	soil	71%	Same, Very Stiff, Moist	131 ppm
10			13	13							petroleum odor
	8	10			19	6	10'-12'	soil	79%	Same, Very Stiff, Moist	137 ppm
			9	7							petroleum odor
	7	50/3"					12'-14'	soil	100%	Same, Hard more gravel present 13'	166 ppm
										Auger refusal at 13.0' inferred as bedrock	petroleum odor
15						8	14'-16'	soil	83%		
										Spun casing into bedrock, to 13.0 ft.	
										Advanced boring through bedrock	
										using 3 7/8" diameter roller bit.	
										No rock core samples collected.	
20										Rock cuttings consist of	
										fine grained grey limestone.	
										23'	
25										Boring terminated at 23.0 feet	
										2" dia. monitoring well installed in boring	
											H NU PID with
30											10.6 ev lamp

N=No. of Blows to Drive 2" Spoon 12" with 140 lb wt. Hammer 30" Each Blow

DRILLING LOG

BERGMANN associates

BORING/WELL NUMBER: **Monitoring Well MW-8**

PROJECT: 1200 East Main Street Rochester, NY — Project No: 4453.02 — Page No. 1 of 1

Start Date: 07/25/2003 — Finish Date: 07/25/2003 — Top of Well: N/A — Boring No: MW-8

Driller: Joe Gardner, Buffalo Drilling — Boring Location: at 1200 East. Main St., southwest corner by fence.

Inspector: James Marschner, Bergmann Associates — Water Level (During Drilling): Not encountered above bedrock

Drilling Method: 4-1/4 inch HAS Augers, Mobil B-61 truck rig — Water Level (Post Drilling): Approximately 14.0 feet below grade

Remarks: Advanced test borings via Hollow Stem Augers. Monitoring well installed through augers via pull back method.

Screened Interval: 20.0 ft. to 8.0 ft. — Slot Size: 0.010 inch — Well Type: 2" dia. PVC — Sandpack: 20.0 ft to 7.0 ft

Seal: 7.0 feet to 4.0 feet — Weather Conditions: Sunny, upper 60s in the morning

Protective Steel Casing installed over the monitoring well.

DEPTH	BLOWS ON SAMPLER				SAMPLE					SOIL AND ROCK INFORMATION	Field Screening for VOCs, ppm, using PID
0	0"/6"	6"/12"	12"/18"	18"/24"	N	NO.	Depth	Type	Recovery		
	7	15			26	1	0-2'	soil	58%	Grass surface, Brown Damp Hard SILT	ND
			11	4						with Gravel, Trace F. Sand	
	3	5			10	2	2'-4'	soil	75%	Same to 2.9 feet	ND
			5	8						Brown Moist Stiff SILT with Clay, Tr. Sand	
5	10	12			26	3	4'-6'	soil	8%	Same, becomes Very Stiff	ND
			14	14							
30	14	12			24	4	6'-8'	soil	71%	Same to 7.1 feet	ND
			12	9						Br. Moist F. SAND, Trace Silt	
	7	9			23	5	8'-10'	soil	62%	Brown Wet M. Dense SAND & Silt,	ND
10			14	50/3"						Trace Gravel 9.8'	
	50/0"				0	6	10'-12'	soil	0%		
										Auger refusal at 9.8' inferred as bedrock	
										Spun casing into bedrock, to 10.0 ft.	
15										Advanced boring through bedrock	
										using 3 7/8" diameter roller bit.	
										No rock core samples collected.	
										Rock cuttings consist of	
										fine grained grey limestone.	
20										20'	
										Boring terminated at 20.0 feet	
										2" dia. monitoring well installed in boring	
25											
											H NU PID with
30											10.6 ev lamp

N=No. of Blows to Drive 2" Spoon 12" with 140 lb wt. Hammer 30" Each Blow

DRILLING LOG

BERGMANN associates

BORING/WELL NUMBER: Monitoring Well MW-9

PROJECT: 1200 East Main Street Rochester, NY   Project No: 4453.02   Page No. 1 of 1
Start Date: 07/24/2003   Finish Date: 07/24/2003   Top of Well: N/A   Boring No: MW-9
Driller: Joe Gardner, Buffalo Drilling   Boring Location: at 1200 East. Main St., center of old parking lot.
Inspector: James Marschner, Bergmann Associates   Water Level (During Drilling): Aproximately 13.5 feet below grade
Drilling Method: 4-1/4 inch HAS Augers, Mobil B-61 truck rig   Water Level (Post Drilling): Approximately 12.5 feet below grade
Remarks: Advanced test borings via Hollow Stem Augers. Monitoring well installed through augers via pull back method.
Screened Interval: 24.0 ft. to 11.0 ft.   Slot Size: 0.010 inch   Well Type: 2" dia. PVC   Sandpack: 24.0 ft to 10.0 ft
Seal: 10.0 feet to 7.0 feet   Weather Conditions: Sunny, mid-70 degrees
Flush to grade roadway box installed over the monitoring well.

DEPTH	BLOWS ON SAMPLER				SAMPLE					SOIL AND ROCK INFORMATION	Field Screening for VOCs, ppm, using PID
0	0"/6"	6"/12"	12"/18"	18"/24"	N	NO.	Depth	Type	Recovery		
	-	-			7	1	0-2'	soil	100%	Asphalt surface & gravel sub base to 1ft	ND
			7	8							
	30	27			34	2	2'-4'	soil	42%	Same to 2.4 ft.	ND
			7	50						Dense GRAVEL and C. Sand	
5	2	13			17	3	4'-6'	soil	42%	Brown Damp V. Stiff SILT, Some Gravel,	ND
			4	4						Trace F. Sand	
30	5	12			26	4	6'-8'	soil	42%	Br. Moist V. Stiff SILT, Some F. Gravel	ND
			14	17							
	2	12			24	5	8'-10'	soil	50%	Br. Moist V. Stiff SILT and F. Sand,	1.9 ppm
10			12	16						Trace Gravel	
	10	22			51	6	10'-12'	soil	42%	Same, Moist, Hard, occasional cobbles	0.9 ppm
			29	14							
	11	16			50+	7	12'-14'	soil	not recorded	Brown Wet Hard SILT and Gravel	ND
			50/3"							wet sheen. Refusal at 13.8' 13.8'	
15											
										Auger refusal at 13.8' inferred as bedrock	
										Spun casing into bedrock, to 14'	
										Advanced boring through bedrock	
20										using 3 7/8" diameter roller bit.	
										No rock core samples collected.	
										Rock cuttings consist of	
										fine grained grey limestone.	
										24.0'	
25											
										Boring terminated at 24.0 feet	
										2" dia. monitoring well installed in boring	
											H NU PID with
30											10.6 ev lamp

N=No. of Blows to Drive   2" Spoon 12" with 140 lb wt. Hammer 30" Each Blow

DRILLING LOG

BERGMANN associates

BORING/WELL NUMBER: Monitoring Well MW-10

PROJECT: 1200 East Main Street Rochester, NY Project No: 4453.02 Page No. 1 of 1
Start Date: 07/22/2003 Finish Date: 07/22/2003 Top of Well: N/A Boring No: MW-10
Driller: Joe Gardner, Buffalo Drilling Boring Location: at 1200 East. Main St., northwest corner of the site
Inspector: James Marschner, Bergmann Associates Water Level (During Drilling): Approximately 14 feet below grade
Drilling Method: 4-1/4 inch HAS Augers, Mobil B-61 truck rig Water Level (Post Drilling): Approximately 14.4 feet below grade
Remarks: Advanced test borings via Hollow Stem Augers. Monitoring well installed through augers via pull back method.
Screened Interval: 24.0 ft. to 11.0 ft. Slot Size: 0.010 inch Well Type: 2" dia. PVC Sandpack: 24.0 ft to 10.0 ft
Seal: 10.0 feet to 7.0 feet Weather Conditions: Cloudy, 70s in the morning
Protective Steel Casing installed over the monitoring well.

DEPTH	BLOWS ON SAMPLER				SAMPLE					SOIL AND ROCK INFORMATION	Field Screening for VOCs, ppm, using PID
0	0"/6"	6"/12"	12"/18"	18"/24"	N	NO.	Depth	Type	Recovery		
	7	8			26	1	0-2'	soil	33%	Gravelly Silt to 0.4 ft. Brown Damp Stiff	ND
			18	17						SILT, Some Gravel, Trace Silt	
	8	9			14	2	2'-4'	soil	50%	Same, Stiff, Damp	ND
			5	5						Same to 3.6 feet	
5	11	12			20	3	4'-6'	soil	58%	Dark Br. Damp SILT, Trace Sand to 4.2'	ND
			8	12						At 4.2' begin Brown Damp Stiff SILT,	
30	10	15			65+	4	6'-8'	soil	100%	Some Gravel, trace rootlets	ND
			50/2"							Same, becomes Hard	
	33	26			43	5	8'-10'	soil	29%	Brown Damp Hard SILT and Gravel,	ND
10			17	9						trace F. Sand	
	7	20			36	6	10'-12'	soil	38%	Brown Damp Hard SILT and Sand,	ND
			16	19						some Gravel. Moist at 12'	
	17	25			45	7	12'-14'	soil	46%	Same, Hard, becomes Wet at 14'	ND
			20	18						Gravel stone in shoe. No recovery 14.0'	
15	50/1"				50+	8	14'-16'	soil	none	Auger refusal at 14.0' inferred as bedrock	
							16-'18'	soil	none	Spun casing into bedrock, to 14.1 ft.	
										Advanced boring through bedrock	
										using 3 7/8" diameter roller bit.	
20										No rock core samples collected.	
										Rock cuttings consist of	
										fine grained grey limestone.	
										24.0'	
25											
										Boring terminated at 24.0 feet	
										2" dia. monitoring well installed in boring	
											H NU PID with
30											10.6 ev lamp

N=No. of Blows to Drive 2" Spoon 12" with 140 lb wt. Hammer 30" Each Blow

DRILLING LOG

BERGMANN associates

BORING/WELL NUMBER: **Monitoring Well MW-11**

PROJECT: 1200 East Main Street Rochester, NY | Project No: 4453.02 | Page No. 1 of 1

Start Date: 07/23/2003 | Finish Date: 07/23/2003 | Top of Well: N/A | Boring No: MW-11

Driller: Joe Gardner, Buffalo Drilling | Boring Location: at 1200 East. Main St., northeastern area of the site

Inspector: James Marschner, Bergmann Associates | Water Level (During Drilling): Aproximately 15 feet below grade

Drilling Method: 4-1/4 inch HAS Augers, Mobil B-61 truck rig | Water Level (Post Drilling): Approximately 14.6 feet below grade

Remarks: Advanced test borings via Hollow Stem Augers. Monitoring well installed through augers via pull back method.

Screened Interval: 26.4 ft. to 12.9 ft. | Slot Size: 0.010 inch | Well Type: 2" dia. PVC | Sandpack: 26.5 ft to 11.8 ft

Seal: 11.8 feet to 9.5 feet | Weather Conditions: Sunny, upper 60s in the morning

Protective Steel Casing installed over the monitoring well.

DEPTH	BLOWS ON SAMPLER				SAMPLE					SOIL AND ROCK INFORMATION	Field Screening for VOCs, ppm, using PID
0	0"/6"	6"/12"	12"/18"	18"/24"	N	NO.	Depth	Type	Recovery		
	5	12			21	1	0-2'	soil	63%	Dark Br. Damp Stiff SILT with Gravel	ND
			9	8						Trace F. Sand to 2.1 feet	
	7	10			20	2	2'-4'	soil	75%	at 2.1 ft: Tan Brown Moist Stiff SILT	ND
			10	12						Some Gravel Trace F. Sand	
5	14	28			48	3	4'-6'	soil	75%	Br. Damp Hard SILT and Gravel,	ND
			20	18						Trace F. Sand	
30	6	5			19	4	6'-8'	soil	58%	Brown Damp Stiff SILT with Gravel,	ND
			14	10						Trace F. Sand	
	3	5			10	5	8'-10'	soil	58%	Same, becomes Medium Stiff, Moist	ND
10			5	10							
	5	14			31	6	10'-12'	soil	63%	Same, Very Stiff	ND
			17	15							
	7	14			37	7	12'-14'	soil	42%	Brown Wet Hard SILT and Gravel,	ND
			23	15						with F. Sand	
15	39	18			32		14'-16'	soil	13%	Brown wet Dense GRAVEL, water sheen	0.1 ppm
			14	14						16.4'	Slight petroleum
	50/4"						16-'18'	soil	none	Auger refusal at 16.4' inferred as bedrock	odor
										Spun casing into bedrock, to 16.5 ft.	
20										Advanced boring through bedrock	
										using 3 7/8" diameter roller bit.	
										No rock core samples collected.	
										Rock cuttings consist of	
										fine grained grey limestone.	
25											
										26.5'	
										Boring terminated at 26.5 feet	
										2" dia. monitoring well installed in boring	H NU PID with
30											10.6 ev lamp

N=No. of Blows to Drive 2" Spoon 12" with 140 lb wt. Hammer 30" Each Blow

DRILLING LOG

BORING/WELL NUMBER: **Monitoring Well MW-12**

BERGMANN associates

PROJECT: 1200 East Main Street Rochester, NY Project No: 4453.02 Page No. 1 of 1
Start Date: 07/29/2003 Finish Date: 07/29/2003 Top of Well: N/A Boring No: MW-12
Driller: Joe Gardner, Buffalo Drilling Boring Location: In sidewalk along south side of East Main St.
Inspector: James Marschner, Bergmann Associates Water Level (During Drilling): Not encountered above bedrock
Drilling Method: 4-1/4 inch HAS Augers, Mobil B-61 truck rig Water Level (Post Drilling): Approximately 17.4 feet below grade
Remarks: Advanced test borings via Hollow Stem Augers. Monitoring well installed through augers via pull back method.
Screened Interval: 22.5 ft. to 10.5 ft. Slot Size: 0.010 inch Well Type: 2" dia. PVC Sandpack: 22.5 ft to 9.5 ft
Seal: 9.5 feet to 6.5 feet Weather Conditions: Sunny, mid-70 degrees
Flush to grade roadway box installed over the monitoring well.

DEPTH	BLOWS ON SAMPLER				SAMPLE					SOIL AND ROCK INFORMATION	Field Screening for VOCs, ppm, using PID
0	0"/6"	6"/12"	12"/18"	18"/24"	N	NO.	Depth	Type	Recovery		
	-	4			6	1	0-2'	soil	0%	Concrete sidewalk to 6"	ND
			2	3						No recovery of soil sample	
	8	7			15	2	2'-4'	soil	42%	Brown F. SAND to 2.4'	ND
			8	9						Brown Moist SILT with Sand and Gravel	
5	2	5			11	3	4'-6'	soil	25%	Same SILT, Stiff	ND
			6	3							
30	3	4			10	4	6'-8'	soil	58%	Br. Moist Loose SAND, Trace Silt	ND
			6	3						Trace Gravel	
	6	11			31	5	8'-10'	soil	38%	Same to 10.7', becomes M. Dense	ND
10			20	33						Brown Moist Hard SILT and Gravel, Tr. Sand	
	16	50/2"			50+	6	10'-12'	soil	13%	Same SILT and Gravel, V. Hard	ND
										Auger refusal encountered at 12.5'	
											ND
										Auger refusal at 12.5' inferred as bedrock	
15						8	14'-16'	soil	83%		ND
										Spun casing into bedrock, to 12.5 ft.	
										Advanced boring through bedrock	
										using 3 7/8" diameter roller bit.	
										No rock core samples collected.	
20										Rock cuttings consist of	
										fine grained grey limestone.	
										22.5'	
										Boring terminated at 22.5 feet	
25										2" dia. monitoring well installed in boring	
											H NU PID with
30											10.6 ev lamp

N=No. of Blows to Drive 2" Spoon 12" with 140 lb wt. Hammer 30" Each Blow

DRILLING LOG

BERGMANN associates

BORING/WELL NUMBER: MW-13

PROJECT:	1200 East Main Street Rochester, NY	Project No:	4453.03	Page No.	1 of 1
Start Date:	05/26/04 Finish Date: 05/26/04	Top of Well:	490.53 ft.	Boring No:	MW-13
Driller:	Buffalo Drilling, Larry Schroeder, Driller	Boring Location:	Back yard of 427 Hayward Avenue.		
Inspector:	Edward Jones, Bergmann Associates	Water Level (During Drilling):	approx. 11 feet below grade		
Drilling Method:	2-1/4 inch HAS Augers, Mobil B-61 truck rig	Water Level (Post Drilling):	approx. 8 ft 3inches below grade		
Remarks:	Advanced test borings via Hollow Stem Augers. Monitoring well installed through augers via pull back method.				

Screened Interval: 23.3 ft. to 8.3 ft. Slot Size: 0.010 inch Well Type: 2" dia. PVC Sandpack: 24.3 ft to 7.4ft

Seal: 7.4 feet to 3.5 feet Weather Conditions: Overcast, fog, 60s in the morning

Flush to grade roadway box installed over the monitoring well.

DEPTH	BLOWS ON SAMPLER				SAMPLE					SOIL AND ROCK INFORMATION	Field Screening for VOCs, ppm, using PID
0	0"/6"	6"/12"	12"/18"	18"/24"	N	NO.	Depth	Type	Recovery		
	3	4			8	1	0-2'	soil	63%	Dirt parking lot surface. Topsoil to 6"	ND
			4	7						Damp Orange Br. Loose F SAND & Silt	
	6	8			17	2	2'-4'	soil	67%	Little Gravel, roots. Becomes M. Dense	ND
			9	10						Same, Damp, M. Dense. Glacial Till	
5	36	20			36	3	4'-6'	soil	58%	Same, damp, Dense to 5'6"	ND
			16	37						Brown damp F-M SAND	
30	50/4"				50+	4	6'-8'	soil	0%	No recovery 6 ft-8', encountered cobble	ND
										or rock fragment in till. Easily augered	
	21	30			49	5	8'-10'	soil	63%	V. Moist to wet Dense F. SAND	ND
10			19	15						and Silt, some Gravel. Till	
	20	28			62	6	10'-12'	soil	79%	Same, V. Moist to Wet, Very Dense.	ND
			34	31						Till	
	49	17			67	7	12'-14'	soil	53%	Same, V. Dense, saturated with water.	ND
			50/3"							Refusal at 13.5 ft. Rock fragment in shoe	
15										Auger refusal encountered at 13.5 ft.	
										inferred as bedrock	No VOCs
											measured
										Spun casing into bedrock at 13.5 ft	on bedrock
										Advanced boring through bedrock	rock cuttings
20										using 3 7/8" diameter roller bit.	flushed to
										Drilling mud flushed up cuttings.	surface
										No rock core samples collected.	Faint petroleum
										Rock cuttings consist of	like odor
										fine grained grey limestone. 23.3 ft	noticed in rock
25											cuttings
										Boring terminated at 23.3 feet	flushed from
										2" dia. monitoring well installed in boring	the boring.
											H NU PID with
30											10.6 ev lamp

N=No. of Blows to Drive 2" Spoon 12" with 140 lb wt. Hammer 30" Each Blow

DRILLING LOG

BERGMANN associates

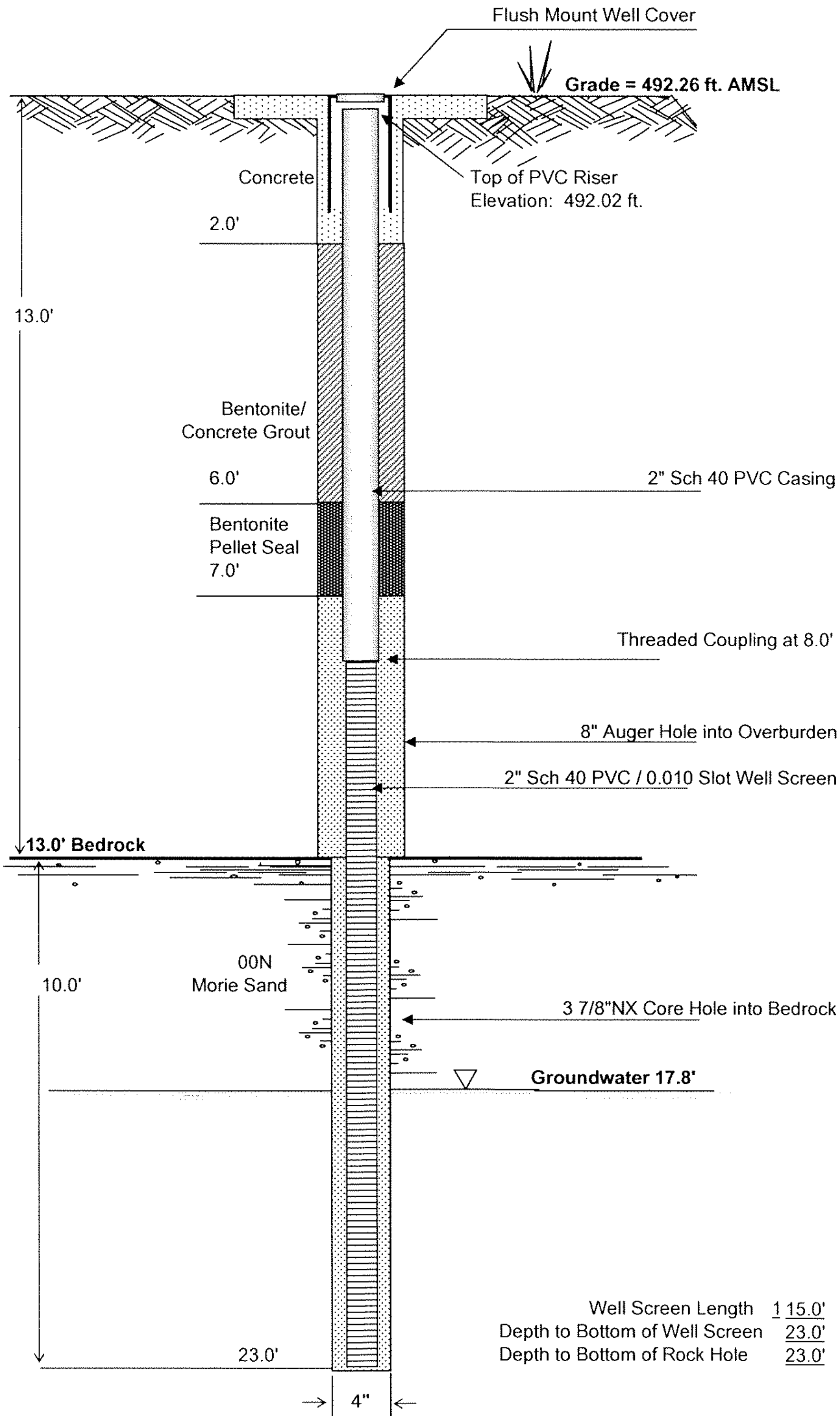
BORING/WELL NUMBER: MW-14

PROJECT: 1200 East Main Street Rochester, NY Project No: 4453.03 Page No. 1 of 1
Start Date: 05/27/04 Finish Date: 05/27/04 Top of Well: 489.48 ft. Boring No: MW-14
Driller: Buffalo Drilling, Larry Schroeder, Driller Boring Location: Back yard of 405 Hayward Avenue.
Inspector: Edward Jones, Bergmann Associates Water Level (During Drilling): Not encountered above bedrock
Drilling Method: 2-1/4 inch HAS Augers, Mobil B-61 truck rig Water Level (Post Drilling): approx. 9 feet below grade
Remarks: Advanced test borings via Hollow Stem Augers. Monitoring well installed through augers via pull back method.
Screened Interval: 19.7 ft. to 4.7 ft. Slot Size: 0.010 inch Well Type: 2" dia. PVC Sandpack: 20 ft to 4 ft
Seal: 4.0 feet to 1.3 feet Weather Conditions: Clear & sunny in morning, 70s
Flush to grade roadway box installed over the monitoring well.

DEPTH	BLOWS ON SAMPLER				SAMPLE					SOIL AND ROCK INFORMATION	Field Screening for VOCs, ppm, using PID
0	0"/6"	6"/12"	12"/18"	18"/24"	N	NO.	Depth	Type	Recovery		
	4	4			7	1	0-2'	soil	42%	Grass yard surface. Black topsoil to 6"	ND
			3	5						Damp Orange Br. Loose F SAND & Silt	
	5	5			10	2	2'-4'	soil	50%	Little Gravel, roots. Same, Damp, Loose	ND
			5	6						Glacial Till	
5	15	24			65	3	4'-6'	soil	42%	Same, damp, becomes Very Dense	ND
			41	29						Brown damp F-M SAND & Silt, Gravel	
30	28	24			59	4	6'-8'	soil	79%	Same, damp, V. Dense. Till	ND
			35	28							
	47	50/2"			50+	5	8'-10'	soil	75%	Same but becomes moist to v. moist	ND
10										V. Dense F. SAND & Silt, little Gravel	
	45	50/2"			50+	6	10'-12'	soil	75%	Damp grey limestone fragments. 10.0 ft	ND
										may be weathered bedrock surface	
										Auger refusal encountered at 10.0 ft,	
										inferred as bedrock	
15										Spun casing into bedrock, at 10.0 ft.	
										Advanced boring through bedrock	No VOCs
										using 3 7/8" diameter roller bit.	measured
										Drilling mud flushed up cuttings.	on bedrock
										No rock core samples collected.	rock cuttings
20										Rock cuttings consist of	flushed to
										fine grained grey limestone. 23.3 20.0 ft	surface
											Faint petroleum
										Boring terminated at 20.0 feet	like odor
										2" dia. monitoring well installed in boring	noticed in rock
25											cuttings
											flushed from
											the boring.
											H NU PID with
30											10.6 ev lamp

N=No. of Blows to Drive 2" Spoon 12" with 140 lb wt. Hammer 30" Each Blow

FLUSHMOUNT MONITORING WELL
MW-3



Profile Description

2.0 to 13.0 ft
Mostly sandy Clay, some silt no gravel.

13.0' to 19.0'
Some vertical fracturing. Some horizontal fracturing.

Core Recovery
107.5"/120"=90%

RQD
58.25"/120"=49%

19.0' to 23.0'
Smooth surfaced laminated bedding medium hard rock.

Bottom of core at 23.0'.

Well Screen Length	1 15.0'
Depth to Bottom of Well Screen	23.0'
Depth to Bottom of Rock Hole	23.0'

NOT TO SCALE

BERGMANN associates	1200 East Main Street City of Rochester, Monroe County, NY **OVERBURDEN / BEDROCK INTERFACE** **MW-3 MONITORING WELL CONSTRUCTION**	Date Installed: 10-Jul-00 Figure: Well MW-3

APPENDIX 11
RESPONSIBILITIES of
OWNER and FUTURE OWNERS / DEVELOPERS

Responsibilities

The responsibilities for implementing the Site Management Plan ("SMP") for the 1200 East Main Street Site (the "site"), number B-00129-8, is with the site owner, as defined below. The owner is currently listed as:

The City of Rochester, New York 14614, (the "owner"). 30 Church Street Rochester, New York - Contact for the City of Rochester are: Ms. Jane Forbes and Mr. Mark Gregor - City of Rochester Division of Environmental Quality 30 Church Street – Room 300B, Project Manager 585-428-5978.

The is no Responsible Party identified for this site.

Nothing on this page shall supersede the provisions of an Environmental Easement, Consent Order, Consent Decree, agreement, or other legally binding document that affects rights and obligations relating to the site.

Site Owner's Responsibilities:

1) The owner shall follow the provisions of the SMP as they relate to implementing the remaining remedy detailed in the SMP, future construction and excavation at the site.

2) In accordance with a periodic time frame determined by the NYSDEC, the owner shall periodically certify, in writing, that all Institutional Controls set forth in an Environmental Easement remain in place and continue to be complied with. The owner shall provide a written certification Periodic Review Report (PRR) certification to the NYSDEC.

3) In the event the site is delisted, the owner remains bound by the Environmental Easement and shall submit, upon request by the NYSDEC, a written certification that the Environmental Easement, Deed Restriction, Environmental is still in place and has been complied with.

4) The owner shall grant access to the site to NYSDEC and its agents for the purposes of performing activities required under the SMP and assuring compliance with the SMP.

5) The owner is responsible for assuring the security of the remedial components located on its property to the best of its ability. In the event that damage to the remedial components or vandalism is evident, the owner shall notify the NYSDEC in accordance with the timeframes indicated in Section 1.3 - Notifications of the SMP.

6) In the event some action or inaction by the owner adversely impacts the site, the owner must notify the NYSDEC in accordance with the time frame indicated in Section 1.3 of the SMP- Notifications and (ii) coordinate the performance of necessary corrective actions.

7) The owner must notify the NYSDEC of any change in ownership of the site property (identifying the tax map numbers in any correspondence) and provide contact information for the new owner of the site property/ies. 6 NYCRR Part contains notification requirements applicable to any construction or activity changes and changes in ownership. Among the notification requirements is the following: Sixty days prior written notification must be made to the NYSDEC. Notification is to be submitted to the NYSDEC Division of Environmental Remediation's Site

Control Section. Notification requirements for a change in use are detailed in Section 2.4 of the SMP. A 60-Day Advance Notification Form and Instructions are found at http://www.dec.ny.gov/chemical/76250.html.

8) The site remedy requires the operation, and maintenance of an on-site oxygen injection system with soil vapor collection trench system (collectively systems) until such time as the NYSDEC deems the systems unnecessary, the owner shall operate the systems, pay for the utilities for the system's operation, and report any maintenance issues to the NYSDEC.

9) In accordance with the tenant notification law, within 15 days of receipt, the owner must supply a copy of any vapor intrusion data, that is produced with respect to structures and that exceeds NYSDOH or OSHA guidelines on the site, whether produced by the NYSDEC, RP, or owner, to the tenants on the property. The owner must otherwise comply with the tenant and occupant notification provisions of Environmental Conservation Law Article 27, Title 24.

Future Owners / Developers Responsibilities

1) The future owners/ developers must follow the SMP provisions regarding any construction and/or excavation it undertakes at the site.

2) The future owners / developers shall report to the NYSDEC all activities required for remediation, operation, maintenance, monitoring, and reporting. Such reporting includes, but is not limited to, periodic review reports and certifications, electronic data deliverables, corrective action work plans and reports, and updated SMPs.

3) Before accessing the site property to undertake a specific activity, the future owners / developers shall provide the owner advance notification that shall include an explanation of the work expected to be completed. The future owner / developers shall provide to (i) the owner, upon the owner's request, (ii) the NYSDEC, and (iii) other entities, if required by the SMP, a copy of any data generated during the site visit and/or any final report produced.

4) If the NYSDEC determines that an update of the SMP is necessary, the future owners shall update the SMP and obtain final approval from the NYSDEC. Within 5 business days after NYSDEC approval, the future owners / developers shall submit a copy of the approved SMP to the owner.

5) The future owners / developers shall notify the NYSDEC and the owner of any changes in control and of any changes in the party/entity responsible for the operation, maintenance, and monitoring of and reporting with respect to any remedial system (Engineering Controls). The future owners shall provide contact information for the new party/entity. Such activity constitutes a Change of Use pursuant to 375-1.11(d) and requires 60-days prior notice to the NYSDEC. A 60-Day Advance Notification Form and Instructions are found at http://www.dec.ny.gov/chemical/76250.html .

6) The future owners / developers shall notify the NYSDEC of any damage to or modification of the systems as required under Section 1.3 - Notifications of the SMP.

7) The future owner(s) / developers is/are responsible for the proper maintenance of any installed systems or future required vapor intrusion mitigation systems associated with the site, as required in Section 5.0 and Appendix 4 (Operation, Monitoring and Maintenance plan) of the SMP.

8) Prior to a change in use that impacts the remedial system or requirements and/or responsibilities for implementing the SMP, the future owners / developers shall submit to the NYSDEC for approval an amended SMP.

10) Any change in use, change in ownership, change in site classification (*e.g*., delisting), reduction or expansion of remediation, and other significant changes related to the site may result in a change in responsibilities and, therefore, necessitate an update to the SMP and/or updated legal documents. The future owners shall contact the Department to discuss the need to update such documents.

Change in future owner ownership and/or control and/or site ownership does not affect the future owner's obligations with respect to the site unless a legally binding document executed by the NYSDEC releases the future owners of its obligations.

All future site owners and their successors and assigns are required to carry out the activities set forth above.

APPENDIX 12
REMEDIAL SYSTEM OPTIMIZATION

BERGMANN
ARCHITECTS ENGINEERS PLANNERS

REMEDIAL SYSTEM OPTIMIZATION FOR 1200 East Main Street Rochester, New York – Site Number B-00129-8

BERGMANN

ARCHITECTS ENGINEERS PLANNERS

TABLE OF CONTENTS

APPENDIX 13
PERMITS AND/OR PERMIT EQUIVALENT

SEWER CONNECTION PERMIT NUMBER: 028566

LATERAL TYPE: Sanitary Storm (RPWD) Combination (RPWD Only)

Permit is hereby granted to Jonathan Gatti

(Plumber)

to connect with the existing public sewer for:

1200 Main E ST

(Street Address)

Lot # Track Name Heath & Beechwood

City/Town ROCH in the IRONDEQUOIT BAY-SOUTH CENT District.

KAD

Permit issued by Plumber's Signature

Date Issued 3/29/2016 Date Expires 3/29/2017

RULES AND REGULATIONS

Permits for connection with sewers in the Sewer District will only be issued by the District or its representative. Permits may be revoked at any time. The work shall be performed by a plumber licensed by the municipality in Monroe County in which the work is being performed.

Applications must be made by the plumber to the District on the form provided and accompanied by a check for any required fees or charges.

Each plumber shall file a Bond of $5,000.00 with the District to indemnify the Sewer District and County against all loss, cost, damage or expense sustained or recovered on account of any negligence omission or act of the applicant for such permit or any of his, their or its servants or agents arising or resulting directly or indirectly by reason of such permit or consent, or any act, construction or excavation done, made or permitted under authority of such permit or consent.

Before a permit is issued, the plumber shall file with the District insurance certificates with the District and County of Monroe names as additionally insured on the policy for:

(a) Public liability limited to $1,000,000.00 for injuries and including wrongful death to each person and limited to $1,000,000.00 on account of each accident.

(b) Property damage for $1,000,000.00 for damages on account of any one accident and $1,000,000.00 for damages on account of all accidents.

(c) Automobile - All owned or leased, $500,000.00.

(d) Workers' Compensation and employee liability.

The policies shall cover motor vehicle operations. all insurance policies must provide for 30 days notice to the District before cancellation and must cover all liabilities of the District and be in form satisfactory to the same.

All work must be done under the supervision and in accordance with the current requirements of the District and the direction of the inspector designated by the District.

There will be an additional charge in accordance with the District's fee schedule for each inspection after the first except for emergencies.

Connections shall be made so that only the specific type of discharge will be allowed as per District requirements.

Whenever it is necessary to enter upon or excavate any highway or cut any pavement, curbing or sidewalk, permission must be obtained from the proper authorities.

Special permission from the District shall be required for blasting or the use of explosives.

SPECIFICATIONS FOR SEWER CONNECTIONS

All connections with sewers shall be made in accordance with the following specifications:

The word "Plumber" is used to describe the person performing the work. Connections shall be made at laterals provided in the sewer. The location of such laterals may be obtained at the District office; however, the District assumes no responsibility for the exact locations or the consequences or damages that may be incurred by virtue of a wrong location. Where no lateral exists, a request for a tap must be made to the District. All 4" & 6" lateral tapping of sewers will be accomplished by the District or an approved representative. The charge for tapping existing sewers will be in accordance with the District's current published schedule and shall include a saddle or collar suitable for receiving approved lateral pipe. Excavation and backfill shall be a the expense of the plumber.

Before connecting to any existing sewer laterals, the plumber shall make sure that they are free and clear of sand, muck, rock, roots and any other material from the point of connection to the main sewer.

Connection to sewers and cleanouts shall be made with District approved soil pipe not less than 4" in diameter. The pipe shall be sound cylindrical, smooth and of uniform thickness. Connection and cleanout joints shall be made with District approved material only.

All fittings shall be recessed drainage fittings with smooth continuous inner surfaces to the flow of drainage and shall conform, in all respects, to the grade of pipe. Change in direction of flow shall be made by the use of proper fittings. Where required, sixteenth bends may be placed as per District requirements. Eighth bends or 2 longsweep, sixteenth bends may be used. The use of longsweep quarter bends will be allowed in riser connections only in conformance with District requirements.

Each lateral shall be provided with a cleanout at the lot line or District permanent easement line, at sharp changes in direction and after each 75' of lateral, with openings set flush with ground grade. Plugs shall consist of a District approved fitting. The plug shall be an extra heavy brass tapered screw Plug with solid hexagonal nut. *No other Plug will be allowed.*

All pipes shall be laid with ends abutting and true to line and grade. Unless otherwise permitted by the inspector, the pipe lines shall be laid to grade of at least one quarter inch per foot. Pipes shall be fitted together and matched so that where laid they will form a sewer with a smooth and uniform invert. All pipes shall be cleared of dirt and foreign materials as the work progresses.

Whenever it is necessary to leave the work, the end of the pipe shall be securely closed with a tightly fitting cover or plug. Any earth or other material entering the main sewer through the opening end of any lateral or pipe shall be removed a the plumber's expense. All trenches must be properly protected as per current OSHA requirements. Where pipes pass under the walls of any building there shall be a relieving arch constructed to prevent the settlement of the masonry over the pipe. The plumber shall erect and maintain barricades, red lights and other safeguards necessary per current OSHA requirements.

All lateral pipe shall be bedded in first class "Class B" stone bedding to within (5) five feet of the building footprint.

The fill over and around the pipes up to a depth of one foot over the pipes must be compacted select fill as per District requirements. It shall be deposited in layers not exceeding six inches in thickness, each of which shall be well pounded, rammed and compacted so that the pipes are firmly embedded. No stones exceeding six inches in their largest dimension may be used in refilling the remaining layers being thoroughly compacted.

It is the responsibility of the plumber to obtain any permits required and pay any costs before doing any excavating within the highway limits when searching for a lateral or wye connection.

Where the trench passes beneath a pavement or where pavements have to be replaced, work shall be done in accordance with the direction of the proper authorities. Outside the limits of the pavement, the surface of the trenches, after being filled and compacted, shall be finished off in a smooth and workmanlike manner. All settlement in public highways occurring after the trenches have been refilled must be filled in by the plumber. Should he fail to do so, the refilling will be done by the Sewer District and the cost of the work charged to him.

PERMIT RECEIPT

3381 Mar 29, 2016 7:52:23 AM

RECEIVED FROM:

RECEIPT # 2370419

COLL BY: KAD | COLL DATE 03/28/2016 | CHK #: 25851

PERMIT#	LOCATION	TOWN	DISTRICT	TAX ACCOUNT	TOTAL FEE
28566	1200 Main E ST	ROCH	IBSCPWD	106.76-1-44	450.00
	Remark:				

SUB TOTAL: $ 450.00

Memo: Rec. to Matrix Env. Tech

RECEIPT TOTAL: $ 450.00

COUNTY OF MONROE
SEWER USE PERMIT ENCLOSURE

City of Rochester-DEQ
300 Church Street
Rochester, NY 14614

PERMIT NUMBER: ST-308
DISTRICT NUMBER: 8575

SITE LOCATION:
1200 East Main Street
NYSDEC ERP B00129-8

TYPE OF BUSINESS: Former Gas Station
SAMPLE POINT: after O/W separator and air stripper

REQUIRED MONITORING

SELF MONITORING FREQUENCY:

1. **Analytical Performance testing** of treatment system with Monroe County approval prior to discharge
2. **Analytical testing once per day** for two consecutive days after start up and discharge commences (24 hour turnaround).
3. **Weekly or every 5 days of active discharge** for three weeks commencing at the end of the three consecutive day testing.
4. **Monthly** thereafter.

SAMPLING PROTOCOL: Sampling and analysis shall be performed in accordance with the techniques prescribed in 40 CFR Part 136 and amendments thereto. In the absence of 40 CFR Part 136 testing methodology, a New York State Department of Health, approved method is acceptable. A grab sample, collected from the above noted sample point shall be analyzed for the following:

Analyte	Sewer Use Limit
BTEX Compounds (EPA Method 624)	*
Polynuclear Aromatic Hydrocarbons (EPA 625)	*
MTBE	**

***** The summation of all BTEX and PAH compounds reported greater than 10 µg/l shall not exceed 2.13 mg/L.
** Monitor only

SPECIAL CONDITIONS:

1. **Sample results must be reviewed by Monroe County DES prior to discharge to the sanitary sewer system.**
2. **Discharge location must be approved by Monroe County DES prior to discharging.**
3. **Discharge rate is not to exceed 10 gpm unless prior authorization has been given by the Monroe County DES.**
4. **Total discharge volume must be tracked and reported to the IW office at the end of the project.**

APPENDIX 14

ALLOWABLE CONSTITUENT LEVELS

FOR

IMPORTED FILL OF SOIL: DER-10

Appendix 5
Allowable Constituent Levels for Imported Fill or Soil
Subdivision 5.4(e)

Source: This table is derived from soil cleanup objective (SCO) tables in 6 NYCRR 375. Table 375-6.8(a) is the source for unrestricted use and Table 375-6.8(b) is the source for restricted use.

Note: For constituents not included in this table, refer to the contaminant for supplemental soil cleanup objectives (SSCOs) in the Commissioner Policy on *Soil Cleanup Guidance*. If an SSCO is not provided for a constituent, contact the DER PM to determine a site-specific level.

Constituent	Unrestricted Use	Residential Use	Restricted Residential Use	Commercial or Industrial Use	If Ecological Resources are Present
Metals					
Arsenic	13	16	16	16	13
Barium	350	350	400	400	433
Beryllium	7.2	14	47	47	10
Cadmium	2.5	2.5	4.3	7.5	4
Chromium, Hexavalent[1]	1 [3]	19	19	19	1 [3]
Chromium, Trivalent[1]	30	36	180	1500	41
Copper	50	270	270	270	50
Cyanide	27	27	27	27	NS
Lead	63	400	400	450	63
Manganese	1600	2000	2000	2000	1600
Mercury (total)	0.18	0.73	0.73	0.73	0.18
Nickel	30	130	130	130	30
Selenium	3.9	4	4	4	3.9
Silver	2	8.3	8.3	8.3	2
Zinc	109	2200	2480	2480	109
PCBs/Pesticides					
2,4,5-TP Acid (Silvex)	3.8	3.8	3.8	3.8	NS
4,4'-DDE	0.0033 [3]	1.8	8.9	17	0.0033 [3]
4,4'-DDT	0.0033 [3]	1.7	7.9	47	0.0033 [3]
4,4'-DDD	0.0033 [3]	2.6	13	14	0.0033 [3]
Aldrin	0.005	0.019	0.097	0.19	0.14
Alpha-BHC	0.02	0.02	0.02	0.02	0.04 [4]
Beta-BHC	0.036	0.072	0.09	0.09	0.6
Chlordane (alpha)	0.094	0.91	2.9	2.9	1.3
Delta-BHC	0.04	0.25	0.25	0.25	0.04 [4]
Dibenzofuran	7	14	59	210	NS
Dieldrin	0.005	0.039	0.1	0.1	0.006
Endosulfan I	2.4[2]	4.8	24	102	NS
Endosulfan II	2.4[2]	4.8	24	102	NS
Endosulfan sulfate	2.4[2]	4.8	24	200	NS
Endrin	0.014	0.06	0.06	0.06	0.014
Heptachlor	0.042	0.38	0.38	0.38	0.14
Lindane	0.1	0.1	0.1	0.1	6
Polychlorinated biphenyls	0.1	1	1	1	1

Constituent	Unrestricted Use	Residential Use	Restricted Residential Use	Commercial or Industrial Use	If Ecological Resources are Present
Semi-volatile Organic Compounds					
Acenaphthene	20	98	98	98	20
Acenaphthylene	100	100	100	107	NS
Anthracene	100	100	100	500	NS
Benzo(a)anthracene	1	1	1	1	NS
Benzo(a)pyrene	1	1	1	1	2.6
Benzo(b)fluoranthene	1	1	1	1.7	NS
Benzo(g,h,i)perylene	100	100	100	500	NS
Benzo(k)fluoranthene	0.8	1	1.7	1.7	NS
Chrysene	1	1	1	1	NS
Dibenz(a,h)anthracene	0.33 [3]	0.33 [3]	0.33 [3]	0.56	NS
Fluoranthene	100	100	100	500	NS
Fluorene	30	100	100	386	30
Indeno(1,2,3-cd)pyrene	0.5	0.5	0.5	5.6	NS
m-Cresol(s)	0.33 [3]	0.33 [3]	0.33 [3]	0.33 [3]	NS
Naphthalene	12	12	12	12	NS
o-Cresol(s)	0.33 [3]	0.33 [3]	0.33 [3]	0.33 [3]	NS
p-Cresol(s)	0.33	0.33	0.33	0.33	NS
Pentachlorophenol	0.8 [3]	0.8 [3]	0.8 [3]	0.8 [3]	0.8 [3]
Phenanthrene	100	100	100	500	NS
Phenol	0.33 [3]	0.33 [3]	0.33 [3]	0.33 [3]	30
Pyrene	100	100	100	500	NS
Volatile Organic Compounds					
1,1,1-Trichloroethane	0.68	0.68	0.68	0.68	NS
1,1-Dichloroethane	0.27	0.27	0.27	0.27	NS
1,1-Dichloroethene	0.33	0.33	0.33	0.33	NS
1,2-Dichlorobenzene	1.1	1.1	1.1	1.1	NS
1,2-Dichloroethane	0.02	0.02	0.02	0.02	10
1,2-Dichloroethene(cis)	0.25	0.25	0.25	0.25	NS
1,2-Dichloroethene(trans)	0.19	0.19	0.19	0.19	NS
1,3-Dichlorobenzene	2.4	2.4	2.4	2.4	NS
1,4-Dichlorobenzene	1.8	1.8	1.8	1.8	20
1,4-Dioxane	0.1 [3]	0.1 [3]	0.1 [3]	0.1 [3]	0.1
Acetone	0.05	0.05	0.05	0.05	2.2
Benzene	0.06	0.06	0.06	0.06	70
Butylbenzene	12	12	12	12	NS
Carbon tetrachloride	0.76	0.76	0.76	0.76	NS
Chlorobenzene	1.1	1.1	1.1	1.1	40
Chloroform	0.37	0.37	0.37	0.37	12
Ethylbenzene	1	1	1	1	NS
Hexachlorobenzene	0.33 [3]	0.33 [3]	1.2	3.2	NS
Methyl ethyl ketone	0.12	0.12	0.12	0.12	100
Methyl tert-butyl ether	0.93	0.93	0.93	0.93	NS
Methylene chloride	0.05	0.05	0.05	0.05	12

Volatile Organic Compounds (continued)					
Propylbenzene-n	3.9	3.9	3.9	3.9	NS
Sec-Butylbenzene	11	11	11	11	NS
Tert-Butylbenzene	5.9	5.9	5.9	5.9	NS
Tetrachloroethene	1.3	1.3	1.3	1.3	2
Toluene	0.7	0.7	0.7	0.7	36
Trichloroethene	0.47	0.47	0.47	0.47	2
Trimethylbenzene-1,2,4	3.6	3.6	3.6	3.6	NS
Trimethylbenzene-1,3,5	8.4	8.4	8.4	8.4	NS
Vinyl chloride	0.02	0.02	0.02	0.02	NS
Xylene (mixed)	0.26	1.6	1.6	1.6	0.26

All concentrations are in parts per million (ppm)
NS = Not Specified

Footnotes:
[1] The SCO for Hexavalent or Trivalent Chromium is considered to be met if the analysis for the total species of this contaminant is below the specific SCO for Hexavalent Chromium.
[2] The SCO is the sum of endosulfan I, endosulfan II and endosulfan sulfate.
[3] For constituents where the calculated SCO was lower than the contract required quantitation limit (CRQL), the CRQL is used as the Track 1 SCO value.
[4] This SCO is derived from data on mixed isomers of BHC.