

# Remedial Investigation Work Plan
# 1641 River Street Site
# Site ID #C905049

Olean, New York

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A.2. TurnKey Environmental Restoration, LLC. (2020). Subsurface Environmental Investigation Report, 1641 River Street Site, Olean, New York, January.
A.3. PTM Engineering, PLLC. (2025). Drum Investigation Report, 1641 River Street Site, Olean, New York, December.
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# Standard Limitations and Disclaimer

This report was prepared exclusively for the use of Hodgson Russ LLP and its client 1641 River Street LLC. The findings and conclusions, if any provided by GEI in this report, are based solely on the information reported to GEI as of the date of this report. Future investigations or additional information not provided to GEI at the time of this report may result in modification of this report. GEI's scope of work did not include verifying the completeness or accuracy of information provided by others. Accordingly, GEI shall not be liable for any damages, costs, or other consequences resulting from reliance on such information if it is later determined to be inaccurate or incomplete. GEI's professional services for this project have been performed in a manner consistent with that degree of skill and care ordinarily exercised by members of the same profession currently practicing in the same locality, performing similar services under similar conditions. GEI makes no other representations and no warranties, express or implied.

# Certification

*I, Jeffrey S. Hall, certify that I am currently a NYS registered professional engineer and that this Remedial Investigation (RI) Work Plan for the 1641 River Street Site was prepared in accordance with applicable statutes and regulations and in substantial conformance with the DER Technical Guidance for Site Investigation and Remediation (DER-10) and 6 NYCRR Part 375, as revised effective December 31, 2025, and that the proposed investigation activities are designed to meet the requirements of the Brownfield Cleanup Program and applicable guidance.*

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*It is a violation of Article 145 of New York State Education Law for any person to alter this document in any way without the express written verification of adoption by any New York State licensed engineer in accordance with Section 7209(2), Article 145, New York State Education Law.*

# Record of Revisions

| Identification | Date | Description of Issued and/or Revision |
|---|---|---|
| CLIENT Draft | March 27, 2026 | Draft/Attorney Client Privilege/Prepared at Request of Counsel |
| CLIENT Draft Revised | March 31, 2026 | Draft/Attorney Client Privilege/Prepared at Request of Counsel |
| CLIENT Draft Final | April 17, 2026 | Draft/Attorney Client Privilege/Prepared at Request of Counsel |
| Final | May 29, 2026 | NYSDEC Submission |
| Final Revised | September 18, 2026 | Revised to Address NYSDEC Comments |
| | | |

# Acronyms and Abbreviations

| | |
|---|---|
| AA | Alternatives Analysis |
| BCA | Brownfield Cleanup Agreement |
| BCP | Brownfield Cleanup Program |
| CAMP | Community Air Monitoring Plan |
| COC | Chain of Custody |
| CP-51 | NYSDEC Commissioner's Policy 51 |
| CSCO | Commercial Soil Cleanup Objective |
| DEC | New York State Department of Environmental Conservation |
| DER | Division of Environmental Remediation |
| DER-10 | NYSDEC Technical Guidance for Site Investigation and Remediation |
| DO | Dissolved Oxygen |
| DUSR | Data Usability Summary Report |
| ELAP | Environmental Laboratory Approval Program |
| EPA | United States Environmental Protection Agency |
| ECL | Environmental Conservation Law |
| FADL | Field Activity Daily Log |
| FTL | Field Team Leader |
| GCM | Grossly Contaminated Material |
| GPS | Global Positioning System |
| GPR | Ground Penetrating Radar |
| GWQS | Groundwater Quality Standard |
| HASP | Health and Safety Plan |
| HSA | Hollow-Stem Auger |
| IDW | Investigation-Derived Waste |
| LNAPL | Light Non-Aqueous Phase Liquid |
| MS | Matrix Spike |
| MSD | Matrix Spike Duplicate |
| NTU | Nephelometric Turbidity Unit |
| NYCRR | New York Codes, Rules and Regulations |
| NYSDOH | New York State Department of Health |
| NYSDOT | New York State Department of Transportation |
| ORP | Oxidation-Reduction Potential |
| PAH | Polycyclic Aromatic Hydrocarbon |
| PCB | Polychlorinated Biphenyl |
| PE | Professional Engineer |
| PID | Photoionization Detector |
| PM | Project Manager |
| PO | Project Officer |
| PPE | Personal Protective Equipment |
| QAPP | Quality Assurance Project Plan |

| | |
|---|---|
| QA | Quality Assurance |
| QC | Quality Control |
| QEP | Qualified Environmental Professional |
| RI | Remedial Investigation |
| RIWP | Remedial Investigation Work Plan |
| SAP | Sampling and Analysis Plan |
| SCO | Soil Cleanup Objective |
| SSHO | Site Safety and Health Officer |
| STRA | Southern Tier Rail Authority |
| SVOC | Semi-Volatile Organic Compound |
| TCL | Target Compound List |
| TIC | Tentatively Identified Compound |
| TP | Test Pit |
| USEPA | United States Environmental Protection Agency |
| USCO | Unrestricted Soil Cleanup Objective |
| USCS | Unified Soil Classification System |
| USGS | United States Geological Survey |
| VOC | Volatile Organic Compound |

# 1. Introduction

This document presents the proposed scope of work and implementation procedures for completion of a Remedial Investigation (RI) at the 1641 River Street Redevelopment Site (Site), located at 1641 River Street in Olean, Cattaraugus County, New York (Site, see Figure 1 and Figure 2).

The Applicant, 1641 River Street LLC, has elected to pursue cleanup and redevelopment of the Site under the New York State Brownfield Cleanup Program (BCP Site No. C905049). The Applicant entered into a Brownfield Cleanup Agreement (BCA) as a Volunteer with the New York State Department of Environmental Conservation (NYSDEC) on January 2, 2026 (Index No. C905049-07-24). This brownfield project will seek to investigate and delineate the subsurface contamination resulting from the decades of past Site uses as a petroleum refining and bulk fuel storage facility. A final redevelopment plan has not yet been established; however, the remedial investigation is being conducted to support commercial or industrial end use consistent with the Brownfield Cleanup Program. The RI will be completed by GEI Consultants, Inc. (GEI), on behalf of the Applicant.

This Remedial Investigation Work Plan (RIWP) has been prepared pursuant to 6 NYCRR Part 375, as revised and effective December 31, 2025, including Subpart 375-3 (Brownfield Cleanup Program). Where guidance contained in DER-10 is referenced, such guidance is applied to the extent it is consistent with Part 375. In the event of any inconsistency, the requirements of Part 375 shall govern.

## 1.1. Site Background

The BCP Site is comprised of an approximate 24.7-acre parcel of land (Tax ID # 94.032-1-5) owned by 1641 River Street LLC (Figure 2). Interstate Route 86 (I-86) bisects the parcel, resulting in two distinct areas, a northern portion (18.4 acres) and a southern portion (6.3 acres). The Site is in a former heavy industrial area in the City of Olean. Based on review of an historical aerial photograph from the 1950s obtained from the City of Olean and an historic USGS topographic map from 1898, as well as other historical documentation, the Site is located within the area of a larger former petroleum refining and storage facility located in northern Olean that operated from approximately 1876 to 1954. The historic aerial photograph and map show approximately 20 large petroleum storage tanks that were located on and/or adjacent to the Site (Figure 3). Review of other historic figures shows a former pump station on the northern portion of the property in the vicinity where Oregon Road and River Street converge (Figure 3).

The northern portion of the Site is currently developed with one unoccupied commercial structure. An access road and parking lot are located adjacent to the structure. The remaining area is vegetated vacant land, with some evidence of former berms. The northern portion of the Site is bordered by Oregon Road and River Street to the north/northeast, the Southern Tier Rail Authority (STRA) railroad to the west/northwest and I-86 to the south (Figure 2).

The southern portion of the Site is currently vegetated vacant land, with some evidence of former berms. The City of Olean maintains a utility easement that traverses the southern portion of the Site that

contains a water main and a stormwater sewer. The southern portion of the Site is bordered by I-86 to the north and residential properties to the south and east.

Previous environmental investigations completed at the northern portion of the Site have identified the presence of petroleum product; elevated levels of volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), and metals exceeding Parts 375 Unrestricted Soil Cleanup Objectives (USCOs); and one metal exceeding Commercial Soil Cleanup Objectives (CSCOs). Based on the presence of petroleum product encountered during this investigation, the New York State Department of Environmental Conservation (NYSDEC) was notified and Spill No. 1908813 was assigned to the Site. Details of the previous investigations are presented in Section 2.6 below and the reports are provided in Appendix A.

## 1.2. Project Objectives

For sites entering the BCP at the point of investigation, NYSDEC requires completion of the RI detailed in this Work Plan. The Remedial Investigation will achieve the following objectives:

- Additional on-site media samples, under appropriate quality assurance (QA)/ quality control (QC) criteria, will be collected to delineate the nature and extent of contamination; and determine if contamination has the potential to migrate off-site.
- Assess the groundwater flow direction and groundwater quality conditions at the Site.
- Determine if the concentrations of constituents of concern in soil and groundwater pose potential unacceptable risks via on-site and off-site qualitative exposure assessment in accordance with DER-10 - Appendix 3b.
- Provide the data needed to evaluate potential remedial measures and determine appropriate actions to address potential risks.

As part of the RI, sampling data will be used to evaluate whether remedial alternatives can meet the cleanup objectives. The intended uses of these data dictate the confidence levels. Two data confidence levels will be employed in the RI: screening level data and definitive level data. In general, screening level confidence will apply to field measurements, including measurements using a photoionization detector (PID), groundwater elevation measurements, and field analyses (i.e., pH, temperature, dissolved oxygen, specific conductivity, and turbidity). Definitive level confidence will apply to samples for chemical analysis.

The applicability of these levels of data are further specified in the Quality Assurance Project Plan (QAPP) in Section 5.0. Sampling and analytical acceptance and performance criteria such as precision, accuracy, representativeness, comparability, completeness, and sensitivity are also defined in the QAPP.

The remedial investigation scope, including sampling density, media selection, and analytical parameter lists, has been designed to generate data sufficient to evaluate site conditions relative to the Site's reasonably anticipated future use as a commercial or industrial property, consistent with the objectives of the Brownfield Cleanup Program and 6 NYCRR Subpart 375-3.

## 1.3. Project Organization and Responsibilities

1641 River Street LLC (the Applicant) is the Brownfield Cleanup Program applicant for the Site, pursuant to Environmental Conservation Law Article 27, Title 14, and 6 NYCRR Subpart 375-3. The Applicant is responsible for compliance with the approved RIWP and all applicable provisions of 6 NYCRR Part 375, including oversight of contractors, management of investigation-derived waste, and coordination with the New York State Department of Environmental Conservation (NYSDEC).

GEI will complete the RI on behalf of the Applicant. GEI will also be responsible for verifying and certifying that the brownfield remedial action was completed in conformance with the approved work plans and NYSDEC DER-10 requirements, where appropriate.

All remedial investigation field activities conducted pursuant to this RIWP will be performed under the supervision of a Qualified Environmental Professional (QEP), as defined in 6 NYCRR 375-1.2, or by trained field representatives acting under the direct supervision of a QEP. The QEP will be responsible for ensuring that field activities are performed in accordance with the approved RIWP, applicable regulatory requirements, and accepted professional standards, and for evaluating and authorizing any necessary field adjustments consistent with the objectives of the investigation.

GEI's Project Team résumés have been included in Appendix B. The table below presents the planned project team.

**Project Team**

| Company | Role | Name | Contact Information |
|---|---|---|---|
| NYSDEC | Project Manager | Jason Kryszak, G.I.T. | (716) 851-7220 |
| NYSDEC | Project Attorney | Gregory Scholand, Esq. | (716) 851-7220 |
| NYSDOH | Project Manager | Ivana Zivkovic | (515) 485-7174 |
| 1641 River Street LLC | Applicant contact | R. Donald Benson | (716) 244-0999 |
| GEI | Project Manager/Senior Environmental Engineer | Jeffrey S. Hall, PE, PMP | (716) 204-7168 |
| GEI | Project Officer/In-House Reviewer | Richard H. Frappa, PG | (716) 204-7156 |
| GEI | Quality Control Manager | Michael Cummings, PG | (716) 204-7155 |
| GEI | Field Team Lead | Jessica Paskie | (716) 204-7164 |
| Eurofins | Analytical Testing | Andy Johnson | (615) 818-9567 |
| Atlantic Testing Limited | Drilling Services | Greg T. Genco | (716) 649-8110 |
| Benson Construction | Excavation Services | R. Donald Benson | (716) 372-1893 |
| Data Validation Services | DUSR | Judy Harry | (518) 241-4429 |

# 2. Site Description

## 2.1. General

The Site is comprised of an approximate 24.7-acre parcel of land (Tax ID # 94.032-1-5) located in a former heavy industrial area in the City of Olean. The Site is located within the footprint of a former petroleum refining and storage facility located in northern Olean that operated from approximately 1876 to 1954. A historic aerial photograph (City of Olean, 1950s) and topographic map (USGS, 1898) show approximately twenty (20) large above ground petroleum storage tanks that were located on and/or adjacent to the Site (see Figure 3 and Appendix A.1). Other historical documentation reviewed shows a former pump station on the northern portion of the property in the vicinity where Oregon Road and River Street converge (see Figure 3 and Appendix A.1).

The Site is currently developed with one unoccupied commercial structure, previously used for storage by Park Centre Development, Inc. (a company related to Blue Bird Industrial Park, Inc.). An access road and parking lot are located adjacent to the structure. The remaining area is vegetated vacant land, with some evidence of former berms. The Site is bordered by Oregon Road and River Street to the north/northeast, the Southern Tier Rail Authority (STRA) railroad to the west/northwest and residential properties to the south. New York State Route I-86 bisects the parcel.

## 2.2. Site Topography and Drainage

The Site topography is generally flat to gently sloping, with an overall gradient from west to east toward River Street and Olean Creek. Based on review of USGS topographic mapping and site reconnaissance, ground surface elevations are highest along the western portion of the Site near the Southern Tier Railroad Authority corridor and decrease toward the eastern portion of the Site.

Interstate Route I-86 traverses the Site at an elevated grade relative to the surrounding parcel, resulting in localized topographic relief of approximately 15 to 20 feet between the interstate embankment and adjacent Site areas. River Street is elevated approximately 5 feet above interior portions of the Site.

Surface drainage is controlled primarily by topography, vegetated areas, and roadway features. Stormwater runoff generally flows east and northeast toward River Street and adjacent municipal drainage infrastructure, with localized ponding observed in low-lying vegetated areas, particularly south of I-86. Multiple culverts and storm drainage features associated with I-86 and River Street likely influence localized drainage patterns. No surface water bodies are located on the Site; however, Olean Creek is located approximately 100-feet east of the Site boundary.

## 2.3. Geology and Hydrogeology

### *2.3.1. Overburden*

According to the United States Department of Agriculture (USDA) Web soil survey, Site soils are characterized primarily as Olean silt loam (19A) with an exceptions being Red Hook silt loam (49A) within

an approximately 6.6 acre strip, along the STRA railroad boundary, and Castile gravely silt loam (27A) within an approximately 3.0 acre strip, along the Oregon Road/River Street boundary. The Olean and Castile gravely silt loams are characterized as moderately well drained soils with 0 to 3 percent slopes. The Red Hook silt loam is characterized as somewhat poorly drained soil with 0 to 3 percent slopes.

Subsurface conditions generally consist of topsoil overlying gravel mixed with sand, silt, and cobbles to about six feet below ground surface, underlain by fine sand with gravel and clay. Fill materials containing construction debris and remnants of historic operations have been observed during prior test pit excavations completed in the northern portion of the site (see Section 2.2.6). The overburden geology of the Site will be further investigated as part of the RI activities.

### *2.3.2. Bedrock*

Bedrock was not encountered during previous investigations at the Site, which overlies the Conneaut group, which is identified as Upper Devonian-aged shale, sandstone, and siltstone with a thickness of 250-600 feet. A geologic cross-section profile shown in the historical regional subsurface mapping (USGS 1985) report traverses the Site and indicates the top of bedrock is more than 200 feet below grade.

### *2.3.3. Hydrogeology*

During previous investigations, the upper water-bearing zone was encountered at approximately six feet below ground surface. The direction of groundwater in this unit has not been established. Localized on-Site groundwater flow will be investigated during the RI.

## 2.4. Utilities and Groundwater Use

The following utilities are available in the vicinity of the Site:

- Electric: National Grid.
- Natural Gas: New York State Electric & Gas.
- Sanitary Sewer and Storm Sewers: City of Olean.
- Potable Water: City of Olean, Water Division.

Groundwater at the Site is assigned Class “GA” by 6NYCRR Part 701.15. Currently, there are no deed restrictions on the use of groundwater at the Site; however, there are no groundwater supply wells on the property.

The municipal water is supplied by the City of Olean. Water is derived from four water sources: Well site M18 on Richmond Ave; Well sites M37 and M38 on East River Road; and the water treatment plant on River Street, which draws water from the Olean Creek.

The single on-Site structure is vacant with no active operations present.

## 2.5. Wetlands

No state-or federal-regulated freshwater wetlands are mapped on the Site; however, according to the NYSDEC Environmental Resource Mapper, approximately 10.5 acres of the site is identified as a wetland within the Informational NYS Freshwater Wetlands layer. This includes an area along the STRA railroad boundary and south of I-86 (See Figure 4). According to the National Wetlands Inventory, freshwater forested/shrub wetlands are collocated within the informational wetland boundaries, estimated to be approximately 1.9 acres (See Figure 4)

## 2.6. Previous Investigations

A summary of the investigations that have occurred at the Site are presented below. Previous investigation reports are included in Appendix A, the locations of the former petroleum refining and storage facility infrastructure, including above ground petroleum storage tanks and associated berms are shown on are shown on Figure 3, and previous investigation locations with areas of concern are shown in Figure 5.

### *2.6.1. April 2006 – Historic and Current Site Conditions Report, Former Socony-Vacuum Oil Company, Inc., Refinery Site, Olean, New York*

AMEC Earth & Environmental, Inc. (AMEC) completed a report summarizing historic conditions at and surrounding the former location of a petroleum refinery facility in the City of Olean, NY for ExxonMobil Refining & Supply Global Remediation in April 2006. AMEC concluded the following:

- North Olean has a history of industrial activities including petroleum storage and refining, leather tanneries, heavy and light manufacturing, chrome plating, fertilizer manufacturing, and railroad facilities.
- Two refineries existed in North Olean from 1876 to 1902, Acme Oil Company (Acme) and Vacuum Oil Company (Vacuum). In 1902, Acme and Vacuum merged under the name Vacuum Oil Company. In 1931, Vacuum merged with the Standard Oil Company of New York (Socony), creating the Socony-Vacuum Oil Company, Inc., (Socony-Vacuum) which would later become ExxonMobil Corporation.
- The Socony-Vacuum petroleum refinery was divided into three sections, #1 Works (administration, research, central power house, central shops building), #2 Works (bulk oil loading, treating, storage), and #3 Works (primary distillation/refining operations and crude oil storage).
- The oil refinery shut down in 1954. Various entities owned parcels within the former refinery footprint shut down. A portion of the #3 Works section, including the subject Site, was purchased by Blue Bird Industrial Park, Inc. (Blue Bird) in approximately 1989.

### *2.6.2. January 2020 – Subsurface Environmental Investigation Report, 1641 River Street Site, Olean, New York*

TurnKey Environmental Restoration, LLC (TurnKey), on behalf of 1641 River Street LLC, performed a Subsurface Environmental Investigation at a property located at 1641 River Street in Olean, Cattaraugus County, New York.

Based on the presence of petroleum product encountered during this investigation, the New York State Department of Environmental Conservation (NYSDEC) was notified, and Spill No. 1908813 was assigned to the Site. Based on the results of this investigation, TurnKey concluded the following:

- The Site appears to have been a part of a larger petroleum refining and storage facility that operated from 1876-1954. The Site itself historically contained 20+/- aboveground petroleum storage tanks and berm areas. (See Figure 3)
- Elevated PID reading over 100 ppm were measured in subsurface soil in seven of the nine test pits, with the highest reading of 990 ppm at TP-9. Mild to strong petroleum odors were observed in the subsurface soil at all test pits except TP-6 and TP-8. See Figure 5 for test pit locations.
- Mobile LNAPL (petroleum) was observed at TP-1, TP-3, TP-4, TP-5, TP-7, and TP-9. TP-9 appeared to be the most impacted sample location based on the amount of LNAPL observed. TP-9 was excavated within a former tank area based on its location within an obvious bermed area. Figure 5 for test pit locations.
- Arsenic exceeded its CSCO at two surface soil locations and mercury exceeded its USCO at one surface soil location.
- Elevated VOC TICSs and SVOC TICs were observed in the subsurface at all test pit locations. Based on our experience at other nearby sites, these results are indicative of weathered petroleum in the subsurface.
- Based on the evidence of petroleum odors, discolored soil, elevated PID measurements, subsurface and above grade piping, and the presence of mobile LNAPL. The environmental impacts can reasonably be attributed to the historical use of the Site as a petroleum bulk storage and transmission facility.

### *2.6.3. December 2025 – Drum Investigation Report, 1641 River Street Site, Olean, New York*

PTM Engineering, PLLC (PTM), on behalf of 1641 River Street LLC, performed a Drum Investigation at the Site. This was conducted in response to a NYSDEC notification to the Site owner that it had information concerning a single drum that reportedly was buried on the Site containing chlorinated solvent material (carbon tetrachloride). 1641 River Street LLC commissioned a ground penetrating radar (GPR) investigation in July 2025, which identified a possible metallic drum signal in the general vicinity of the alleged burial location, in addition to suspected concrete signatures. A limited scope investigation was conducted to assess the potential presence of the alleged single drum and/or any identified impacts from chlorinated solvent impacts. PTM concluded the following:

- The investigation did not find any physical evidence of the alleged drum disposal, nor did it identify any impacts associated with chlorinated solvents within the reported burial area (See Figure 5).
- The absence of chlorinated aliphatic hydrocarbons, carbon tetrachloride, or any other chlorinated compounds in both the soil and groundwater samples supports the finding that the disposal of the drum most likely did not occur at the Site.

# 3. Conceptual Site Model

## 3.1. Purpose

A Conceptual Site Model (CSM) has been developed for the Site to identify known and potential sources of contamination, environmental media that may be affected, contaminant migration pathways, and potential exposure routes to human and ecological receptors. The CSM is preliminary and based on available historical information, results of prior environmental investigations, site reconnaissance, and the physical characteristics of the Site and surrounding area. The preliminary CSM will be refined upon completion of the RI.

## 3.2. Site Setting Summary

The Site is located within a historically industrialized portion of the City of Olean and is situated within the footprint of a former petroleum refining and bulk storage facility that operated from approximately 1876 to 1954. Current Site conditions include one commercial structure, paved access areas, and undeveloped vegetated land. Interstate Route I-86 bisects the Site, and nearby land uses include transportation corridors, industrial properties, and residential areas.

## 3.3. Sources of Contamination

Based on historical records and prior investigations, the primary sources of contamination at the Site are associated with past petroleum refining, storage, and transfer operations. Documented and inferred sources include:

- Former aboveground petroleum storage tanks and associated bermed areas;
- Historic petroleum transmission piping and ancillary infrastructure;
- Former pump station facilities located near the northern portion of the Site; and
- Areas where petroleum-impacted soil and mobile light non-aqueous phase liquid (LNAPL) have been previously observed.

A limited investigation conducted in response to a reported buried drum containing chlorinated solvents did not identify evidence of drum disposal or chlorinated solvent impacts, and chlorinated compounds are not currently considered constituents of concern (COC) for the Site.

## 3.4. Environmental Media of Concern

Environmental media that have been impacted or are potential receptors include:

- Soil: Surface and subsurface soils contain petroleum-related impacts, including elevated volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), polycyclic aromatic hydrocarbons (PAHs), and metals above applicable soil cleanup objectives in discrete areas.

- Soil vapor: Due to the petroleum-related impacts observed in soils, soil vapor will be investigated.
- Groundwater: Shallow groundwater has been encountered at approximately 6 to 7 feet below ground surface and exhibits petroleum-related impacts. Mobile LNAPL has been observed at multiple locations.

## 3.5. Contaminant Migration Pathways

Potential migration pathways identified in the preliminary CSM include:

- Vertical Migration: Infiltration of petroleum-impacted soil contaminants to shallow groundwater.
- Lateral Groundwater Migration: Transport of dissolved-phase petroleum constituents and LNAPL within the shallow water-bearing zone toward downgradient areas.
- Lateral Soil Vapor Migration: Transport of petroleum vapor within the vadose zone toward offsite areas.
- Lateral Migration Through Utilities: Transport of petroleum vapor, dissolved-phase petroleum constituents, and LNAPL through underground utilities and pipe bedding.

Given the Site's early operational history and its decommissioning and out of use service for approximately 75 years, constituent presence and potential migration are likely approaching steady state conditions. The RI will further evaluate groundwater flow direction, hydraulic gradients, and the extent of impacted media to refine migration pathway understanding.

## 3.6. Potential Receptors and Exposure Pathways

### *3.6.1. Human Receptors*

Potential human receptors include:

- On-site commercial or industrial workers;
- Construction and utility workers during intrusive activities; and
- Off-site residents via potential subsurface migration pathways.

Potential exposure pathways include:

- Direct contact with contaminated soil during intrusive activities;
- Inhalation of volatile constituents or particulates during soil disturbance; and
- Incidental ingestion of impacted soil or groundwater (controlled under current and planned site use).

### *3.6.2. Ecological Receptors*

Potential ecological receptors include terrestrial organisms inhabiting undeveloped portions of the Site. The RI will include evaluation of ecological exposure pathways consistent with DER-10 qualitative exposure assessment requirements.

## 3.7. CSM Use in the Remedial Investigation

The preliminary conceptual site model provides the framework for the RI sampling program described in this Work Plan. The planned investigation is designed to:

- Delineate the nature and extent of petroleum-related impacts in soil, soil vapor, and groundwater;
- Assess the presence, thickness, and mobility of LNAPL;
- Evaluate contaminant migration pathways and downgradient conditions; and
- Generate data sufficient to support remedial alternatives evaluation and qualitative human health and ecological exposure assessments.

The preliminary CSM will be updated and finalized in the RI Report based on the results of the investigation.

# 4. Remedial Investigation Scope of Work

This RI is focused on defining the nature and extent of contamination on-site and potential for off-site migration, identifying the sources of contamination, defining chemical constituent migration pathways, qualitatively assessing human health and ecological risks, and obtaining data of sufficient quantity and quality to perform an alternatives analysis report. The investigation will include intrusive activities to evaluate subsurface soil quality and assess groundwater quality, including the presence of LNAPL.

Past history of petroleum bulk storage on the property justifies an analytical program that utilizes both a Full BCP List of parameters (Full Parameter List) and a Target Parameter List, specific to indicators of petroleum impacts. Field team personnel will collect environmental samples in accordance with the rationale and protocols described in the QAPP in Section 5. United States Environmental Protection Agency (USEPA) sample collection and handling techniques will be used. Soil, groundwater, and soil vapor samples taken for chemical analysis will be analyzed in accordance with USEPA SW-846 methodology with an equivalent Category B deliverable package to meet the definitive-level data requirements and facilitate the data usability summary report (DUSR). Analytical results will be evaluated by a third-party data validation expert in accordance with provisions described in the QAPP. Data submittals will be provided to the NYSDEC in accordance with the most current electronic data deliverables (EDD) protocols.

During intrusive RI activities, the Community Air Monitoring Plan (CAMP) will be followed. The CAMP is consistent with the requirements for community air monitoring at remediation sites as established by the New York State Department of Health (NYSDOH) and NYSDEC. Accordingly, it follows procedures and practices outlined under NYSDEC's DER-10 (May 2010) Appendix 1A (NYSDOH's Generic Community Air Monitoring Plan) and Appendix 1B (Fugitive Dust and Particulate Monitoring).

The investigation approach is described below. Figure 6 presents the proposed RI sample locations. Investigation locations shown in Figure 6 are approximate; actual locations will be selected based on equipment accessibility and visual impacts (i.e., staining), odors, and/or remnants of petroleum storage infrastructure. Table 1 outlines the planned sampling and analytical program.

## 4.1. Pre-Investigation Activities

### *4.1.1. Utility Clearance*

Prior to any intrusive activities, Dig Safely New York (Call 811) will be contacted by the site contractor a minimum of three business days in advance of the work and informed of the intent to perform excavation work at the Site. If underground utilities are present on the property and are anticipated to interfere with intrusive activities, the Applicant and the NYSDEC will be contacted to discuss mitigating measures.

### *4.1.2. Clearing*

Vegetation will be cleared, as needed, to access investigation locations. Vegetation from site clearing activities will remain on site.

## 4.2. Soil Investigation

A soil investigation will be completed at the Site to assess the horizontal and vertical depth of known historical contamination and investigate for the potential presence of other contaminants. The soil investigation will include the completion of test pits and soil borings to allow for characterization of surface and subsurface soil material and sample collection.

### *4.2.1. Test Pits*

Thirteen subsurface exploratory test pit locations (TP-10 through TP-22) will be excavated across the Site as identified in Figure 6. Test pits are spatially located to identify:

- potential source areas and assess the extent of known source areas;
- observe subsurface features such as abandoned conveyance piping that may serve as migration pathways; and
- facilitate soil sample collection.

Eight (8) test pits are proposed to be excavated across the northern portion of the Site to supplement the known site conditions determined from the Benchmark study conducted in 2019. Five (5) test pits are proposed for the southern portion of the Site. Test pits will be advanced to a minimum of 5 feet below the phreatic zone (water table interface) and to a maximum depth of approximately 15 feet, due to equipment limitations. This will be sufficient to characterize soil stratigraphy and screen for visual or olfactory evidence of contamination.

Soil samples retrieved from these test pits will be field screened for the presence of volatile organics using a calibrated PID with a 10.6 eV lamp to identify potential impacts and logged in accordance with the Unified Soil Classification System (USCS), including detailed descriptions and observations of potential contamination. Upon reaching the completion depth of each location, field visual/olfactory and PID results will be reviewed to determine the representative soil sampling interval to submitted for laboratory analysis. Two (2) samples will be collected and submitted from each of proposed test pits. A sample will be collected from the surface soil in each test pit and submitted for laboratory analysis. The unsaturated soil sample exhibiting the highest apparent impacts, from each test pit, will be submitted for laboratory analysis. If apparent impacts are not present within a test pit location, the second soil sample submitted will be collected from the phreatic zone.

GEI will oversee the investigation work and create a test pit log (including photographs) for each investigation location. Field forms in Appendix D provide a test pit log. Real time air and particulate monitoring will be conducted during intrusive activities using a PID and particulate monitor in accordance with the CAMP.

The Full Parameter List will be used for analyzing test pit soil samples exhibiting the highest apparent impacts across the Site and the Target Parameter List will be utilized for the remaining subsurface samples and all surficial samples as described below.

Five (5) soil samples, three (3) selected from the northern portion of the Site, and two (2) from the southern portion of the Site, will be analyzed for the Full Parameter List, including:

- Target Compound List (TCL) Volatile Organic Compounds (VOCs) plus Commissioner's Policy (CP)-51 Lists with Tentatively Identified Compounds (TICs)
- TCL Semivolatile Organic Compounds (SVOCs) plus 1,4-dioxane
- TCL Pesticides
- TCL Polychlorinated Biphenyls (PCBs)
- Target Analyte List (TAL) Metals - Inductively Coupled Plasma (ICP)
- Mercury
- Hexavalent Chromium
- Trivalent Chromium
- Total Cyanide

Eight (8) subsurface soil samples will be collected from the remaining test pits and analyzed for the Target Parameter List, including:

- TCL VOCs plus CP-51 Lists
- TCL SVOCs plus 1,4-dioxane
- TAL Metals
- Mercury

Thirteen (13) surficial soil samples will be analyzed for the Target Parameter List, including:

- TCL VOCs plus CP-51 Lists
- TCL SVOCs plus 1,4-dioxane
- TAL Metals
- Mercury

Soil removed from the test pit investigation locations shall be returned to the location in the general order that it was excavated/removed provided that no grossly contaminated material (GCM) is observed. If GCM is observed, impacted soil/fill will be containerized in sealed New York State Department of Transportation (NYSDOT)-approved drums. The determination of grossly contaminated material will be made by the QEP or their supervised designee in the field.

The Applicant, or its designated contractors, will be responsible for the characterization, temporary on-site storage, transportation, and disposal of all investigation-derived waste (IDW) generated during implementation of this RIWP, in accordance with 6 NYCRR Part 375 and DER-10 requirements. No IDW will be disposed of or reused without appropriate characterization and regulatory approval, as applicable.

### *4.2.2. Soil Borings*

Eleven (11) soil borings, identified as SB-01 through SB-11, will be advanced to characterize subsurface soil conditions primarily near the perimeter of the northern and southern portions of the Site and allow for the installation of monitoring wells MW-01 through MW-11, respectively (see Figure 6). Soil borings will be advanced using 4¼-inch diameter hollow-stem augers (HSA), with soil samples collected using a five-foot MacroCore™ sampler driven by an auto-hammer to an approximate depth of 15 feet, or deeper to adequately characterize the uppermost water-bearing zone, unless limited by equipment refusal.

Continuous soil sampling will be performed throughout each boring. Samples will be screened using a photoionization detector (PID) and logged in accordance with the Unified Soil Classification System (USCS), including detailed descriptions and observations of potential contamination.

If grossly contaminated materials suggestive of LNAPL presence are encountered, borehole advancement will transition to 6¼-inch HSA to allow installation of 4-inch diameter monitoring wells. This larger well diameter will improve LNAPL assessment and provide the potential for future product recovery if warranted.

Drill cuttings and any other investigation derived waste (IDW) will be managed in accordance with DER-10 3.3(e). Specifically, drill cuttings from soil borings where wells will be installed will be placed in NYSDOT-approved drums and labeled.

GEI will oversee the investigation work and create a field borehole log (including photographs) for each investigation location. Field forms in Appendix D provide a sample field boring log. Real time air and particulate monitoring will be conducted during intrusive activities using a PID and particulate monitor in accordance with the CAMP.

All soil samples will be field screened for the presence of volatile organics using a calibrated PID with a 10.6 eV lamp, as a procedure for ensuring the health and safety of personnel at the Site, and to identify potential impacts in soil samples for laboratory analysis. Upon reaching the completion depth of each location, field visual/olfactory and PID results will be reviewed, and sample intervals will be determined.

One (1) sample will be collected and submitted from each of the proposed soil borings from surficial soils., and a second sample will be collected and submitted from each of proposed soil borings from soils from the phreatic zone (water table interface). Specifically, twelve (12) soil samples will be collected from the six (6) soil borings on the northern portion of the Site and ten (10) soil samples will be collected from the five (5) soil borings on the southern portion of the Site.

All soil boring samples will be analyzed for the Target Parameter List, including:

- TCL VOCs plus CP-51 Lists
- TCL SVOCs plus 1,4-dioxane
- TAL Metals
- Mercury

### *4.2.3. Soil Sample Collection and Analysis*

Table 1 summarizes the proposed sample collection and analytical program described above and Figure 6 shows the planned sample locations. En-core samplers will be used to collect RI VOC soil samples as described in Method 5035. The remaining samples will be collected and placed into pre-cleaned laboratory-provided sample bottles. Samples will be cooled to 4ºC in the field and transported under chain-of-custody command to a NYSDOH Environmental Laboratory Approval Program (ELAP)-certified analytical laboratory.

## 4.3. Soil Vapor Investigation

Four (4) soil vapor sampling points, SV-01 through SV-04, will be installed along the perimeter of the property (see Figure 6) to evaluate petroleum impacts in soil vapor. Three (3) sampling points will be installed along the southern and eastern extents of the southern portion of the Site which is adjacent to residential properties. One (1) sampling point will be located within the northern extent of the northern portion of the Site which is adjacent to Oregon Road.

Each soil vapor sampling point will be installed within a soil bore holes that will be drilled into the soil to a depth of approximately 5 feet below ground surface. This depth is anticipated to be above the water table. 6-inch soil vapor screens will be threaded to anchor points and installed in each bore hole. One end of a length of inert tubing will be placed in the screened interval at each location. The annular space surrounding the vapor screen interval and at least 6-inches above the top of the screen will be filled with porous backfill material (e.g., sand) to create a sampling zone one foot in length. The soil vapor points will be sealed above the sampling zone with a bentonite slurry to grade.

A suction pump will be used to remove three volumes of air from each point prior to sampling, at a rate less than 0.2 liters per minute. A tracer gas evaluation will also be conducted at each point to verify the integrity of the seal above the sampling zone.

Samples will be collected via the inert tubing in 1-liter Summa canisters using a flow controller calibrated to collect a sample for four minutes. Detailed procedures for installing the sampling points, purging, tracer gas testing, and sample collection are included in the NYSDOH guidance document and GEI's SOP for Soil Vapor Collection (Appendix C). The soil gas samples will be analyzed for VOCs by an ELAP-certified laboratory using EPA method TO-15.

## 4.4. Groundwater Investigation

Eleven (11) groundwater monitoring wells, MW-01 through MW-11, will be installed within soil borings SB-01 through SB-11, respectively to evaluate groundwater quality near the site perimeter, flow direction, and assess the presence of LNAPL. The groundwater wells will be installed into the uppermost water bearing zone previously identified at approximately 6 to 7 feet below ground surface during the Benchmark investigation. Two groundwater sampling events, with the second sampling event occurring approximately 3 to 6 months after the first sampling event, and two rounds of groundwater elevation monitoring are considered sufficient to characterize Site conditions. Proposed groundwater monitoring well locations are identified on Figure 6. Monitoring well installation, well development, groundwater sample collection, and LNAPL mobility assessment details are discussed in the following sections.

### *4.4.1. Monitoring Well Installation*

The monitoring wells will be installed with a track mounted drill rig. Each well will be advanced into the uppermost water bearing zone, a minimum of 15 fbgs. Soil/fill will be removed from the boreholes and characterized as the borings are advanced, as discussed in Section 4.2.2. Evidence indicating the uppermost water zone has been encountered includes the presence of wet soil/fill and/or water in the MacroCore™ sampler. The depth and screen length of each monitoring well will be determined based on geologic and hydrologic conditions observed in the field. All non-dedicated drilling tools and equipment will be decontaminated between boring locations using potable tap water and a phosphate-free detergent (e.g., Alconox).

Each well will be constructed with either a two-inch or four-inch diameter Schedule (SCH) 40 PVC. Final well diameter will be determined, by the QEP, during borehole advancement; if gross contamination is encountered, 4-inch diameter wells will be installed to facilitate LNAPL assessment and potential product recovery. A minimum five-foot flush joint SCH 40 PVC 0.010-inch machine-slotted well screen positioned to straddle the water table. Each well screen and attached riser will be placed at the bottom of each borehole and a silica sand filter pack (size #0) will be installed from the base of the well to a maximum of two feet above the top of the screen. A bentonite chip seal will then be installed and allowed to hydrate sufficiently to mitigate the potential for downhole grout contamination. The newly installed monitoring wells will be completed with stick-up protective casings with locking cap.

### *4.4.2. Well Development*

After installation, but not within 24 hours, newly installed monitoring wells will be developed in accordance with GEI and NYSDEC protocols. Development of the monitoring wells will be accomplished with dedicated disposable HDPE or PVC bailers via surge and purge methodology. Field parameters including pH, temperature, turbidity, dissolved oxygen (DO), oxidation-reduction potential (ORP), and specific conductance will be measured periodically (i.e., every well volume) during development. Field measurements will continue until they become relatively stable. Stability will be defined as variation between measurements of approximately 10 percent or less with no overall upward or downward trend in the measurements. A minimum of three well volumes will be evacuated from each monitoring well. Development water from the monitoring wells will be containerized in NYSDOT-approved drums and labeled per monitoring well location upon production in accordance with DER-10 Section 3.3(e)5.ii. It will

be determined, in consultation with the Department and in accordance with DER-10 Section 3.3(e)5.ii and the NYSDEC's Generic Effluent Criteria for Groundwater Discharges Memorandum (August 2013), if the containerized development water is acceptable for surface discharge or requires subsequent on-site treatment and/or off-site disposal.

### *4.4.3. Groundwater Sample Collection*

Following well development, wells will be allowed to stabilize for a minimum of two weeks prior to sampling. Prior to groundwater sample collection, static water levels will be measured and recorded from the on-site monitoring wells to facilitate the preparation of a Site-wide isopotential map. Each well will also be checked for LNAPL using an interface probe. If LNAPL is present, it will be removed with dedicated polyethylene disposable bailers, and recovery rates will be documented to assess mobility.

Following water level measurement and LNAPL recovery, field personnel will purge and sample monitoring wells using a peristaltic pump with dedicated well tubing following low flow/minimal drawdown purge and sample collection procedures. In the event of pump failure or the saturated unit does not permit the proper implementation of low-flow sampling, a dedicated polyethylene bailer will be used to purge and sample the well. Prior to sample collection via low-flow methodology, groundwater will be evacuated from each well at a low-flow rate (typically less than 0.1 L/min) while maintaining a generally consistent water level. Field measurements for pH, temperature, turbidity, DO, ORP, specific conductance, and water level, as well as visual and olfactory field observations will be periodically recorded and monitored for stabilization. Low-flow purging will be considered complete when field parameters stabilize and when turbidity measurements fall below 50 Nephelometric Turbidity Units (NTU) or become stable above 50 NTU regardless of volume purged. Purging via disposable bailer, if necessary, will be considered complete following the removal of three well volumes and field parameter stabilization or to dryness, whichever occurs first. In general, stability is defined as variation between field measurements of 10 percent or less and no overall upward or downward trend in the measurements. Upon stabilization of field parameters, groundwater samples will be collected and analyzed as discussed below.

Prior to, and immediately following collection of groundwater samples, field measurements for pH, specific conductance, temperature, DO, ORP, turbidity, and water level, as well as visual and olfactory field observations will be recorded. All collected groundwater samples will be placed in pre-cleaned, pre-preserved laboratory provided sample bottles, cooled to 4$^{o}$C in the field, and transported under chain-of-custody command to a NYSDOH-approved ELAP-certified laboratory for analysis.

Purge water from the monitoring wells will be containerized in NYSDOT-approved drums and labeled per monitoring well location upon production in accordance with DER-10 Section 3.3(e)5.ii. It will be determined, in consultation with the Department and in accordance with DER-10 Section 3.3(e)5.ii and the NYSDEC's Generic Effluent Criteria for Groundwater Discharges Memorandum (August 2013), if the containerized development water is acceptable for surface discharge or requires subsequent on-site treatment and/or off-site disposal. If LNAPL is present in a well, the recovered product will be containerized in NYSDOT-approved drums and labeled in accordance with DER-10 Section 3.3(e)5.ii.

### *4.4.4. Groundwater Sample Analyses*

As summarized on Table 1, groundwater samples will be collected for the Target Parameter List, including

- TCL VOCs plus CP-51 Lists with TICs
- TCL SVOCs plus 1,4-dioxane
- TAL Metals - ICP
- Mercury

Groundwater samples will be collected and analyzed in accordance with USEPA SW 846 methodology with equivalent NYSDEC Category B deliverables to allow for preparation of a DUSR by an independent third-party data validator.

## 4.5. Field Specific Quality Assurance/Quality Control Sampling

In addition to the soil/fill, soil vapor, and groundwater samples described above, field-specific QA/QC samples will be collected and analyzed to ensure the reliability of the generated data as described in the QAPP (see Section 5.0) and to support the required third-party data usability assessment effort. Site-specific QA/QC samples will include matrix spikes, matrix spike duplicates, blind duplicates, and trip blanks.

## 4.6. Decontamination and Investigation-Derived Waste Management

Every attempt will be made to utilize dedicated sampling equipment during the RI. However, if non-dedicated equipment is required and/or used, the equipment will be decontaminated, at a minimum, with a non-phosphate detergent (i.e., Alconox®) and potable water mixture, rinsed with distilled water, and air-dried before each use in accordance with GEI's SOPs presented in Appendix C. All decontaminated sampling equipment will be kept in a clean environment prior to sample collection. Heavy equipment, such as an excavator, will be decontaminated by the subcontractor. Drilling tools (i.e., augers, split spoons, etc.) will be decontaminated upon mobilization to the Site, between investigation locations, and upon demobilization from the Site. Decontamination fluid will be containerized in sealed NYSDOT-approved drums and labeled upon generation.

RI generated test pit spoils not exhibiting gross contamination (i.e., visible product, odor, sheen, etc.) will be returned to test pit from which it was removed. Drilling spoils from boreholes will be placed in sealed NYSDOT-approved drums and labeled. Development water from the monitoring wells will be containerized in NYSDOT-approved drums and labeled per monitoring well location upon production in accordance with DER-10 Section 3.3(e)5.ii. Any IDW materials exhibiting gross contamination will be placed in sealed NYSDOT-approved drums and labeled. All generated IDW drums will be labeled alpha-numerically regarding contents, origin, and date of generation using a paint stick marker on two sides and the top of each drum. IDW will be stored and secured on the northern portion of the property near the existing structure.

The Applicant, or its designated contractors, will be responsible for the characterization, temporary on-site storage, transportation, and disposal of all investigation-derived waste (IDW) generated during

implementation of this RIWP, in accordance with 6 NYCRR Part 375 and DER-10 requirements. No IDW will be disposed of or reused without appropriate characterization and regulatory approval, as applicable.

Discarded personal protective equipment (PPE) (i.e., latex gloves, Tyvek, paper towels, etc.) and disposable sampling equipment (i.e., bailers or stainless-steel spoons) will be placed in sealed plastic garbage bags and disposed of as municipal solid waste.

## 4.7. Site Mapping

A Site map will be developed during the field investigation. Sample points and relevant Site features will be located on the map. GEI will employ a handheld GPS unit to identify the locations of soil borings and monitoring wells relative to State planar grid coordinates. Monitoring well elevations will be measured by GEI's surveyor. An isopotential map showing the general direction of groundwater flow will be prepared based on water level measurements relative to USGS vertical datum. Maps will be provided with the RI report.

## 4.8. Fish and Wildlife Resources Impact Analysis

A Fish and Wildlife Resources Impact Analysis (FWRIA) Part 1 evaluation will be conducted as described in DER-10 Section 3.10.1 and DER-10 Appendix 3C. All fish and wildlife resources on the Site and within one-quarter of a mile of the Site will be identified and described. Fish and wildlife exposure pathways and contaminants of ecological concern will also be identified and described in the FWRIA Part 1 report included with the RI report. A topographic map of Site resources and a general cover map of ecological habitats will be prepared and included in the RI report.

## 4.9. Field Documentation and Daily Reporting

Remedial investigation field activities will be documented through preparation of Field Activity Daily Logs (FADLs). In accordance with 6 NYCRR Part 375, FADLs will be submitted electronically to the NYSDEC Project Manager no later than the next business day following the conducted field work. At a minimum, daily field reports will include:

- Date(s) and location(s) of work performed;
- Names and affiliations of field personnel and contractors;
- Description of investigation activities completed;
- Identification of sampling locations and depths;
- Community Air Monitoring Program (CAMP) summary results and exceedances, if any;
- Description of investigation-derived waste generation and handling;
- Deviations from the approved RIWP and justification for such deviations; and
- Identification of unusual conditions, observations, or complaints received.

Sampling activities will be logged and photographed to document the activities at the Site. Progress photographs from a set location will be collected to document development activities and intrusive construction activities. Field personnel will, at a minimum, complete the following additional standard field forms (see Appendix D) to include in the RI Report:

- Chain of Custody Form (per selected laboratory)
- Equipment Calibration Log
- Field Borehole/Monitoring Well Log
- Groundwater Field Form
- Investigative-Derived Waste Container Log
- Photographic Log
- Tailgate Safety Meeting Form
- Test Pit Excavation Log
- Problem Identification Report
- Corrective Measures Report

# 5. Quality Assurance Project Plan

A Quality Assurance Project Plan (QAPP) has been prepared in support of the RI activities. The QAPP dictates implementation of the investigation tasks delineated in this Work Plan. A Sampling and Analysis Plan (SAP) identifying methods for sample collection, decontamination, handling, and shipping, is provided below.

The QAPP will assure the accuracy and precision of data collection during the Site characterization and data interpretation periods. The QAPP identifies procedures for sample collection to mitigate the potential for cross-contamination, as well as analytical requirements necessary to allow for independent data validation. The QAPP has been prepared in accordance with USEPA's Requirements for Quality Assurance Project Plans for Environmental Data Operations; the EPA Region II CERCLA Quality Assurance Manual, and NYSDEC's DER-10 Technical Guidance for Site Investigation and Remediation (May 2010).

## 5.1. Scope of the QAPP

This QAPP was prepared to provide QA/QC guidelines to be implemented during the RI activities. This document may be modified for subsequent phases of investigative work. The QAPP provides:

- A means to communicate to the persons executing the various activities exactly what is to be done, by whom, and when.
- A culmination to the planning process that ensures that the program includes provisions for obtaining quality data (e.g., suitable methods of field operations).
- A historical record that documents the investigation in terms of the methods used, calibration standards and frequencies planned, and auditing planned.
- A document that can be used by the Project Manager's and QA Officer to assess if the activities planned are being implemented and their importance for accomplishing the goal of quality data.
- A plan to document and track project data and results.
- Detailed descriptions of the data documentation materials and procedures, project files, and tabular and graphical reports.

The QAPP is primarily concerned with the QA/QC aspects of the procedures involved in the collection, preservation, packaging, and transportation of samples; field testing; record keeping; data management; chain-of-custody procedures; laboratory analyses; and other necessary matters to assure that the investigation activities, once completed, will yield data whose integrity can be defended.

QA refers to the conduct of all planned and systematic actions necessary to perform satisfactorily all task-specific activities and to provide information and data confidence as a result of such activities. The QA for task-specific activities includes the development of procedures, auditing, monitoring, and surveillance of the performance.

QC refers to the activity performed to determine if the work activities conform to the requirements. This includes activities such as inspections of the work activities in the field (e.g., verification that the items

and materials installed conform to applicable codes and design specifications). QA is an overview monitoring of the performance of QC activities through audits rather than first time inspections.

## 5.2. QAPP Organization and Responsibility

The principal organizations involved in verifying achievement of data collection goals for the Site include: 1641 River Street LLC (Applicant), GEI (Applicant's Consultant), the drilling subcontractor(s), the independent environmental laboratory, and the independent third-party data validator. The roles, responsibilities, and required qualifications of these organizations are discussed in the following subsections. Résumés are included in Appendix B.

### *5.2.1. Applicant*

1641 River Street LLC will be responsible for complying with the QA requirements as specified herein and for monitoring and controlling the quality of the Brownfield cleanup construction either directly or through their designated environmental consultant and/or legal counsel. The Applicant will also have the authority to select Remedial Action Contractor(s) to assist them in fulfilling these responsibilities. The designated Project Manager is responsible for implementing the project and has the authority to commit the resources necessary to meet project objectives and requirements.

### *5.2.2. Environmental Engineer and Scientific Technical Consultant*

GEI is the Environmental Engineer and Scientific Technical Consultant on this project and is responsible for the implementation of the RI Work Plan, including, but not limited to, field operations, laboratory testing, data management, data analysis and reporting. Any one member of GEI's staff may fill more than one of the identified project positions (e.g., field team leader and site safety and health officer).

All remedial investigation field activities conducted pursuant to this RIWP will be performed under the supervision of a QEP, as defined in 6 NYCRR 375-1.2, or by trained field representatives acting under the direct supervision of a QEP. The QEP will be responsible for ensuring that field activities are performed in accordance with the approved RIWP, applicable regulatory requirements, and accepted professional standards, and for evaluating and authorizing any necessary field adjustments consistent with the objectives of the investigation.

The various quality assurances, field, laboratory, and management responsibilities of key project personnel are defined below.

#### 5.2.2.1. Project Officer (PO): Richard Frappa, PG

The PO has the responsibility for ensuring conformance with the BCP program requirements. The PO will report directly to the Applicants and the NYSDEC/NYSDOH Project Managers and is responsible for project oversight as a QEP.

The PO will:

- Define project objectives and develop a detailed work plan schedule.
- Acquire and apply technical and corporate resources as needed to assure performance within budget and schedule constraints.
- Review the work performed on the project to assure its quality, responsiveness, and timeliness.
- Certify deliverables before their submission to NYSDEC.

#### 5.2.2.2. Project Manager (PM): Jeffrey S. Hall, PE. PMP

The PM has the responsibility for ensuring that the project meets the Work Plan objectives. The PM will report directly to the Applicants' Project Coordinator and the NYSDEC/NYSDOH Project Managers and is responsible for technical and project oversight as a QEP. The PM will:

- Define project objectives and develop a detailed work plan schedule.
- Establish project policy and procedures to address the specific needs of the project as a whole, as well as the objectives of each task.
- Develop and meet ongoing project and/or task staffing requirements, including mechanisms to review and evaluate each task product.
- Review the work performed on each task to assure its quality, responsiveness, and timeliness.
- Review and analyze overall task performance with respect to planned requirements and authorizations.
- Review all deliverables before their submission to NYSDEC.
- Develop and meet ongoing project and/or task staffing requirements, including mechanisms to review and evaluate each task product.
- Ultimately be responsible for the preparation and quality of interim and final reports.
- Represent the project team at meetings.

#### 5.2.2.3. FTL/SSHO: Jessica Paskie

The Field Team Leader (FTL) has the responsibility for implementation of specific project tasks identified at the Site, is responsible for the supervision of project field personnel, subconsultants, and subcontractors. The FTL reports directly to the PM. The FTL will:

- Define daily work activities.
- Orient field staff concerning the project's special considerations.
- Monitor and direct subcontractor personnel.
- Review the work performed on each task to ensure its quality, responsiveness, and timeliness.
- Assure that field activities, including sample collection and handling, are carried out in accordance with this QAPP.

For this project the FTL will also serve as the Site Safety and Health Officer (SSHO). As such, they are responsible for implementing the procedures and required components of the Site Health and Safety Plan (HASP), determining levels of protection needed during field tasks, controlling site entry/exit, briefing the field team and subcontractors on site-specific health and safety issues, and all other responsibilities as identified in the HASP.

## 5.3. QA Responsibilities

The QA Officer will have direct access to corporate executive staff, to resolve any QA dispute, and is responsible for auditing the implementation of the QA program in conformance with the demands of specific investigations and GEI's policies, and NYSDEC requirements. The QA Officer has sufficient authority to stop work on the investigation as deemed necessary in the event of serious QA issues.

### *5.3.1. Project QA Officer: Michael Cummings, PG*

Specific function and duties include:

- Performing QA audits on various phases of the field operations.
- Reviewing and approving QA plans and procedures.
- Providing QA technical assistance to project staff.
- Reporting on the adequacy, status, and effectiveness of the QA program on a regular basis to the Project Manager for technical operations.
- Responsible for assuring third party data review of all sample results from the analytical laboratory.

## 5.4. Field Responsibilities

GEI field staff for this project is drawn from a pool of qualified personnel. The PM will use staff to gather and analyze data, and to prepare various task reports and support materials. All of the designated technical team members will be experienced professionals who possess the degree of specialization and technical competence required to effectively and efficiently perform the required work.

## 5.5. Quality Assurance Objectives for Measurement Data

The overall objectives and criteria for assuring quality for this effort are discussed below. This QAPP addresses how the acquisition and handling of samples and the review and reporting of data will be documented.

The objectives of this QAPP are to address the following:

- The procedures to be used to collect, preserve, package, and transport soil/fill, groundwater, and soil vapor samples.
- Field data collection.
- Record keeping.
- Data management.
- Chain-of-custody procedures.
- Precision, accuracy, completeness, representativeness, decision rules, comparability, and level of quality control effort conformance for sample analysis and data management by laboratory under EPA analytical methods.

## 5.6. Level of QC Effort for Sample Parameters

Rinse blank, method blank, trip blank, field duplicate, laboratory duplicate, laboratory control, matrix spike (MS), and matrix spike duplicate (MSD) samples will be analyzed to assess the quality of the data resulting from the field sampling and analytical programs. QC samples are discussed below.

- Rinse and trip blanks consisting of distilled water will be submitted to the analytical laboratories to provide the means to assess the quality of the data resulting from the field-sampling program. Equipment blank samples are analyzed to check for procedural chemical constituents at the facility that may cause sample contamination. Field and trip blanks are used to assess the potential for contamination of samples due to contaminant migration during sample shipment and storage.
- Method blank samples are generated within the laboratory and used to assess contamination resulting from laboratory procedures.
- Duplicate samples are analyzed to check for sampling and analytical reproducibility.
- MS/MSD samples provide information about the effect of the sample matrix on the digestion and measurement methodology. In accordance with the sampling program, one MS/MSD will be collected for every 20 or fewer investigative samples to be analyzed for organic and inorganic chemicals of a given matrix (see Table 1).

The general level of QC effort will be one field (blind) duplicate and one MS/MSD for every 20 or fewer investigative samples of a given matrix. One trip blank consisting of distilled, deionized water will be included along with each sample delivery group of aqueous VOC samples. VOC aqueous sampling will include an equipment blank when non dedicated equipment is used.

## 5.7. Sampling and Analysis Plan

Methods and protocol to be used to collect environmental samples (i.e., soil, soil vapor, and groundwater) for this investigation are described in the GEI SOPs, summarized in Table 3.

The number and types of environmental samples to be collected is summarized in Table 1. Sample parameter lists, holding times and sample container requirements are summarized in Table 2. The sampling program and related site activities are discussed below. To the extent allowed by existing physical conditions at the facility, sample collection efforts will adhere to the specific methods presented herein. If alternative sampling locations or procedures are implemented in response to facility specific constraints, each will be selected based on meeting data objectives. Such alternatives will be approved by NYSDEC before implementation and subsequently documented for inclusion in the project file.

### *5.7.1. Custody Procedures*

Sample custody is controlled and maintained through the chain-of-custody (COC) procedures. Chain of custody is how the possession and handling of samples will be tracked from the source (field) to their final disposition, the laboratory. A sample is in a person's custody if it is in the person's possession or is in the person's view after being in their possession or was in that person's possession and that person has locked it in a vehicle or room. Sample containers will be cleaned and preserved at the laboratory before shipment to the Site. The following section and SOPs for Sampling, Labeling, Storage, and Shipment, located in Appendix C, describe procedures for maintaining sample custody from the time samples are collected to the time they are received by the analytical laboratory.

### *5.7.2. Sample Storage*

Samples are stored in secure limited-access areas. Walk-in coolers or refrigerators are maintained at 4°C, +/- 2°C, or as required by the applicable regulatory program. The temperatures of all refrigerated storage areas are monitored and recorded at a minimum of once per day. Deviations of temperature from the applicable range require corrective action, including moving samples to another storage location if necessary.

### *5.7.3. Sample Custody*

Sample custody is defined by this document as when any of the following occur:

- It is in someone's actual possession.
- It is in someone's view after being in his or her physical possession.
- It was in someone's possession and then locked, sealed, or secured in a manner that prevents unsuspected tampering.
- It is situated in a designated and secure area.

Samples are removed from storage areas by the sample custodian or analysts and transported to secure laboratory areas for analysis. Access to the laboratory and sample storage areas is restricted to laboratory personnel and escorted visitors only; all areas of the laboratory are therefore considered secure. If required by the applicable regulatory program, internal COC is documented in a log by the person moving the samples between laboratory and storage areas.

Laboratory documentation used to establish COC and sample identification may include the following:

- Field COC forms or other paperwork that arrives with the sample.
- The laboratory COC.
- Sample labels or tags are attached to each sample container.
- Sample custody seals.
- Sample preparation logs (i.e., extraction and digestion information) recorded in hardbound laboratory books that are filled out in legible handwriting, signed, and dated by the chemist.
- Sample analysis logs (e.g., metals, GC/MS, etc.) information recorded in hardbound laboratory books that are filled out in legible handwriting, signed, and dated by the chemist.
- Sample storage log (same as the laboratory COC).
- Sample disposition log, which documents sample disposal by a contracted waste disposal company.

### *5.7.4. Sample Tracking*

All samples are maintained in the appropriate coolers prior to and after analysis. The analysts remove and return their samples as needed. Samples that require internal COC are relinquished to the analysts by the sample custodians. The analyst and sample custodian must sign the original COC relinquishing custody of the samples from the sample custodian to the analyst. When the samples are returned, the analyst will sign the original COC returning sample custody to the sample custodian. Sample extracts are relinquished to the instrumentation analysts by the preparatory analysts. Each preparation department tracks internal COC through their logbooks/spreadsheets. Any change in the sample during the time of custody will be noted on the COC (e.g., sample breakage or depletion).

### *5.7.5. Split Sampling*

The Department may split any soil or groundwater samples at the Department's expense, during this RI. GEI personnel will cooperate with the Department to facilitate split sampling, as requested.

## 5.8. Calibration Procedures and Frequency

Quantitative field data to be obtained during groundwater sampling include pH, turbidity, specific conductance, temperature, DO, ORP, and depth to groundwater. Quantitative water level measurements will be obtained with an electronic sounder or steel tape, which require no calibration. Quantitative field data to be obtained during soil sampling include screening for the presence of volatile organic constituents using a PID.

SOPs located in Appendix C describe the field instruments used to monitor these parameters and the calibration methods, standards, and frequency requirements for each instrument. Calibration results will be recorded on the appropriate field forms and in the FADL.

## 5.9. Analytical Procedures

Samples collected during this investigation field sampling activities will be analyzed by a NYSDOH-approved laboratory. Field procedures for collecting and preserving groundwater and soil samples are described in SOPs located in Appendix C. A summary of the SOPs is presented on Table 3.

## 5.10. Data Usability Evaluation

Data usability evaluation procedures shall be performed for both field and laboratory operations as described below.

### *5.10.1. Procedures Used to Evaluate Field Data Usability*

Procedures to validate field data for this project will be facilitated by adherence to the SOPs identified in Appendix C. The performance of all field activities, calibration checks on all field instruments at the beginning of each day of use, manual checks of field calculations, checking for transcription errors and review of FADLs is the responsibility of the Field Team Leader.

### *5.10.2. Procedures Used to Evaluate Laboratory Data Usability*

Soil, groundwater, and soil vapor samples taken for chemical analysis will be analyzed in accordance with USEPA SW-846 methodology with an equivalent Category B deliverable package to meet the definitive-level data requirements and facilitate the data usability summary report (DUSR). Data evaluation will be performed by the third-party data validator using the most current methods and quality control criteria from the USEPA's Contract Laboratory Program (CLP) National Functional Guidelines for Organic Data Review, and Contract Laboratory Program, National Functional Guidelines for Inorganic Data Review. The data review guidance will be used only to the extent that it is applicable to the SW-846 methods; SW-846 methodologies will be followed primarily and given preference over CLP when differences occur. Also, results of blanks, surrogate spikes, MS/MSDs, and laboratory control samples will be reviewed/evaluated by the data validator. All sample analytical data for each sample matrix shall be evaluated. The third-party data validation expert will also evaluate the overall completeness of the data package. Completeness checks will be administered on all data to determine whether deliverables specified in this QAPP are present. The reviewer will determine whether all required items are present and request copies of missing deliverables.

# 6. Investigation Support Documents

## 6.1. Health and Safety Protocols

GEI has prepared a Site-Specific Health and Safety Plan (HASP) for use by our employees in accordance with 40 CFR 300.150 of the NCP and 29 CFR 1910.120. The HASP, provided in Appendix E, includes the following site-specific information:

- A hazard assessment.
- Training requirements.
- Definition of exclusion, contaminant reduction, and other work zones.
- Monitoring procedures for site operations.
- Safety procedures.
- Personal protective clothing and equipment requirements for various field operations.
- Disposal and decontamination procedures.

The HASP also includes a contingency plan that addresses potential site-specific emergencies. Health and safety activities will be monitored throughout the field investigation. A member of the field team will be designated to serve as the on-site Health and Safety Officer throughout the field program. This person will report directly to the Project Manager and the Corporate Health and Safety Coordinator. The HASP will be subject to revision, based on new information that is discovered during the field investigation and/or remedial activities.

## 6.2. Community Air Monitoring

Real-time community air monitoring will be performed during the RI activities at the Site. The CAMP is included in Appendix F. Particulate and VOC monitoring will be performed along the upwind and downwind perimeter of the work area during all intrusive activities completed as part of the RI including boring, excavation, and soil/fill handling activities in accordance with this plan. The CAMP is consistent with the requirements for community air monitoring at remediation sites as established by the NYSDOH and NYSDEC. Accordingly, it follows procedures and practices outlined under NYSDEC's DER-10 (May 2010) Appendix 1A (NYSDOH's Generic Community Air Monitoring Plan) and Appendix 1B (Fugitive Dust and Particulate Monitoring). In the event that work is completed within 20 feet of potentially exposed individuals or structures, the CAMP Special Requirements must also be followed, as presented in Appendix F.

Any CAMP exceedances or issues will be reported to NYSDEC and NYSDOH within 24 hours along with the mitigative actions taken and if those actions were effective. A summary of CAMP data will be provided to the NYSDEC and NYSDOH on a weekly basis at minimum.

## 6.3. Citizen Participation Activities

NYSDEC will coordinate and lead community relations throughout the course of the project. GEI will support NYSDEC's community relations activities. A Citizen Participation Plan was prepared by GEI and submitted to NYSDEC under separate cover. The Citizen Participation Plan follows NYSDEC's Citizen Participation Plans template for Brownfield Cleanup Program sites entering the BCP at the point of site investigation. BCP documents will be maintained at the Olean Public Library, the designated repository for the Site.

# 7. Reporting and Schedule

Upon completion of the RI fieldwork, a comprehensive RI Report will be completed summarizing the RI tasks completed as described below.

## 7.1. Remedial Investigation Reporting

The RI Report will include the following information and documentation, consistent with the NYSDEC's DER-10 Technical Guidance for Site Investigation and Remediation (May 2010).

- Introduction and background;
- A description of the Site and the investigation areas;
- A description of the field procedures and methods used during the RI;
- The collection of geospatial data and presentation of investigation drawings detailing the investigation locations, potential areas of concern, presence of buildings, utility poles, and subgrade utilities;
- A discussion of the nature and rationale for any significant variances from the scope of work described in this RI Work Plan;
- The data obtained during the RI and historical investigations, considered by GEI to be of useable quality, including geochemical data, field measurements, validated analytical results, etc.;
- Comparative criteria that may be used to calculate cleanup levels during the AA process, such as NYSDEC's USCOs, NYSDEC's GWQS, and other pertinent regulatory standards or criteria;
- A discussion of contaminant fate and transport. This will provide a description of the hydrologic parameters of the Site, and an evaluation of the lateral and vertical movement of groundwater;
- Results of a Fish and Wildlife Resource Impact Analysis to be conducted as a component of the RI;
- Conclusions regarding the extent and character of environmental impact in the media being investigated;
- The conclusions of the on-site and off-site qualitative human health and environmental exposure assessment completed in accordance with DER-10; and
- Supporting materials for RI data. These will include boring logs, monitoring well construction diagrams, laboratory analytical reports, and similar information.
- An updated conceptual site model in accordance with DER-10 requirements if a no further action conclusion is not achieved by the RI.

In addition, GEI will require third-party analytical data review by a qualified, independent data validation expert for the RI and historic investigation data. Specifically, a DUSR will be prepared, with appropriate data qualifiers added to the results. The DUSR will follow NYSDEC format per the NYSDEC's September

1997 DUSR guidelines and May 2010 DER-10 guidance. The DUSR and any necessary qualifications to the data will be appended to the RI report.

# 8. Project Schedule

Figure 7 presents the anticipated project schedule for the major tasks to be performed in support of the RI Work Plan and RI Report.

# 9. References

*AMEC Earth & Environmental, Inc. (AMEC) April 2006. Historic and Current Site Conditions Report, Former Socony-Vacuum Oil Company, Inc. Refinery Site, Olean, New York. Prepared for ExxonMobil Refining & Supply Global Remediation.*

*NYSDEC, May 2010. DER-10 Technical Guidance for Site Investigation and Remediation.*

*NYSDEC, August 2013. Generic Effluent Criteria for Groundwater Discharges Memorandum.*

*NYSDEC, December 31, 2025. 6 NYCRR Part 375 Environmental Remediation Programs, as revised.*

*NYSDEC, 2025. Environmental Resource Mapper. Accessed March 2026.*

*NYSDOH, October 2006. Guidance for Evaluating Soil Vapor Intrusion in the State of New York.*

*PTM Engineering, PLLC (PTM), December 2025. Drum Investigation Report, 1641 River Street Site, Olean, New York. Prepared for 1641 River Street, LLC.*

*TurnKey Environmental Restoration, LLC (TurnKey), January 2020. Subsurface Environmental Investigation Report, 1641 River Street Site, Olean, New York. Prepared for 1641 River Street, LLC.*

*USDA, 2025. Web Soil Survey, Natural Resources Conservation Service.*

*USEPA, October 1989. CERCLA Quality Assurance Manual, Revision 1, EPA/540/G-89/004.*

*USEPA, 1994a. National Functional Guidelines for Organic Data Review, EPA-540/R-94-012.*

*USEPA, 1994b. National Functional Guidelines for Inorganic Data Review, EPA-540/R-94-013.*

*USEPA, October 1998. Requirements for Quality Assurance Project Plans for Environmental Data Operations (QA/R-5).*

*USGS, 1985. Hydrogeology of the Olean Area, Cattaraugus County, New York. Water-Resources Investigations Report 85-4157.*

# Tables

**Table 1 – Sampling & Analysis Summary**

**Table 2 – Analytical Methods/Quality Assurance Summary**

**Table 3 – GEI SOP Summary**

**Table 1 Sampling & Analysis Summary**
**Remedial Investigation Work Plan**
**1641 River Street Redevelopment Site**
**Olean, NY**

| Sample Type | Sub Parcel | Interval | Analytes | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | TCL VOCs + CP-51 | TCL SVOCs | TAL Metals | Mercury | TCL Pesticides | TCL PCBs | Chromium (III+VI) | Total CN | Air-VOC |
| Soil - Test Pit | North | Surface Sample | 8 | 8 | 8 | 8 | -- | -- | -- | -- | -- |
| Soil - Test Pit | North | Highest Apparent Impacts or Water Table Interface | 5 | 5 | 5 | 5 | -- | -- | -- | -- | -- |
| Soil - Test Pit | North | Highest Apparent Impacts (Grossly Contaminated Material) | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | -- |
| Soil - Test Pit | South | Surface Sample | 5 | 5 | 5 | 5 | -- | -- | -- | -- | -- |
| Soil - Test Pit | South | Highest Apparent Impacts or Water Table Interface | 3 | 3 | 3 | 3 | -- | -- | -- | -- | -- |
| Soil - Test Pit | South | Highest Apparent Impacts (Grossly Contaminated Material) | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | -- |
| Soil - Boring | North | Surface Sample | 6 | 6 | 6 | 6 | -- | -- | -- | -- | -- |
| Soil - Boring | North | Water Table Interface | 6 | 6 | 6 | 6 | -- | -- | -- | -- | -- |
| Soil - Boring | South | Surface Sample | 5 | 5 | 5 | 5 | -- | -- | -- | -- | -- |
| Soil - Boring | South | Water Table Interface | 5 | 5 | 5 | 5 | -- | -- | -- | -- | -- |
| Groundwater - Monitoring Well | North | Middle of Screen | 12 | 12 | 12 | 12 | -- | -- | -- | -- | -- |
| Groundwater - Monitoring Well | South | Middle of Screen | 10 | 10 | 10 | 10 | -- | -- | -- | -- | -- |
| Air - Soil Gas | North | N/A | -- | -- | -- | -- | -- | -- | -- | -- | 1 |
| Air - Soil Gas | South | N/A | -- | -- | -- | -- | -- | -- | -- | -- | 3 |
| **TOTALS** | | | **70** | **70** | **70** | **70** | **5** | **5** | **5** | **5** | **4** |

**Notes:**
1. Soil: Two sets of QA/QC will be collected for VOCs, SVOCs, and TAL metals, and mercury. One set of QA/QC will be collected for the remaining parameters. QA/QC includes trip blank (VOCs), rinse blank, matrix spike/matrix spike duplicate, and blind duplicate. See Table 2 for further details.
2. Groundwater: One set of QA/QC will be collected for all parameters. QA/QC includes trip blank (VOCs), rinse blank, matrix spike/matrix spike duplicate, and blind duplicate. See Table 2 for further details.
3. Air: One set of QA/QC will be collected for all parameters. See Table 2 for further details.

**Table 2. Analytical Methods/Quality Assurance Summary**
**1641 River Street Redevelopment Site**
**Olean, New York**

| Media | Number of Primary Samples | QA/QC Samples | | | | Total Number of QA/QC Samples | Total Number of Samples | Analytical Parameters | Method(s) | Preservative | Holding Time | Container(s) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | TB | FB | DUP | MS/MSD | | | | | | | |
| Soil | 48 | N/A | 1/20 | 1/20 | 1/20 | 9 | 57 | TCL VOCs plus CP-51 Lists | 8021/8260C | Cool to 4°C | 48 hours | 3 - TerraCore Samplers |
| | 48 | N/A | 1/20 | 1/20 | 1/20 | 9 | 57 | TCL SVOCs | 8270D | Cool to 4°C | 14 days | 1 - Clear glass 125ml/4oz unpreserved |
| | 5 | N/A | 1/20 | 1/20 | 1/20 | 3 | 8 | TCL Pesticides | 8081B | Cool to 4°C | 14 days | 1 - Clear glass 125ml/4oz unpreserved |
| | 5 | N/A | 1/20 | 1/20 | 1/20 | 3 | 8 | TCL PCBs | 8082A | Cool to 4°C | 14 days | 1 - Clear glass 125ml/4oz unpreserved |
| | 5 | N/A | 1/20 | 1/20 | 1/20 | 3 | 8 | Hexavalent Chromium | 7196A | Cool to 4°C | 30 days | 1 - Clear glass 125ml/4oz unpreserved |
| | 5 | N/A | 1/20 | 1/20 | 1/20 | 3 | 8 | Trivalent Chromium | SM3500 CR3 D | Cool to 4°C | 180 days | 1 - Clear glass 125ml/4oz unpreserved |
| | 5 | N/A | 1/20 | 1/20 | 1/20 | 3 | 8 | Total Cyanide | 9012B | Cool to 4°C | 14 days | 1 - Clear glass 125ml/4oz unpreserved |
| | 48 | N/A | 1/20 | 1/20 | 1/20 | 9 | 57 | TAL Metals | 6010D | Cool to 4°C | 180 days | 1 - Clear glass 125ml/4oz unpreserved |
| | 48 | N/A | 1/20 | 1/20 | 1/20 | 9 | 57 | Mercury | 7471B | Cool to 4°C | 28 days | 1 - Clear glass 125ml/4oz unpreserved |
| Groundwater (2 Sampling Events) | 22 | 1/Cooler | 1/20 | 1/20 | 1/20 | 8 | 30 | TCL VOCs plus CP-51 Lists | 8260C | pH<2 with HCl, Cool to 4°C | 14 days | 3 - 40 mL VOA vials w/HCL |
| | 22 | N/A | 1/20 | 1/20 | 1/20 | 6 | 28 | TCL SVOCs | 8270D | Cool to 4°C | 7 days | 2 - Amber Glass 250mL/8oz |
| | 22 | N/A | 1/20 | 1/20 | 1/20 | 6 | 28 | TAL Metals | 6010D | pH<2 with HNO3 Cool to 4°C | 180 days | 1 - Plastic 250 mL/8oz w/HNO3 |
| | 22 | N/A | 1/20 | 1/20 | 1/20 | 6 | 28 | Mercury | 7470A | pH<2 with HNO3 Cool to 4°C | 28 days | 1 - Plastic 250 mL/8oz w/HNO3 |
| Soil Vapor | 4 | N/A | 1/20 | 1/20 | 1/20 | 3 | 7 | Air VOCs | TO-15 | N/A | 30 days | 1 -Summa Canister |

**Notes:**

VOCs - Volatile organic compounds
°C - Degrees Celsius
L - Liter
oz - Ounce
mL - Milliliter
N/A - Not Applicable
TAL - Target Analyte List

# Table 3: GEI SOP Summary

| SOP # or Reference[1] | Title, Revision, Date, and URL (if available) | Originating Organization | SOP Option or Equipment Type (if SOP provides options) | Modified for Project? Y/N | Comments |
|---|---|---|---|---|---|
| AR-001 | General Guidance on Work Zone Monitoring Methods. | GEI | See SOP for specific equipment needs | N | Describes general guidance on work zone air monitoring methods. |
| AR-002 | Air Sampling for Dust (Particulate Matter) Using the MIE DataRAM™ Real-Time Aerosol Monitor | GEI | MIE DataRAM™ model DR-2000 real-time aerosol monitor | N | Describes procedures for real-time monitoring of airborne particulate matter. |
| DM-002 | Hollow Stem Auger. | GEI | See SOP for specific equipment needs | N | Describes common hollow-stem auger drilling procedures for overburden soil borings. |
| DM-006 | GeoProbe® Direct Push Boring. | GEI | See SOP for specific equipment needs | N | Describes procedures for drilling overburden soil borings using Geoprobe® and Macro Core® technologies. |
| DM-007 | Monitoring Well Construction and Installation. | GEI | See SOP for specific equipment needs | N | Describes procedures for installation of monitoring wells screened across or below groundwater table. Assumes wells will be constructed of flush-joint PVC pipe and screened section with factory-slotted openings. |
| DM-009 | Monitoring Well Development. | GEI | See SOP for specific equipment needs | N | Describes procedures to develop monitoring wells and maximize groundwater movement. |
| DM-010 | General Guidance on Monitoring Well Abandonment | GEI | See SOP for specific equipment needs | N | Describes procedure for appropriately abandoning monitoring wells when investigation is complete |

| SOP # or Reference[1] | Title, Revision, Date, and URL (if available) | Originating Organization | SOP Option or Equipment Type (if SOP provides options) | Modified for Project? Y/N | Comments |
|---|---|---|---|---|---|
| FD-001 | Field Notebook. | GEI | See SOP for specific equipment needs | N | Describes methods for documentation of field activities. |
| FD-002 | Field Observation Report. | GEI | See SOP for specific equipment needs | N | Describes methods to generate a field observation report. |
| FD-003 | Sample Management and Chain of Custody. | GEI | See SOP for specific equipment needs | N | Describes general methods of labelling and managing samples and chain-of-custody preparation. Additionally addresses sample transport. |
| FD-004 | Photo Documentation. | GEI | See SOP for specific equipment needs | N | Describes methods to document and retain photographic records. |
| FD-006 | Handheld Global Positioning Receiver Operation. | GEI | See SOP for specific equipment needs | N | Describes procedures for conducting GPS surveys. |
| FD-007 | Surveying and Mapping Specifications | GEI | See SOP for specific equipment needs | N | Describes procedures for surveying and creating maps |
| GW-001 | Water Level and NAPL Measurement. | GEI | Water level meter or oil/water interface probe | N | Describes procedures to measure depth to water and NAPL. |
| GW-002 | NAPL Recovery | GEI | See SOP for specific equipment needs | N | Describes procedures for recovering non-aqueous phase liquid from monitoring wells |
| GW-003 | Low Flow (Low Stress) Groundwater Sampling. | GEI | See SOP for specific equipment needs | N | Describe methods to collect groundwater samples representative of aquifer conditions in wells exhibiting no continuous drawdown. |
| GW-004 | pH and Temperature Measurement. | GEI | Combination pH/temperature meter | N | Describes methods to measure pH and temperature of liquids. |
| GW-005 | Turbidity Measurement. | GEI | Hach nephelometer/ turbidimeter | N | Describes calibration and method to measure turbidity. |

| SOP # or Reference[1] | Title, Revision, Date, and URL (if available) | Originating Organization | SOP Option or Equipment Type (if SOP provides options) | Modified for Project? Y/N | Comments |
|---|---|---|---|---|---|
| GW-006 | Specific Conductance Measurement. | GEI | Field conductivity meter | N | Describes calibration and method to measure conductivity. |
| GW-007 | Dissolved Oxygen Measurement. | GEI | Dissolved oxygen (DO) meter | N | Describes calibration and method to measure DO. |
| GW-014 | DNAPL Measurement and Recovery | GEI | See SOP for specific equipment needs | N | Describes procedures for measuring and removing DNAPL from monitoring wells. |
| PM-001 | Utility Mark Out and Clearance | GEI | See SOP for specific equipment needs | N | Describes utility mark out/clearance procedures. |
| QA-001 | Equipment Decontamination. | GEI | See SOP for specific equipment needs | N | Describes methods used to decontaminate core collection equipment and reusable sampling equipment for projects that require collection of organic and inorganic samples. |
| QA-002 | Field Quality Control Samples. | GEI | See SOP for specific equipment needs | N | Describes procedures for field quality control (QC) samples. |
| SC-001 | Environmental Sample Types and Sampling Strategies | GEI | See SOP for specific equipment needs | N | Describes sample types and strategic approaches to sample locations. |
| SC-002 | Environmental Sample Handling. | GEI | See SOP for specific equipment needs | N | Describes procedures related to the collection and transportation of environmental samples. |
| SC-003 | Investigation Derived Waste. | GEI | See SOP for specific equipment needs | N | Describes characterization and management of investigation derived waste resulting from investigation activities. |
| SC-004 | Headspace VOC Screening. | GEI | Photoionization detector (PID) or flame ionization detector (FID) | N | Describes methods to measure total VOCs present in headspace. |

| SOP # or Reference[1] | Title, Revision, Date, and URL (if available) | Originating Organization | SOP Option or Equipment Type (if SOP provides options) | Modified for Project? Y/N | Comments |
|---|---|---|---|---|---|
| SG-002 | Soil Vapor Sample Collection | GEI | See SOP for specific equipment needs | N | Describes the procedure for collecting soil vapor samples. |
| SG-004 | Ambient Air Sample Collection | GEI | See SOP for specific equipment needs | N | Describes the procedure for collecting samples of ambient air. |
| SM-001 | Soil Sampling Techniques Including Split-Spoon. | GEI | See SOP for specific equipment needs | N | Describes the standard procedure for the collection of surface and subsurface soil samples using traditional sampling methods. |
| SM-002 | VOC Soil Collection and Preservation Method. | GEI | See SOP for specific equipment needs | N | Describes methods to collect and preserve soil samples for the analysis of VOCs in accordance with the EPA Method 5035. |
| SM-003 | Classification of Soil Samples in the Field. | GEI | See SOP for specific equipment needs | N | Describes methods to classify soil samples collected in the field in a consistent manner. |
| SM-004 | Test Pit Excavation | GEI | See SOP for specific equipment needs | N | Describes methods for observing and collecting soil samples from test pits |

**Notes:**

[1] GEI field standard operating procedures (SOPs) are presented in Appendix C of this RIWP.

Y = yes; N = no; GPS = global positioning system; ID = identification; SOP = standard operating procedure; VOC = volatile organic compound; QC = quality control.

# Figures

**Figure 1 - Site Location Map**

**Figure 2 - Site Plan**

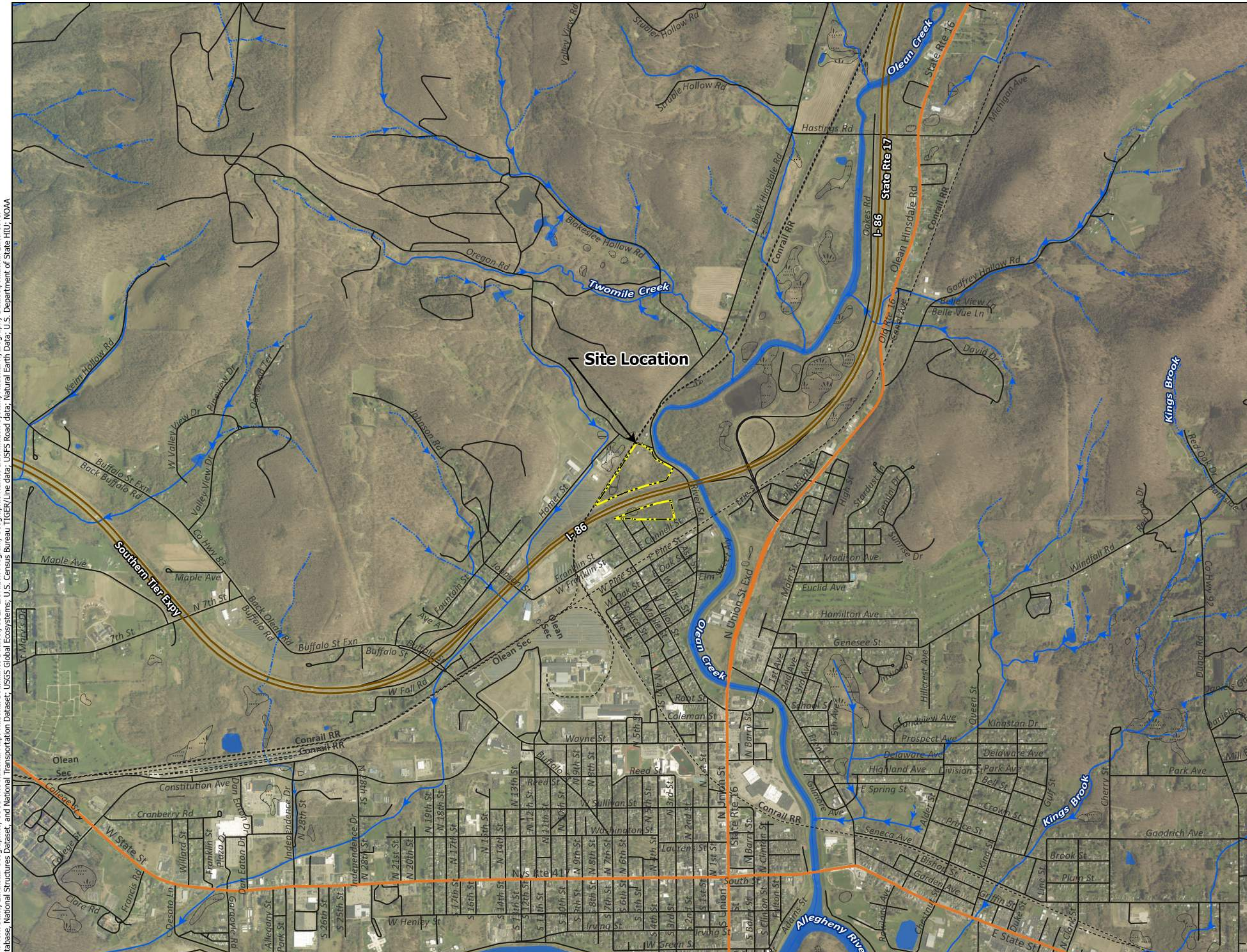
**Figure 3 - Historical Site Features**

**Figure 4 - Potential Wetland Locations**

**Figure 5 - Previous Investigation Locations**

**Figure 6 - Proposed Investigation Locations**

**Figure 7 - Project Schedule**




New York State, Earthstar Geographics, USGS The National Map: National Boundaries Dataset, 3DEP Elevation Program, Geographic Names Information System, National Hydrography Dataset, National Land Cover Database, National Structures Dataset, and National Transportation Dataset; USGS Global Ecosystems; U.S. Census Bureau TIGER/Line data; USFS Road data; Natural Earth Data; U.S. Department of State HIU; NOAA

## SITE LOCATION

***LEGEND:***

- Stream/River (NHD)
- Stream/River - Intermittent (NHD)
- USA Wetlands (NWI)
- Property Parcel

N
W E
S

GEI Consultants

0 1,000 2,000 4,000 Feet




1641 River St

Olean, New York

Project 2600988 March 2026 Figure 1

Path: C:\Users\zachyc3493\GEI Consultants, Inc\Buffalo GIS - Documents\General\Projects\Proposals\Olean\Olean.aprx

# SITE PLAN

***LEGEND:***

- Catch Basin
- Sanitary Sewer (City of Olean)
- Water Main (City of Olean)
- Storm Pipe (City of Olean)
- Stream/River (NHD)
- Property Parcel

Note: Location of public utilities based on 2014 drawings from the City of Olean.

N
W E
S

GEI Consultants

0 100 200 400
Feet




1641 River St

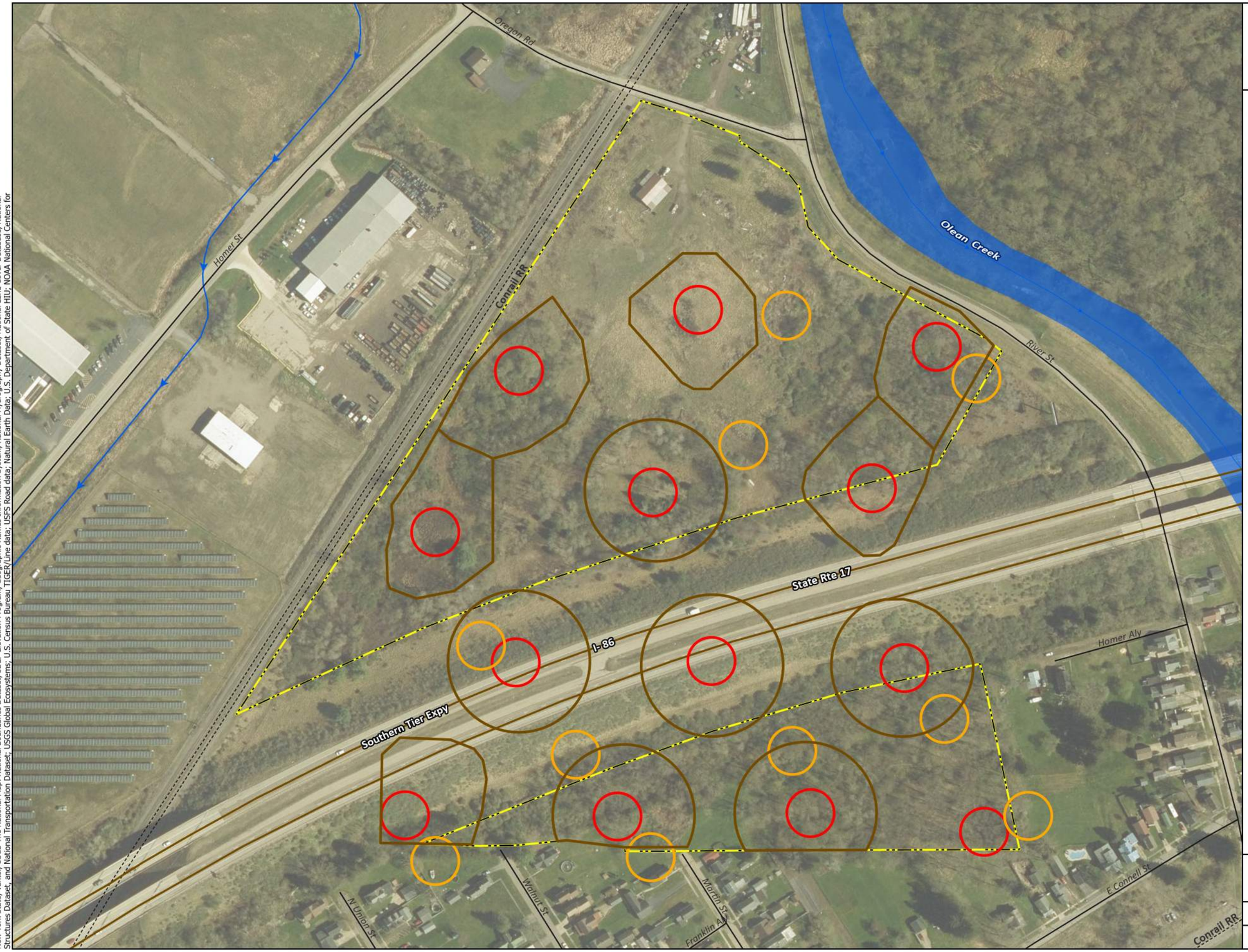
Olean, New York

Project 2600988 March 2026 Figure 2



New York State, Microsoft, Vantor, USGS The National Map: National Boundaries Dataset, 3DEP Elevation Program, Geographic Names Information System, National Hydrography Dataset, National Land Cover Database, National Structures Dataset, and National Transportation Dataset; USGS Global Ecosystems; U.S. Census Bureau TIGER/Line data; USFS Road data; Natural Earth Data; U.S. Department of State HIU; NOAA

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## HISTORICAL SITE FEATURES

***LEGEND:***

- Stream/River (NHD)
- Historic Tank - 1955 Aerial (Approximate)
- Historic Tank - 1898 USGS Map (Approximate)
- Historic Berm (Approximate)
- Property Parcel

N
W E
S

GEI Consultants

0 100 200 400
Feet




1641 River St

Olean, New York

Project 2600988 March 2026 Figure 3

New York State, Vantor, USGS The National Map: National Boundaries Dataset, 3DEP Elevation Program, Geographic Names Information System, National Hydrography Dataset, National Land Cover Database, National Structures Dataset, and National Transportation Dataset; USGS Global Ecosystems; U.S. Census Bureau TIGER/Line data; USFS Road data; Natural Earth Data; U.S. Department of State HIU; NOAA National Centers for

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# POTENTIAL WETLAND LOCATIONS

***LEGEND:***

- Stream/River (NHD)
- Potential Freshwater Wetland
- Property Parcel

Oregon Rd
Homer St
Conrail RR
Olean Creek
River St
State Rte 17 Southern Tier Expy
I- 86
Homer Aly
N Union St
Walnut St
Franklin Alley
Martin St
E Connell St
Conrail RR

N
W E
S

GEI Consultants

0 100 200 400
Feet




1641 River St

Olean, New York

Project 2600988 March 2026 Figure 4

NYSDEC, New York State, Microsoft, Vantor, USGS The National Map: National Boundaries Dataset, 3DEP Elevation Program, Geographic Names Information System, National Hydrography Dataset, National Land Cover Database, National Structures Dataset, and National Transportation Dataset; USGS Global Ecosystems; U.S. Census Bureau TIGER/Line data; USFS Road data; Natural Earth Data; U.S. Department of State HIU; NOAA

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# PREVIOUS INVESTIGATION LOCATIONS

***LEGEND:***

- Soil Boring/Piezometer (November 2025)
- Test Pit (November 2025)
- Test Pit (December 2019)
- Petroleum Pipeline (Abandoned; Observed in Test December 2019 Test Pit)
- Stream/River (NHD)
- Drum Investigation Area (November 2025)
- Property Parcel




N
W E
S

GEI Consultants

0 100 200 400
Feet




1641 River St

Olean, New York

Project 2600988 March 2026 Figure 5

New York State, Microsoft, Vantor, USGS The National Map: National Boundaries Dataset, 3DEP Elevation Program, Geographic Names Information System, National Hydrography Dataset, National Land Cover Database, National Structures Dataset, and National Transportation Dataset; USGS Global Ecosystems; U.S. Census Bureau TIGER/Line data; USFS Road data; Natural Earth Data; U.S. Department of State HIU; NOAA

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# PROPOSED INVESTIGATION LOCATIONS

***LEGEND:***

- RI Boring/Monitoring Well (Proposed)
- Test Pit (Proposed)
- Soil Vapor (Proposed)
- Stream/River (NHD)
- Property Parcel

*Historic Investigation Features*

- Soil Boring/Piezometer (November 2025)
- Test Pit (November 2025)
- Test Pit (December 2019)
- Petroleum Pipeline (Abandoned; Observed in Test December 2019 Test Pit)
- Drum Investigation Area (November 2025)
- Historic Tank - 1955 Aerial (Approximate)
- Historic Tank - 1898 USGS Map (Approximate)
- Historic Berm (Approximate)

Note: Test Pit located to assess potential migration pathway from former infrastructure.

N W E S

GEI Consultants

0 100 200 400 Feet




1641 River St

Olean, New York

Project 2600988 September 2026 Figure 6

New York State, Microsoft, Vantor, USGS The National Map: National Boundaries Dataset, 3DEP Elevation Program, Geographic Names Information System, National Hydrography Dataset, National Land Cover Database, National Structures Dataset, and National Transportation Dataset; USGS Global Ecosystems; U.S. Census Bureau TIGER/Line data; USFS Road data; Natural Earth Data; U.S. Department of State HIU; NOAA

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| ID | Task Mode | Task Name | Duration | Start | Finish |
|---|---|---|---|---|---|
| 1 | | **Remedial Investigation Work Plans** | **91 days** | **Fri 5/29/26** | **Fri 10/2/26** |
| 2 | ✓ | Submit Draft Final to NYSDEC | 0 days | Fri 5/29/26 | Fri 5/29/26 |
| 3 | ✓ | NYSDEC Review | 18 days | Fri 5/29/26 | Tue 6/23/26 |
| 4 | ✓ | NYSDEC Submits Comments | 0 days | Tue 6/23/26 | Tue 6/23/26 |
| 5 | ✓ | Resolve NYSDEC Comments | 63 days | Wed 6/24/26 | Fri 9/18/26 |
| 6 | | Submit Final to NYSDEC | 0 days | Fri 9/18/26 | Fri 9/18/26 |
| 7 | | NYSDEC Backcheck | 10 days | Mon 9/21/26 | Fri 10/2/26 |
| 8 | | NYSDEC Approval | 0 days | Fri 10/2/26 | Fri 10/2/26 |
| 9 | | **Remedial Investigation Field Work** | **126 days** | **Mon 10/12/26** | **Mon 4/5/27** |
| 10 | | Mobilize | 1 day | Mon 10/12/26 | Mon 10/12/26 |
| 11 | | Utility Clearance | 1 day | Mon 10/12/26 | Mon 10/12/26 |
| 12 | | Clearing | 2 days | Tue 10/13/26 | Wed 10/14/26 |
| 13 | | **Soil Investigation** | **16 days** | **Thu 10/15/26** | **Thu 11/5/26** |
| 14 | | Test Pits | 3 days | Thu 10/15/26 | Mon 10/19/26 |
| 15 | | Soil Borings | 13 days | Tue 10/20/26 | Thu 11/5/26 |
| 16 | | **Groundwater Investigation** | **120 days** | **Tue 10/20/26** | **Mon 4/5/27** |
| 17 | | Monitoring Well Installation | 13 days | Tue 10/20/26 | Thu 11/5/26 |
| 18 | | Well Development | 1 day | Fri 11/6/26 | Fri 11/6/26 |
| 19 | | Water Levels/NAPL Recovery (1) | 1 day | Mon 11/23/26 | Mon 11/23/26 |
| 20 | | Groundwater Sampling (1) | 2 days | Tue 11/24/26 | Wed 11/25/26 |
| 21 | | Water Levels/NAPL Recovery (2) | 1 day | Thu 4/1/27 | Thu 4/1/27 |
| 22 | | Groundwater Sampling (2) | 2 days | Fri 4/2/27 | Mon 4/5/27 |
| 23 | | **Laboratory & Data Review** | **143 days** | **Fri 11/6/26** | **Tue 5/25/27** |
| 24 | | Soil Analysis | 21 days | Fri 11/6/26 | Fri 12/4/26 |
| 25 | | Groundwater Analysis (1) | 21 days | Thu 11/26/26 | Thu 12/24/26 |
| 26 | | Groundwater Analysis (2) | 21 days | Tue 4/6/27 | Tue 5/4/27 |
| 27 | | Data Validation / DUSR Preparation | 15 days | Wed 5/5/27 | Tue 5/25/27 |
| 28 | | **Remedial Investigation Report** | **157 days** | **Wed 5/26/27** | **Thu 12/30/27** |
| 29 | | Data Evaluation & CSM Update | 25 days | Wed 5/26/27 | Tue 6/29/27 |
| 30 | | Report Draft | 40 days | Wed 6/30/27 | Tue 8/24/27 |
| 31 | | Report QA/QC | 20 days | Wed 8/25/27 | Tue 9/21/27 |
| 32 | | Submit Draft Final to NYSDEC | 0 days | Tue 9/21/27 | Tue 9/21/27 |
| 33 | | NYSDEC Review | 32 days | Wed 9/22/27 | Thu 11/4/27 |
| 34 | | NYSDEC Submits Comments | 0 days | Thu 11/4/27 | Thu 11/4/27 |
| 35 | | Resolve NYSDEC Comments | 20 days | Fri 11/5/27 | Thu 12/2/27 |
| 36 | | Submit Final to NYSDEC | 0 days | Thu 12/2/27 | Thu 12/2/27 |
| 37 | | NYSDEC Backcheck | 20 days | Fri 12/3/27 | Thu 12/30/27 |
| 38 | | NYSDEC Approval | 0 days | Thu 12/30/27 | Thu 12/30/27 |

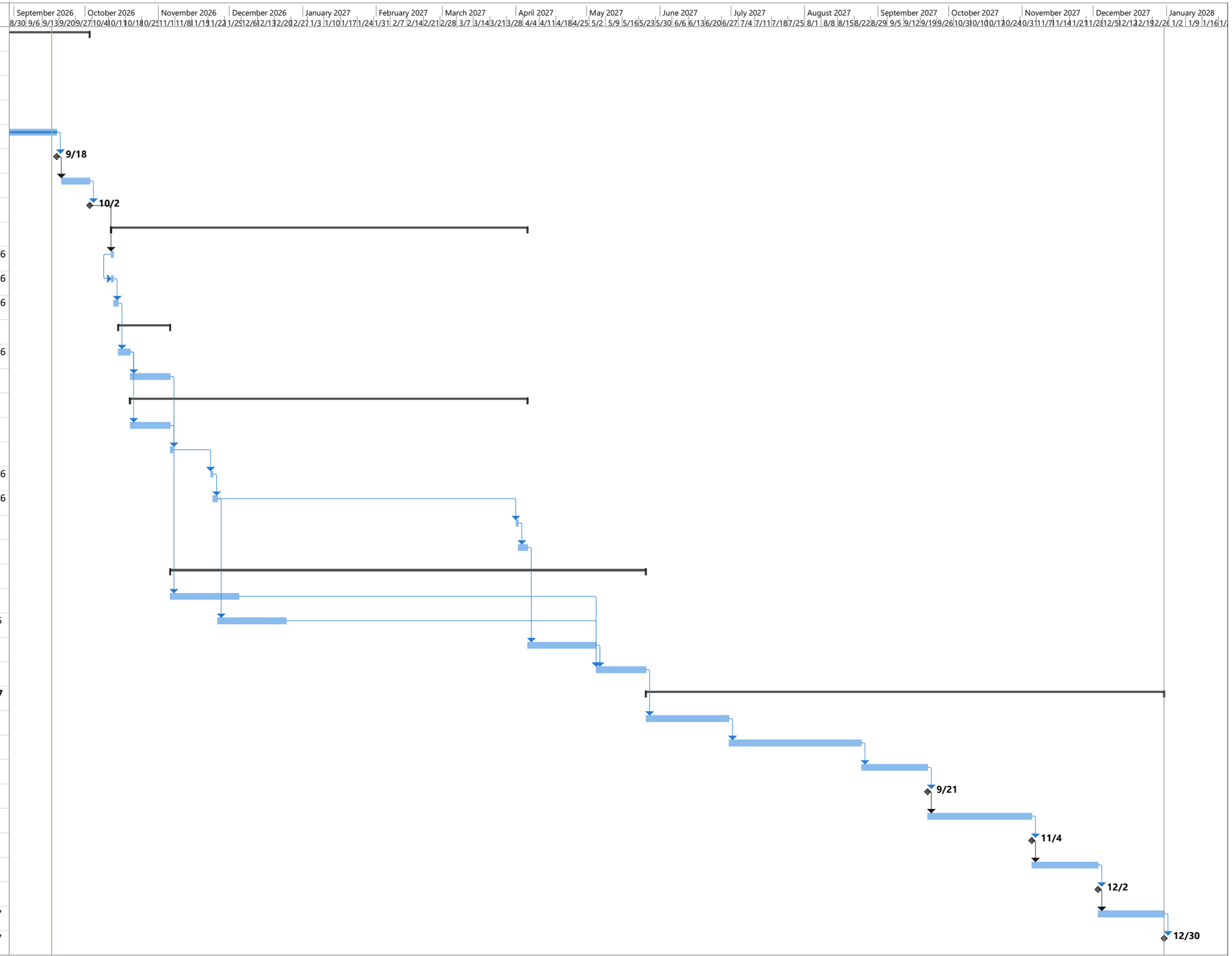



**Figure 7: Project Schedule**
**1641 River St, Olean, NY**
**Site ID #C905049**
**Date: Thu 9/17/26**

Task · Split · Milestone · Summary · Project Summary · Inactive Task · Inactive Milestone · Inactive Summary · Manual Task · Duration-only · Manual Summary Rollup · Manual Summary · Start-only · Finish-only · External Tasks · External Milestone · Deadline · Progress · Manual Progress

# Appendix A Previous Investigation Reports

**A.1. AMEC Earth & Environmental, Inc. (2006). Historic and Current Site Conditions Report, Former Socony-Vacuum Oil Company, Inc. Refinery Site, Olean, New York, April.**

**A.2. TurnKey Environmental Restoration, LLC. (2020). Subsurface Environmental Investigation Report, 1641 River Street Site, Olean, New York, January.**

**A.3. PTM Engineering, PLLC. (2025). Drum Investigation Report, 1641 River Street Site, Olean, New York, December.**

## A.1. AMEC Earth & Environmental, Inc. (2006). Historic and Current Site Conditions Report, Former Socony-Vacuum Oil Company, Inc. Refinery Site, Olean, New York, April.

**ExxonMobil**
**Refining & Supply Company**
Global Remediation
1001 Wampanoag Trail
Riverside, Rhode Island 02915

28 April 2006

ExxonMobil
*Refining & Supply*

**Sent via UPS Next Day Air:**
**Tracking Number: 1ZE032422210008022**
New York State Department of
Environmental Conservation
Region 9
270 Michigan Avenue
Buffalo, New York 14203-2999
ATTN: Mr. Daniel King, P.E.

RECEIVED
MAY 0 1 2006
NYSDEC REG 9
FOIL
REL UNREL

**RE: Johnston Road and I-86**
**Olean, New York**
**NYSDEC Spill #: 98-00112**

Dear Mr. King:

Attached for your review are two copies of the "Historic and Current Site Conditions Report" for the former Socony-Vacuum Oil refinery in Olean, New York. Upon your receipt and review of the document, please contact us to set up a meeting to discuss the findings contained within the report.

If there are any questions and/or comments, please feel free to contact me at 401.434.7358, via E-Mail at michael.a.lamarre@exxonmobil.com, or at the above noted address.

Sincerely,

Michael A. Lamarre
Project Manager

# HISTORIC AND CURRENT SITE CONDITIONS REPORT

# FORMER SOCONY-VACUUM OIL COMPANY, INC., REFINERY SITE
# OLEAN, NEW YORK

## REPORT OF FINDINGS

RECEIVED
MAY 0 1 2006
NYSDEC REG 9
FOIL
___REL ___UNREL

*Prepared for:*

**ExxonMobil Refining & Supply**
**Global Remediation**
**1001 Wampanoag Trail**
**Riverside, Rhode Island 02915**

*Prepared by:*

**AMEC Earth & Environmental, Inc.**
**285 Davidson Avenue, Suite 100**
**Somerset, New Jersey 08873**

**April 2006**

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# 1.0 INTRODUCTION

AMEC Earth & Environmental, Inc. (AMEC) prepared this *Historic and Current Site Conditions Report* regarding the Former Socony-Vacuum Oil Company, Inc. (Socony-Vacuum) refinery site (the Site) located in Olean, New York (see Figure 1-1) on behalf of ExxonMobil Refining & Supply - Global Remediation (ExxonMobil). The Site encompasses various parcels of land located in the northern industrial section of the city (see Figure 1-2).

The Vacuum Oil Company (Vacuum Oil) and the Socony-Vacuum Oil Company, Inc., which were predecessors of the Mobil Oil Corporation and Exxon Mobil Corporation, owned all or a portion of the property in question at one point in time. As the New York State Department of Environmental Conservation (NYSDEC) has raised concerns regarding the former Socony-Vacuum Site, an investigation into historic site conditions was initiated to develop information that would provide ExxonMobil with a technical basis for decisions regarding the management of the Site. The objective of this research was to develop an understanding of the physical conditions of the property and areas associated with site processes, laboratories, storage areas, tankage and contents, pipelines, and points and methods of shipping and distribution that were associated with the refinery operations. This report summarizes the historic operations and conditions at the Site from prior to the purchase of the property by Vacuum Oil to a period after the Socony-Vacuum refinery went out of business. The information summarized in this report describes the conditions of the property (past and present) and the operations that Vacuum Oil and Socony-Vacuum maintained during its tenure onsite.

Two separate refineries operated at the location from approximately 1876 to 1902. At that time the two refineries merged to become one under the direction of the Vacuum Oil Company. On July 31, 1931, Vacuum Oil merged with the Standard Oil Company of New York and in 1934, the company changed its name to Socony-Vacuum Oil Company, Inc (TTH, 1986c). At its maximum extent, the refining operations in Olean occupied approximately 115 acres, with a 1,600-foot frontage along the east side of Buffalo Street (see Figure 1-2) (TTH, 1954). This

plant was Socony-Vacuum's principal manufacturing plant and distribution center for an extensive list of specialty products (SVOC, 1950).

The refinery was divided into three sections known as the #1 Works, #2 Works, and #3 Works (see Figure 1-3). Most of the administrative and research areas were located along Buffalo Street, south of the Erie Railroad tracks (#1 Works). The #1 Works property along the tracks contained the central power house as well as the central shops building. The #2 Works was located just northeast of the #1 Works on the southern side of the Erie tracks and contained the bulk oil loading, treating, and storage departments (ORT, 1952). The area north of the Erie tracks and just west of the Pennsylvania Railroad tracks was the #3 Works where most of the initial refining took place after the addition of a two-stage Crude Pipe Still. Currently, the land once occupied by this large refinery remains almost entirely undeveloped with the exception of a few scattered buildings remaining from the Agway-Felmont fertilizer plant operations that utilized much of the former refinery's property from 1964 to 1984, and the Blue Bird Industrial Park located on a portion of the former #3 Works area (see figure 1-4).

North Olean was, and still is, considered the industrial center of the city (NOH, 2006). Research activities also focused on the numerous other industrial companies that surrounded the refinery property in the past and in the present. Many of these factories were unrelated to the oil business and produced such things as acids, spring-beds, boilers, engines, glue, glassware, horseshoes, hubs, leather, mill machinery, soap, shoe-findings, stump machines, shirts, tanners' supplies, wagons, and many others (Mott, 1899).

Recently, the #1 and #2 Works areas were occupied by two companies called Agway and the Felmont Oil Corporation (Felmont) (see Figure 1-4). These two worked together to produce fertilizer. Their operations were shut down in 1984 and have been non-operational ever since. Previous investigations into groundwater and soil contamination attributable to Agway have been done and additional studies are currently being conducted on the former Felmont property.

This report was developed based on research that included the evaluation of a variety of informational sources on the area. A partial list of those sources included:

- Aerial Photographs (historic and present-day);
- Sanborn Fire Insurance Maps (It is noted that only a limited number of Sanborn Maps were available for the Site. Information obtained on the Sanborn Maps suggests that fire insurance maps were not developed for the refinery through commercial means, though the refinery may have developed them for themselves.);
- Personal Interviews;
- Olean Historic and Preservation Society information;
- Cattaraugus County Historical Society information;
- Tax maps;
- Technical and promotional information from Socony-Vacuum Oil;
- The ExxonMobil Historical Collection at the Center for American History, the University of Texas at Austin;
- City of Olean Public Library; and
- Regulatory/Municipal Agencies such as NYSDEC, Olean City Developer's Office, City of Olean Tax Assessor, etc.

A physical survey was made of a section of the perimeter of the Site on February 20, 2006. Photographs from those site visits are included as Appendix A. In addition, Environmental Data Resources, Inc. (EDR) was used to develop reports identifying environmental contamination in the area (Appendix B). Reference materials gathered for this research are located in Appendices C through I.

# 2.0 SITE LOCATION AND SETTING

The following sections present an overview of the project area, including a general description of the geographic location and ecological characteristics of the former refinery property.

## 2.1 SITE LOCATION

The Site is located in the City of Olean, Cattaraugus County, New York. The property in question is north of downtown Olean and is situated between Buffalo Street to the west and the Pennsylvania Railroad tracks to the east (see Figure 1-2). The Dresser-Rand property is located directly to the south and east of the Site (see Figure 1-4). Homer Street was the approximate northwestern extent of the refinery. This area of North Olean has a long history of industrial operations, including, but not limited to, petroleum storage and refining, leather tanneries, heavy and light manufacturing, chrome plating, fertilizer manufacturing, and railroad facilities (TVGA, 2003). The Site is currently zoned for industrial use and a mixture of municipal, commercial, service, manufacturing, and industrial facilities characterize the land usage in the nearby vicinity (TVGA, 2005).

The land that was once occupied by the former refinery, now partially labeled as the Agway Industrial Park, currently remains almost entirely undeveloped. Only a few buildings and parking areas remain that were once associated with the former Agway-Felmont fertilizer complex. The fertilizer complex utilized much of the former refinery's property between 1964 and 1984 (see Figure 1-4) (TVGA, 2003).

## 2.2 TOPOGRAPHY AND DRAINAGE

Olean sits at an elevation of 1450 feet above sea level (asl). Based on an examination of current and historic topographic maps (see Figures 1-1, 2-1, 2-2, and 2-3), the former refinery property sits at or just below 1430 feet asl. The property slopes gently to the south/southwest, changing elevation eventually to 1420 feet asl off-site. Drainage of surface soil during rain events is not

well understood at this time but a large portion of it is believed to infiltrate into the subsurface (TVGA, 2005).

The depth to water in the area is believed to be approximately 20 feet below grade under natural conditions. The estimated direction of groundwater flow is generally to the southwest, towards Two Mile Creek, with a downward vertical component. The Site and surrounding residences and businesses are all serviced by the municipal water supply system that relies on water withdrawn from Ischua Creek, a tributary of Olean Creek located nearly six miles northeast of the Site, as well as that produced from a network of groundwater wells that are located to the east of the former refinery property (TVGA, 2005).

TVGA reported that they identified some catch basins and drainage conveyances on historic facility maps of the project site, however, no such conveyances were physically verified (TVGA, 2005).

## 2.3 SITE GEOLOGY

Olean is located on the Allegany Plateau in the Appalachian Mountains (NYSOFT, 2004). The refinery's oil (Pennsylvania crude) was derived from sand's of the Devonian Age, which ranged from 400 to 2,200 feet below ground surface (bgs), and which varied in thickness from 10 to 70 feet. The sand's porosity varied from 10 to 18 percent (SVOC, 1950). The Richburg oil field (55,576 acres) in Allegany County, New York was located approximately 14 miles directly east of Olean. The Bradford oil field (37,563) in Cattaraugus County, New York was located approximately eight miles southwest of Olean. These two oil fields were the principal suppliers of crude oil to the refinery (SVOC, 1950).

The Allegheny Plateau physiographic province extends from Lake Erie in the west to the Catskill Mountains in the east and is part of the larger Appalachian Plateau areas of Ohio, New York and Pennsylvania. The following description was taken directly from a New York State Office for Technology report (NYSOFT, 2004):

"The Allegheny Plateau was formed as a combination of uplift and erosion. The general topographic expression of the Plateau is that of a dissected plateau with areas of high elevation and deep valleys. Relief varies from the relatively rugged topography of the Catskill Mountains in the east, to more moderate relief in the central and western areas.

Surficial deposits cover most of the Plateau with bedrock cropping out occasionally. The surficial geologic deposits covering the Allegheny Plateau are primarily the result of glacial deposition. In order of areal extent, the deposits are predominantly till, followed by diamicton, outwash sand and gravel and kame features. Lacustrine sands, silts and clay, as well as swamp deposits, account for a minor part of the total surficial deposits.

The thickness of the surficial deposits in the Allegheny Plateau varies between 0 and 984 feet. Exceptionally thick surficial geologic deposits are found in the valleys of Chautauqua Lake, and the Cassadaga and Conewango Creeks in the west. Surficial deposits there are between 591 and 984 feet in thickness. Elsewhere on the Plateau, glacial deposits are rarely thicker than 49 feet.

The following surficial deposits make up a minority (<5%) of the total surficial deposits on the Plateau: swamp, lacustrine delta and lacustrine sand. Swamp materials consist of peat-muck, organic silt and sand. They are generally between 6 and 66 feet thick and create potential land instability. Lacustrine beach deposits form a linear pattern along the northwestern edge of the Plateau in the west. They are comprised of coarse to fine gravel and sand, which is stratified and generally well-sorted. Their thickness ranges between 10 and 49 feet."

## 2.4 ECOLOGICAL SETTING

As stated in Section 2.1, the former refinery property is mostly undeveloped land, devoid of a large number of permanent structures. It was evident from a Site visit in February 2006 that most of the abandoned property is covered by tall grasses, shrubs and vines, as well as some

portions of manicured lawn. Appendix A displays photographs of the property taken during the Site visit.

The one significant environmental feature that is associated with the former refinery property is that the property is situated along the southern and eastern banks of Two Mile Creek (see Figure 1-2). Two Mile Creek flows in a south and southwest direction and discharges to the Allegheny River. In the vicinity of the Site, the creek is described as a Class D stream. There are no National Wetland Inventory (NWI) Maps available for this area, however, the Site itself is located in the Allegheny-Ohio-Mississippi River drainage basin and parts of the property are locally designated as within Two Mile Creek's 100 year floodplain (see Figure 2-4) (TVGA, 2005).

Olean Creek, another tributary to the Allegheny, is located approximately 0.40 miles east of the Site (see Figure 1-2). A detailed evaluation of the plant and wildlife species identified on the Site was not conducted.

# 3.0 HISTORY OF REFINERY SITE PRIOR TO 1902

The following sections summarize the information that was developed regarding the history of the Olean refinery facility prior to the merger of Vacuum Oil and Acme Oil Works in 1902. This refinery was started in 1876 when Olean found itself between two oil fields, one located near Limestone, New York, and the other located along Brimmer Brook, 3.5 miles southwest of Wellsville, New York (TTH, 1954). As quoted in The Times Herald (TTH, 1954):

> "It was the outgrowth of a frenetic race for more and still more crude oil from the lush and newly-discovered Pennsylvania field, found to extend into southwestern New York State, and for refining capacity to transform the oil into kerosene, then the principal product."

## 3.1 EASTMAN REFINERY 1876-1877

William W. Eastman, originally from New Hampshire, relocated to Olean, New York in 1857. In 1861 he erected his first still in Olean. This still was used to produce illuminating oil from crude oil shipped to him in barrels via the railroad line from Venango County, Pennsylvania. After two years, Eastman abandoned the still because the venture proved unsuccessful (TTH, 1954).

Eastman reentered the refining business with his son, J. Cleveland Eastman, in early 1876 by erecting a two-still refinery on the Site, located in the corner bordered by Buffalo Street to the west and the New York, Lake Erie & Western Railroad (later to become part of the Erie Railroad system) tracks to the north (TTH, 1954).

The Eastman plant began producing products from the crude oil that was coming in from the newly-discovered oil fields of Pennsylvania and New York (TTH, 1965). At this time in history, approximately 75 to 80 percent of the crude oil produced in the United States was going into the production of illuminates, principally kerosene. The other 20 to 25 percent of the crude yielded

napthas, such as gasoline, and heavy paraffinic oils which were used as lubricants (SVOC, 1950).

The supply of crude oil for this refinery came from the Tuna Valley through a single pipeline (TTH, 1954). Prior to that, crude oil was transferred from the Tuna Valley, at that time the only oil-producing area in the state, to Olean in barrels aboard railcars on the Erie Railroad or on horse drawn wagons (TVGA, 2003; SVOC, 1950).

Wing, Wilbur & Company purchased the Eastman refinery in the late 1870's and changed the name to the Eclipse Lubricating Oil Company, Ltd (SVOC, 1950).

### 3.2 ECLIPSE LUBRICATING OIL COMPANY, LTD. 1877-1890

Wing, Wilbur & Company was owned by Abram W. Wing, William O. Wing, and Matson O. Wilbur. At the time of their buying the Eastman Refinery in 1877, they already had a successful refinery operation in Franklin, Pennsylvania (TTH, 1954). After their purchase of the refinery in Olean, they immediately enlarged the stills to a total capacity of between 500 (TTH, 1954) and 685 barrels per day (Chapin, 1889). Soon afterwards, they changed the name from the Wing, Wilber & Company Works to the Eclipse Lubricating Oil Company, Ltd (Eclipse) (see Figure 3-1) (SVOC, 1950). In the following year, the Eclipse refinery was expanded to the northeast along the Erie Railroad tracks through the construction of another 200-barrel capacity still. Dalzell R. Laughlin also added to the capabilities of the Eclipse plant by selling his adjoining two-still operation to Eclipse sometime around 1877 or 1878 (TTH, 1954). The Acme Oil Company bought out the northeastern portion of the refinery in 1878 and named it the Acme Oil Works (see Figure 3-1) (Adams, 1893; TTH, 1954).

By 1882, Eclipse had six stills reported to contain 155 barrels each and 11 iron tanks (see Figure 3-2) (ONYD, 1882). The Vacuum Oil Company purchased the remaining portion of the Eclipse refinery in 1890. At that point, Eclipse had a total of eight stills (TTH, 1954).

## 3.3 ACME OIL WORKS 1878-1902

The Acme Oil Company (Acme) owned and operated the Acme Oil Works plant from 1878 until Acme was bought out by the Standard Oil Company of New York in 1893 (TTH, 1954).

### *3.3.1 Acme Oil Company 1878-1893*

In 1878, Acme, which was already operating a refinery in Titusville, Pennsylvania, acquired a single still unit with an agitator and several tanks from the neighboring Eclipse plant, which at that time was operating at about 200 barrels of throughput per day. Acme immediately built another two stills of 500 barrel capacity each. They also constructed three 35,000 barrel tanks for onsite crude oil storage. These were the first large oil storage tanks in the city (TTH, 1954). A year after establishment, Acme was operating 12 more stills, new agitators, pumps, condensers, and tanks for a total capacity of 2,300 barrels a day (see Figure 3-3) (TEH, 1900; TTH, 1954).

In 1880 Acme constructed a barrel factory just south of the Erie Railroad tracks, near where the Socony-Vacuum Oil plant's central shop's area would be constructed later (see Figures 3-1 and 3-4). This factory supplied blue and white receptacles known all over the world for the quality of their contents (usually kerosene) and was named the Acme Barrel Works. Eventually, the Vacuum Oil Company's refinery in Rochester, New York and the Standard Oil Company's refinery in Buffalo, New York were using these barrels. It was reported that the barrel factory was turning out as many as 3,500 oak barrels a day, utilizing nearly 70,000 oak staves and 30,000 pounds of iron hoops over a 24 hour period (TTH, 1954).

A one-story high building with a saw-tooth roof was constructed along with the barrel factory and was referred to as the dry kiln building because it was built to kiln-dry the lumber used in the making of staves and heading. Lumber was stacked onto wood grating which covered all of the floors and dried until it was suitable to use in the barrel making process. The lumber was dried by pumping hot air through trenches under the wood grating and blown up through the grating

with a large fan (Sovac, 1951). These barrels were for storing and transporting finished products only and approximately 2,000 barrels were shipped each day (Adams, 1893; ONYD, 1882).

Prior to 1882, a filling or shipping station was built in support of the barrel factory (see Figures 3-1 and 3-4). This station was used to prepare the barrels for receipt of the oil by spraying the inside with glue and painting the outside and was located just east of the barrel factory (Adams, 1893). This filling station was built near the approximate location of Socony-Vacuum's Central Power House.

With approximately 30 acres (ONYD, 1882) of land now located on both sides of the Erie Railroad tracks, Acme expanded again in 1882 with the erection of five more stills (see Figure 3-5) (TTH, 1954). At this point in time, it was reported that they operated 15 crude stills (600 barrels each); seven tar stills (total capacity of 450 barrels); two steam stills (600 barrels each); forty tanks (total holding capacity of 150,000 barrels); and ten pumps, capable of forcing 9,600 barrels of oil every hour (ONYD, 1882).

At an undetermined period in the 1880's, Acme established an additional 84 iron tanks (capacity of 500 to 35,000 barrels each) for storing products used and produced in the refining process. At that point, there were thirty steam pumps being used for pumping water and product from point to point throughout the plant (Adams, 1893). Five more stills were erected in 1885, after which, their processing capacity increased to 4,600 barrels a day. In 1886, they purchased another adjoining operation started by the Knights of Labor. It consisted of a single still used for refining kerosene (TTH, 1954).

With the increase in the number of stills came an increase in the number of corresponding apparatus such as tanks, agitators, pumps, condensers, loading racks, lines and other miscellaneous items (Adams, 1893). Condensers were constructed of iron and were filled with iron pipe, through which the vapors of the oil were passed during the course of refining. The most important aspect of refining was the distillation process. In order to obtain the desired result, perfect condensation was necessary (Adams, 1893). The condensing tanks around the

pipes were filled with cold water and the refinery at this time was using upwards of 30,000 barrels, and by some accounts 50,000 barrels (TEH, 1900), of water per 24-hour period (Adams, 1893). Although the principal process was distillation, further manipulation was needed beyond this for the purpose of bleaching and purifying the distillates. Caustic lyes and sulfuric acid were utilized in this process (Adams, 1893).

It has been noted that the Acme refinery was converting the crude oil into finished products in approximately 14 days (TTH, 1954). Gasoline, naphtha, water white oil, standard white oil, paraffin oils and others were among these products. One of the products was coke, which was used almost exclusively to make carbon points for electric lights (Adams, 1893). Acme was supplying vast amounts of lubricating oil stock to the Vacuum Oil Company's refinery in Rochester, New York (TTH, 1954) for finishing, packaging, and shipping (Herrick, 1949).

Acme was making a total of ten different products from petroleum at this time (TTH, 1954). These products included pure, deodorized stove gasolines, various grades of napthas for heating, water white illuminating oils, Standard White Oil (differing grades and qualities), paraffin oil, fuel oil and coke (Adams, 1893; TEH, 1900). Many of these products were shipped to all parts of the world in sailing vessels after having been shipped by rail to Communipaw, New Jersey in barrels. Sixty to 80 barrels of refined products, or in some cases crude oil, would be loaded into each of 50 cattle or rack cars in trains that were supplied by the Erie Railroad for transport to the eastern seaboard shipping points (TTH, 1954). As many as 75 trains were loaded and left Olean each day. The average was 30 trains per day (TEH, 1900). The leading export at the time was branded Royal Daylight. The higher grades of lamp oil produced were branded Pratt's Astral, Crown Acme (recognized as the finest quality), Headlight, and Canadian Astral. In addition, a special grade of white-water oil was produced and called Shot Gun Oil. Crude naphtha was then sold for heating and used in various blendings. Mineral Seal and Mineral Sperm oils were manufactured for use in lighting trains and lighthouses. A product called Fire Still Stock contained wax distillates and fuel oil and was re-run exactly the same as crude oil. The coke and tar at the bottom of the stills amounted to about six percent of the amount of petroleum passing through the stills (Herrick, 1949).

Fires during this time period were frequent. On July 27, 1882 a tank was struck by lightning and 23,000 barrels of benzine burned (DWM, 2006). An explosion and subsequent fire occurred at the plant on May 28, 1886 while employees were trying to fill Still #19. The still had formed a leak and the oil caught fire on the outside. As workers pumped as much of the oil out of the still as possible, the still filled with steam and the gas exploded and blew out the end of the still. There was a fire that burned fast for a few minutes but was extinguished by water within moments (TOD, 1886). Another fire occurred on June 9, 1892 (DWM, 2006).

By 1893, Acme had 32 stills and a daily throughput of nearly 5,000 barrels per day. At that point, the Acme property consisted of 53 acres of land, (part of what would be later referred to as the #2 and #3 Works) and was situated west along the Western New York & Pennsylvania Railroad (later known as the Pennsylvania Railroad) tracks and extended across the New York, Lake Erie & Western Railroad (later known as the Erie Railroad) tracks (see Figure 3-6) (TTH, 1954; Adams, 1893).

### *3.3.2 Standard Oil Company of New York 1893-1902*

The Standard Oil Company of New York (Socony) bought the Acme Oil Company in 1893 and operated the Acme Oil Works plant until Vacuum Oil acquired it on July 3, 1902 (TTH, 1986c SVOC, 1950). Based on the literature that was reviewed, it appears that Socony retained the refinery's Acme Oil Works name.

Only once in the history of the Acme Oil Works refinery did this plant process something other than Pennsylvania crude oil. For a very short time in 1894, Olean received its crude supply from the newly developed Lima oilfield in Ohio. This temporary change was due to the fact that the Lima crude oil was plentiful and cheap (TTH, 1954). It was referred to as "skunk grease" because it had an undesirably high levels of hydrogen sulfide which necessitated the construction of circular stills to remove it (TTH, 1954). These stills were fired through several doors on the circumferences and were equipped with devices that operated paddles inside the stills. With the paddles and the heat, the deodorizing agent, oxide of lead, was mixed into the Lima crude to

sweeten it. Afterwards, the oxide of lead was recovered and restored in the buildings that were to become the chlorex plant and a structure near it that ultimately became known as the compound building (SVOC, 1950). To make room for these new structures, considerable enlargements were found to be necessary and extensive construction began on the northern side of the Erie Railroad tracks. Many of the tanks from this area were floated to other parts of their grounds via canals dug for this purpose (TEH, 1900).

By 1896, The Acme Oil Works plant had expanded to 49 stills, 23 steam boilers, 14 steam engines, 68 steam pumps, 153 tanks, a boiler shop (where repairs were made to stills, boilers and tanks), and a machine shop (TTH, 1954). An acid restoring plant was also erected that year. In 1898, eighteen new tar stills were installed along with condensing and oil tanks, piping and buildings (TEH, 1900). However, a fire on January 22, 1899 destroyed several tanks, stills, and 15 cars (DWM, 2006).

The refining process during this time period was reported to be conducted by first transferring the crude to stills where it was subjected to intense heat for three or four days. These stills could hold approximately 600 barrels each. The vapors arising from the heating process were carried through pipes submerged in cold water. The water was held in the condensing tanks. The vapors circulating through the pipes were condensed into liquid and ran out to the tail house, where the distillates were tested for gravity and then transferred to their final destination (Chapin, 1889).

Depending on the quality of the crude oil that was used, 10 to 20 percent of the distillate that was first passed off was naptha. Illuminating oil stock then followed. What was remaining in the stills consisted of dark residuum and coke. The distillate was placed in elevated tanks called agitators. The agitation was caused by air being forced up through the bottom of the tanks and this process kept the liquid in a cold boil. This is where it was treated with sulfuric acid and alkali from caustic soda which resulted in bleaching and deodorizing. To render the oil bright and transparent, it was decanted into shallow tanks called bleachers, where it remained for a few hours. At that point, the process was complete (Chapin, 1889).

From the bleaching tanks, the oil was transferred to a storage tank. From there it went to a filling rack, where a whole train of tank cars may be filled at once, or to the filling station, where a row of automatic fillers would distribute the oil into barrels. The steam would stop when the barrel was full (Chapin, 1889).

By 1902, Acme had expanded its operations over an area of approximately 63 acres (TEH, 1900). In that same year, the Acme Oil Works refinery and the adjacent Vacuum Oil Company refinery merged to became one plant.

### 3.4 VACUUM OIL COMPANY 1890-1902

The Vacuum Oil Company purchased the eight-stills, five boilers and associated tanks of the Eclipse Lubricating Oil Works, Ltd. refinery in 1890, at which point, the majority interest of Vacuum Oil was held by the Standard Oil Company of Ohio which acquired that status in 1879 (CAM, 2006; TEH, 1900). The most likely reason for the purchase was due to the fact that Eclipse was already supplying the Vacuum Oil refinery in Rochester, New York with large quantities of lubricating distillates by tank car (TTH, 1954; Herrick, 1949). Soon after Vacuum took over the refinery in Olean, the capacity of the plant nearly doubled to 1,500 barrels a day in throughput (TTH, 1954; TEH, 1900).

Expansions at the Vacuum refinery included two 275 barrel stills in 1891 and 1892, and the addition of a paraffin wax plant during that same time period (TTH, 1954). The paraffin wax plant operated by initially separating the paraffin oil from the crude, then manipulating it further to make it precipitate the wax which it held in solution. One part of this process required the use of an apparatus designed and built specifically for creating a low degree of refrigeration (TEH, 1900).

In 1894, a 1,400 barrel steam still was erected followed by a second in 1897 and a third in 1898 (TEH, 1900). A chlorex-treating plant was built in 1895 where oil was treated to improve its viscosity index (SVOC, 1950). The years 1897 and 1898 saw the addition of two 400 barrel stills each year, including the additional tanks, condensers and appliances necessary for the

increase in production (see Figure 3-7) (TEH, 1900). A two-story brick office building was erected along Buffalo Street in 1899 (see Figure 3-8) (SVOC, 1950). This building was used as the refinery's main office building until 1954 when the refinery closed down (TTH, 1954). Additionally, large machine, boiler and blacksmith shops were erected around that time as well as several substantial brick structures built for the purpose of enclosing a number of tanks to keep them warm (TEH, 1900).

In 1900, four stills with 400 barrel capacities and four with 275 barrel capacities were built to replace eight smaller stills which were inadequate for the service needed. Because the demands for wax were so great, an additional large filter press and a duplicate refrigerating plant were designed and constructed around the same period (TEH, 1900).

This refinery specialized in lubricating oils of several grades, fuel oil and gasoline, and paraffin wax. The lubricating oils were shipped to the Rochester, New York Vacuum plant. The wax, fuel oils and gasoline were shipped in barrels or tanks from the Olean plant directly to consumers or to various distribution stations (TEH, 1900). Some of the first products that the Vacuum Oil Company marketed were blacking (for harness, boots, shoes, etc.), cylinder oil for steam engines, and coach oil (for lubricating axles) (Pire, UD).

# 4.0 HISTORY OF THE VACUUM OIL REFINERY 1902-1931

The following sections summarize the information that was collected regarding the use of the refinery property during the period of Vacuum Oil Company ownership (1902 until 1931).

On July 3, 1902, the Vacuum Oil Company merged with the then separately functioning Acme Oil Works plant which was owned by Socony (TTH, 1954). After the merge, the plant was divided by name into three sections. The section previously owned by the Acme Oil Company became known as the #2 and #3 Works. The #2 Works was located south of the Erie tracks and just west of the Pennsylvania tracks. The #3 Works was also located just west of the Pennsylvania tracks but was north of the Erie tracks. The last section, known as the #1 Works was located on the former Eclipse Lubricating Oil property, along Buffalo Street (see Figure 4-1).

From 1879 to 1911, the Vacuum Oil Company was part of the old Standard Oil Organization (Sovac, UD). In 1911 the Standard Oil Organization was dissolved and the Vacuum Oil Company became its own private company (UTD, 1944). The Vacuum Oil Company operated the Olean refinery until 1931 when the Vacuum Oil Company and the Standard Oil Company of New York merged to create the Socony-Vacuum Oil Company, Inc (CAM, 2006; TTH, 1954).

## 4.1 RAW MATERIALS, TYPES OF PRODUCTS AND CAPACITY

By 1908, the refinery at Olean was reported to be running over 1.5 million barrels of crude oil per year. At that point, in their refining process, the Vacuum Oil Company was using 64,000 tons of coal per year (TTH, 1954). With the exception of the First World War, when the price of the Pennsylvania crude soared to a cost of $6.10 a barrel and the requirements of the refinery for crude could not be met by the Pennsylvania crude alone, the Vacuum Oil Company used only the crude oil from Pennsylvania, which had a paraffin base (TTH, 1954; UTD, 1944). During that time period, Vacuum Oil shifted to mid-continent crude which had an asphalt base (TTH, 1954) and required an acid treatment. Additionally, tar and pitch stills had to be erected to handle the

base stock (UTD, 1944). After the shift back to Pennsylvania crude in 1927, the refinery shut down the specialized mid-continent crude refining equipment and eventually dismantled it (TTH, 1954; UTD, 1944).

A large brick building with a steel roof was built in 1911 for the purpose of repairing tank cars owned by the company (see Figure 4-2). A lean-to was also assembled in 1912 on the north side of the building. The lean-to housed the repair shops, storehouse, tool room, and office in connection with the car repair operation. Three railroad tracks were present that ran through the building so that cars to be repaired could be brought in from either end and three lines of cars could be worked on simultaneously (Sovac, 1950b).

The car repair shop, which later became the Central Shops building, was located next to the Central Power House (see Figure 4-1). The repairing operation was taken over by the Union Tank Car Company who used this building from about 1913 until 1921. At that time it was decided to build another building of their own on land leased to them by the Vacuum Oil Company and the Pennsylvania Railroad in 1916 (Sovac, 1950b).

Twenty-five shell stills at the plant were used for running crude and for rerunning many stocks (Sovac, UD). To the immediate west of center of these 25 stills, was the location of the #2 Works Pump House. The major portion of this building was still standing when the plant closed in 1954. When it was built, it was customary to use vertical triplex pumps for nearly all transfers. These in turn were generally driven by a steam engine. There was a lean-to on the north side of the pump house which was built primarily to house the gauger's office and the electric light plant which was installed in 1913 (Sovac, UD).

Prior to the installation of this lighting system, the few lights and motors present at the plant were direct current and were run from a D.C. generator driven from the line shaft in the Wax Works. It was decided to convert the refinery to alternating current for safety reasons. The current was distributed from the #2 Works Pump House generators under ground in lead covered cables at 2,200 volts to sub-stations around the plant where it was transformed to 220 and 110

volts for use. The current was 25-cycle to be consistent with what the City of Olean was using at the time. Some of the electricity used at the refinery came from City lines from Niagara Falls and from the City's electric light plant. The lean-to housed the turbines which were switched from a high to a low RPM through reduction gears in the form of oil switches on a switchboard located in the same structure (Sovac, UD).

By the early 1920's, operations that had been handled in the Rochester Vacuum Oil refinery were added to the Olean refinery. These operations included the Percolation Filter Plant, with clay handling, burning, and storage facilities, and all of the transformer oil operations (SVOC, 1950; UTD, 1944). Vacuum Oil erected their first transformer oil unit in Olean in 1918 (SVOC, 1950). A group of five fireproof buildings were devoted to the manufacturing of transformer oil; to the filtering, compounding and blending of lubricant oils; and to preparation, filling and shipping of packages (SVOC, 1950; OEH, 1922). The transformer oil went through rigorous, carefully-controlled tests to determine its dielectric properties to extremely close tolerances before it was shipped out to manufacturers of electrical equipment (SVOC, 1950). Transformer oil from the plant was shipped in tank cars, steel drums, or cans (OET, 1922). As a result, a Compounding, Filling and Shipping Department was formed (UTD, 1944).

At this point in the refinery's history, every section of the plant (#1, #2 and #3 Works) housed their own separate shop buildings. For example, the #1 Works had a carpenter shop, boiler shop, machine shop, and a pipe shop located in what was later to become the Laboratory building (see Figure 4-3) just east of Buffalo Street (see Figure 4-1). Some equipment, such as the cold saw, bulldozer and similar items too large to store in the lab building, were originally housed in a garage between the main office and lab buildings. It was then decided that these shops should be consolidated and relocated in the refinery to eliminate various separate locations throughout the plant (Sovac, 1950b).

The boiler shops, carpenter shops, machine shops, pipe shops and one lead shop, among others, were transferred over to the car-repair building and would then be known as the Central Shops building (see Figure 4-2). By 1924, all of the shops had been transferred. A monorail system

was used within the Central Shops area to serve the machine and pipe shops' need for movement of heavy parts between shops. It also was used to deliver pipe, pumps, and other materials out-of-doors to trucks for loading and also served the pipe rack just south of the pipe shop's southern door. Jib cranes were installed for each machine in the boiler shop in order to be able to sufficiently serve all of the various materials being handled in this area, such as I-beams, plates, dished heads, etc. Vacuum Oil was, at this time, building practically all of its own tanks and vessels, and all structural steel work was fabricated and erected by Vacuum employees (Sovac, 1950b).

At the west end of the boiler shop, the hydraulic press and flange fires were installed. Just out-of-doors from this area, an erecting yard was set aside and was serviced by a Gantry crane used to erect equipment, remove material from freight cars, or service the plate storage racks in order to provide a safe and efficient way of plate removal from the storage yard and transfer to the shops for fabrication (Sovac, 1950b).

The Central Shops also had a centralized foremen's gallery. The space at the eastern end of the tool room and repair shop, which was originally the office of the Union Tank Car Company, was made into the electrician's shop which housed battery chargers and the automatic telephone switchboard (Sovac, 1950b).

The western end of the lean-to, located to the north of the Central Shops building, was arranged to house the blacksmith shop which included three forges, a helve hammer and a steam hammer. A jib crane was installed here to assist with handling of heavy parts. Immediately east of the blacksmith shop was the welding shop divided into an east room, devoted almost entirely to electric arc welding and a west room reserved primarily for acetylene welding. This shop was also served by the monorail system for movement of parts. Between the tool room and welding shop were three additional rooms. One of these rooms served as a tool room for the machine shop, and the other two served as a bathroom and locker room/washroom for the shops' employees (Sovac, 1950b).

The refinery was headquarters for lead work required by the other Vacuum Oil plants' operations. As such, a lead shop was built in order to meet the demands and internal requirements (acid pan houses for concentrating acid and many lead lines around the plant) (Sovac, 1950b).

Near the Central Shops area was a one-story high building with a saw-tooth roof, referred to as the dry kiln building (see Figure 4-1), which used to house the barrel factory. The paint shop was on the west end of the building and the remainder was used for storage for the various mechanical departments (Sovac, 1951).

Prior to the construction of the central boiler house, there were a total of 22 water-tube type steam boilers in the refinery located in three separate boiler houses (Sovac, 1950a). One of these three early boiler houses was a large brick building named the #2 Works Boiler House and would later be used during the war years by Hydrocarbon Research people. This #2 Works Boiler House had a large pump house attached to the south, and an L-shaped wing (containing the #2 Works pipe shop and the #2 Works machine shop) extending to the east just south of that (Sovac, UD).

A metal covered, wooden framed building, located just south of the #2 Works foam building, was utilized as the second of the smaller boiler houses and included a small carpenter shop in the southwest corner. To the west of this building was a long shed, called a still house, which housed several shell stills and sludge stills (Sovac, UD).

A large portion of the Central Power House (or Central Boiler House) was constructed in 1922, including space for three boilers, a portion of the coal bin, the north smoke stack, and a portion of the coal and ash handling machinery (see Figure 4-4). The east crusher and its elevator and the original concrete ash bin were also part of the first section of that boiler house. A large Babcock and Wilcox steam boiler was constructed prior to the erection of the central boiler house in anticipation of the new building. It was stored and operated in the hand-fired boiler house and fired with hand stokers. It was then moved to the central boiler house as soon as the

first two boilers were installed in the new facility. In 1924, the boiler house was expanded westward to include four more boilers on the south side of the firing aisle, the south stack and power wing (Sovac, 1950a). The final additions were made to the building in 1932. This building provided air, steam, and electric power for the entire refinery (ORT, 1952).

The steam was distributed throughout the plant in eight-inch lines all arranged as loops. Each high pressure steam line was equipped with sectionalizing valves for easy replacement if needed. A coal bin was located over the top of the central boiler house, extended 100 feet in length, and held 1,000 tons of coal. This bin was served by two crushers, two elevators and a distributing conveyor over the coal bunker (Sovac, 1950a). The two stacks of the central boiler house were 215 feet high, 20 feet in diameter at the base, and 12 feet in diameter at the top (OEH, 1922).

By 1922, the refinery had more than 400 receiving, working, and storage tanks onsite, along with 78 crude oil storage tanks on the property, with a total estimated storage capacity of 150,000,000 gallons (TTH, 1954).

In 1924, an Ellis Cracking Still was added to the plant (see Figure 4-5) (UTD, 1944). The "cracking" process breaks up heavier hydrocarbon molecules into lighter hydrocarbon molecules. This was immediately followed by a second cracking still in 1925 and a third in 1926 which were called Cross Units. These three units operated continuously until the development of the Catalytic Cracking and the Houdry Process (UTD, 1944). The Cross Cracking Plant included a bubble tower, an evaporating tower and associated piping (SVOC, UD).

In 1927 a P-Oil reducing still was added with a capacity rated at 1,100 barrels a day and a Solution Reducing Still was erected in 1929 with a rated capacity of 2,500 barrels per day (UTD, 1944).

The modern continuous two-stage Crude Pipe Still (see Figure 4-6) was installed in either 1927 (UTD, 1944; SVOC, 1950) or 1928 (TTH, 1986b; ORT, 1952). This still had had a maximum daily throughput of up to 7,250 barrels per day (TTH, 1986b). In 1929, the refinery's first

cooling towers were erected at the crude still (SVOC, 1950). All the crude coming into the plant would go through the crude still first which would perform the primary distillation of the crude into some of its component parts. The still consisted of an 85 foot tower (see Figure 4-6). The component parts would then be piped to the wax plant (see Figure 4-7), lubricating plant, or grease plant (see Figure 4-8) for further refining (TTH, 1986b). Look boxes were used by a stillman to observe the color and the volume of the products, with the exception of the cylinder stocks and gases, as they were separated. This still only processed 100 percent Pennsylvania crude oil (ORT, 1952). Located next to the still were the control and pump rooms to the north and the asbestos cement building to the south (see Figure 4-9) (SVOC, UD).

At peak production in the 1920's and 1930's, 7,000 barrels of crude were refined each day and 500 tanks were scattered throughout the facility (TTH, 1965). The Olean refinery was turning out lubricating oils of all types, in addition to producing finished gasolines, kerosenes, "white" products and fuel oils. The "white" products were principally illuminants. One specialty product that began distribution in 1927 was called Upperlube (SVOC, 1950). Another product, known as Stove Distillate, was made using most of the kerosene and gasoline (Sovac, UD).

## 4.2 PROCESSES USED IN REFINERY OPERATIONS

There were seven steam stills, used to re-run Stove Distillate and make straight run gasoline, located to the west of the southern end of the shell stills. Some of these stills had fractioning towers which were used to attempt to improve the overhead product from a shell still. They were 20 to 30 feet high and packed with river gravel or small stones. Others, located on the southern end of this line of stills, contained a heat exchange system consisting of large steel shells supported on top of the condenser boxes, which were also made of steel, and had considerable amounts of cast iron pipe installed inside the shells. The crude entering these stills was pumped through the pipes into the shell stills, and the shells themselves were cut into the vapor line before it entered the condenser box. These structures were called Vorwarmers and may have been introduced to the plant as early as 1902. The condensers on the shell stills originally consisted of shallow wooden boxes containing the coils and were supported on elevated

platforms. The condensers were elevated to permit their discharge to gravitate down to the running room (or tail house), through the look-box, and into the storage tanks (Sovac, UD).

A circular, wrought-iron, type condenser box was also used at this time but they usually rested on the ground. Their wooden tongue and groove floors were calked to reduce leakage. The shell of the tank was caulked to the floor as well using cotton wick and white lead. From 1913 to around 1916, all of the old condenser boxes were replaced with more modern steel condenser boxes erected on concrete or brick piers up to ten feet high (Sovac, UD).

The Foster-Wheeler two-stage crude pipe still unit (see Figure 4-6), erected in the late 1920's, had a capacity of nearly 7,000 barrels per day. In this unit, the Pennsylvania crude received its first break-down into wax distillate, lubricating oil stock and some fuel oil, gasoline, kerosene, and diesel fuels for further processing. The gasoline and fuel oil stock, however, were destined for the Atlas Works' Thermofor Catalytic Cracking unit in Buffalo. This unit replaced approximately 56 shell, or batch, stills. The latter were reported to be 20-30 feet long, about 12 feet in diameter and have individual capacities ranging from 400-1,000 barrels each (SVOC, 1950).

Wax distillates were always re-run in an operation referred to as "cracking" the wax distillate. This, however, was not a true cracking process so much as it was a further re-distillation to increase the accuracy of the fractionation and improve the pressability of the wax (Sovac, UD). Thirty-nine centrifuge units were installed in 1929 in order to remove micro-crystalline wax from the crude oil. The wax was principally used for insulation of electric wire. Prior to this, the wax had been removed by chilling and cold settling the crude. Crystalline wax was produced by pressing and chilling the wax distillate, a system which was continued in the making of wax (SVOC, 1950).

## 4.3 PRODUCT SHIPMENT AND MODES OF TRANSPORTATION

After completion of the refining process, the Vacuum Oil Company in Olean would relay lubricating oil products and base stocks by tank car to their Rochester refinery for blending transformer oils to meet various requirements. The volume of oil handled at this time over the Olean-to-Rochester 100 mile distance of the Pennsylvania Railroad constituted the largest percentage of the freight carried on this branch line. With the closing of the Rochester refinery in 1930, shipping of these products was redirected to the Atlas Works in Buffalo (SVOC, 1950).

## 4.4 HISTORIC INDUSTRIAL ACCIDENTS

Historic photographs depict a tank storage fire that was reported to have occurred in 1910. However, the last tank fire in Olean was reported to have occurred in 1930 due to implementation of a new safety system. This system included steel poles that were erected among groups of tanks for lightning protection. When the use of a pole was impractical, the fire hazard was reduced by making the wooden roofs vapor tight and a series of cables were installed, similar to the spokes of a wheel, with the center or hub on the center pole of the tank. No tanks equipped in this fashion were known to have been struck by lightning after the protection system was installed (TTH, 1949). A firefighting chemical called foamite was also created that was used to fight tank fires (SVOC, 1950). It was a chemical powder that was mixed with water to form a thick film used to smother oil fires (TTH, 1930).

# 5.0 HISTORY OF THE SOCONY-VACUUM OIL COMPANY REFINERY 1931-1954

The following sections summarize the information that was collected regarding the history of the Socony-Vacuum Oil Company, Inc. Olean refinery from 1931 until its closure in the fall of 1954. The refinery was closed at that time due to substantial operating loses that occurred following the end of World War II (Dunham, 1954).

On July 31, 1931, the Vacuum Oil Company and the Standard Oil Company of New York were merged into the Socony-Vacuum Corporation. On May 31, 1934, the company's name was changed to the Socony-Vacuum Oil Company, Inc. (Socony-Vacuum) (TTH, 1986c). The Socony-Vacuum refinery site occupied approximately 115 acres, with a 1,600-foot frontage along the east side of Buffalo Street (see Figure 1-2) (TTH, 1954). This plant was Socony-Vacuum's principal manufacturing plant and distribution center for an extensive list of specialty products (SVOC, 1950).

## 5.1 RAW MATERIALS, TYPES OF PRODUCTS AND CAPACITY

The Socony-Vacuum's refinery in Olean was their only manufacturing source of tanners' hard greases used for preserving, softening, and otherwise treating leather for all purposes (Olean Refinery, 1953). The production of these greases began at this plant in 1932, with the closing of the Vacuum Oil Company refinery in Rochester, New York. These greases consisted of approximately 60% petroleum wax and the remaining 40% made up of oil from pressed menhaden, fats, tallow, wool grease and hydrofol glycerides, a synthetic type of wax. The grease was shipped from the plant in 11-pound slabs at the rate of several million pounds per year. This operation was the outgrowth of the Vacuum Oil Company's original business involvement in high-quality harness oils and was presumably housed in the Grease Plant (see Figure 4-8) (SVOC, 1950).

A Solvent Treating Plant was also part of the refinery and was established in 1934 for the purpose of removing tar and sludge from the base stocks. Modifications to this plant were for use of different types of solvents or the addition of updated equipment (ORT, 1952).

At one time, the Socony-Vacuum Olean refinery turned out lubricating oils and greases of Pennsylvania-grade quality, waxes, compounded products, and a wide range of specialties (TTH, 1954; Herrick, 1949). They produced over 100 brands of industrial lubricants, including Cylinder and Super Cylinder oils. They also manufactured nearly twenty brands of automotive specialties (Olean Refinery, 1953). Production of specialties began to centralize in the Olean plant around 1934. At that point, approximately 500 cases were being shipped per month. (SVOC, 1950)

The #2 Works area consisted of the bulk oil loading, treating, and storage departments. After the crude was filtered at the Crude Pipe Still, the distillate was treated in the continuous agitators in this section of the plant and the finished products were known as Mobil Kerosene and Diesel Fuels. These departments were also responsible for blending household fuel oil used to heat homes to its proper specifications (ORT, 1952). In 1935, the steam engine for the #2 Works Pump House was replaced by an electric motor. The need for this pump house and the number of pumps it house decreased after the crude still was built and the shell and steam stills were dismantled (Sovac, UD).

Transil Oil is another product that was manufactured at the Olean plant. It was used as a cooling, lubricating, and insulating agent for electricity transformers. Most of the production of the transformer oils was shifted from this plant to the Paulsboro, New Jersey refinery in 1935. This was due to the need for the product to withstand temperatures as low as 40 degrees below zero. The crude oil and synthetics used at the Paulsboro refinery were better able to create transformer oil that met those requirements than the transformer oil made from the Pennsylvania crude at the Olean plant (SVOC, 1950).

The Package and Filling Department was responsible for the compounding and blending procedures. The base stocks were mixed with chemicals according to formula and, after examination and approval from the laboratory; the finished products were filled in either tank car lots or in containers. These containers ranged from one quart cans to 50 gallon drums or barrels. This is where the rail service would remove and replace the tank and box cars (ORT, 1952).

The # 1 Works Area contained the Distillation Department. This department oversaw the fires in the furnaces that normally fractionated distillate and oil-naphtha solutions through their units. The laboratory building housing the lab personnel that inspected samples of all products produced at the plant was also located in the #1 Works area (ORT, 1952).

Wax became one of this refinery's major products around the mid 1940's (SVOC, 1950). With the introduction of Solvent-Dewaxing, a three filter Benzol-Ketone (or by some accounts, a Bezol-Acetone (UTD, 1944)) Dewaxing Plant was added to the plant in 1936 (ORT, 1952) which replaced an eleven chiller and wax press installation (UTD, 1944). This is where wax and petrolatum were removed from the base stocks and oil solutions so that they could meet cold test specifications (ORT, 1952). The plant produced about 12,000 barrels of it in 1949. Most of it went into producing wax emulsions for ceramics, waterproofing materials, tiles, tents, and for general impregnating (SVOC, 1950).

The specialties building, located in the #1 Works Area, opened in June of 1947 and stored and shipped Socony-Vacuum Oil specialty products such as Mobil All-Purpose Cleaner, Mobil Handy Oil, Mobil Hydraulic Brake Fluid, Mobil Hydrotone, Mobilgloss, Mobiltox, Mobil Penetrating Oils, Mobil Radiator Flush, Mobil Radiator Flush Concentrate, Mobil Rubber Parts Lubricant, Sovasuds Cleaner, Sovasuds Car Wash, Mobil Stop Leak, Mobil Upperlube, Mobilwax in cream and in paste form, Sanilac Heavy Duty Non-Rub Wax, Mobil Window Spray, Bugaboo, Sanilac Insect Spray, and Gargoyle Marine Diesel Hydrotone (SVOC, 1950; ORT, 1952; Pire, UD).

Most of these specialty products were created using petroleum in some form, with the exception of Mobil Hydraulic Brake Fluid, which was a synthetic and inorganic solvent. The Mobil Radiator Flush was an acid type introduced in September of 1948. The Mobil Hydrotone was a water solution of corrosion-inhibiting compounds. Mobiltox was an insect spray, most of which was exported to Indonesia (SVOC, 1950).

In 1950, the specialties building installed new machines that enabled production of wooden boxes used for export. This equipment also included a component to wrap the boxes with protective metal bands. By 1954, the plant was shipping 500 cases each day and utilizing 1,800,000 cans of various sizes per quarter and 8,000 one-gallon jugs per month. They filled 104,000 pint bottles and 147,000 quart bottles per month primarily on five high-speed lines which handled containers as small as four ounces in capacity up to five gallons. This operation was entirely automatic, with the feed stock flowing from tanks on the second floor to the filling machines on the first floor. A line for filling 50-gallon drums with specialty products was also located within the building. The four-ounce containers for Upperlube were filled the fastest at 7,200 per hour (SVOC, 1950).

The plant consisted of 131 buildings when it closed in 1954. These buildings included a specialty plant, the chlorex-treating plant, and the main office building on Buffalo Street (see Figure 3-8). In addition, there were 804 tanks of various sizes. The number of tanks had been the same since 1939. Four of those tanks were 80,000 barrels in capacity. Out of those four, one was used to store the base materials from which aromatic oils were produced and used in the refinery. The other three were used for crude-oil storage or to hold partially-refined crude oil to be later relayed to the Atlas refinery in Buffalo, New York (SVOC, 1950).

Before it's closing in 1954, the refinery was rated at a capacity of 6,500 to 7,000 barrels of crude oil per day, operating on Pennsylvania crude oil only (TTH, 1954; Wollstadt, 1954). However, the plant was only averaging a throughput of 4,000 barrels a day in 1947 and a mere 2,800 barrels per day in the few months prior to the refinery closing (Wollstadt, 1954).

## 5.2 PROCESSES USED IN REFINERY OPERATIONS

This refinery was the scene of development of several refinery processes standard in the industry today. These processes included tube-still distillation of crude oil, high-pressure thermal cracking, and the Thermofor kiln process for regenerating the clay used to remove color bodies from lubricating oil stock (SVOC, 1950).

The Olean refinery was the site of the first commercial installation of the Thermofor kiln in February of 1939. Two more Thermofor kilns were installed in 1946 and 1947 (one of them replacing the original unit) (SVOC, 1950). The Thermofor kiln operation was located in the Filtering Department and was responsible for decolorizing the oil by use of a filtering process (ORT, 1952).

Lubricating oils, along with many other oils, required filtration to improve colors and to lower carbon residue. Pennsylvania crude was very stable, making it harder to filter the oil. The solvent-treating process used very little color correction on lubricants made from Pennsylvania crude when compared to similar products made from other types of crude oil (SVOC, 1950). A filter clay that had been used was reactivated through a burning process which removed the impurities collected during the filtering operation (ORT, 1952). The filtering was done in vertical steel tanks which were 30 feet high and ten feet in diameter. Forty four tons of bauxite, or granulated Fullers Earth of 30-60 mesh, was charged into the tanks in order to perform the filtering operation (SVOC, 1950).

Bauxite is denser than clay per cubic foot. Thus it became impossible to fill the filters to the same height as when clay was used because the lugs, beams, and other associated equipment were unable to support the weight (SVOC, 1950). The Fullers Earth was shipped to the refinery from either South Carolina (SVOC, 1950) or Florida (ORT, 1952). Bauxite was shipped from Arkansas in box-cars, bagged or in bulk. They were emptied into the clay bins that were used for the storage of clay. A large assembly of vertical concrete clay bins, for storage of the clay after use and after recovery, was associated with the filters. In order to segregate the used clays, a

large number of bins were necessary. This enabled the refinery to keep a record of the number of times each batch of clay had been used. At one point, six regenerating burnings were considered the maximum amount of burnings with the Fullers Earth. However, with new equipment and improvements made to the technique, by 1950, it was possible to burn or regenerate these clays as many as 50 times or more and still provide a fairly efficient filtering material (SVOC, 1950).

The bauxite was only used for certain products such as petrolatums or lubricating oils because of the increased stability of the oils after such filtering. When bauxite was used in the filtering of wax, the quality of the product was improved. After the color bodies had been extracted from the oil, the filter was washed with naptha to remove recoverable oil that remained in the clay. The clay was then steamed to prevent it from igniting when it was charged to the heat-laden kilns which would regenerate the clay by burning off color bodies. When steamed, the clay passed into a heated hopper over the Thermofor kilns and was fed into the kilns in close proximity to tubes filled with sodium and potassium nitrites in a heavy liquid form. The nitrite liquid in the tubes was lacking in vapor pressure and had a high coefficient of heat transfer. These heat transfer salts, as they were commonly known, were solid at temperatures below 500 degrees Fahrenheit. They removed the heat resulting from the burning of color bodies and carbon from the clay as air was blown into the bottom of the kiln and caused to pass up through the clay. Introduction of the Thermofor kiln reduced the refinery's use of clay from 300 tons per month to less than that per year (SVOC, 1950).

The benzol-ketone process of wax removal employed at the plant consisted of chilling the wax distillate or heavy lube oils (for micro-waxes) after the addition of benzol-ketone. The wax was then filtered out. This system of wax removal was still in use at least until the year 1950 (SVOC, 1950).

The plant generated its own electricity (TTH, 1986b). The plant's requirements for fresh, cold water, which was used in wax production and for condensation in the crude still was met through the use of five wells on the plant's property (TTH, 1986b; SVOC, 1950). Each well pumped at a

rate of 1,500 gallons per minute. An additional 800-900 gallons of water was obtained by nearby surface streams. The water was treated prior to reaching the steam boilers by removing mineral salts and reducing the hardness to zero (SVOC, 1950).

## 5.3 Waste Water Treatment

Waste water was directed into three sets of separators, where oil was removed by skimming. When that process was complete, the water was discharged to the Allegheny River (SVOC, 1950).

## 5.4 Product Shipment and Modes of Transportation

The Socony-Vacuum Oil refinery in Olean was served by both the Erie and Pennsylvania Railroad tracks. The specialties department would often use refrigerated rail cars in the summer or heated rail cars (heated with charcoal braziers) in the wintertime for shipment of some of their products, particularly wax emulsions, which were often affected by extreme temperature shifts (SVOC, 1950). Tractor trailers were used as well for transportation of Socony-Vacuum Oil products. Quantities ranged from four ounce jars to 10,000 gallon rail tank cars (TTH, 1986b).

# 6.0 HISTORY OF THE FORMER REFINERY SITE 1954-1983

The following sections summarize the information that was collected regarding the history of the property from the closing of the Socony-Vacuum Oil refinery in 1954 until the closure of the Agway-Felmont Complex in 1983.

## 6.1 SWAN FINCH OIL COMPANY OLEAN INDUSTRIES, INC.

In 1954, the refinery was purchased from Socony-Vacuum by a Mr. C. J. Simpson (TTH, 1955). Through a series of stock transactions, Swan Finch Oil Company Olean Industries Inc., a subsidiary of Swan Finch, eventually became the owners (TTH, 1965) and used the refinery tanks for the storage of grain for the Commodity Credit Corporation (TTH, 1955). Approximately 60 tanks and other buildings on the former refinery site were used for this purpose and were capable of holding four to five million bushels. Corn was the first to be stored there and wheat was next. The tanks were cleaned by steam and aeration equipment installed in the tanks. Approximately 30 to 50 carloads of grain were reportedly expected to be unloaded every day (TTH, 1955). In 1958, Swan Finch declared bankruptcy and eventually sold the Olean facility to the Felmont Oil Corporation in 1964. The last of the old refinery tanks were torn down and sold for scraps in the summer and fall of 1964. The last two chimneys, along with many other former facility buildings, were brought down in 1962 (TTH, 1965).

## 6.2 THE FELMONT OIL CORPORATION 1964-1983

Although the land was purchased by The Felmont Oil Corporation (Felmont) in 1964 (TTH, 1968), construction of their anhydrous ammonia operation at the fertilizer complex did not begin until 1965 (BENB, 1965). They built their plant on a portion of a 60 acre tract that they shared with Agway (see Figure 1-4) (BENB, 1965). Felmont purchased a total of 120 acres that were once home to the Socony-Vacuum Oil refinery. In 1968, they cleared 60 acres of debris, unused buildings, and foundations of unused tanks left over from the oil refinery days (TTH, 1968). Felmont was contracted to supply Agway with anhydrous ammonia and carbon dioxide for its

agricultural nitrogen materials (BENB, 1965). Felmont's portion of the property (primarily the former refinery's #2 Works area) contained an office building and laboratories, a large furnace complex, a compressor building, and a 7,500 ton capacity storage tank (see Figure 6-1). The principal ingredients for the production of ammonia were heated to 1,400 degrees in the furnace before being transported through a complex system of pipes to the compressor building. There, the material was subjected to high pressure by two large Dresser-Clark compressors. The ammonia then would be moved to the storage tank until it was needed by Agway, Inc. At that point, the ammonia would be drawn from the tank and through a pipeline system to the Agway fertilizer plant (TTH, 1967). A majority of this pipeline system and the office building are still in place today (see Figure 1-3 and Appendix A).

An electrical substation that contained several large transformers was located to the northwest of the ammonia plant (TVGA, 2005). Pierose, Inc., which provided general maintenance of both the Away and Felmont plants, also occupied a building on the property to the west of the plant (TTH, 1967). That building is also still intact (see Figure 1-3).

The Felmont ammonia plant produced approximately 240 tons of anhydrous ammonia and 100 tons of food grade carbon dioxide each day. The raw materials or feedstock consisted of natural gas and air. However, seven or more different catalysts were used to strip carbon dioxide. These catalysts were changed out as they became contaminated or depleted during the ammonia manufacturing process. Nickel-based catalysts required disposal at a hazardous waste facility but no mention of where other spent catalysts were disposed of was made. Zeolites were also used by Felmont as a water-conditioning chemical. Used oils from the compressors were reportedly disposed of on site by spreading the oil onto the ground in various areas of the project site (TVGA, 2005).

On January 18, 1976, the Felmont plant experienced an explosion in the shed that housed water-treatment chemicals (TTH, 1979c). On October 27, 1989, another explosion occurred at the Felmont plant. The explosion occurred due to a safety mechanism failing, resulting in a ruptured vessel from extreme pressure. This occurred in a pressure-reducing tank (eighth feet high by five

feet wide) at the plant during an ammonia producing procedure. The New York State Department of Environmental Conservation (NYSDEC), the United States Environmental Protection Agency (USEPA), and the Occupational Safety and Health Administration (OSHA) each conducted their own investigation into this matter (TTH, 1979a). The blast was so severe, it created extensive damage to the Felmont operation and was said to have torn through tanks and pipes that were secured with inch-thick steel and bolts. NYSDEC's Olean office was directed to check the Two Mile Creek for evidence of any fish kill that would indicate the blast resulted in an ammonia leak. They found no evidence of any fish kill in the creek and reported to Olean citizens that there appeared to be no pending danger from the blast (TTH, 1979b).

A storage tank containing 2,700 tons of liquid ammonia was hit with a piece of flying debris from the explosion. The tank was subsequently drained by Felmont in order to determine if the tank sustained damage (TTH, 1979d). While draining the tank, Felmont claimed it was necessary to release some ammonia into the air in order to maintain positive pressure in the tank (TTH, 1979b). Apparently, this method of releasing puffs of ammonia into the air was a common event, especially when it rained, and several surrounding residents complained that they experienced serious eye and nasal problems in addition to ruined gardens and house paint as a result (TTH, 1979c). Despite the residential concern, the NYDEC declared North Olean safe on October 30, after touring the plant and examining the damaged ammonia tank that was struck. The damage was limited to the removal of a ten square foot section of insulation and an indentation in the tank that formed a small hairline fracture. The tank was vented to a flare for safety. The crack in the tank was ordered to be patched with fibrous lead and epoxy (TTH, 1979d).

Felmont had a three acre landfill where foundry waste and tile manufacturing waste were disposed of from 1970-1979. This eventually was listed as a hazardous waste site in 1984 and was suspected to have contaminated surface soil and groundwater (TTH, 1984c). Currently, the Felmont Site is still listed as a hazardous waste disposal site and a small quantity hazardous waste generator in the Federal RCRIS database (EDR, 2006).

Agway contractually purchased Felmont's ammonia plant after Agway's CF Industries suspended operations at the adjacent fertilizer plant in 1983 (TTH, 1984a; TTH, 1984b). Felmont could not continue production after Agway's closure as they were Felmont's sole customer (TTH, 1983b).

## 6.3 AGWAY 1965-1984

Agway is owned by CF Industries (TTH, 1983b). In 1965, Agway started construction on their portion of the urea fertilizer manufacturing complex by erecting a 160-foot high Urea Prill Tower (see Figure 6-2) (TTH, 1984d). Ammonium nitrate and urea were synthesized to produce urea pills, urea liquid, ammonium nitrate liquid and various nitrogen mixes (TVGA, 2003). Agway stored carbon dioxide in large tanks at the plant and their waste urea was sent to the Putts Farm in the nearby town of Allegany (TTH, 1984c; TTH, 1984f). There, it was spread out over the farmland and plowed under (TTH, 1984c). The Agway and Felmont plants combined required a total of seven million cubic feet of natural gas for daily operations (BENB, 1965).

High natural gas prices were stated as the reason that CF Industries closed the Olean Agway plant (TTH, 1984a). The urea tower was brought down and dismantled in 1984, along with much of the rest of the complex, and sold for scrap (TTH, 1984e). The last two million gallon fertilizer storage tank located northeast of the plant, on land associated with the old Socony-Vacuum refinery, was dismantled in July of 1984 (TTH, 1984d). The Agway-Felmont complex and the Putts Farm were on the states list of hazardous waste disposal sites (TTH, 1984c). They were both removed from this list in 1986 (TTH, 1986a). This site has been largely vacant and underutilized for over a decade, with environmental concerns contributing heavily to its status (TVGA, 2003).

### *6.3.1 Agway-Felmont Environmental Contamination*

In 1979, the United States Geological Survey (USGS) conducted a study at the fertilizer complex and discovered total nitrogen compound levels in groundwater that ranged from 100 ppm to

1,840 ppm (NYSDEC, 2006). From that point on, both Agway and the Felmont Oil Corporation worked to contain the nitrate ($NO_3^-$) and ammonia ($NH_3$) contaminated groundwater (TTH, 1985b) underneath 16 acres of their land off Buffalo Street even after they closed operations in 1983 (TTH, 2005a). It was reported that the contamination stemmed from "spills and discharges" from the former fertilizer plant that entered the aquifer (TTH, 1985e). Agway signed a memorandum of agreement in 1983 to continue operation and maintenance of a one million-gallon per day purge well and three other production wells until June 30, 1987 to halt the spread of these nitrogen-containing contaminants in groundwater towards municipal wells located behind St. Francis Hospital. These municipal wells produced a total of 1.5 million gallons of water per day and were approximately one mile away from the Agway-Felmont site (TTH, 1983a). It was reported that if the purging were to stop, traces of nitrogen compounds in the groundwater could reach the wells within a range of four (TTH, 1985e) to twelve years (TTH, 1985b), and in some cases, the ammonia concentrations would be higher than those set as safe for drinking water by the state Health Department (TTH, 1985d). In addition, it was believed that some of the contaminants would migrate off-site in a south/southwesterly direction towards the Allegheny River if only the purge well were operated (TTH, 1983a).

Agway was pumping four million gallons of water daily from beneath the complex into a pipeline that emptied into Two Mile Creek. Agway hired In-Situ, Inc. consultants from Lakewood, Colorado in 1984 to verify that their upper target of 10 parts per million (ppm) of nitrates set by the NYSDEC in the agreement had been reached (TTH, 1984a). The water quality standards for nitrates and ammonia in groundwater and surface water have been established by the NYSDC as 10 ppm and 2 ppm, respectively (NYSDEC, 1999). In 1985, one report claimed that Agway indicated 2.0 ppm was the level of ammonia contamination in the groundwater at the plant (TTH, 1985g).

Because their target for nitrate levels in the signed agreement had been met, Agway stopped pumping operations on October 31, 1984 (TTH, 1985a). They eventually asked NYSDEC to consider early shutdown of the pumping operations along with a monitoring program in 1985 (TTH, 1985e). The U.S. Geological Service (USGS) had been studying the contamination for

years and was to have begun taking measurements before, during and after the pumps were shut off to test an aquifer model they had developed. However, they were not notified of the shut down until two weeks after the fact. Agway was ordered to run the pumps for one month while USGS collected their data (TTH, 1985a). USGS was reported to have suggested in 1985, that according to their model, the nitrate contamination of the well field at St. Francis would return to normal by the year 2009 without further pumping (TTH, 1985c). However, the town officials were much more concerned about the high ammonia levels rather than the nitrate (TTH, 1985f). The town feared that ammonia would combine with chlorine in treated potable water, to form chloramines (TTH, 1985h). Chloramines are suspected to be carcinogenic (TTH, 1985i).

Agway was ordered by the NYSDEC to resume pumping from all four wells by June 28, 1985 (TTH, 1985h). Agway was, however, at this time concerned that it would draw chromium contaminated water onto its property, presumably from the Van der Horst property (TTH, 1985j). It was reported that the NYSDEC wanted to contain the chromium in the groundwater using Agway's pumps. As the chromium was not related to their fertilizer production, they refused to restart their pumps (TTH, 1985k). The NYSDEC took their bid to the state Supreme Court and in December of 1985, the court ruled in favor of Agway (TTH, 1985l).

Sampling programs conducted between 1990 and 1991 documented metals in groundwater, including chromium, barium, and lead, at levels exceeding the NYSDEC groundwater guidelines (NYSDEC, 2006). Additional investigations at the former fertilizer complex documented the presence of PCBs and semi-volatile organic compounds in soil as well (TVGA, 2003).

# 7.0 HISTORY OF OTHER INDUSTRIES WITHIN NORTH OLEAN

The following sections discuss other industrial facilities that were historically found in the general vicinity of the former refinery Site.

## 7.1 OTHER OIL REFINERIES

The New York Oil Works refinery was established in September of 1861 by Major Enos C. Brooks, Orville E. Hill, and Levi S. Enos. This plant was located on a large lot on the North side of West Sullivan Street. It was designed to manufacture two grades of kerosene from crude petroleum and the throughput of the plant was about ten barrels a day. The refinery was made up of one still with a crossbar and cap, a boiler, a safety valve and a quantity of copper and iron pipe fittings. The refinery was in serious financial trouble by 1862 and closed soon after (Herrick, 1949).

The exact location of this refinery was not found. However, in relation to the former Socony-Vacuum Site, West Sullivan Street is located just two blocks south of the southern most point of the # 1 Works area.

## 7.2 TANNERIES

The tanning industry was one of Olean's most significant early industries. The tanning process involved such steps as washing the animal hides using heavy detergents, hair removal using a caustic solution, tanning using leachates of tree bark (harvested from local forests), along with chromium and arsenic compounds, and various other chemicals used to re-tan, color and finish the products. There were numerous residual products of little value from the tanning process. These included large volumes of spent tanning bark, animal flesh, fat and hair, and chemical solutions and sludges. On-site disposal of these waste products was common to the industry during their era of peak activity. On a national basis, there are many former tannery sites that have or are currently undergoing environmental remediation. The typical former tannery site

exhibits ecological concerns such as soil and groundwater contamination due to metals, semi-violate organic compounds (SVOCs), and dioxins (TVGA, 2003).

Walter Wood was reported to have established the first tannery, which was a small, old-fashioned tannery in North Olean along the edge of a swamp (NOH, 2006). By the 1930's, the tanning industry had declined and the last operating tannery closed in Olean (TVGA, 2003). The following are just a few of the tanning companies that operated in North Olean, near the former refinery Site.

### *7.2.1 Root and Keating Tannery*

In 1864, Mr. Jewett and Mr. Keating were the next to establish what was to become one of the first important industries of Olean. Their tannery was built along what is now known as North Union Street, less than 0.5 miles to the southeast of the former #2 Works Socony-Vacuum refinery area (see Figures 7-1 and 3-1). Mr. Jewett's interests were purchased by a Mr. Root in 1874, thus the tannery became known as the Root and Keating Tannery (see Figure 7-2). In 1893, the tannery was purchased by the United States Leather Co. Improvements were made to this tannery by adding a new power department, steam plant, two tank bark ovens and two 150 horse-power boilers. There was a threat of shutdown in 1895, however, the tannery continued to operate and was booming. On July 8, 1911, an attempt was made to burn down the Root and Keating tannery. In May 1935, the Spindler Brothers purchased the 38 acres of land occupied by the Root and Keating Tannery and divided it into building lots and streets. The new development was called the Spindler Brothers Brookview sub-division (NOH, 2006).

### *7.2.2 Claflin Manufacturing Company's Tannery*

Lee, Claflin & Company announced their plans to build a new tannery in Olean in May 1888. It was located on ten acres of land south of Two Mile Creek, with access to switches to both the Erie and Pennsylvania Railroads (NOH, 2006). Their tanning operations were located along the

Erie Railroad tracks, directly north of the #1 and #2 Works areas of the former Socony-Vacuum refinery (see Figure 7-1). It was also adjacent to the western border of the former #3 Works area.

The Claflin Manufacturing Company's Tannery was sold to Adam Kinley in 1894. The Adam Kinley & Sons tannery became a very prosperous leather tannery and expanded in size to 18 acres (NOH, 2006). They produced only one grade of goods known as Union Crop Sole Leather exclusively by a process called bark tannage (TEH, 1900).

### *7.2.3 Buswell, Brown & Company Tannery*

The Hubbard, Blake & Company tannery, later to be known as the Buswell, Brown & Company Tannery, was built in the western part of Olean off of Fall Road in the summer of 1889. The tanning facility was located adjacent to the former Socony-Vacuum #1 Works area, just west of Buffalo Street (see Figure 7-1). A street was opened from Buffalo Street to the Hubbard, Blake & Company tannery and the Erie Railroad put in a switch connecting to the tannery. In May 1891, an injunction was made against the tannery in an attempt to restrain the plant from emptying refuse from their tannery into Two Mile Creek. Work stoppages in 1894 and 1895 resulted in the removal of the finishing department from Olean. On September 29, 1904, the tannery was consumed by fire. The tannery was never rebuilt (NOH, 2006).

### *7.2.4 Cattaraugus Tanning Company*

The Cattaraugus Tanning Company purchased the property located on Connell Street, approximately 0.07 miles north of the former Socony-Vacuum #1 Works refinery area (see Figure 7-3), around the year 1910 and operated there until 1919. It was sold that year to the Kistler Leather Company but still operated under the name Cattaraugus Tanning Company. On July 1, 1929, it was announced that the tannery would cease operations due to the high cost of shipping the raw material from the east coast and the finished leather having to be shipped back to the seaboard (NOH, 2006). The tannery property housed bark sheds, acid tanks, transformers, engine rooms as well as settling basins and sludge beds (TVGA, 2003).

## 7.3 RAILROADS

The following sections describe the two main railroad lines that intersect at a point that was adjacent to the former refinery, one of these lines having bisected the property. A major environmental spill is also examined.

### *7.3.1 Erie Railroad*

Erie opened their line to Olean on May 14, 1851 (Mott, 1899). Through the early 1900's, this line accommodated 140 railroad trains, both passenger and freight, from six different railroads, arriving and departing from Olean on a daily basis (TEH, 1900). The Erie line was established to connect Chicago with New York City. The Empire Freight Line, operating on the Pennsylvania Railroad system and the Erie Railroad, each loaded a car or two a day that was sent directly to Olean from New York City without making a stop (TEH, 1900). The Erie track traversed the former Socony-Vacuum refinery, in a sense splitting it into a northern (#3 Works) and southern (#1 and #2 Works) section (see Figure 1-2).

### *7.3.2 Pennsylvania Railroad*

The precursor to the Pennsylvania Railroad began as the Olean, Bradford & Warren Railroad. This was a three-foot gauge line running 63 miles from Olean, New York to Warren, Pennsylvania through Bradford, Pennsylvania. The city of Warren, however, never contributed to the construction of the line and, as a result, the only work done between Bradford and Warren was an initial survey. On October 8, 1877 a gang began grading the line towards Olean. In November of the same year, 200 men began work on the northern end of the line and reached Gilmore City in December. On February 8, 1878 the last spike was driven and the track was put into operation (WNYRA, 2005).

The Olean-Bradford section ran through two states and was incorporated as two separate companies with two separate charters. The 12.5 mile section in New York was called the Olean,

Bradford & Warren (OB&W) Railroad while the 10.5 mile section in Pennsylvania was incorporated as the OB&W Railway (WNYRA, 2005).

The OB&W connected to many other narrow and standard gauge railroads. Most notably was the Kendall & Eldred Railroad which connected to the OB&W at Tarport, Pennsylvania (East Bradford). These two companies shared the same management and were operated by the same personnel (WNYRA, 2005).

During that era, as today, the larger railroad systems were always looking to lease or purchase smaller systems to add to their operations. The OB&W was no exception and on June 11, 1878 the Pennsylvania section of the line was sold to the Buffalo, New York & Philadelphia Railway (BNY&P). The BNY&P purchased the New York section of the OB&W line on December 8, 1881(WNYRA, 2005).

During its explosive growth by acquisition phase, the BNY&P purchased the McKean & Buffalo Railroad, 16,000 acres of land, and the 121 mile main line of the Western New York & Pennsylvania Railway in Pennsylvania. In 1883 the BNY&P purchased the Kendall & Eldred Railroad, the Buffalo, Pittsburgh and Western Railroad Company, the Olean and Salamanca Railroad Company, the Bradford Railroad, the Kinzua Railroad, the Genesee Valley Canal Railroad, the Oil City and Chicago Railroad Company, and the Rochester, New York & Pennsylvania Railroad. After this rash of purchases the company was reorganized on February 14, 1883 as the Buffalo, New York & Philadelphia Railroad Company. The BNY&P was purchased in the winter of 1887/88 by the Western New York & Pennsylvania Railroad Company which was, in turn, leased to the Pennsylvania Railroad in 1900 (WNYRA, 2005).
The Western New York and Pennsylvania Railroad ran from Buffalo, New York to Emporium, Pennsylvania and was absorbed by the Pennsylvania Railroad in 1905 (WNYRA, 2005). The main Pennsylvania Railroad tracks ran along the eastern boundary of the former Socony-Vacuum refinery property (see Figure 1-2).

### *7.3.3 Historic Environmental Accidents*

A very significant environmental accident began about 8:30 on the evening of March 9, 1903 on the Erie line. The accident occurred beyond the Erie Bridge which was located over Olean Creek, approximately 0.60 miles east of the former refinery Site (see Figure 1-2), and occurred when a westbound freight train broke in two between Hinsdale and Olean. The crew was unaware of this fact, which was first discovered by the operator at the tower just east of Olean. He sent word to the operator at the Erie station, who had the engineer keep on down the main track, counter to the standing orders of stopping at the bridge to take the switch. Before the engineer could get the twenty-six cars attached to his engine in motion again, the fourteen cars that were following with the caboose, crashed into those ahead of it just east of the Erie Bridge across the Olean Creek. Of the fourteen cars involved, eight were loaded with refined oil or naphtha and the other six with sugar (NOH, 2006).

The collision caused an explosion of some of the oil cars; three of which were thrown down the north side of the embankment. Another toppled part way down the south bank and others were piled sidewise across the tracks (NOH, 2006).

## 7.4 OLEAN CHEMICAL WORKS

One of the earliest industries in North Olean was the Olean Chemical Works which was organized in 1881 (Adams, 1893) on the site of the current Henkel Corporation factory between Washington (now Connell) and Franklin Streets (see Figures 7-1 and 3-1) (NOH, 2006). The chemical manufacturing operations were located along the Pennsylvania Railroad tracks, adjacent to the eastern border of the former Socony-Vacuum #3 Works refinery area (see Figure 7-4). The Olean Chemical Works was a branch of the Graselli Company of Cleveland, Ohio (NOH, 2006).

The Olean Chemical Works plant manufactured sulphuric, nitric, mixed and muriatic acids, aqua ammonia, extra distilled glycerine, etc. Their methods and processes remained a secret and

many of the appliances used by the chemical company were of their own invention and were used exclusively for them (Chapin, 1889). On November 5, 1884, the Chemical Works was the scene of a destructive fire. The fire originated in the boiler works. In total, the fire destroyed approximately one-third of the plant including 64 glass stills with their contents (TOD, 1884a). This fire was reported to have created some damage to the Acme refinery as well, specifically to the east end of the barrel factory, and to tankage and piping at the pump station just north of town. Before a new building was erected to replace the one that caught fire, the Chemical Works plant had to create large stores of sulphur and other minerals by baking and melting them into a solid concrete rock (TOD, 1884b).

After the fire, George Lurther purchased the Chemical Works property in November of 1904. He built a factory 80 feet by 30 feet on that site in July of 1905 and was going to name it the Sanitary Dinner Pail Company. On July 25, 1905, the Dinner Pail Company was gutted by a fire of unknown origin (NOH, 2006).

Following the Pail Company fire, the executive committee of the Board of Trade secured an option on a portion of the old Chemical land owned by George Luther. They built a large glass bottle and demijohn manufacturing plant and named it the Boley Manufacturing Company. A demijohn is a large, narrow-necked bottle made of glass or earthenware, and is usually encased in wickerwork. After the factory was in operation, a fire occurred on January 1, 1907 (NOH, 2006).

## 7.5 THE OLEAN GLASS WORKS

The Olean Glass Works was located south/southwest of the Eclipse and Acme refineries on Buffalo Street near Thirteenth Street and begun operations in 1883 (see Figure 7-1) (NOH, 2006). In relation to the former Socony-Vacuum refinery, it was located just west of Buffalo Street, adjacent to the southern end of the former #1 Works area.

The glass works was the site of many serious fires. The first, in September 1894, badly scorched the factory. The second one occurred in January 1896 and destroyed the main building. Fire struck the glass works in 1905 in which two large buildings were destroyed. Presumably the last fire to hit the plant occurred in 1913. In that same year, the factory was sold to the Acme Glass Works (NOH, 2006).

## 7.6 UNITED LUMBER COMPANY

The United Lumber Company made plans to locate on 40 acres purchased from S.R. Homer, a tract of land opposite the Erie Railroad tracks from the Acme Barrel Works. It was expected that this plant would be the main storage plant for the product of various mills owned by United Lumber companies. Mr. S.S. Bullis, owner of the company, was given much credit for locating his company to Olean in February of 1888. A huge fire destroyed about 4,000 to 5,000 feet of lumber as well as the building in which they were stored in September of 1889 (NOH, 2006).

## 7.7 WILSON ROLLER BLIND MANUFACTORY

On October 14, 1891 the Wilson Roller Blind Manufactory (also referred to as the Wilson Sash and Blind Company) had started operations in an area just north of the Acme and Eclipse refineries on Johnson Street (see figure 7-1) (NOH, 2006). Johnson Street is located within 0.14 miles north of the former #1 and #2 Works areas of the Socony-Vacuum refinery Site and approximately 0.10 miles west of the former #3 Works.

The Wilson plant manufactured rolling blinds, partitions, rolling steel shutters, wood block flooring, window frames, and hygienic school wardrobes. The products of this factory also included Mr. Wilson's patented inside and outside blinds and shutters (the first Venetian blinds). It was in March 1902 that a fire destroyed the Wilson factory along with a saw mill located along Two Mile Creek. After the fire, the Wilson Roller Blind Manufactory left Olean (NOH, 2006).

## 7.8 UNION PLANNING MILLS

The Union Planning Mills was established in an area north of the Eclipse and Acme refineries that were operating at the time. Although its exact location was not discovered, it appears to have been situated just north of the Wilson Roller Blind Manufactory (see Figure 7-1). In April of 1895, it was announced that the mill had put through about one million feet of hemlock to be dressed for the eastern market. In that same year, Thomas Whitton, owner of the Union Planning Mills, had purchased the entire stock of Pennsylvania Storage Company's Storage Yard just north of his mill (see Figure 7-1) (NOH, 2006).

## 7.9 ACME GLASS WORKS

The Acme Glass Works came to Olean in 1895 and was located near the intersection of Franklin and Johnson Streets in North Olean, within 0.14 miles north of the former #1 and #2 Works areas of the Socony-Vacuum refinery Site and approximately 0.10 miles west of the former #3 Works (see Figure 7-3). The Acme Glass Works purchased the Olean Glass Company business in 1913 and would operate the factory on the corner of Buffalo Street and Thirteenth Street in connection with their more northern facility. The glass works was running to full capacity in 1916 and in March of 1926, the Acme Glass Works was sold. In 1932, fire destroyed the old Acme Glass plant on Franklin Street which had been closed since April 1929 (NOH, 2006).

## 7.10 UNITED WOOD ALCOHOL COMPANY

A site for an alcohol refinery was selected north of Franklin Street and east of the Pennsylvania Railroad in February of 1907 (see Figure 7-3). This facility was also situated adjacent to the eastern border of the former Socony-Vacuum #3 Works refinery area. Crude alcohol would be brought to this location from factories in metal drums and shipped out in barrels after being refined. The plant was never operated (NOH, 2006).

The Seaman Organization, one of the largest industries to come into North Olean, announced in October 1924 that they would take over the idle United Wood Alcohol Company plant (see Figure 7-2). The company had been noted for their manufacture of fiber containers and while the new plant was being made ready, the temporary plant turned out buckets that were used for shipping candy, paints, lards, greases and similar products (NOH, 2006).

In the spring of 1927 the Arvey Manufacturing Company was organized and took over the Seaman Organization. The Arveyware Corporation purchased the building in 1934 and renamed it the Fibre Forming Corporation. It has been estimated that he plant closed sometime during the 1960's. The building was dismantled and the land is now part of a parking lot for the Henkel Corporation (see Figure 1-4) (NOH, 2006).

### 7.11 DRESSER-RAND COMPANY

The Dresser-Rand Company (Dresser) began in the 1880's in nearby Belmont, New York when the two Clark brothers decided to begin manufacturing farm implements and sawmill equipment. The brothers eventually decided to shift their focus from agriculture to oilfield equipment (TVGA, 2003). In 1912, a fire destroyed the Clark Brothers plant in Belmont and the firm decided to move to northwestern Olean and began manufacturing engines for the oil industry (NOH, 2006; Dresser-Rand, 2006). They started their Olean plant in the southeast corner of their current property, along Lincoln Street and the Pennsylvania Railroad tracks (see Figures 7-3 and 7-5). Their current property is situated adjacent to both the southern #1 Works and eastern #2 Works borders of the former refinery Site (see Figure 1-4). Large, slow-speed reciprocating engines and compressors were the primary product manufactured in the Olean plant at that time (TVGA, 2003).

In 1938, Clark Brothers merged with another oil industry manufacturer, the Dresser Manufacturing Company from Bradford, Pennsylvania, to form the Dresser-Clark Company. In 1956, Dresser Industries was incorporated under the laws of the State of Delaware as a successor

to the Dresser-Clark Company. On January 1, 1987, Dresser Industries merged their interests with the Ingersoll-Rand Company to form the Dresser-Rand Company (Dresser-Rand, 2006).

During World War II, Dresser expanded their line of oil industry products in addition to designing and building marine diesel engines for use on tankers. Around this time, Dresser acquired their first portion of the former Pennsylvania Railroad maintenance facility (TVGA, 2003). Eventually, Dresser acquired all of the land adjacent to the former Socony-Vacuum Oil Site previously owned by the Pennsylvania Railroad for repairing steam locomotives for the Union Tank Line Company (see Figure 7-5).

The company steadily grew, and in 1956 a new plant was constructed in northwestern Olean to manufacture gas turbines and centrifugal compressors. By 1975, the company had designed and built one of the largest natural gas compressors in the world (TVGA, 2003).

Throughout most its history, Dresser-Rand has had a foundry at the Olean facility. This foundry was capable of producing very large castings. Although many processes have been used at the facility, the bulk of the casting process involved the sand cast method. This common casting method involved the construction of a mold and pattern in which foundry sand and its amendments are packed tightly. Molten metal was then poured into the mold after the pattern was withdrawn and the mold was closed. The casting was allowed to cool and was withdrawn from the mold. The casting was then chipped clean of slag and sand and machined into its intended form. The spent foundry sand was used for on-site fill and at other nearby locations, including an area to the south of Buffalo Street (TVGA, 2003).

Of the many manufacturing facilities that occupy northwestern Olean, Dresser-Rand is one of the largest and is still active today. Although the Dresser-Rand facility is still an active operation, TVGA consultants stated in their Bond Act Application – Project Description report (2003) that the company indicated portions of the plant are no longer utilized and may be available for redevelopment.

## 7.12 VAN DER HORST

The Van Atta Plant had been established at the corner of Penn Avenue and N. Fourth Street in North Olean in 1916. This location was slightly southeast of the former #2 Works area of the refinery Site, just across the Pennsylvania Railroad tracks. They produced hydraulic presses that were used in the Seaman Organization's manufacturing process of fibre containers (NOH, 2006). It appears as though this was the precursor to the Vander Horst plant, or at least was very near the former Van der Horst factory property.

Van der Horst was a chromium plating facility that operated at 315 Penn Avenue location from the early 1950's until June of 1987 (see Figure 1-4) (TVGA, 2003). In their operations, they produced chromic acid wastes that were allegedly disposed of on the property, resulting in groundwater contamination. The resulting chromium contamination in groundwater was largely contained by the Agway-Felmont purge pumping operation (see Section 7.3.1) (TTH, 1984c). However, groundwater was also contaminated with lead and tetrachloroethene. Previous investigations at the former chrome plant indicated that contamination from the plant was also in the on-site soil, in City storm sewers around the property, and in the sediments of Olean Creek. Surface soil samples taken from adjacent residential properties indicated elevated levels of arsenic, lead and chromium, confirming the airborne transport of site-related contaminants as well. To date, a total of 31,539 tons of contaminated soil and building have been removed from the property, as well as from neighboring properties, and quarterly groundwater monitoring is in progress. This site is still listed as a class 4 hazardous waste site, meaning that it is one that requires management, on Olean's list of four such sites (Cmap, 2002).

Van der Horst also owned and operated an iron/chrome plating facility on Johnson Road (Van der Horst Plant #2), near Two-Mile Creek, within 0.14 miles north of the former #1 and #2 Works areas of the Socony-Vacuum refinery Site and approximately 0.10 miles west of the former #3 Works (see Figure 1-4). Approximately three acres of waste material was identified on site during a Preliminary Investigation conducted by NYSDEC in 1988. The soil was contaminated with both chromium and barium. Hazardous waste was improperly stored within

the plant building, including both corrosive and ignitable material. Demolition of all the on-site structures was completed in 1995. Consolidation of on-site soil and sediment at one location and subsequent encapsulation work was completed in 1996. This property is also listed as a class 4 hazardous waste site in Olean and long term monitoring of the property is ongoing. Chromium contamination in the groundwater at the site has been reduced since the completion of the remedial work. The property is currently fenced and gated to restrict access (Cmap, 2002).

### 7.13 PENNSYLVANIA RAILROAD SHOPS AND YARDS

The Pennsylvania Railroad had established two separate maintenance shops and train yards. One yard was located directly adjacent to the former Socony-Vacuum Site, currently the Dresser-Rand property (see Figures 1-4, 7-3 and 7-5), and the other was located just south of Wayne Street between Third and Seventh Streets, approximately 0.5 miles southeast of the former refinery property (see Figures 7-1, 7-3 and 7-5). Presumably they were established after the Union Tank Car Company left the former refinery Site around 1921.

Machine shops and lifting equipment used for the maintenance and repair of locomotives and rail cars were housed on these properties. The use of cutting oils, lubricating oils, solvents, degreasers, and paints were commonplace at train yards during this time in history (TVGA, 2003). The tank car repairing effort on the property abutting the former refinery Site was discontinued in 1950 due to changes in requirements for tank cars throughout the country and as a result, the Union Tank Car Company buildings were dismantled and the tank car storage tracks removed (Sovac, 1950b).

In March of 1927 an announcement was made that a modern glass factory was to be erected on the ten acre property on Wayne Street and construction began in April of that year. Around 1935, the glass factory was bought out by the Thatcher Company who continued in Olean until they finally closed and moved all their operations to Elmira, New York. The Olean Board of Education bought the property in 1978 and built the Olean Junior High School on its site (NOH, 2006).

## 7.14 HENKEL CORPORATION

Located on the land that once housed the Olean Chemical Works facility, the precursors to the Henkel Corporation began in April 1930 with a new plant, the Olean Metal Cabinet Works, erected on Franklin Street for the purpose of manufacturing metal products. Eventually, Lloyd D. Dahmen bought the plant and in the year 1935, the Daystrom Corporation became a manufacturer of metal ashtrays. In 1938, Daystrom began manufacturing chromium kitchen furniture and upholstered stools and chairs. The Daystrom plant in Olean was shut down in February 1962, at which time the operation was relocated to South Boston, Virginia. The Henkel Corporation took over the former Daystrom factory some time later and has been operating there ever since (see Figure 1-4) (NOH, 2006).

## 7.15 ALCAS CUTLERY

Although it is located approximately 2.5 miles southeast of the former refinery property, the Alcas Cutlery property is listed as one of Olean's four known hazardous waste sites. They are listed as a class 2 hazardous waste site in the City of Olean, indicating that it is a "significant threat" (Cmap, 2002). Their plant is located at 1116 West State Street in the southeastern section of town, just north of the Allegheny River. It is near the former Quirin's Tannery depicted in Figure 8-1.

Alcas Cutlery produces household cutlery in a process that does not involve plating. Prior to 1979, this company was responsible for applying four to five drums of 1,1,1-trichlorethane (TCE), used as a weed killer, to their property every year (Cmap, 2002). Grinding wastes were also disposed of in an abandoned canal bed behind the property (TTH, 1984c). Previous investigations indicated both groundwater and soil contamination at the location (Cmap, 2002). The Olean Well Field, near the Alcas Cutlery plant, has also been listed as a class 2 hazardous waste site because of TCE contamination. A portion of the contamination has been attributed to Alcas (Cmap, 2002).

# 8.0 CURRENT SITE CONDITIONS

The site visit to the property, on which the former Socony-Vacuum Oil Company, Inc. refinery was once located, focused on the relatively undeveloped portions of the Site that were accessible from Buffalo Street. This primarily included the former #1 Works area. Appendix A presents the photographs that were taken during the site visit and this section describes the existing structures depicted in the photos. An attempt was also made to relate current Site conditions for the former #2 Works and #3 Works areas primarily through the use of current aerial photographs (see Figure 1-3). Summaries of the ongoing environmental investigation being conducted on a portion of the Site and of the environmental database search that was completed are also presented in this section.

## 8.1 FORMER #1 WORKS AREA

The portion of the site that once was referred to as the #1 Works (parcels 94.047.28.1, 94.047.29, 94.047.28.2, and 94.047.30) (see Figure 8-1) is bound to the west by Buffalo Street (Photos 1 and 2), to the north by the Erie Railroad tracks (Photo 1), to the east by the Dresser-Rand Company property (Photo 3) and the former #2 Works property, and to the south by the Dresser-Rand Company property as well (see figure 1-4). The majority of the area previously covered by the former #1 Works is relatively flat with no distinct gradation in any direction. It is primarily undeveloped and contains mostly short manicured or high unkempt grass habitat as depicted in Photos 4 through 9. However, there are some existing features of note within this section of the former refinery Site. These features include the two-story Harris Supply Company, Inc. building and parking lot situated at the intersection of Buffalo Street and the Erie Railroad tracks (Photos 10 and 11), and two former Agway plant buildings (see Figure 1-4). Both of these buildings are two-stories high and are located just east of Buffalo Street. The more northern building is depicted in Photos 12 and 13. The building located further south is depicted in Photos 14 and 15. A former Agway guard shack also remains on their property just east of Buffalo Street, situated in between the other two former Agway buildings described above (Photo 16).

In addition to buildings, the former #1 Works site contains various signs and the remnants of the former pipeline used by the Agway-Felmont fertilizer complex. One of these signs, located at what once was the main entrance into the Agway plant from Buffalo Street, bares the complex's name; the "Agway Industrial Park" (Photo 17). Photos 18 and 19 depict two additional signs in separate parcels of the former #1 Works facility that list that parcel as available. The former Agway-Felmont complex utilized a large pipeline system (see Figure 6-1) (Photo 20) that runs primarily parallel to the Erie Railroad tracks, for the transport of ammonia (Photo 21). The remainder of this pipeline stretches along the boundary of parcels 94.047.28.1 and 94.047.29 (Photo 22). Near the northeastern end of the pipeline system, an arch was created over an access road that connects the two parcels mentioned above (Photo 23). A gas line structure is located just a little further northeast of the pipeline arch (Photo 24).

## 8.2 FORMER #2 WORKS AREA

The portion of the site that once was referred to as the #2 Works (parcels 94.048.1.1 and 94.048.1.2) (see Figure 8-1) is bound to the west by the former #1 Works property, to the North by the Erie Railroad tracks, to the east by the Pennsylvania Railroad tracks, and to the south by the Dresser-Rand Company property (see Figure 1-2). Parcel 94.048.1.1 appears completely undeveloped with the exception of one small structure located on the border between the two parcels. It appears as if it is primarily made up of non-manicured grassy habitat with some brush and small trees (TVGA, 2005). TVGA indicated that there are several former building foundations, fencing, monitoring well casings, and power poles located in this area (TVGA, 2003; TVGA, 2005). The NYSDEC documented the presence of small spheres and pellets in soil piles on this parcel that were likely linked to the Agway-Felmont fertilizer complex operations (NYSDEC, 2005).

Parcel 94.048.1.2 still contains three large buildings and a parking lot. Two of these buildings served as an office building and a maintenance building when the Agway-Felmont fertilizer complex was operational (see Figure 1-4). There are some various other small structures visible on the aerial photo that are more than likely related to the former Agway-Felmont fertilizer

operations as well. This property appears to contain a mix of tall grassy areas mixed in with some scrub/shrub habitat.

## 8.3 FORMER #3 WORKS AREA

The majority of the Site that once was referred to as the #3 Works includes many different tax parcels (94.040.29, 94.040.2.1, 94.040.2.2, and 94.032.2.1) (see Figure 8-1) including a portion of the New York State Route 17 that runs directly through the center of the former #3 Works area from east to west. What constituted the #3 Works property boundaries are not entirely clear, however, it is believed to have been bounded generally to the north and west by Homer Street, to the east by the Pennsylvania Railroad tracks, and to the south by the Erie Railroad tracks (see Figure 1-2). All of the parcels believed to be a part of the #3 Works portion of the former refinery are currently vacant with the exception of 94.040.29. This property houses two large buildings and associated parking areas for the Blue Bird Industrial Park (see Figure 1-4). The rest of the land once associated with the primary distillation and crude storage for the former refinery appears to be covered with tall or short grassy habitat.

## 8.4 UNDERSTANDING OF CURRENT ENVIRONMENTAL INVESTIGATIONS IN NORTH OLEAN

The City of Olean wanted to acquire the former Felmont Oil Company parcels via tax foreclosure to further investigate known and suspected contamination at the former ammonia production site in North Olean. The actions of the City of Olean and Cattaraugus County, with respect to the acquisition of these parcels, were coordinated with the intent of consolidating the subject site under the control of the Urban Renewal Agency (URA). In December of 2003, a Bond Act Application – Project Description Report was submitted by TVGA Consultants on behalf of the City of Olean stating the reasons for the city's interest in the former Felmont Oil property (TVGA, 2003).

In June of 2004, the city of Olean won an $180,000 grant from the New York State Department of Environmental Conservation, which was funded under the 1996 federal Clean Water/Clean

Air Bond Act (TTH, 2004). The Felmont subject area currently being investigated consists of three parcels of land, including 94.048.1.1, 94.047.28.1, and 94.047.30 (see Figure 8-1) (TVGA, 2003), covering a total of approximately 24 acres. Through various interviews, it was revealed that environmental consultants are, however, concentrating more of their efforts on parcel 94.048.1.1, believed to be the site of the major explosion that occurred on October 27, 1979.

The site along New York State Route 17 in North Olean is considered a prime area for restoration and commercial redevelopment (TVGA, 2003), but investors and builders have avoided the Buffalo Street location for fear of possible contamination (TTH, 2004). Although the entire Felmont property being investigated is only 24 acres in size, the city has identified nearly 500 abandoned acres in the North Olean industrial district that would be ideal for redevelopment (TVGA, 2003). In April of 2005, the city won another $72,500 grant to help hire consultants to survey the entire 500 acres. This survey will be necessary in helping with future applications for federal and state aid required for property rehabilitation (TTH, 2005a).

The primary Felmont parcel being investigated has been vacant since approximately 1994 (TTH, 2004) and has, to the city's knowledge, never been subjected to any previous environmental assessments and/or investigations (TVGA, 2003). However, several adjacent properties were investigated regarding environmental contamination including the former Agway Nitrogen Complex and the Van der Horst Plants 1 and 2. Investigations of these two properties confirmed the presence of surface and subsurface soil contamination, groundwater contamination, and sediment contamination within Two-Mile Creek located 0.25 miles west of the subject property's western boundary (TVGA, 2003).

Based on the results of those investigations and the historical use of the site, the primary concerns regarding environmental contamination at the Felmont subject property were identified by TVGA (2003) consultants as:

- "The potential for surface and subsurface contamination in connection with the former use of the site for industrial use for over 85 years, including, but not limited to, spills

and/or leaks from extensive petrochemical storage and processing facilities formerly located on the subject site;

- The potential presence of potential underground storage tanks (USTs) and/or process piping;
- The potential for contamination associated with the former rail facilities that serviced the subject site;
- The potential for contaminant migration from the Van Der Horst sites onto the subject site via groundwater;
- The documented occurrence of PCBs and semi-volatile organic compounds (SVOCs) in the soil on the adjacent Agway site, which was originally part of the larger refinery complex that formerly contained the subject site;
- The documented occurrence of groundwater contamination by ammonia and nitrate on the adjacent Agway site; and
- Potential presence of contaminated sediments sludges and/or wastewater within the remaining components of the on-site drainage system."

TVGA indicated in their 2003 Bond Act Application that the Felmont Oil facility operated a machine shop and compressor facility and utilized multiple electrical transformers, as well as numerous petroleum containing above ground storage tanks (ASTs). This suggests the potential for the onsite storage and use of solvents, the presence of PCB-containing electrical equipment, and the use of petroleum products by the Socony-Vacuum refinery's successor (TVGA, 2003).

The primary goals of this Brownfield restoration project are to identify and remediate any contamination that could pose a threat to the public's health and safety or to the environment (TVGA, 2003). The City of Olean would like to take advantage of the State's federal Brownfield program policy in which they grant up to $200,000 for cleanup costs and an additional $200,000 if the site is contaminated with petroleum products (TTH, 2002). According to The Times Herald in June of 2005, TVGA engineers had found "...some pockets of oil contamination, but not enough to preclude development (TTH, 2005b)."

The cleanup strategy was reported to be bulldozing contaminated soil into a containment area and then capping. Because the property is intended for retail development, the level of cleanup will be lower than if it were to be used for residential development due to New York's newer, more relaxed, state regulations for cleanup of former industrial sites (TTH, 2005b).

The Agway-Felmont site is within the Empire Zone, meaning any new business locating there would receive breaks on taxes and utility costs (TTH, 2004). The mayor of Olean has made it a priority to redevelop the site and suggested that the location would be ideal for an outlet mall or similar development (TVGA, 2003).

## 8.5 Environmental Database Search Results

An environmental database service company, Environmental Data Resources, Inc., was contracted to provide a Site-specific environmental database search report for the property in question and the surrounding vicinity. This report is provided as Appendix B of this report. All of the information contained below summarizes their findings and came directly from their report (EDR, 2006).

### *8.5.1 Federal Records*

A search of several federal databases, including the Comprehensive Environmental Response, Compensation and Liability Information System (CERCLIS), The CERCLIS "No Further Remedial Action Planned" (CERCLIS-NFRAP) database, the Resource Conservation and Recovery Act (RCRA) Information (RCRAInfo) system, and the RCRA corrective Action Activity (CORRACTS) database, produced the information detailed below.

CERCLIS contains data on potentially hazardous waste sites that have been reported to the United States Department of Environmental Protection (USEPA) by states, municipalities, private companies and private persons, pursuant to Section 103 of the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA). CERCLIS contains sites

which are either on the National Priorities List (NPL), or are proposed to be on the list and sites which are in the screening and assessment phase for possible inclusion on the NPL. The following company is reported as being on the CERCLIS list:

| *Equal/Higher Elevation* | *Address* | *Distance/Direction* |
|---|---|---|
| ▪ Van Der Horst Corp of America | 314 Penn Ave. | ¼ to ½ mile east |

CERCLIS-NFRAP sites have been removed from the CERCLIS database as of February of 1995. These sites are properties where, following an initial investigation, no contamination was found, contamination was quickly removed without the need for the site to be placed on the NPL, or the contamination was not serious enough to require Federal Superfund Action or NPL consideration. The following two companies are reported as being on the CERCLIS-NFRAP list:

| *Lower Elevation* | *Address* | *Distance/Direction* |
|---|---|---|
| ▪ Felmont | 1439 Buffalo St. | ¼ to ½ mile southwest |
| ▪ CF Industries Inc Olean Nitrog | 1446 Buffalo St. | ¼ to ½ mile southwest |

RCRAInfo is the USEPA's comprehensive information system, providing access to data supporting the RCRA of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. This database includes selective information on companies which generate, transport, store, treat, and/or dispose of hazardous waste as defined by the RCRA. Small quantity generators (SQGs) generate between 100 kg and 1,000 kg of hazardous waste per month while large quantity generators (LQGs) generate over 1,000 kg of hazardous waste or over 1 kg of acutely hazardous waste per month. The following 12 companies are reported as being on the RCRAInfo SQG list:

| *Equal/Higher Elevation* | *Address* | *Distance/Direction* |
|---|---|---|
| ▪ RUPP Rental & Sales Corp | 355 Franklin St. | ¼ to ½ mile north |
| ▪ R G Scott | 900 W. Connell St. | ¼ to ½ mile north/northeast |

| | | |
|---|---|---|
| ▪ Advanced Monolithic Ceramics | 1010 Wayne St. | ¼ to ½ mile south/southeast |
| ▪ NYS Police Western Regional CR | 722 Homer St. | ¼ to ½ mile northwest |
| ▪ NYS Police Western Crime Labor | 722 Homer St. | ¼ to ½ mile northwest |
| ▪ R G Scott | 314 Penn Ave. | ¼ to ½ mile east |
| ▪ Van Der Horst Corp of America | 314 Penn Ave. | ¼ to ½ mile east |
| ▪ Van Der Hors | 314 Penn Ave. | ¼ to ½ mile east |
| ▪ Uni-Marts Inc | 9th at Wayne St. | ¼ to ½ mile south/southeast |

| *Lower Elevation* | *Address* | *Distance/Direction* |
|---|---|---|
| ▪ CF Industries Inc Olean Nitrog | 1446 Buffalo St. | ¼ to ½ mile southwest |
| ▪ Felmont Oil Corp Chemical Div | 1446 Buffalo St. | ¼ to ½ mile southwest |
| ▪ Agway Olean Nitrogen Complex | 1446 Buffalo St. | ¼ to ½ mile southwest |

The following two companies are reported as being on the RCRAInfo LQG list:

| *Equal/Higher Elevation* | *Address* | *Distance/Direction* |
|---|---|---|
| ▪ Dresser Ind Inc Dresser Clark | 5th St. | ¼ to ½ mile southeast |
| ▪ Cytec Olean Incorporated | 1405 Buffalo St. | ¼ to ½ mile south/southwest |

CORRACTS is a list of handlers with RCRA Corrective Action Activity. The following two companies are reported as being on the CORRACTS list:

| *Equal/Higher Elevation* | *Address* | *Distance/Direction* |
|---|---|---|
| ▪ Loctite Corporation | 211 Franklin St. | ¼ to ½ mile north/northeast |
| *Lower Elevation* | *Address* | *Distance/Direction* |
| ▪ CF Industries Inc Olean Nitrog | 1446 Buffalo St. | ¼ to ½ mile southwest |

### *8.5.2 State and Local Records*

A search of several state and local databases, including the Hazardous Substance Waste Disposal Sites (HSWDS), the State Hazardous Waste Sites (SHWS), Leaking Storage Tank Incident Reports (LTANKS), the Underground Storage Tank (UST) database, the Aboveground Storage Tank (AST) database, the Chemical Bulk Storage (CBS UST and CBS AST) databases, and the Brownfields Site List, produced the information detailed below.

The HSWDS list includes any known or suspected hazardous substance waste disposal sites. Also included are properties delisted from the Registry of Inactive Hazardous Waste Disposal Sites and non-registry sites for which USEPA Preliminary Assessment or Site Investigation reports were prepared. The following company is reported on the HSWDS list:

| *Lower Elevation* | *Address* | *Distance/Direction* |
|---|---|---|
| ▪ Agway-Felmont | Buffalo St. | 1/8 to 1/4 mile southwest |

The SHWS records are the equivalent to the federal CERCLIS list. These sites may or may not already be listed as CERCLIS sites. Priority sites planned for cleanup using state funds (state equivalent of Superfund) are identified along with sites where cleanup will be paid for by potentially responsible parties. The data come from the NYDEC's Inactive Hazardous Waste Disposal Sites in New York. The following company is reported on the SHWS list:

| *Equal/Higher Elevation* | *Address* | *Distance/Direction* |
|---|---|---|
| ▪ Van Der Horst Corporation | 314 Penn Ave. | ¼ to ½ mile east |

LTANKS reports contain an inventory of reported leaking storage tank incidents reported from 4/1/86 through the most recent update. The list incorporates both leaking aboveground and underground tanks. The causes of the leak incidents are tank test failures, tank failures, or tank overfills. The following six companies are reported as being on the LTANKS list:

| *Equal/Higher Elevation* | *Address* | *Distance/Direction* |
|---|---|---|
| ▪ Cytec Olean Incorporated | 1405 Buffalo St. | ¼ to ½ mile south/southwest |
| ▪ NYS Police/NYSOGS | 722 Homer St. | ¼ to ½ mile northwest |
| ▪ McKean Machinery Sales, Inc | 921 N. 4th St. | ¼ to ½ mile east |
| ▪ Proposed Hampton Inn Site | 1128 Buffalo St. | ¼ to ½ mile south |

| *Lower Elevation* | *Address* | *Distance/Direction* |
|---|---|---|
| ▪ Agway-Felmont | Buffalo St. | 1/8 to 1/4 mile southwest |
| ▪ Bell Atlantic Garage | 1480 Buffalo St. | ¼ to ½ mile west/southwest |

The UST database lists properties that currently contain registered underground storage tanks. These tanks are regulated under Subtitle 1 of the RCRA. The data comes from the NYSDEC's Petroleum Bulk Storage (PBS) database. The following six sites are reported as being on the UST list:

| *Equal/Higher Elevation* | *Address* | *Distance/Direction* |
|---|---|---|
| ▪ Dresser Rand | North 5th St. | ¼ to ½ mile southeast |
| ▪ Conap Inc | 1405 Buffalo St. | ¼ to ½ mile south/southwest |
| ▪ Western Regional Crime Laborat | 722 Homer St. | ¼ to ½ mile northwest |
| ▪ Van Der Horst Corp of America | 314 Penn Ave. | ¼ to ½ mile east |
| ▪ Uni-Mart #05019 | 9th at Wayne St. | ¼ to ½ mile south/southeast |

| *Lower Elevation* | *Address* | *Distance/Direction* |
|---|---|---|
| ▪ Van Der Horst Corp of America | 900 W Connell St. | 1/8 to1/4 mile west |
| ▪ | | |

The AST database lists properties that currently contain registered aboveground storage tanks. The data comes from the NYSDEC's Petroleum Bulk Storage (PBS) database. The following four sites are reported as being on the AST list:

| *Equal/Higher Elevation* | *Address* | *Distance/Direction* |
|---|---|---|
| ▪ Dresser Rand | North 5th St. | ¼ to ½ mile southeast |
| ▪ Anderson Equipment Company | 355 East Franklin St. | ¼ to ½ mile north/northeast |
| ▪ Van Der Horst Corp of America | 314 Penn Ave. | ¼ to ½ mile east |

| *Lower Elevation* | *Address* | *Distance/Direction* |
|---|---|---|
| ▪ Van Der Horst Corp of America | 900 W Connell St. | 1/8 to1/4 mile west |

The CBS databases include facilities storing hazardous substances listed in 6 NYCRR Part 597 in aboveground tanks with capacities of 185 gallons or greater and/or underground tanks of any size. The list includes facilities registered (and closed) since effective date of CBS regulations (July, 15, 1988) through the date the research was requested. The following site is reported as being on the CBS UST list:

| *Equal/Higher Elevation* | *Address* | *Distance/Direction* |
|---|---|---|
| ▪ Dresser Rand Turbo Products | P.O. Box 560 | ¼ to ½ mile southeast |

The following two sites are reported as being on the CBS AST list:

| *Equal/Higher Elevation* | *Address* | *Distance/Direction* |
|---|---|---|
| ▪ Dresser Rand Turbo Products | P.O. Box 560 | ¼ to ½ mile southeast |
| ▪ Cytec Olean Incorporated | 1405 Buffalo St. | ¼ to ½ mile south/southwest |

The Former Felmont Oil Site (1446 Buffalo St.) was the only property listed in the area as a Brownsfield Site.

# 9.0 CONCLUSIONS

This Historic and Current Site Conditions Report presents the results of the review of information regarding the historic operations of the Socony-Vacuum Oil refinery in north Olean, New York and an understanding of the existing environmental conditions at the Site and in the surrounding community.

The Site is located in the City of Olean, Cattaraugus County, New York. It is north of downtown Olean and is situated primarily between Buffalo Street to the west and the Pennsylvania Railroad tracks to the east (see Figure 1-2). The Dresser-Rand property is located directly to the south and east of the Site (see Figure 1-4) and Homer Street was the approximate northwestern extent of the refinery. This area of North Olean has a long history of industrial operations, including, but not limited to, petroleum storage and refining, leather tanneries, heavy and light manufacturing, chrome plating, fertilizer manufacturing, and railroad facilities (TVGA, 2003).

Based on the historical research conducted, it is understood that two separate refineries operated at this location from approximately 1876 to 1902. At that time the two refineries merged to become one under the direction of the Vacuum Oil Company. On July 31, 1931, the Vacuum Oil Company merged with the Standard Oil Company of New York and in 1934, the company changed its name to Socony-Vacuum Oil Company, Inc (TTH, 1986c). At its maximum extent, the refining operations in Olean occupied approximately 115 acres, with a 1600-foot frontage along the east side of Buffalo Street (see Figure 1-2) (TTH, 1954). This plant was Socony-Vacuum's principal manufacturing plant and distribution center for an extensive list of specialty products (SVOC, 1950).

The refinery was divided into three sections known as the #1 Works, #2 Works, and #3 Works (see Figure 1-3). Most of the administrative and research areas were located along Buffalo Street, south of the Erie Railroad tracks (#1 Works). The #1 Works property along the tracks contained the central power house as well as the central shops building. The #2 Works was located just northeast of the #1 Works on the southern side of the Erie tracks and contained the

bulk oil loading, treating, and storage departments (ORT, 1952). The area north of the Erie tracks and just west of the Pennsylvania Railroad tracks was the #3 Works where most of the initial refining took place after the addition of a two-stage Crude Pipe Still. Currently, the land once occupied by this large refinery remains almost entirely undeveloped with the exception of a few scattered buildings remaining from the Agway-Felmont fertilizer plant operations that utilized much of the former refinery's property from 1964 to 1984, and the Blue Bird Industrial Park located on a portion of the former #3 Works.

The #1 and #2 Works areas were occupied by two companies identified as Agway and the Felmont Oil Corporation (see Figure 1-4). These two worked together to produce fertilizer. Their operations were shut down in 1984 and have been non-operational ever since. Previous investigations into groundwater and soil contamination attributable to Agway have been concluded and additional studies are currently being conducted on the former Felmont property.

## 10.0 REFERENCES

Adams, W., 1893. Historical Gazetteer and Biographical Memorial of Cattaraugus County, N.Y. Lyman, Horton & Co., Limited., October 1893, pgs 879 to 882.

Buffalo Evening News Bureau (BENB), 1965. Newspaper article entitled "Agway Will Start Work Next Month on Plant in Olean". Printed on 11/24/1965. From the ExxonMobil Historical Collection at the Center for American History, the University of Texas at Austin.

Center for American History (CAM), 2006. A guide to the ExxonMobil Historical Collection, 1790-2004. Part 1. Website: www.lib.utexas.edu/taro/utcah/00352/cah-00352.html

Chapin, L. E., 1889. Olean, N. Y., "The City of Natural Advantages," Its History and Institutions. Persons, Sibley & Spaulding, Art Printing House. 1889, pgs. 25-32 and 57.

Dresser-Rand, 2006. A Historical Synopsis. Dresser-Rand Website: www.dresser-rand.com.

Dunham, G. S., 1954. Statement by George S. Dunham, Director in Charge of Manufacturing Socony-Vacuum Oil Company, Inc., May 11, 1954. From the ExxonMobil Historical Collection at the Center for American History, the University of Texas at Austin.

Environmental Data Resources, Inc. (EDR), 2006. The EDR Radius Map with GeoCheck for the Former Vacuum oil Company, Buffalo Street/Wayne Street, Olean, NY 14760. Inquiry Number 1608251.2s.

Herrick, J. P., 1949. Empire Oil: The Story of Oil in New York State. Dodd, Mead & Company, New York. Pgs. 234-259.

Mott, E. H., 1899. Excerpt from "Between the Ocean and the Lakes—The Story of the ERIE". Portion entitled "Gazetteer of Cities and Villages on the Line of the Original Erie and its Branches". Website: www.catskillarchive.com/rrextra/ergazete.Html.

New York Public Interest Research Group's Community Mapping Assistance Project (CMAP), 2002. Superfund Site Search Website: www.nonprofitmaps.org/Superfund/SuperfundMap.asp? Action–Start.

New York State Department of Environmental Conservation (NYSDEC), 1999. Surface Water and Groundwater Quality Standards and Groundwater Effluent Limitations. 6 NYCRR Part 703, Environmental Conservation Law, 3-0301[2][m], 15-0313, 17-0301, 17-0809. Website: www.dec.state.ny.us/website/regs/part703.html.

NYSDEC, 2005. Division of Environmental Remediation, Region 9 Office, Buffalo, NY. Daily Field Report for May 25, 2005.

NYSDEC, 2006. Information obtained from a Freedom of Information Law (FOIL) inquiry on the Former Felmont Oil site. Document entitled "Site 1: CF Industries, Inc./Agway Olean Nitrogen Complex" and was contained in the Environmental Remediation records. FOIL request # 06-336.

New York State Office for Technology (NYSOFT), 2004. Draft Generic Environmental Impact Statement, New York State, Statewide Wireless Network. Appendix C: Geologic Resources. Website: www5.oft.state.ny.us/SWN/DGEIS.pdf.

North Olean History (NOH), 2006. Website: www.northoleanhistory.com.

Olean Evening Herald (OEH), 1922. Newspaper article entitled "Vacuum Oil Works in Olean to be Enlarged". Unknown print date. Circa 1922.

Olean, New York Directory (ONYD), 1882. Excerpt from an 1882 city directory with a brief history of the town. Times Publ. Co.

Olean Refinery, 1953. An excerpt entitled "Olean Refinery" from a publication that was distributed in the Spring of 1953, according to a hand written note on the cover. From the ExxonMobil Historical Collection at the Center for American History, the University of Texas at Austin.

Olean Refinery Tour (ORT), 1952. Manuscript for an Olean refinery tour written circa 1952. From the ExxonMobil Historical Collection at the Center for American History, the University of Texas at Austin.

Pennsylvania Historical and Museum Commission Drake Well Museum (DWM), 2006. Letter from the Historian/Curator at the museum detailing their research results.

Pire, B., Undated (UD). Document entitled "Cattaraugus County Oil". Section entitled "Olean, A Prominent Oil Center".

Socony-Vacuum Oil Company, Inc. (SVOC), 1950. Document entitled "History: Olean, N. Y. Refinery". Socony-Vacuum Oil Company, Inc. July 15, 1950.

SVOC, Undated (UD). Information obtained from descriptions of photos copied from the ExxonMobil Historical Collection at the Center for American History, the University of Texas at Austin.

Sovac-tivities (Sovac), 1950a. Article entitled "The Olean Refinery; The Central Boiler House" taken from the refinery's "Sovac-tivities" publication. Published Sept. – Oct., 1950, pgs 18-21. From the ExxonMobil Historical Collection at the Center for American History, the University of Texas at Austin.

Sovac, 1950b. Article entitled "The Olean Refinery; The Central Shops" taken from the refinery's "Sovac-tivities" publication. Published Nov. – Dec., 1950, pgs 10, 12-19. From the ExxonMobil Historical Collection at the Center for American History, the University of Texas at Austin.

Sovac, 1951. Article entitled "The Olean Refinery" taken from the refinery's "Sovac-tivities" publication. Published Jan. – Feb., 1951, pgs 7, 9-10. From the ExxonMobil Historical Collection at the Center for American History, the University of Texas at Austin.

Sovac, Undated (UD). Article entitled "The Olean Refinery" taken from the refinery's "Sovac-tivities" publication. Pgs 3-8. From the ExxonMobil Historical Collection at the Center for American History, the University of Texas at Austin.

The Evening Herald (TEH), 1900. Article entitled "Manufacturing Industries" from The Evening Herald – Illustrated Edition, Olean, New York. Printed circa 1900.

The Olean Democrat (TOD), 1884a. Newspaper article entitled "Fire at the Chemical Works". Printed on 11/11/1884.

The Olean Democrat (TOD), 1884b. Newspaper article entitled "North Olean". Printed on 11/11/1884.

The Olean Democrat (TOD), 1886. Newspaper article entitled "Explosion at the Refinery". Printed on 5/28/1886.

The Olean Evening Times (OET), 1922. Newspaper article entitled "Vacuum Oil Co. to Enlarge its Plant; New Dept. Coming". Unknown print date. Circa 1922.

The Times Herald (TTH), 1949. Newspaper article entitled "Fire Banks Mark Site of Crude Oil Vats in City's Tank Lots". Printed on 8/20/1949. From the ExxonMobil Historical Collection at the Center for American History, the University of Texas at Austin.

The Times Herald (TTH), 1954. Newspaper article entitled "Oil Refinery Closely Associated With Growth of City". Printed on 8/14/1954. From the ExxonMobil Historical Collection at the Center for American History, the University of Texas at Austin.

The Times Herald (TTH), 1955. Newspaper article entitled "Will Use S-V Tanks for Grain Storage; 100 to be Employed". Printed on 8/31/1955. From the ExxonMobil Historical Collection at the Center for American History, the University of Texas at Austin.

The Times Herald (TTH), 1965. Newspaper article entitled "History of Sprawling Ex Refinery Site Goes Back to 1876". Unknown print date. Circa 1965.

The Times Herald (TTH), 1967. Newspaper article entitled "Felmont's Ammonia Plant at Olean, Seen From Air". Printed on 4/4/1967. From the ExxonMobil Historical Collection at the Center for American History, the University of Texas at Austin.

The Times Herald (TTH), 1968. Newspaper article entitled "Industrial Park Site Cleared". Printed on 7/31/1968.

The Times Herald (TTH), 1979a. Newspaper article entitled "Midnight Explosion Rocks Felmont Plant". Printed on 10/29/1979.

The Times Herald (TTH), 1979b. Newspaper article entitled "Felmont Blast Probe Continues". Printed on 10/30/1979.

The Times Herald (TTH), 1979c. Newspaper article entitled "North Olean's Citizens Remain Concerned". Printed on 10/30/1979.

The Times Herald (TTH), 1979d. Newspaper article entitled "DEC Reports North Olean is 'Environmentally Safe'". Printed on 10/31/1979.

The Times Herald (TTH), 1983a. Newspaper article entitled "Felmont-Agway Sign Five-Year Agreement for Purging Aquifer". Printed on 3/8/1983.

The Times Herald (TTH), 1983b. Newspaper article entitled "Agway-Felmont Talks Continue". Printed on 3/17/1983.

The Times Herald (TTH), 1984a. Newspaper article entitled "Agway Purging Will Continue". Printed on 4/19/1984.

The Times Herald (TTH), 1984b. Newspaper article entitled "Agway Dismantling Fertilizer Complex". Printed on 6/8/1984.

The Times Herald (TTH), 1984c. Newspaper article entitled "Four Olean Sites on State 'Hazardous' List". Printed on 7/11/1984.

The Times Herald (TTH), 1984d. Newspaper article entitled "Last Storage Tank Yields to Cutting Torches". Printed on 7/16/1984.

The Times Herald (TTH), 1984e. Newspaper article entitled "Olean Fertilizer Complex Tower Razed". Printed on 8/4/1984.

The Times Herald (TTH), 1984f. Newspaper article entitled "Taking the L-o-n-g Way Home". Printed on 9/14/1984.

The Times Herald (TTH), 1985a. Newspaper article entitled "Local Officials Concerned by a Halt in Pumping by Agway". Printed on 1/30/1985.

The Times Herald (TTH), 1985b. Newspaper article entitled "Agway-Felmont Pumping Begun; Monitoring Assurances Sought". Printed on 2/8/1985.

The Times Herald (TTH), 1985c. Newspaper article entitled "Agway 'Purge' Pumping is DEC Meeting Topic". Printed on 4/4/1985.

The Times Herald (TTH), 1985d. Newspaper article entitled "Agway Pumping to be Meeting Topic". Printed on 4/17/1985.

The Times Herald (TTH), 1985e. Newspaper article entitled "Agway Seeks End to Pumping, Start of Long-Term Monitoring". Printed on 4/30/1985.

The Times Herald (TTH), 1985f. Newspaper article entitled "City Meeting Friday With DEC in Buffalo on Agway Pumping". Printed on 5/30/1985.

The Times Herald (TTH), 1985g. Newspaper article entitled "Agway Pumping Meet Canceled". Printed on 5/31/1985.

The Times Herald (TTH), 1985h. Newspaper article entitled "Agway Wells Ordered Back on to Purge Area Contamination". Printed on 6/22/1985.

The Times Herald (TTH), 1985i. Newspaper article entitled "Agway Balks at Pump Order". Printed on 7/9/1985.

The Times Herald (TTH), 1985j. Newspaper article entitled "DEC May Take Agway to Court". Printed on 8/1/1985.

The Times Herald (TTH), 1985k Newspaper article entitled "Adjournment Occurs in Case of Olean Agway Well Pumping". Printed on 11/15/1985.

The Times Herald (TTH), 1985l. Newspaper article entitled "Agway Purge Pumping Bid Rejected in Supreme Court". Printed on 12/24/1985.

The Times Herald (TTH), 1986a. Newspaper article entitled "Two Olean-Area Sites Removed From DEC Toxic Dump Listing". Printed on 1/17/1986.

The Times Herald (TTH), 1986b. Newspaper article entitled "From Pipes to Personnel, Socony-Vacuum Had it All". Printed on 8/2/1986.

The Times Herald (TTH), 1986c. Newspaper article entitled "Socony-Vacuum Once Called Olean Home". Printed on 8/2/1986.

The Times Herald (TTH), 2002. Newspaper article entitled "City Seeks Aid for Agway Cleanup". Printed on 11/13/2002.

The Times Herald (TTH), 2004. Newspaper article entitled "State Grant Will Help Olean Test Former Industrial Sites for Development". Printed on 6/9/2004.

The Times Herald (TTH), 2005a. Newspaper article entitled "City Gets Grant to Survey Former Industrial Site". Printed on 4/29/2005.

The Times Herald (TTH), 2005b. Newspaper article entitled "Former Agway Site Eyed as Retail Lot". Printed on 6/20/2005.

TVGA Consultants (TVGA), 2003. Bond Act Application – Project Description Report. Former Felmont Oil Site. Submitted in December, 2003.

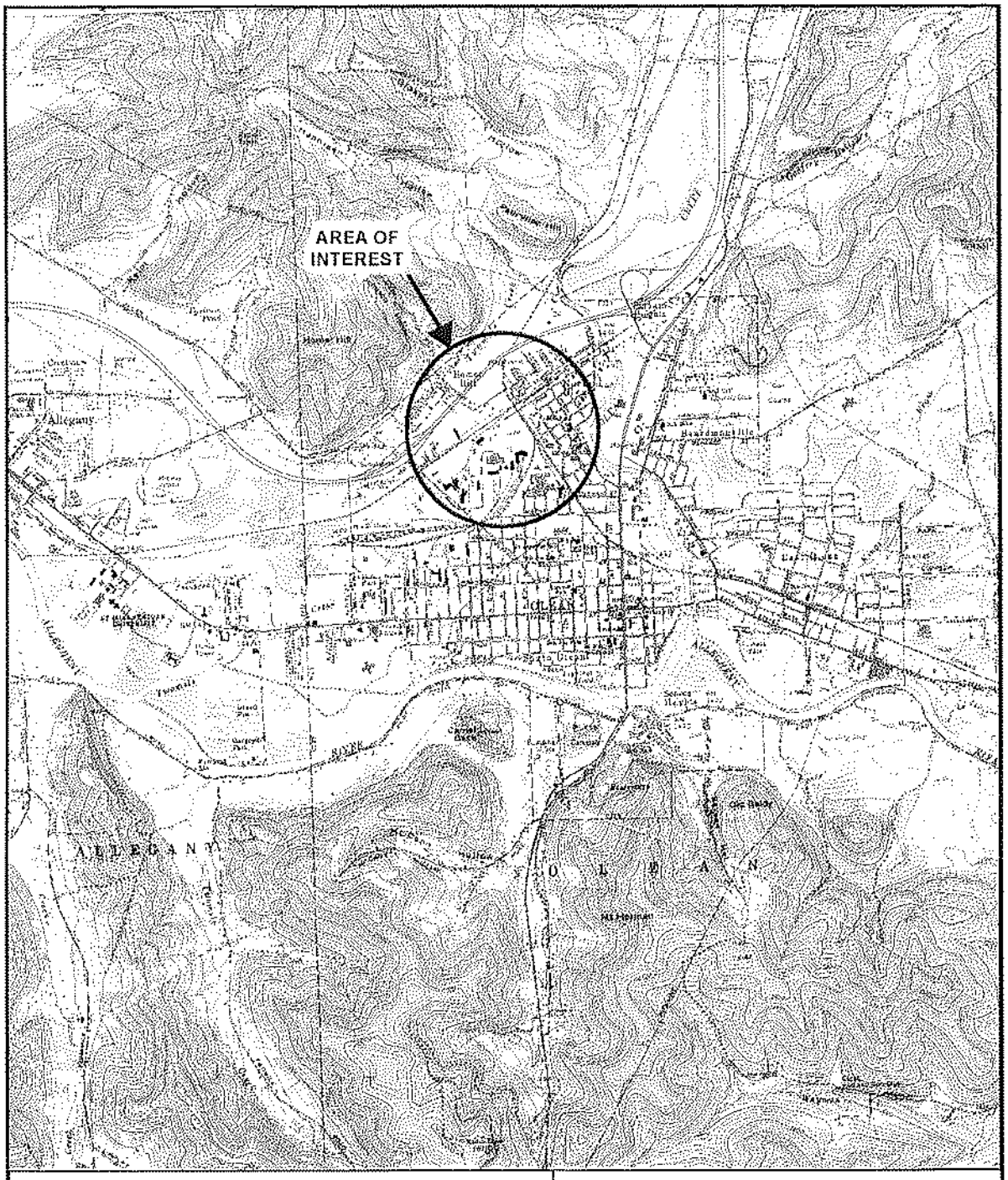
TVGA, 2005. Remedial Investigation/Alternitives Analysis (RI/AA) Workplan of the Former Felmont Oil Site (NYSDEC Site No. E-905027). Submitted in May, 2005.

Untitled Document (UTD), 1944. Two page document dated 8/23/44. From the ExxonMobil Historical Collection at the Center for American History, the University of Texas at Austin.

Western New York Railroad Archive (WNYRA), 2005. Railroads of Western New York; Pennsylvania Railroad and Predecessors. Website: wnyrails.railfan.net/railroads.htm.

Wollstadt, P., 1954. Personal letter from Mr. Wollstadt addressed to a Mr. Holton on December 2, 1954. From the ExxonMobil Historical Collection at the Center for American History, the University of Texas at Austin.

# *Figures*



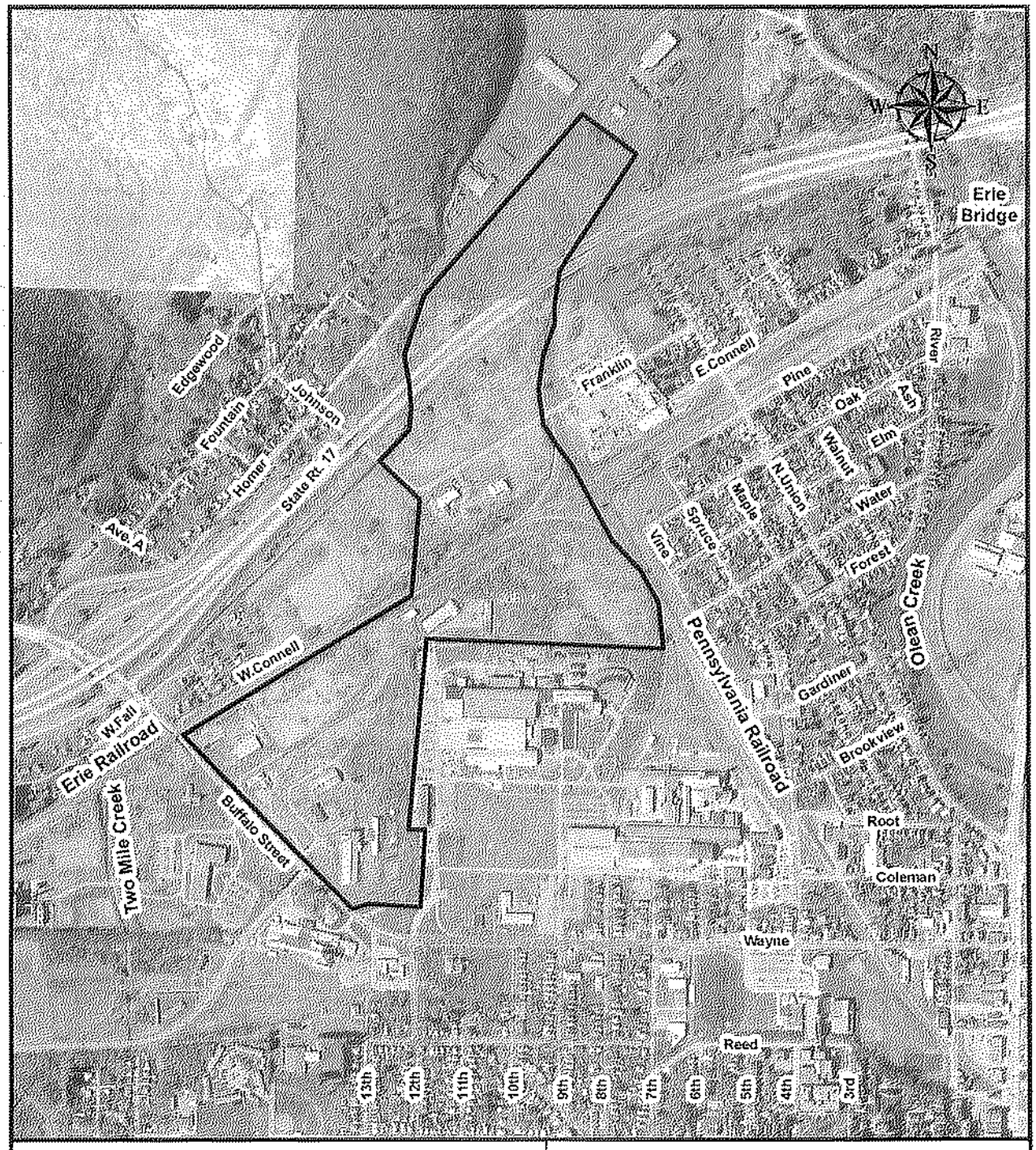

0 2,000 4,000 6,000 Feet

SOURCE: USGS Quarter Quad Topographic Map
Olean, New York 1961
Photorevised 1980

amec Earth & Environmental

Figure 1 - 1
Site Location Map
Former Socony-Vacuum Oil Refinery
Olean, New York

| Rev. By: CB | Contract No.: 676400000 | 03/20/2006 |
|---|---|---|




0 500 1,000 1,500 Feet

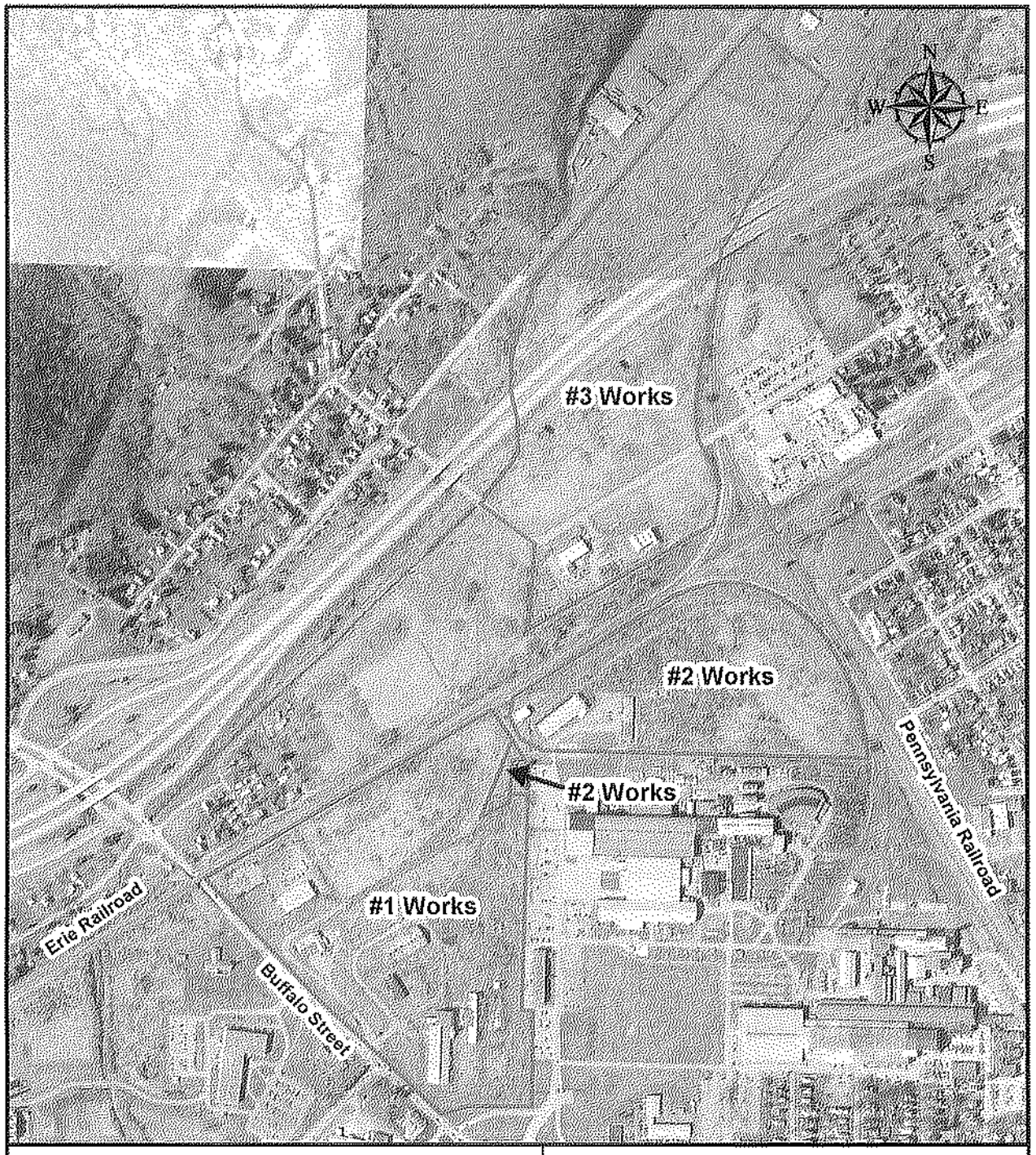
Note: Property boundaries are approximate based on current tax map interpretation.

SOURCE: New York State GIS Clearinghouse, High Resolution Digital Orthoimagery, 2002 www.nysgis.state.ny.us

amec Earth & Environmental

Figure 1 - 2
Former Socony-Vacuum Oil Refinery Site Map
Former Socony-Vacuum Oil Refinery
Olean, New York

| Rev. By: CB | Contract No.: 676400000 | 03/21/2006 |
|---|---|---|




0 500 1,000 1,500 Feet

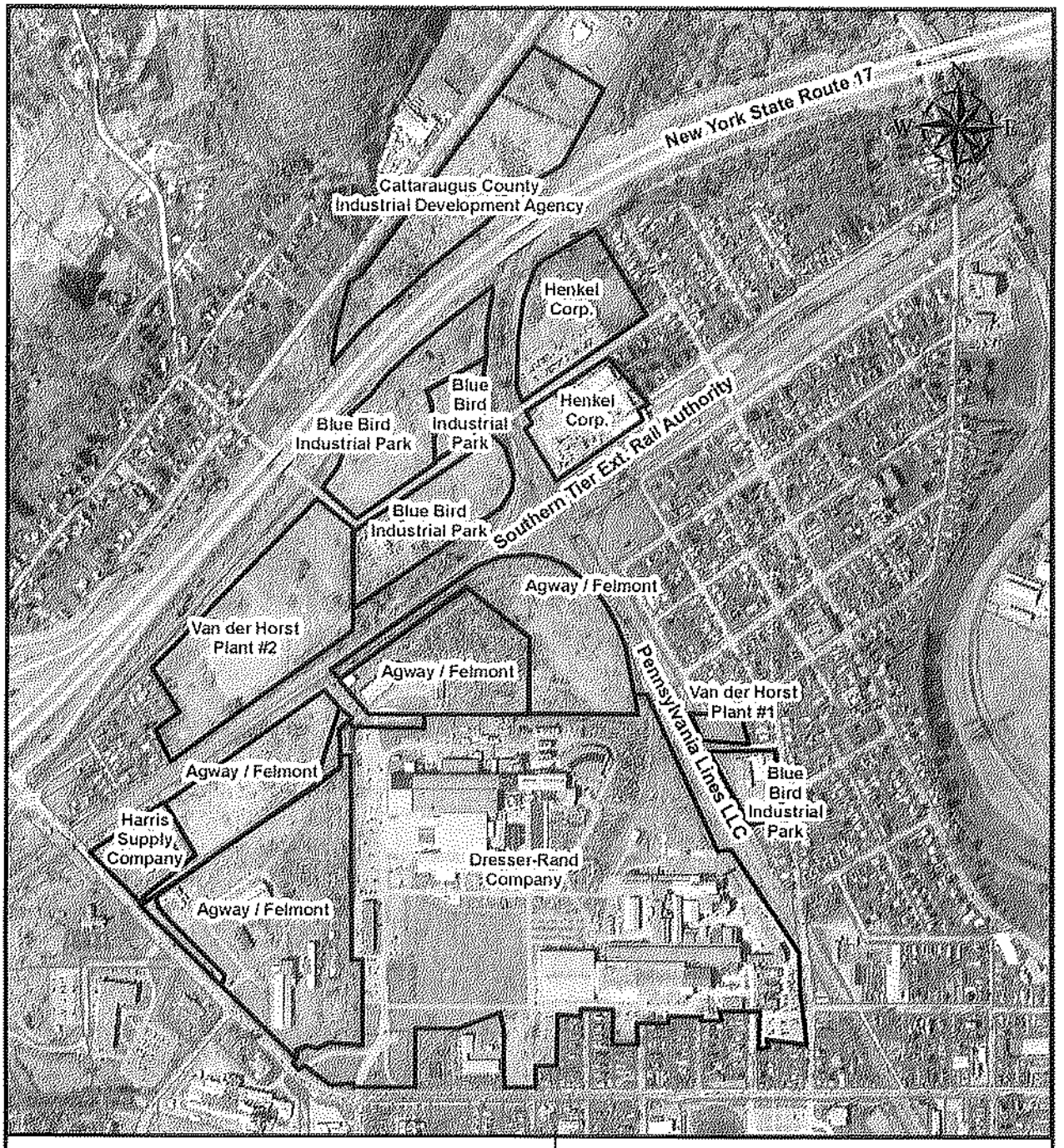
Note: Property boundaries are approximate based on current tax map interpretation.

SOURCE: New York State GIS Clearinghouse, High Resolution Digital Orthoimagery, 2002 www.nysgis.state.ny.us

amec Earth & Environmental

Figure 1 - 3
Former Refinery #1, #2, and #3 Works Areas
Former Socony-Vacuum Oil Refinery
Olean, New York

| Rev. By: CB | Contract No.: 676400000 | 03/20/2006 |
|---|---|---|



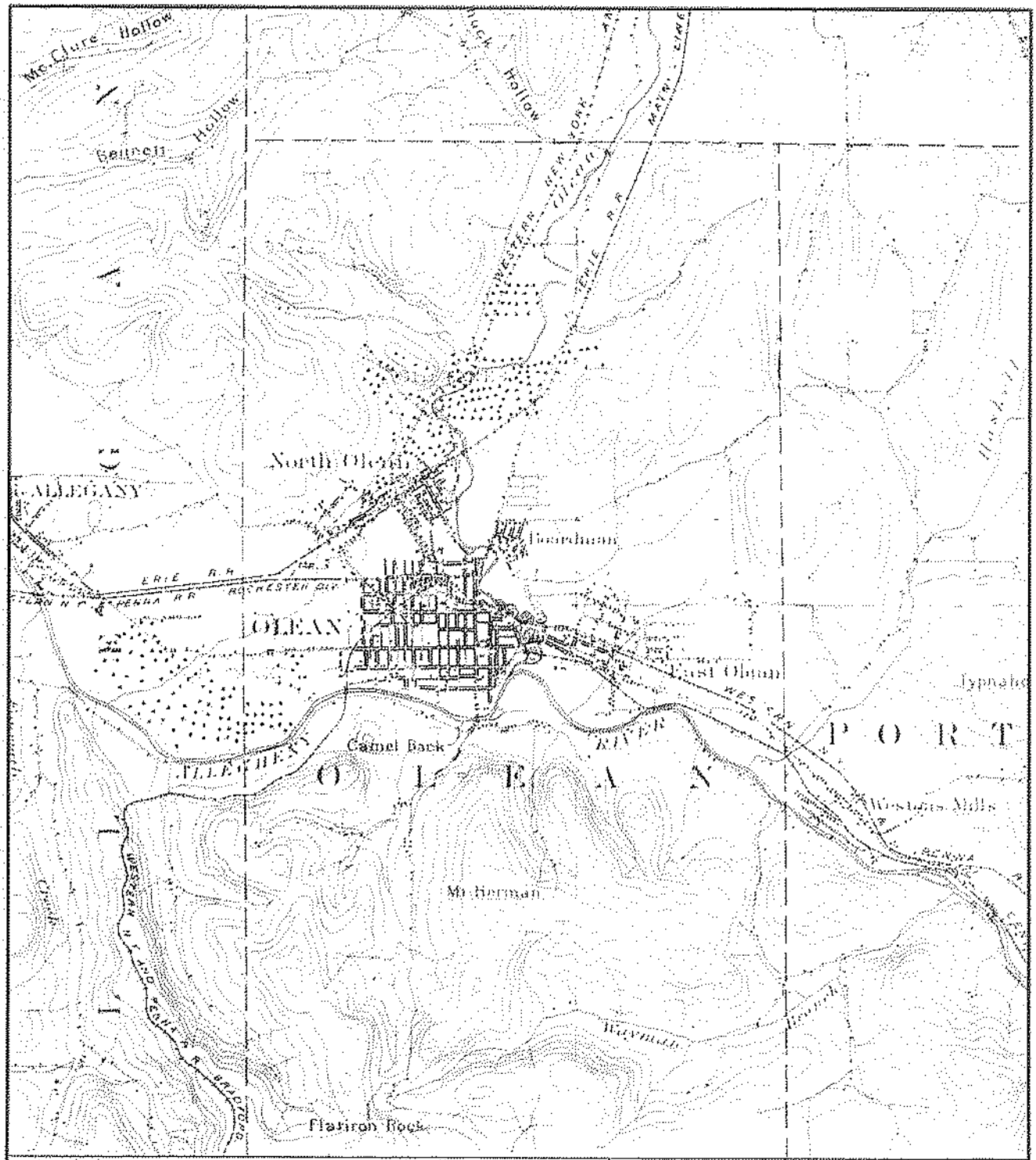

Note: Property boundaries are approximate based on current tax map interpretation.

SOURCE: Cattaraugus County Real Property Service
Interactive Parcel Map, 2006
www.cattco.org

amec Earth & Environmental

Figure 1 - 4
Current or Recent Parcel Owners
Former Socony-Vacuum Oil Refinery
Olean, New York

| Rev. By: CB | Contract No.: 676400000 | 03/20/2006 |
|---|---|---|

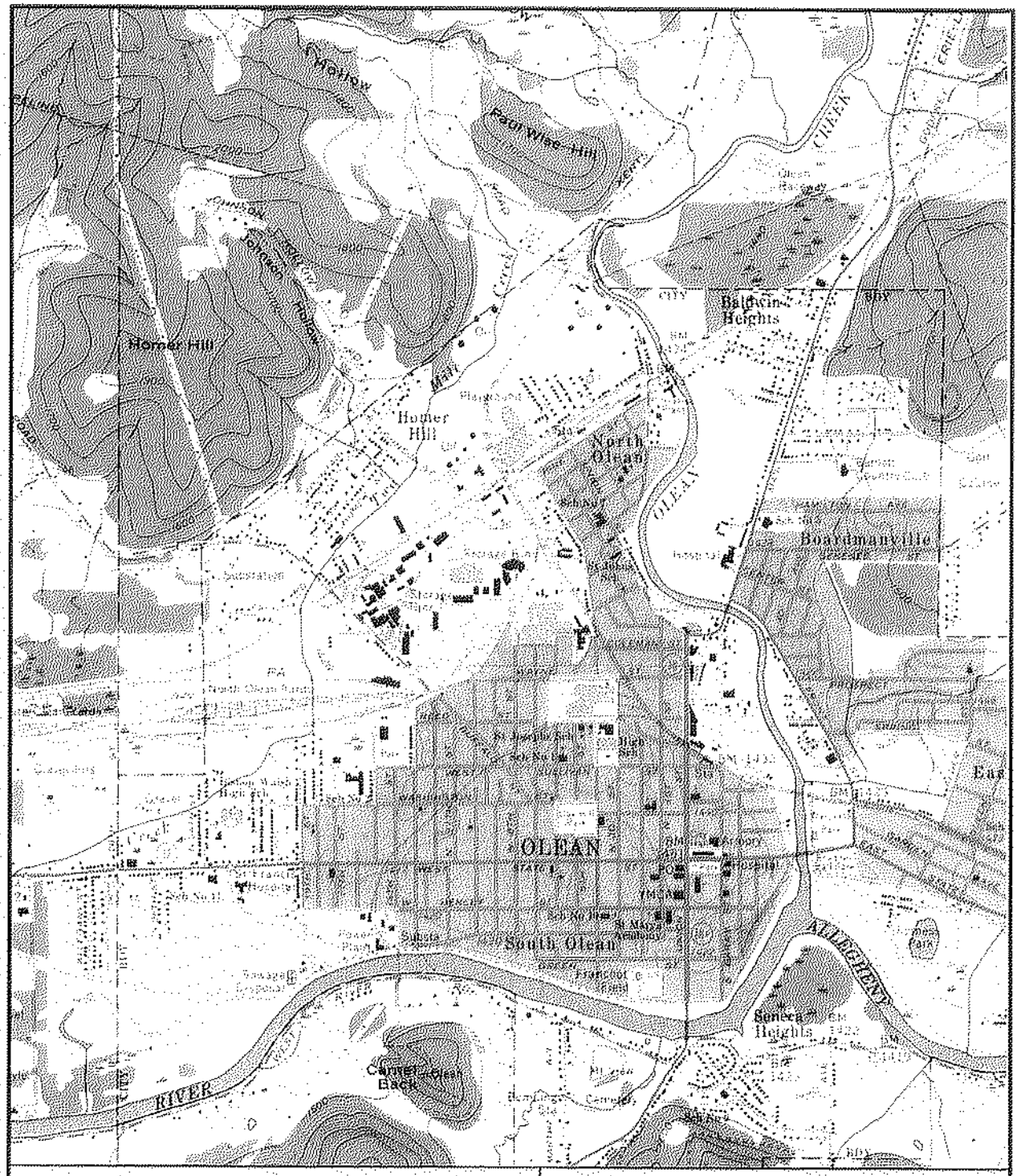



SOURCE:
EDR Historical Topographic Map Report
Quad: Olean, Year: 1898, Series: 15' Scale: 1:62,500
Environmental Data Resources, Inc., 2006

amec Earth & Environmental

Figure 2 - 1
1898 Historic Topographic Map
Former Socony-Vacuum Oil Refinery
Olean, New York

| Rev. By: CB | Contract No.: 676400000 | 03/29/2006 |
|---|---|---|

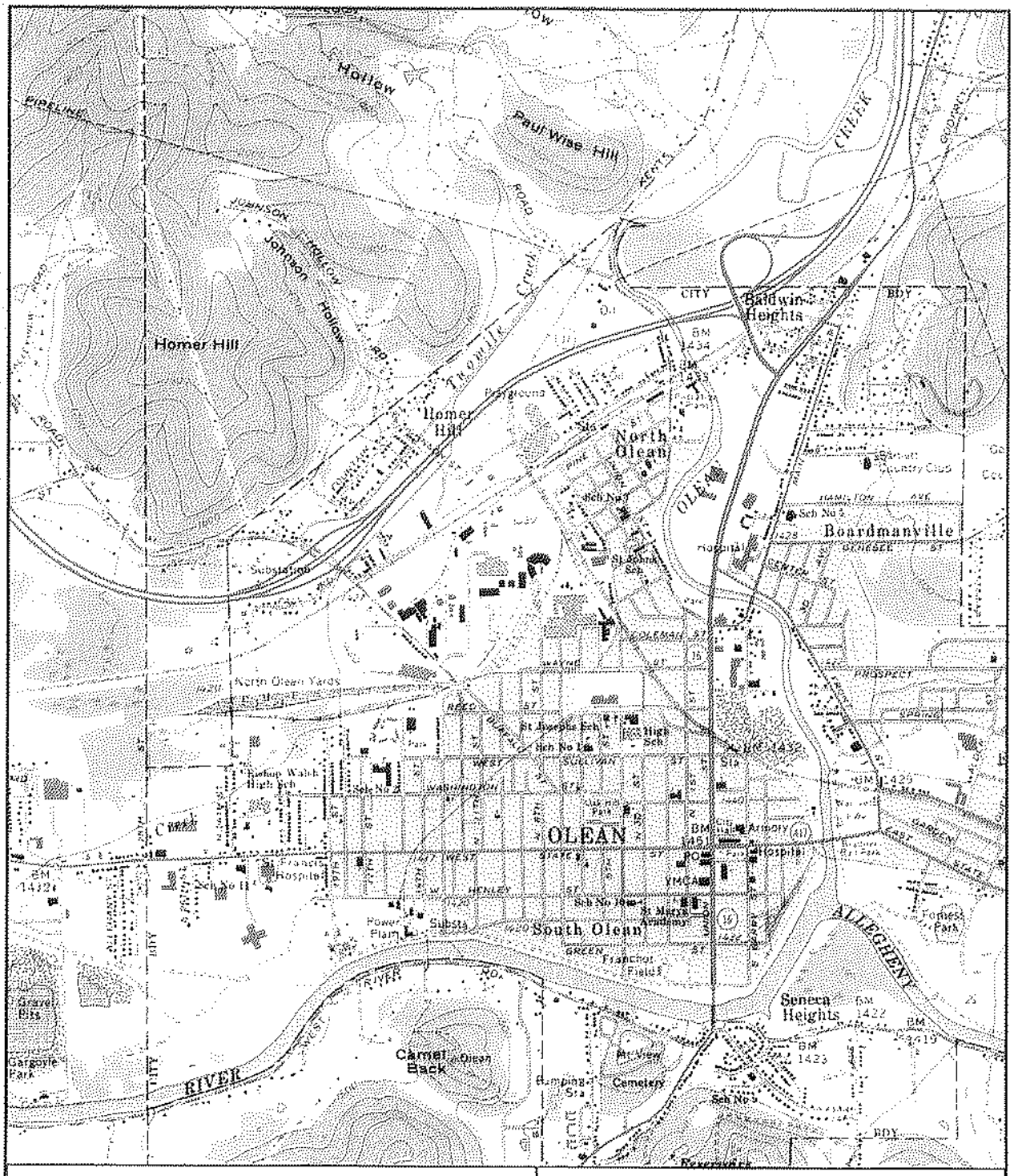



SOURCE:
EDR Historical Topographic Map Report
Quad: Olean, Year: 1961, Series: 7.5' Scale: 1:24,000
Environmental Data Resources, Inc., 2006

amec Earth & Environmental

Figure 2 - 2
1961 Historic Topographic Map
Former Socony-Vacuum Oil Refinery
Olean, New York

| Rev. By: CB | Contract No.: 676400000 | 03/20/2006 |
|---|---|---|

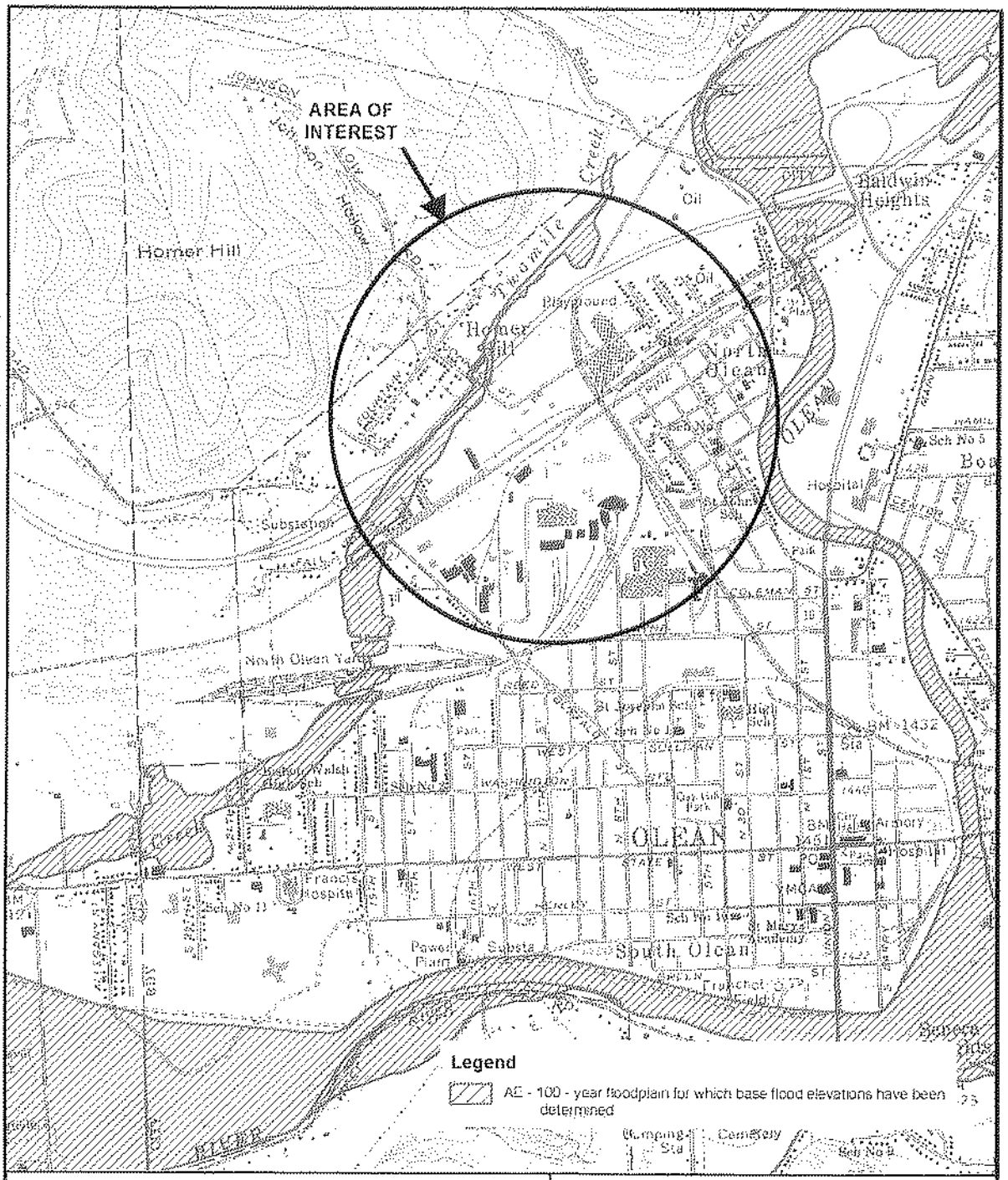



SOURCE:
EDR Historical Topographic Map Report
Quad: Olean, Photorevised: 1961-1981, Series: 7.5' Scale: 1:24,000
Environmental Data Resources, Inc., 2006

amec Earth & Environmental

Figure 2 - 3
1961-1980 Historic Topographic Map
Former Socony-Vacuum Oil Refinery
Olean, New York

| Rev. By: CB | Contract No.: 676400000 | 03/20/2006 |
|---|---|---|



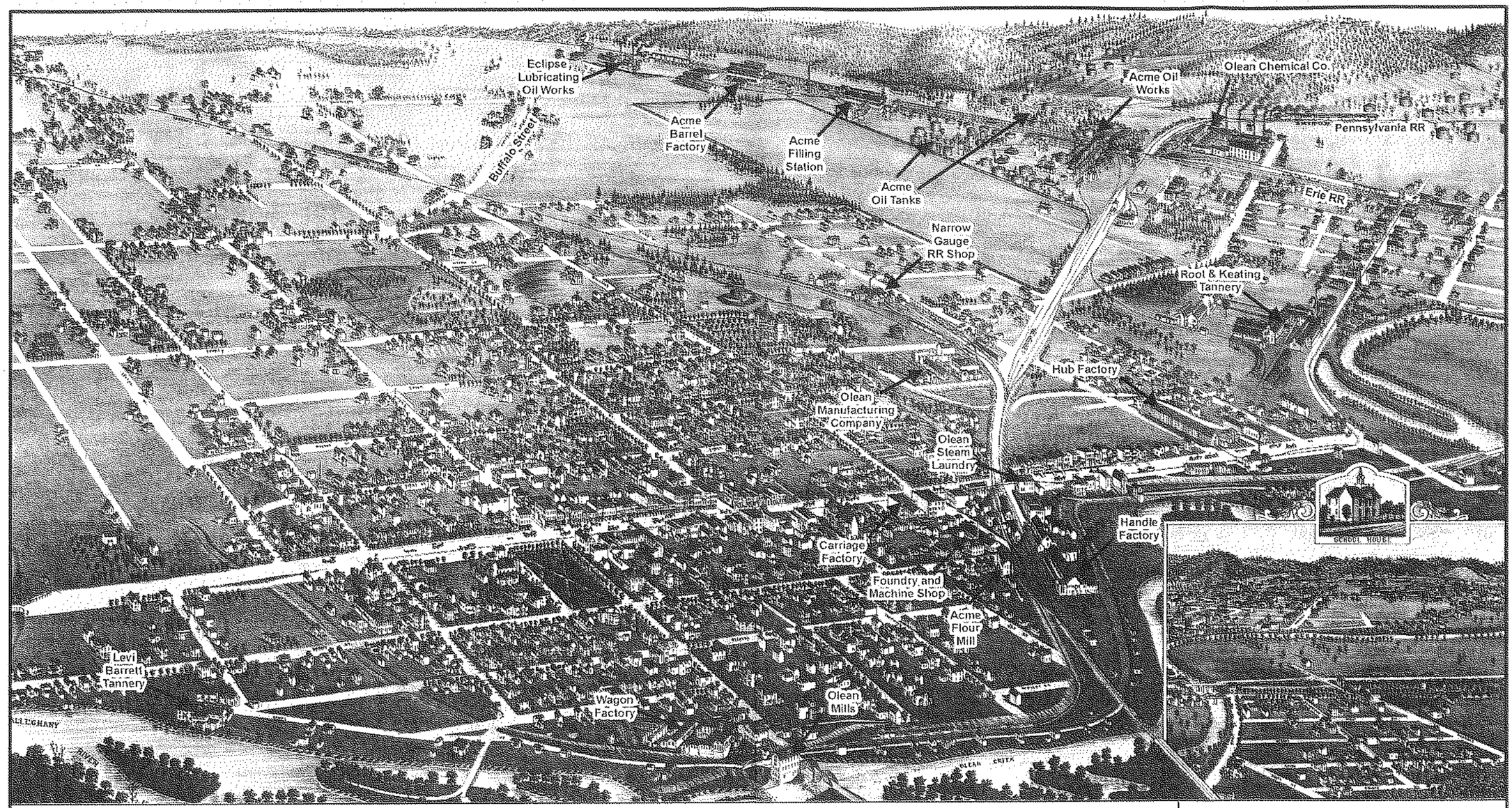

0 1,000 2,000 3,000 Feet

SOURCE:
USGS Quarter Quad Topographic Map
Olean, New York 1961, Photorevised 1980;
Federal Emergency Management Agency, Q3 Flood Data, 1996.

amec Earth & environmental

Figure 2 - 4
FEMA Q3 Flood Map
Former Socony-Vacuum Oil Refinery
Olean, New York

| Rev. By: CB | Contract No.: 676400000 | 03/21/2006 |
|---|---|---|

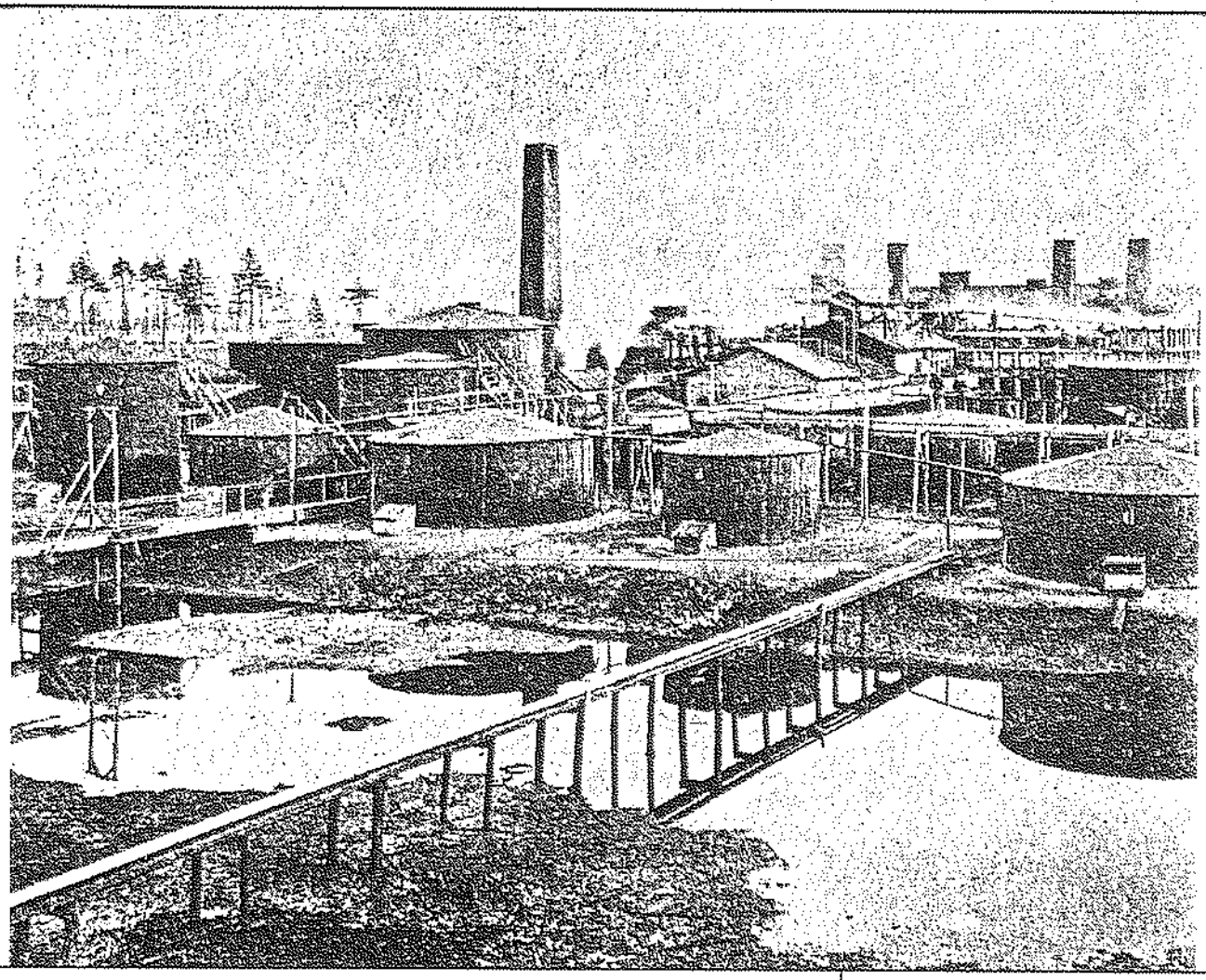



SOURCE: Bird's eye view of Olean, Cattaraugus County, NY
1882. H. Brosius, del. Beck & Pauli, lithographers
American Memory Map Collection
Library of Congress Geography and Map Division

amec Earth & Environmental

Figure 3 - 1
1882 Diagram of North Olean
Former Socony-Vacuum Oil Refinery
Olean, New York

| Rev. By: CB | Contract No.: 676400000 | 03/21/2006 |
|---|---|---|

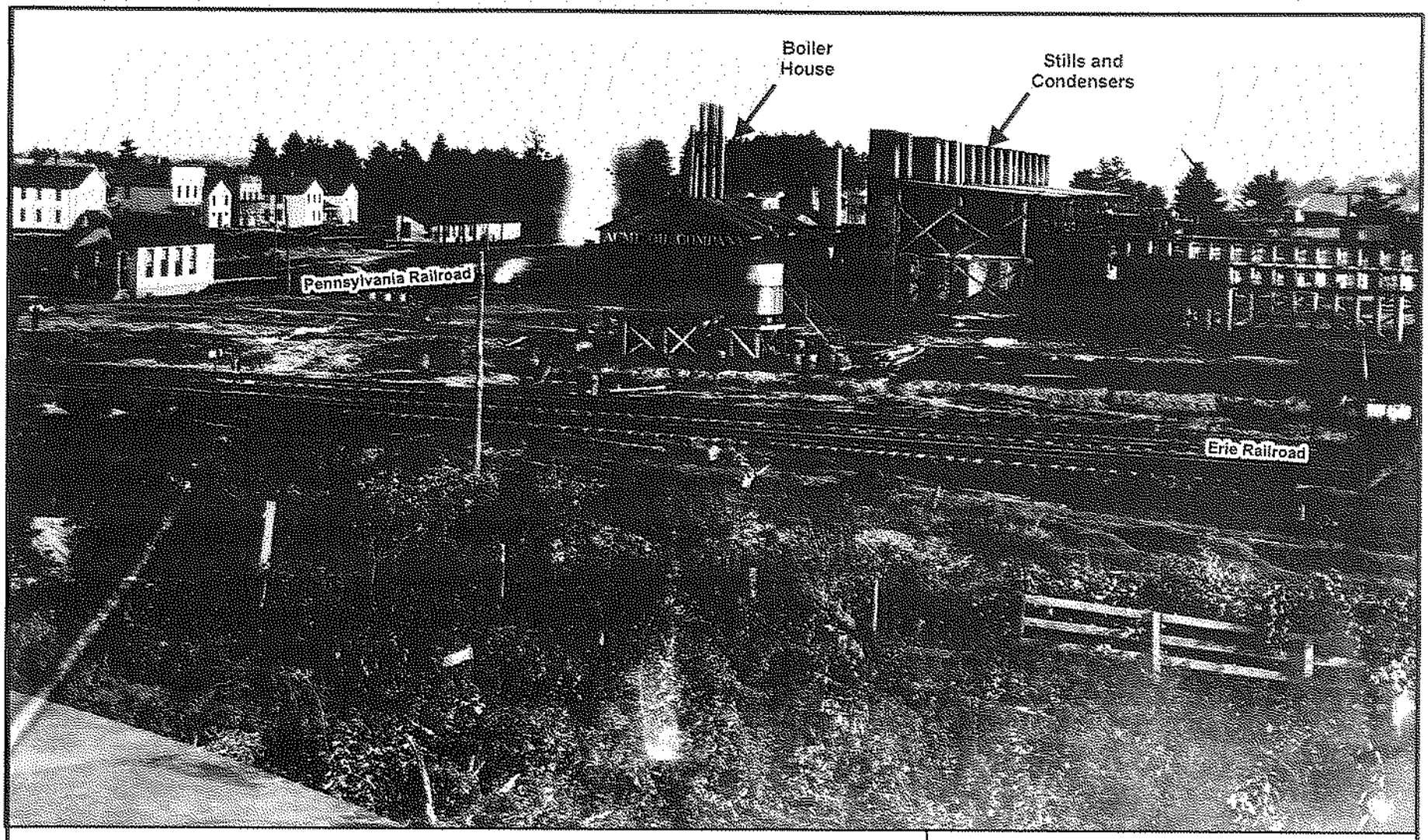


SOURCE: Olean Historical & Preservation Society
Olean, New York

amec Earth & Environmental

Figure 3 - 2
Undated Photograph of Eclipse Oil Company Refinery
Former Socony-Vacuum Oil Refinery
Olean, New York

| Rev. By: CB | Contract No.: 676400000 | 03/20/2006 |
|---|---|---|

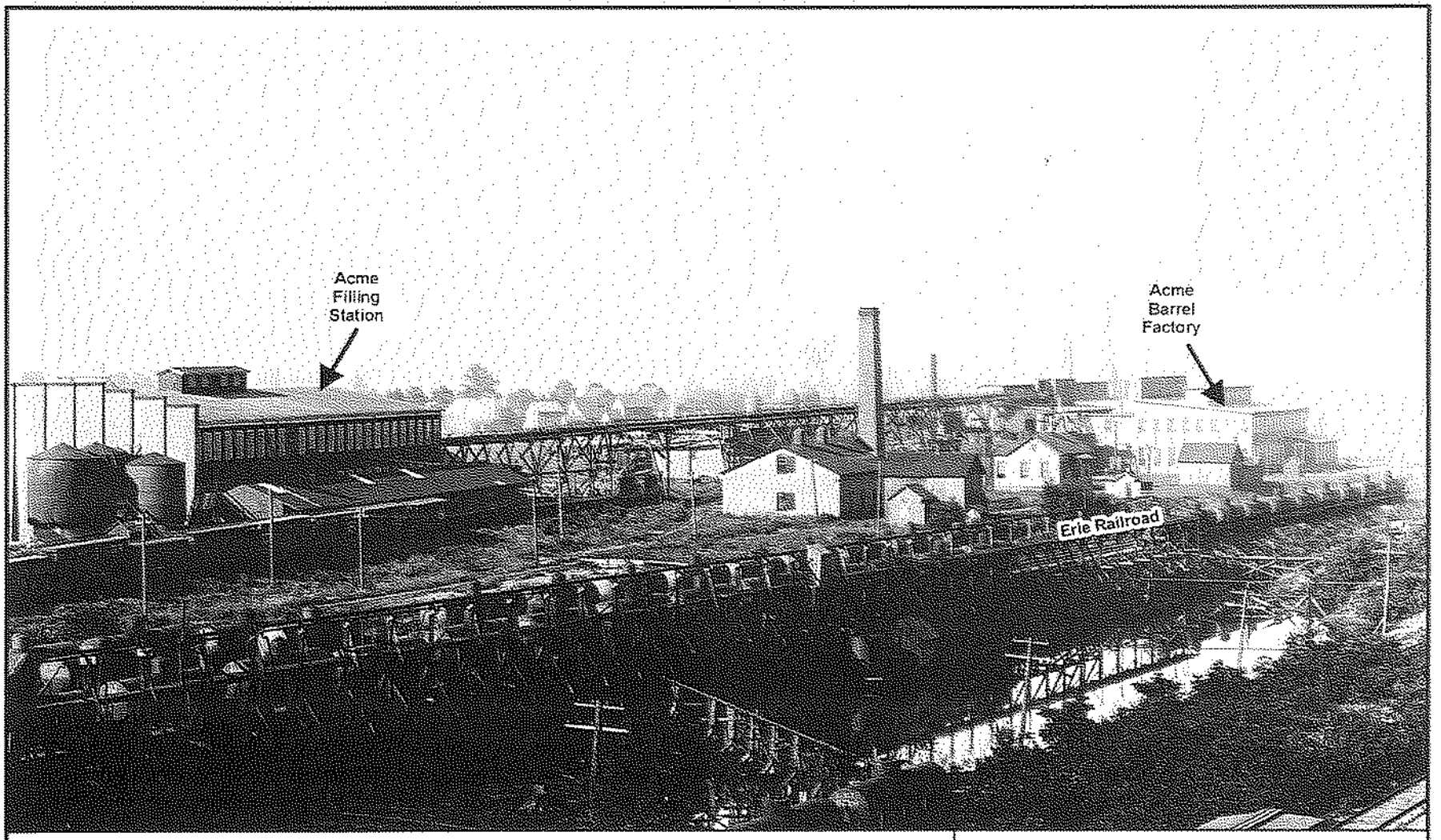



SOURCE: 1880 Acme Refinery Photograph
Drake Well Museum Collection

amec Earth & Environmental

Figure 3 - 3
1880 Photograph of the Acme Oil Works Refinery
Former Socony-Vacuum Oil Refinery
Olean, New York

| Rev. By: CB | Contract No.: 676400000 | 03/30/2006 |
|---|---|---|

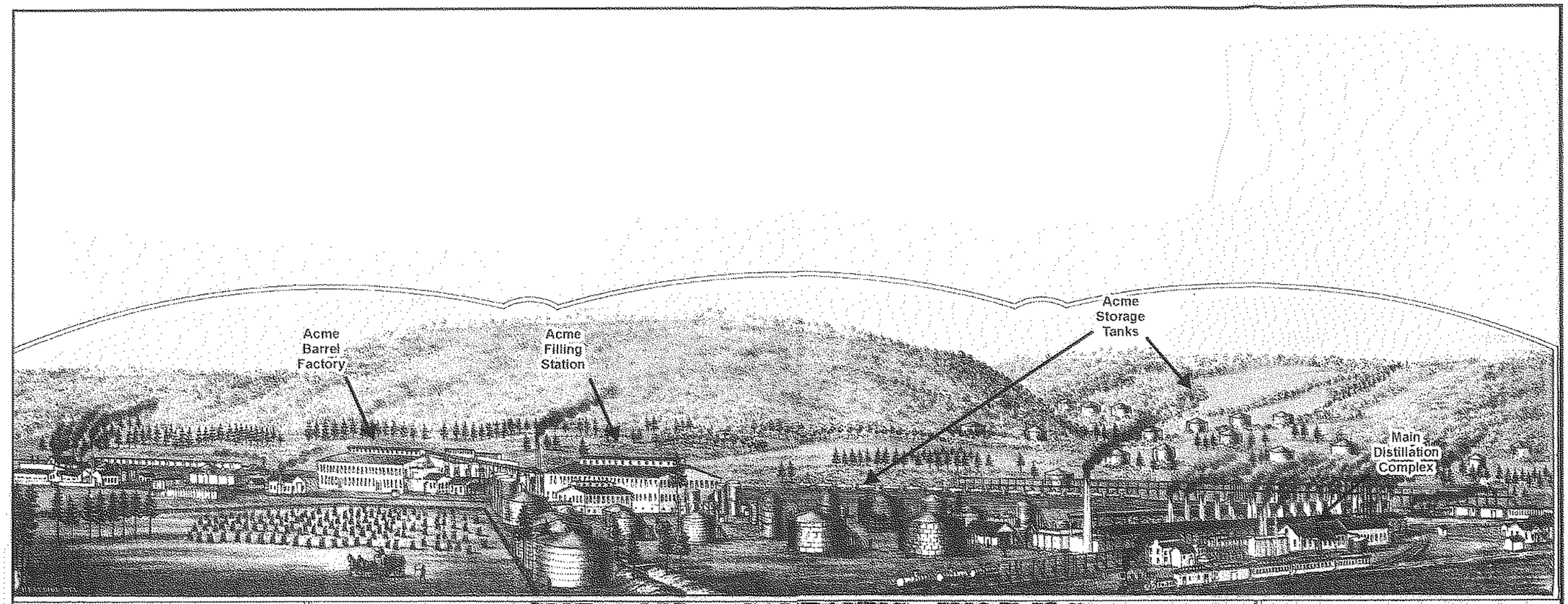



SOURCE: The Center for American History
at the University of Texas at Austin
from the ExxonMobil Historical Collection

amec Earth & Environmental

Figure 3 - 4
1899 Photograph of the
Acme Barrel Factory and Filling Station
Former Socony-Vacuum Oil Refinery
Olean, New York

| Rev. By: CB | Contract No.: 676400000 | 03/20/2006 |
|---|---|---|

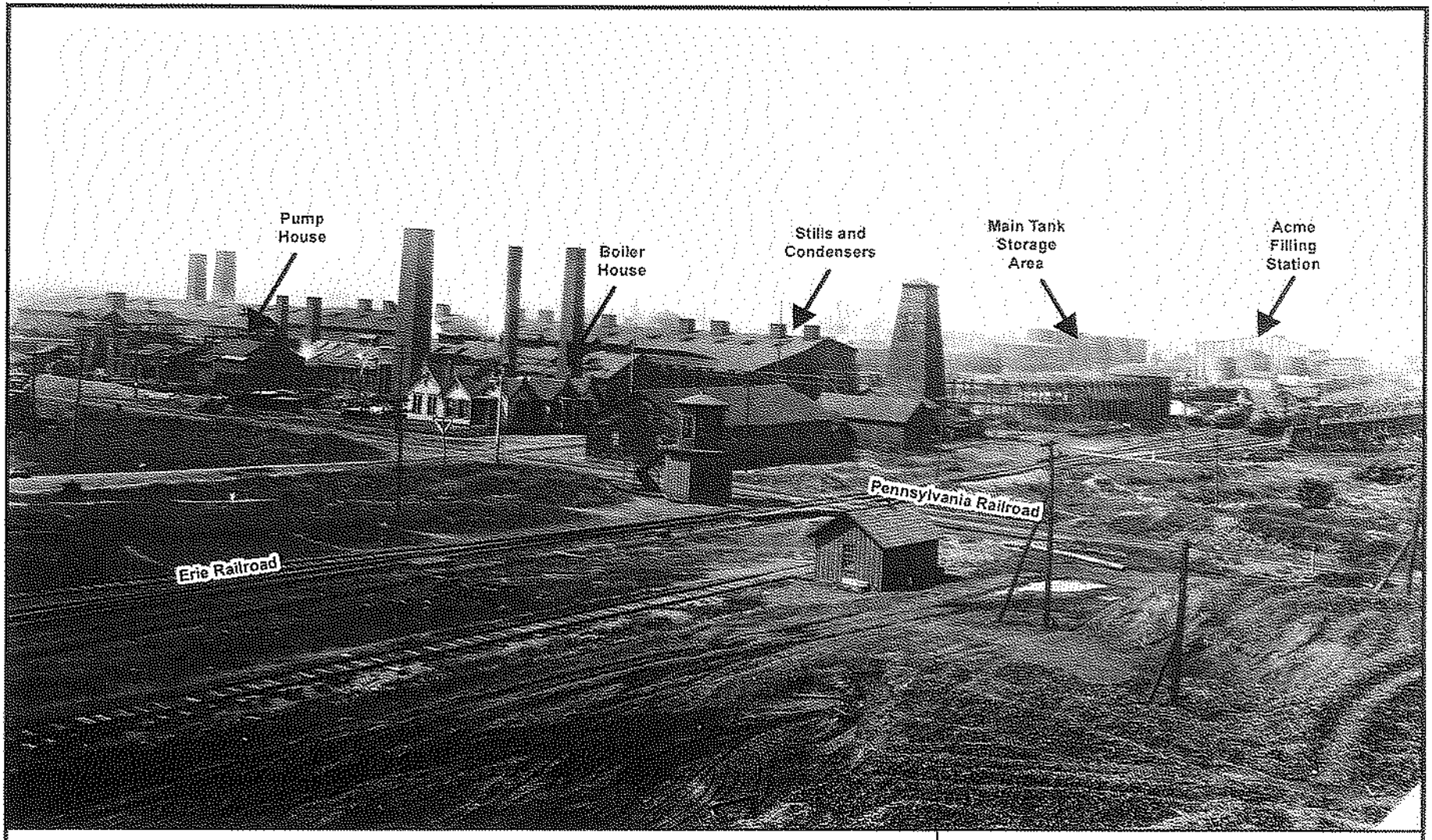



SOURCE: Bird's eye view of Olean, Cattaraugus County, NY
1882. H. Brosius, del Beck & Pauli, lithographers
American Memory Map Collection
Library of Congress Geography and Map Division

amec Earth & Environmental

Figure 3 - 5
1882 Diagram of the Acme Oil Works Refinery
Former Socony-Vacuum Oil Refinery
Olean, New York

| Rev. By: CB | Contract No.: 676400000 | 03/20/2006 |
|---|---|---|

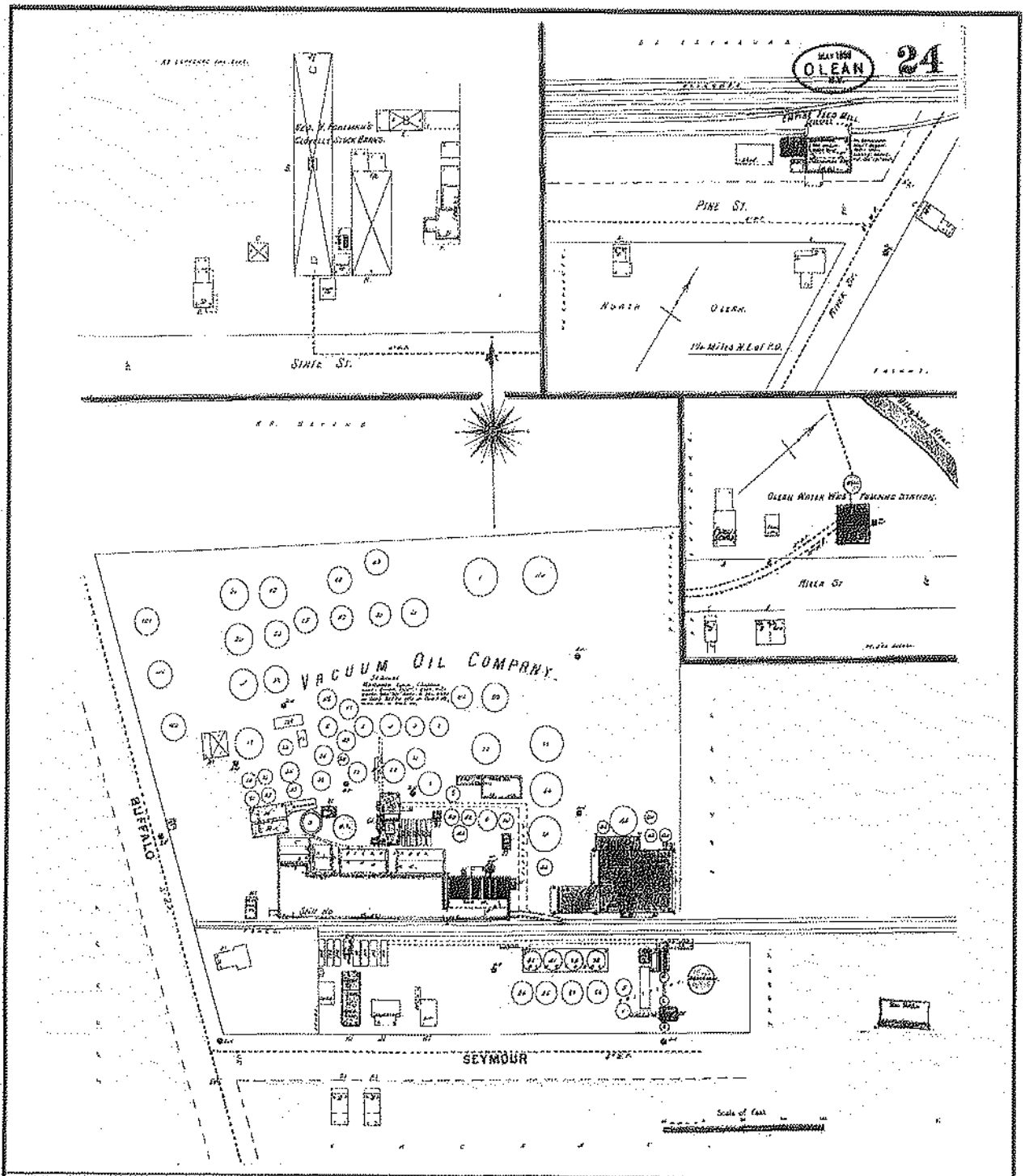



SOURCE: The Center for American History
at the University of Texas at Austin
from the ExxonMobil Historical Collection

amec Earth & Environmental

Figure 3 - 6
1899 Photograph of the Acme Oil Works Refinery
Former Socony-Vacuum Oil Refinery
Olean, New York

| Rev. By: CB | Contract No.: 676400000 | 03/30/2006 |
|---|---|---|

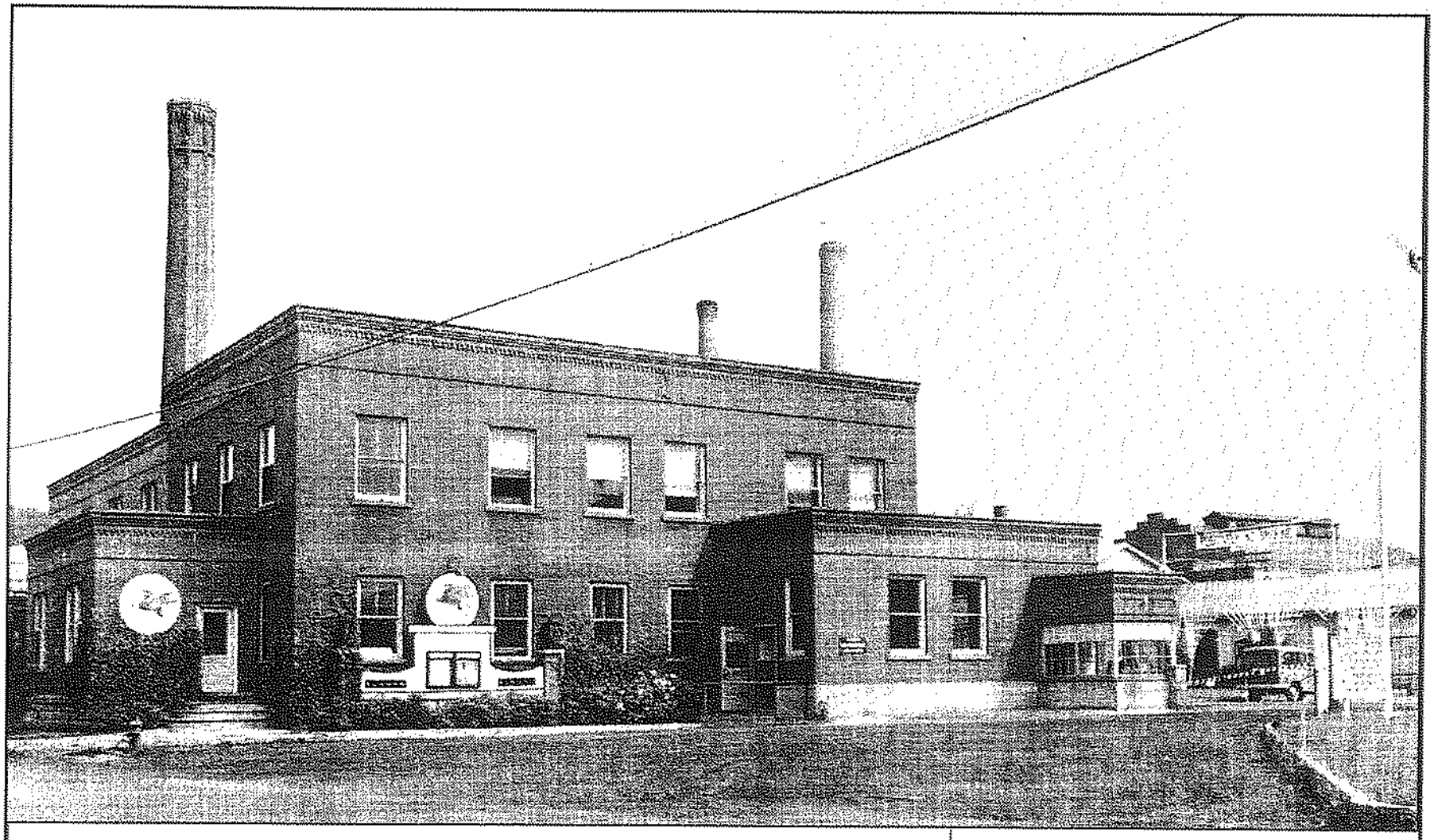



SOURCE:
EDR 1898 Sanborn Map
Environmental Data Resources, Inc., 2006

amec Earth & Environmental

Figure 3 - 7
1898 Sanborn Map of the
Vacuum Oil Company Refinery
Former Socony-Vacuum Oil Refinery
Olean, New York

| Rev. By: CB | Contract No.: 676400000 | 03/21/2006 |
|---|---|---|

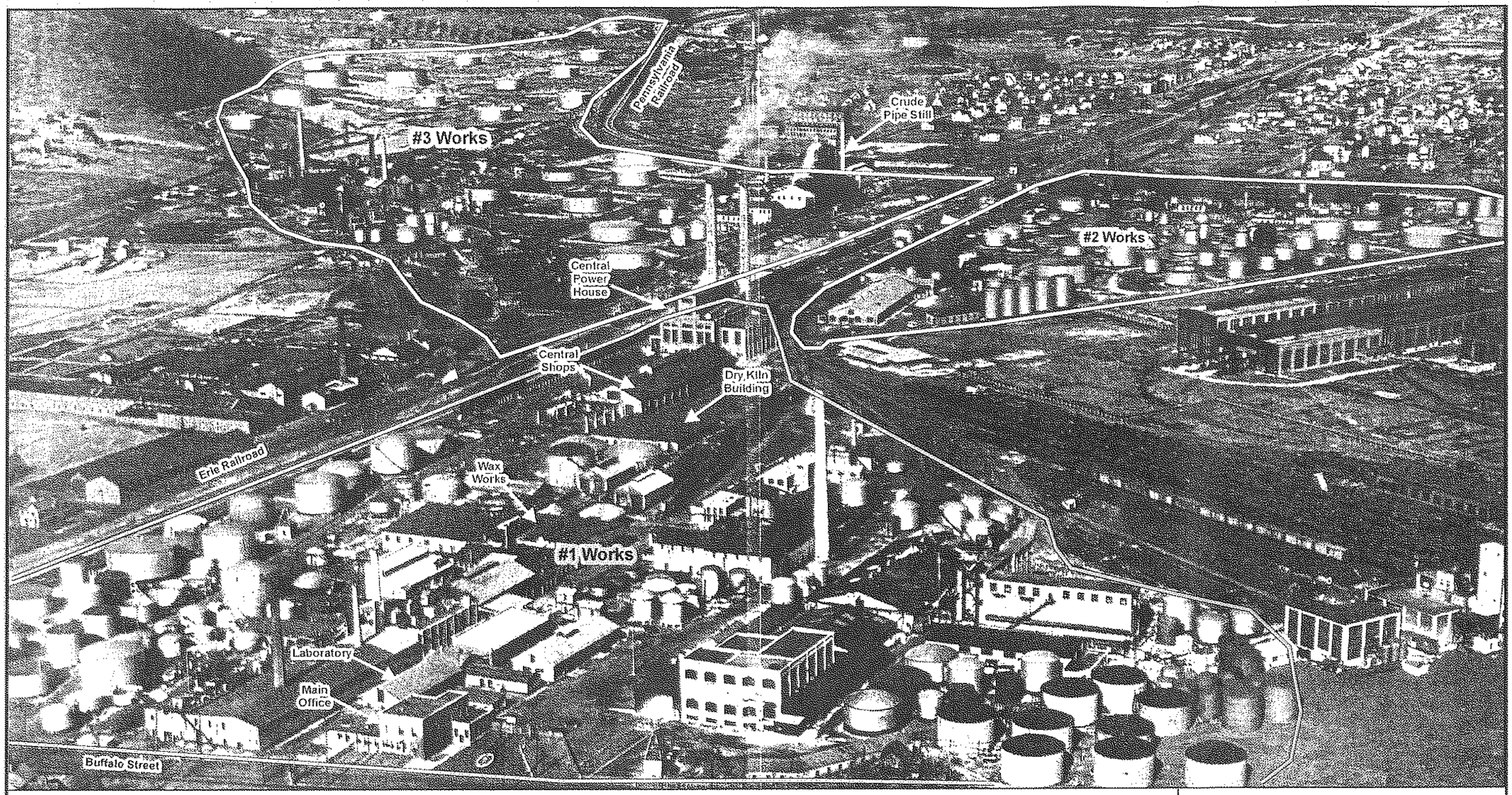


amec Earth & Environmental

Figure 3 - 8
Main Office Building
Former Socony-Vacuum Oil Refinery
Olean, New York

SOURCE: Olean Historical & Preservation Society
Olean, New York

| Rev. By: CB | Contract No.: 676400000 | 03/20/2006 |
|---|---|---|




LEGEND

- Former Socony-Vacuum Refinery #1 Works Area
- Former Socony-Vacuum Refinery #2 Works Area
- Former Socony-Vacuum Refinery #3 Works Area

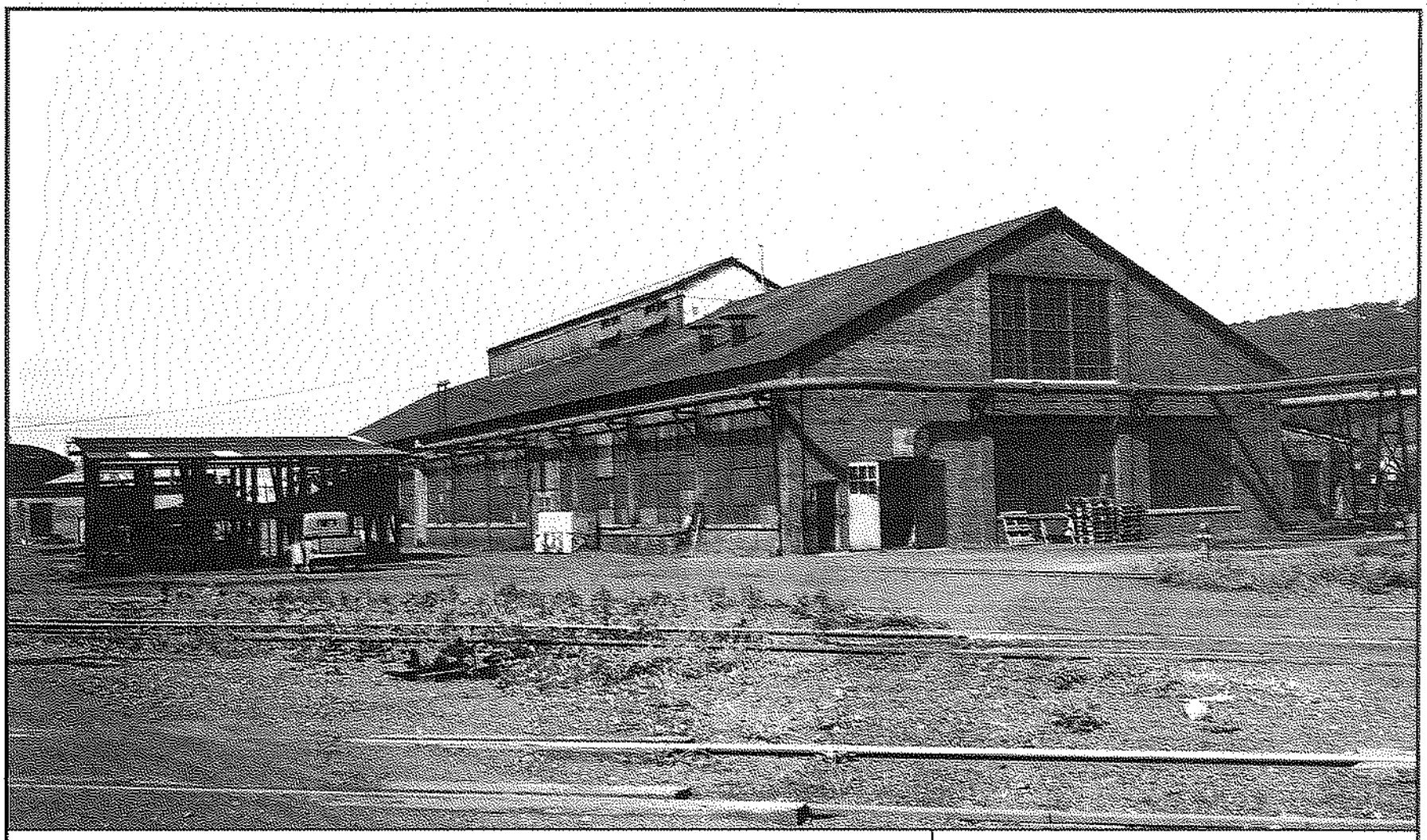
SOURCE: Olean Historical & Preservation Society
Olean, New York

Note: Property boundaries are approximate based on current tax map interpretation.

amec Earth & Environmental

Figure 4 - 1
Undated Site Aerial Photograph (1927-1954)
Former Socony-Vacuum Oil Refinery
Olean, New York

| Rev. By: CB | Contract No.: 676400000 | 03/21/2006 |
|---|---|---|

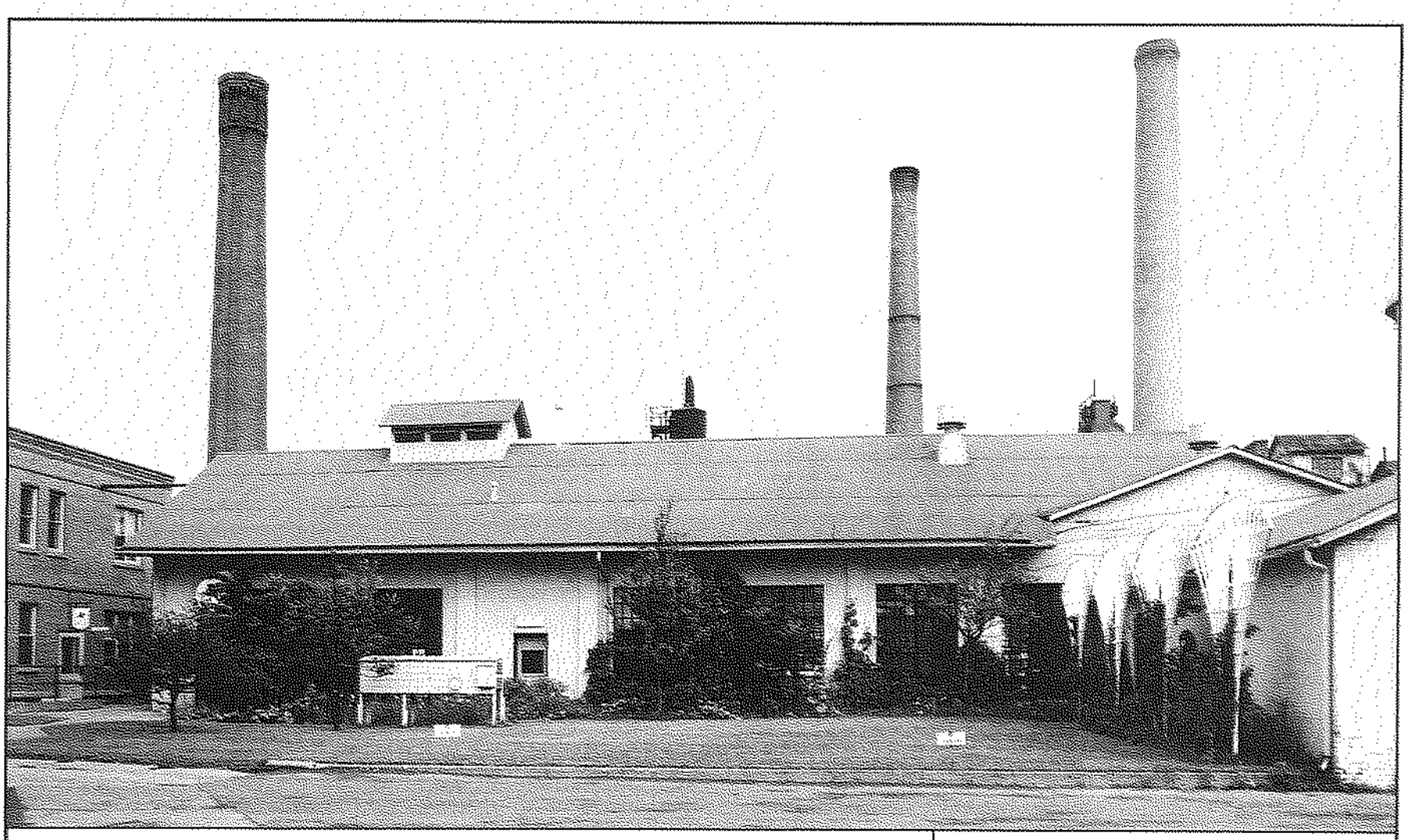


SOURCE: The Center for American History
at the University of Texas at Austin
from the ExxonMobil Historical Collection

amec Earth & Environmental

Figure 4 - 2
Central Shops and Former Tank Car Repair Building
Former Socony-Vacuum Oil Refinery
Olean, New York

| Rev. By: CB | Contract No.: 676400000 | 03/21/2006 |
|---|---|---|

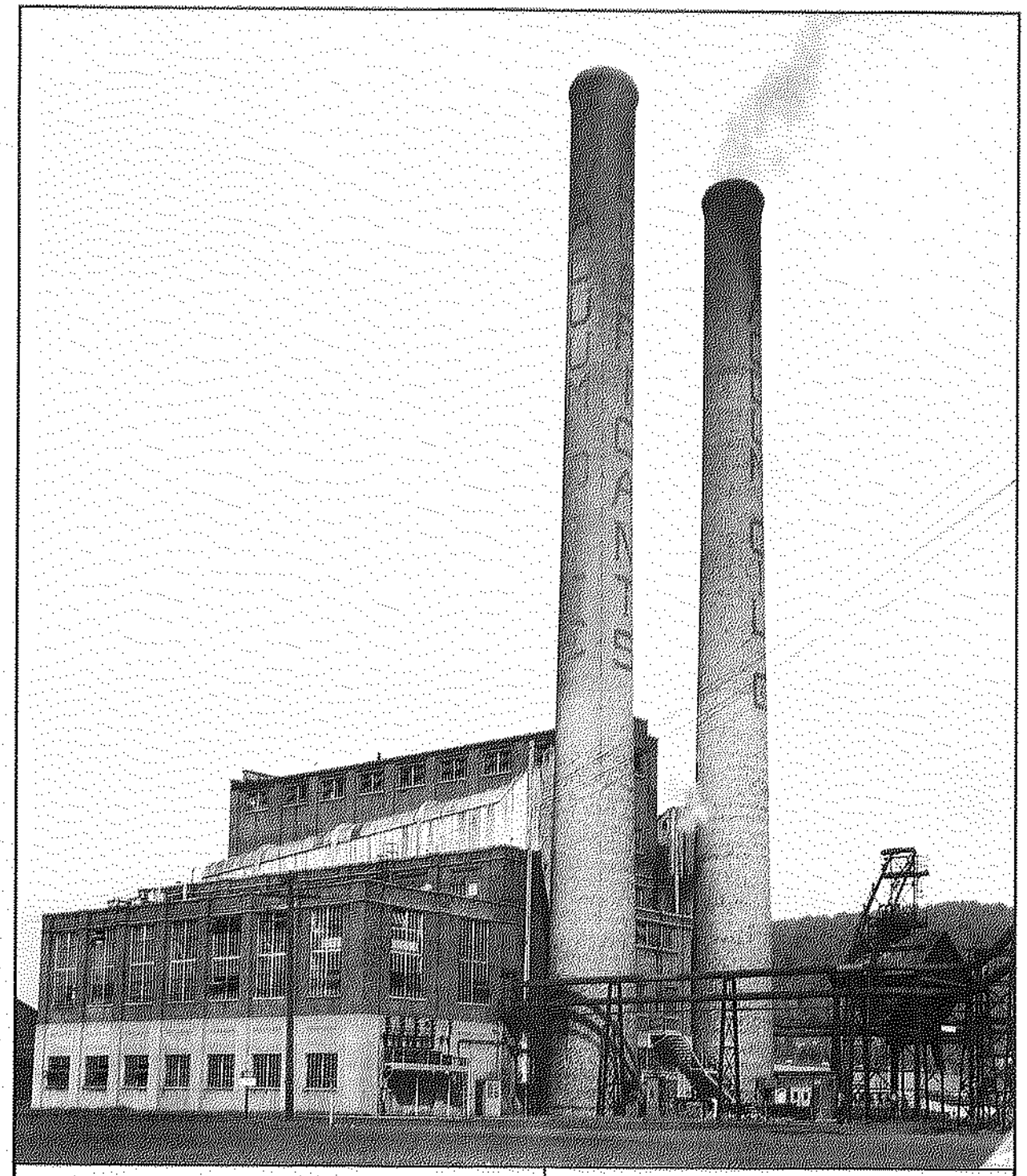


SOURCE: The Center for American History
at the University of Texas at Austin
from the ExxonMobil Historical Collection

amec Earth & Environmental

Figure 4 - 3
Laboratory Building
Former Socony-Vacuum Oil Refinery
Olean, New York

| Rev. By: CB | Contract No.: 676400000 | 03/21/2006 |
|---|---|---|

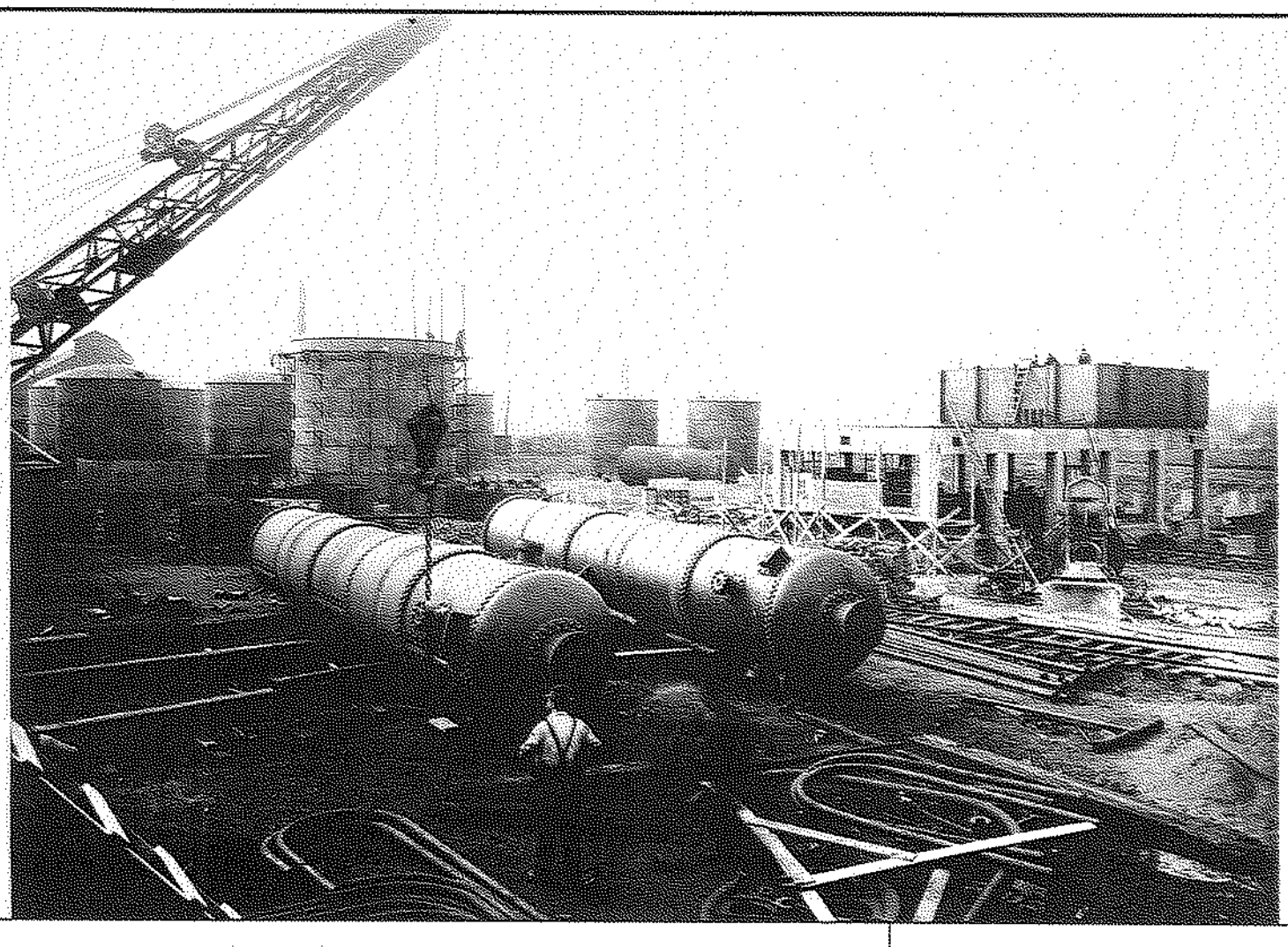


amec Earth & Environmental

Figure 4 - 4
Central Power House
Former Socony-Vacuum Oil Refinery
Olean, New York

SOURCE: The Center for American History
at the University of Texas at Austin
from the ExxonMobil Historical Collection

| Rev. By: CB | Contract No.: 676400000 | 03/21/2006 |
|---|---|---|

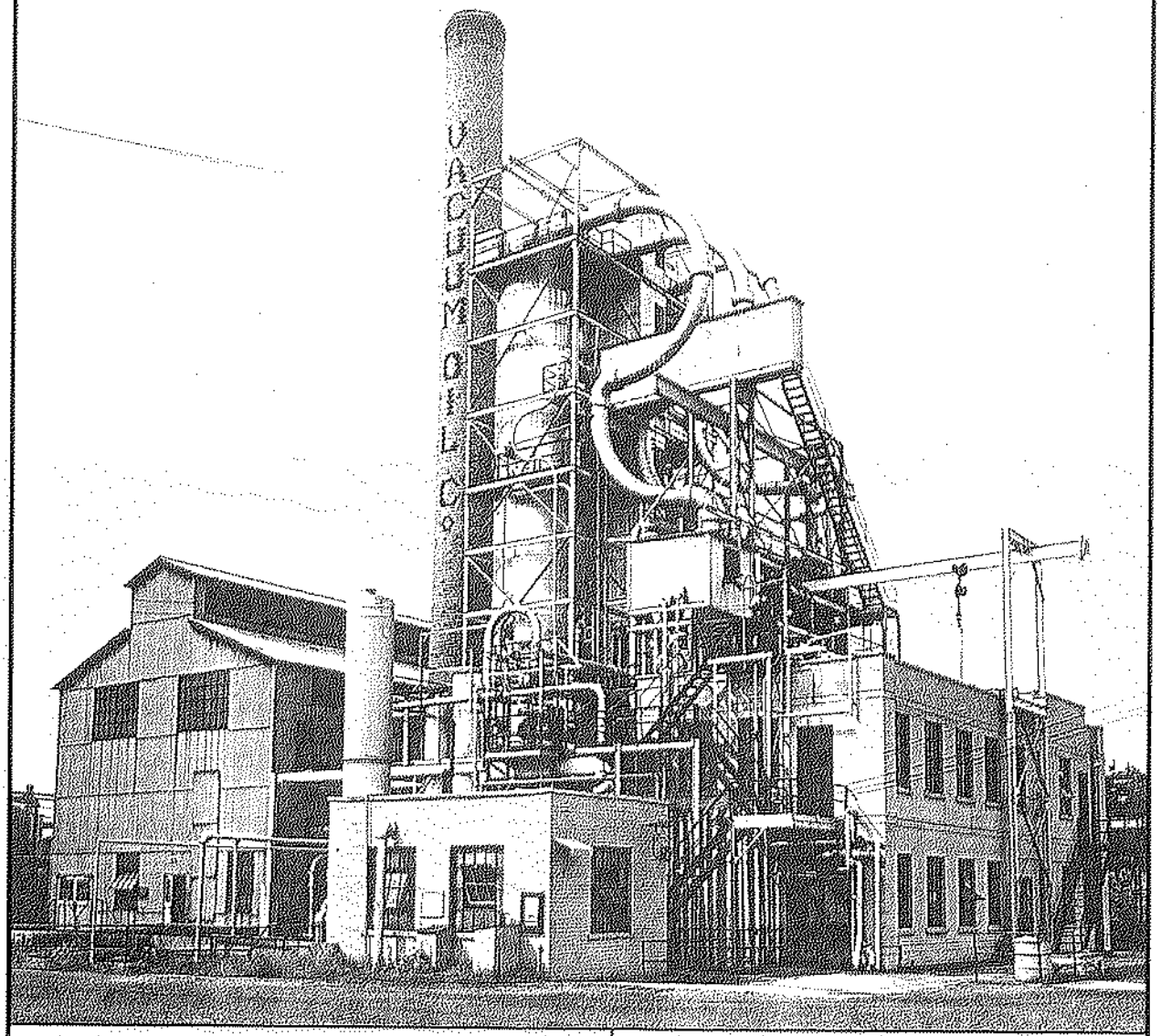


SOURCE: The Center for American History
at the University of Texas at Austin
from the ExxonMobil Historical Collection

amec Earth & Environmental

Figure 4 - 5
Cracking Stills
Former Socony-Vacuum Oil Refinery
Olean, New York

| Rev. By: CB | Contract No.: 676400000 | 03/21/2006 |
|---|---|---|

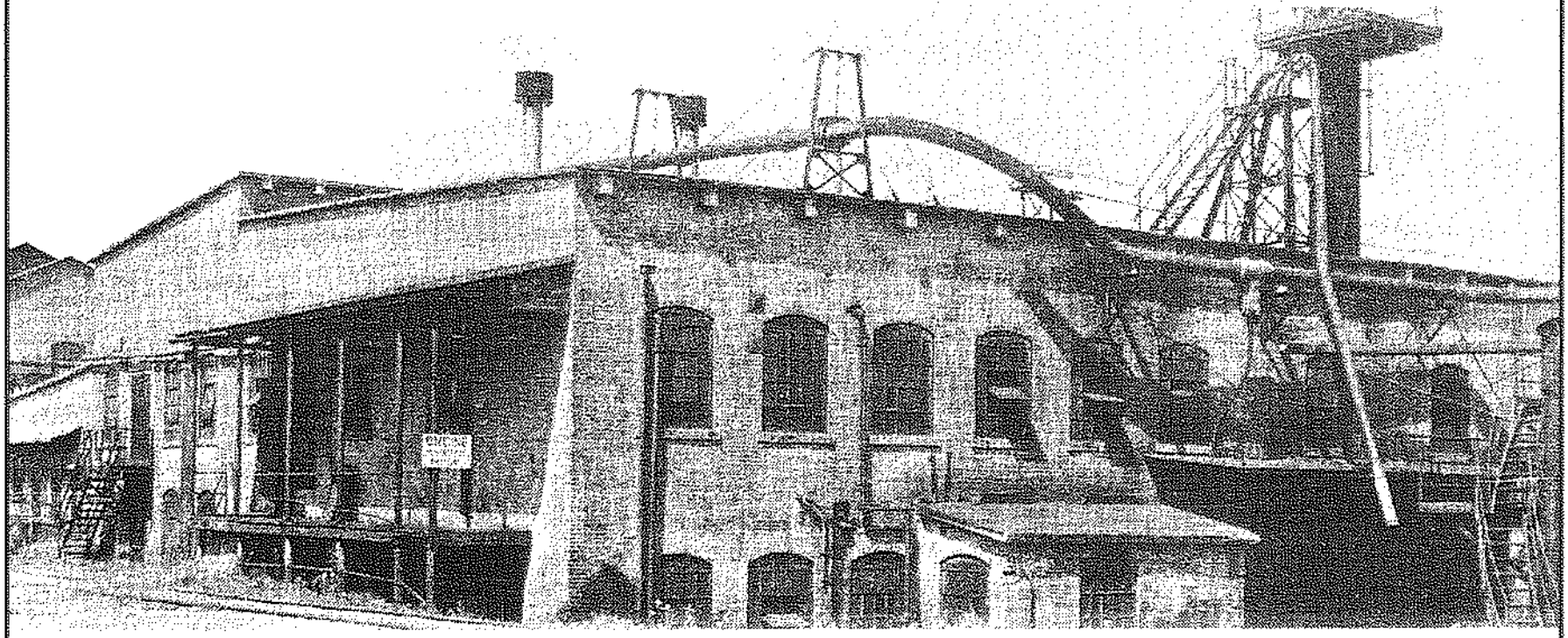



SOURCE: The Center for American History
at the University of Texas at Austin
from the ExxonMobil Historical Collection

amec Earth & Environmental

Figure 4 - 6
Two Stage Crude Pipe Still
Former Socony-Vacuum Oil Refinery
Olean, New York

| Rev. By: CB | Contract No.: 676400000 | 03/20/2006 |
|---|---|---|

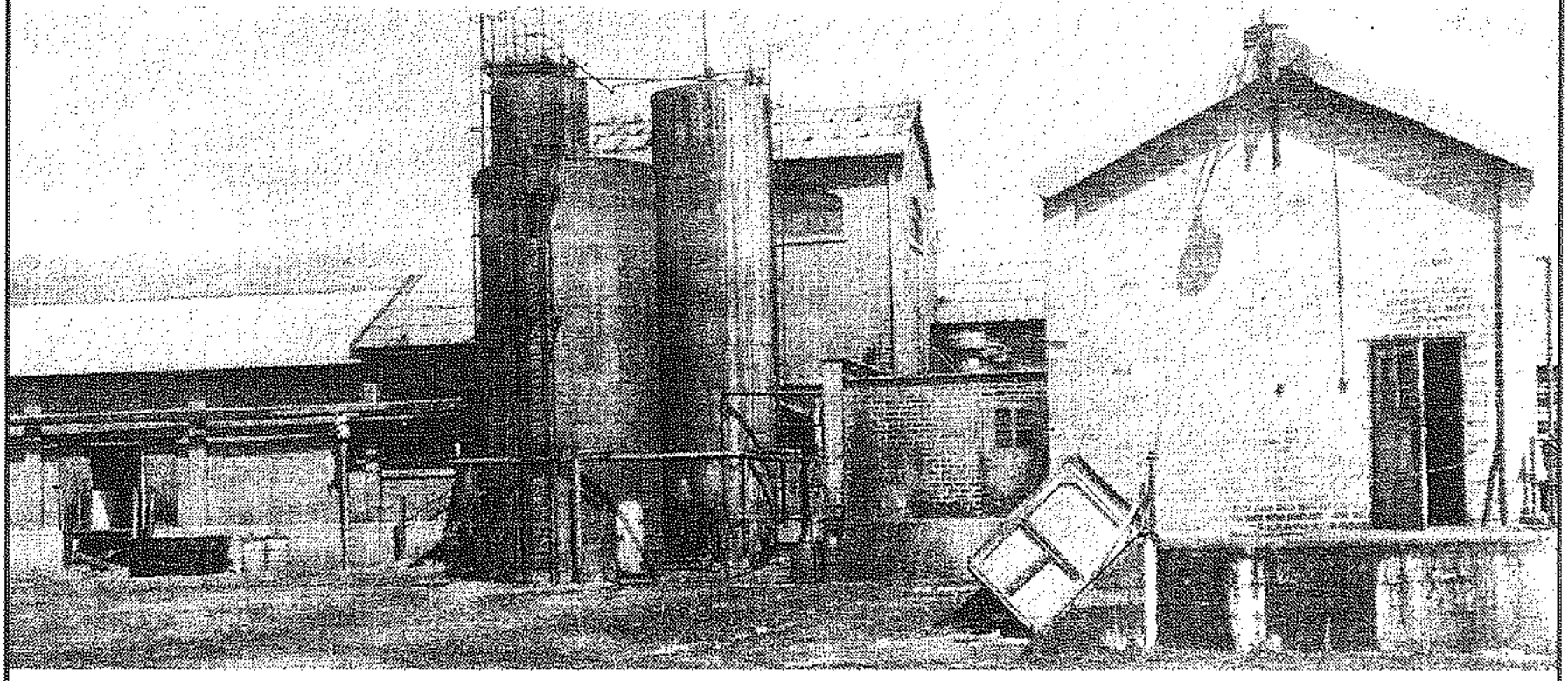


SOURCE: Olean Historical & Preservation Society
Olean, New York

amec Earth & Environmental

Figure 4 - 7
Wax Works Building
Former Socony-Vacuum Oil Refinery
Olean, New York

| Rev. By: CB | Contract No.: 676400000 | 03/20/2006 |
|---|---|---|

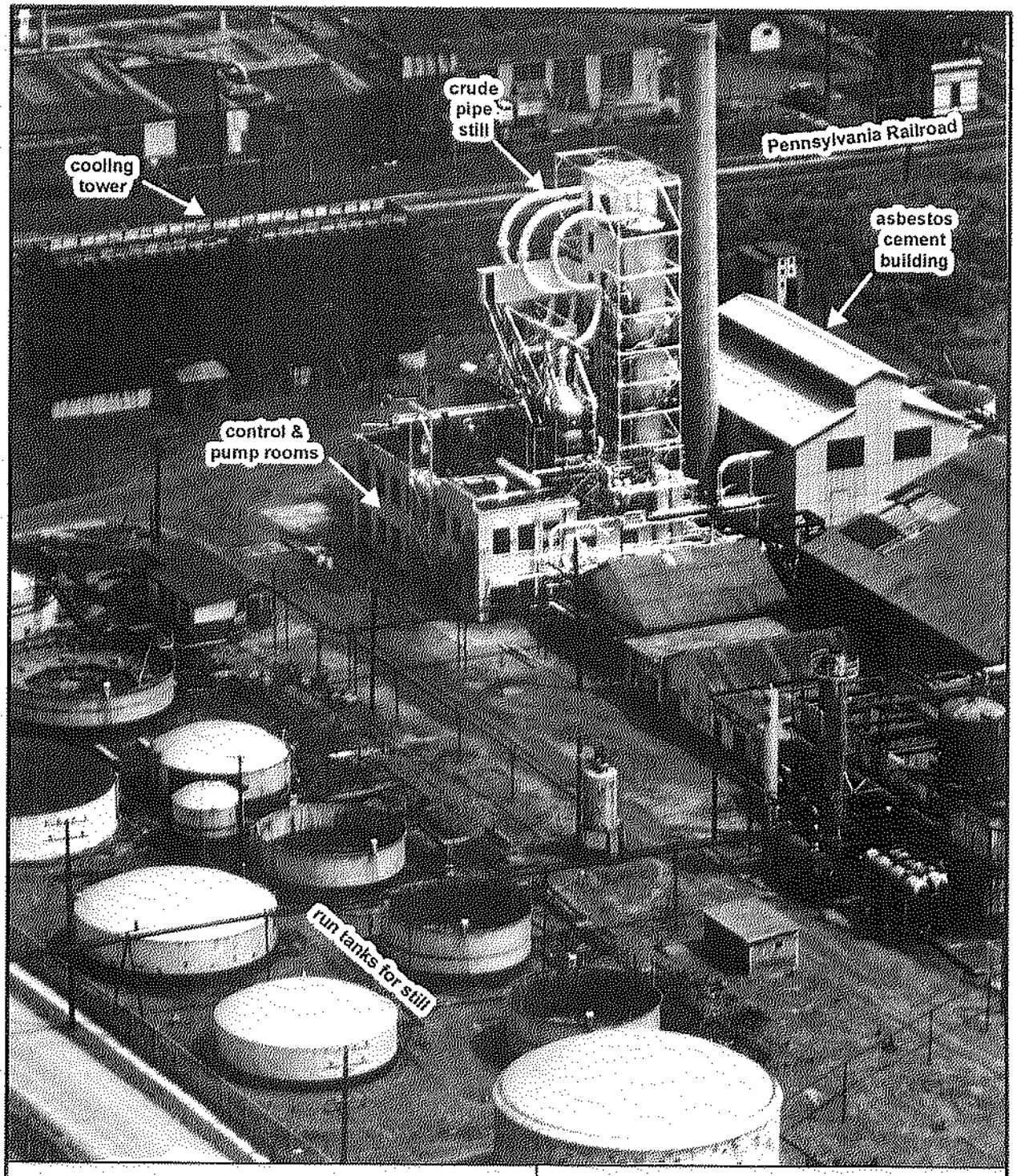


amec Earth & Environmental

Figure 4 - 8
Grease Plant Building
Former Socony-Vacuum Oil Refinery
Olean, New York

SOURCE: Olean Historical & Preservation Society
Olean, New York

| Rev. By: CB | Contract No.: 676400000 | 03/20/2006 |
|---|---|---|

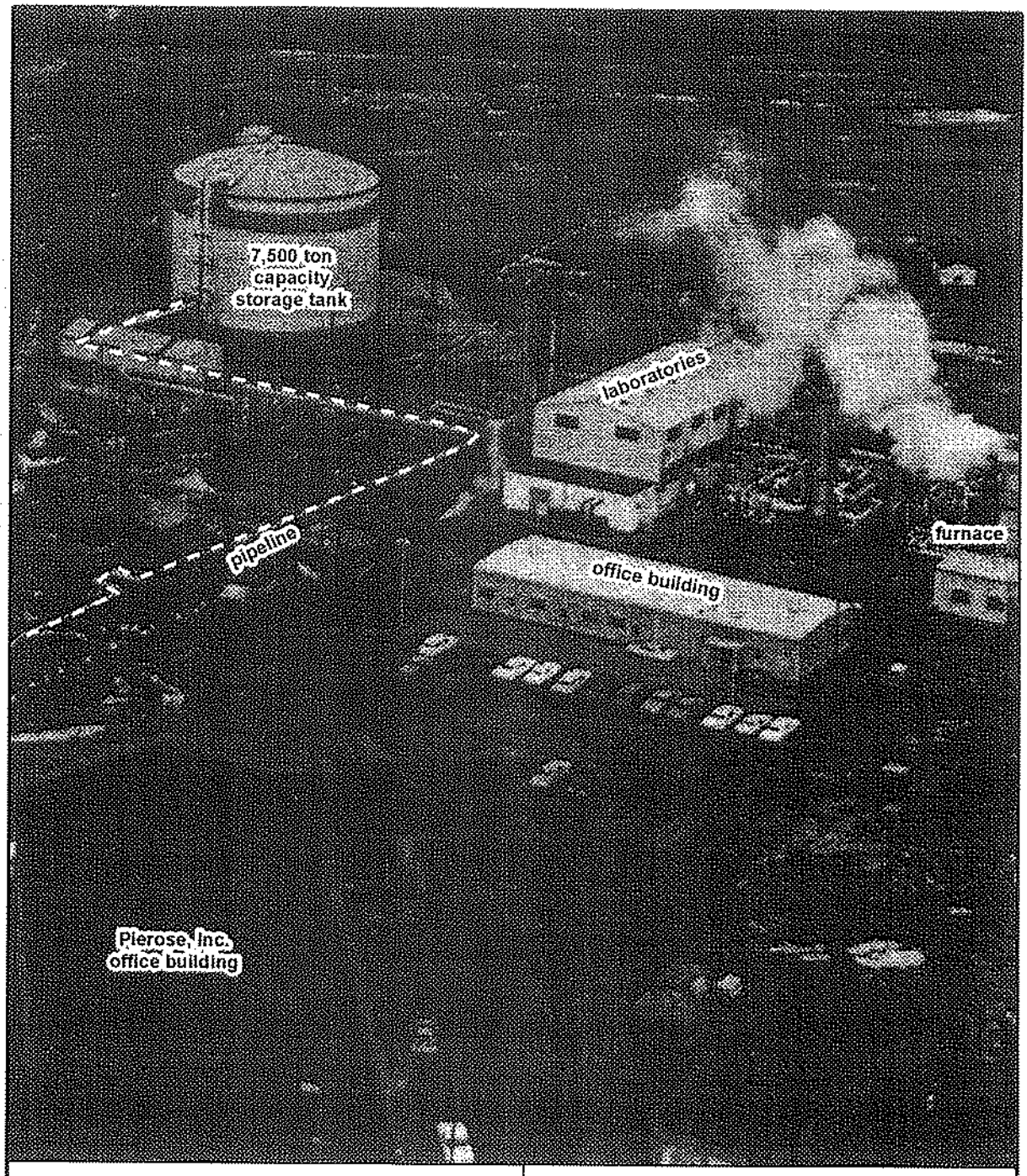



SOURCE: The Center for American History
at the University of Texas at Austin
from the ExxonMobil Historical Collection

amec Earth & Environmental

Figure 4 - 9
Two Stage Crude Pipe Still and
Associated Refinery Stuctures
Former Socony-Vacuum Oil Refinery
Olean, New York

| Rev. By: CB | Contract No.: 676400000 | 03/21/2006 |
|---|---|---|

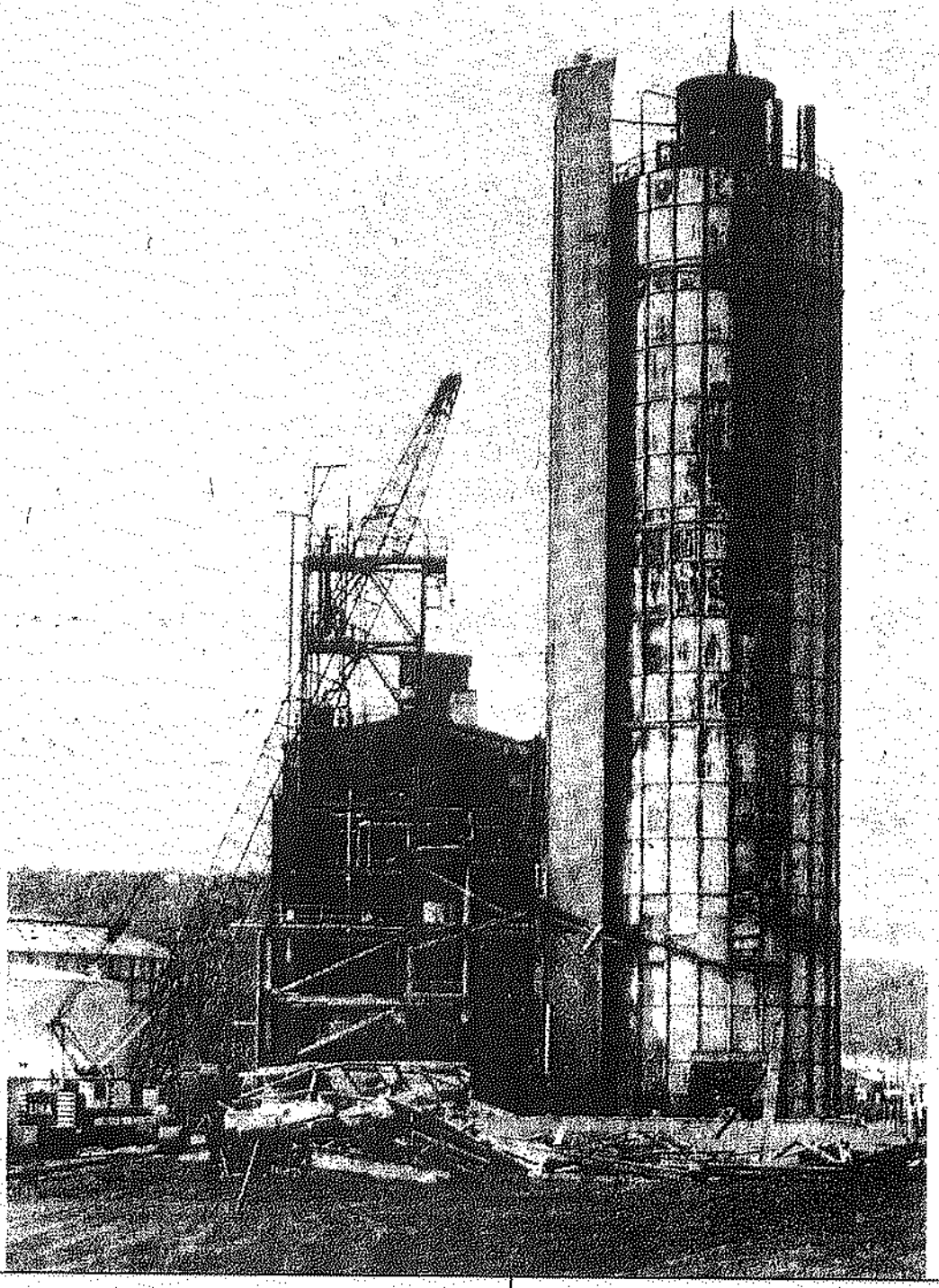



SOURCE: The Center for American History
at the University of Texas at Austin
from the ExxonMobil Historical Collection
Olean Times, Olean, NY
April 4, 1967 newspaper article

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Figure 6 - 1
1967 Former Felmont Oil Corporation Plant
Former Socony-Vacuum Oil Refinery
Olean, New York

| Rev. By: CB | Contract No.: 676400000 | 03/10/2005 |
|---|---|---|

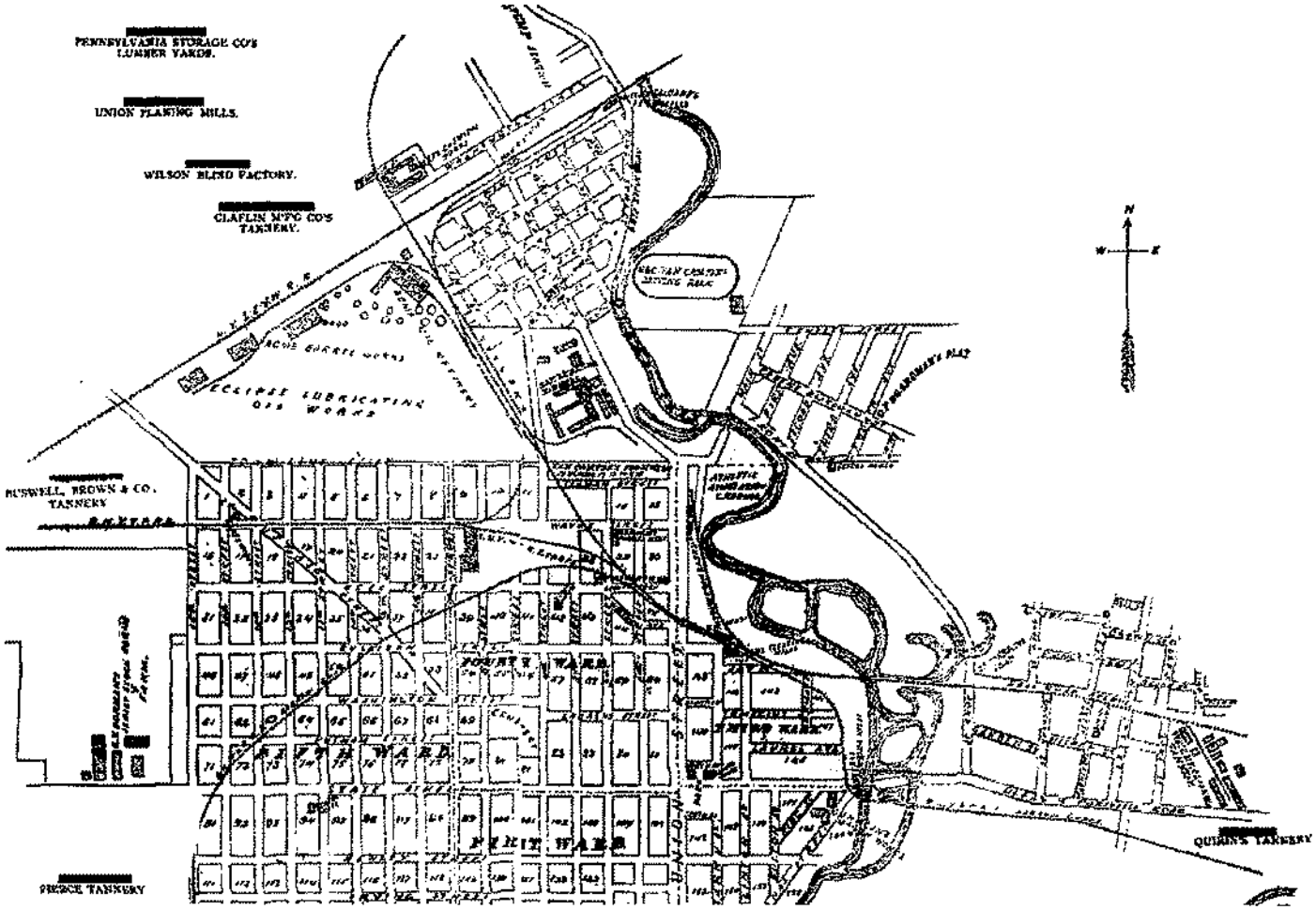


SOURCE: The Times Herald, Olean, NY
June 8, 1984 newspaper article

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Figure 6 - 2
Agway's Urea Prill Tower
Former Socony-Vacuum Oil Refinery
Olean, New York

| Rev. By: CB | Contract No.: 676400000 | 03/20/2006 |
|---|---|---|

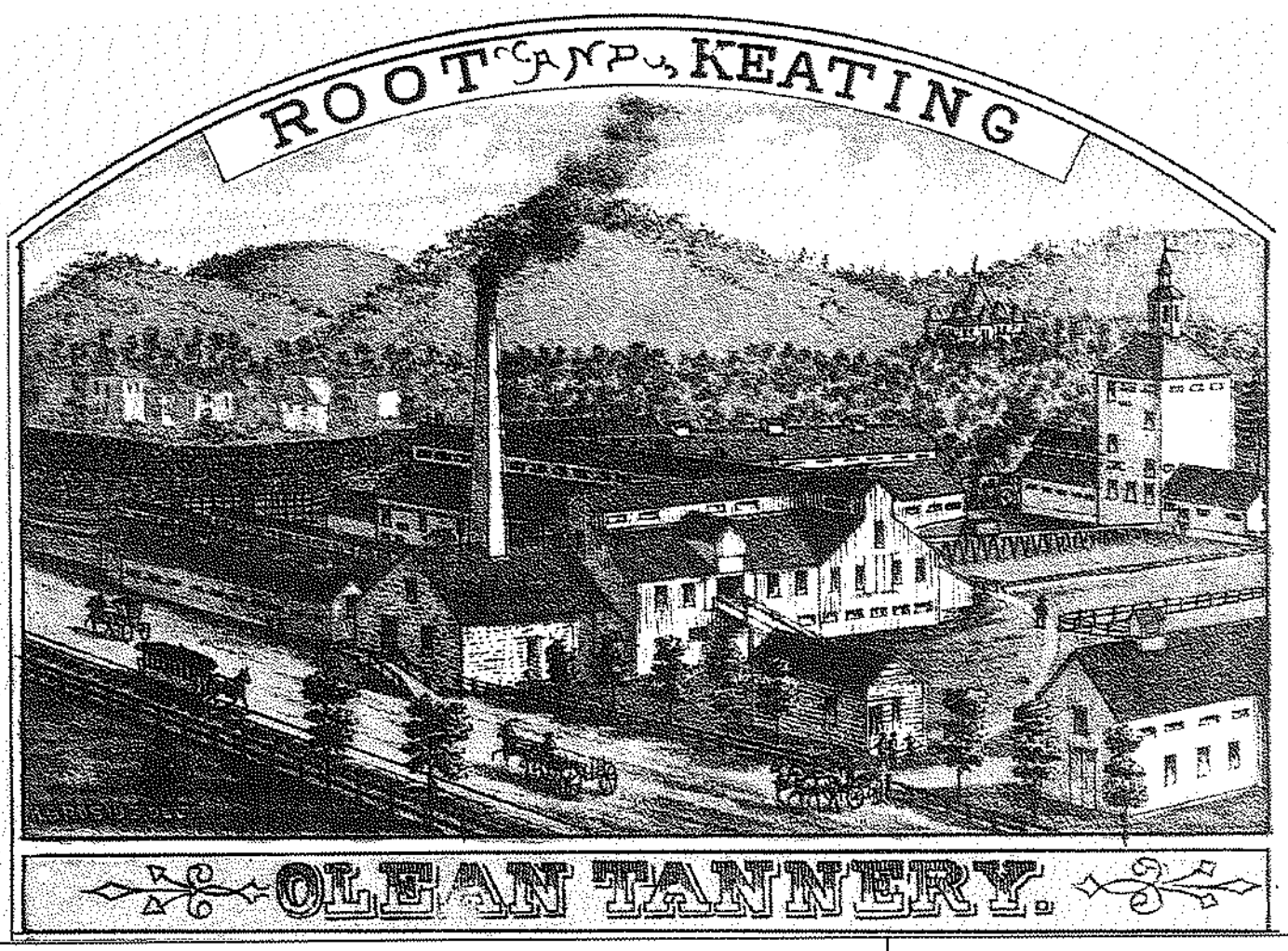



SOURCE: Olean City Directory, 1893 - 1894
Compiled by Thompson and Sibley
Olean, Cattaraugus County, New York website

amec Earth & Environmental

Figure 7 - 1
1893 - 1894 Olean Street Map
Former Socony-Vacuum Oil Refinery
Olean, New York

| Rev. By: CB | Contract No.: 676400000 | 03/21/2006 |
|---|---|---|

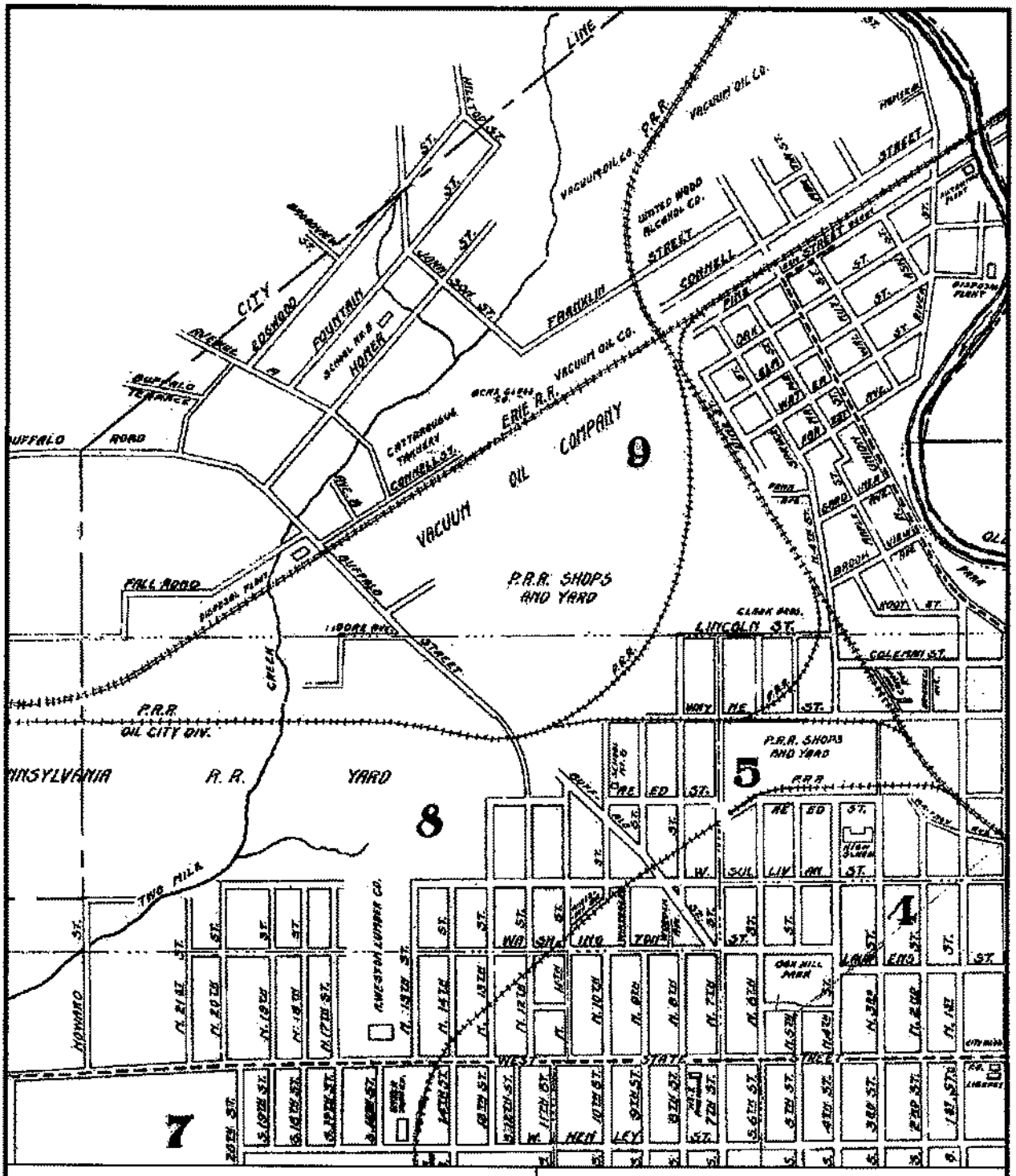



SOURCE: Bird's eye view of Olean, Cattaraugus County, NY
1882. H. Brosius, del. Beck & Pauli, lithographers
American Memory Map Collection
Library of Congress Geography and Map Division

amec Earth & Environmental

Figure 7 - 2
1882 Diagram of the Root and Keating Tannery
Former Socony-Vacuum Oil Refinery
Olean, New York

| Rev. By: CB | Contract No.: 676400000 | 03/20/2006 |
|---|---|---|

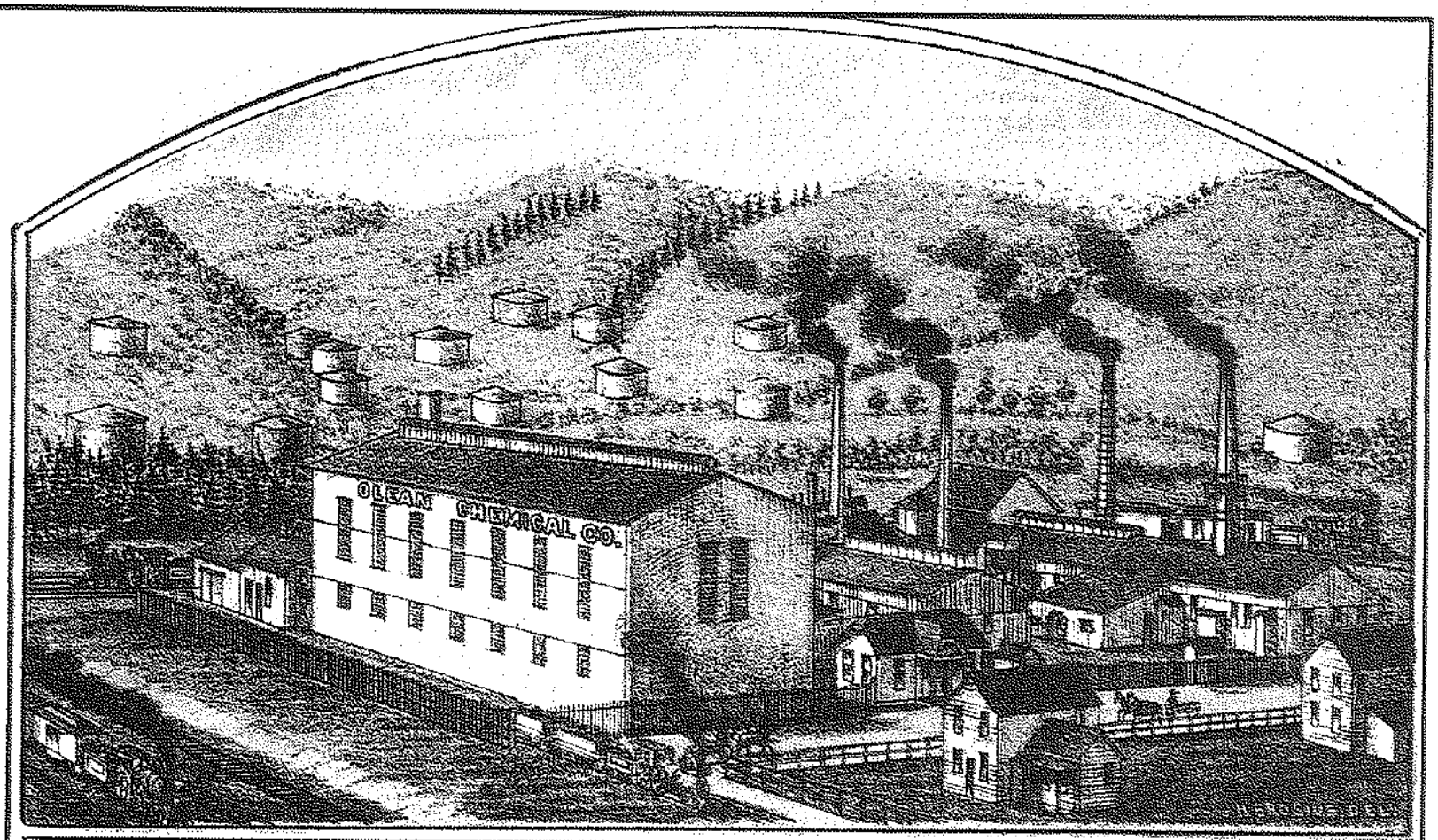



amec Earth & Environmental

Figure 7 - 3
Undated Olean Street Map (1912-1916)
Former Socony-Vacuum Oil Refinery
Olean, New York

SOURCE: Cattaraugus County Historical Society
Little Valley, NY

| Rev. By: CB | Contract No.: 676400000 | 03/21/2006 |
|---|---|---|



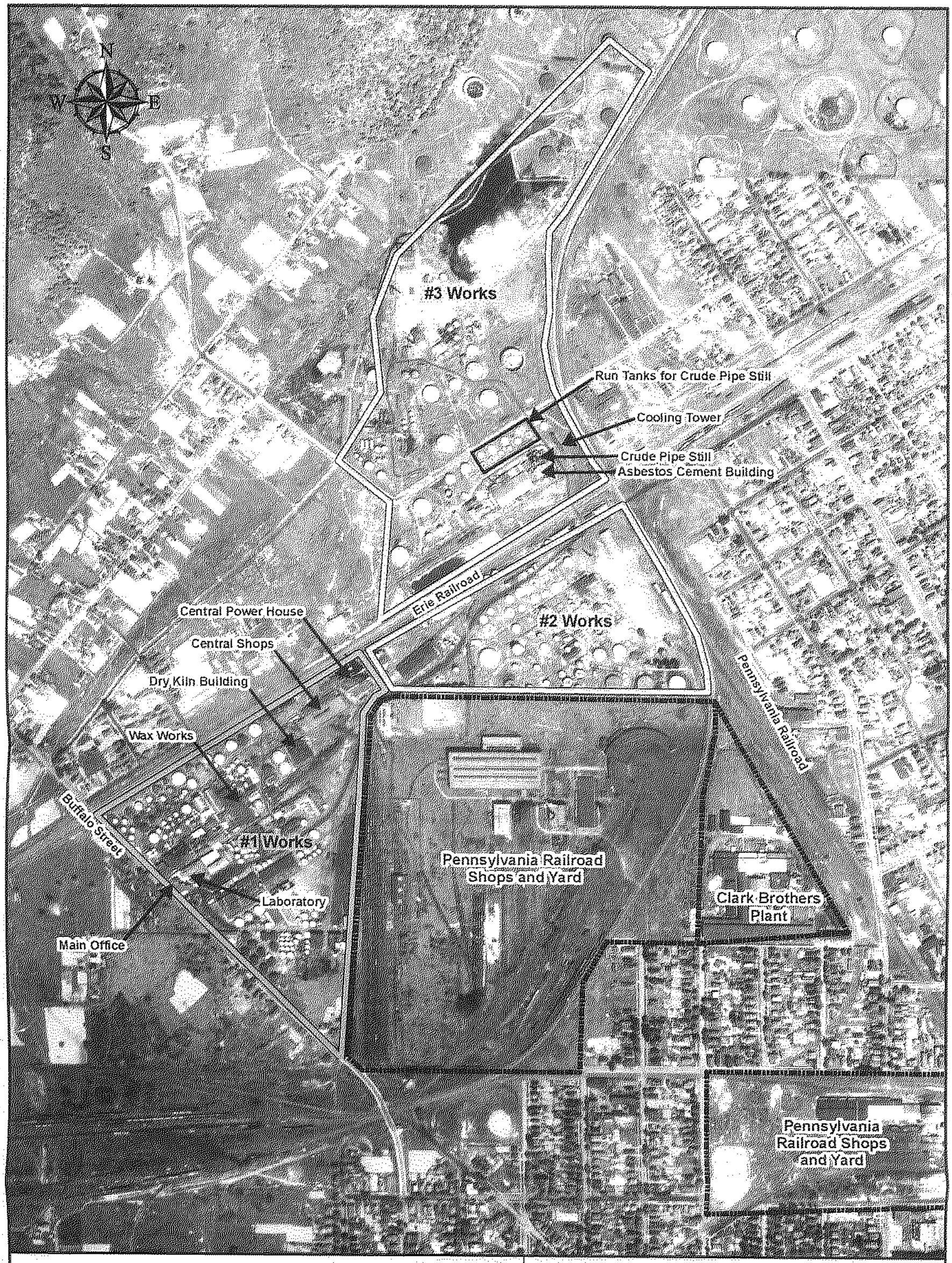

# OLEAN CHEMICAL CO'S WORKS.

SOURCE: Bird's eye view of Olean, Cattaraugus County, NY
1882. H. Brosius, del. Beck & Pauli, lithographers
American Memory Map Collection
Library of Congress Geography and Map Division

amec Earth & Environmental

Figure 7 - 4
1882 Diagram of the Olean Chemical Works Plant
Former Socony-Vacuum Oil Refinery
Olean, New York

| Rev. By: CB | Contract No.: 676400000 | 03/20/2006 |
|---|---|---|



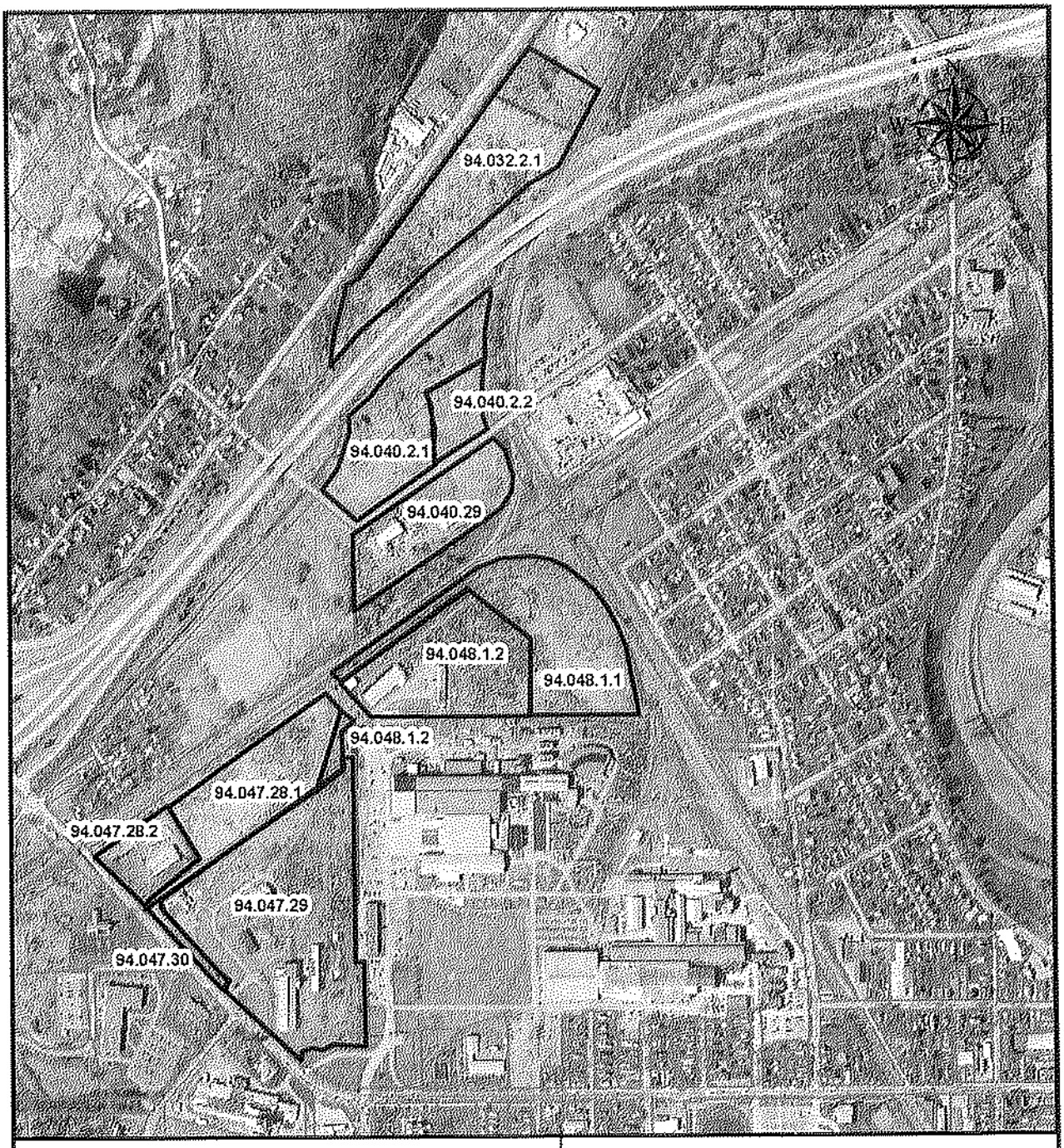

Note: Property boundaries are approximate based on current tax map interpretation.

Source: Olean, New York, May 25, 1939
aerial cartographic scanned image
www.asmanphoto.com, 38-39-may-25-1939.tif

amec Earth & Environmental

Figure 7 - 5
1939 Site Aerial Photograph
Former Socony-Vacuum Oil Refinery
Olean, New York

| Rev By: CB | Contract No.: 676400000 | 04/19/2006 |
|---|---|---|




Note: Property boundaries are approximate based on current tax map interpretation.

SOURCE: Cattaraugus County Real Property Service
Interactive Parcel Map, 2006
www.cattco.org

amec Earth & Environmental

Figure 8 - 1
Tax Parcel Map of Former Refinery Property
Former Socony-Vacuum Oil Refinery
Olean, New York

| Rev. By: CB | Contract No.: 676400000 | 03/20/2006 |
|---|---|---|

# *Appendix A*

# *Photographic Log of February 2006 Site Visit*

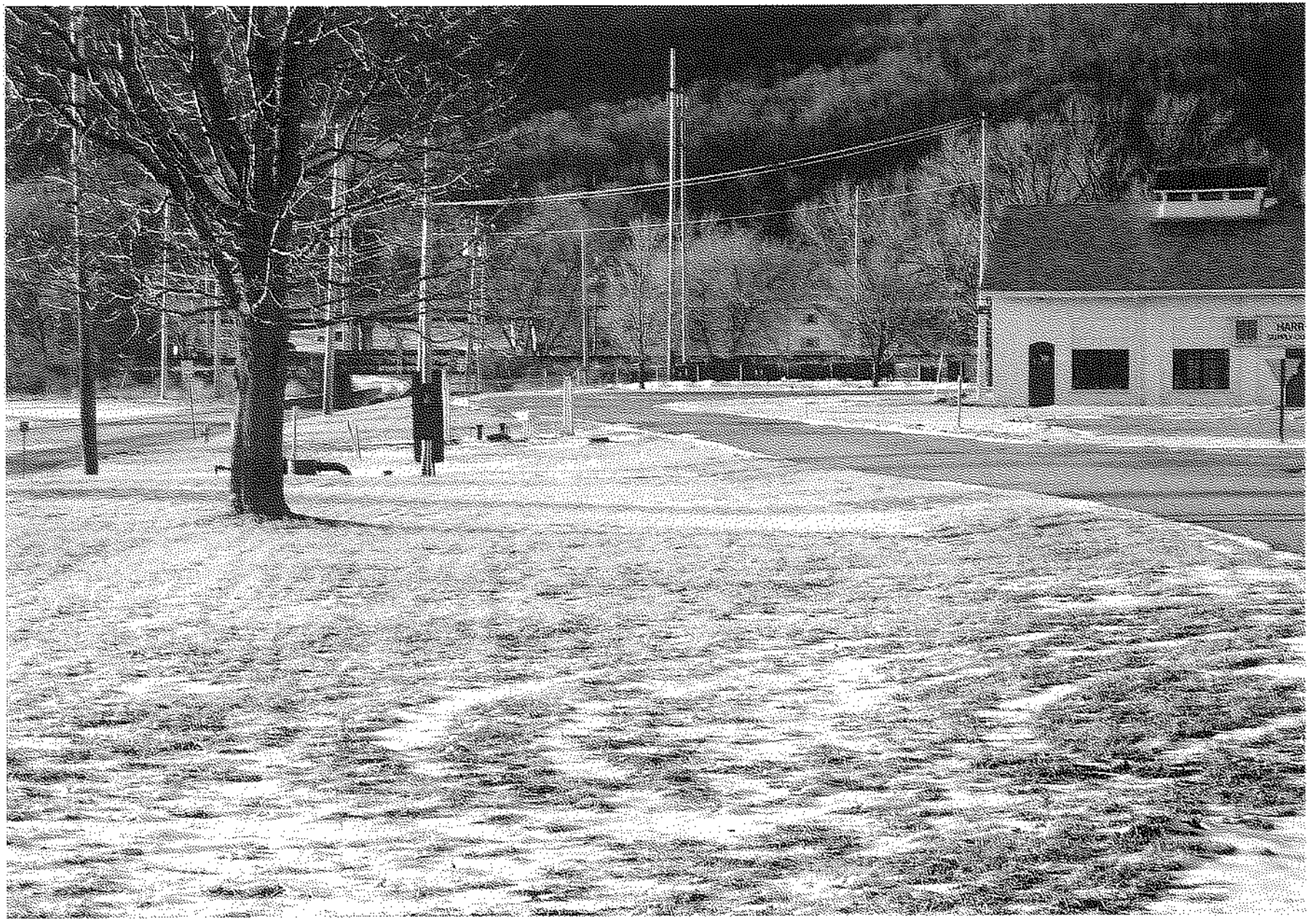


Photo 1: Western edge of the former refinery property along Buffalo Street, facing northwest. Erie Railroad tracks running perpendicular in the background.

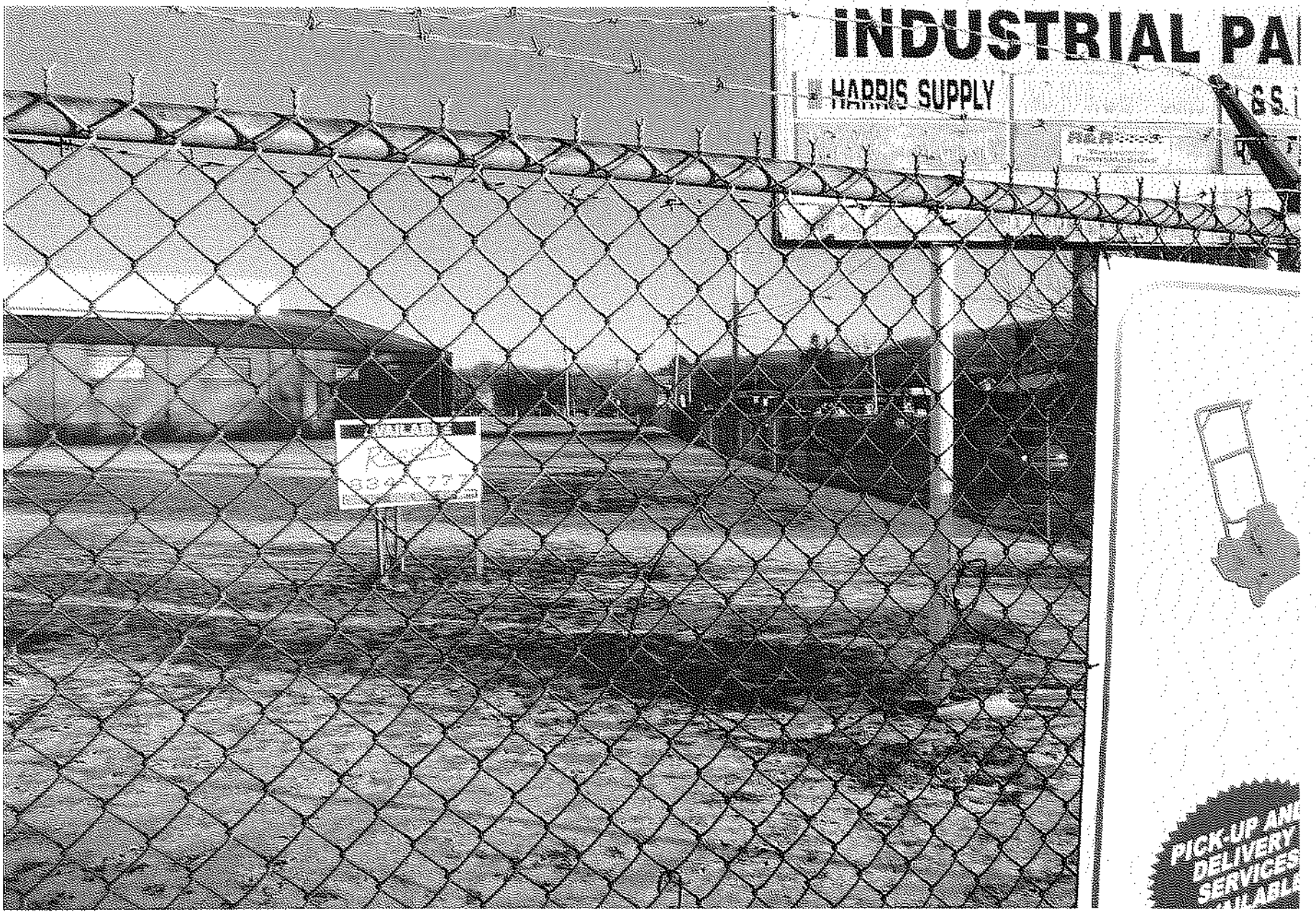



Photo 2: Western edge of the former refinery property (southern part of former #1 Works area) along Buffalo Street, facing south.

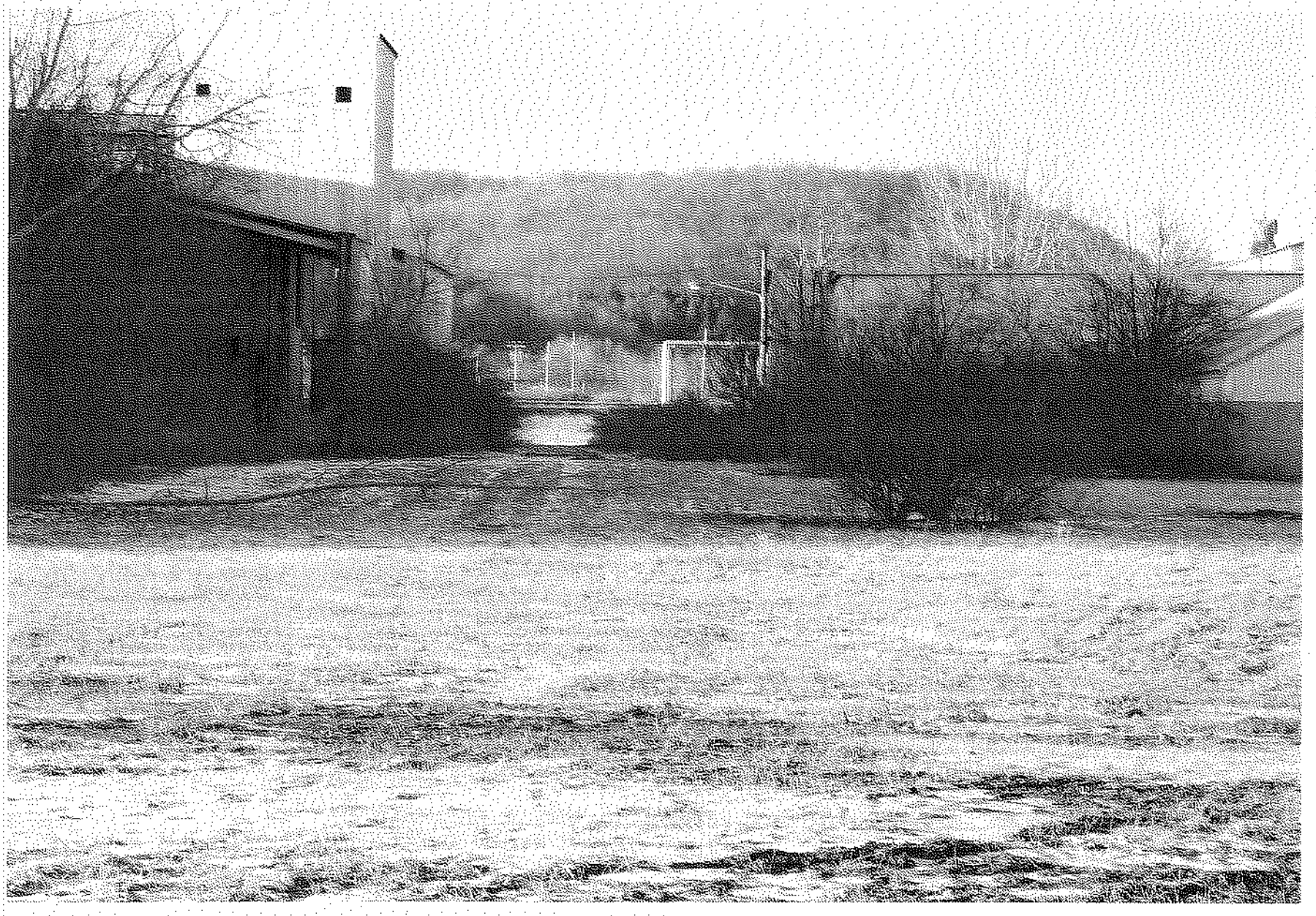


Photo 3: Looking directly north, between the eastern border of the former #1 Works refinery area and the western border of the Dresser-Rand facility.

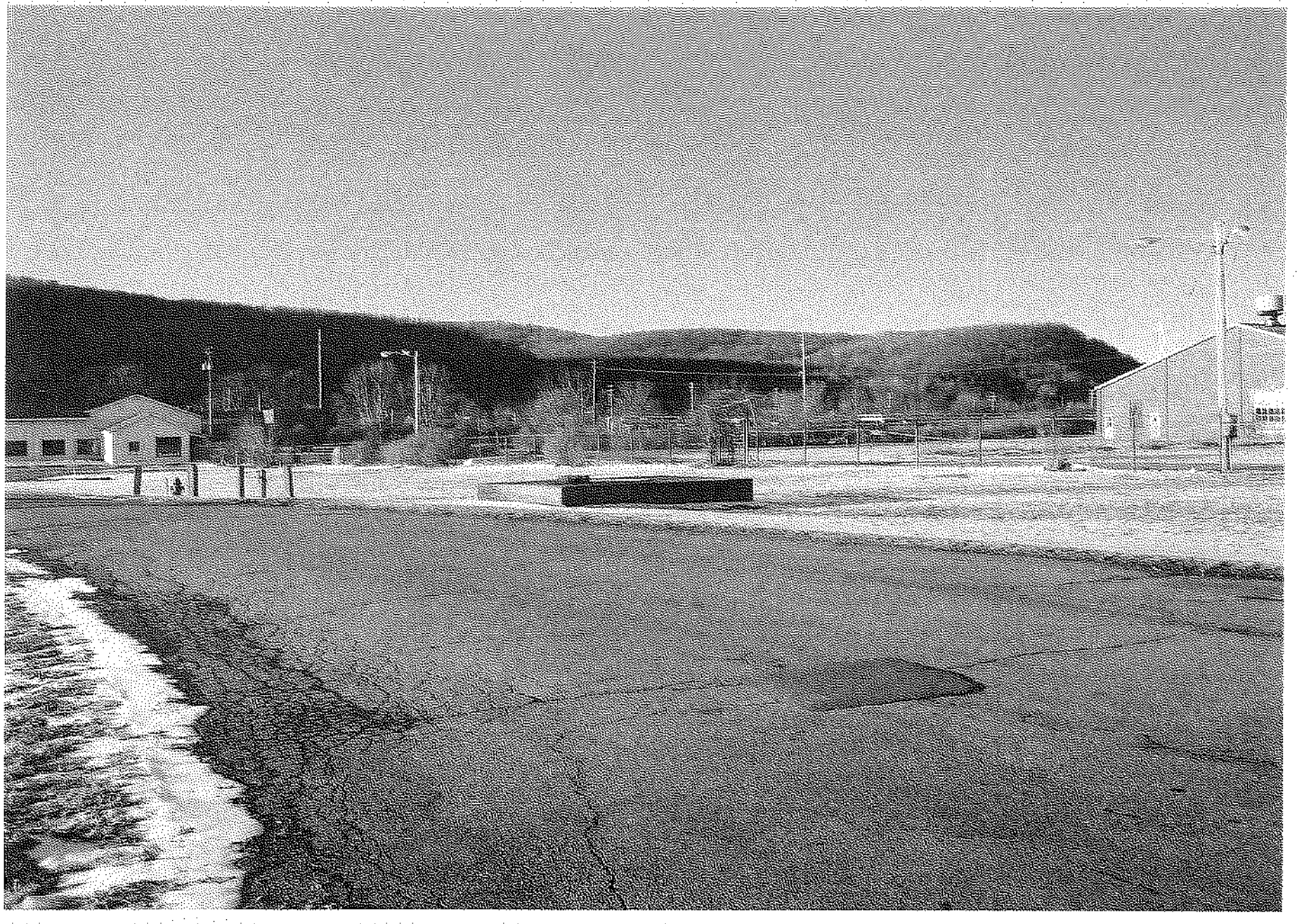


Photo 4: The northwestern portion of the former refinery (northern part of former #1 Works), facing north.



Photo 5: The central portion of the former #1 Works refinery area, facing east.



Photo 6: Southwestern section of the former #1 Works refinery area, facing northeast.



Photo 7: Southwestern section of the former #1 Works refinery area, facing southeast.



Photo 8: Northeastern portion of the former #1 Works area. This photo depicts the area between the former Agway-Felmont complex pipeline and the Erie Railroad tracks, facing northwest.



Photo 9: Northeastern portion of the former #1 Works area, facing northeast. The former #2 Works area was located just east/northeast of this photo and the former #3 Works area was located just beyond the Erie tracks which are in the background of this photo.




Photo 10: Photo of Harris Supply Company, Inc. located at the corner of Buffalo Street and the Erie Railroad tracks. This was the area formerly occupied by the Eclipse Lubricating Oil Works and the #1 Works area of the Socony-Vacuum Oil refinery.



Photo 11: Harris Supply Company, Inc. occupying parcel 94.047.28.2, facing northeast.

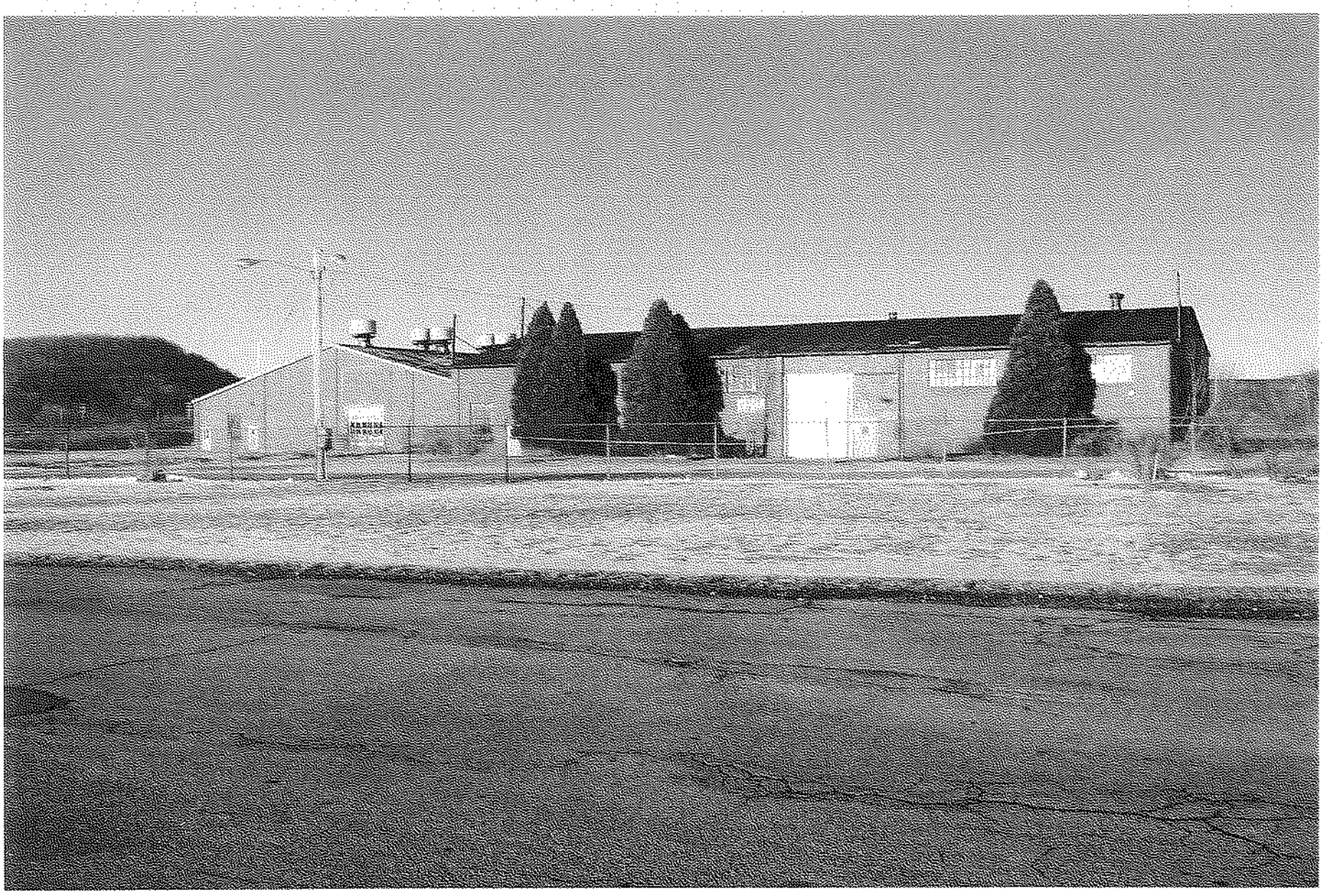


Photo 12: One of the former Agway buildings still remaining on the former refinery Site, just east of Buffalo Street, facing northeast.



Photo 13: The northwestern wall of the building depicted in Photo #12, facing southeast.

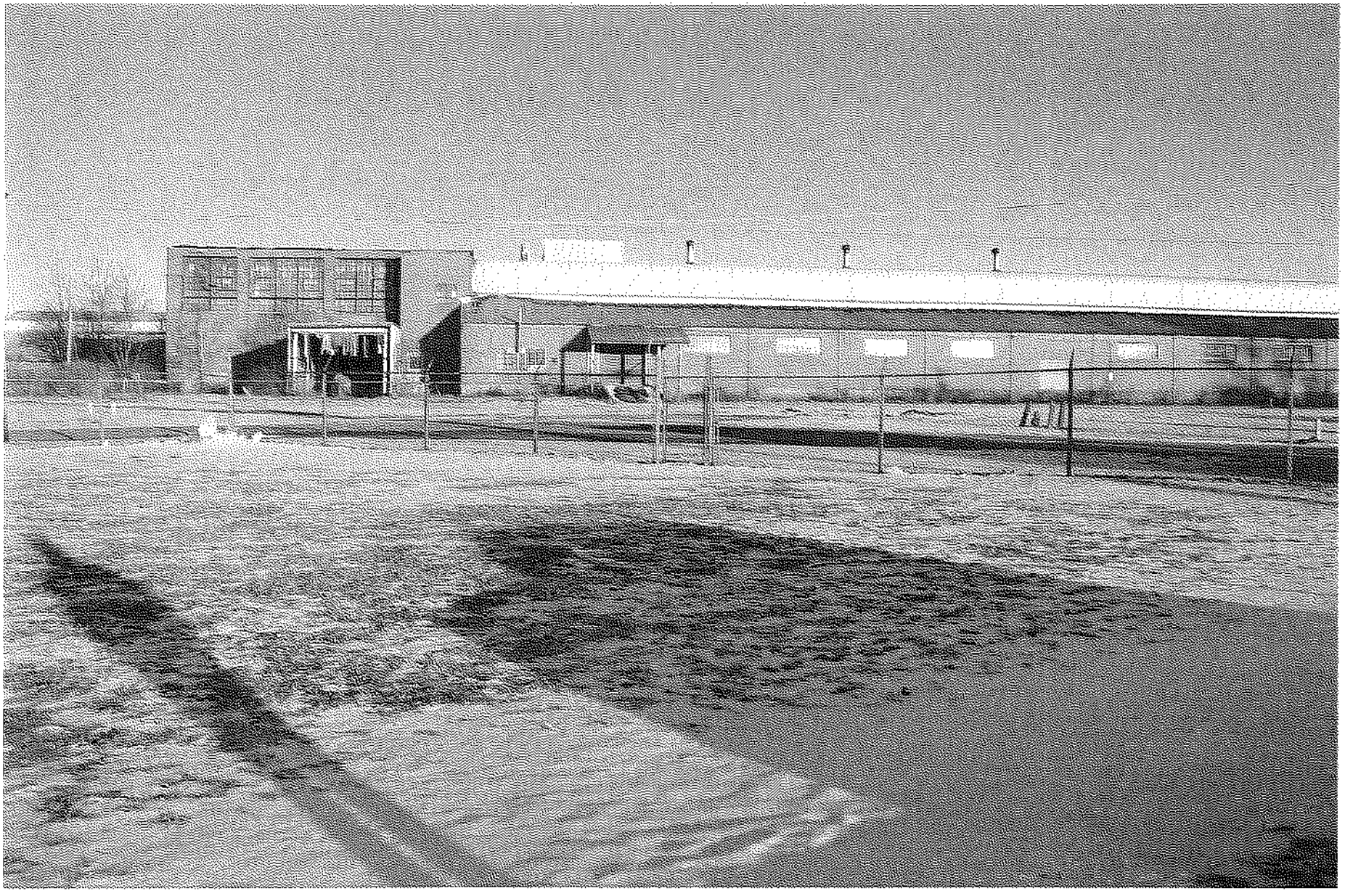


Photo 14: Another former Agway building still remaining on the former refinery Site, just east of Buffalo Street, facing southeast.



Photo 15: Southern wall of the building depicted in Photo #14, facing North.

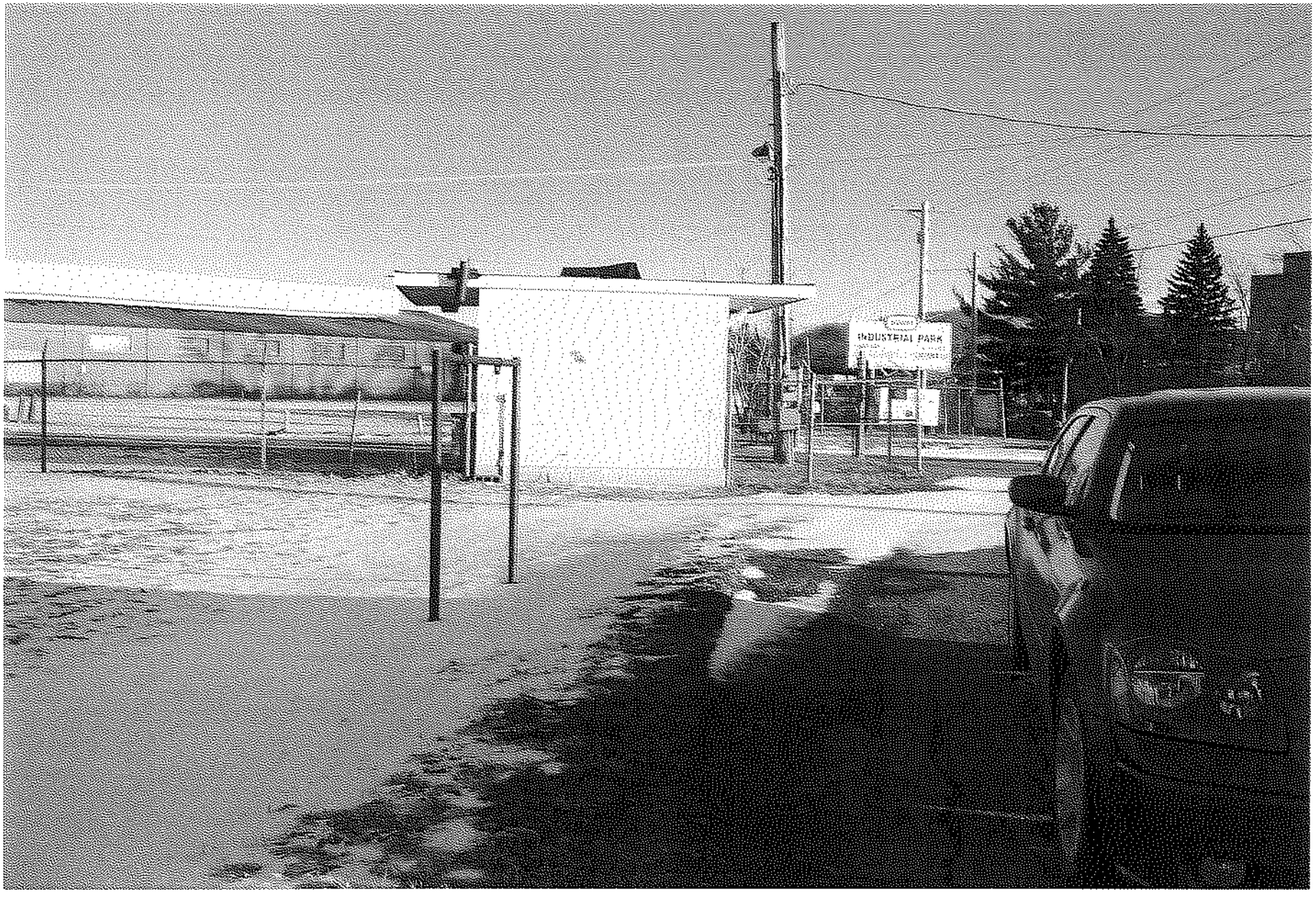



Photo 16: Former Agway guard station along Buffalo Street, facing south.

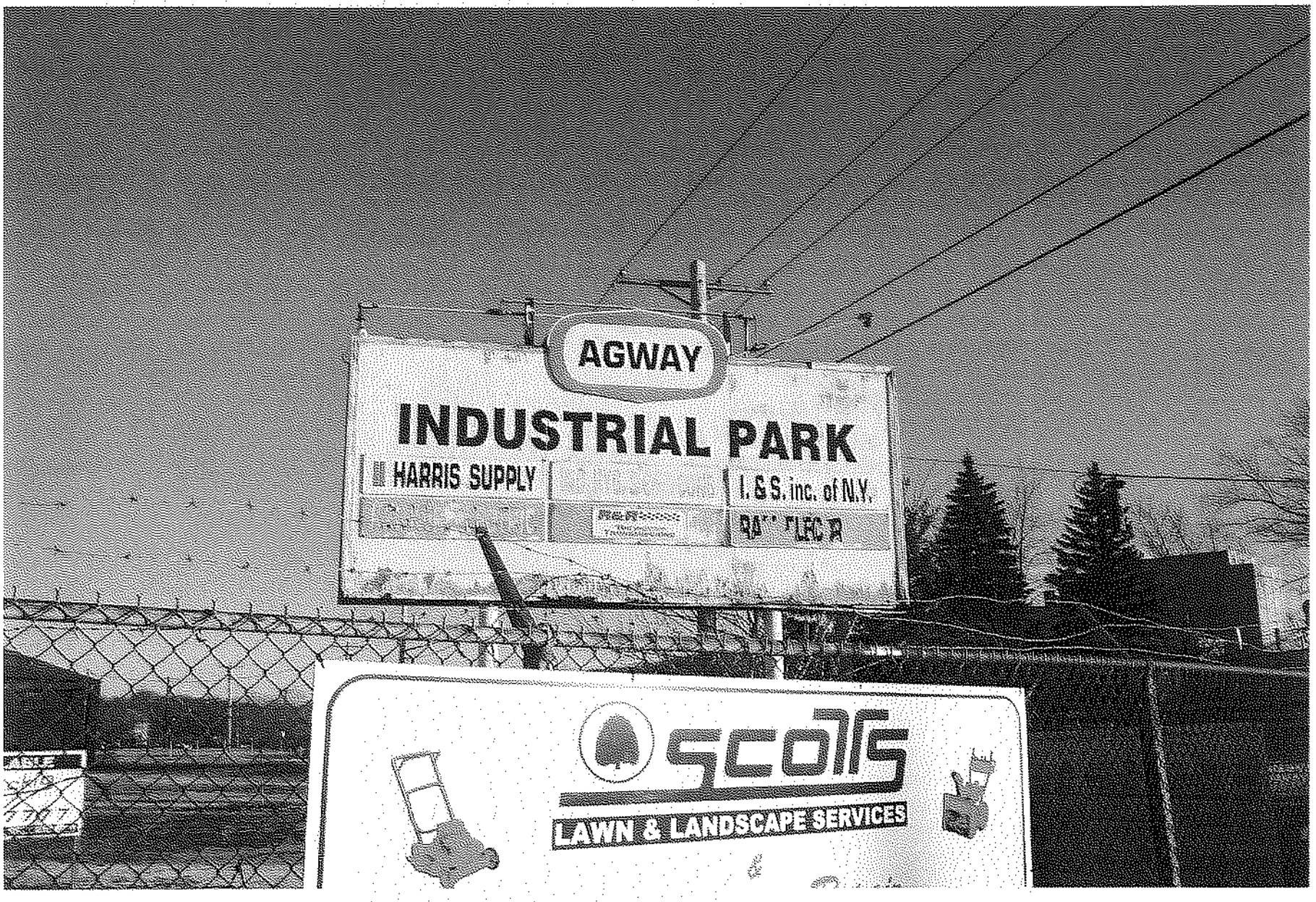



Photo 17: The Agway Industrial Park sign at the former Agway entrance off of Buffalo Street.



Photo 18: Realtor sign on the former #1 Works refinery area property, parcel 94.047.29.




Photo 19: Photo showing the former #1 Works refinery area property for sale sign, located on parcel 94.047.28.1.

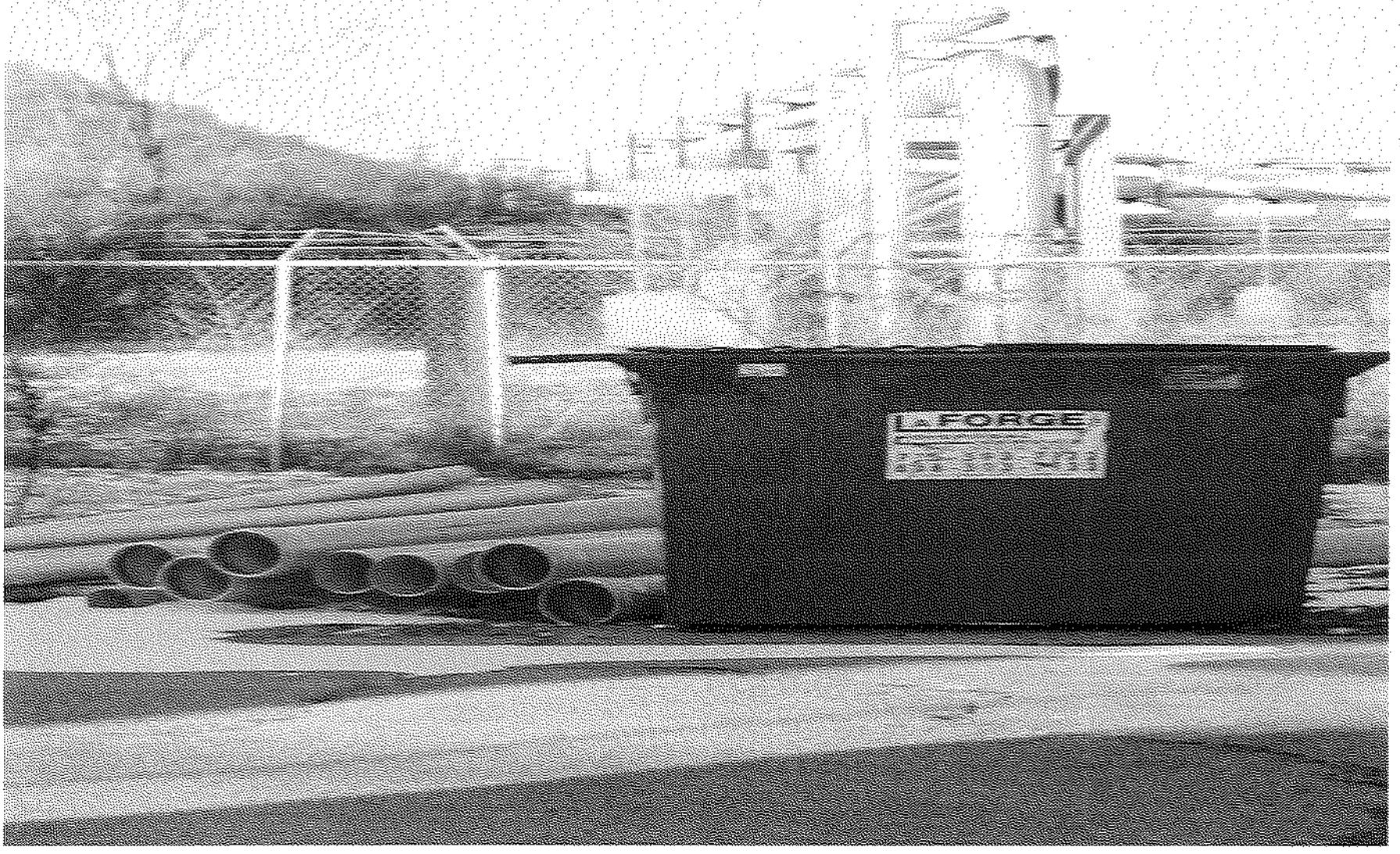



Photo 20: The northwest section of the former refinery property (#1 Works), showing the former Agway-Felmont complex ammonia pipeline, facing east.



Photo 21: Photo showing the ammonia pipe line that was used by the former Agway-Felmont fertilizer complex. Most of the line runs parallel to, and just south of, the Erie Railroad tracks. Archway depicted in Photo 23 can be seen in the background.



Photo 22: Close up photo of the former ammonia pipeline used by Agway and Felmont along the border between parcels 94.047.28.1 and 94.047.29.

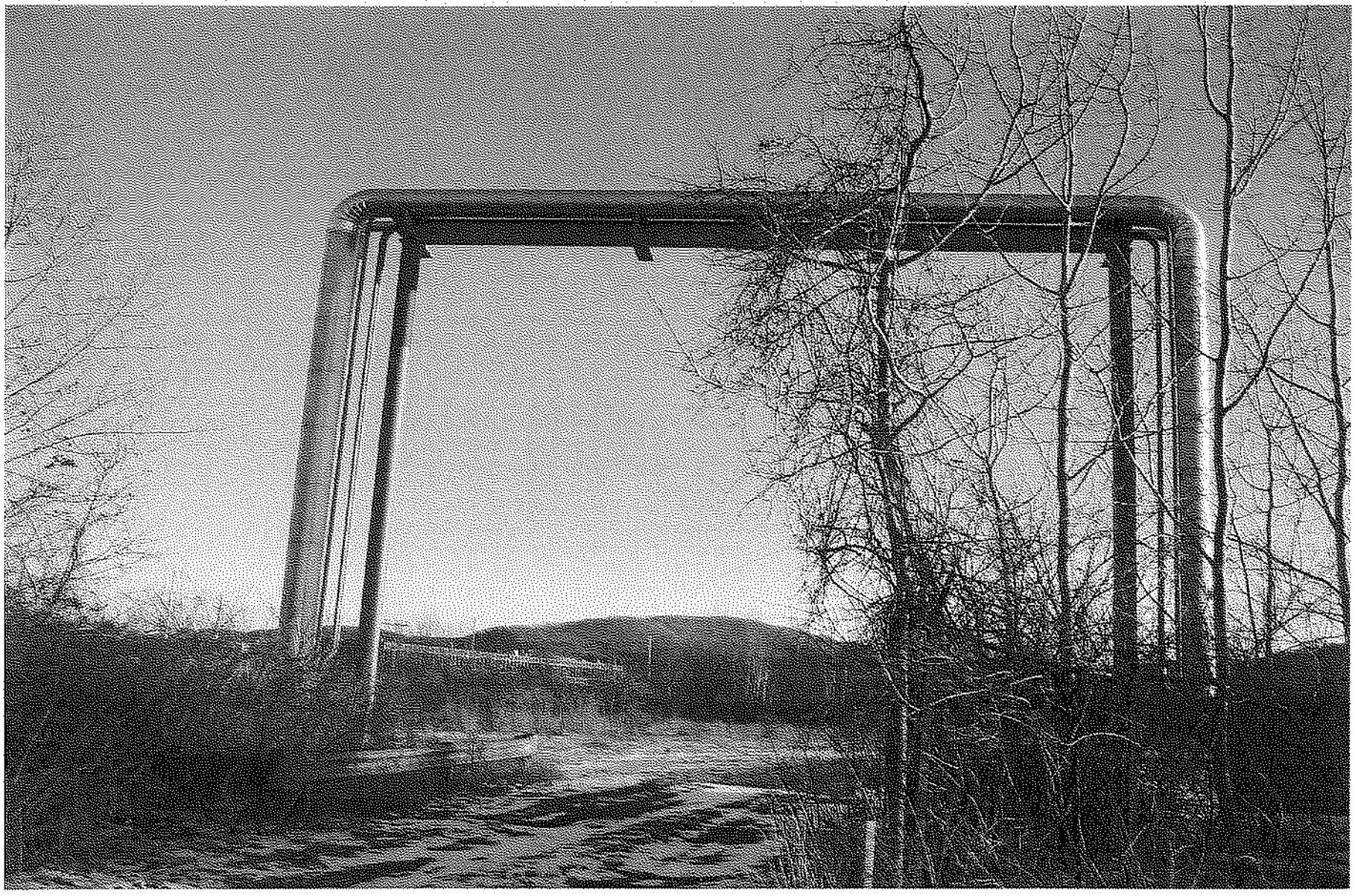


Photo 23: Arch in the former ammonia pipeline located near the intersection of parcels 94.048.1.2, 94.047.28.1and 94.047.29, facing southeast.

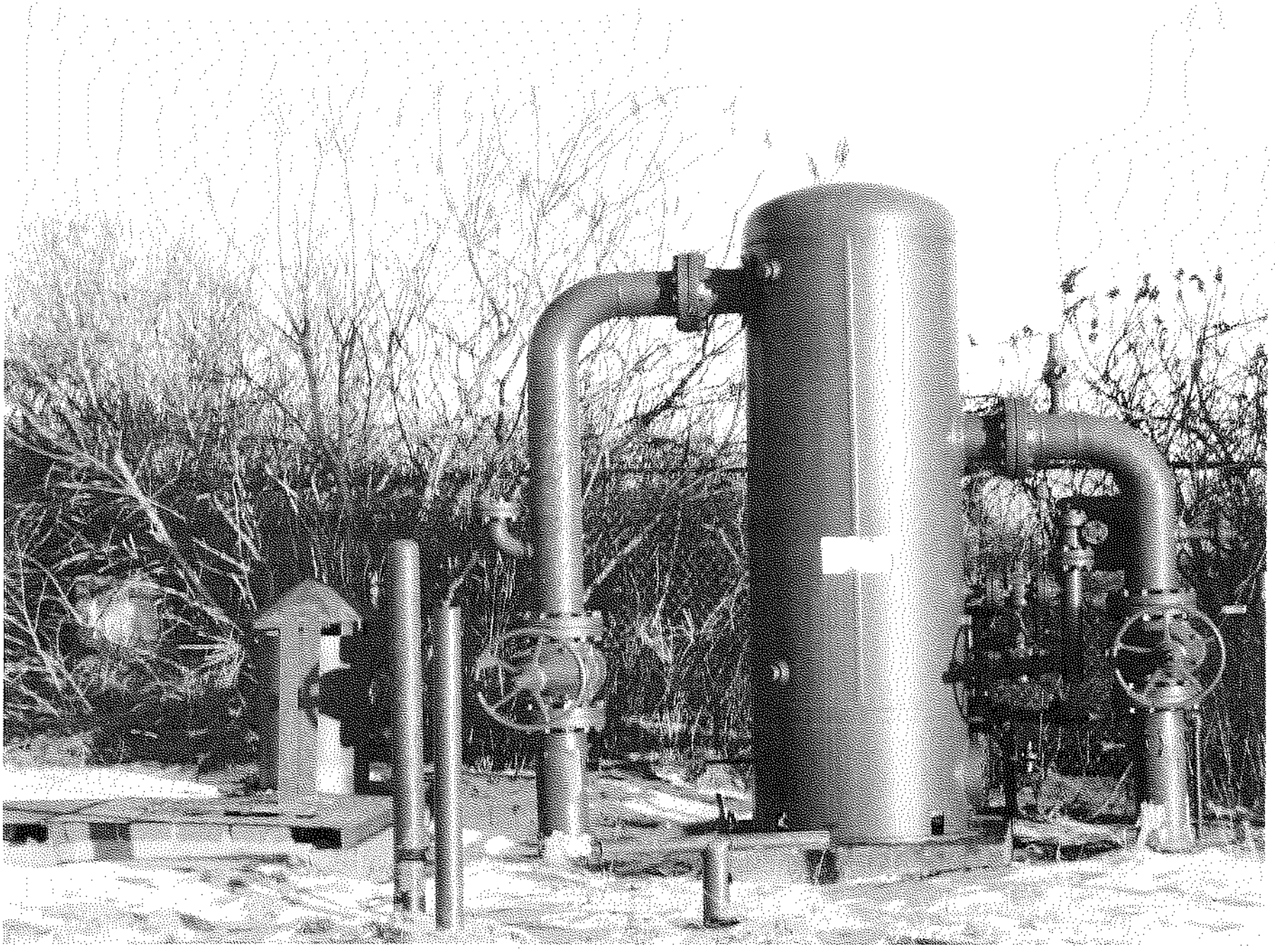


Photo 24: Gas line structure located just northeast of the pipeline arch depicted in the previous photo.

# *Appendix B*

# *EDR Radius Map Report*

# The EDR Radius Map
## with GeoCheck®

**Former Vacuum Oil Company**
**Buffalo Street/Wayne Street**
**Olean, NY 14760**

**Inquiry Number: 1608251.2s**

**February 07, 2006**

EDR® Environmental Data Resources Inc

**The Standard in Environmental Risk Management Information**


440 Wheelers Farms Road
Milford, Connecticut 06461

**Nationwide Customer Service**

Telephone: 1-800-352-0050
Fax: 1-800-231-6802
Internet: www.edrnet.com


FORM STD-TMC

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| Map Findings | 6 |
| Orphan Summary | 111 |
| EPA Waste Codes | EPA-1 |
| Government Records Searched/Data Currency Tracking | GR-1 |

GEOCHECK ADDENDUM

| | |
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***Thank you for your business.***
Please contact EDR at 1-800-352-0050
with any questions or comments.


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# EXECUTIVE SUMMARY

A search of available environmental records was conducted by Environmental Data Resources, Inc (EDR). The report was designed to assist parties seeking to meet the search requirements of EPA's Standards and Practices for All Appropriate Inquiries (40 CFR Part 312), the ASTM Standard Practice for Environmental Site Assessments (E 1527-05) or custom requirements developed for the evaluation of environmental risk associated with a parcel of real estate.

## TARGET PROPERTY INFORMATION

### ADDRESS

BUFFALO STREET/WAYNE STREET
OLEAN, NY 14760

### COORDINATES

| | |
|---|---|
| Latitude (North): | 42.090300 - 42° 5' 25.1" |
| Longitude (West): | 78.443200 - 78° 26' 35.5" |
| Universal Tranverse Mercator: | Zone 17 |
| UTM X (Meters): | 711461.6 |
| UTM Y (Meters): | 4662752.0 |
| Elevation: | 1427 ft. above sea level |

## USGS TOPOGRAPHIC MAP ASSOCIATED WITH TARGET PROPERTY

| | |
|---|---|
| Target Property: | 42078-A4 OLEAN, NY |
| Source: | USGS 7.5 min quad index |

## TARGET PROPERTY SEARCH RESULTS

The target property was not listed in any of the databases searched by EDR.

## DATABASES WITH NO MAPPED SITES

No mapped sites were found in EDR's search of available ("reasonably ascertainable ") government records either on the target property or within the search radius around the target property for the following databases:

## FEDERAL RECORDS

| | |
|---|---|
| **NPL** | National Priority List |
| **Proposed NPL** | Proposed National Priority List Sites |
| **Delisted NPL** | National Priority List Deletions |
| **NPL Liens** | Federal Superfund Liens |
| **RCRA-TSDF** | Resource Conservation and Recovery Act Information |
| **ERNS** | Emergency Response Notification System |
| **HMIRS** | Hazardous Materials Information Reporting System |
| **US ENG CONTROLS** | Engineering Controls Sites List |
| **US INST CONTROL** | Sites with Institutional Controls |
| **DOD** | Department of Defense Sites |

# EXECUTIVE SUMMARY

| | |
|---|---|
| **FUDS** | Formerly Used Defense Sites |
| **US BROWNFIELDS** | A Listing of Brownfields Sites |
| **CONSENT** | Superfund (CERCLA) Consent Decrees |
| **ROD** | Records Of Decision |
| **UMTRA** | Uranium Mill Tailings Sites |
| **ODI** | Open Dump Inventory |
| **TRIS** | Toxic Chemical Release Inventory System |
| **TSCA** | Toxic Substances Control Act |
| **FTTS** | FIFRA/ TSCA Tracking System - FIFRA (Federal Insecticide, Fungicide, & Rodenticide Act)/TSCA (Toxic Substances Control Act) |
| **SSTS** | Section 7 Tracking Systems |
| **PADS** | PCB Activity Database System |
| **MLTS** | Material Licensing Tracking System |
| **MINES** | Mines Master Index File |
| **FINDS** | Facility Index System/Facility Registry System |
| **RAATS** | RCRA Administrative Action Tracking System |

STATE AND LOCAL RECORDS

| | |
|---|---|
| **DEL SHWS** | Delisted Registry Sites |
| **SWF/LF** | Facility Register |
| **SWRCY** | Registered Recycling Facility List |
| **SWTIRE** | Registered Waste Tire Storage & Facility List |
| **MOSF UST** | Major Oil Storage Facilities Database |
| **MOSF AST** | Major Oil Storage Facilities Database |
| **NY Spills** | Spills Information Database |
| **NY Hist Spills** | SPILLS Database |
| **ENG CONTROLS** | Registry of Engineering Controls |
| **INST CONTROL** | Registry of Institutional Controls |
| **VCP** | Voluntary Cleanup Agreements |
| **DRYCLEANERS** | Registered Drycleaners |
| **SPDES** | State Pollutant Discharge Elimination System |
| **AIRS** | Air Emissions Data |

TRIBAL RECORDS

| | |
|---|---|
| **INDIAN RESERV** | Indian Reservations |

EDR PROPRIETARY RECORDS

| | |
|---|---|
| **Manufactured Gas Plants** | EDR Proprietary Manufactured Gas Plants |
| **EDR Auto Stations** | EDR Proprietary Historic Gas Stations |
| **EDR Cleaners** | EDR Proprietary Historic Dry Cleaners |

SURROUNDING SITES: SEARCH RESULTS

Surrounding sites were identified.

Elevations have been determined from the USGS Digital Elevation Model and should be evaluated on a relative (not an absolute) basis. Relative elevation information between sites of close proximity should be field verified. Sites with an elevation equal to or higher than the target property have been differentiated below from sites with an elevation lower than the target property.
Page numbers and map identification numbers refer to the EDR Radius Map report where detailed data on individual sites can be reviewed.

Sites listed in ***bold italics*** are in multiple databases.

Unmappable (orphan) sites are not considered in the foregoing analysis.

# EXECUTIVE SUMMARY

FEDERAL RECORDS

**CERCLIS:**The Comprehensive Environmental Response, Compensation and Liability Information System contains data on potentially hazardous waste sites that have been reported to the USEPA by states, municipalities, private companies and private persons, pursuant to Section 103 of the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA). CERCLIS contains sites which are either proposed to or on the National Priorities List (NPL) and sites which are in the screening and assessment phase for possible inclusion on the NPL.

A review of the CERCLIS list, as provided by EDR, and dated 10/24/2005 has revealed that there is 1 CERCLIS site within approximately 0.625 miles of the target property.

| Equal/Higher Elevation | Address | Dist / Dir | Map ID | Page |
|---|---|---|---|---|
| *VAN DER HORST CORP OF AMERICA* | *314 PENN AVENUE* | *1/4 - 1/2 E* | *G22* | *89* |

**CERCLIS-NFRAP:**As of February 1995. CERCLIS sites designated "No Further Remedial Action Planned" (NFRAP) have been removed from CERCLIS. NFRAP sites may be sites where, following an initial investigation, no contamination was found, contamination was removed quickly without the need for the site to be placed on the NPL, or the contamination was not serious enough to require Federal Superfund Action or NPL consideration. EPA has removed approximately 25,000 NFRAP sites to lift the unintended barriers to the redevelopment of these properties and has archived them as historical records so EPA does not needlessly repeat the investigations in the future. This policy change is part of the EPA's Brownfields Redevelopment Program to help cities, states, private investors and affected citizens to promote economic redevelopment of unproductive urban sites.

A review of the CERC-NFRAP list, as provided by EDR, and dated 10/24/2005 has revealed that there are 2 CERC-NFRAP sites within approximately 0.625 miles of the target property.

| Lower Elevation | Address | Dist / Dir | Map ID | Page |
|---|---|---|---|---|
| FELMONT | 1439 BUFFALO STREET | 1/4 - 1/2 SW | 4 | 15 |
| *CF INDUSTRIES INC OLEAN NITROG* | *1446 BUFFALO STREET* | *1/4 - 1/2 SW* | *B9* | *59* |

**CORRACTS:**CORRACTS is a list of handlers with RCRA Corrective Action Activity. This report shows which nationally-defined corrective action core events have occurred for every handler that has had corrective action activity.

A review of the CORRACTS list, as provided by EDR, and dated 10/13/2005 has revealed that there are 2 CORRACTS sites within approximately 1.125 miles of the target property.

| Equal/Higher Elevation | Address | Dist / Dir | Map ID | Page |
|---|---|---|---|---|
| *LOCTITE CORPORATION* | *211 FRANKLIN STREET* | *1/4 - 1/2 NNE* | *D29* | *105* |

| Lower Elevation | Address | Dist / Dir | Map ID | Page |
|---|---|---|---|---|
| *CF INDUSTRIES INC OLEAN NITROG* | *1446 BUFFALO STREET* | *1/4 - 1/2 SW* | *B9* | *59* |

# EXECUTIVE SUMMARY

**RCRAInfo:**RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act ( RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. RCRAInfo replaces the data recording and reporting abilities of the Resource Conservation and Recovery Information System(RCRIS). The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Conditionally exempt small quantity generators (CESQGs) generate less than 100 kg of hazardous waste, or less than 1 kg of acutely hazardous waste per month. Small quantity generators (SQGs) generate between 100 kg and 1,000 kg of hazardous waste per month Large quantity generators generate over 1,000 kilograms (kg) of hazardous waste, or over 1 kg of acutely hazardous waste per month. Transporters are individuals or entities that move hazardous waste from the generator offsite to a facility that can recycle, treat, store, or dispose of the waste. TSDFs treat, store, or dispose of the waste.

A review of the RCRA-LQG list, as provided by EDR, and dated 12/15/2005 has revealed that there are 2 RCRA-LQG sites within approximately 0.375 miles of the target property.

| Equal/Higher Elevation | Address | Dist / Dir | Map ID | Page |
|---|---|---|---|---|
| ***DRESSER IND INC DRESSER CLARK*** | ***5TH ST*** | ***1/4 - 1/2 SE*** | ***A7*** | ***55*** |
| ***CYTEC OLEAN INCORPORATED*** | ***1405 BUFFALO ST.*** | ***1/4 - 1/2 SSW*** | ***C12*** | ***62*** |

**RCRAInfo:**RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act ( RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. RCRAInfo replaces the data recording and reporting abilities of the Resource Conservation and Recovery Information System(RCRIS). The database includes selective information on sites which generate, transport, store , treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Conditionally exempt small quantity generators (CESQGs) generate less than 100 kg of hazardous waste, or less than 1 kg of acutely hazardous waste per month. Small quantity generators (SQGs) generate between 100 kg and 1,000 kg of hazardous waste per month Large quantity generators generate over 1,000 kilograms (kg) of hazardous waste, or over 1 kg of acutely hazardous waste per month. Transporters are individuals or entities that move hazardous waste from the generator offsite to a facility that can recycle, treat, store, or dispose of the waste. TSDFs treat, store, or dispose of the waste.

A review of the RCRA-SQG list, as provided by EDR, and dated 12/15/2005 has revealed that there are 12 RCRA-SQG sites within approximately 0.375 miles of the target property.

| Equal/Higher Elevation | Address | Dist / Dir | Map ID | Page |
|---|---|---|---|---|
| ***RUPP RENTAL & SALES CORP*** | ***355 FRANKLIN ST*** | ***1/4 - 1/2 N*** | ***3*** | ***15*** |
| ***R G SCOTT*** | ***900 W CONNELL ST*** | ***1/4 - 1/2 NNE*** | ***D14*** | ***79*** |
| ***ADVANCED MONOLYTHIC CERAMICS*** | ***1010 WAYNE ST*** | ***1/4 - 1/2 SSE*** | ***E16*** | ***83*** |
| NYS POLICE WESTERN REGIONAL CR | 722 HOMER ST | 1/4 - 1/2 NW | F17 | 83 |
| ***NYS POLICE WESTERN CRIME LABOR*** | ***722 HOMER ST*** | ***1/4 - 1/2 NW*** | ***F20*** | ***88*** |
| ***R G SCOTT*** | ***314 PENN AVE*** | ***1/4 - 1/2 E*** | ***G21*** | ***88*** |
| ***VAN DER HORST CORP OF AMERICA*** | ***314 PENN AVENUE*** | ***1/4 - 1/2 E*** | ***G22*** | ***89*** |
| VAN DER HORS | 314 PENN AVENUE | 1/4 - 1/2 E | G23 | 91 |
| ***UNI-MARTS INC*** | ***9TH AT WAYNE STS*** | ***1/4 - 1/2 SSE*** | ***E26*** | ***97*** |

| Lower Elevation | Address | Dist / Dir | Map ID | Page |
|---|---|---|---|---|
| ***CF INDUSTRIES INC OLEAN NITROG*** | ***1446 BUFFALO STREET*** | ***1/4 - 1/2 SW*** | ***B9*** | ***59*** |
| ***FELMONT OIL CORP CHEMICAL DIV*** | ***1446 BUFFALO ST*** | ***1/4 - 1/2 SW*** | ***B10*** | ***61*** |
| ***AGWAY OLEAN NITROGEN COMPLEX*** | ***1446 BUFFALO ST*** | ***1/4 - 1/2 SW*** | ***B11*** | ***61*** |

# EXECUTIVE SUMMARY

## STATE AND LOCAL RECORDS

**HSWDS:**The List includes any known or suspected hazardous substance waste disposal sites. Also included are sites delisted from the Registry of Inactive Hazardous Waste Disposal Sites and non-registry sites that U.S. EPA Preliminary Assessment (PA) reports or Site Investigation (SI) reports were prepared. Hazardous Substance Waste Disposal Sites are eligible to be Superfund sites now that the New York State Superfund has been refinanced and changed. This means that the study inventory has served its purpose and will no longer be maintained as a separate entity The latest version of the study is frozen in time. The sites on the study will not automatically be made superfund sites, rather each site will be further evaluated for listing in the registry. So overtime they will be added to the registry or not.

A review of the HSWDS list, as provided by EDR, and dated 09/01/2002 has revealed that there is 1 HSWDS site within approximately 0.625 miles of the target property.

| Lower Elevation | Address | Dist / Dir | Map ID | Page |
|---|---|---|---|---|
| *AGWAY FELMONT* | *BUFFALO STREET* | *1/8 - 1/4SW* | *1* | *6* |

**SHWS:**The State Hazardous Waste Sites records are the states' equivalent to CERCLIS. These sites may or may not already be listed on the federal CERCLIS list. Priority sites planned for cleanup using state funds (state equivalent of Superfund) are identified along with sites where cleanup will be paid for by potentially responsible parties. The data come from the Department of Environmental Conservation's Inactive Hazardous waste Disposal Sites in New York State.

A review of the SHWS list, as provided by EDR, and dated 12/30/2005 has revealed that there is 1 SHWS site within approximately 1.125 miles of the target property.

| Equal/Higher Elevation | Address | Dist / Dir | Map ID | Page |
|---|---|---|---|---|
| VAN DER HORST CORPORATION | 314 PENN AVENUE | 1/4 - 1/2E | G24 | 91 |
| Class Code: Site is properly closed - requires continued management. | | | | |

**LTANKS:**Leaking Storage Tank Incident Reports. These records contain an inventory of reported leaking storage tank incidents reported from 4/1/86 through the most recent update. They can be either leaking underground storage tanks or leaking aboveground storage tanks. The causes of the incidents are tank test failures, tank failures or tank overfills

A review of the LTANKS list, as provided by EDR, and dated 12/08/2005 has revealed that there are 6 LTANKS sites within approximately 0.625 miles of the target property.

| Equal/Higher Elevation | Address | Dist / Dir | Map ID | Page |
|---|---|---|---|---|
| *CYTEC OLEAN INCORPORATED* | *1405 BUFFALO ST.* | *1/4 - 1/2SSW* | *C12* | *62* |
| Date Closed: 09/14/90 | | | | |
| Date Closed: 12/30/91 | | | | |
| *NYS POLICE/NYSOGS* | *722 HOMER STREET* | *1/4 - 1/2NW* | *F19* | *85* |
| Date Closed: 03/17/99 | | | | |
| *MCKEAN MACHINERY SALES, INC.* | *921 N.4TH ST.* | *1/4 - 1/2E* | *G27* | *97* |
| Date Closed: 02/12/98 | | | | |
| *PROPOSED HAMPTON INN SITE* | *1128 BUFFALO STREET* | *1/4 - 1/2S* | *30* | *108* |
| Date Closed: 06/28/96 | | | | |

| Lower Elevation | Address | Dist / Dir | Map ID | Page |
|---|---|---|---|---|
| *AGWAY FELMONT* | *BUFFALO STREET* | *1/8 - 1/4SW* | *1* | *6* |
| Date Closed: 04/28/87 | | | | |

# EXECUTIVE SUMMARY

| Lower Elevation | Address | Dist / Dir | Map ID | Page |
|---|---|---|---|---|
| *BELL ATLANTIC GARAGE*<br>Date Closed: 08/05/98 | *1480 BUFFALO STREET* | *1/4 - 1/2 WSW* | *28* | *102* |

**HIST LTANKS:**A listing of leaking underground and aboveground storage tanks. The causes of the incidents are tank test failures, tank failures or tank overfills. In 2002, the Department of Environmental Conservation stopped providing updates to its original Spills Information Database. This database includes fields that are no longer available from the NYDEC as of January 1, 2002. Current information may be found in the NY LTANKS database.

A review of the HIST LTANKS list, as provided by EDR, and dated 01/01/2002 has revealed that there are 6 HIST LTANKS sites within approximately 0.625 miles of the target property.

| Equal/Higher Elevation | Address | Dist / Dir | Map ID | Page |
|---|---|---|---|---|
| *CYTEC OLEAN INCORPORATED* | *1405 BUFFALO ST.* | *1/4 - 1/2 SSW* | *C12* | *62* |
| *NYS POLICE/NYSOGS* | *722 HOMER STREET* | *1/4 - 1/2 NW* | *F19* | *85* |
| *MCKEAN MACHINERY SALES, INC.* | *921 N.4TH ST.* | *1/4 - 1/2 E* | *G27* | *97* |
| *PROPOSED HAMPTON INN SITE* | *1128 BUFFALO STREET* | *1/4 - 1/2 S* | *30* | *108* |

| Lower Elevation | Address | Dist / Dir | Map ID | Page |
|---|---|---|---|---|
| *AGWAY FELMONT* | *BUFFALO STREET* | *1/8 - 1/4 SW* | *1* | *6* |
| *BELL ATLANTIC GARAGE* | *1480 BUFFALO STREET* | *1/4 - 1/2 WSW* | *28* | *102* |

**UST:**The Underground Storage Tank database contains registered USTs. USTs are regulated under Subtitle I of the Resource Conservation and Recovery Act (RCRA). The data come from the Department of Environmental Conservation's Petroleum Bulk Storage (PBS) Database

A review of the UST list, as provided by EDR, and dated 01/01/2002 has revealed that there are 6 UST sites within approximately 0.375 miles of the target property.

| Equal/Higher Elevation | Address | Dist / Dir | Map ID | Page |
|---|---|---|---|---|
| *DRESSER RAND* | *NORTH 5TH ST* | *1/4 - 1/2 SE* | *A6* | *20* |
| CONAP INC | 1405 BUFFALO ST | 1/4 - 1/2 SSW | C13 | 78 |
| WESTERN REGIONAL CRIME LABORAT | 722 HOMER STREET | 1/4 - 1/2 NW | F18 | 84 |
| *VAN DER HORST CORP OF AMERICA* | *314 PENN AVENUE* | *1/4 - 1/2 E* | *G22* | *89* |
| UNI-MART #05019 | 9TH AT WAYNE ST. | 1/4 - 1/2 SSE | E25 | 94 |

| Lower Elevation | Address | Dist / Dir | Map ID | Page |
|---|---|---|---|---|
| *VAN DER HORST CORP OF AMERICA* | *900 W CONNELL ST* | *1/8 - 1/4 W* | *2* | *13* |

**CBS UST:**Chemical Bulk Storage Database. Registration data collected as required by 6 NYCRR Part 596. It includes facilities storing hazardous substances listed in 6 NYCRR Part 597, in aboveground tanks with capacities of 185 gallons or greater, and/or in underground tanks of any size. Includes facilities registered (and closed) since effective date of CBS regulations (July 15, 1988) through the date request is processed.

A review of the CBS UST list, as provided by EDR, and dated 01/01/2002 has revealed that there is 1

CBS UST site within approximately 0.375 miles of the target property.

| Equal/Higher Elevation | Address | Dist / Dir | Map ID | Page |
|---|---|---|---|---|
| *DRESSER RAND TURBO PRODUCTS DI* | *PO BOX 560* | *1/4 - 1/2 SE* | *A5* | *16* |

**AST:**The Aboveground Storage Tank database contains registered ASTs. The data come from the Department of Environmental Conservation's Petroleum Bulk Storage (PBS) Database.

A review of the AST list, as provided by EDR, and dated 01/01/2002 has revealed that there are 4 AST sites within approximately 0.375 miles of the target property.

| Equal/Higher Elevation | Address | Dist / Dir | Map ID | Page |
|---|---|---|---|---|
| *DRESSER RAND* | *NORTH 5TH ST* | *1/4 - 1/2 SE* | *A6* | *20* |
| ANDERSON EQUIPMENT COMPANY (NY | 355 EAST FRANKLIN STREE | 1/4 - 1/2 NNE | D15 | 80 |
| *VAN DER HORST CORP OF AMERICA* | *314 PENN AVENUE* | *1/4 - 1/2 E* | *G22* | *89* |
| **Lower Elevation** | **Address** | **Dist / Dir** | **Map ID** | **Page** |
| *VAN DER HORST CORP OF AMERICA* | *900 W CONNELL ST* | *1/8 - 1/4 W* | *2* | *13* |

**CBS AST:**Chemical Bulk Storage Database. Registration data collected as required by 6 NYCRR Part 596. It includes facilities storing hazardous substances listed in 6 NYCRR Part 597, in aboveground tanks with capacities of 185 gallons or greater, and/or in underground tanks of any size. Includes facilities registered (and closed) since effective date of CBS regulations (July 15, 1988) through the date request is processed.

A review of the CBS AST list, as provided by EDR, and dated 01/01/2002 has revealed that there are 2 CBS AST sites within approximately 0.375 miles of the target property.

| Equal/Higher Elevation | Address | Dist / Dir | Map ID | Page |
|---|---|---|---|---|
| *DRESSER RAND TURBO PRODUCTS DI* | *PO BOX 560* | *1/4 - 1/2 SE* | *A5* | *16* |
| *CYTEC OLEAN INCORPORATED* | *1405 BUFFALO ST.* | *1/4 - 1/2 SSW* | *C12* | *62* |

**BROWNFIELDS:**Brownfields Site List

A review of the BROWNFIELDS list, as provided by EDR, and dated 12/30/2005 has revealed that there is 1 BROWNFIELDS site within approximately 0.625 miles of the target property.

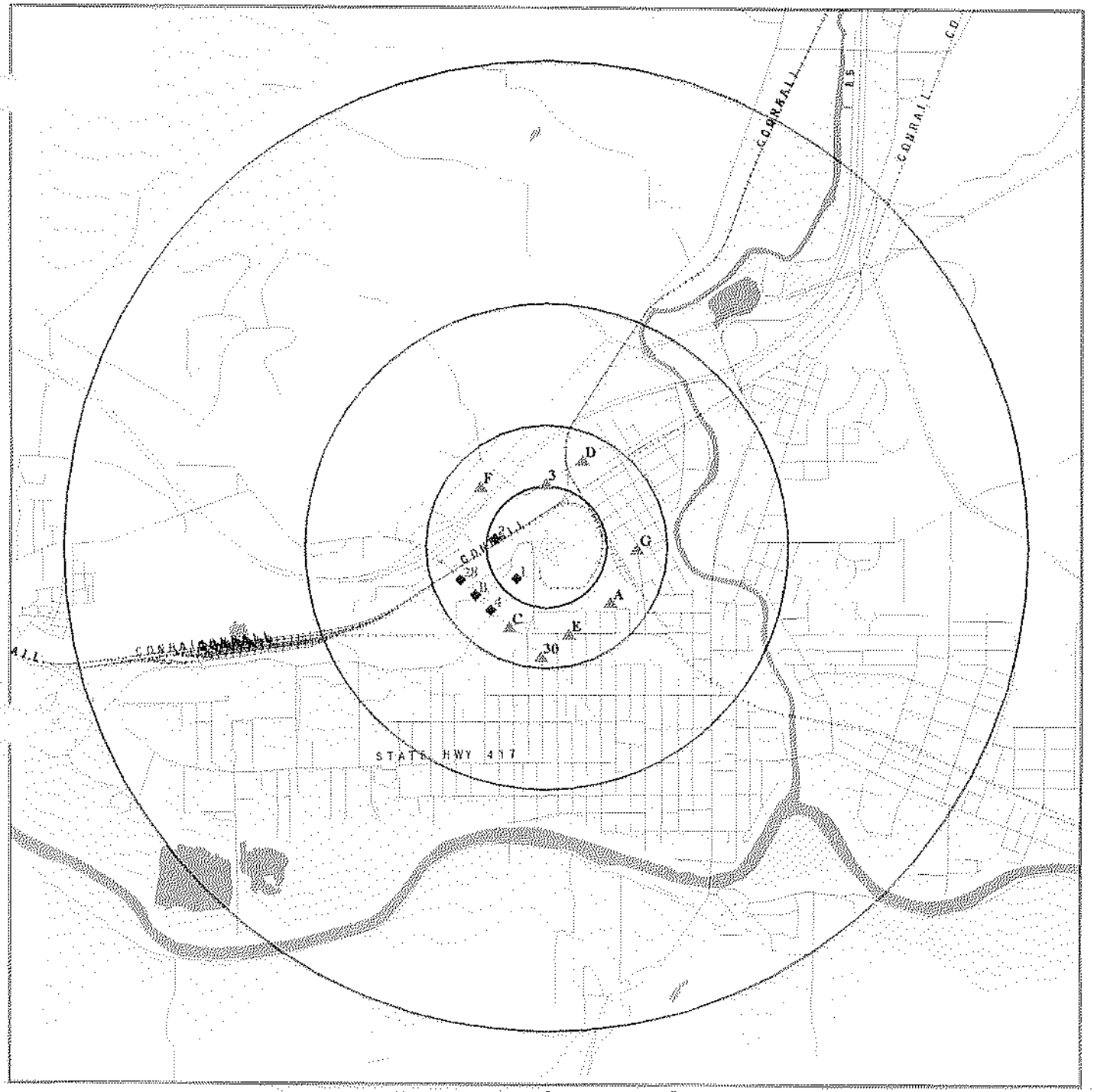
| Lower Elevation | Address | Dist / Dir | Map ID | Page |
|---|---|---|---|---|
| *FORMER FELMONT OIL SITE* | *1446 BUFFALO STREET* | *1/4 - 1/2 SW* | *B8* | *57* |

# EXECUTIVE SUMMARY

Due to poor or inadequate address information, the following sites were not mapped:

| Site Name | Database(s) |
|---|---|
| VAN DER HORST PLANT NO. 2 | SHWS |
| OLEAN WELL FIELD; TCE CONTAMINATIO | SHWS |
| OLEAN STEEL SALES & SERVICE | CERCLIS, RCRA-SQG, FINDS |
| LEE'S SEPTIC SERVICE | SWF/LF |
| LEAKING TRUCK ON ROUTE 16 | LTANKS, HIST LTANKS |
| CRUDE OIL LEAK | LTANKS |
| MEYER BARNARD CHEV GEO INC | RCRA-SQG, FINDS |
| NYSDOT | RCRA-SQG, FINDS |
| NYSDOT | RCRA-SQG, FINDS |
| NYSDOT BIN 1092061&2 | RCRA-SQG, FINDS |
| NYSDOT BIN 1092040 | RCRA-SQG, FINDS |
| C G S T - HEBRON MEASURING STATION | RCRA-SQG |
| NYSDOT | RCRA-SQG, FINDS |
| NYSDOT D256580 BIN 1092071 | RCRA-SQG, FINDS |
| NYSDOT D256580 BIN 1092072 | RCRA-SQG, FINDS |
| NYSDOT D256580 BIN 1092081 | RCRA-SQG, FINDS |
| NYSDOT D256580 BIN 1092082 | RCRA-SQG, FINDS |
| OIL IN CREEK | NY Spills, NY Hist Spills |
| OIL IN POND IN FORNESS PK | NY Spills, NY Hist Spills |
| CATTARAUGUS COUNTY DEV. | NY Spills, NY Hist Spills |
| OIL IN GRAVEL PIT WATER | NY Spills, NY Hist Spills |
| CRUDE OIL WELL | NY Spills, NY Hist Spills |
| CONRAIL | NY Spills, NY Hist Spills |
| ANTIFREEZE SPILL | NY Spills |
| HASTING ROAD BRIDGE | NY Spills, NY Hist Spills |
| FORMER SOCONY VACUUM | NY Spills |
| FORMER HONDA DEALER | NY Spills, NY Hist Spills |
| JOHN WISE OIL LEASE | NY Spills, NY Hist Spills |
| OIL WELL-OLEAN | NY Spills, NY Hist Spills |
| NYSEG - CRUDE OIL LINE | NY Spills, NY Hist Spills |
| NYSEG CRUDE OIL #2 | NY Spills, NY Hist Spills |
| CAMPBELL OIL CO | NY Spills, NY Hist Spills |
| CAMPBELL OIL | NY Spills, NY Hist Spills |
| BRADNER STATIUM | NY Spills, NY Hist Spills |
| OLEAN STEEL SALES | NY Spills, NY Hist Spills |
| TERRY'S AUTOMOTIVE | NY Spills, NY Hist Spills |
| COLUMBIA GAS TRANSMISSION | NY Spills, NY Hist Spills |
| ROUTE 17 | NY Spills, NY Hist Spills |
| ROUNDS GARAGE | NY Spills, NY Hist Spills |
| NIAGARA MOHAWK POLE | NY Spills, NY Hist Spills |
| NYSDEC - OLEAN | NY Spills, NY Hist Spills |
| GREAT WALL CHINESE REST. | NY Spills, NY Hist Spills |
| ON THE ROADWAY | NY Spills |
| OIL DUMPING - STORM SEWER | NY Spills, NY Hist Spills |
| CRUDE OIL LEAK - PIPELINE | NY Spills, NY Hist Spills |
| OIL IN PIPE OUTFALL | NY Spills, NY Hist Spills |

# OVERVIEW MAP - 1608251.2s



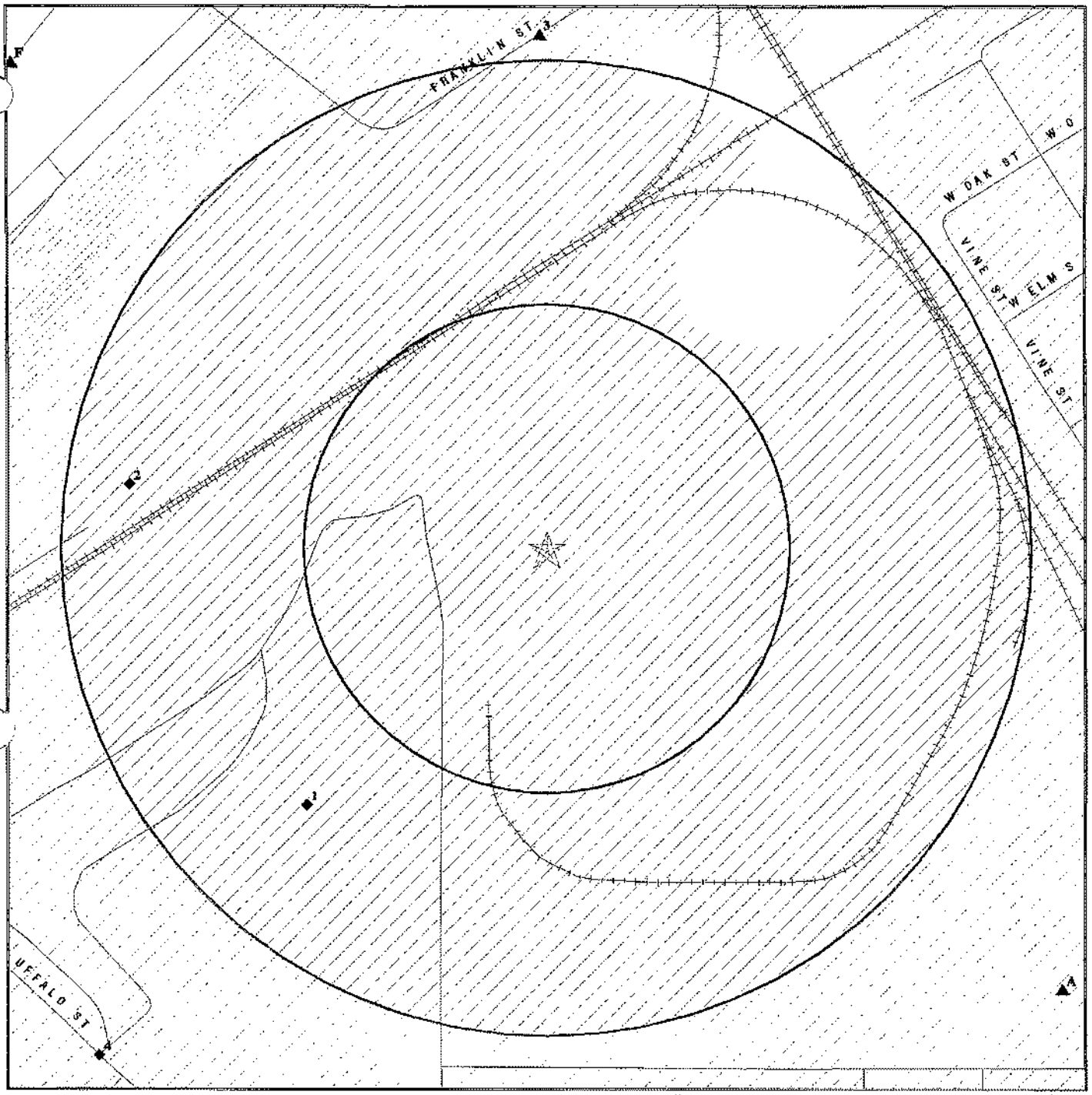

- Target Property
- Sites at elevations higher than or equal to the target property
- Sites at elevations lower than the target property
- Manufactured Gas Plants
- National Priority List Sites
- Landfill Sites
- Dept. Defense Sites
- Indian Reservations BIA
- Oil & Gas pipelines
- 100-year flood zone
- 500-year flood zone
- Federal Wetlands
- State Wetlands

This report includes Interactive Map Layers to display and/or hide map information. The legend includes only those icons for the default map view.

| | | | |
|---|---|---|---|
| SITE NAME: | Former Vacuum Oil Company | CLIENT: | AMEC Earth & Environmental |
| ADDRESS: | Buffalo Street/Wayne Street<br>Olean NY 14760 | CONTACT: | Christy Benes |
| | | INQUIRY #: | 1608251.2s |
| LAT/LONG: | 42.0903 / 78.4432 | DATE: | February 07, 2006 |

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# DETAIL MAP - 1608251.2s




- Target Property
- Sites at elevations higher than or equal to the target property
- Sites at elevations lower than the target property
- Manufactured Gas Plants
- Sensitive Receptors
- National Priority List Sites
- Landfill Sites
- Dept. Defense Sites
- Indian Reservations BIA
- Oil & Gas pipelines
- 100-year flood zone
- 500-year flood zone

This report includes Interactive Map Layers to display and/or hide map information. The legend includes only those icons for the default map view.

| | |
|---|---|
| SITE NAME: Former Vacuum Oil Company | CLIENT: AMEC Earth & Environmental |
| ADDRESS: Buffalo Street/Wayne Street<br>Olean NY 14760 | CONTACT: Christy Benes<br>INQUIRY #: 1608251.2s |
| LAT/LONG: 42.0903 / 78.4432 | DATE: February 07, 2006 |

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# MAP FINDINGS SUMMARY

| Database | Target Property | Search Distance (Miles) | < 1/8 | 1/8 - 1/4 | 1/4 - 1/2 | 1/2 - 1 | > 1 | Total Plotted |
|---|---|---|---|---|---|---|---|---|
| **FEDERAL RECORDS** | | | | | | | | |
| NPL | | 1.125 | 0 | 0 | 0 | 0 | 0 | 0 |
| Proposed NPL | | 1.125 | 0 | 0 | 0 | 0 | 0 | 0 |
| Delisted NPL | | 1.125 | 0 | 0 | 0 | 0 | 0 | 0 |
| NPL Liens | | 0.125 | 0 | NR | NR | NR | NR | 0 |
| CERCLIS | | 0.625 | 0 | 0 | 1 | 0 | NR | 1 |
| CERC-NFRAP | | 0.625 | 0 | 0 | 2 | 0 | NR | 2 |
| CORRACTS | | 1.125 | 0 | 0 | 2 | 0 | 0 | 2 |
| RCRA TSD | | 0.625 | 0 | 0 | 0 | 0 | NR | 0 |
| RCRA Lg. Quan. Gen. | | 0.375 | 0 | 0 | 2 | NR | NR | 2 |
| RCRA Sm. Quan. Gen. | | 0.375 | 0 | 0 | 12 | NR | NR | 12 |
| ERNS | | 0.125 | 0 | NR | NR | NR | NR | 0 |
| HMIRS | | 0.125 | 0 | NR | NR | NR | NR | 0 |
| US ENG CONTROLS | | 0.625 | 0 | 0 | 0 | 0 | NR | 0 |
| US INST CONTROL | | 0.625 | 0 | 0 | 0 | 0 | NR | 0 |
| DOD | | 1.125 | 0 | 0 | 0 | 0 | 0 | 0 |
| FUDS | | 1.125 | 0 | 0 | 0 | 0 | 0 | 0 |
| US BROWNFIELDS | | 0.625 | 0 | 0 | 0 | 0 | NR | 0 |
| CONSENT | | 1.125 | 0 | 0 | 0 | 0 | 0 | 0 |
| ROD | | 1.125 | 0 | 0 | 0 | 0 | 0 | 0 |
| UMTRA | | 0.625 | 0 | 0 | 0 | 0 | NR | 0 |
| ODI | | 0.625 | 0 | 0 | 0 | 0 | NR | 0 |
| TRIS | | 0.125 | 0 | NR | NR | NR | NR | 0 |
| TSCA | | 0.125 | 0 | NR | NR | NR | NR | 0 |
| FTTS | | 0.125 | 0 | NR | NR | NR | NR | 0 |
| SSTS | | 0.125 | 0 | NR | NR | NR | NR | 0 |
| PADS | | 0.125 | 0 | NR | NR | NR | NR | 0 |
| MLTS | | 0.125 | 0 | NR | NR | NR | NR | 0 |
| MINES | | 0.375 | 0 | 0 | 0 | NR | NR | 0 |
| FINDS | | 0.125 | 0 | NR | NR | NR | NR | 0 |
| RAATS | | 0.125 | 0 | NR | NR | NR | NR | 0 |
| **STATE AND LOCAL RECORDS** | | | | | | | | |
| HSWDS | | 0.625 | 0 | 1 | 0 | 0 | NR | 1 |
| State Haz. Waste | | 1.125 | 0 | 0 | 1 | 0 | 0 | 1 |
| DEL SHWS | | 1.125 | 0 | 0 | 0 | 0 | 0 | 0 |
| State Landfill | | 0.625 | 0 | 0 | 0 | 0 | NR | 0 |
| SWRCY | | 0.625 | 0 | 0 | 0 | 0 | NR | 0 |
| SWTIRE | | 0.625 | 0 | 0 | 0 | 0 | NR | 0 |
| LTANKS | | 0.625 | 0 | 1 | 5 | 0 | NR | 6 |
| HIST LTANKS | | 0.625 | 0 | 1 | 5 | 0 | NR | 6 |
| UST | | 0.375 | 0 | 1 | 5 | NR | NR | 6 |
| CBS UST | | 0.375 | 0 | 0 | 1 | NR | NR | 1 |
| MOSF UST | | 0.625 | 0 | 0 | 0 | 0 | NR | 0 |
| AST | | 0.375 | 0 | 1 | 3 | NR | NR | 4 |
| CBS AST | | 0.375 | 0 | 0 | 2 | NR | NR | 2 |
| MOSF AST | | 0.625 | 0 | 0 | 0 | 0 | NR | 0 |
| NY Spills | | 0.250 | 0 | 0 | NR | NR | NR | 0 |

# MAP FINDINGS SUMMARY

| Database | Target Property | Search Distance (Miles) | < 1/8 | 1/8 - 1/4 | 1/4 - 1/2 | 1/2 - 1 | > 1 | Total Plotted |
|---|---|---|---|---|---|---|---|---|
| NY Hist Spills | | 0.250 | 0 | 0 | NR | NR | NR | 0 |
| ENG CONTROLS | | 0.625 | 0 | 0 | 0 | 0 | NR | 0 |
| INST CONTROL | | 0.625 | 0 | 0 | 0 | 0 | NR | 0 |
| VCP | | 0.625 | 0 | 0 | 0 | 0 | NR | 0 |
| DRYCLEANERS | | 0.375 | 0 | 0 | 0 | NR | NR | 0 |
| BROWNFIELDS | | 0.625 | 0 | 0 | 1 | 0 | NR | 1 |
| SPDES | | 0.125 | 0 | NR | NR | NR | NR | 0 |
| AIRS | | 0.125 | 0 | NR | NR | NR | NR | 0 |
| **TRIBAL RECORDS** | | | | | | | | |
| INDIAN RESERV | | 1.125 | 0 | 0 | 0 | 0 | 0 | 0 |
| **EDR PROPRIETARY RECORDS** | | | | | | | | |
| Manufactured Gas Plants | | 1.125 | 0 | 0 | 0 | 0 | 0 | 0 |
| EDR Auto Stations | | 0.375 | 0 | 0 | 0 | NR | NR | 0 |
| EDR Cleaners | | 0.375 | 0 | 0 | 0 | NR | NR | 0 |

NOTES:

TP = Target Property

NR = Not Requested at this Search Distance

Sites may be listed in more than one database

1 SW 1/8-1/4 952 ft. **AGWAY FELMONT**
***BUFFALO STREET***
**OLEAN, NY 14760**

**LTANKS 1000353052**
**HSWDS N/A**
**HIST LTANKS**

Relative: Lower

Actual: 1425 ft.

NY HSWDS:

| | | | |
|---|---|---|---|
| Facility ID: | HS9003 | EPA ID: | None |
| Facility Status: | Unknown | | |
| Owner Type: | Puplic | | |
| Owner: | Agway Incorporated | | |
| Owner Address | POBox 4933 | | |
| | Syracuse, NY 13321-4933 | | |
| Owner Phone: | (315)477-6431 | | |
| Operator Type: | Puplic | | |
| Operator: | Same | | |
| Operator Address | Same | | |
| Operator Phone: | Same | | |
| Registry: | D | | |
| Registry Site ID: | 905001 | RCRA Permitted: | Unknown |
| Quadrange: | Unknown | Lat/Long: | Unknown / Unknown |
| Acres: | 0.00 | | |
| Operator Date: | Unknown | Close Date: | Unknown |
| Completed: | Unknown | Active: | Unknown |
| Region: | 9 | | |

| | |
|---|---|
| Volatile Organic Compounds Disposed: | No |
| Semi Volatile Organic Compounds Disposed: | No |
| PCB's Disposed: | No |
| Pesticides Disposed: | No |
| Metals Disposed: | No |
| Asbestos Disposed: | No |
| Analytical Info Exists for Air: | Not reported |
| Analytical Info Exists for Ground: | None |
| Analytical Info Exists for Surface: | Not reported |
| Analytical Info Exists for Sediments: | Not reported |
| Analytical Info Exists for Surface Soil: | Not reported |
| Analytical Info Exists for Substance: | Not reported |
| Analytical Info Exists for Waste: | Not reported |
| Analytical Info Exists for Leachate: | Not reported |
| Analytical Info Exists for EP Toxicity: | Not reported |
| Analytical Info Exists for TCLP: | Not reported |
| Site Poses Threat to Environment/Public Health: | Unknown |
| Surface Water Contamination: | Unknown |
| Surface Water Body Class: | Unknown |
| Groundwater Contamination: | Unknown |
| Groundwater Classification: | Unknown |
| Drinking Water Contamination: | Unknown |
| Drinking Water Supply is Active: | Unknown |
| Any Known Fish or Wildlife: | Unknown |
| Hazardous Exposure: | Unknown |
| Site Has Controlled Acess: | Unknown |
| Ambient Air Contamination: | Unknown |
| Direct Contact: | Unknown |
| EPA Hazardous Ranking System Score: | None |

| | |
|---|---|
| Agencies: | NYSDEC-DOW |
| Air: | Not reported |
| Building: | Not reported |
| Site Description: | THE SITE IS NOT FELMONT OIL(905007), IN OLEAN, NY. AGWAY(905001) LIES ADJACENT TO FELMONT OIL. |
| Drink: | Not reported |

**AGWAY FELMONT (Continued)** **1000353052**

Eptox: Not reported
Fish: Not reported
Ground: Not reported
Hazardous Threat: AMMONIA NITRATES
A NITROGEN FERTILIZER PLANT OPERATED FROM 1966-1983. AMMONIA AND NITRATE CONTAMINATION RESULTED IN GROUNWATER (PRINCIPAL AQUIFER) CONTAMINATION. DEC ORDERED GROUNDWATER RESTORATION FROM 1977 - 1985.
Leachate: Not reported
Preparer: JULIE WELCH ENVENGRTECH2 NYSDEC JULY 1, 1994
Sediment: Not reported
Soil: Not reported
Surface: Not reported
Status: Not reported
Surface Soil: Not reported
Surface: Not reported
TCLP: Not reported
Waste: Not reported

LTANKS:

| | | | |
|---|---|---|---|
| Spill Number: | 8700333 | Region of Spill: | 9 |
| Facility ID : | 8700333 | DER Facility ID : | 277765 |
| Site ID : | 61772 | CID : | Not reported |
| Spill Date: | 04/11/87 | Reported to Dept: | 04/11/87 |
| Referred To : | Not reported | DEC Region : | 9 |
| Water Affected: | Not reported | Spill Source: | RAILROAD CAR |
| Spill Cause: | TANK FAILURE | | |
| Facility Address 2: | Not reported | Facility Tele: | Not reported |
| Investigator: | MJHINTON | SWIS: | 3200 |
| Caller Name: | Not reported | Caller Agency: | Not reported |
| Caller Phone: | Not reported | Caller Extension: | Not reported |
| Notifier Name: | Not reported | Notifier Agency: | Not reported |
| Notifier Phone: | Not reported | Notifier Extension: | Not reported |
| Spiller Contact: | Not reported | Spiller Phone: | Not reported |
| Spiller: | Not reported | | |

Spiller Company : CONRAIL
Spiller Address: HYDE PARK BOULEVARD
NIAGARA FALLS, NY
Spiller County : 001
Spill Class: Not reported
**Spill Closed Dt: 04/28/87**
Spill Notifier: RESPONSIBLE PARTY
Cleanup Ceased: 04/28/87
Last Inspection: / /
Cleanup Meets Standard: True
Recommended Penalty: Penalty Not Recommended
UST Involvement: False
Spill Record Last Update: 05/04/87
Date Spill Entered In Computer Data File: 04/14/87
Remediation Phase : 0
Program Number : 8700333
Material
Material ID : 470335
Site ID : 61772
Operable Unit : 01
Operable Unit ID : 906401
Material Code : 0039A
Material Name : SULFURIC ACID
Case No. : 07664939

**AGWAY FELMONT (Continued)** 1000353052

Material FA : Hazardous Material
Quantity : Not reported
Units : G
Recovered : Not reported
Resource Affected - Soil : Yes
Resource Affected - Air : No
Resource Affected - Indoor Air : No
Resource Affected - Groundwater : No
Resource Affected - Surface Water : No
Resource Affected - Drinking Wtr : No
Resource Affected - Sewer : No
Resource Affected - Impervious Surface : No
Resource Affected - Subway : No
Resource Affected - Utility : No
Resource Affected - Impervious Surface : No
Oxygenate : False
Tank Test
Spill Tank Test : Not reported
Site ID : Not reported
Tank Number : Not reported
Tank Size : Not reported
Test Method : Not reported
Leak Rate : Not reported
Gross Fail : Not reported
Modified By : Not reported
Last Modified : Not reported
Test Method : Not reported
DEC Remarks : Prior to Sept, 2004 data translation this spill Lead DEC Field was "MJH" / / : NOTIFIED NCHD, ROSSITE, 04/11/87 1535; NCHD 04/11/87, CLEANUP REQUIRED AND UNDERWAY. / / : NCHD INVESTIGATED AND SUBMITTED REPORT, SATISFIED W/ CLEANUP NO FURTHE R ACTION REQUIRED.
Remark: Not reported

HIST LTANKS:
Spill Number: 6080623 Region of Spill: 8
Spill Date: 06/23/1980 Reported to Dept: 09/26/80 16:00
Water Affected: Not reported Spill Source: Unknown
Resource Affectd: Air
Spill Cause: Tank Failure
Facility Contact: Not reported Facility Tele: Not reported
Investigator: AS SWIS: 18
Caller Name: Not reported Caller Agency: Not reported
Caller Phone: Not reported Caller Extension: Not reported
Notifier Name: Not reported Notifier Agency: Not reported
Notifier Phone: Not reported Notifier Extension: Not reported
Spiller Contact: Not reported Spiller Phone: Not reported
Spiller: CONRAIL RAILROAD
Spiller Address: Not reported
Spill Class: Not reported
Spill Closed Dt: 01/01/83
Spill Notifier: Health Department PBS Number: Not reported
Cleanup Ceased: 01/01/83
Last Inspection: / /
Cleanup Meets Standard: True
Recommended Penalty: Penalty Not Recommended
Spiller Cleanup Date: / /
Enforcement Date: / /

**AGWAY FELMONT (Continued)** 1000353052

Investigation Complete: / /
UST Involvement: False
Spill Record Last Update: / /
Is Updated: False
Corrective Action Plan Submitted: / /
Date Spill Entered In Computer Data File: 01/28/93
Date Region Sent Summary to Central Office: / /
Tank Test:
PBS Number: Not reported
Tank Number: Not reported
Test Method: Not reported
Capacity of Failed Tank: Not reported
Leak Rate Failed Tank: Not reported
Gross Leak Rate: Not reported
Material:
Material Class Type: 1
Quantity Spilled: 1700
Units: Gallons
Unknown Qty Spilled: 1700
Quantity Recovered: 0
Unknown Qty Recovered: False
Material: DIESEL
Class Type: Petroleum
Chem Abstract Service Number: DIESEL
Last Date: 07/28/1994
Num Times Material Entry In File: 10625
DEC Remarks: Not reported
Spill Cause: APPARENTLY CLEANED UP BY CONRAIL SPILL LOCATED NEAR CITY WATER SUPPLY WE LLS.

Spill Number: 8700333
Spill Date: 04/11/1987 15:00
Water Affected: Not reported
Resource Affectd: On Land
Spill Cause: Tank Failure
Facility Contact: Not reported
Investigator: MJH
Caller Name: Not reported
Caller Phone: Not reported
Notifier Name: Not reported
Notifier Phone: Not reported
Spiller Contact: Not reported
Spiller: CONRAIL
Spiller Address: HYDE PARK BOULEVARD
NIAGARA FALLS, NY
Spill Class: Not reported
Spill Closed Dt: 04/28/87
Spill Notifier: Responsible Party
Cleanup Ceased: 04/28/87
Last Inspection: / /
Cleanup Meets Standard: True
Recommended Penalty: Penalty Not Recommended
Spiller Cleanup Date: / /
Enforcement Date: / /
Investigation Complete: / /
UST Involvement: False
Spill Record Last Update: 05/04/87

Region of Spill: 9
Reported to Dept: 04/11/87 15:15
Spill Source: Railroad Car
Facility Tele: Not reported
SWIS: 29
Caller Agency: Not reported
Caller Extension: Not reported
Notifier Agency: Not reported
Notifier Extension: Not reported
Spiller Phone: Not reported
PBS Number: Not reported

**AGWAY FELMONT (Continued)** 1000353052

Is Updated: False
Corrective Action Plan Submitted: / /
Date Spill Entered In Computer Data File: 04/14/87
Date Region Sent Summary to Central Office: / /
Tank Test:
PBS Number: Not reported
Tank Number: Not reported
Test Method: Not reported
Capacity of Failed Tank: Not reported
Leak Rate Failed Tank: Not reported
Gross Leak Rate: Not reported
Material:
Material Class Type: 2
Quantity Spilled: 2
Units: Gallons
Unknown Qty Spilled: 2
Quantity Recovered: 2
Unknown Qty Recovered: False
Material: SULFURIC ACID
Class Type: Hazardous
Chem Abstract Service Number: SULFURIC ACID
Last Date: Not reported
Num Times Material Entry In File: 0
DEC Remarks: / / : NOTIFIED NCHD, ROSSITE, 04/11/87 1535; NCHD 04/11/87, CLEANUP RE QUIRED AND UNDERWAY. / / : NCHD INVESTIGATED AND SUBMITTED REPORT, SAT ISFIED W/ CLEANUP NO FURTHER ACTION REQUIRED.
Spill Cause: Not reported

Spill Number: 9207615 Region of Spill: 9
Spill Date: 09/30/1992 12:00 Reported to Dept: 09/30/92 12:40
Water Affected: Not reported Spill Source: Other Commercial/Industrial
Resource Affectd: Groundwater
Spill Cause: Tank Failure
Facility Contact: CARL GERHARDSTEIN Facility Tele: (215) 209-1693
Investigator: FG SWIS: 14
Caller Name: Not reported Caller Agency: Not reported
Caller Phone: Not reported Caller Extension: Not reported
Notifier Name: Not reported Notifier Agency: Not reported
Notifier Phone: Not reported Notifier Extension: Not reported
Spiller Contact: Not reported Spiller Phone: Not reported
Spiller: CSX
Spiller Address: 500 WATER STREET
JACKSONVILLE, FL 32202
Spill Class: Known release that creates potential for fire or hazard. DEC Response. Willing Responsible Party. Corrective action taken.
Spill Closed Dt: 08/31/00
Spill Notifier: Responsible Party PBS Number: Not reported
Cleanup Ceased: / /
Last Inspection: 06/05/97
Cleanup Meets Standard: False
Recommended Penalty: Penalty Not Recommended
Spiller Cleanup Date: / /
Enforcement Date: / /
Investigation Complete: / /
UST Involvement: True
Spill Record Last Update: 09/25/00
Is Updated: False

**AGWAY FELMONT (Continued)** 1000353052

Corrective Action Plan Submitted: / /
Date Spill Entered In Computer Data File: 10/01/92
Date Region Sent Summary to Central Office: / /
Tank Test:
PBS Number: Not reported
Tank Number: Not reported
Test Method: Not reported
Capacity of Failed Tank: Not reported
Leak Rate Failed Tank: Not reported
Gross Leak Rate: Not reported
Material:
Material Class Type: 1
Quantity Spilled: 0
Units: Gallons
Unknown Qty Spilled: No
Quantity Recovered: 0
Unknown Qty Recovered: True
Material: GASOLINE
Class Type: Petroleum
Chem Abstract Service Number: GASOLINE
Last Date: 09/29/1994
Num Times Material Entry In File: 21329
Spill Cause: FOUND CONTAMINATION DURING TANK REMOVAL; HIGH GROUNDWATER TABLE.

Spill Number: 9603843 Region of Spill: 7
Spill Date: 06/15/1996 12:00 Reported to Dept: 06/20/96 14:36
Water Affected: Not reported Spill Source: Tank Truck
Resource Affectd: On Land
Spill Cause: Tank Overfill
Facility Contact: Not reported Facility Tele: ( ) -
Investigator: MR SWIS: 31
Caller Name: Not reported Caller Agency: Not reported
Caller Phone: Not reported Caller Extension: Not reported
Notifier Name: Not reported Notifier Agency: Not reported
Notifier Phone: Not reported Notifier Extension: Not reported
Spiller Contact: GEORGE AYERS Spiller Phone: (315) 656-5887
Spiller: EAGLE BROOK CO
Spiller Address: 17877 ST CLARE AV
CLEVELAND, OH -
Spill Class: Known release with minimal potential for fire or hazard. DEC Response.
Willing Responsible Party. Corrective action taken.
Spill Closed Dt: 06/25/96
Spill Notifier: Affected Persons PBS Number: Not reported
Cleanup Ceased: / /
Last Inspection: 06/21/96
Cleanup Meets Standard: False
Recommended Penalty: Penalty Not Recommended
Spiller Cleanup Date: / /
Enforcement Date: / /
Investigation Complete: / /
UST Involvement: False
Spill Record Last Update: 06/25/96
Is Updated: False
Corrective Action Plan Submitted: / /
Date Spill Entered In Computer Data File: 06/20/96
Date Region Sent Summary to Central Office: / /
Tank Test:

**AGWAY FELMONT (Continued)** 1000353052

PBS Number: Not reported
Tank Number: Not reported
Test Method: Not reported
Capacity of Failed Tank: Not reported
Leak Rate Failed Tank: Not reported
Gross Leak Rate: Not reported
Material:
Material Class Type: 2
Quantity Spilled: 10
Units: Gallons
Unknown Qty Spilled: 10
Quantity Recovered: 0
Unknown Qty Recovered: True
Material: FERRIC CHLORIDE
Class Type: Hazardous
Chem Abstract Service Number: FERRIC CHLORIDE
Last Date: Not reported
Num Times Material Entry In File: 0
DEC Remarks: 06/25/96:VISITED SITE. MET W/ REPRESENTATIVES FROM E.P.S.,CONTRACTOR HIR ED BY CONRAIL TO CLEANUP THE SPILL. ALSO ON SITE WAS S.MUSCARELLA -INSUR ANCE ADJUSTER. CLEANUP CREW CONSISTED OF FOUR MEN WITH A VAC TRUCK. SPIL L HAD SPREAD DUE TO HEAVY RAIN. AMOUNT OF SPILL APPEARS TO BE MORE THAN WHAT WAS REPORTED.
Spill Cause: HOSE CAME OFF TRUCK - BEING CLEANED UP NOW

Spill Number: 9806485 Region of Spill: 7
Spill Date: 08/26/1998 08:30 Reported to Dept: 08/26/98 08:42
Water Affected: Not reported Spill Source: Other Commercial/Industrial
Resource Affectd: Groundwater
Spill Cause: Tank Failure
Facility Contact: ED COLLINS Facility Tele: (716) 732-2695
Investigator: CM SWIS: 31
Caller Name: Not reported Caller Agency: Not reported
Caller Phone: Not reported Caller Extension: Not reported
Notifier Name: Not reported Notifier Agency: Not reported
Notifier Phone: Not reported Notifier Extension: Not reported
Spiller Contact: ED COLLINS Spiller Phone: (716) 732-2695
Spiller: CONRAIL
Spiller Address: 6200 GIRDEN RD
E SYRACUSE, NY
Spill Class: Known release with minimal potential for fire or hazard. DEC Response. Willing Responsible Party. Corrective action taken.
Spill Closed Dt: / /
Spill Notifier: Responsible Party PBS Number: Not reported
Cleanup Ceased: / /
Last Inspection: / /
Cleanup Meets Standard: False
Recommended Penalty: Penalty Not Recommended
Spiller Cleanup Date: / /
Enforcement Date: / /
Investigation Complete: / /
UST Involvement: True
Spill Record Last Update: 11/27/98
Is Updated: False
Corrective Action Plan Submitted: / /
Date Spill Entered In Computer Data File: 08/26/98
Date Region Sent Summary to Central Office: / /

AGWAY FELMONT (Continued) 1000353052

Tank Test:
PBS Number: Not reported
Tank Number: Not reported
Test Method: Not reported
Capacity of Failed Tank: Not reported
Leak Rate Failed Tank: Not reported
Gross Leak Rate: Not reported
Material:
Material Class Type: Not reported
Quantity Spilled: Not reported
Units: Not reported
Unknown Qty Spilled: Not reported
Quantity Recovered: Not reported
Unknown Qty Recovered: Not reported
Material: Not reported
Class Type: Not reported
Chem Abstract Service Number: Not reported
Last Date: Not reported
Num Times Material Entry In File: Not reported
DEC Remarks: Not reported
Spill Cause: during tank removal caller found contamination - a sheen on some water i n hole

Click this hyperlink while viewing on your computer to access additional HIST LTANKS detail in the EDR Site Report.

---

2
West
1/8-1/4
1147 ft.

**VAN DER HORST CORP OF AMERICA**
**900 W CONNELL ST**
**OLEAN, NY 14760**

UST U003079520
AST N/A

Relative:
Lower

Actual:
1422 ft.

PBS UST:
PBS Number: 9-224154 CBS Number: Not reported
SPDES Number: Not reported SWIS ID: 0466
Operator: VAN DER HORSE CORP OF AMERICA
(716) 372-5200
Emergency Contact: ROBERT BUSH
(716) 372-5200
Total Tanks: 0
Owner: VAN DER HORSE CORP OF AMERICA
314 PENN AVE
OLEAN, NY 14760
(716) 372-5200
Owner Type: Not reported
Owner Mark: First Owner
Owner Subtype: Not reported
Mailing Address: VAN DER HORSE CORP OF AMERICA
314 PENN AVE
OLEAN, NY 14760
(716) 372-5200
Tank Status: Closed - Removed
Capacity (gals): 6000
Tank Location: UNDERGROUND
Tank Id: 201 Install Date: Not reported
Tank Type: Steel/carbon steel Product Stored: NOS 1,2, OR 4 FUEL OIL
Tank Internal: Not reported Pipe Internal: Not reported
Pipe Location: 2 Pipe Type: GALVANIZED STEEL
Tank External: Not reported
Missing Data for Tank: Minor Data Missing

VAN DER HORST CORP OF AMERICA (Continued) U003079520

| | | | |
|---|---|---|---|
| Pipe External: | Not reported | | |
| Second Containment: | NONE | | |
| Leak Detection: | NONE | | |
| Overfill Prot: | 2 | Dispenser: | Suction |
| Date Tested: | Not reported | Next Test Date: | Not reported |
| Date Closed: | Not reported | Test Method: | Not reported |
| Deleted: | False | Updated: | True |
| Dead Letter: | True | Owner Screen: | Minor data missing |
| FAMT: | Fiscal amount for registration fee is correct | | |
| Total Capacity: | 0 | Renewal Date: | 05/27/1992 |
| Tank Screen: | 0 | Federal ID: | Not reported |
| Renew Flag: | Renwal has not been printed | Facility Screen: | Minor data missing |
| Certification Flag: | False | Certification Date: | 08/17/1987 |
| Old PBS Number: | Not reported | Expiration Date: | 08/17/1992 |
| Inspected Date: | Not reported | Inspector: | Not reported |
| Inspection Result: | Not reported | | |
| Lat/long: | Not reported | | |
| Facility Type: | Not reported | | |
| Town or City: | OLEAN | | |
| Town or City Code: | 66 | | |
| County Code: | 04 | | |
| Region: | 9 | | |

PBS AST:

| | | | |
|---|---|---|---|
| PBS Number: | 9-224154 | CBS Number: | Not reported |
| SPDES Number: | Not reported | SWIS Code: | 0466 |
| Federal ID: | Not reported | Previous PBS#: | Not reported |
| Facility Status: | 2 - Unregulated by PBS (the total capacity is less than 1,101 gallons) and Subpart 360-14. | | |
| Facility Type: | Not reported | | |
| Owner Type: | Not reported | | |
| Owner Sub Type: | Not reported | | |
| Owner: | VAN DER HORSE CORP OF AMERICA<br>314 PENN AVE<br>OLEAN, NY 14760 | | |
| Owner Phone: | (716) 372-5200 | | |
| Facility Phone: | (716) 372-5200 | | |
| Operator: | VAN DER HORSE CORP OF AMERICA | | |
| Emergency Name: | ROBERT BUSH | | |
| Emergency Phone: | (716) 372-5200 | | |
| Total Tanks: | 0 | | |
| Total Capacity: | 0 | | |
| Tank ID: | 202 | | |
| Capacity (Gal): | 1000 | | |
| Missing Data for Tank : | Minor data missing | | |
| Tank Location: | ABOVEGROUND | | |
| Product Stored: | NOS 1,2, OR 4 FUEL OIL | | |
| Tank Type: | Steel/carbon steel | | |
| Install Date: | / / | | |
| Tank Internal: | Not reported | | |
| Tank External: | Not reported | | |
| Tank Containment: | NONE | | |
| Pipe Type: | GALVANIZED STEEL | | |
| Pipe Location: | Not reported | | |
| Pipe Internal: | Not reported | | |
| Pipe External: | Not reported | | |
| Leak Detection: | NONE | | |
| Overfill Protection: | Not reported | | |

VAN DER HORST CORP OF AMERICA (Continued) U003079520

| | | | |
|---|---|---|---|
| Dispenser Method: | Gravity | | |
| Date Tested: | / / | Next Test Date: | / / |
| Date Closed: | / / | Test Method: | Not reported |
| Updated: | True | Deleted: | False |
| Date Inspected: | Not reported | Inspector: | Not reported |
| Result of Inspection: | Not reported | | |
| Mailing Name: | VAN DER HORSE CORP OF AMERICA | | |
| Mailing Address: | 314 PENN AVE<br>OLEAN, NY 14760 | | |
| Mailing Contact: | Not reported | | |
| Mailing Telephone: | (716) 372-5200 | | |
| Owner Mark: | First Owner | Expiration Date: | 08/17/1992 |
| Certification Flag: | False | Certification Date: | 08/17/1987 |
| Renew Flag: | False | Renew Date: | 05/27/1992 |
| Lat/Long: | Not reported | | |
| Dead Letter: | True | | |
| Facility Screen: | Minor data missing | | |
| Owner Screen: | Minor data missing | | |
| Tank Screen: | 0 | | |
| Town or City: | OLEAN | | |
| Town or City Code: | 66 | | |
| County Code: | 04 | | |
| Region: | 9 | | |

Fiscal Amount for Registration Fee is Correct: True

---

3
North
1/4-1/2
1390 ft.

**RUPP RENTAL & SALES CORP** RCRA-SQG 1000791096
**355 FRANKLIN ST** FINDS NYD987025988
**OLEAN, NY 14760**

Relative:
Higher

Actual:
1428 ft.

RCRAInfo:

| | |
|---|---|
| Owner: | BLUE BIRD INDUSTRIAL PARK INC<br>(716) 372-5500 |
| EPA ID: | NYD987025988 |
| Contact: | Not reported |
| Classification: | Small Quantity Generator |
| TSDF Activities: | Not reported |

Violation Status: No violations found

FINDS:
Other Pertinent Environmental Activity Identified at Site:
RESOURCE CONSERVATION AND RECOVERY ACT INFORMATION SYSTEM

---

4
SW
1/4-1/2
1835 ft.

**FELMONT** CERC-NFRAP 1003863736
**1439 BUFFALO STREET** NYD980508253
**OLEAN, NY 14760**

Relative:
Lower

Actual:
1424 ft.

CERCLIS-NFRAP Classification Data:

| | |
|---|---|
| Federal Facility: | Not a Federal Facility |
| Non NPL Code: | NFRAP |
| NPL Status: | Not on the NPL |

CERCLIS-NFRAP Assessment History:

| | | | |
|---|---|---|---|
| Assessment: | DISCOVERY | Completed: | 04/01/1980 |
| Assessment: | PRELIMINARY ASSESSMENT | Completed: | 09/30/1986 |

FELMONT (Continued) 1003863736

Assessment: SITE INSPECTION Completed: 12/31/1991
Assessment: ARCHIVE SITE Completed: 12/31/1991

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**A5**
**SE**
**1/4-1/2**
**1842 ft.**

Relative:
Equal

Actual:
1427 ft.

**DRESSER RAND TURBO PRODUCTS DIVISION**
**PO BOX 560**
**OLEAN, NY 14760**

CBS UST S102639545
CBS AST N/A

**Site 1 of 3 in cluster A**

CBS UST:

| | | | |
|---|---|---|---|
| CBS Number: | 9-000289 | ICS No: | 9-178397 |
| PBS No: | Not reported | MOSF No: | Not reported |
| Region: | STATE | Town: | OLEAN (C) |
| Operator: | ARTHUR TITUS | Facility Tel: | (716) 375-3122 |
| Emergency Contact: | PATRICK KELLAM, (716) 375-3445 | | |
| Certification Date: | 09/10/2001 | Expiration Date: | 09/28/2002 |
| Owner: | DRESSER RAND TURBO PRODUCTS | | |
| Owner Address: | PO BOX 560<br>OLEAN, NY 14760 | | |
| Owner Phone | (716) 375-3000 | | |
| Owner Type: | Corporate/Commercial | | |
| Facility Type: | MANUFACTURING | | |
| Mail To: | DRESSER RAND, OLEAN OPERATIONS | | |
| Mail Address | PO BOX 560<br>OLEAN, NY 14760<br>ATTN: ARTHUR TITUS<br>(716) 375-3114 | | |
| SPDES No: | 0-094781 | Facility Status: | NO LONGER A MAJOR FACILITY |
| Owner Subtype: | Not reported | | |
| Tank Status: | In Service | | |
| Tank Error Status: | No Missing Data | | |
| Total Tanks: | 3 | Capacity: | 8000 Gals |
| Tank Location: | Underground | | |
| Install Date: | 00/00 | | |
| CAS No: | 67561 | | |
| Substance: | Single Hazardous Substance on DEC List | | |
| Tank Type: | Steel/carbon steel | 2nd Containmt: | None |
| Tank Internal: | None | Pipe Type: | STEEL/IRON |
| Tank External: | None | | |
| Pipe Internal: | None | Pipe Location: | Underground |
| Pipe External: | None | | |
| Pipe Containment: | None | Haz Percent: | 100 |
| Leak Detection: | None | | |
| Overfill Protection: | 0 | | |
| Chemical: | Methanol | | |
| Tank Closed: | 09/92 | | |
| Tank Secret: | False | Date Entered: | 09/08/1992 09:56:45 |
| Last Test: | Not reported | Due Date: | Not reported |
| SWIS Code: | 0412 | | |
| Cert Flag: | False | | |
| Case No: | Not reported | Reserve Flag: | True |
| Pipe Flag: | False | Federal Amt: | True |
| Is it There: | False | Is Updated: | False |
| Owner Mark: | 1 | Lat/Long: | 42\|05\|17 / 78\|26\|17 |
| Renew Date: | 09/08/92 | Date Expired: | 09/28/94 |
| Total Capacity: | 8800 | | |
| Tank Number: | 2V | | |

CBS AST:

**DRESSER RAND TURBO PRODUCTS DIVISION (Continued)** **S102639545**

| | | | |
|---|---|---|---|
| CBS Number: | 9-000289 | Telephone: | (716) 375-3122 |
| Owner: | DRESSER RAND TURBO PRODUCTS<br>PO BOX 560<br>OLEAN, NY 14760<br>(716) 375-3000 | | |
| Facility Status: | Active | | |
| Total Tanks | 3 | | |
| Tank Status: | In Service | | |
| Tank Error Status: | Minor Data Missing | | |
| Tank Location: | Aboveground | | |
| Install Date: | 10/80 | | |
| Capacity (Gal): | 3000 | | |
| Tank Type: | Fiberglass reinforced plastic [FRP] | | |
| Substance: | Not reported | | |
| Extrnl Protection: | | | |
| Intrnl Protection: | Not reported | | |
| Tank Containment: | Diking | | |
| Pipe Type: | PLASTIC | Pipe Location: | Not reported |
| Pipe Internal: | Not reported | | |
| Pipe External: | Not reported | | |
| Pipe Containment: | Not reported | Haz Percent: | 0 |
| Leak Detection: | Not reported | | |
| Overfill Protection: | Not reported | | |
| Chemical: | Methanol | | |
| Tank Closed: | 08/90 | | |
| PBS Number: | Not reported | SWIS Code: | 0412 |
| Federal ID: | Not reported | | |
| MOSF Number: | Not reported | CAS Number: | 67561 |
| SPDES Number: | 0-094781 | ICS Number: | 9-178397 |
| Facility Type: | Manufacturing | | |
| Operator: | ARTHUR TITUS | Facility Town: | OLEAN (C) |
| Emrgncy Contact: | PATRICK KELLAM | Emrgncy Phone: | (716) 375-3445 |
| Certified Date: | 09/10/2001 | Expiration Date: | 09/28/2002 |
| Owner type: | Corporate/Commercial | | |
| Owner Sub Type: | Not reported | | |
| Mail Name: | DRESSER RAND, OLEAN OPERATIONS | | |
| Mail Contact: | ARTHUR TITUS<br>PO BOX 560<br>OLEAN, NY 14760 | | |
| Mail Phone: | (716) 375-3114 | | |
| Tank Secret: | False | Date Entered: | 09/28/1990 07:40:46 |
| Last Test: | Not reported | Due Date: | Not reported |
| Pipe Flag: | False | Owner Mark: | 1 |
| Renew Date: | 09/08/92 | Date Expired: | 09/28/94 |
| Is it There: | False | Is Updated: | False |
| Owner Status: | F | | |

| | |
|---|---|
| Certificate Needs to be Printed: | False |
| Fiscal Amt for Registration Fee Correct: | True |
| Renewal Has Been Printed for Facility: | True |
| Total Capacity of All Active Tanks(gal): | 8800 |
| Unique Tank Id Number: | F1 |
| Date Pre-Printed Renewal App Form Was Last Printed: | 06/01/2000 |

| | | | |
|---|---|---|---|
| CBS Number: | 9-000289 | Telephone: | (716) 375-3122 |
| Owner: | DRESSER RAND TURBO PRODUCTS<br>PO BOX 560<br>OLEAN, NY 14760 | | |

**DRESSER RAND TURBO PRODUCTS DIVISION (Continued)** **S102639545**

(716) 375-3000
Facility Status: Active
Total Tanks 3
Tank Status: In Service
Tank Error Status: Minor Data Missing
Tank Location: Aboveground
Install Date: 10/80
Capacity (Gal): 3000
Tank Type: Fiberglass reinforced plastic [FRP]
Substance: Not reported
Extrnl Protection:
Intrnl Protection: Not reported
Tank Containment: Diking
Pipe Type: PLASTIC
Pipe Location: Not reported
Pipe Internal: Not reported
Pipe External: Not reported
Pipe Containment: Not reported
Haz Percent: 0
Leak Detection: Not reported
Overfill Protection: Not reported
Chemical: Methanol
Tank Closed: 08/90
PBS Number: Not reported
SWIS Code: 0412
Federal ID: Not reported
MOSF Number: Not reported
CAS Number: 67561
SPDES Number: 0-094781
ICS Number: 9-178397
Facility Type: Manufacturing
Operator: ARTHUR TITUS
Facility Town: OLEAN (C)
Emrgncy Contact: PATRICK KELLAM
Emrgncy Phone: (716) 375-3445
Certified Date: 09/10/2001
Expiration Date: 09/28/2002
Owner type: Corporate/Commercial
Owner Sub Type: Not reported
Mail Name: DRESSER RAND, OLEAN OPERATIONS
Mail Contact: ARTHUR TITUS
PO BOX 560
OLEAN, NY 14760
Mail Phone: (716) 375-3114
Tank Secret: False
Date Entered: 09/28/1990 07:40:58
Last Test: Not reported
Due Date: Not reported
Pipe Flag: False
Owner Mark: 1
Renew Date: 09/08/92
Date Expired: 09/28/94
Is it There: False
Is Updated: False
Owner Status: F
Certificate Needs to be Printed: False
Fiscal Amt for Registration Fee Correct: True
Renewal Has Been Printed for Facility: True
Total Capacity of All Active Tanks(gal): 8800
Unique Tank Id Number: F2
Date Pre-Printed Renewal App Form Was Last Printed: 06/01/2000

CBS Number: 9-000289
Telephone: (716) 375-3122
Owner: DRESSER RAND TURBO PRODUCTS
PO BOX 560
OLEAN, NY 14760
(716) 375-3000
Facility Status: Active
Total Tanks 3
Tank Status: In Service

**DRESSER RAND TURBO PRODUCTS DIVISION (Continued)** S102639545

| | | | |
|---|---|---|---|
| Tank Error Status: | No Missing Data | | |
| Tank Location: | Aboveground | | |
| Install Date: | 07/89 | | |
| Capacity (Gal): | 3100 | | |
| Tank Type: | Stainless steel alloy | | |
| Substance: | Single Hazardous Substance on DEC List | | |
| Extrnl Protection: | Painted/Asphalt Coating | | |
| Intrnl Protection: | None | | |
| Tank Containment: | None | | |
| Pipe Type: | STEEL/IRON | Pipe Location: | Aboveground |
| Pipe Internal: | None | | |
| Pipe External: | None | | |
| Pipe Containment: | None | Haz Percent: | 100 |
| Leak Detection: | None | | |
| Overfill Protection: | Not reported | | |
| Chemical: | Methane, dichlorodifluoro- | | |
| Tank Closed: | 07/96 | | |
| PBS Number: | Not reported | SWIS Code: | 0412 |
| Federal ID: | Not reported | | |
| MOSF Number: | Not reported | CAS Number: | 75718 |
| SPDES Number: | 0-094781 | ICS Number: | 9-178397 |
| Facility Type: | Manufacturing | | |
| Operator: | ARTHUR TITUS | Facility Town: | OLEAN (C) |
| Emrgncy Contact: | PATRICK KELLAM | Emrgncy Phone: | (716) 375-3445 |
| Certified Date: | 09/10/2001 | Expiration Date: | 09/28/2002 |
| Owner type: | Corporate/Commercial | | |
| Owner Sub Type: | Not reported | | |
| Mail Name: | DRESSER RAND, OLEAN OPERATIONS | | |
| Mail Contact: | ARTHUR TITUS<br>PO BOX 560<br>OLEAN, NY 14760 | | |
| Mail Phone: | (716) 375-3114 | | |
| Tank Secret: | False | Date Entered: | 09/28/1990 07:41:25 |
| Last Test: | Not reported | Due Date: | Not reported |
| Pipe Flag: | False | Owner Mark: | 1 |
| Renew Date: | 09/08/92 | Date Expired: | 09/28/94 |
| Is it There: | False | Is Updated: | False |
| Owner Status: | F | | |

| | |
|---|---|
| Certificate Needs to be Printed: | False |
| Fiscal Amt for Registration Fee Correct: | True |
| Renewal Has Been Printed for Facility: | True |
| Total Capacity of All Active Tanks(gal): | 8800 |
| Unique Tank Id Number: | 15243 |
| Date Pre-Printed Renewal App Form Was Last Printed: | 06/01/2000 |

| | | | |
|---|---|---|---|
| CBS Number: | 9-000289 | Telephone: | (716) 375-3122 |
| Owner: | DRESSER RAND TURBO PRODUCTS<br>PO BOX 560<br>OLEAN, NY 14760<br>(716) 375-3000 | | |
| Facility Status: | Active | | |
| Total Tanks | 3 | | |
| Tank Status: | In Service | | |
| Tank Error Status: | No Missing Data | | |
| Tank Location: | Aboveground | | |
| Install Date: | 07/89 | | |
| Capacity (Gal): | 3100 | | |

**DRESSER RAND TURBO PRODUCTS DIVISION (Continued)** S102639545

| | | | |
|---|---|---|---|
| Tank Type: | Stainless steel alloy | | |
| Substance: | Single Hazardous Substance on DEC List | | |
| Extrnl Protection: | Painted/Asphalt Coating | | |
| Intrnl Protection: | None | | |
| Tank Containment: | None | | |
| Pipe Type: | STEEL/IRON | Pipe Location: | Aboveground |
| Pipe Internal: | None | | |
| Pipe External: | None | | |
| Pipe Containment: | None | Haz Percent: | 100 |
| Leak Detection: | None | | |
| Overfill Protection: | Not reported | | |
| Chemical: | Methane, dichlorodifluoro- | | |
| Tank Closed: | 07/96 | | |
| PBS Number: | Not reported | SWIS Code: | 0412 |
| Federal ID: | Not reported | | |
| MOSF Number: | Not reported | CAS Number: | 75718 |
| SPDES Number: | 0-094781 | ICS Number: | 9-178397 |
| Facility Type: | Manufacturing | | |
| Operator: | ARTHUR TITUS | Facility Town: | OLEAN (C) |
| Emrgncy Contact: | PATRICK KELLAM | Emrgncy Phone: | (716) 375-3445 |
| Certified Date: | 09/10/2001 | Expiration Date: | 09/28/2002 |
| Owner type: | Corporate/Commercial | | |
| Owner Sub Type: | Not reported | | |
| Mail Name: | DRESSER RAND, OLEAN OPERATIONS | | |
| Mail Contact: | ARTHUR TITUS<br>PO BOX 560<br>OLEAN, NY 14760 | | |
| Mail Phone: | (716) 375-3114 | | |
| Tank Secret: | False | Date Entered: | 09/28/1990 07:41:37 |
| Last Test: | Not reported | Due Date: | Not reported |
| Pipe Flag: | False | Owner Mark: | 1 |
| Renew Date: | 09/08/92 | Date Expired: | 09/28/94 |
| Is it There: | False | Is Updated: | False |
| Owner Status: | F | | |

| | |
|---|---|
| Certificate Needs to be Printed: | False |
| Fiscal Amt for Registration Fee Correct: | True |
| Renewal Has Been Printed for Facility: | True |
| Total Capacity of All Active Tanks(gal): | 8800 |
| Unique Tank Id Number: | 15681 |
| Date Pre-Printed Renewal App Form Was Last Printed: | 06/01/2000 |

This is the most recent NY CBS AST data for this site.

Click this hyperlink while viewing on your computer to access
2 additional NY CBS AST record(s) in the EDR Site Report.

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**A6** **DRESSER RAND** UST U003317168
**SE** **NORTH 5TH ST** AST N/A
**1/4-1/2** **OLEAN, NY 14760** NY Spills
**1842 ft.** NY Hist Spills

**Site 2 of 3 in cluster A**

**Relative:**
**Equal**

**Actual:**
**1427 ft.**

SPILLS:

| | | | |
|---|---|---|---|
| DER Facility ID: | 263289 | | |
| Site ID: | 327045 | CID: | Not reported |
| Spill Number: | 9975579 | Region of Spill: | 9 |
| Investigator: | JFOTTO | SWIS: | 0566 |
| Caller Name: | PAUL KUTLINA | Caller Agency: | NYSDEC |
| Caller Phone: | (716) 851-7220 | Caller Extension: | Not reported |

**DRESSER RAND (Continued)** **U003317168**

Notifier Name: Not reported
Notifier Agency: Not reported
Notifier Phone: Not reported
Notifier Extension: Not reported
Spill Date: 12/14/99
Reported to Dept: 12/14/99
Facility Address 2: Not reported
Facility Type: ER
Referred To : Not reported
DEC Region : 9
Remediation Phase : 0
Program Number : 9975579
Spill Cause: EQUIPMENT FAILURE
Water Affected: Not reported
Spill Source: COMMERCIAL/INDUSTRIAL
Contact Name: GARY OFINOWICZ
Facility Tele: (716) 375-3448
Spill Notifier: DEC
Spiller: GARY OFINOWICZ
Spiller Company : DRESSER RAND
Spiller Address: NORTH FIFTH STREET
OLEAN, NY 14760
Spiller County : 001
Spill Class: Known release with minimal potential for fire or hazard. DEC Response. Willing Responsible Party. Corrective action taken.
**Spill Closed Dt: 12/14/99**
Cleanup Ceased: / /
Last Inspection: / /
Cleanup Meets Std: False
Recommended Penalty: Penalty Not Recommended
UST Trust: False
Spill Record Last Update: 02/20/02
Date Spill Entered In Computer Data File: 12/14/99

Material
Material ID : 290110
Site ID : 327045
Operable Unit : 01
Operable Unit ID : 1091733
Material Code : 0022
Material Name : Waste Oil/Used Oil (Not Fuel)
Case No. : Not reported
Material FA : Petroleum
Quantity : Not reported
Units : G
Recovered : Not reported
Resource Affected - Soil : No
Resource Affected - Air : No
Resource Affected - Indoor Air : No
Resource Affected - Groundwater : Yes
Resource Affected - Surface Water : No
Resource Affected - Drinking Wtr : No
Resource Affected - Sewer : No
Resource Affected - Impervious Surface : No
Resource Affected - Subway : No
Resource Affected - Utility : No
Resource Affected - Impervious Surface : No
Oxygenate : False

DEC Remarks : Prior to Sept, 2004 data translation this spill Lead DEC Field was "JFO"
12/14/99: JFO REVIEWED THE ANALYTICAL FROM THE TANK PIT. RESULTS INDICATE THAT THIS SITE CAN BE MADE "INACTIVE" WITH THE BLESSING OF RNL. NO FURTHER ACTION REQUIRED AT THIS TIME. INACTIVE LETTER ATTACHED. CLOSED
Remark: EXCAVATION ANALYTICAL RESULTS FOR THE REMOVAL OF A 1000 GALLON WASTE OIL UNDERGROUND STORAGE TANK EXCEEDS STARS FOR 8270

**DRESSER RAND (Continued)** **U003317168**

This is the most recent NY SPILLS record for this site.

Click this hyperlink while viewing on your computer to access additional NY SPILLS detail in the EDR Site Report.

HIST SPILLS:

| | | | |
|---|---|---|---|
| Spill Number: | 9975579 | Region of Spill: | 9 |
| Investigator: | JFO | SWIS: | 04 |
| Caller Name: | Not reported | Caller Agency: | Not reported |
| Caller Phone: | Not reported | Caller Extension: | Not reported |
| Notifier Name: | Not reported | Notifier Agency: | Not reported |
| Notifier Phone: | Not reported | Notifier Extension: | Not reported |
| Spill Date: | 12/01/1999 12:00 | Reported to Dept: | 12/14/99 13:19 |
| Spill Cause: | Equipment Failure | Resource Affected: | Groundwater |
| Water Affected: | Not reported | Spill Source: | Other Commercial/Industrial |
| Facility Contact: | GARY OFINOWICZ | Facility Tele: | (716) 375-3448 |
| Spill Notifier: | DEC | PBS Number: | Not reported |
| Spiller Contact: | GARY OFINOWICZ | Spiller Phone: | (716) 375-3448 |

Spiller: DRESSER RAND
Spiller Address: NORTH FIFTH STREET
OLEAN, NY 14760
DEC Remarks : 12/14/99: JFO REVIEWED THE ANALYTICAL FROM THE TANK PIT. RESULTS INDICATE THAT THIS SITE CAN BE MADE INACTIVE WITH THE BLESSING OF RNL. NO FURTHER ACTION REQUIRED AT THIS TIME. INACTIVE LETTER ATTACHED. CLOSED
Remark: EXCAVATION ANALYTICAL RESULTS FOR THE REMOVAL OF A 1000 GALLON WASTE OIL UNDERGROUND STORAGE TANK EXCEEDS STARS FOR 8270
Spill Class: Known release with minimal potential for fire or hazard. DEC Response. Willing Responsible Party. Corrective action taken.

Material:

| | |
|---|---|
| Material Class Type: | 1 |
| Quantity Spilled: | 0 |
| Units: | Gallons |
| Unknown Qty Spilled: | No |
| Quantity Recovered: | 0 |
| Unknown Qty Recovered: | True |
| Material: | WASTE OIL |
| Class Type: | Petroleum |
| Chem Abstract Service Number: | WASTE OIL |
| Last Date: | 09/27/1994 |
| Num Times Material Entry In File: | 9509 |

Spill Closed Dt: 12/14/99
Cleanup Ceased: / /
Last Inspection: / / Cleanup Meets Std:False
Recommended Penalty: Penalty Not Recommended
Spiller Cleanup Dt/ / Enforcement Date: / /
Invstgn Complete:/ / UST Involvement: False
Spill Record Last Update: 12/23/99
Is Updated: False
Corrective Action Plan Submitted: / /
Date Spill Entered In Computer Data File: 12/14/99 13:21
Date Region Sent Summary to Central Office: / /

This is the most recent NY HISTORIC SPILLS record for this site.

Click this hyperlink while viewing on your computer to access additional NY HIST SPILLS detail in the EDR Site Report.

PBS UST:

**DRESSER RAND (Continued)** **U003317168**

| | | | |
|---|---|---|---|
| PBS Number: | 9-386634 | CBS Number: | 9-000289 |
| SPDES Number: | 0-094781 | SWIS ID: | 0466 |
| Operator: | GARY OFINOWICZ<br>(716) 375-3448 | | |
| Emergency Contact: | DAVID R. PERNA<br>(716) 375-3095 | | |
| Total Tanks: | 10 | | |
| Owner: | DRESSER RAND<br>NORTH 5TH ST<br>OLEAN, NY 14760<br>(716) 375-3000 | | |
| Owner Type: | Corporate/Commercial | | |
| Owner Mark: | First Owner | | |
| Owner Subtype: | Not reported | | |
| Mailing Address: | DRESSER RAND<br>ATTN: GARY OFINOWICZ<br>NORTH 5TH ST<br>P.O. BOX 560<br>OLEAN, NY 14760<br>(716) 375-3448 | | |
| Tank Status: | Closed Prior to 04/91 (Either Closed In-Place or Removed) | | |
| Capacity (gals): | 30000 | | |
| Tank Location: | UNDERGROUND | | |
| Tank Id: | 1A | Install Date: | 01/01/1970 |
| Tank Type: | Steel/carbon steel | Product Stored: | NOS 1,2, OR 4 FUEL OIL |
| Tank Internal: | Not reported | Pipe Internal: | Not reported |
| Pipe Location: | 1 | Pipe Type: | STEEL/IRON |
| Tank External: | Not reported | | |
| Missing Data for Tank: | Minor Data Missing | | |
| Pipe External: | Not reported | | |
| Second Containment: | NONE | | |
| Leak Detection: | NONE | | |
| Overfill Prot: | Product Level Gauge | Dispenser: | Suction |
| Date Tested: | Not reported | Next Test Date: | Not reported |
| Date Closed: | Not reported | Test Method: | Not reported |
| Deleted: | False | Updated: | False |
| Dead Letter: | False | Owner Screen: | No data missing |
| FAMT: | Fiscal amount for registration fee is correct | | |
| Total Capacity: | 130700 | Renewal Date: | 05/01/1992 |
| Tank Screen: | No data missing | Federal ID: | Not reported |
| Renew Flag: | Renwal has not been printed | Facility Screen: | No data missing |
| Certification Flag: | False | Certification Date: | 12/17/1999 |
| Old PBS Number: | Not reported | Expiration Date: | 07/20/2002 |
| Inspected Date: | 11/21/1996 | Inspector: | BAJ |
| Inspection Result: | Not reported | | |
| Lat/long: | 45\|05\|20 / 78\|26\|20 | | |
| Facility Type: | OTHER | | |
| Town or City: | OLEAN | | |
| Town or City Code: | 66 | | |
| County Code: | 04 | | |
| Region: | 9 | | |

| | | | |
|---|---|---|---|
| PBS Number: | 9-386634 | CBS Number: | 9-000289 |
| SPDES Number: | 0-094781 | SWIS ID: | 0466 |
| Operator: | GARY OFINOWICZ<br>(716) 375-3448 | | |
| Emergency Contact: | DAVID R. PERNA | | |

**DRESSER RAND (Continued)** **U003317168**

| | | | |
|---|---|---|---|
| | (716) 375-3095 | | |
| Total Tanks: | 10 | | |
| Owner: | DRESSER RAND<br>NORTH 5TH ST<br>OLEAN, NY 14760<br>(716) 375-3000 | | |
| Owner Type: | Corporate/Commercial | | |
| Owner Mark: | First Owner | | |
| Owner Subtype: | Not reported | | |
| Mailing Address: | DRESSER RAND<br>ATTN: GARY OFINOWICZ<br>NORTH 5TH ST<br>P.O. BOX 560<br>OLEAN, NY 14760<br>(716) 375-3448 | | |
| Tank Status: | Closed Prior to 04/91 (Either Closed In-Place or Removed) | | |
| Capacity (gals): | 30000 | | |
| Tank Location: | UNDERGROUND | | |
| Tank Id: | 1N | Install Date: | 01/01/1975 |
| Tank Type: | Steel/carbon steel | Product Stored: | NOS 1,2, OR 4 FUEL OIL |
| Tank Internal: | Not reported | Pipe Internal: | Not reported |
| Pipe Location: | 1 | Pipe Type: | STEEL/IRON |
| Tank External: | Not reported | | |
| Missing Data for Tank: | Minor Data Missing | | |
| Pipe External: | Not reported | | |
| Second Containment: | NONE | | |
| Leak Detection: | NONE | | |
| Overfill Prot: | Product Level Gauge | Dispenser: | Suction |
| Date Tested: | Not reported | Next Test Date: | Not reported |
| Date Closed: | Not reported | Test Method: | Not reported |
| Deleted: | False | Updated: | False |
| Dead Letter: | False | Owner Screen: | No data missing |
| FAMT: | Fiscal amount for registration fee is correct | | |
| Total Capacity: | 130700 | Renewal Date: | 05/01/1992 |
| Tank Screen: | No data missing | Federal ID: | Not reported |
| Renew Flag: | Renwal has not been printed | Facility Screen: | No data missing |
| Certification Flag: | False | Certification Date: | 12/17/1999 |
| Old PBS Number: | Not reported | Expiration Date: | 07/20/2002 |
| Inspected Date: | 11/21/1996 | Inspector: | BAJ |
| Inspection Result: | Not reported | | |
| Lat/long: | 45\|05\|20 / 78\|26\|20 | | |
| Facility Type: | OTHER | | |
| Town or City: | OLEAN | | |
| Town or City Code: | 66 | | |
| County Code: | 04 | | |
| Region: | 9 | | |
| | | | |
| PBS Number: | 9-386634 | CBS Number: | 9-000289 |
| SPDES Number: | 0-094781 | SWIS ID: | 0466 |
| Operator: | GARY OFINOWICZ<br>(716) 375-3448 | | |
| Emergency Contact: | DAVID R. PERNA<br>(716) 375-3095 | | |
| Total Tanks: | 10 | | |
| Owner: | DRESSER RAND<br>NORTH 5TH ST<br>OLEAN, NY 14760 | | |

**DRESSER RAND (Continued)** U003317168

| | | | |
|---|---|---|---|
| | (716) 375-3000 | | |
| Owner Type: | Corporate/Commercial | | |
| Owner Mark: | First Owner | | |
| Owner Subtype: | Not reported | | |
| Mailing Address: | DRESSER RAND<br>ATTN: GARY OFINOWICZ<br>NORTH 5TH ST<br>P.O. BOX 560<br>OLEAN, NY 14760<br>(716) 375-3448 | | |
| Tank Status: | Closed Prior to 04/91 (Either Closed In-Place or Removed) | | |
| Capacity (gals): | 10000 | | |
| Tank Location: | UNDERGROUND | | |
| Tank Id: | 1Q | Install Date: | 01/01/1975 |
| Tank Type: | Steel/carbon steel | Product Stored: | NOS 1,2, OR 4 FUEL OIL |
| Tank Internal: | Not reported | Pipe Internal: | Not reported |
| Pipe Location: | 1 | Pipe Type: | STEEL/IRON |
| Tank External: | Not reported | | |
| Missing Data for Tank: | Minor Data Missing | | |
| Pipe External: | Not reported | | |
| Second Containment: | NONE | | |
| Leak Detection: | NONE | | |
| Overfill Prot: | Product Level Gauge | Dispenser: | Suction |
| Date Tested: | Not reported | Next Test Date: | Not reported |
| Date Closed: | Not reported | Test Method: | Not reported |
| Deleted: | False | Updated: | False |
| Dead Letter: | False | Owner Screen: | No data missing |
| FAMT: | Fiscal amount for registration fee is correct | | |
| Total Capacity: | 130700 | Renewal Date: | 05/01/1992 |
| Tank Screen: | No data missing | Federal ID: | Not reported |
| Renew Flag: | Renwal has not been printed | Facility Screen: | No data missing |
| Certification Flag: | False | Certification Date: | 12/17/1999 |
| Old PBS Number: | Not reported | Expiration Date: | 07/20/2002 |
| Inspected Date: | 11/21/1996 | Inspector: | BAJ |
| Inspection Result: | Not reported | | |
| Lat/long: | 45[05:20 / 78[26]20 | | |
| Facility Type: | OTHER | | |
| Town or City: | OLEAN | | |
| Town or City Code: | 66 | | |
| County Code: | 04 | | |
| Region: | 9 | | |
| | | | |
| PBS Number: | 9-386634 | CBS Number: | 9-000289 |
| SPDES Number: | 0-094781 | SWIS ID: | 0466 |
| Operator: | GARY OFINOWICZ<br>(716) 375-3448 | | |
| Emergency Contact: | DAVID R. PERNA<br>(716) 375-3095 | | |
| Total Tanks: | 10 | | |
| Owner: | DRESSER RAND<br>NORTH 5TH ST<br>OLEAN, NY 14760<br>(716) 375-3000 | | |
| Owner Type: | Corporate/Commercial | | |
| Owner Mark: | First Owner | | |
| Owner Subtype: | Not reported | | |
| Mailing Address: | DRESSER RAND | | |

**DRESSER RAND (Continued)** U003317168

ATTN: GARY OFINOWICZ
NORTH 5TH ST
P.O. BOX 560
OLEAN, NY 14760
(716) 375-3448

| | | | |
|---|---|---|---|
| Tank Status: | Closed Prior to 04/91 (Either Closed In-Place or Removed) | | |
| Capacity (gals): | 15000 | | |
| Tank Location: | UNDERGROUND | | |
| Tank Id: | 2B | Install Date: | 01/01/1955 |
| Tank Type: | Steel/carbon steel | Product Stored: | NOS 1,2, OR 4 FUEL OIL |
| Tank Internal: | Not reported | Pipe Internal: | Not reported |
| Pipe Location: | 1 | Pipe Type: | STEEL/IRON |
| Tank External: | Not reported | | |
| Missing Data for Tank: | Minor Data Missing | | |
| Pipe External: | Not reported | | |
| Second Containment: | NONE | | |
| Leak Detection: | NONE | | |
| Overfill Prot: | Product Level Gauge | Dispenser: | Suction |
| Date Tested: | Not reported | Next Test Date: | Not reported |
| Date Closed: | Not reported | Test Method: | Not reported |
| Deleted: | False | Updated: | False |
| Dead Letter: | False | Owner Screen: | No data missing |
| FAMT: | Fiscal amount for registration fee is correct | | |
| Total Capacity: | 130700 | Renewal Date: | 05/01/1992 |
| Tank Screen: | No data missing | Federal ID: | Not reported |
| Renew Flag: | Renwal has not been printed | Facility Screen: | No data missing |
| Certification Flag: | False | Certification Date: | 12/17/1999 |
| Old PBS Number: | Not reported | Expiration Date: | 07/20/2002 |
| Inspected Date: | 11/21/1996 | Inspector: | BAJ |
| Inspection Result: | Not reported | | |
| Lat/long: | 45\|05\|20 / 78\|26\|20 | | |
| Facility Type: | OTHER | | |
| Town or City: | OLEAN | | |
| Town or City Code: | 66 | | |
| County Code: | 04 | | |
| Region: | 9 | | |

| | | | |
|---|---|---|---|
| PBS Number: | 9-386634 | CBS Number: | 9-000289 |
| SPDES Number: | 0-094781 | SWIS ID: | 0466 |
| Operator: | GARY OFINOWICZ<br>(716) 375-3448 | | |
| Emergency Contact: | DAVID R. PERNA<br>(716) 375-3095 | | |
| Total Tanks: | 10 | | |
| Owner: | DRESSER RAND<br>NORTH 5TH ST<br>OLEAN, NY 14760<br>(716) 375-3000 | | |
| Owner Type: | Corporate/Commercial | | |
| Owner Mark: | First Owner | | |
| Owner Subtype: | Not reported | | |
| Mailing Address: | DRESSER RAND<br>ATTN: GARY OFINOWICZ<br>NORTH 5TH ST<br>P.O. BOX 560<br>OLEAN, NY 14760<br>(716) 375-3448 | | |

**DRESSER RAND (Continued)** U003317168

| | | | |
|---|---|---|---|
| Tank Status: | Closed Prior to 04/91 (Either Closed In-Place or Removed) | | |
| Capacity (gals): | 15000 | | |
| Tank Location: | UNDERGROUND | | |
| Tank Id: | 2C | Install Date: | 01/01/1955 |
| Tank Type: | Steel/carbon steel | Product Stored: | NOS 1,2, OR 4 FUEL OIL |
| Tank Internal: | Not reported | Pipe Internal: | Not reported |
| Pipe Location: | 1 | Pipe Type: | STEEL/IRON |
| Tank External: | Not reported | | |
| Missing Data for Tank: | Minor Data Missing | | |
| Pipe External: | Not reported | | |
| Second Containment: | NONE | | |
| Leak Detection: | NONE | | |
| Overfill Prot: | Product Level Gauge | Dispenser: | Suction |
| Date Tested: | Not reported | Next Test Date: | Not reported |
| Date Closed: | Not reported | Test Method: | Not reported |
| Deleted: | False | Updated: | False |
| Dead Letter: | False | Owner Screen: | No data missing |
| FAMT: | Fiscal amount for registration fee is correct | | |
| Total Capacity: | 130700 | Renewal Date: | 05/01/1992 |
| Tank Screen: | No data missing | Federal ID: | Not reported |
| Renew Flag: | Renwal has not been printed | Facility Screen: | No data missing |
| Certification Flag: | False | Certification Date: | 12/17/1999 |
| Old PBS Number: | Not reported | Expiration Date: | 07/20/2002 |
| Inspected Date: | 11/21/1996 | Inspector: | BAJ |
| Inspection Result: | Not reported | | |
| Lat/long: | 45\|05\|20 / 78\|26\|20 | | |
| Facility Type: | OTHER | | |
| Town or City: | OLEAN | | |
| Town or City Code: | 66 | | |
| County Code: | 04 | | |
| Region: | 9 | | |

This is the most recent NY PBS data for this site.

Click this hyperlink while viewing on your computer to access
5 additional NY PBS record(s) in the EDR Site Report.

PBS AST:

| | | | |
|---|---|---|---|
| PBS Number: | 9-386634 | CBS Number: | 9-000289 |
| SPDES Number: | 0-094781 | SWIS Code: | 0466 |
| Federal ID: | Not reported | Previous PBS#: | Not reported |
| Facility Status: | 1 - Active PBS facility, i.e. total capacity of the PBS tanks is greater than 1,100 gallons, regardless if Subpart 360-14 tanks exist or not at the facility. | | |
| Facility Type: | OTHER | | |
| Owner Type: | Corporate/Commercial | | |
| Owner Sub Type: | Not reported | | |
| Owner: | DRESSER RAND<br>NORTH 5TH ST<br>OLEAN, NY 14760 | | |
| Owner Phone: | (716) 375-3000 | | |
| Facility Phone: | (716) 375-3448 | | |
| Operator: | GARY OFINOWICZ | | |
| Emergency Name: | DAVID R. PERNA | | |
| Emergency Phone: | (716) 375-3095 | | |
| Total Tanks: | 10 | | |
| Total Capacity: | 130700 | | |
| Tank ID: | 1E | | |
| Capacity (Gal): | 1000 | | |

**DRESSER RAND (Continued)** **U003317168**

| | | | |
|---|---|---|---|
| Missing Data for Tank : | Minor data missing | | |
| Tank Location: | ABOVEGROUND | | |
| Product Stored: | NOS 1,2, OR 4 FUEL OIL | | |
| Tank Type: | Steel/carbon steel | | |
| Install Date: | 01/01/1949 | | |
| Tank Internal: | Not reported | | |
| Tank External: | Not reported | | |
| Tank Containment: | OTHER | | |
| Pipe Type: | STEEL/IRON | | |
| Pipe Location: | Not reported | | |
| Pipe Internal: | Not reported | | |
| Pipe External: | Not reported | | |
| Leak Detection: | NONE | | |
| Overfill Protection: | Product Level Gauge | | |
| Dispenser Method: | Suction | | |
| Date Tested: | / / | Next Test Date: | / / |
| Date Closed: | / / | Test Method: | Not reported |
| Updated: | False | Deleted: | False |
| Date Inspected: | 11/21/1996 | Inspector: | BAJ |
| Result of Inspection: | Not reported | | |
| Mailing Name: | DRESSER RAND | | |
| Mailing Address: | NORTH 5TH ST<br>P.O. BOX 560<br>OLEAN, NY 14760 | | |
| Mailing Contact: | GARY OFINOWICZ | | |
| Mailing Telephone: | (716) 375-3448 | | |
| Owner Mark: | First Owner | Expiration Date: | 07/20/2002 |
| Certification Flag: | False | Certification Date: | 12/17/1999 |
| Renew Flag: | False | Renew Date: | 05/01/1992 |
| Lat/Long: | 45\|05\|20 / 78\|26\|20 | | |
| Dead Letter: | False | | |
| Facility Screen: | No data missing | | |
| Owner Screen: | No data missing | | |
| Tank Screen: | No data missing | | |
| Town or City: | OLEAN | | |
| Town or City Code: | 66 | | |
| County Code: | 04 | | |
| Region: | 9 | | |

Fiscal Amount for Registration Fee is Correct: True

| | | | |
|---|---|---|---|
| PBS Number: | 9-386634 | CBS Number: | 9-000289 |
| SPDES Number: | 0-094781 | SWIS Code: | 0466 |
| Federal ID: | Not reported | Previous PBS#: | Not reported |
| Facility Status: | 1 - Active PBS facility, i.e. total capacity of the PBS tanks is greater than 1,100 gallons, regardless if Subpart 360-14 tanks exist or not at the facility. | | |
| Facility Type: | OTHER | | |
| Owner Type: | Corporate/Commercial | | |
| Owner Sub Type: | Not reported | | |
| Owner: | DRESSER RAND<br>NORTH 5TH ST<br>OLEAN, NY 14760 | | |
| Owner Phone: | (716) 375-3000 | | |
| Facility Phone: | (716) 375-3448 | | |
| Operator: | GARY OFINOWICZ | | |
| Emergency Name: | DAVID R. PERNA | | |
| Emergency Phone: | (716) 375-3095 | | |
| Total Tanks: | 10 | | |

DRESSER RAND (Continued) U003317168

| | | | |
|---|---|---|---|
| Total Capacity: | 130700 | | |
| Tank ID: | 1F | | |
| Capacity (Gal): | 1000 | | |
| Missing Data for Tank : | Minor data missing | | |
| Tank Location: | ABOVEGROUND | | |
| Product Stored: | NOS 1,2, OR 4 FUEL OIL | | |
| Tank Type: | Steel/carbon steel | | |
| Install Date: | 01/01/1949 | | |
| Tank Internal: | Not reported | | |
| Tank External: | Not reported | | |
| Tank Containment: | OTHER | | |
| Pipe Type: | STEEL/IRON | | |
| Pipe Location: | Not reported | | |
| Pipe Internal: | Not reported | | |
| Pipe External: | Not reported | | |
| Leak Detection: | NONE | | |
| Overfill Protection: | Product Level Gauge | | |
| Dispenser Method: | Suction | | |
| Date Tested: | / / | Next Test Date: | / / |
| Date Closed: | / / | Test Method: | Not reported |
| Updated: | False | Deleted: | False |
| Date Inspected: | 11/21/1996 | Inspector: | BAJ |
| Result of Inspection: | Not reported | | |
| Mailing Name: | DRESSER RAND | | |
| Mailing Address: | NORTH 5TH ST<br>P.O. BOX 560<br>OLEAN, NY 14760 | | |
| Mailing Contact: | GARY OFINOWICZ | | |
| Mailing Telephone: | (716) 375-3448 | | |
| Owner Mark: | First Owner | Expiration Date: | 07/20/2002 |
| Certification Flag: | False | Certification Date: | 12/17/1999 |
| Renew Flag: | False | Renew Date: | 05/01/1992 |
| Lat/Long: | 45\|05\|20 / 78\|26\|20 | | |
| Dead Letter: | False | | |
| Facility Screen: | No data missing | | |
| Owner Screen: | No data missing | | |
| Tank Screen: | No data missing | | |
| Town or City: | OLEAN | | |
| Town or City Code: | 66 | | |
| County Code: | 04 | | |
| Region: | 9 | | |

Fiscal Amount for Registration Fee is Correct: True

| | | | |
|---|---|---|---|
| PBS Number: | 9-386634 | CBS Number: | 9-000289 |
| SPDES Number: | 0-094781 | SWIS Code: | 0466 |
| Federal ID: | Not reported | Previous PBS#: | Not reported |
| Facility Status: | 1 - Active PBS facility, i.e. total capacity of the PBS tanks is greater than 1,100 gallons, regardless if Subpart 360-14 tanks exist or not at the facility. | | |
| Facility Type: | OTHER | | |
| Owner Type: | Corporate/Commercial | | |
| Owner Sub Type: | Not reported | | |
| Owner: | DRESSER RAND<br>NORTH 5TH ST<br>OLEAN, NY 14760 | | |
| Owner Phone: | (716) 375-3000 | | |
| Facility Phone: | (716) 375-3448 | | |
| Operator: | GARY OFINOWICZ | | |

**DRESSER RAND (Continued)** U003317168

| | | | |
|---|---|---|---|
| Emergency Name: | DAVID R. PERNA | | |
| Emergency Phone: | (716) 375-3095 | | |
| Total Tanks: | 10 | | |
| Total Capacity: | 130700 | | |
| Tank ID: | 1G | | |
| Capacity (Gal): | 1000 | | |
| Missing Data for Tank : | Minor data missing | | |
| Tank Location: | ABOVEGROUND | | |
| Product Stored: | NOS 1,2, OR 4 FUEL OIL | | |
| Tank Type: | Steel/carbon steel | | |
| Install Date: | 01/01/1949 | | |
| Tank Internal: | Not reported | | |
| Tank External: | Not reported | | |
| Tank Containment: | OTHER | | |
| Pipe Type: | STEEL/IRON | | |
| Pipe Location: | Not reported | | |
| Pipe Internal: | Not reported | | |
| Pipe External: | Not reported | | |
| Leak Detection: | NONE | | |
| Overfill Protection: | Product Level Gauge | | |
| Dispenser Method: | Suction | | |
| Date Tested: | / / | Next Test Date: | / / |
| Date Closed: | / / | Test Method: | Not reported |
| Updated: | False | Deleted: | False |
| Date Inspected: | 11/21/1996 | Inspector: | BAJ |
| Result of Inspection: | Not reported | | |
| Mailing Name: | DRESSER RAND | | |
| Mailing Address: | NORTH 5TH ST<br>P.O. BOX 560<br>OLEAN, NY 14760 | | |
| Mailing Contact: | GARY OFINOWICZ | | |
| Mailing Telephone: | (716) 375-3448 | | |
| Owner Mark: | First Owner | Expiration Date: | 07/20/2002 |
| Certification Flag: | False | Certification Date: | 12/17/1999 |
| Renew Flag: | False | Renew Date: | 05/01/1992 |
| Lat/Long: | 45\|05\|20 / 78\|26\|20 | | |
| Dead Letter: | False | | |
| Facility Screen: | No data missing | | |
| Owner Screen: | No data missing | | |
| Tank Screen: | No data missing | | |
| Town or City: | OLEAN | | |
| Town or City Code: | 66 | | |
| County Code: | 04 | | |
| Region: | 9 | | |

Fiscal Amount for Registration Fee is Correct: True

| | | | |
|---|---|---|---|
| PBS Number: | 9-386634 | CBS Number: | 9-000289 |
| SPDES Number: | 0-094781 | SWIS Code: | 0466 |
| Federal ID: | Not reported | Previous PBS#: | Not reported |
| Facility Status: | 1 - Active PBS facility, i.e. total capacity of the PBS tanks is greater than 1,100 gallons, regardless if Subpart 360-14 tanks exist or not at the facility. | | |
| Facility Type: | OTHER | | |
| Owner Type: | Corporate/Commercial | | |
| Owner Sub Type: | Not reported | | |
| Owner: | DRESSER RAND<br>NORTH 5TH ST<br>OLEAN, NY 14760 | | |

**DRESSER RAND (Continued)** U003317168

| | | | |
|---|---|---|---|
| Owner Phone: | (716) 375-3000 | | |
| Facility Phone: | (716) 375-3448 | | |
| Operator: | GARY OFINOWICZ | | |
| Emergency Name: | DAVID R. PERNA | | |
| Emergency Phone: | (716) 375-3095 | | |
| Total Tanks: | 10 | | |
| Total Capacity: | 130700 | | |
| Tank ID: | 1M | | |
| Capacity (Gal): | 1000 | | |
| Missing Data for Tank : | Minor data missing | | |
| Tank Location: | ABOVEGROUND | | |
| Product Stored: | LEADED GASOLINE | | |
| Tank Type: | Steel/carbon steel | | |
| Install Date: | / / | | |
| Tank Internal: | Not reported | | |
| Tank External: | Not reported | | |
| Tank Containment: | Not reported | | |
| Pipe Type: | STEEL/IRON | | |
| Pipe Location: | Not reported | | |
| Pipe Internal: | Not reported | | |
| Pipe External: | Not reported | | |
| Leak Detection: | NONE | | |
| Overfill Protection: | Product Level Gauge | | |
| Dispenser Method: | Suction | | |
| Date Tested: | / / | Next Test Date: | / / |
| Date Closed: | / / | Test Method: | Not reported |
| Updated: | False | Deleted: | False |
| Date Inspected: | 11/21/1996 | Inspector: | BAJ |
| Result of Inspection: | Not reported | | |
| Mailing Name: | DRESSER RAND | | |
| Mailing Address: | NORTH 5TH ST<br>P.O. BOX 560<br>OLEAN, NY 14760 | | |
| Mailing Contact: | GARY OFINOWICZ | | |
| Mailing Telephone: | (716) 375-3448 | | |
| Owner Mark: | First Owner | Expiration Date: | 07/20/2002 |
| Certification Flag: | False | Certification Date: | 12/17/1999 |
| Renew Flag: | False | Renew Date: | 05/01/1992 |
| Lat/Long: | 45\|05\|20 / 78\|26\|20 | | |
| Dead Letter: | False | | |
| Facility Screen: | No data missing | | |
| Owner Screen: | No data missing | | |
| Tank Screen: | No data missing | | |
| Town or City: | OLEAN | | |
| Town or City Code: | 66 | | |
| County Code: | 04 | | |
| Region: | 9 | | |

Fiscal Amount for Registration Fee is Correct: True

| | | | |
|---|---|---|---|
| PBS Number: | 9-386634 | CBS Number: | 9-000289 |
| SPDES Number: | 0-094781 | SWIS Code: | 0466 |
| Federal ID: | Not reported | Previous PBS#: | Not reported |
| Facility Status: | 1 - Active PBS facility, i.e. total capacity of the PBS tanks is greater than 1,100 gallons, regardless if Subpart 360-14 tanks exist or not at the facility. | | |
| Facility Type: | OTHER | | |
| Owner Type: | Corporate/Commercial | | |
| Owner Sub Type: | Not reported | | |

**DRESSER RAND (Continued)** U003317168

| | | | |
|---|---|---|---|
| Owner: | DRESSER RAND<br>NORTH 5TH ST<br>OLEAN, NY 14760 | | |
| Owner Phone: | (716) 375-3000 | | |
| Facility Phone: | (716) 375-3448 | | |
| Operator: | GARY OFINOWICZ | | |
| Emergency Name: | DAVID R. PERNA | | |
| Emergency Phone: | (716) 375-3095 | | |
| Total Tanks: | 10 | | |
| Total Capacity: | 130700 | | |
| Tank ID: | 2A | | |
| Capacity (Gal): | 110000 | | |
| Missing Data for Tank : | No data missing | | |
| Tank Location: | ABOVEGROUND | | |
| Product Stored: | NOS 1,2, OR 4 FUEL OIL | | |
| Tank Type: | Steel/carbon steel | | |
| Install Date: | / / | | |
| Tank Internal: | NONE | | |
| Tank External: | PAINTED/ASPHALT COATING/NONE | | |
| Tank Containment: | EARTHEN DIKE/NONE | | |
| Pipe Type: | STEEL/IRON | | |
| Pipe Location: | Above/Underground Combination | | |
| Pipe Internal: | NONE | | |
| Pipe External: | PAINTED/ASPHALT COATING/NONE | | |
| Leak Detection: | NONE/NONE | | |
| Overfill Protection: | Product Level Gauge, None | | |
| Dispenser Method: | Suction | | |
| Date Tested: | / / | Next Test Date: | / / |
| Date Closed: | / / | Test Method: | Not reported |
| Updated: | True | Deleted: | False |
| Date Inspected: | 11/21/1996 | Inspector: | BAJ |
| Result of Inspection: | Not reported | | |
| Mailing Name: | DRESSER RAND | | |
| Mailing Address: | NORTH 5TH ST<br>P.O. BOX 560<br>OLEAN, NY 14760 | | |
| Mailing Contact: | GARY OFINOWICZ | | |
| Mailing Telephone: | (716) 375-3448 | | |
| Owner Mark: | First Owner | Expiration Date: | 07/20/2002 |
| Certification Flag: | False | Certification Date: | 12/17/1999 |
| Renew Flag: | False | Renew Date: | 05/01/1992 |
| Lat/Long: | 45\|05\|20 / 78\|26\|20 | | |
| Dead Letter: | False | | |
| Facility Screen: | No data missing | | |
| Owner Screen: | No data missing | | |
| Tank Screen: | No data missing | | |
| Town or City: | OLEAN | | |
| Town or City Code: | 66 | | |
| County Code: | 04 | | |
| Region: | 9 | | |

Fiscal Amount for Registration Fee is Correct: True

| | | | |
|---|---|---|---|
| PBS Number: | 9-386634 | CBS Number: | 9-000289 |
| SPDES Number: | 0-094781 | SWIS Code: | 0466 |
| Federal ID: | Not reported | Previous PBS#: | Not reported |
| Facility Status: | 1 - Active PBS facility, i.e. total capacity of the PBS tanks is greater than 1,100 gallons, regardless if Subpart 360-14 tanks exist or not at the facility. | | |

**DRESSER RAND (Continued)** U003317168

| | | | |
|---|---|---|---|
| Facility Type: | OTHER | | |
| Owner Type: | Corporate/Commercial | | |
| Owner Sub Type: | Not reported | | |
| Owner: | DRESSER RAND<br>NORTH 5TH ST<br>OLEAN, NY 14760 | | |
| Owner Phone: | (716) 375-3000 | | |
| Facility Phone: | (716) 375-3448 | | |
| Operator: | GARY OFINOWICZ | | |
| Emergency Name: | DAVID R. PERNA | | |
| Emergency Phone: | (716) 375-3095 | | |
| Total Tanks: | 10 | | |
| Total Capacity: | 130700 | | |
| Tank ID: | 2D | | |
| Capacity (Gal): | 1800 | | |
| Missing Data for Tank : | No data missing | | |
| Tank Location: | ABOVEGROUND | | |
| Product Stored: | LUBE OIL | | |
| Tank Type: | Steel/carbon steel | | |
| Install Date: | 01/01/1973 | | |
| Tank Internal: | NONE | | |
| Tank External: | PAINTED/ASPHALT COATING/NONE | | |
| Tank Containment: | OTHER/NONE | | |
| Pipe Type: | STEEL/IRON | | |
| Pipe Location: | Aboveground | | |
| Pipe Internal: | NONE | | |
| Pipe External: | PAINTED/ASPHALT COATING/NONE | | |
| Leak Detection: | NONE/NONE | | |
| Overfill Protection: | Product Level Gauge, None | | |
| Dispenser Method: | Suction | | |
| Date Tested: | / / | Next Test Date: | / / |
| Date Closed: | / / | Test Method: | Not reported |
| Updated: | True | Deleted: | False |
| Date Inspected: | 11/21/1996 | Inspector: | BAJ |
| Result of Inspection: | Not reported | | |
| Mailing Name: | DRESSER RAND | | |
| Mailing Address: | NORTH 5TH ST<br>P.O. BOX 560<br>OLEAN, NY 14760 | | |
| Mailing Contact: | GARY OFINOWICZ | | |
| Mailing Telephone: | (716) 375-3448 | | |
| Owner Mark: | First Owner | Expiration Date: | 07/20/2002 |
| Certification Flag: | False | Certification Date: | 12/17/1999 |
| Renew Flag: | False | Renew Date: | 05/01/1992 |
| Lat/Long: | 45\|05\|20 / 78\|26\|20 | | |
| Dead Letter: | False | | |
| Facility Screen: | No data missing | | |
| Owner Screen: | No data missing | | |
| Tank Screen: | No data missing | | |
| Town or City: | OLEAN | | |
| Town or City Code: | 66 | | |
| County Code: | 04 | | |
| Region: | 9 | | |

Fiscal Amount for Registration Fee is Correct: True

| | | | |
|---|---|---|---|
| PBS Number: | 9-386634 | CBS Number: | 9-000269 |
| SPDES Number: | 0-094781 | SWIS Code: | 0466 |

**DRESSER RAND (Continued)** U003317168

| | | | |
|---|---|---|---|
| Federal ID: | Not reported | Previous PBS#: | Not reported |
| Facility Status: | 1 - Active PBS facility, i.e. total capacity of the PBS tanks is greater than 1,100 gallons, regardless if Subpart 360-14 tanks exist or not at the facility. | | |
| Facility Type: | OTHER | | |
| Owner Type: | Corporate/Commercial | | |
| Owner Sub Type: | Not reported | | |
| Owner: | DRESSER RAND<br>NORTH 5TH ST<br>OLEAN, NY 14760 | | |
| Owner Phone: | (716) 375-3000 | | |
| Facility Phone: | (716) 375-3448 | | |
| Operator: | GARY OFINOWICZ | | |
| Emergency Name: | DAVID R. PERNA | | |
| Emergency Phone: | (716) 375-3095 | | |
| Total Tanks: | 10 | | |
| Total Capacity: | 130700 | | |
| Tank ID: | 2E | | |
| Capacity (Gal): | 850 | | |
| Missing Data for Tank : | Minor data missing | | |
| Tank Location: | ABOVEGROUND | | |
| Product Stored: | OTHER | | |
| Tank Type: | Steel/carbon steel | | |
| Install Date: | / / | | |
| Tank Internal: | Not reported | | |
| Tank External: | Not reported | | |
| Tank Containment: | OTHER | | |
| Pipe Type: | STEEL/IRON | | |
| Pipe Location: | Not reported | | |
| Pipe Internal: | Not reported | | |
| Pipe External: | Not reported | | |
| Leak Detection: | NONE | | |
| Overfill Protection: | Product Level Gauge | | |
| Dispenser Method: | Suction | | |
| Date Tested: | / / | Next Test Date: | / / |
| Date Closed: | / / | Test Method: | Not reported |
| Updated: | False | Deleted: | False |
| Date Inspected: | 11/21/1996 | Inspector: | BAJ |
| Result of Inspection: | Not reported | | |
| Mailing Name: | DRESSER RAND | | |
| Mailing Address: | NORTH 5TH ST<br>P.O. BOX 560<br>OLEAN, NY 14760 | | |
| Mailing Contact: | GARY OFINOWICZ | | |
| Mailing Telephone: | (716) 375-3448 | | |
| Owner Mark: | First Owner | Expiration Date: | 07/20/2002 |
| Certification Flag: | False | Certification Date: | 12/17/1999 |
| Renew Flag: | False | Renew Date: | 05/01/1992 |
| Lat/Long: | 45\|05\|20 / 78\|26\|20 | | |
| Dead Letter: | False | | |
| Facility Screen: | No data missing | | |
| Owner Screen: | No data missing | | |
| Tank Screen: | No data missing | | |
| Town or City: | OLEAN | | |
| Town or City Code: | 66 | | |
| County Code: | 04 | | |
| Region: | 9 | | |

Fiscal Amount for Registration Fee is Correct: True

**DRESSER RAND (Continued)** **U003317168**

| | | | |
|---|---|---|---|
| PBS Number: | 9-386634 | CBS Number: | 9-000289 |
| SPDES Number: | 0-094781 | SWIS Code: | 0466 |
| Federal ID: | Not reported | Previous PBS#: | Not reported |
| Facility Status: | 1 - Active PBS facility, i.e. total capacity of the PBS tanks is greater than 1,100 gallons, regardless if Subpart 360-14 tanks exist or not at the facility. | | |
| Facility Type: | OTHER | | |
| Owner Type: | Corporate/Commercial | | |
| Owner Sub Type: | Not reported | | |
| Owner: | DRESSER RAND<br>NORTH 5TH ST<br>OLEAN, NY 14760 | | |
| Owner Phone: | (716) 375-3000 | | |
| Facility Phone: | (716) 375-3448 | | |
| Operator: | GARY OFINOWICZ | | |
| Emergency Name: | DAVID R. PERNA | | |
| Emergency Phone: | (716) 375-3095 | | |
| Total Tanks: | 10 | | |
| Total Capacity: | 130700 | | |
| Tank ID: | 2F | | |
| Capacity (Gal): | 850 | | |
| Missing Data for Tank : | Minor data missing | | |
| Tank Location: | ABOVEGROUND | | |
| Product Stored: | OTHER | | |
| Tank Type: | Steel/carbon steel | | |
| Install Date: | / / | | |
| Tank Internal: | Not reported | | |
| Tank External: | Not reported | | |
| Tank Containment: | OTHER | | |
| Pipe Type: | STEEL/IRON | | |
| Pipe Location: | Not reported | | |
| Pipe Internal: | Not reported | | |
| Pipe External: | Not reported | | |
| Leak Detection: | NONE | | |
| Overfill Protection: | Product Level Gauge | | |
| Dispenser Method: | Suction | | |
| Date Tested: | / / | Next Test Date: | / / |
| Date Closed: | / / | Test Method: | Not reported |
| Updated: | False | Deleted: | False |
| Date Inspected: | 11/21/1996 | Inspector: | BAJ |
| Result of Inspection: | Not reported | | |
| Mailing Name: | DRESSER RAND | | |
| Mailing Address: | NORTH 5TH ST<br>P.O. BOX 560<br>OLEAN, NY 14760 | | |
| Mailing Contact: | GARY OFINOWICZ | | |
| Mailing Telephone: | (716) 375-3448 | | |
| Owner Mark: | First Owner | Expiration Date: | 07/20/2002 |
| Certification Flag: | False | Certification Date: | 12/17/1998 |
| Renew Flag: | False | Renew Date: | 05/01/1992 |
| Lat/Long: | 45\|05\|20 / 78\|26\|20 | | |
| Dead Letter: | False | | |
| Facility Screen: | No data missing | | |
| Owner Screen: | No data missing | | |
| Tank Screen: | No data missing | | |
| Town or City: | OLEAN | | |
| Town or City Code: | 66 | | |

**DRESSER RAND (Continued)** U003317168

County Code: 04
Region: 9
Fiscal Amount for Registration Fee is Correct: True

| | | | |
|---|---|---|---|
| PBS Number: | 9-386634 | CBS Number: | 9-000289 |
| SPDES Number: | 0-094781 | SWIS Code: | 0466 |
| Federal ID: | Not reported | Previous PBS#: | Not reported |

Facility Status: 1 - Active PBS facility, i.e. total capacity of the PBS tanks is greater than 1,100 gallons, regardless if Subpart 360-14 tanks exist or not at the facility.
Facility Type: OTHER
Owner Type: Corporate/Commercial
Owner Sub Type: Not reported
Owner: DRESSER RAND
NORTH 5TH ST
OLEAN, NY 14760
Owner Phone: (716) 375-3000
Facility Phone: (716) 375-3448
Operator: GARY OFINOWICZ
Emergency Name: DAVID R. PERNA
Emergency Phone: (716) 375-3095
Total Tanks: 10
Total Capacity: 130700
Tank ID: 2G
Capacity (Gal): 1800
Missing Data for Tank : No data missing
Tank Location: ABOVEGROUND
Product Stored: LUBE OIL
Tank Type: Steel/carbon steel
Install Date: 01/01/1973
Tank Internal: NONE
Tank External: PAINTED/ASPHALT COATING/NONE
Tank Containment: OTHER/NONE
Pipe Type: STEEL/IRON
Pipe Location: Aboveground
Pipe Internal: NONE
Pipe External: PAINTED/ASPHALT COATING/NONE
Leak Detection: NONE/NONE
Overfill Protection: Product Level Gauge, None
Dispenser Method: Suction

| | | | |
|---|---|---|---|
| Date Tested: | / / | Next Test Date: | / / |
| Date Closed: | / / | Test Method: | Not reported |
| Updated: | True | Deleted: | False |
| Date Inspected: | 11/21/1996 | Inspector: | BAJ |

Result of Inspection: Not reported
Mailing Name: DRESSER RAND
Mailing Address: NORTH 5TH ST
P.O. BOX 560
OLEAN, NY 14760
Mailing Contact: GARY OFINOWICZ
Mailing Telephone: (716) 375-3448

| | | | |
|---|---|---|---|
| Owner Mark: | First Owner | Expiration Date: | 07/20/2002 |
| Certification Flag: | False | Certification Date: | 12/17/1999 |
| Renew Flag: | False | Renew Date: | 05/01/1992 |

Lat/Long: 45|05|20 / 78|26|20
Dead Letter: False
Facility Screen: No data missing
Owner Screen: No data missing

DRESSER RAND (Continued) U003317168

| | | | |
|---|---|---|---|
| Tank Screen: | No data missing | | |
| Town or City: | OLEAN | | |
| Town or City Code: | 66 | | |
| County Code: | 04 | | |
| Region: | 9 | | |
| Fiscal Amount for Registration Fee is Correct: | True | | |
| PBS Number: | 9-386634 | CBS Number: | 9-000289 |
| SPDES Number: | 0-094781 | SWIS Code: | 0466 |
| Federal ID: | Not reported | Previous PBS#: | Not reported |
| Facility Status: | 1 - Active PBS facility, i.e. total capacity of the PBS tanks is greater than 1,100 gallons, regardless if Subpart 360-14 tanks exist or not at the facility. | | |
| Facility Type: | OTHER | | |
| Owner Type: | Corporate/Commercial | | |
| Owner Sub Type: | Not reported | | |
| Owner: | DRESSER RAND<br>NORTH 5TH ST<br>OLEAN, NY 14760 | | |
| Owner Phone: | (716) 375-3000 | | |
| Facility Phone: | (716) 375-3448 | | |
| Operator: | GARY OFINOWICZ | | |
| Emergency Name: | DAVID R. PERNA | | |
| Emergency Phone: | (716) 375-3095 | | |
| Total Tanks: | 10 | | |
| Total Capacity: | 130700 | | |
| Tank ID: | 2I | | |
| Capacity (Gal): | 6000 | | |
| Missing Data for Tank : | No data missing | | |
| Tank Location: | ABOVEGROUND ON SADDLES LEGS, STILTS, RACK, OR CRADLE | | |
| Product Stored: | LUBE OIL | | |
| Tank Type: | Steel/carbon steel | | |
| Install Date: | / / | | |
| Tank Internal: | NONE | | |
| Tank External: | PAINTED/ASPHALT COATING/NONE | | |
| Tank Containment: | CONCRETE DIKE/NONE | | |
| Pipe Type: | STEEL/IRON | | |
| Pipe Location: | Above/Underground Combination | | |
| Pipe Internal: | NONE | | |
| Pipe External: | PAINTED/ASPHALT COATING/NONE | | |
| Leak Detection: | NONE/NONE | | |
| Overfill Protection: | Product Level Gauge, None | | |
| Dispenser Method: | Suction | | |
| Date Tested: | / / | Next Test Date: | / / |
| Date Closed: | / / | Test Method: | Not reported |
| Updated: | True | Deleted: | False |
| Date Inspected: | 11/21/1996 | Inspector: | BAJ |
| Result of Inspection: | Not reported | | |
| Mailing Name: | DRESSER RAND | | |
| Mailing Address: | NORTH 5TH ST<br>P.O. BOX 560<br>OLEAN, NY 14760 | | |
| Mailing Contact: | GARY OFINOWICZ | | |
| Mailing Telephone: | (716) 375-3448 | | |
| Owner Mark: | First Owner | Expiration Date: | 07/20/2002 |
| Certification Flag: | False | Certification Date: | 12/17/1999 |
| Renew Flag: | False | Renew Date: | 05/01/1992 |
| Lat/Long: | 45\|05\|20 / 78\|26\|20 | | |

**DRESSER RAND (Continued)** **U003317168**

| | |
|---|---|
| Dead Letter: | False |
| Facility Screen: | No data missing |
| Owner Screen: | No data missing |
| Tank Screen: | No data missing |
| Town or City: | OLEAN |
| Town or City Code: | 66 |
| County Code: | 04 |
| Region: | 9 |

Fiscal Amount for Registration Fee is Correct: True

| | | | |
|---|---|---|---|
| PBS Number: | 9-386634 | CBS Number: | 9-000289 |
| SPDES Number: | 0-094781 | SWIS Code: | 0466 |
| Federal ID: | Not reported | Previous PBS#: | Not reported |
| Facility Status: | 1 - Active PBS facility, i.e. total capacity of the PBS tanks is greater than 1,100 gallons, regardless if Subpart 360-14 tanks exist or not at the facility. | | |
| Facility Type: | OTHER | | |
| Owner Type: | Corporate/Commercial | | |
| Owner Sub Type: | Not reported | | |
| Owner: | DRESSER RAND<br>NORTH 5TH ST<br>OLEAN, NY 14760 | | |
| Owner Phone: | (716) 375-3000 | | |
| Facility Phone: | (716) 375-3448 | | |
| Operator: | GARY OFINOWICZ | | |
| Emergency Name: | DAVID R. PERNA | | |
| Emergency Phone: | (716) 375-3095 | | |
| Total Tanks: | 10 | | |
| Total Capacity: | 130700 | | |
| Tank ID: | 2J | | |
| Capacity (Gal): | 1000 | | |
| Missing Data for Tank : | No data missing | | |
| Tank Location: | ABOVEGROUND ON SADDLES LEGS, STILTS, RACK, OR CRADLE | | |
| Product Stored: | DIESEL | | |
| Tank Type: | Steel/carbon steel | | |
| Install Date: | / / | | |
| Tank Internal: | NONE | | |
| Tank External: | PAINTED/ASPHALT COATING/NONE | | |
| Tank Containment: | PREFABRICATED STEEL DIKE/NONE | | |
| Pipe Type: | STEEL/IRON | | |
| Pipe Location: | Aboveground | | |
| Pipe Internal: | NONE | | |
| Pipe External: | PAINTED/ASPHALT COATING/NONE | | |
| Leak Detection: | NONE/NONE | | |
| Overfill Protection: | Product Level Gauge, None | | |
| Dispenser Method: | Suction | | |
| Date Tested: | / / | Next Test Date: | / / |
| Date Closed: | / / | Test Method: | Not reported |
| Updated: | True | Deleted: | False |
| Date Inspected: | 11/21/1996 | Inspector: | BAJ |
| Result of Inspection: | Not reported | | |
| Mailing Name: | DRESSER RAND | | |
| Mailing Address: | NORTH 5TH ST<br>P.O. BOX 560<br>OLEAN, NY 14760 | | |
| Mailing Contact: | GARY OFINOWICZ | | |
| Mailing Telephone: | (716) 375-3448 | | |
| Owner Mark: | First Owner | Expiration Date: | 07/20/2002 |

**DRESSER RAND (Continued)** U003317168

| | | | |
|---|---|---|---|
| Certification Flag: | False | Certification Date: | 12/17/1999 |
| Renew Flag: | False | Renew Date: | 05/01/1992 |
| Lat/Long: | 45\|05\|20 / 78\|26\|20 | | |
| Dead Letter: | False | | |
| Facility Screen: | No data missing | | |
| Owner Screen: | No data missing | | |
| Tank Screen: | No data missing | | |
| Town or City: | OLEAN | | |
| Town or City Code: | 66 | | |
| County Code: | 04 | | |
| Region: | 9 | | |

Fiscal Amount for Registration Fee is Correct: True

| | | | |
|---|---|---|---|
| PBS Number: | 9-386634 | CBS Number: | 9-000289 |
| SPDES Number: | 0-094781 | SWIS Code: | 0466 |
| Federal ID: | Not reported | Previous PBS#: | Not reported |
| Facility Status: | 1 - Active PBS facility, i.e. total capacity of the PBS tanks is greater than 1,100 gallons, regardless if Subpart 360-14 tanks exist or not at the facility. | | |
| Facility Type: | OTHER | | |
| Owner Type: | Corporate/Commercial | | |
| Owner Sub Type: | Not reported | | |
| Owner: | DRESSER RAND<br>NORTH 5TH ST<br>OLEAN, NY 14760 | | |
| Owner Phone: | (716) 375-3000 | | |
| Facility Phone: | (716) 375-3448 | | |
| Operator: | GARY OFINOWICZ | | |
| Emergency Name: | DAVID R. PERNA | | |
| Emergency Phone: | (716) 375-3095 | | |
| Total Tanks: | 10 | | |
| Total Capacity: | 130700 | | |
| Tank ID: | 2K | | |
| Capacity (Gal): | 300 | | |
| Missing Data for Tank : | Minor data missing | | |
| Tank Location: | ABOVEGROUND | | |
| Product Stored: | OTHER | | |
| Tank Type: | Steel/carbon steel | | |
| Install Date: | / / | | |
| Tank Internal: | Not reported | | |
| Tank External: | Not reported | | |
| Tank Containment: | NONE | | |
| Pipe Type: | STEEL/IRON | | |
| Pipe Location: | Not reported | | |
| Pipe Internal: | Not reported | | |
| Pipe External: | Not reported | | |
| Leak Detection: | NONE | | |
| Overfill Protection: | Product Level Gauge | | |
| Dispenser Method: | Suction | | |
| Date Tested: | / / | Next Test Date: | / / |
| Date Closed: | 07/01/1988 | Test Method: | Not reported |
| Updated: | True | Deleted: | False |
| Date Inspected: | 11/21/1996 | Inspector: | BAJ |
| Result of Inspection: | Not reported | | |
| Mailing Name: | DRESSER RAND | | |
| Mailing Address: | NORTH 5TH ST<br>P.O. BOX 560<br>OLEAN, NY 14760 | | |

**DRESSER RAND (Continued)** U003317168

| | | | |
|---|---|---|---|
| Mailing Contact: | GARY OFINOWICZ | | |
| Mailing Telephone: | (716) 375-3448 | | |
| Owner Mark: | First Owner | Expiration Date: | 07/20/2002 |
| Certification Flag: | False | Certification Date: | 12/17/1999 |
| Renew Flag: | False | Renew Date: | 05/01/1992 |
| Lat/Long: | 45\|05\|20 / 78\|26\|20 | | |
| Dead Letter: | False | | |
| Facility Screen: | No data missing | | |
| Owner Screen: | No data missing | | |
| Tank Screen: | No data missing | | |
| Town or City: | OLEAN | | |
| Town or City Code: | 66 | | |
| County Code: | 04 | | |
| Region: | 9 | | |

Fiscal Amount for Registration Fee is Correct: True

| | | | |
|---|---|---|---|
| PBS Number: | 9-386634 | CBS Number: | 9-000289 |
| SPDES Number: | 0-094781 | SWIS Code: | 0466 |
| Federal ID: | Not reported | Previous PBS#: | Not reported |
| Facility Status: | 1 - Active PBS facility, i.e. total capacity of the PBS tanks is greater than 1,100 gallons, regardless if Subpart 360-14 tanks exist or not at the facility. | | |
| Facility Type: | OTHER | | |
| Owner Type: | Corporate/Commercial | | |
| Owner Sub Type: | Not reported | | |
| Owner: | DRESSER RAND<br>NORTH 5TH ST<br>OLEAN, NY 14760 | | |
| Owner Phone: | (716) 375-3000 | | |
| Facility Phone: | (716) 375-3448 | | |
| Operator: | GARY OFINOWICZ | | |
| Emergency Name: | DAVID R. PERNA | | |
| Emergency Phone: | (716) 375-3095 | | |
| Total Tanks: | 10 | | |
| Total Capacity: | 130700 | | |
| Tank ID: | 2L | | |
| Capacity (Gal): | 1000 | | |
| Missing Data for Tank : | Minor data missing | | |
| Tank Location: | ABOVEGROUND | | |
| Product Stored: | OTHER | | |
| Tank Type: | Steel/carbon steel | | |
| Install Date: | / / | | |
| Tank Internal: | Not reported | | |
| Tank External: | Not reported | | |
| Tank Containment: | NONE | | |
| Pipe Type: | STEEL/IRON | | |
| Pipe Location: | Not reported | | |
| Pipe Internal: | Not reported | | |
| Pipe External: | Not reported | | |
| Leak Detection: | NONE | | |
| Overfill Protection: | Product Level Gauge | | |
| Dispenser Method: | Suction | | |
| Date Tested: | / / | Next Test Date: | / / |
| Date Closed: | / / | Test Method: | Not reported |
| Updated: | False | Deleted: | False |
| Date Inspected: | 11/21/1996 | Inspector: | BAJ |
| Result of Inspection: | Not reported | | |
| Mailing Name: | DRESSER RAND | | |

DRESSER RAND (Continued) U003317168

| | | | |
|---|---|---|---|
| Mailing Address: | NORTH 5TH ST<br>P.O. BOX 560<br>OLEAN, NY 14760 | | |
| Mailing Contact: | GARY OFINOWICZ | | |
| Mailing Telephone: | (716) 375-3448 | | |
| Owner Mark: | First Owner | Expiration Date: | 07/20/2002 |
| Certification Flag: | False | Certification Date: | 12/17/1999 |
| Renew Flag: | False | Renew Date: | 05/01/1992 |
| Lat/Long: | 45\|05\|20 / 78\|26\|20 | | |
| Dead Letter: | False | | |
| Facility Screen: | No data missing | | |
| Owner Screen: | No data missing | | |
| Tank Screen: | No data missing | | |
| Town or City: | OLEAN | | |
| Town or City Code: | 66 | | |
| County Code: | 04 | | |
| Region: | 9 | | |

Fiscal Amount for Registration Fee is Correct: True

| | | | |
|---|---|---|---|
| PBS Number: | 9-386634 | CBS Number: | 9-000289 |
| SPDES Number: | 0-094781 | SWIS Code: | 0466 |
| Federal ID: | Not reported | Previous PBS#: | Not reported |
| Facility Status: | 1 - Active PBS facility, i.e. total capacity of the PBS tanks is greater than 1,100 gallons, regardless if Subpart 360-14 tanks exist or not at the facility. | | |
| Facility Type: | OTHER | | |
| Owner Type: | Corporate/Commercial | | |
| Owner Sub Type: | Not reported | | |
| Owner: | DRESSER RAND<br>NORTH 5TH ST<br>OLEAN, NY 14760 | | |
| Owner Phone: | (716) 375-3000 | | |
| Facility Phone: | (716) 375-3448 | | |
| Operator: | GARY OFINOWICZ | | |
| Emergency Name: | DAVID R. PERNA | | |
| Emergency Phone: | (716) 375-3095 | | |
| Total Tanks: | 10 | | |
| Total Capacity: | 130700 | | |
| Tank ID: | 2M | | |
| Capacity (Gal): | 1050 | | |
| Missing Data for Tank : | Minor data missing | | |
| Tank Location: | ABOVEGROUND | | |
| Product Stored: | OTHER | | |
| Tank Type: | Steel/carbon steel | | |
| Install Date: | / / | | |
| Tank Internal: | Not reported | | |
| Tank External: | Not reported | | |
| Tank Containment: | NONE | | |
| Pipe Type: | STEEL/IRON | | |
| Pipe Location: | Not reported | | |
| Pipe Internal: | Not reported | | |
| Pipe External: | Not reported | | |
| Leak Detection: | NONE | | |
| Overfill Protection: | Product Level Gauge | | |
| Dispenser Method: | Suction | | |
| Date Tested: | / / | Next Test Date: | / / |
| Date Closed: | / / | Test Method: | Not reported |
| Updated: | False | Deleted: | False |

**DRESSER RAND (Continued)** **U003317168**

| | | | |
|---|---|---|---|
| Date Inspected: | 11/21/1996 | Inspector: | BAJ |
| Result of Inspection: | Not reported | | |
| Mailing Name: | DRESSER RAND | | |
| Mailing Address: | NORTH 5TH ST | | |
| | P.O. BOX 560 | | |
| | OLEAN, NY 14760 | | |
| Mailing Contact: | GARY OFINOWICZ | | |
| Mailing Telephone: | (716) 375-3448 | | |
| Owner Mark: | First Owner | Expiration Date: | 07/20/2002 |
| Certification Flag: | False | Certification Date: | 12/17/1999 |
| Renew Flag: | False | Renew Date: | 05/01/1992 |
| Lat/Long: | 45\|05\|20 / 78\|26\|20 | | |
| Dead Letter: | False | | |
| Facility Screen: | No data missing | | |
| Owner Screen: | No data missing | | |
| Tank Screen: | No data missing | | |
| Town or City: | OLEAN | | |
| Town or City Code: | 66 | | |
| County Code: | 04 | | |
| Region: | 9 | | |

Fiscal Amount for Registration Fee is Correct: True

| | | | |
|---|---|---|---|
| PBS Number: | 9-386634 | CBS Number: | 9-000269 |
| SPDES Number: | 0-094781 | SWIS Code: | 0466 |
| Federal ID: | Not reported | Previous PBS#: | Not reported |
| Facility Status: | 1 - Active PBS facility, i.e. total capacity of the PBS tanks is greater than 1,100 gallons, regardless if Subpart 360-14 tanks exist or not at the facility. | | |
| Facility Type: | OTHER | | |
| Owner Type: | Corporate/Commercial | | |
| Owner Sub Type: | Not reported | | |
| Owner: | DRESSER RAND | | |
| | NORTH 5TH ST | | |
| | OLEAN, NY 14760 | | |
| Owner Phone: | (716) 375-3000 | | |
| Facility Phone: | (716) 375-3448 | | |
| Operator: | GARY OFINOWICZ | | |
| Emergency Name: | DAVID R. PERNA | | |
| Emergency Phone: | (716) 375-3095 | | |
| Total Tanks: | 10 | | |
| Total Capacity: | 130700 | | |
| Tank ID: | 2P | | |
| Capacity (Gal): | 1100 | | |
| Missing Data for Tank : | Minor data missing | | |
| Tank Location: | ABOVEGROUND | | |
| Product Stored: | OTHER | | |
| Tank Type: | Steel/carbon steel | | |
| Install Date: | / / | | |
| Tank Internal: | Not reported | | |
| Tank External: | Not reported | | |
| Tank Containment: | NONE | | |
| Pipe Type: | STEEL/IRON | | |
| Pipe Location: | Not reported | | |
| Pipe Internal: | Not reported | | |
| Pipe External: | Not reported | | |
| Leak Detection: | NONE | | |
| Overfill Protection: | Product Level Gauge | | |
| Dispenser Method: | Suction | | |

**DRESSER RAND (Continued)** U003317168

| | | | |
|---|---|---|---|
| Date Tested: | / / | Next Test Date: | / / |
| Date Closed: | / / | Test Method: | Not reported |
| Updated: | False | Deleted: | False |
| Date Inspected: | 11/21/1996 | Inspector: | BAJ |
| Result of Inspection: | Not reported | | |
| Mailing Name: | DRESSER RAND | | |
| Mailing Address: | NORTH 5TH ST<br>P.O. BOX 560<br>OLEAN, NY 14760 | | |
| Mailing Contact: | GARY OFINOWICZ | | |
| Mailing Telephone: | (716) 375-3448 | | |
| Owner Mark: | First Owner | Expiration Date: | 07/20/2002 |
| Certification Flag: | False | Certification Date: | 12/17/1999 |
| Renew Flag: | False | Renew Date: | 05/01/1992 |
| Lat/Long: | 45\|05\|20 / 78\|26\|20 | | |
| Dead Letter: | False | | |
| Facility Screen: | No data missing | | |
| Owner Screen: | No data missing | | |
| Tank Screen: | No data missing | | |
| Town or City: | OLEAN | | |
| Town or City Code: | 66 | | |
| County Code: | 04 | | |
| Region: | 9 | | |

Fiscal Amount for Registration Fee is Correct: True

| | | | |
|---|---|---|---|
| PBS Number: | 9-386834 | CBS Number: | 9-000289 |
| SPDES Number: | 0-094781 | SWIS Code: | 0466 |
| Federal ID: | Not reported | Previous PBS#: | Not reported |
| Facility Status: | 1 - Active PBS facility, i.e. total capacity of the PBS tanks is greater than 1,100 gallons, regardless if Subpart 360-14 tanks exist or not at the facility. | | |
| Facility Type: | OTHER | | |
| Owner Type: | Corporate/Commercial | | |
| Owner Sub Type: | Not reported | | |
| Owner: | DRESSER RAND<br>NORTH 5TH ST<br>OLEAN, NY 14760 | | |
| Owner Phone: | (716) 375-3000 | | |
| Facility Phone: | (716) 375-3448 | | |
| Operator: | GARY OFINOWICZ | | |
| Emergency Name: | DAVID R. PERNA | | |
| Emergency Phone: | (716) 375-3095 | | |
| Total Tanks: | 10 | | |
| Total Capacity: | 130700 | | |
| Tank ID: | 2Q | | |
| Capacity (Gal): | 1200 | | |
| Missing Data for Tank : | Minor data missing | | |
| Tank Location: | ABOVEGROUND | | |
| Product Stored: | OTHER | | |
| Tank Type: | Steel/carbon steel | | |
| Install Date: | / / | | |
| Tank Internal: | Not reported | | |
| Tank External: | Not reported | | |
| Tank Containment: | NONE | | |
| Pipe Type: | STEEL/IRON | | |
| Pipe Location: | Not reported | | |
| Pipe Internal: | Not reported | | |
| Pipe External: | Not reported | | |

**DRESSER RAND (Continued)** U003317168

| | | | |
|---|---|---|---|
| Leak Detection: | NONE | | |
| Overfill Protection: | Product Level Gauge | | |
| Dispenser Method: | Suction | | |
| Date Tested: | / / | Next Test Date: | / / |
| Date Closed: | / / | Test Method: | Not reported |
| Updated: | False | Deleted: | False |
| Date Inspected: | 11/21/1996 | Inspector: | BAJ |
| Result of Inspection: | Not reported | | |
| Mailing Name: | DRESSER RAND | | |
| Mailing Address: | NORTH 5TH ST<br>P.O. BOX 560<br>OLEAN, NY 14760 | | |
| Mailing Contact: | GARY OFINOWICZ | | |
| Mailing Telephone: | (716) 375-3448 | | |
| Owner Mark: | First Owner | Expiration Date: | 07/20/2002 |
| Certification Flag: | False | Certification Date: | 12/17/1999 |
| Renew Flag: | False | Renew Date: | 05/01/1992 |
| Lat/Long: | 45\|05\|20 / 78\|26\|20 | | |
| Dead Letter: | False | | |
| Facility Screen: | No data missing | | |
| Owner Screen: | No data missing | | |
| Tank Screen: | No data missing | | |
| Town or City: | OLEAN | | |
| Town or City Code: | 66 | | |
| County Code: | 04 | | |
| Region: | 9 | | |

Fiscal Amount for Registration Fee is Correct: True

| | | | |
|---|---|---|---|
| PBS Number: | 9-386634 | CBS Number: | 9-000289 |
| SPDES Number: | 0-094781 | SWIS Code: | 0466 |
| Federal ID: | Not reported | Previous PBS#: | Not reported |
| Facility Status: | 1 - Active PBS facility, i.e. total capacity of the PBS tanks is greater than 1,100 gallons, regardless if Subpart 360-14 tanks exist or not at the facility. | | |
| Facility Type: | OTHER | | |
| Owner Type: | Corporate/Commercial | | |
| Owner Sub Type: | Not reported | | |
| Owner: | DRESSER RAND<br>NORTH 5TH ST<br>OLEAN, NY 14760 | | |
| Owner Phone: | (716) 375-3000 | | |
| Facility Phone: | (716) 375-3448 | | |
| Operator: | GARY OFINOWICZ | | |
| Emergency Name: | DAVID R. PERNA | | |
| Emergency Phone: | (716) 375-3095 | | |
| Total Tanks: | 10 | | |
| Total Capacity: | 130700 | | |
| Tank ID: | 2R | | |
| Capacity (Gal): | 110000 | | |
| Missing Data for Tank : | Minor data missing | | |
| Tank Location: | ABOVEGROUND | | |
| Product Stored: | NOS 1,2, OR 4 FUEL OIL | | |
| Tank Type: | Steel/carbon steel | | |
| Install Date: | 01/01/1975 | | |
| Tank Internal: | Not reported | | |
| Tank External: | Not reported | | |
| Tank Containment: | NONE | | |
| Pipe Type: | STEEL/IRON | | |

**DRESSER RAND (Continued)** U003317168

| | | | |
|---|---|---|---|
| Pipe Location: | Not reported | | |
| Pipe Internal: | Not reported | | |
| Pipe External: | Not reported | | |
| Leak Detection: | NONE | | |
| Overfill Protection: | Product Level Gauge | | |
| Dispenser Method: | Suction | | |
| Date Tested: | / / | Next Test Date: | / / |
| Date Closed: | / / | Test Method: | Not reported |
| Updated: | True | Deleted: | False |
| Date Inspected: | 11/21/1996 | Inspector: | BAJ |
| Result of Inspection: | Not reported | | |
| Mailing Name: | DRESSER RAND | | |
| Mailing Address: | NORTH 5TH ST<br>P.O. BOX 560<br>OLEAN, NY 14760 | | |
| Mailing Contact: | GARY OFINOWICZ | | |
| Mailing Telephone: | (716) 375-3448 | | |
| Owner Mark: | First Owner | Expiration Date: | 07/20/2002 |
| Certification Flag: | False | Certification Date: | 12/17/1999 |
| Renew Flag: | False | Renew Date: | 05/01/1992 |
| Lat/Long: | 45\|05\|20 / 78\|26\|20 | | |
| Dead Letter: | False | | |
| Facility Screen: | No data missing | | |
| Owner Screen: | No data missing | | |
| Tank Screen: | No data missing | | |
| Town or City: | OLEAN | | |
| Town or City Code: | 66 | | |
| County Code: | 04 | | |
| Region: | 9 | | |

Fiscal Amount for Registration Fee is Correct: True

| | | | |
|---|---|---|---|
| PBS Number: | 9-386634 | CBS Number: | 9-000289 |
| SPDES Number: | 0-094781 | SWIS Code: | 0466 |
| Federal ID: | Not reported | Previous PBS#: | Not reported |
| Facility Status: | 1 - Active PBS facility, i.e. total capacity of the PBS tanks is greater than 1,100 gallons, regardless if Subpart 360-14 tanks exist or not at the facility. | | |
| Facility Type: | OTHER | | |
| Owner Type: | Corporate/Commercial | | |
| Owner Sub Type: | Not reported | | |
| Owner: | DRESSER RAND<br>NORTH 5TH ST<br>OLEAN, NY 14760 | | |
| Owner Phone: | (716) 375-3000 | | |
| Facility Phone: | (716) 375-3448 | | |
| Operator: | GARY OFINOWICZ | | |
| Emergency Name: | DAVID R. PERNA | | |
| Emergency Phone: | (716) 375-3095 | | |
| Total Tanks: | 10 | | |
| Total Capacity: | 130700 | | |
| Tank ID: | 2W | | |
| Capacity (Gal): | 2500 | | |
| Missing Data for Tank : | No data missing | | |
| Tank Location: | ABOVEGROUND ON SADDLES LEGS, STILTS, RACK, OR CRADLE | | |
| Product Stored: | LUBE OIL | | |
| Tank Type: | Steel/carbon steel | | |
| Install Date: | / / | | |
| Tank Internal: | NONE | | |

**DRESSER RAND (Continued)** U003317168

| | | | |
|---|---|---|---|
| Tank External: | PAINTED/ASPHALT COATING/NONE | | |
| Tank Containment: | CONCRETE DIKE/NONE | | |
| Pipe Type: | STEEL/IRON | | |
| Pipe Location: | Above/Underground Combination | | |
| Pipe Internal: | NONE | | |
| Pipe External: | PAINTED/ASPHALT COATING/NONE | | |
| Leak Detection: | NONE/NONE | | |
| Overfill Protection: | Product Level Gauge, None | | |
| Dispenser Method: | Suction | | |
| Date Tested: | / / | Next Test Date: | / / |
| Date Closed: | / / | Test Method: | Not reported |
| Updated: | True | Deleted: | False |
| Date Inspected: | 11/21/1996 | Inspector: | BAJ |
| Result of Inspection: | Not reported | | |
| Mailing Name: | DRESSER RAND | | |
| Mailing Address: | NORTH 5TH ST<br>P.O. BOX 560<br>OLEAN, NY 14760 | | |
| Mailing Contact: | GARY OFINOWICZ | | |
| Mailing Telephone: | (716) 375-3448 | | |
| Owner Mark: | First Owner | Expiration Date: | 07/20/2002 |
| Certification Flag: | False | Certification Date: | 12/17/1999 |
| Renew Flag: | False | Renew Date: | 05/01/1992 |
| Lat/Long: | 45\|05\|20 / 78\|26\|20 | | |
| Dead Letter: | False | | |
| Facility Screen: | No data missing | | |
| Owner Screen: | No data missing | | |
| Tank Screen: | No data missing | | |
| Town or City: | OLEAN | | |
| Town or City Code: | 66 | | |
| County Code: | 04 | | |
| Region: | 9 | | |

Fiscal Amount for Registration Fee is Correct: True

| | | | |
|---|---|---|---|
| PBS Number: | 9-386634 | CBS Number: | 9-000289 |
| SPDES Number: | 0-094781 | SWIS Code: | 0466 |
| Federal ID: | Not reported | Previous PBS#: | Not reported |
| Facility Status: | 1 - Active PBS facility, i.e. total capacity of the PBS tanks is greater than 1,100 gallons, regardless if Subpart 360-14 tanks exist or not at the facility. | | |
| Facility Type: | OTHER | | |
| Owner Type: | Corporate/Commercial | | |
| Owner Sub Type: | Not reported | | |
| Owner: | DRESSER RAND<br>NORTH 5TH ST<br>OLEAN, NY 14760 | | |
| Owner Phone: | (716) 375-3000 | | |
| Facility Phone: | (716) 375-3448 | | |
| Operator: | GARY OFINOWICZ | | |
| Emergency Name: | DAVID R. PERNA | | |
| Emergency Phone: | (716) 375-3095 | | |
| Total Tanks: | 10 | | |
| Total Capacity: | 130700 | | |
| Tank ID: | 2X | | |
| Capacity (Gal): | 3500 | | |
| Missing Data for Tank : | No data missing | | |
| Tank Location: | ABOVEGROUND | | |
| Product Stored: | OTHER | | |

**DRESSER RAND (Continued)** U003317168

| | | | |
|---|---|---|---|
| Tank Type: | Steel/carbon steel | | |
| Install Date: | / / | | |
| Tank Internal: | NONE | | |
| Tank External: | PAINTED/ASPHALT COATING/NONE | | |
| Tank Containment: | PREFABRICATED STEEL DIKE/NONE | | |
| Pipe Type: | STEEL/IRON | | |
| Pipe Location: | Above/Underground Combination | | |
| Pipe Internal: | NONE | | |
| Pipe External: | PAINTED/ASPHALT COATING/NONE | | |
| Leak Detection: | NONE/NONE | | |
| Overfill Protection: | 90 | | |
| Dispenser Method: | Suction | | |
| Date Tested: | / / | Next Test Date: | / / |
| Date Closed: | 03/01/1997 | Test Method: | Not reported |
| Updated: | True | Deleted: | False |
| Date Inspected: | 11/21/1996 | Inspector: | BAJ |
| Result of Inspection: | Not reported | | |
| Mailing Name: | DRESSER RAND | | |
| Mailing Address: | NORTH 5TH ST<br>P.O. BOX 560<br>OLEAN, NY 14760 | | |
| Mailing Contact: | GARY OFINOWICZ | | |
| Mailing Telephone: | (716) 375-3448 | | |
| Owner Mark: | First Owner | Expiration Date: | 07/20/2002 |
| Certification Flag: | False | Certification Date: | 12/17/1999 |
| Renew Flag: | False | Renew Date: | 05/01/1992 |
| Lat/Long: | 45\|05\|20 / 78\|26\|20 | | |
| Dead Letter: | False | | |
| Facility Screen: | No data missing | | |
| Owner Screen: | No data missing | | |
| Tank Screen: | No data missing | | |
| Town or City: | OLEAN | | |
| Town or City Code: | 66 | | |
| County Code: | 04 | | |
| Region: | 9 | | |

Fiscal Amount for Registration Fee is Correct: True

| | | | |
|---|---|---|---|
| PBS Number: | 9-386634 | CBS Number: | 9-000289 |
| SPDES Number: | 0-094781 | SWIS Code: | 0466 |
| Federal ID: | Not reported | Previous PBS#: | Not reported |
| Facility Status: | 1 - Active PBS facility, i.e. total capacity of the PBS tanks is greater than 1,100 gallons, regardless if Subpart 360-14 tanks exist or not at the facility. | | |
| Facility Type: | OTHER | | |
| Owner Type: | Corporate/Commercial | | |
| Owner Sub Type: | Not reported | | |
| Owner: | DRESSER RAND<br>NORTH 5TH ST<br>OLEAN, NY 14760 | | |
| Owner Phone: | (716) 375-3000 | | |
| Facility Phone: | (716) 375-3448 | | |
| Operator: | GARY OFINOWICZ | | |
| Emergency Name: | DAVID R. PERNA | | |
| Emergency Phone: | (716) 375-3095 | | |
| Total Tanks: | 10 | | |
| Total Capacity: | 130700 | | |
| Tank ID: | 2Z | | |
| Capacity (Gal): | 4200 | | |

**DRESSER RAND (Continued)** **U003317168**

| | | | |
|---|---|---|---|
| Missing Data for Tank : | No data missing | | |
| Tank Location: | ABOVEGROUND | | |
| Product Stored: | LUBE OIL | | |
| Tank Type: | Steel/carbon steel | | |
| Install Date: | / / | | |
| Tank Internal: | NONE | | |
| Tank External: | PAINTED/ASPHALT COATING/NONE | | |
| Tank Containment: | PREFABRICATED STEEL DIKE/NONE | | |
| Pipe Type: | STEEL/IRON | | |
| Pipe Location: | Aboveground | | |
| Pipe Internal: | NONE | | |
| Pipe External: | PAINTED/ASPHALT COATING/NONE | | |
| Leak Detection: | NONE/NONE | | |
| Overfill Protection: | 90 | | |
| *Dispenser Method:* | *Suction* | | |
| Date Tested: | / / | Next Test Date: | / / |
| Date Closed: | 03/01/1997 | Test Method: | Not reported |
| Updated: | True | Deleted: | False |
| Date Inspected: | 11/21/1996 | Inspector: | BAJ |
| Result of Inspection: | Not reported | | |
| Mailing Name: | DRESSER RAND | | |
| Mailing Address: | NORTH 5TH ST<br>P.O. BOX 560<br>OLEAN, NY 14760 | | |
| Mailing Contact: | GARY OFINOWICZ | | |
| Mailing Telephone: | (716) 375-3448 | | |
| Owner Mark: | First Owner | Expiration Date: | 07/20/2002 |
| Certification Flag: | False | Certification Date: | 12/17/1999 |
| Renew Flag: | False | Renew Date: | 05/01/1992 |
| Lat/Long: | 45\|05\|20 / 78\|26\|20 | | |
| Dead Letter: | False | | |
| Facility Screen: | No data missing | | |
| Owner Screen: | No data missing | | |
| Tank Screen: | No data missing | | |
| Town or City: | OLEAN | | |
| Town or City Code: | 66 | | |
| County Code: | 04 | | |
| Region: | 9 | | |

*Fiscal Amount for Registration Fee is Correct: True*

| | | | |
|---|---|---|---|
| PBS Number: | 9-386634 | CBS Number: | 9-000289 |
| SPDES Number: | 0-094781 | SWIS Code: | 0466 |
| Federal ID: | Not reported | Previous PBS#: | Not reported |
| Facility Status: | 1 - Active PBS facility, i.e. total capacity of the PBS tanks is greater than 1,100 gallons, regardless if Subpart 360-14 tanks exist or not at the facility. | | |
| Facility Type: | OTHER | | |
| Owner Type: | Corporate/Commercial | | |
| Owner Sub Type: | Not reported | | |
| Owner: | DRESSER RAND<br>NORTH 5TH ST<br>OLEAN, NY 14760 | | |
| Owner Phone: | (716) 375-3000 | | |
| Facility Phone: | (716) 375-3448 | | |
| Operator: | GARY OFINOWICZ | | |
| Emergency Name: | DAVID R. PERNA | | |
| Emergency Phone: | (716) 375-3095 | | |
| Total Tanks: | 10 | | |

**DRESSER RAND (Continued)** U003317168

| | | | |
|---|---|---|---|
| Total Capacity: | 130700 | | |
| Tank ID: | 2AA | | |
| Capacity (Gal): | 5000 | | |
| Missing Data for Tank : | No data missing | | |
| Tank Location: | ABOVEGROUND | | |
| Product Stored: | USED OIL | | |
| Tank Type: | Steel/carbon steel | | |
| Install Date: | / / | | |
| Tank Internal: | NONE | | |
| Tank External: | PAINTED/ASPHALT COATING/NONE | | |
| Tank Containment: | CONCRETE DIKE/NONE | | |
| Pipe Type: | STEEL/IRON | | |
| Pipe Location: | Aboveground | | |
| Pipe Internal: | NONE | | |
| Pipe External: | PAINTED/ASPHALT COATING/NONE | | |
| Leak Detection: | NONE/NONE | | |
| Overfill Protection: | 90 | | |
| Dispenser Method: | Suction | | |
| Date Tested: | / / | Next Test Date: | / / |
| Date Closed: | 05/01/1997 | Test Method: | Not reported |
| Updated: | True | Deleted: | False |
| Date Inspected: | 11/21/1996 | Inspector: | BAJ |
| Result of Inspection: | Not reported | | |
| Mailing Name: | DRESSER RAND | | |
| Mailing Address: | NORTH 5TH ST<br>P.O. BOX 560<br>OLEAN, NY 14760 | | |
| Mailing Contact: | GARY OFINOWICZ | | |
| Mailing Telephone: | (716) 375-3448 | | |
| Owner Mark: | First Owner | Expiration Date: | 07/20/2002 |
| Certification Flag: | False | Certification Date: | 12/17/1999 |
| Renew Flag: | False | Renew Date: | 05/01/1992 |
| Lat/Long: | 45\|05\|20 / 78\|26\|20 | | |
| Dead Letter: | False | | |
| Facility Screen: | No data missing | | |
| Owner Screen: | No data missing | | |
| Tank Screen: | No data missing | | |
| Town or City: | OLEAN | | |
| Town or City Code: | 66 | | |
| County Code: | 04 | | |
| Region: | 9 | | |

Fiscal Amount for Registration Fee is Correct: True

| | | | |
|---|---|---|---|
| PBS Number: | 9-386634 | CBS Number: | 9-000269 |
| SPDES Number: | 0-094781 | SWIS Code: | 0466 |
| Federal ID: | Not reported | Previous PBS#: | Not reported |
| Facility Status: | 1 - Active PBS facility, i.e. total capacity of the PBS tanks is greater than 1,100 gallons, regardless if Subpart 360-14 tanks exist or not at the facility. | | |
| Facility Type: | OTHER | | |
| Owner Type: | Corporate/Commercial | | |
| Owner Sub Type: | Not reported | | |
| Owner: | DRESSER RAND<br>NORTH 5TH ST<br>OLEAN, NY 14760 | | |
| Owner Phone: | (716) 375-3000 | | |
| Facility Phone: | (716) 375-3448 | | |
| Operator: | GARY OFINOWICZ | | |

**DRESSER RAND (Continued)** **U003317168**

| | | | |
|---|---|---|---|
| Emergency Name: | DAVID R. PERNA | | |
| Emergency Phone: | (716) 375-3095 | | |
| Total Tanks: | 10 | | |
| Total Capacity: | 130700 | | |
| Tank ID: | 2BB | | |
| Capacity (Gal): | 1000 | | |
| Missing Data for Tank : | No data missing | | |
| Tank Location: | ABOVEGROUND | | |
| Product Stored: | USED OIL | | |
| Tank Type: | Steel/carbon steel | | |
| Install Date: | / / | | |
| Tank Internal: | NONE | | |
| Tank External: | PAINTED/ASPHALT COATING/NONE | | |
| Tank Containment: | NONE/NONE | | |
| Pipe Type: | STEEL/IRON | | |
| Pipe Location: | Aboveground | | |
| Pipe Internal: | NONE | | |
| Pipe External: | PAINTED/ASPHALT COATING/NONE | | |
| Leak Detection: | NONE/NONE | | |
| Overfill Protection: | None | | |
| Dispenser Method: | Suction | | |
| Date Tested: | / / | Next Test Date: | / / |
| Date Closed: | 03/01/1997 | Test Method: | Not reported |
| Updated: | True | Deleted: | False |
| Date Inspected: | 11/21/1996 | Inspector: | BAJ |
| Result of Inspection: | Not reported | | |
| Mailing Name: | DRESSER RAND | | |
| Mailing Address: | NORTH 5TH ST<br>P.O. BOX 560<br>OLEAN, NY 14760 | | |
| Mailing Contact: | GARY OFINOWICZ | | |
| Mailing Telephone: | (716) 375-3448 | | |
| Owner Mark: | First Owner | Expiration Date: | 07/20/2002 |
| Certification Flag: | False | Certification Date: | 12/17/1999 |
| Renew Flag: | False | Renew Date: | 05/01/1992 |
| Lat/Long: | 45\|05\|20 / 78\|26\|20 | | |
| Dead Letter: | False | | |
| Facility Screen: | No data missing | | |
| Owner Screen: | No data missing | | |
| Tank Screen: | No data missing | | |
| Town or City: | OLEAN | | |
| Town or City Code: | 66 | | |
| County Code: | 04 | | |
| Region: | 9 | | |

Fiscal Amount for Registration Fee is Correct: True

| | | | |
|---|---|---|---|
| PBS Number: | 9-386634 | CBS Number: | 9-000289 |
| SPDES Number: | 0-094781 | SWIS Code: | 0466 |
| Federal ID: | Not reported | Previous PBS#: | Not reported |
| Facility Status: | 1 - Active PBS facility, i.e. total capacity of the PBS tanks is greater than 1,100 gallons, regardless if Subpart 360-14 tanks exist or not at the facility. | | |
| Facility Type: | OTHER | | |
| Owner Type: | Corporate/Commercial | | |
| Owner Sub Type: | Not reported | | |
| Owner: | DRESSER RAND<br>NORTH 5TH ST<br>OLEAN, NY 14760 | | |

**DRESSER RAND (Continued)** U003317168

| | | | |
|---|---|---|---|
| Owner Phone: | (716) 375-3000 | | |
| Facility Phone: | (716) 375-3448 | | |
| Operator: | GARY OFINOWICZ | | |
| Emergency Name: | DAVID R. PERNA | | |
| Emergency Phone: | (716) 375-3095 | | |
| Total Tanks: | 10 | | |
| Total Capacity: | 130700 | | |
| Tank ID: | 2CC | | |
| Capacity (Gal): | 800 | | |
| Missing Data for Tank : | Minor data missing | | |
| Tank Location: | ABOVEGROUND | | |
| Product Stored: | OTHER | | |
| Tank Type: | Steel/carbon steel | | |
| Install Date: | / / | | |
| Tank Internal: | Not reported | | |
| Tank External: | Not reported | | |
| Tank Containment: | NONE | | |
| Pipe Type: | STEEL/IRON | | |
| Pipe Location: | Not reported | | |
| Pipe Internal: | Not reported | | |
| Pipe External: | Not reported | | |
| Leak Detection: | OTHER | | |
| Overfill Protection: | Not reported | | |
| Dispenser Method: | Suction | | |
| Date Tested: | / / | Next Test Date: | / / |
| Date Closed: | / / | Test Method: | Not reported |
| Updated: | True | Deleted: | False |
| Date Inspected: | 11/21/1996 | Inspector: | BAJ |
| Result of Inspection: | Not reported | | |
| Mailing Name: | DRESSER RAND | | |
| Mailing Address: | NORTH 5TH ST<br>P.O. BOX 560<br>OLEAN, NY 14760 | | |
| Mailing Contact: | GARY OFINOWICZ | | |
| Mailing Telephone: | (716) 375-3448 | | |
| Owner Mark: | First Owner | Expiration Date: | 07/20/2002 |
| Certification Flag: | False | Certification Date: | 12/17/1999 |
| Renew Flag: | False | Renew Date: | 05/01/1992 |
| Lat/Long: | 45\|05\|20 / 78\|26\|20 | | |
| Dead Letter: | False | | |
| Facility Screen: | No data missing | | |
| Owner Screen: | No data missing | | |
| Tank Screen: | No data missing | | |
| Town or City: | OLEAN | | |
| Town or City Code: | 66 | | |
| County Code: | 04 | | |
| Region: | 9 | | |

Fiscal Amount for Registration Fee is Correct: True

| | | | |
|---|---|---|---|
| PBS Number: | 9-386634 | CBS Number: | 9-000289 |
| SPDES Number: | 0-094781 | SWIS Code: | 0466 |
| Federal ID: | Not reported | Previous PBS#: | Not reported |
| Facility Status: | 1 - Active PBS facility, i.e. total capacity of the PBS tanks is greater than 1,100 gallons, regardless if Subpart 360-14 tanks exist or not at the facility. | | |
| Facility Type: | OTHER | | |
| Owner Type: | Corporate/Commercial | | |
| Owner Sub Type: | Not reported | | |

**DRESSER RAND (Continued)** U003317168

| | | | |
|---|---|---|---|
| Owner: | DRESSER RAND<br>NORTH 5TH ST<br>OLEAN, NY 14760 | | |
| Owner Phone: | (716) 375-3000 | | |
| Facility Phone: | (716) 375-3448 | | |
| Operator: | GARY OFINOWICZ | | |
| Emergency Name: | DAVID R. PERNA | | |
| Emergency Phone: | (716) 375-3095 | | |
| Total Tanks: | 10 | | |
| Total Capacity: | 130700 | | |
| Tank ID: | 2DD | | |
| Capacity (Gal): | 1800 | | |
| Missing Data for Tank : | No data missing | | |
| Tank Location: | ABOVEGROUND | | |
| Product Stored: | LUBE OIL | | |
| Tank Type: | Steel/carbon steel | | |
| Install Date: | 12/01/1993 | | |
| Tank Internal: | NONE | | |
| Tank External: | PAINTED/ASPHALT COATING/NONE | | |
| Tank Containment: | OTHER/NONE | | |
| Pipe Type: | STEEL/IRON | | |
| Pipe Location: | Aboveground | | |
| Pipe Internal: | NONE | | |
| Pipe External: | PAINTED/ASPHALT COATING/NONE | | |
| Leak Detection: | NONE/NONE | | |
| Overfill Protection: | Product Level Gauge, None | | |
| Dispenser Method: | Suction | | |
| Date Tested: | / / | Next Test Date: | / / |
| Date Closed: | / / | Test Method: | Not reported |
| Updated: | True | Deleted: | False |
| Date Inspected: | 11/21/1996 | Inspector: | BAJ |
| Result of Inspection: | Not reported | | |
| Mailing Name: | DRESSER RAND | | |
| Mailing Address: | NORTH 5TH ST<br>P.O. BOX 560<br>OLEAN, NY 14760 | | |
| Mailing Contact: | GARY OFINOWICZ | | |
| Mailing Telephone: | (716) 375-3448 | | |
| Owner Mark: | First Owner | Expiration Date: | 07/20/2002 |
| Certification Flag: | False | Certification Date: | 12/17/1999 |
| Renew Flag: | False | Renew Date: | 05/01/1992 |
| Lat/Long: | 45\|05\|20 / 78\|26\|20 | | |
| Dead Letter: | False | | |
| Facility Screen: | No data missing | | |
| Owner Screen: | No data missing | | |
| Tank Screen: | No data missing | | |
| Town or City: | OLEAN | | |
| Town or City Code: | 66 | | |
| County Code: | 04 | | |
| Region: | 9 | | |

Fiscal Amount for Registration Fee is Correct: True

| | | | |
|---|---|---|---|
| PBS Number: | 9-386634 | CBS Number: | 9-000289 |
| SPDES Number: | 0-094781 | SWIS Code: | 0466 |
| Federal ID: | Not reported | Previous PBS#: | Not reported |
| Facility Status: | 1 - Active PBS facility, i.e. total capacity of the PBS tanks is greater than 1,100 gallons, regardless if Subpart 360-14 tanks exist or not at the facility. | | |

**DRESSER RAND (Continued)** U003317168

| | | | |
|---|---|---|---|
| Facility Type: | OTHER | | |
| Owner Type: | Corporate/Commercial | | |
| Owner Sub Type: | Not reported | | |
| Owner: | DRESSER RAND<br>NORTH 5TH ST<br>OLEAN, NY 14760 | | |
| Owner Phone: | (716) 375-3000 | | |
| Facility Phone: | (716) 375-3448 | | |
| Operator: | GARY OFINOWICZ | | |
| *Emergency Name:* | *DAVID R. PERNA* | | |
| Emergency Phone: | (716) 375-3095 | | |
| Total Tanks: | 10 | | |
| Total Capacity: | 130700 | | |
| Tank ID: | 2GG | | |
| Capacity (Gal): | 1800 | | |
| Missing Data for Tank : | No data missing | | |
| Tank Location: | ABOVEGROUND | | |
| Product Stored: | LUBE OIL | | |
| Tank Type: | Steel/carbon steel | | |
| Install Date: | 12/01/1994 | | |
| Tank Internal: | NONE | | |
| Tank External: | PAINTED/ASPHALT COATING/NONE | | |
| Tank Containment: | OTHER/NONE | | |
| Pipe Type: | STEEL/IRON | | |
| Pipe Location: | Aboveground | | |
| Pipe Internal: | NONE | | |
| Pipe External: | PAINTED/ASPHALT COATING/NONE | | |
| Leak Detection: | NONE/NONE | | |
| *Overfill Protection:* | Product Level Gauge, None | | |
| Dispenser Method: | Suction | | |
| Date Tested: | / / | Next Test Date: | / / |
| Date Closed: | / / | Test Method: | Not reported |
| Updated: | True | Deleted: | False |
| *Date Inspected:* | *11/21/1996* | *Inspector:* | BAJ |
| Result of Inspection: | Not reported | | |
| Mailing Name: | DRESSER RAND | | |
| Mailing Address: | NORTH 5TH ST<br>P.O. BOX 560<br>OLEAN, NY 14760 | | |
| Mailing Contact: | GARY OFINOWICZ | | |
| Mailing Telephone: | (716) 375-3448 | | |
| Owner Mark: | First Owner | Expiration Date: | 07/20/2002 |
| Certification Flag: | False | Certification Date: | 12/17/1999 |
| Renew Flag: | False | Renew Date: | 05/01/1992 |
| Lat/Long: | 45\|05\|20 / 78\|26\|20 | | |
| Dead Letter: | False | | |
| Facility Screen: | No data missing | | |
| Owner Screen: | No data missing | | |
| Tank Screen: | No data missing | | |
| Town or City: | OLEAN | | |
| Town or City Code: | 66 | | |
| County Code: | 04 | | |
| *Region:* | 9 | | |

Fiscal Amount for Registration Fee is Correct: True

| | | | |
|---|---|---|---|
| PBS Number: | 9-386634 | CBS Number: | 9-000289 |
| SPDES Number: | 0-094781 | SWIS Code: | 0466 |

**DRESSER RAND (Continued)** U003317168

| | | | |
|---|---|---|---|
| Federal ID: | Not reported | Previous PBS#: | Not reported |
| Facility Status: | 1 - Active PBS facility, i.e. total capacity of the PBS tanks is greater than 1,100 gallons, regardless if Subpart 360-14 tanks exist or not at the facility. | | |
| Facility Type: | OTHER | | |
| Owner Type: | Corporate/Commercial | | |
| Owner Sub Type: | Not reported | | |
| Owner: | DRESSER RAND<br>NORTH 5TH ST<br>OLEAN, NY 14760 | | |
| Owner Phone: | (716) 375-3000 | | |
| Facility Phone: | (716) 375-3448 | | |
| Operator: | GARY OFINOWICZ | | |
| Emergency Name: | DAVID R. PERNA | | |
| Emergency Phone: | (716) 375-3095 | | |
| Total Tanks: | 10 | | |
| Total Capacity: | 130700 | | |
| Tank ID: | WO1 | | |
| Capacity (Gal): | 3000 | | |
| Missing Data for Tank : | No data missing | | |
| Tank Location: | ABOVEGROUND | | |
| Product Stored: | USED OIL (fuel) | | |
| Tank Type: | Fiberglass reinforced plastic [FRP] | | |
| Install Date: | 09/01/1992 | | |
| Tank Internal: | NONE | | |
| Tank External: | NONE/NONE | | |
| Tank Containment: | CONCRETE DIKE/NONE | | |
| Pipe Type: | STEEL/IRON | | |
| Pipe Location: | Aboveground | | |
| Pipe Internal: | NONE | | |
| Pipe External: | NONE/NONE | | |
| Leak Detection: | NONE/NONE | | |
| Overfill Protection: | Product Level Gauge, None | | |
| Dispenser Method: | Suction | | |
| Date Tested: | / / | Next Test Date: | / / |
| Date Closed: | / / | Test Method: | Not reported |
| Updated: | True | Deleted: | False |
| Date Inspected: | 11/21/1996 | Inspector: | BAJ |
| Result of Inspection: | Not reported | | |
| Mailing Name: | DRESSER RAND | | |
| Mailing Address: | NORTH 5TH ST<br>P.O. BOX 560<br>OLEAN, NY 14760 | | |
| Mailing Contact: | GARY OFINOWICZ | | |
| Mailing Telephone: | (716) 375-3448 | | |
| Owner Mark: | First Owner | Expiration Date: | 07/20/2002 |
| Certification Flag: | False | Certification Date: | 12/17/1999 |
| Renew Flag: | False | Renew Date: | 05/01/1992 |
| Lat/Long: | 45\|05\|20 / 78\|26\|20 | | |
| Dead Letter: | False | | |
| Facility Screen: | No data missing | | |
| Owner Screen: | No data missing | | |
| Tank Screen: | No data missing | | |
| Town or City: | OLEAN | | |
| Town or City Code: | 66 | | |
| County Code: | 04 | | |
| Region: | 9 | | |

Fiscal Amount for Registration Fee is Correct: True

A7
SE
1/4-1/2
1842 ft.

DRESSER IND INC DRESSER CLARK DIV
5TH ST
OLEAN, NY 14760

FINDS 1000386215
RCRA-LQG 14760DRSSRPO
TRIS

Site 3 of 3 in cluster A

Relative:
Equal

Actual:
1427 ft.

RCRAInfo:
Owner: Not reported
EPA ID: NYD002123644

Contact: P E MAARSEN
(716) 375-3443

Classification: Large Quantity Generator
TSDF Activities: Not reported

Violation Status: Violations exist

Regulation Violated: 372.2(a)(8)('d')
Area of Violation: GENRATOR-SQG REQUIREMENTS
Date Violation Determined: 04/27/2005
Actual Date Achieved Compliance: 05/20/2005

Enforcement Action: WRITTEN INFORMAL
Enforcement Action Date: 05/06/2005
Penalty Type: Not reported

Regulation Violated: 373-3.9(d)(3)
Area of Violation: GENRATOR-SQG REQUIREMENTS
Date Violation Determined: 04/27/2005
Actual Date Achieved Compliance: 05/20/2005

Enforcement Action: WRITTEN INFORMAL
Enforcement Action Date: 05/06/2005
Penalty Type: Not reported

Regulation Violated: 374-3.2(e)(5) & (f)(3)
Area of Violation: GENERATOR-SPECIAL CONDITIONS
Date Violation Determined: 04/27/2005
Actual Date Achieved Compliance: 05/20/2005

Enforcement Action: WRITTEN INFORMAL
Enforcement Action Date: 05/06/2005
Penalty Type: Not reported

Regulation Violated: 372-2(a)(8)(i)(a)
Area of Violation: GENERATOR-ALL REQUIREMENTS (OVERSIGHT)
Date Violation Determined: 07/31/2001
Actual Date Achieved Compliance: 08/28/2001

Enforcement Action: WRITTEN INFORMAL
Enforcement Action Date: 08/06/2001
Penalty Type: Not reported

Regulation Violated: Not reported
Area of Violation: GENERATOR-ALL REQUIREMENTS (OVERSIGHT)
Date Violation Determined: 11/02/1999
Actual Date Achieved Compliance: 12/06/1999

Enforcement Action: WRITTEN INFORMAL
Enforcement Action Date: 11/04/1999
Penalty Type: Not reported

Regulation Violated: Not reported
Area of Violation: GENERATOR-ALL REQUIREMENTS (OVERSIGHT)
Date Violation Determined: 02/13/1995

**DRESSER IND INC DRESSER CLARK DIV (Continued)** **1000386215**

Actual Date Achieved Compliance: 03/20/1995

Enforcement Action: WRITTEN INFORMAL
Enforcement Action Date: 02/13/1995
Penalty Type: Not reported

Regulation Violated: Not reported
Area of Violation: GENERATOR-LAND BAN REQUIREMENTS
Date Violation Determined: 02/13/1995
Actual Date Achieved Compliance: 03/20/1995

Enforcement Action: WRITTEN INFORMAL
Enforcement Action Date: 02/13/1995
Penalty Type: Not reported

Regulation Violated: Not reported
Area of Violation: GENERATOR-ALL REQUIREMENTS (OVERSIGHT)
Date Violation Determined: 08/23/1988
Actual Date Achieved Compliance: 10/24/1988

Enforcement Action: WRITTEN INFORMAL
Enforcement Action Date: 09/09/1988
Penalty Type: Not reported

Regulation Violated: Not reported
Area of Violation: GENERATOR-ALL REQUIREMENTS (OVERSIGHT)
Date Violation Determined: 08/26/1986
Actual Date Achieved Compliance: 02/03/1987

Enforcement Action: WRITTEN INFORMAL
Enforcement Action Date: 09/26/1986
Penalty Type: Not reported

There are 9 violation record(s) reported at this site:

| Evaluation | Area of Violation | Date of Compliance |
|---|---|---|
| Compliance Evaluation Inspection | GENRATOR-SQG REQUIREMENTS | 20050520 |
| | GENRATOR-SQG REQUIREMENTS | 20050520 |
| | GENERATOR-SPECIAL CONDITIONS | 20050520 |
| Compliance Evaluation Inspection | GENERATOR-ALL REQUIREMENTS (OVERSIGHT) | 20010828 |
| Compliance Evaluation Inspection | GENERATOR-ALL REQUIREMENTS (OVERSIGHT) | 19991206 |
| Compliance Evaluation Inspection | GENERATOR-ALL REQUIREMENTS (OVERSIGHT) | 19950320 |
| | GENERATOR-LAND BAN REQUIREMENTS | 19950320 |
| Compliance Evaluation Inspection | GENERATOR-ALL REQUIREMENTS (OVERSIGHT) | 19881024 |
| Compliance Evaluation Inspection | GENERATOR-ALL REQUIREMENTS (OVERSIGHT) | 19870203 |

NY MANIFEST

Click this hyperlink while viewing on your computer to access additional NY MANIFEST detail in the EDR Site Report.

FINDS:
Other Pertinent Environmental Activity Identified at Site:
AEROMETRIC INFORMATION RETRIEVAL SYSTEM/AIRS FACILITY SYSTEM
NATIONAL EMISSIONS INVENTORY
PERMIT COMPLIANCE SYSTEM
RESOURCE CONSERVATION AND RECOVERY ACT INFORMATION SYSTEM
TOXIC CHEMICAL RELEASE INVENTORY SYSTEM

B8 FORMER FELMONT OIL SITE — BROWNFIELDS S106450335
SW 1446 BUFFALO STREET — NY Spills N/A
1/4-1/2 OLEAN, NY 14760
1877 ft.

Site 1 of 4 in cluster B

Relative:
Lower

Actual:
1422 ft.

NY BROWNFIELD:

| | |
|---|---|
| Region: | 9 |
| Classification | 99 |
| Acres: | 21.7 |
| Program: | ERP |
| Site Code: | 57539 |
| HW Code: | E905027 |
| SWIS: | 0512 |
| Town: | Olean (c) |
| Record Added: | 01/22/04 |
| Update Date: | 03/22/05 |
| Update By: | MLDOSTER |
| Site Description : | The purpose of this Environmental Restoration project is to further investigate known and suspected contamination at the former Felmont Oil Site (subject site) located at 1446 Buffalo Street, Olean, New York. The subject site consists of one proper ty with an approximate area of 15 acres located in a historically industrial area of Olean. The City of Olean and Cattaraugus County have identified the subject site as a prime candidate for restoration and redevelopment. The subject site's attribut es include its size; the presence of existing infrastructure (e.g., municipal sanitary sewer, water, etc.); position within an Empire Zone; and proximity to an existing interstate 86 interchange. However, a number of issues continue to block efforts to advance redevelopment efforts at the subject site. These issues center on the suspected presence of environmental contamination and the associated short and long term liability. The City of Olean is considering the acquisition of the Felmont Oil parcels via tax foreclosure. The actions of the City of Olean and Cattaraugus County with respect to the acquisition of these three parcels have been coordinated with the intent of consolidating the subject site under the control of the Olean Urban Renewal Agency. The subject site has a long history of industrial use, having been utilized by various companies for petroleum refining from 1917 to 1955 and by the Felmont Oil Corporation for the production of anhydrous ammonia from 1964 until 1983 |
| Environmental Problems : | Investigations of several adjacent former industrial properties,including the Agway Nitrogen Complex and the Van Der Horst Plant 1 and 2 Sites have confirmed the historical presence of soil contamination, groundwater contamination, and sediment cont amination within Two-Mile Creek, which is located about 0.25 miles west of the subject site's western boundary. Based upon the historical use of the subject site and the results of the investigations of the adjacent former industrial sites, the foll owing potential environmentalconcerns were identified in connection with the subject site: *leaks from extensive petrochemical storage and processing facilities formerly located on the subject site; *The potential presence of potential underground storage tanks (USTs) andor process piping; *The potential for contamination associated with the former rail facilities that serviced the subject site; *The documented occurrence of groundwater contamination by ammonia and nitrate on the adjacent Agw |

FORMER FELMONT OIL SITE (Continued) S106450335

ay site; and *Potential presence of contaminated sediments sludges and/or wastewater within the remaining components of the on-site drainage system.

Assessment : Not reported

SPILLS:

DER Facility ID : 299605
Site ID : 352308
Spill Number: 0506994
Investigator: FXGALLEG
Caller Name: JOHN STEINER
Caller Phone: (315) 449-7427
Notifier Name: JOHN STEINER
Notifier Phone: (315) 449-7427
Spill Date: 09/09/05
Facility Address 2:Not reported
Facility Type: ER
Referred To : Not reported
Remediation Phase : 1
Program Number : 0506994
Spill Cause: OTHER
Water Affected: Not reported
Contact Name: JOHN STEINER
Spill Notifier: OTHER
Spiller: JOHN STEINER
Spiller Company : AGWAY PROPERTY
Spiller Address: 1446 BUFFALO STREET
OLEAN, NY
Spiller County : 001
Spill Class: Not reported
Spill Closed Dt: / /
Cleanup Ceased: / /
Last Inspection: / /
Recommended Penalty: Penalty Not Recommended
UST Trust: False
Spill Record Last Update: 11/30/05
Date Spill Entered In Computer Data File: 09/09/05

CID : 31
Region of Spill: 9
SWIS: 0566
Caller Agency: AGWAY
Caller Extension: Not reported
Notifier Agency: AGWAY
Notifier Extension: Not reported
Reported to Dept: 09/09/05
DEC Region : 9
Spill Source: INSTITUTIONAL, EDUCATIONAL, GOV., OTHER
Facility Tele: (315) 449-7427
Cleanup Meets Std:False

Material

Material ID : 2099833
Site ID : 352308
Operable Unit : 01
Operable Unit ID : 1109813
Material Code : 0066A
Material Name : UNKNOWN PETROLEUM
Case No. : Not reported
Material FA : Petroleum
Quantity : Not reported
Units : G
Recovered : Not reported
Resource Affected - Soil : No
Resource Affected - Air : No
Resource Affected - Indoor Air : No
Resource Affected - Groundwater : Yes
Resource Affected - Surface Water : No
Resource Affected - Drinking Wtr : No
Resource Affected - Sewer : No
Resource Affected - Impervious Surface : No
Resource Affected - Subway : No

**FORMER FELMONT OIL SITE (Continued)** **S106450335**

Resource Affected - Utility : No
Resource Affected - Impervious Surface : No
Oxygenate : False
DEC Remarks : 9/15/05 FG SPOKE TO JOHN STEINER WITH AGWAY WHO SAID THAT THEY ARE LIQUIDATING ASSETS AND A POTENTIAL PURCHASER WAS INTERESTED IN THIS PROPERTY. THEY PUT 72 TEST PITS ON A 35 ACRE PARCEL AND DISCOVERED PETROLEUM. MR. STEINER SAID AGWAY HAD A NITR
OGEN OPERATION ON THE FACILITY, IT WAS NOT PETROLEUM STORAGE. HE BELIEVES THE CONTAMINATION IS FROM THE FORMER STANDARD OIL REFINERY THAT WAS AT THE SITE. HE WILL PROVIDE ALL THE DOCUMENTATION HE HAS ON THESE ISSUES. HE HAS NOT RECEIVED THE POTEN
TIAL DEVELOPERS REPORT OF FINDINGS YET BUT WILL PROVIDE IT ONCE HE RECEIVES IT. 10/26/05 FG DKK MET WITH MOBIL, ERIC ERRICO AND MENTIONED THIS SITE. MR. ERRICO SAID THIS IS ASSIGNED TO THE MAJOR PROJECTS GROUP, MIKE LAMARRE. I TOLD MR. ERRICO
NYSDEC WILL BE MEETING WITH MR. LAMARRE ON SITE ON 11/8/05. 11/30/05 JOHN STEINER 315-449-7427 WITH AGWAY CALLED. HE SAID THAT HE WILL BE DEALING WITH THE IRON OXIDE PELLETS DISCOVERED ON THE PROPERTY. HE SAID THEY WERE USED AS A CATALYST IN T
HEIR PROCESS. HE IS HOPING TO RECYCLE AND HAS CONTACTED SOME FIRMS. IF HE CANNOT RECYCLE HE WILL DETERMINE THE APPROPRIATE DISPOSAL NECESSARY.
Remark: WHILE DOING SOIL TESTING FOUND SOME CONTAMINATED SOIL. PRE AGWAY OWNING WAS A TERMINAL, AGWAY NOW IS TRYINGH TO SELL AND THAT IS WHY IT IS BEING TESTED.

---

**B9** **CF INDUSTRIES INC OLEAN NITROG** **RCRA-SQG 1000255893**
**SW** **1446 BUFFALO STREET** **CORRACTS NYD055057665**
**1/4-1/2** **OLEAN, NY 14760** **CERC-NFRAP**
**1877 ft.**

**Site 2 of 4 in cluster B**

**Relative:**
Lower

**Actual:**
1422 ft.

CERCLIS-NFRAP Classification Data:
Federal Facility: Not a Federal Facility
Non NPL Code: DR
NPL Status: Not on the NPL
CERCLIS-NFRAP Assessment History:

| | | | |
|---|---|---|---|
| Assessment: | DISCOVERY | Completed: | 04/15/1980 |
| Assessment: | PRELIMINARY ASSESSMENT | Completed: | 06/23/1987 |
| Assessment: | SITE INSPECTION | Completed: | 09/25/1990 |
| Assessment: | ARCHIVE SITE | Completed: | 01/31/1997 |

CERCLIS-NFRAP Alias Name(s):
MOBIL OIL/OLEAN REFINERY
CF INDUSTRIES
AGWAY (NYD980506174)

CORRACTS Data:

EPA Id: NYD055057665
Region: 02
Area Name: SITEWIDE
Actual Date: 06/26/1996
Corrective Action: CA225NR - Stabilization Measures Evaluation, This facility is , not amenable to stabilization activity at the, present time for reasons other than (1) it appears to be technically, infeasible or inappropriate (NF) or (2) there is a lack of technical, information (IN). Reasons for this conclusion may be the status of, closure at the facility, the degree of risk, timing considerations, the status of corrective action work at the facility, or other, administrative considerations
2002 NAICS Title: Not reported

**CF INDUSTRIES INC OLEAN NITROG (Continued)** 1000255893

EPA Id: NYD055057665
Region: 02
Area Name: SITEWIDE
Actual Date: 09/08/1993
Corrective Action: CA075ME - CA Prioritization, Facility or area was assigned a medium corrective action priority
2002 NAICS Title: Not reported

EPA Id: NYD055057665
Region: 02
Area Name: SITEWIDE
Actual Date: 09/22/1992
Corrective Action: CA050 - RFA Completed
2002 NAICS Title: Not reported

RCRAInfo Corrective Action Summary:
Event: Stabilization Measures Evaluation,This facility is not amenable to stabilization activity at the present time for reasons other than 1) it appears to be technically infeasible or inappropriate (NF) or 2) there is a lack of technical information (IN). Reasons for this conclusion may be the status of closure at the facility, the degree of risk, timing considerations, the status of corrective action work at the facility, or other administrative considerations.
Event Date: 06/26/1996

Event: CA Prioritization, Facility or area was assigned a medium corrective action priority.
Event Date: 09/08/1993

Event: RFA Completed
Event Date: 09/22/1992

RCRAInfo:
Owner: CF INDUSTRIES INC
(312) 438-9500
EPA ID: NYD055057665

Contact: STANLEY C RYS
(716) 373-1700

Classification: Small Quantity Generator
TSDF Activities: Not reported

Violation Status: Violations exist

Regulation Violated: Not reported
Area of Violation: GENERATOR-ALL REQUIREMENTS (OVERSIGHT)
Date Violation Determined: 04/11/1985
Actual Date Achieved Compliance: 07/30/1985

Enforcement Action: WRITTEN INFORMAL
Enforcement Action Date: 04/11/1985
Penalty Type: Not reported

Regulation Violated: Not reported
Area of Violation: GENERATOR-ALL REQUIREMENTS (OVERSIGHT)
Date Violation Determined: 03/05/1985
Actual Date Achieved Compliance: 07/30/1985

Enforcement Action: WRITTEN INFORMAL
Enforcement Action Date: 03/05/1985

**CF INDUSTRIES INC OLEAN NITROG (Continued)** 1000255893

Penalty Type: Not reported

There are 2 violation record(s) reported at this site:

| Evaluation | Area of Violation | Date of Compliance |
|---|---|---|
| Non-Financial Record Review | GENERATOR-ALL REQUIREMENTS (OVERSIGHT) | 19850730 |
| Non-Financial Record Review | GENERATOR-ALL REQUIREMENTS (OVERSIGHT) | 19850730 |

NY MANIFEST

Click this hyperlink while viewing on your computer to access additional NY MANIFEST detail in the EDR Site Report.

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**B10**
**SW**
**1/4-1/2**
**1877 ft.**

Relative:
Lower

Actual:
1422 ft.

**FELMONT OIL CORP CHEMICAL DIV** RCRA-SQG 1000301660
**1446 BUFFALO ST** FINDS NYD006983605
**OLEAN, NY 14760**

**Site 3 of 4 in cluster B**

RCRAInfo:
Owner: FELMONT OIL CORP
(212) 555-1212
EPA ID: NYD006983605
Contact: Not reported
Classification: Small Quantity Generator
TSDF Activities: Not reported
Violation Status: No violations found

NY MANIFEST

Click this hyperlink while viewing on your computer to access additional NY MANIFEST detail in the EDR Site Report.

FINDS:
Other Pertinent Environmental Activity Identified at Site:
NATIONAL EMISSIONS INVENTORY
RESOURCE CONSERVATION AND RECOVERY ACT INFORMATION SYSTEM

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**B11**
**SW**
**1/4-1/2**
**1877 ft.**

Relative:
Lower

Actual:
1422 ft.

**AGWAY OLEAN NITROGEN COMPLEX** RCRA-SQG 1000546726
**1446 BUFFALO ST** FINDS NYD030207708
**OLEAN, NY 14760**

**Site 4 of 4 in cluster B**

RCRAInfo:
Owner: AGWAY INC
(315) 449-6498
EPA ID: NYD030207708
Contact: Not reported
Classification: Small Quantity Generator
TSDF Activities: Not reported

**AGWAY OLEAN NITROGEN COMPLEX (Continued)** 1000546726

Violation Status: No violations found

FINDS:
Other Pertinent Environmental Activity Identified at Site:
RESOURCE CONSERVATION AND RECOVERY ACT INFORMATION SYSTEM

---

**C12** **CYTEC OLEAN INCORPORATED** FINDS 1000153951
**SSW** **1405 BUFFALO ST.** RCRA-LQG 14760CNPNC14
**1/4-1/2** **OLEAN, NY 14760** TRIS
**1910 ft.** CBS AST
LTANKS
**Site 1 of 2 in cluster C** NY Spills
**Relative:** NY Hist Spills
**Higher** HIST LTANKS

**Actual:**
**1433 ft.**

RCRAInfo:
Owner: WHEELABRATOR-FRYE, INC
(603) 926-5911
EPA ID: NYD096297544

Contact: GEORGE KARPIN
(716) 372-9650

Classification: Large Quantity Generator
TSDF Activities: Not reported

BIENNIAL REPORTS:
Last Biennial Reporting Year: 2003

| Waste | Quantity (Lbs) | Waste | Quantity (Lbs) |
|---|---|---|---|
| D001 | 16419.00 | D002 | 635.00 |
| D003 | 200.00 | D005 | 157.00 |
| D007 | 3804.00 | D008 | 3804.00 |
| D009 | 24413.00 | D011 | 4560.00 |
| D018 | 15348.00 | D022 | 4560.00 |
| D035 | 4560.00 | D040 | 32362.00 |
| F003 | 9550.00 | U153 | 375.00 |
| U158 | 215.00 | U223 | 369.00 |

Violation Status: Violations exist

Regulation Violated: Not reported
Area of Violation: GENERATOR-LAND BAN REQUIREMENTS
Date Violation Determined: 09/03/1997
Actual Date Achieved Compliance: 03/12/1998

Enforcement Action: WRITTEN INFORMAL
Enforcement Action Date: 09/03/1997
Penalty Type: Not reported

Regulation Violated: Not reported
Area of Violation: GENERATOR-ALL REQUIREMENTS (OVERSIGHT)
Date Violation Determined: 09/03/1997
Actual Date Achieved Compliance: 03/12/1998

Enforcement Action: WRITTEN INFORMAL
Enforcement Action Date: 09/03/1997
Penalty Type: Not reported

Regulation Violated: Not reported
Area of Violation: GENERATOR-ALL REQUIREMENTS (OVERSIGHT)
Date Violation Determined: 12/14/1994
Actual Date Achieved Compliance: 01/26/1995

**CYTEC OLEAN INCORPORATED (Continued)** 1000153951

Enforcement Action: WRITTEN INFORMAL
Enforcement Action Date: 12/14/1994
Penalty Type: Not reported

Regulation Violated: Not reported
Area of Violation: GENERATOR-LAND BAN REQUIREMENTS
Date Violation Determined: 12/14/1994
Actual Date Achieved Compliance: 01/26/1995

Enforcement Action: WRITTEN INFORMAL
Enforcement Action Date: 12/14/1994
Penalty Type: Not reported

Regulation Violated: Not reported
Area of Violation: GENERATOR-ALL REQUIREMENTS (OVERSIGHT)
Date Violation Determined: 10/16/1985
Actual Date Achieved Compliance: 02/20/1986

Enforcement Action: WRITTEN INFORMAL
Enforcement Action Date: 01/15/1986
Penalty Type: Not reported

There are 5 violation record(s) reported at this site:

| Evaluation | Area of Violation | Date of Compliance |
|---|---|---|
| Compliance Evaluation Inspection | GENERATOR-LAND BAN REQUIREMENTS | 19980312 |
| | GENERATOR-ALL REQUIREMENTS (OVERSIGHT) | 19980312 |
| Compliance Evaluation Inspection | GENERATOR-ALL REQUIREMENTS (OVERSIGHT) | 19950126 |
| | GENERATOR-LAND BAN REQUIREMENTS | 19950126 |
| Compliance Evaluation Inspection | GENERATOR-ALL REQUIREMENTS (OVERSIGHT) | 19860220 |

NY MANIFEST

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FINDS:
Other Pertinent Environmental Activity Identified at Site:
AEROMETRIC INFORMATION RETRIEVAL SYSTEM/AIRS FACILITY SYSTEM
INTEGRATED COMPLIANCE INFORMATION SYSTEM
NATIONAL COMPLIANCE DATABASE SYSTEM
NATIONAL EMISSIONS INVENTORY
RESOURCE CONSERVATION AND RECOVERY ACT INFORMATION SYSTEM
TOXIC CHEMICAL RELEASE INVENTORY SYSTEM

SPILLS:
DER Facility ID: 184151
Site ID: 222702
Spill Number: 9611515
Investigator: FXGALLEG
Caller Name: DON WILLIAMSON
Caller Phone: (716) 372-9650
Notifier Name: TOM DYE
Notifier Phone: (716) 372-9650
Spill Date: 12/19/96
Facility Address 2: Not reported
Facility Type: ER
Referred To: Not reported
Remediation Phase: 0
Program Number: 9611515
Spill Cause: EQUIPMENT FAILURE

CID: 31
Region of Spill: 9
SWIS: 0566
Caller Agency: CONAP INC
Caller Extension: Not reported
Notifier Agency: CONAP INC
Notifier Extension: Not reported
Reported to Dept: 12/19/96

DEC Region: 9

**CYTEC OLEAN INCORPORATED (Continued)** **1000153951**

Water Affected: Not reported
Contact Name: Not reported
Spill Notifier: RESPONSIBLE PARTY
Spiller: DON WILLIAMSON
Spiller Company : CONAP, INC
Spiller Address: 1405 BUFFALO STREET
OLEAN, NY 14760
Spiller County : 001
Spill Class: Known release that creates potential for fire or hazard. DEC Response. Willing Responsible Party. Corrective action taken.
**Spill Closed Dt: 09/08/98**
Cleanup Ceased: / /
Last Inspection: 12/27/96
Recommended Penalty: Penalty Not Recommended
UST Trust: False
Spill Record Last Update: 10/08/99
Date Spill Entered In Computer Data File: 12/19/96
Material
Material ID : 340157
Site ID : 222702
Operable Unit : 01
Operable Unit ID : 1042927
Material Code : 2006A
Material Name : TOLUENE 2,4-DIISOCYANATE
Case No. : 00584849
Material FA : Hazardous Material
Quantity : 19
Units : G
Recovered : 19
Resource Affected - Soil : Yes
Resource Affected - Air : No
Resource Affected - Indoor Air : No
Resource Affected - Groundwater : No
Resource Affected - Surface Water : No
Resource Affected - Drinking Wtr : No
Resource Affected - Sewer : No
Resource Affected - Impervious Surface : No
Resource Affected - Subway : No
Resource Affected - Utility : No
Resource Affected - Impervious Surface : No
Oxygenate : False

Spill Source: COMMERCIAL/INDUSTRIAL
Facility Tele: Not reported

Cleanup Meets Std:False

DEC Remarks : Prior to Sept, 2004 data translation this spill Lead DEC Field was "FG"
12/19/96: MNP TELECON WITH DON WILLIAMSON, CONAP, SPILL CONTAINED IN DIKE, THEY HIRED EP&S TO CLEANUP. 12/19/96: MNP RESPONSE, EP&S ON SITE, SPILL CONTAINED INSIDE DIKE AREA
IN ONE BUILDING WHICH IS SEPARATE FROM THE REST OF THE PLANT. ADJACENT STORM & SANITARY SEWERS WERE CHECKED VISUALLY & WITH A TDI DETECTOR, NOTHING FOUND. EP&S FOUND ABOUT 12-13" OF PRODUCT IN THE BUILDING WHICH INDICATES 3200 - 3300 GALS SPILLED IN
STEAD OF THE ORIGINAL ESTIMATE OF 1400 GALS. MONITORING AT THE OUTSIDE DOOR INDICATES 200 PPM DOWN TO 0 A FEW FEET AWAY. NO OFF-SITE IMPACTS EXPECTED. CONAP HAD ALREADY CLOSED & EVACUATED THE PLANT AS A PRECAUTION. CONAP ALSO NOTIFIED THE LOCAL MEDI
A, NEIGHBORS & PUBLIC SCHOOL. EP&S BEGAN PUMPING THE TDI INTO DRUMS STAGED ON POLY OUTSIDE, THE DRUMS TO BE TRANSPORTED TO CONAP'S SECURE HAZ-WASTE DRUM STORAGE ROOM ON THE OTHER SIDE OF THE PLANT. I SPOKE WITH THE OLEAN FIRE CHIEF, HE WAS SATISFIED

**CYTEC OLEAN INCORPORATED (Continued)** **1000153951**

WITH CONTAINMENT & CLEANUP PROCEDURES & LEFT THE SCENE. AFTER UPDATING SAC, I LEFT THE SITE BECAUSE THE CLEANUP WILL GO ON THROUGH THE NIGHT. I REQUESTED TO BE CONTACTED IF THEIR WERE ANY PROBLEMS. 12/20/96: MNP TELECON WITH DON WILLIAMSON, CONAP
, CLEANUP STILL UNDERWAY, PRODUCT PUMPED DOWN TO 3". THE PUMP KEEPS FREEZING DUE TO THE COLD TEMPERATURES. STILL NO PRODUCT SPILLED OUTSIDE OF THE DIKE IN THE BUIDING. 12/27/96: MNP INSPECTION, MET WITH GARY POKORSKI, CONAP, SPILL CLEANUP DONE, U
NABLE TO INSPECT SPILL AREA IN TDI BUILDING, STILL NEEDS ADDITIONAL DECON, EVEN THEN AREA WILL STILL HAVE RESTRICTED ACCESS (IE. LEVEL B). AN ESTIMATED 96 LBS. OF TDI LEAKED INTO BASEMENT OF ADJACENT BLDG IN THE MAIN PLANT, SPILLAGE CLEANED UP. ALL
DRUMS OF RECOVERED PRODUCT, DECON WATER & DBRIS STAGED IN HAZ-WASTE DRUM ROOM. NEW ESTIMATE OF TDI SPILLED IS 1970 GALS, CONAP TO SEND PRELIMINARY INCIDENT REPORT TO DEC BY 1/19/97 & A COMPLETE REPORT EXPECTED BY 2/1/97. [TO CC BRUCE BARTZ - AIR RES
OURCES]. 01/21/97: RECEIVED PRELIMINARY REPORT FROM CONAP. CLEANUP OF ALL TDI SPILLAGE INSIDE STORAGE BUILDING COMPLETE. APPROX. 95 LBS (9.3 GALS.) UNACCOUNTED FOR BETWEEN STORAGE BLDG & ADJACENT BASEMENT. CONAP OBTAINING BIDS TO COMPLETE A SITE
ASSESSMENT & REMEDIATE AREA. THEY ALSO PLAN TO CONSTRUCT A NEW TANK FARM FACILITY IN 1997 OR 1998. 11/?/97: GREEN ENV. REMOVED PORTION OF OLD GRAIN AUGER & REPAIRED DIKE IN TDI BUILDING. 01/?/98: MNP TELECONS WITH MATT CHIMPF, GREEN ENV., HOL
E IN WALL BETWEEN TDI BUILDING, AUGER FILLED WITH CONCRETE, TDI READINGS NOTED ON METER. TDI CAN BE SAMPLED VIA MODIFIED EPA METHOD 625. CONAP RELUCTANT TO DO ANALYSIS. BOB REICH TO CALL & DISCUSS. 01/?/98: MNP TELECONS TO BOB REICH - CONAP. NOT
AVAILABLE. 09/08/98 FILE, REVIEW, CONAP SUBMITTED A REPORT OF A SITE ASSESSMENT COMPLETED REGARDING THE TDI SPILL IN A LETTER DATED APRIL 3, 1998. THE TDI DISPOSAL RECEIPTS WERE SUBMITTED ALONG WITH THIS REPORT. TWO SOIL BORINGS COMPLETED AT THE
SPILL AREA SHOW LEVELS OF TDI AT 2.6PPM AND .88PPM IN THE SOIL. A WELL ADJACENT TO THE TDI SPILL AREA SHOWS NO CONTAMINATION PRESENT. THE BORINGS ALSO SHOW THAT BENZO(K)FLUORANTHENE AND CHRYSENE ARE PRESENT AT .45PPM AND .5PPM IN THE SOIL BORINGS.
NO CLEANUP LEVEL IS AVAILABLE FOR TDI. THE BENZO(K)FLUORANTHENE AND THE CHRYSENE EXCEED THE STARS LEVELS. THE SITE CAN BE MADE INACTIVE, NO FURTHER WORK WILL BE REQUIRED. THE TDI CLEANUP LEVEL IS BEING REFERRED TO HAZARDOUS WASTE
REMEDIATION TO DETERMINE IF ADDITIONAL WORK IS REQUIRED.

Remark: SPILL CONTAINED IN A DYKED AREA AFTER A VALVE TO A PUMP FAILED INSIDE THE CONTAINMENT AREA - THE 1400 GALLON DID EMPTY - ENVIROMENTAL SERVICES CONTACTED FOR CLEAN UP AND THEY ARE ENROUTE - FD & PD WERE BOTH CONTACTED AND ON SITE
This is the most recent NY SPILLS record for this site.

Click this hyperlink while viewing on your computer to access additional NY SPILLS detail in the EDR Site Report.

HIST SPILLS:

| | | | |
|---|---|---|---|
| Spill Number: | 9611515 | Region of Spill: | 9 |
| Investigator: | FG | SWIS: | 04 |
| Caller Name: | Not reported | Caller Agency: | Not reported |
| Caller Phone: | Not reported | Caller Extension: | Not reported |
| Notifier Name: | Not reported | Notifier Agency: | Not reported |
| Notifier Phone: | Not reported | Notifier Extension: | Not reported |
| Spill Date: | 12/19/1996 07:15 | Reported to Dept: | 12/19/96 11:06 |

**CYTEC OLEAN INCORPORATED (Continued)** 1000153951

| | | | |
|---|---|---|---|
| Spill Cause: | Equipment Failure | Resource Affected: | On Land |
| Water Affected: | Not reported | Spill Source: | Other Commercial/Industrial |
| Facility Contact: | DON WILLIAMSON | Facility Tele: | (716) 372-9654 |
| Spill Notifier: | Responsible Party | PBS Number: | Not reported |
| Spiller Contact: | Not reported | Spiller Phone: | Not reported |
| Spiller: | CONAP, INC | | |
| Spiller Address: | 1405 BUFFALO STREET<br>OLEAN, NY 14760 | | |

DEC Remarks : 12/19/96: MNP TELECON WITH DON WILLIAMSON, CONAP, SPILL CONTAINED IN DIKE, THEY HIRED EP S TO CLEANUP. 12/19/96: MNP RESPONSE, EP S ON SITE, SPILL CONTAINED INSIDE DIKE AREA IN ONE BUILDING WHICH IS SEPARATE FROM THE REST OF THE PLANT. ADJACENT STORM SANITARY SEWERS WERE CHECKED VISUALLY WITH A TDI DETECTOR, NOTHING FOUND. EP S FOUND ABOUT 12-13 OF PRODUCT IN THE BUILDING WHICH INDICATES 3200 - 3300 GALS SPILLED INSTEAD OF THE ORIGINAL ESTIMATE OF 1400 GALS. MONITORING AT THE OUTSIDE DOOR INDICATES 200 PPM DOWN TO 0 A FEW FEET AWAY. NO OFF-SITE IMPACTS EXPECTED. CONAP HAD ALREADY CLOSED EVACUATED THE PLANT AS A PRECAUTION. CONAP ALSO NOTIFIED THE LOCAL MEDIA, NEIGHBORS PUBLIC SCHOOL. EP S BEGAN PUMPING THE TDI INTO DRUMS STA GED ON POLY OUTSIDE, THE DRUMS TO BE TRANSPORTED TO CONAP S SECURE HAZ-WASTE DRUM STORAGE ROOM ON THE OTHER SIDE OF THE PLANT. I SPOKE WITH THE OLEAN FIRE CHIEF, HE WAS SATISFIED WITH CONTAINMENT CLEANUP PROCEDURES LEFT THE SCENE. AFTER UPDATING SAC, I LEFT THE SITE BECAUSE THE CLEANUP WILL GO ON THROUGH THE NIGHT. I REQUESTED TO BE CONTACTED IF THEIR WERE ANY PROBLEMS. 12/20/96: MNP TELECON WITH DON WILLIAMSON, CONAP, CLEANUP STILL UNDERWAY, PRODUCT PUMPED DOWN TO 3 . THE PUMP KEEPS FRE EZING DUE TO THE COLD TEMPERATURES. STILL NO PRODUCT SPILLED OUTSIDE OF THE DIKE IN THE BUIDING. 12/27/96: MNP INSPECTION, MET WITH GARY POKORSKI, CONAP, SPILL CLEANUP DONE, UNABLE TO INSPECT SPILL AREA IN TDI BUILDING, STILL NEEDS ADDITIONAL DEC ON, EVEN THEN AREA WILL STILL HAVE RESTRICTED ACCESS IE. LEVEL B). AN ESTIMATED 96 LBS. OF TDI LEAKED INTO BASEMENT OF ADJACENT BLDG IN THE MAIN PLANT, SPILLAGE CLEANED UP. ALL DRUMS OF RECOVERED PRODUCT, DECON WATER DBRIS STAGED IN HAZ-WASTE DR UM ROOM. NEW ESTIMATE OF TDI SPILLED IS 1970 GALS. CONAP TO SEND PRELIMINARY INCIDENT REPORT TO DEC BY 1/19/97 A COMPLETE REPORT EXPECTED BY 2/1/97. TO CC BRUCE BARTZ - AIR RESOURCES . 01/21/97: RECEIVED PRELIMINARY REPORT FROM CONAP. CLEANUP OF ALL TDI SPILLAGE INSIDE STORAGE BUILDING COMPLETE. APPROX. 95 LBS 9.3 GALS.) UNACCOUNTED FOR BETWEEN STORAGE BLDG ADJACENT BASEMENT. CONAP OBTAINING BIDS TO COMPLETE A SITE ASSESSMENT REMEDIATE AREA. THEY ALSO PLAN TO CONSTRUCT A NEW TANK FA RM FACILITY IN 1997 OR 1998. 11/?/97: GREEN ENV. REMOVED PORTION OF OLD GRAIN AUGER REPAIRED DIKE IN TDI BUILDING. 01/?/98: MNP TELECONS WITH MATT CHIMPF, GREEN ENV., HOLE IN WALL BETWEEN TDI BUILDING, AUGER FILLED WITH CONCRETE. TDI READIN GS NOTED ON METER. TDI CAN BE SAMPLED VIA MODIFIED EPA METHOD 625. CONAP RELUCTANT TO DO ANALYSIS. BOB REICH TO CALL DISCUSS. 01/?/98: MNP TELECONS TO BOB REICH - CONAP. NOT AVAILABLE. 09/08/98 FILE, REVIEW, CONAP SUBMITTED A REPORT OF A SIT E ASSESSMENT COMPLETED REGARDING THE TDI SPILL IN A LETTER DATED APRIL 3, 1998. THE TDI DISPOSAL RECEIPTS WERE SUBMITTED ALONG WITH THIS REPORT. TWO SOIL BORINGS COMPLETED AT THE SPILL AREA SHOW LEVELS OF TDI AT 2.6PPM AND .88PPM IN THE SOIL. A WEL L ADJACENT TO THE TDI SPILL AREA SHOWS NO CONTAMINATION PRESENT. THE

**CYTEC OLEAN INCORPORATED (Continued)** **1000153951**

BORINGS ALSO SHOW THAT BENZO K)FLUORANTHENE AND CHRYSENE ARE PRESENT AT .45PPM AND .5PPM IN THE SOIL BORINGS. NO CLEANUP LEVEL IS AVAILABLE FOR TDI. THE BENZO K)FLUORANTHEN E AND THE CHRYSENE EXCEED THE STARS LEVELS. THE SITE CAN BE MADE INACTIVE, NO FURTHER WORK WILL BE REQUIRED. THE TDI CLEANUP LEVEL IS BEING REFERRED TO HAZARDOUS WASTE REMEDIATION TO DETERMINE IF ADDITIONAL WORK IS REQUIRED.

Remark: SPILL CONTAINED IN A DYKED AREA AFTER A VALVE TO A PUMP FAILED INSIDE THE CONTAINMENT AREA - THE 1400 GALLON DID EMPTY - ENVIROMENTAL SERVICES CONTACTED FOR CLEAN UP AND THEY ARE ENROUTE - FD PD WERE BOTH CONTACTED AND ON SITE

Spill Class: Known release that creates potential for fire or hazard. DEC Response. Willing Responsible Party. Corrective action taken.

Material:
Material Class Type: 2
Quantity Spilled: 1970
Units: Gallons
Unknown Qty Spilled: 1970
Quantity Recovered: 1900
Unknown Qty Recovered: False
Material: TOLUENE 2,4-DIISOCYANATE
Class Type: Hazardous
Chem Abstract Service Number: TOLUENE 2,4-DIISOCYANATE
Last Date: Not reported
Num Times Material Entry In File: 0

Spill Closed Dt: 09/08/98
Cleanup Ceased: / /
Last Inspection: 12/27/96 Cleanup Meets Std:False
Recommended Penalty: Penalty Not Recommended
Spiller Cleanup Dt/ / Enforcement Date: / /
Invstgn Complete:/ / UST Involvement: False
Spill Record Last Update: 10/08/99
Is Updated: False
Corrective Action Plan Submitted: / /
Date Spill Entered In Computer Data File: 12/19/96
Date Region Sent Summary to Central Office: / /

This is the most recent NY HISTORIC SPILLS record for this site.

Click this hyperlink while viewing on your computer to access additional NY HIST SPILLS detail in the EDR Site Report.

CBS AST:
CBS Number: 9-000136 Telephone: (716) 372-9650
Owner: CYTEC INDUSTRIES, INC.
FIVE GARRET MOUNTAIN PLAZA
WEST PATERSON, NJ 07424
(716) 372-9650
Facility Status: Active
Total Tanks 2
Tank Status: In Service
Tank Error Status: No Missing Data
Tank Location: Aboveground on crib, rack or cradle
Install Date: 06/85
Capacity (Gal): 5000
Tank Type: Stainless steel alloy
Substance: Single Hazardous Substance on DEC List
Extrnl Protection: None
Intrnl Protection: None

**CYTEC OLEAN INCORPORATED (Continued)** 1000153951

| | | | |
|---|---|---|---|
| Tank Containment: | Other | | |
| Pipe Type: | STAINLESS STEEL ALLOY | Pipe Location: | Aboveground |
| Pipe Internal: | None | | |
| Pipe External: | None | | |
| Pipe Containment: | None | Haz Percent: | 100 |
| Leak Detection: | Other | | |
| Overfill Protection: | Not reported | | |
| Chemical: | Toluene diisocyanite | | |
| Tank Closed: | 06/99 | | |
| PBS Number: | 9-042684 | SWIS Code: | 0466 |
| Federal ID: | Not reported | | |
| MOSF Number: | - | CAS Number: | 26471625 |
| SPDES Number: | 0-24471 | ICS Number: | 9-179343 |
| Facility Type: | Manufacturing | | |
| Operator: | GERRET PETERS | Facility Town: | OLEAN |
| Emrgncy Contact: | JOHN NORTHRUP | Emrgncy Phone: | (716) 372-7955 |
| Certified Date: | 03/29/2001 | Expiration Date: | 06/20/2003 |
| Owner type: | Corporate/Commercial | | |
| Owner Sub Type: | Not reported | | |
| Mail Name: | CYTEC INDUSTRIES, INC. | | |
| Mail Contact: | TOM HARDES<br>1405 BUFFALO STREET<br>OLEAN, NY 14760 | | |
| Mail Phone: | (716) 372-9650 | | |
| Tank Secret: | False | Date Entered: | 06/20/1989 10:01:49 |
| Last Test: | Not reported | Due Date: | Not reported |
| Pipe Flag: | False | Owner Mark: | 1 |
| Renew Date: | 03/01/93 | Date Expired: | 06/20/95 |
| Is it There: | False | Is Updated: | False |
| Owner Status: | F | | |

| | |
|---|---|
| Certificate Needs to be Printed: | False |
| Fiscal Amt for Registration Fee Correct: | True |
| Renewal Has Been Printed for Facility: | True |
| Total Capacity of All Active Tanks(gal): | 14000 |
| Unique Tank Id Number: | 00001 |
| Date Pre-Printed Renewal App Form Was Last Printed: | 03/12/2001 |

| | | | |
|---|---|---|---|
| CBS Number: | 9-000136 | Telephone: | (716) 372-9650 |
| Owner: | CYTEC INDUSTRIES, INC.<br>FIVE GARRET MOUNTAIN PLAZA<br>WEST PATERSON, NJ 07424<br>(716) 372-9650 | | |
| Facility Status: | Active | | |
| Total Tanks | 2 | | |
| Tank Status: | In Service | | |
| Tank Error Status: | No Missing Data | | |
| Tank Location: | Aboveground on crib, rack or cradle | | |
| Install Date: | 06/85 | | |
| Capacity (Gal): | 5000 | | |
| Tank Type: | Stainless steel alloy | | |
| Substance: | Single Hazardous Substance on DEC List | | |
| Extrnl Protection: | None | | |
| Intrnl Protection: | None | | |
| Tank Containment: | Other | | |
| Pipe Type: | STAINLESS STEEL ALLOY | Pipe Location: | Aboveground |
| Pipe Internal: | None | | |
| Pipe External: | None | | |

**CYTEC OLEAN INCORPORATED (Continued)** **1000153951**

| | | | |
|---|---|---|---|
| Pipe Containment: | None | Haz Percent: | 100 |
| Leak Detection: | Other | | |
| Overfill Protection: | Not reported | | |
| Chemical: | Toluene 2,4-diisocyanate | | |
| Tank Closed: | 06/99 | | |
| PBS Number: | 9-042684 | SWIS Code: | 0466 |
| Federal ID: | Not reported | | |
| MOSF Number: | - | CAS Number: | 584849 |
| SPDES Number: | 0-24471 | ICS Number: | 9-179343 |
| Facility Type: | Manufacturing | | |
| Operator: | GERRET PETERS | Facility Town: | OLEAN |
| Emrgncy Contact: | JOHN NORTHRUP | Emrgncy Phone: | (716) 372-7955 |
| Certified Date: | 03/29/2001 | Expiration Date: | 06/20/2003 |
| Owner type: | Corporate/Commercial | | |
| Owner Sub Type: | Not reported | | |
| Mail Name: | CYTEC INDUSTRIES, INC. | | |
| Mail Contact: | TOM HARDES<br>1405 BUFFALO STREET<br>OLEAN, NY 14760 | | |
| Mail Phone: | (716) 372-9650 | | |
| Tank Secret: | False | Date Entered: | 06/20/1989 10:01:25 |
| Last Test: | Not reported | Due Date: | Not reported |
| Pipe Flag: | False | Owner Mark: | 1 |
| Renew Date: | 03/01/93 | Date Expired: | 06/20/95 |
| Is it There: | False | Is Updated: | False |
| Owner Status: | F | | |

| | |
|---|---|
| Certificate Needs to be Printed: | False |
| Fiscal Amt for Registration Fee Correct: | True |
| Renewal Has Been Printed for Facility: | True |
| Total Capacity of All Active Tanks(gal): | 14000 |
| Unique Tank Id Number: | 00002 |
| Date Pre-Printed Renewal App Form Was Last Printed: | 03/12/2001 |

| | | | |
|---|---|---|---|
| CBS Number: | 9-000136 | Telephone: | (716) 372-9650 |
| Owner: | CYTEC INDUSTRIES, INC.<br>FIVE GARRET MOUNTAIN PLAZA<br>WEST PATERSON, NJ 07424<br>(716) 372-9650 | | |
| Facility Status: | Active | | |
| Total Tanks | 2 | | |
| Tank Status: | In Service | | |
| Tank Error Status: | No Missing Data | | |
| Tank Location: | Aboveground on crib, rack or cradle | | |
| Install Date: | 10/99 | | |
| Capacity (Gal): | 7000 | | |
| Tank Type: | Stainless steel alloy | | |
| Substance: | Single Hazardous Substance on DEC List | | |
| Extrnl Protection: | None | | |
| Intrnl Protection: | None | | |
| Tank Containment: | Other | | |
| Pipe Type: | STAINLESS STEEL ALLOY | Pipe Location: | Aboveground |
| Pipe Internal: | None | | |
| Pipe External: | None | | |
| Pipe Containment: | None | Haz Percent: | 100 |
| Leak Detection: | Other | | |
| Overfill Protection: | 3/3 | | |
| Chemical: | Toluene diisocyanite | | |

**CYTEC OLEAN INCORPORATED (Continued)** 1000153951

| | | | |
|---|---|---|---|
| Tank Closed: | 02/00 | | |
| PBS Number: | 9-042684 | SWIS Code: | 0466 |
| Federal ID: | Not reported | | |
| MOSF Number: | - | CAS Number: | 26471625 |
| SPDES Number: | 0-24471 | ICS Number: | 9-179343 |
| Facility Type: | Manufacturing | | |
| Operator: | GERRET PETERS | Facility Town: | OLEAN |
| Emrgncy Contact: | JOHN NORTHRUP | Emrgncy Phone: | (716) 372-7955 |
| Certified Date: | 03/29/2001 | Expiration Date: | 06/20/2003 |
| Owner type: | Corporate/Commercial | | |
| Owner Sub Type: | Not reported | | |
| Mail Name: | CYTEC INDUSTRIES, INC. | | |
| Mail Contact: | TOM HARDES<br>1405 BUFFALO STREET<br>OLEAN, NY 14760 | | |
| Mail Phone: | (716) 372-9650 | | |
| Tank Secret: | False | Date Entered: | 04/01/1999 08:18:42 |
| Last Test: | Not reported | Due Date: | Not reported |
| Pipe Flag: | False | Owner Mark: | 1 |
| Renew Date: | 03/01/93 | Date Expired: | 06/20/95 |
| Is it There: | False | Is Updated: | False |
| Owner Status: | F | | |

| | |
|---|---|
| Certificate Needs to be Printed: | False |
| Fiscal Amt for Registration Fee Correct: | True |
| Renewal Has Been Printed for Facility: | True |
| Total Capacity of All Active Tanks(gal): | 14000 |
| Unique Tank Id Number: | 0001 |
| Date Pre-Printed Renewal App Form Was Last Printed: | 03/12/2001 |

| | | | |
|---|---|---|---|
| CBS Number: | 9-000136 | Telephone: | (716) 372-9650 |
| Owner: | CYTEC INDUSTRIES, INC.<br>FIVE GARRET MOUNTAIN PLAZA<br>WEST PATERSON, NJ 07424<br>(716) 372-9650 | | |
| Facility Status: | Active | | |
| Total Tanks | 2 | | |
| Tank Status: | In Service | | |
| Tank Error Status: | No Missing Data | | |
| Tank Location: | Aboveground on crib, rack or cradle | | |
| Install Date: | 10/99 | | |
| Capacity (Gal): | 7000 | | |
| Tank Type: | Stainless steel alloy | | |
| Substance: | Single Hazardous Substance on DEC List | | |
| Extrnl Protection: | None | | |
| Intrnl Protection: | None | | |
| Tank Containment: | Other | | |
| Pipe Type: | STAINLESS STEEL ALLOY | Pipe Location: | Aboveground |
| Pipe Internal: | None | | |
| Pipe External: | None | | |
| Pipe Containment: | None | Haz Percent: | 100 |
| Leak Detection: | Other | | |
| Overfill Protection: | 3/3 | | |
| Chemical: | Toluene 2,4-diisocyanate | | |
| Tank Closed: | 02/00 | | |
| PBS Number: | 9-042684 | SWIS Code: | 0466 |
| Federal ID: | Not reported | | |
| MOSF Number: | - | CAS Number: | 584849 |

**CYTEC OLEAN INCORPORATED (Continued)** **1000153951**

SPDES Number: 0-24471
Facility Type: Manufacturing
Operator: GERRET PETERS
Emrgncy Contact: JOHN NORTHRUP
Certified Date: 03/29/2001
Owner type: Corporate/Commercial
Owner Sub Type: Not reported
Mail Name: CYTEC INDUSTRIES, INC.
Mail Contact: TOM HARDES
1405 BUFFALO STREET
OLEAN, NY 14760
Mail Phone: (716) 372-9650
Tank Secret: False
Last Test: Not reported
Pipe Flag: False
Renew Date: 03/01/93
Is it There: False
Owner Status: F

ICS Number: 9-179343
Facility Town: OLEAN
Emrgncy Phone: (716) 372-7955
Expiration Date: 06/20/2003
Date Entered: 04/01/1999 08:19:03
Due Date: Not reported
Owner Mark: 1
Date Expired: 06/20/95
Is Updated: False

Certificate Needs to be Printed: False
Fiscal Amt for Registration Fee Correct: True
Renewal Has Been Printed for Facility: True
Total Capacity of All Active Tanks(gal): 14000
Unique Tank Id Number: 00002
Date Pre-Printed Renewal App Form Was Last Printed: 03/12/2001

This is the most recent NY CBS AST data for this site.

Click this hyperlink while viewing on your computer to access
1 additional NY CBS AST record(s) in the EDR Site Report.

LTANKS:

Spill Number: 9005295
Facility ID : 9005295
Site ID : 276671
Spill Date: 08/13/90
Referred To : Not reported
Water Affected: Not reported
Spill Cause: TANK FAILURE
Facility Address 2: Not reported
Investigator: MXFRANKS
Caller Name: KEN CAMPBELL
Caller Phone: (716) 372-2171
Notifier Name: Not reported
Notifier Phone: Not reported
Spiller Contact: Not reported
Spiller: Not reported
Spiller Company : CONAP INC.
Spiller Address: 1405 BUFFALO STREET
OLEAN, NY 14760
Spiller County : 001
Spill Class: Not reported
**Spill Closed Dt: 09/14/90**
Spill Notifier: DEC
Cleanup Ceased: 09/14/90
Last Inspection: / /
Cleanup Meets Standard: True
Recommended Penalty: Penalty Not Recommended
UST Involvement: False

Region of Spill: 9
DER Facility ID : 224933
CID : Not reported
Reported to Dept: 08/13/90
DEC Region : 9
Spill Source: COMMERCIAL/INDUSTRIAL
Facility Tele: (716) 372-9650
SWIS: 0566
Caller Agency: GRIFFITH OIL
Caller Extension: Not reported
Notifier Agency: Not reported
Notifier Extension: Not reported
Spiller Phone: Not reported

**CYTEC OLEAN INCORPORATED (Continued)** 1000153951

Spill Record Last Update: 09/19/90
Date Spill Entered In Computer Data File: 08/16/90
Remediation Phase : 0
Program Number : 9005295
Material
Material ID : 436347
Site ID : 276671
Operable Unit : 01
Operable Unit ID : 945778
Material Code : 0001
Material Name : #2 Fuel Oil
Case No. : Not reported
Material FA : Petroleum
Quantity : Not reported
Units : G
Recovered : Not reported
Resource Affected - Soil : Yes
Resource Affected - Air : No
Resource Affected - Indoor Air : No
Resource Affected - Groundwater : No
Resource Affected - Surface Water : No
Resource Affected - Drinking Wtr : No
Resource Affected - Sewer : No
Resource Affected - Impervious Surface : No
Resource Affected - Subway : No
Resource Affected - Utility : No
Resource Affected - Impervious Surface : No
Oxygenate : False
Tank Test
Spill Tank Test : 11989
Site ID : 276671
Tank Number : Not reported
Tank Size : 0
Test Method : 00
Leak Rate : 0.00
Gross Fail : Not reported
Modified By : Spills
Last Modified : 10/01/04
Test Method : Unknown
DEC Remarks : Prior to Sept, 2004 data translation this spill Lead DEC Field was "MF"
08/14/90: RNL NOTIFIED CACHD 08/14/90, T. POWERS; RNL TELECON TO
GRIFFITH OIL 08/14/90, CONAP FOUND FITTING LEAK, WILL REPAIR AND RETEST.
09/14/90: MF RECEIVED RETEST RESULTS,
TANK PASSED. NO FUTHER ACTION NECESSARY.
Remark: 10000 GALLON TANK FAILED TANK AT CONAP, FAILURE RATE -1.214

| | | | |
|---|---|---|---|
| Spill Number: | 9108208 | Region of Spill: | 9 |
| Facility ID : | 9108208 | DER Facility ID : | 184151 |
| Site ID : | 222699 | CID : | 31 |
| Spill Date: | 10/31/91 | Reported to Dept: | 10/31/91 |
| Referred To : | Not reported | DEC Region : | 9 |
| Water Affected: | Not reported | Spill Source: | COMMERCIAL/INDUSTRIAL |
| Spill Cause: | TANK TEST FAILURE | | |
| Facility Address 2: | Not reported | Facility Tele: | (716) 372-9650 |
| Investigator: | MXFRANKS | SWIS: | 0566 |
| Caller Name: | KEN CAMPBELL | Caller Agency: | GRIFFITH OIL |
| Caller Phone: | (716) 372-2171 | Caller Extension: | Not reported |

**CYTEC OLEAN INCORPORATED (Continued)** **1000153951**

Notifier Name: Not reported
Notifier Agency: Not reported
Notifier Phone: Not reported
Notifier Extension: Not reported
Spiller Contact: Not reported
Spiller Phone: Not reported
Spiller: Not reported
Spiller Company : CONAP INC
Spiller Address: 1405 BUFFALO STREET
OLEAN, NY 14760
Spiller County : 001
Spill Class: Not reported
**Spill Closed Dt: 12/30/91**
Spill Notifier: TANK TESTER
Cleanup Ceased: 12/30/91
Last Inspection: / /
Cleanup Meets Standard: True
Recommended Penalty: Penalty Not Recommended
UST Involvement: False
Spill Record Last Update: 01/24/92
Date Spill Entered In Computer Data File: 10/31/91
Remediation Phase : 0
Program Number : 9108208
Material
Material ID : 420367
Site ID : 222699
Operable Unit : 01
Operable Unit ID : 958584
Material Code : 0001
Material Name : #2 Fuel Oil
Case No. : Not reported
Material FA : Petroleum
Quantity : Not reported
Units : Not reported
Recovered : Not reported
Resource Affected - Soil : Yes
Resource Affected - Air : No
Resource Affected - Indoor Air : No
Resource Affected - Groundwater : No
Resource Affected - Surface Water : No
Resource Affected - Drinking Wtr : No
Resource Affected - Sewer : No
Resource Affected - Impervious Surface : No
Resource Affected - Subway : No
Resource Affected - Utility : No
Resource Affected - Impervious Surface : No
Oxygenate : False
Tank Test
Spill Tank Test : 13820
Site ID : 222699
Tank Number : Not reported
Tank Size : 0
Test Method : 00
Leak Rate : 0.00
Gross Fail : Not reported
Modified By : Spills
Last Modified : 10/01/04
Test Method : Unknown
DEC Remarks : Prior to Sept, 2004 data translation this spill Lead DEC Field was "MF"
11/01/91: MF INFO WILL EXCAVATE & RETEST. 11/01/91: MF 11/1/91 TELECON

**CYTEC OLEAN INCORPORATED (Continued)** 1000153951

SPILLER, GAVE HIM TANK OPTIONS. LETTTER SENT. 12/11/91: MF 11/9/91
TELECON SPILLER, HE CLAIMED TANK PA
SSED RETEST (AIR POCKET). HE HASEN'T RECEIVED THE RESULTS FROM GRIFFITH
AS YET. HE WILL FOWARD THEY TO ME WHEN HE RECEIVES THEM. 12/30/91: MF
12/30/91 RECEIVED COPY OF TANK RETEST RESULTS. TANK PASSED, NO REASON
FOR FIRST FAILURE. NO FURTHER ACTIO
N NECESSARY.
Remark: 10K #2FO TANK TEST FAILURE, WILL EXCAVATE & RETEST.

| | | | |
|---|---|---|---|
| Spill Number: | 9708644 | Region of Spill: | 9 |
| Facility ID : | 9708644 | DER Facility ID : | 99383 |
| Site ID : | 113907 | CID : | 31 |
| Spill Date: | 10/23/97 | Reported to Dept: | 10/23/97 |
| Referred To : | Not reported | DEC Region : | 9 |
| Water Affected: | Not reported | Spill Source: | UNKNOWN |
| Spill Cause: | TANK OVERFILL | | |
| Facility Address 2: | Not reported | Facility Tele: | (716) 372-9650 |
| Investigator: | PRINGLE | SWIS: | 0566 |
| Caller Name: | JAMES GRIEG | Caller Agency: | GREEN ENVIORNMENT |
| Caller Phone: | (716) 298-5297 | Caller Extension: | Not reported |
| Notifier Name: | Not reported | Notifier Agency: | Not reported |
| Notifier Phone: | Not reported | Notifier Extension: | Not reported |
| Spiller Contact: | Not reported | Spiller Phone: | Not reported |
| Spiller: | TOM HARDES | | |
| Spiller Company : | CONAP | | |
| Spiller Address: | 1405 BUFFALO ST<br>OLEAN, NY | | |
| Spiller County : | 001 | | |
| Spill Class: | Known release that creates potential for fire or hazard. DEC Response. Willing Responsible Party. Corrective action taken. | | |
| **Spill Closed Dt:** | **01/23/98** | | |
| Spill Notifier: | OTHER | | |
| Cleanup Ceased: | / / | | |
| Last Inspection: | 10/29/97 | | |
| Cleanup Meets Standard: | True | | |
| Recommended Penalty: | Penalty Not Recommended | | |
| UST Involvement: | False | | |
| Spill Record Last Update: | 01/23/98 | | |
| Date Spill Entered In Computer Data File: | 10/23/97 | | |
| Remediation Phase : | 0 | | |
| Program Number : | 9708644 | | |
| Material | | | |
| Material ID : | 330598 | | |
| Site ID : | 113907 | | |
| Operable Unit : | 01 | | |
| Operable Unit ID : | 1051757 | | |
| Material Code : | 0001 | | |
| Material Name : | #2 Fuel Oil | | |
| Case No. ; | Not reported | | |
| Material FA : | Petroleum | | |
| Quantity : | Not reported | | |
| Units : | G | | |
| Recovered : | | Not reported | |
| Resource Affected - Soil : | | No | |
| Resource Affected - Air : | | No | |
| Resource Affected - Indoor Air : | | No | |
| Resource Affected - Groundwater : | | Yes | |

**CYTEC OLEAN INCORPORATED (Continued)** **1000153951**

Resource Affected - Surface Water : No
Resource Affected - Drinking Wtr : No
Resource Affected - Sewer : No
Resource Affected - Impervious Surface : No
Resource Affected - Subway : No
Resource Affected - Utility : No
Resource Affected - Impervious Surface : No
Oxygenate : False
Tank Test
Spill Tank Test : Not reported
Site ID : Not reported
Tank Number : Not reported
Tank Size : Not reported
Test Method : Not reported
Leak Rate : Not reported
Gross Fail : Not reported
Modified By : Not reported
Last Modified : Not reported
Test Method : Not reported
DEC Remarks : Prior to Sept, 2004 data translation this spill Lead DEC Field was "MNP"
10/29/97: MNP INSP. MET W/ JAMES GREIG - GREEN ENV. VISIBLE CONTAMINATION IN BOTTOM OF EXCAVATION, PETRO. ODOR NOTED. ADDITIONAL SOIL REMOVED, TO CHECK AGAIN LATER TODAY. 10 /29/97: MNP INSP. ABOUT 300 YDS. CONTAM. SOIL REMOVED. SOIL PASSED SHEEN TEST, NO SIGNIFICANT ODORS NOTED. SOIL SAMPLES COLLECTED FROM BOTTOM FOR STARS #1 ANALYSIS. 11/21/97: REVIEWED DISPOSAL RECEIPTS RECEIVED ON 11/19/97. APPROX. 205 TONS DIS POSED AT MODERN LANDFILL ON 11/6/97. SITE NEEDS FINAL INSP. BEFORE CLOSING. 11/ /97: MNP INSP. EXCAVATION BACKFILLED, SOIL GONE, COMPLETE
Remark: TANK REMOVAL CONTRACTOR REPORTED CONTAMINATION PER SAMPLE RESULTS LEVELS WELL ABOVE NYSDEC GUIDANCE VALUES

HIST LTANKS:

| | | | |
|---|---|---|---|
| Spill Number: | 9005295 | Region of Spill: | 9 |
| Spill Date: | 08/13/1990 15:00 | Reported to Dept: | 08/13/90 15:15 |
| Water Affected: | Not reported | Spill Source: | Other Commercial/Industrial |
| Resource Affectd: | On Land | | |
| Spill Cause: | Tank Failure | | |
| Facility Contact: | Not reported | Facility Tele: | (716) 372-9650 |
| Investigator: | MF | SWIS: | 04 |
| Caller Name: | Not reported | Caller Agency: | Not reported |
| Caller Phone: | Not reported | Caller Extension: | Not reported |
| Notifier Name: | Not reported | Notifier Agency: | Not reported |
| Notifier Phone: | Not reported | Notifier Extension: | Not reported |
| Spiller Contact: | Not reported | Spiller Phone: | Not reported |
| Spiller: | CONAP INC. | | |
| Spiller Address: | 1405 BUFFALO STREET OLEAN, NY 14760 | | |
| Spill Class: | Not reported | | |
| Spill Closed Dt: | 09/14/90 | | |
| Spill Notifier: | DEC | PBS Number: | 9-042684 |
| Cleanup Ceased: | 09/14/90 | | |
| Last Inspection: | / / | | |
| Cleanup Meets Standard: | True | | |
| Recommended Penalty: | Penalty Not Recommended | | |
| Spiller Cleanup Date: | / / | | |
| Enforcement Date: | / / | | |

**CYTEC OLEAN INCORPORATED (Continued)** 1000153951

Investigation Complete: / /
UST Involvement: False
Spill Record Last Update: 09/19/90
Is Updated: False
Corrective Action Plan Submitted: / /
Date Spill Entered In Computer Data File: 08/16/90
Date Region Sent Summary to Central Office: / /
Tank Test:
PBS Number: 7-033847
Tank Number: Not reported
Test Method: Not reported
Capacity of Failed Tank: 0
Leak Rate Failed Tank: 0.00
Gross Leak Rate: Not reported
Material:
Material Class Type: 1
Quantity Spilled: 0
Units: Gallons
Unknown Qty Spilled: No
Quantity Recovered: 0
Unknown Qty Recovered: False
Material: #2 FUEL OIL
Class Type: Petroleum
Chem Abstract Service Number: #2 FUEL OIL
Last Date: 12/07/1994
Num Times Material Entry In File: 24464
DEC Remarks: 08/14/90: RNL NOTIFIED CACHD 08/14/90, T. POWERS; RNL TELECON TO GRIFFIT H OIL 08/14/90, CONAP FOUND FITTING LEAK, WILL REPAIR AND RETEST. 09/14 /90: MF RECEIVED RETEST RESULTS, TANK PASSED. NO FUTHER ACTION NECESSARY .
Spill Cause: 10000 GALLON TANK FAILED TANK AT CONAP, FAILURE RATE -1.214

Spill Number: 9108208
Spill Date: 10/31/1991 15:00
Water Affected: Not reported
Resource Affectd: On Land
Spill Cause: Tank Test Failure
Facility Contact: Not reported
Investigator: MF
Caller Name: Not reported
Caller Phone: Not reported
Notifier Name: Not reported
Notifier Phone: Not reported
Spiller Contact: Not reported
Spiller: CONAP INC
Spiller Address: 1405 BUFFALO STREET
OLEAN, NY 14760
Spill Class: Not reported
Spill Closed Dt: 12/30/91
Spill Notifier: Tank Tester
Cleanup Ceased: 12/30/91
Last Inspection: / /
Cleanup Meets Standard: True
Recommended Penalty: Penalty Not Recommended
Spiller Cleanup Date: / /
Enforcement Date: / /
Investigation Complete: / /

Region of Spill: 9
Reported to Dept: 10/31/91 15:48
Spill Source: Other Commercial/Industrial
Facility Tele: (716) 372-9650
SWIS: 04
Caller Agency: Not reported
Caller Extension: Not reported
Notifier Agency: Not reported
Notifier Extension: Not reported
Spiller Phone: Not reported
PBS Number: Not reported

**CYTEC OLEAN INCORPORATED (Continued)** 1000153951

UST Involvement: False
Spill Record Last Update: 01/24/92
Is Updated: False
Corrective Action Plan Submitted: / /
Date Spill Entered In Computer Data File: 10/31/91
Date Region Sent Summary to Central Office: / /
Tank Test:
PBS Number: Not reported
Tank Number: Not reported
Test Method: Not reported
Capacity of Failed Tank: 0
Leak Rate Failed Tank: 0.00
Gross Leak Rate: Not reported
Material:
Material Class Type: 1
Quantity Spilled: 0
Units: Not reported
Unknown Qty Spilled: No
Quantity Recovered: 0
Unknown Qty Recovered: True
Material: #2 FUEL OIL
Class Type: Petroleum
Chem Abstract Service Number: #2 FUEL OIL
Last Date: 12/07/1994
Num Times Material Entry In File: 24464
DEC Remarks: 11/01/91: MF INFO WILL EXCAVATE RETEST. 11/01/91: MF 11/1/91 TELECON SPI LLER, GAVE HIM TANK OPTIONS. LETTTER SENT. 12/11/91; MF 11/9/91 TELECON SPILLER, HE CLAIMED TANK PASSED RETEST AIR POCKET). HE HASEN T RECEIVED THE RESULTS FROM GRIFFITH AS YET. HE WILL FOWARD THEY TO ME WHEN HE RECE IVES THEM. 12/30/91: MF 12/30/91 RECEIVED COPY OF TANK RETEST RESULTS. T ANK PASSED, NO REASON FOR FIRST FAILURE. NO FURTHER ACTION NECESSARY.
Spill Cause: 10K 2FO TANK TEST FAILURE, WILL EXCAVATE RETEST.

Spill Number: 9708644
Region of Spill: 9
Spill Date: 10/20/1997 12:00
Reported to Dept: 10/23/97 11:30
Water Affected: Not reported
Spill Source: Unknown
Resource Affectd: Groundwater
Spill Cause: Tank Overfill
Facility Contact: TOM HARDES
Facility Tele: (716) 372-9650
Investigator: MNP
SWIS: 04
Caller Name: Not reported
Caller Agency: Not reported
Caller Phone: Not reported
Caller Extension: Not reported
Notifier Name: Not reported
Notifier Agency: Not reported
Notifier Phone: Not reported
Notifier Extension: Not reported
Spiller Contact: Not reported
Spiller Phone: Not reported
Spiller: CONAP
Spiller Address: 1405 BUFFALO ST
OLEAN, NY
Spill Class: Known release that creates potential for fire or hazard. DEC Response. Willing Responsible Party. Corrective action taken.
Spill Closed Dt: 01/23/98
Spill Notifier: Other
PBS Number: Not reported
Cleanup Ceased: / /
Last Inspection: 10/29/97
Cleanup Meets Standard: True
Recommended Penalty: Penalty Not Recommended
Spiller Cleanup Date: / /

**CYTEC OLEAN INCORPORATED (Continued)** **1000153951**

Enforcement Date: / /
Investigation Complete: / /
UST Involvement: False
Spill Record Last Update: 01/23/98
Is Updated: False
Corrective Action Plan Submitted: / /
Date Spill Entered In Computer Data File: 10/23/97
Date Region Sent Summary to Central Office: / /
Tank Test:
PBS Number: Not reported
Tank Number: Not reported
Test Method: Not reported
Capacity of Failed Tank: Not reported
Leak Rate Failed Tank: Not reported
Gross Leak Rate: Not reported
Material:
Material Class Type: 1
Quantity Spilled: 0
Units: Gallons
Unknown Qty Spilled: No
Quantity Recovered: 0
Unknown Qty Recovered: True
Material: #2 FUEL OIL
Class Type: Petroleum
Chem Abstract Service Number: #2 FUEL OIL
Last Date: 12/07/1994
Num Times Material Entry In File: 24464
DEC Remarks: 10/29/97: MNP INSP. MET W/ JAMES GREIG - GREEN ENV. VISIBLE CONTAMINATIO N IN BOTTOM OF EXCAVATION, PETRO. ODOR NOTED. ADDITIONAL SOIL REMOVED, T O CHECK AGAIN LATER TODAY. 10/29/97: MNP INSP. ABOUT 300 YDS. CONTAM. SO IL REMOVED. SOIL PASSED SHEEN TEST, NO SIGNIFICANT ODORS NOTED. SOIL SAM PLES COLLECTED FROM BOTTOM FOR STARS 1 ANALYSIS. 11/21/97: REVIEWED DIS POSAL RECEIPTS RECEIVED ON 11/19/97. APPROX. 205 TONS DISPOSED AT MODERN LANDFILL ON 11/6/97. SITE NEEDS FINAL INSP. BEFORE CLOSING. 11//97: MNP INSP. EXCAVATION BACKFILLED, SOIL GONE, COMPLETE
Spill Cause: TANK REMOVAL CONTRACTOR REPORTED CONTAMINATION PER SAMPLE RESULTS LEVEL S WELL ABOVE NYSDEC GUIDANCE VALUES

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**C13** **CONAP INC** UST U003316581
**SSW** **1405 BUFFALO ST** N/A
**1/4-1/2** **OLEAN, NY 14760**
**1910 ft.**

**Site 2 of 2 in cluster C**

**Relative:**
**Higher**

**Actual:**
**1433 ft.**

PBS UST:
PBS Number: 9-042684 CBS Number: 9-000136
SPDES Number: - SWIS ID: 0466
Operator: CONAP INC
(716) 372-9650
Emergency Contact: TOM HARDES
(716) 676-9111
Total Tanks: 0
Owner: CONAP INC
1405 BUFFALO ST
OLEAN, NY 14760
(716) 372-9650
Owner Type: Corporate/Commercial
Owner Mark: First Owner
Owner Subtype: Not reported

**CONAP INC (Continued)** U003316581

| | | | |
|---|---|---|---|
| Mailing Address: | CONAP INC<br>ATTN: TOM HARDES<br>1405 BUFFALO ST<br>OLEAN, NY 14760<br>(716) 372-9650 | | |
| Tank Status: | Closed - Removed | | |
| Capacity (gals): | 10000 | | |
| Tank Location: | UNDERGROUND | | |
| Tank Id: | 1 | Install Date: | 07/01/1974 |
| Tank Type: | Steel/carbon steel | Product Stored: | NOS 1,2, OR 4 FUEL OIL |
| Tank Internal: | NONE | Pipe Internal: | NONE |
| Pipe Location: | Above/Underground Combination | Pipe Type: | GALVANIZED STEEL |
| Tank External: | NONE | | |
| Missing Data for Tank: | No Missing Data | | |
| Pipe External: | NONE | | |
| Second Containment: | NONE | | |
| Leak Detection: | NONE | | |
| Overfill Prot: | Product Level Gauge | Dispenser: | Suction |
| Date Tested: | 10/01/1996 | Next Test Date: | Not reported |
| Date Closed: | 09/01/1997 | Test Method: | HORNER |
| Deleted: | False | Updated: | True |
| Dead Letter: | False | Owner Screen: | No data missing |
| FAMT: | Fiscal amount for registration fee is correct | | |
| Total Capacity: | 0 | Renewal Date: | Not reported |
| Tank Screen: | 0 | Federal ID: | Not reported |
| Renew Flag: | Renwal has not been printed | Facility Screen: | No data missing |
| Certification Flag: | False | Certification Date: | 11/19/1996 |
| Old PBS Number: | Not reported | Expiration Date: | 11/14/2001 |
| Inspected Date: | 10/25/1996 | Inspector: | BAJ |
| Inspection Result: | Not reported | | |
| Lat/long: | 42\|05\|05 / 78\|26\|40 | | |
| Facility Type: | OTHER | | |
| Town or City: | OLEAN | | |
| Town or City Code: | 66 | | |
| County Code: | 04 | | |
| Region: | 9 | | |

D14 **R G SCOTT** RCRA-SQG 1000140751
NNE **900 W CONNELL ST** FINDS NYD000822932
1/4-1/2 **OLEAN, NY 14760**
1932 ft.

**Site 1 of 3 in cluster D**

Relative:
Higher

Actual:
1430 ft.

RCRAInfo:

| | |
|---|---|
| Owner: | VAN DER HORST CORP<br>(716) 372-5200 |
| EPA ID: | NYD000822932 |
| Contact: | ROBERT BUSH<br>(716) 372-2946 |
| Classification: | Small Quantity Generator |
| TSDF Activities: | Not reported |

**R G SCOTT (Continued)** **1000140751**

Violation Status: No violations found

FINDS:
Other Pertinent Environmental Activity Identified at Site:
RESOURCE CONSERVATION AND RECOVERY ACT INFORMATION SYSTEM

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**D15** **ANDERSON EQUIPMENT COMPANY (NY), INC.** AST A100183665
**NNE** **355 EAST FRANKLIN STREET** N/A
**1/4-1/2** **OLEAN, NY 14760**
**1938 ft.**

**Site 2 of 3 in cluster D**

Relative:
Higher

Actual:
1430 ft.

PBS AST:

| | | | |
|---|---|---|---|
| PBS Number: | 9-600535 | CBS Number: | Not reported |
| SPDES Number: | Not reported | SWIS Code: | 0412 |
| Federal ID: | Not reported | Previous PBS#: | Not reported |
| Facility Status: | 1 - Active PBS facility, i.e. total capacity of the PBS tanks is greater than 1,100 gallons, regardless if Subpart 360-14 tanks exist or not at the facility. | | |
| Facility Type: | OTHER | | |
| Owner Type: | Corporate/Commercial | | |
| Owner Sub Type: | Not reported | | |
| Owner: | ANDRESON EQUIPMENT COMPANY (NY), INC.<br>101 GREAT ARROW AVENUE<br>BUFFALO, NY 14216 | | |
| Owner Phone: | (716) 877-1992 | | |
| Facility Phone: | (716) 372-8822 | | |
| Operator: | ROD DABOLT | | |
| Emergency Name: | BILL SNOWBERGER | | |
| Emergency Phone: | (716) 877-1992 | | |
| Total Tanks: | 3 | | |
| Total Capacity: | 4336 | | |
| Tank ID: | 260 | | |
| Capacity (Gal): | 2500 | | |
| Missing Data for Tank : | No data missing | | |
| Tank Location: | ABOVEGROUND ON SADDLES LEGS, STILTS, RACK, OR CRADLE | | |
| Product Stored: | USED OIL (fuel) | | |
| Tank Type: | Steel/carbon steel | | |
| Install Date: | 12/01/1992 | | |
| Tank Internal: | NONE | | |
| Tank External: | NONE | | |
| Tank Containment: | OTHER | | |
| Pipe Type: | GALVANIZED STEEL | | |
| Pipe Location: | Aboveground | | |
| Pipe Internal: | NONE | | |
| Pipe External: | NONE | | |
| Leak Detection: | OTHER | | |
| Overfill Protection: | High Level Alarm | | |
| Dispenser Method: | Suction | | |
| Date Tested: | / / | Next Test Date: | / / |
| Date Closed: | / / | Test Method: | Not reported |
| Updated: | True | Deleted: | False |
| Date Inspected: | Not reported | Inspector: | Not reported |
| Result of Inspection: | Not reported | | |
| Mailing Name: | ANDERSON EQUIPMENT COMPANY (NY), INC. | | |
| Mailing Address: | 101 GREAT ARROW AVENUE<br>BUFFALO, NY 14216 | | |
| Mailing Contact: | BILL SNOWBERGER | | |
| Mailing Telephone: | (716) 877-1992 | | |

**ANDERSON EQUIPMENT COMPANY (NY), INC. (Continued)** A100183665

| | | | |
|---|---|---|---|
| Owner Mark: | First Owner | Expiration Date: | 08/08/2006 |
| Certification Flag: | False | Certification Date: | 08/17/2001 |
| Renew Flag: | False | Renew Date: | / / |
| Lat/Long: | Not reported | | |
| Dead Letter: | False | | |
| Facility Screen: | No data missing | | |
| Owner Screen: | No data missing | | |
| Tank Screen: | No data missing | | |
| Town or City: | OLEAN (C) | | |
| Town or City Code: | 12 | | |
| County Code: | 04 | | |
| Region: | 9 | | |

Fiscal Amount for Registration Fee is Correct: True

| | | | |
|---|---|---|---|
| PBS Number: | 9-600535 | CBS Number: | Not reported |
| SPDES Number: | Not reported | SWIS Code: | 0412 |
| Federal ID: | Not reported | Previous PBS#: | Not reported |
| Facility Status: | 1 - Active PBS facility, i.e. total capacity of the PBS tanks is greater than 1,100 gallons, regardless if Subpart 360-14 tanks exist or not at the facility. | | |
| Facility Type: | OTHER | | |
| Owner Type: | Corporate/Commercial | | |
| Owner Sub Type: | Not reported | | |
| Owner: | ANDRESON EQUIPMENT COMPANY (NY), INC.<br>101 GREAT ARROW AVENUE<br>BUFFALO, NY 14216 | | |
| Owner Phone: | (716) 877-1992 | | |
| Facility Phone: | (716) 372-8822 | | |
| Operator: | ROD DABOLT | | |
| Emergency Name: | BILL SNOWBERGER | | |
| Emergency Phone: | (716) 877-1992 | | |
| Total Tanks: | 3 | | |
| Total Capacity: | 4336 | | |
| Tank ID: | 262 | | |
| Capacity (Gal): | 716 | | |
| Missing Data for Tank : | No data missing | | |
| Tank Location: | ABOVEGROUND ON SADDLES LEGS, STILTS, RACK, OR CRADLE | | |
| Product Stored: | LUBE OIL | | |
| Tank Type: | Steel/carbon steel | | |
| Install Date: | 10/11/1993 | | |
| Tank Internal: | NONE | | |
| Tank External: | NONE | | |
| Tank Containment: | OTHER | | |
| Pipe Type: | GALVANIZED STEEL | | |
| Pipe Location: | Aboveground | | |
| Pipe Internal: | NONE | | |
| Pipe External: | NONE | | |
| Leak Detection: | OTHER | | |
| Overfill Protection: | High Level Alarm | | |
| Dispenser Method: | Suction | | |
| Date Tested: | / / | Next Test Date: | / / |
| Date Closed: | / / | Test Method: | Not reported |
| Updated: | True | Deleted: | False |
| Date Inspected: | Not reported | Inspector: | Not reported |
| Result of Inspection: | Not reported | | |
| Mailing Name: | ANDERSON EQUIPMENT COMPANY (NY), INC. | | |
| Mailing Address: | 101 GREAT ARROW AVENUE<br>BUFFALO, NY 14216 | | |

**ANDERSON EQUIPMENT COMPANY (NY), INC. (Continued)** **A100183665**

| | | | |
|---|---|---|---|
| Mailing Contact: | BILL SNOWBERGER | | |
| Mailing Telephone: | (716) 877-1992 | | |
| Owner Mark: | First Owner | Expiration Date: | 08/08/2006 |
| Certification Flag: | False | Certification Date: | 08/17/2001 |
| Renew Flag: | False | Renew Date: | / / |
| Lat/Long: | Not reported | | |
| Dead Letter: | False | | |
| Facility Screen: | No data missing | | |
| Owner Screen: | No data missing | | |
| Tank Screen: | No data missing | | |
| Town or City: | OLEAN (C) | | |
| Town or City Code: | 12 | | |
| County Code: | 04 | | |
| Region: | 9 | | |

Fiscal Amount for Registration Fee is Correct: True

| | | | |
|---|---|---|---|
| PBS Number: | 9-600535 | CBS Number: | Not reported |
| SPDES Number: | Not reported | SWIS Code: | 0412 |
| Federal ID: | Not reported | Previous PBS#: | Not reported |
| Facility Status: | 1 - Active PBS facility, i.e. total capacity of the PBS tanks is greater than 1,100 gallons, regardless if Subpart 360-14 tanks exist or not at the facility. | | |
| Facility Type: | OTHER | | |
| Owner Type: | Corporate/Commercial | | |
| Owner Sub Type: | Not reported | | |
| Owner: | ANDRESON EQUIPMENT COMPANY (NY), INC.<br>101 GREAT ARROW AVENUE<br>BUFFALO, NY 14216 | | |
| Owner Phone: | (716) 877-1992 | | |
| Facility Phone: | (716) 372-8822 | | |
| Operator: | ROD DABOLT | | |
| Emergency Name: | BILL SNOWBERGER | | |
| Emergency Phone: | (716) 877-1992 | | |
| Total Tanks: | 3 | | |
| Total Capacity: | 4336 | | |
| Tank ID: | 264 | | |
| Capacity (Gal): | 1120 | | |
| Missing Data for Tank : | No data missing | | |
| Tank Location: | ABOVEGROUND ON SADDLES LEGS, STILTS, RACK, OR CRADLE | | |
| Product Stored: | NOS 1,2, OR 4 FUEL OIL | | |
| Tank Type: | Steel/carbon steel | | |
| Install Date: | 11/01/1992 | | |
| Tank Internal: | NONE | | |
| Tank External: | NONE | | |
| Tank Containment: | OTHER | | |
| Pipe Type: | GALVANIZED STEEL | | |
| Pipe Location: | Aboveground | | |
| Pipe Internal: | NONE | | |
| Pipe External: | NONE | | |
| Leak Detection: | OTHER | | |
| Overfill Protection: | Product Level Gauge | | |
| Dispenser Method: | Suction | | |
| Date Tested: | / / | Next Test Date: | / / |
| Date Closed: | / / | Test Method: | Not reported |
| Updated: | True | Deleted: | False |
| Date Inspected: | Not reported | Inspector: | Not reported |
| Result of Inspection: | Not reported | | |
| Mailing Name: | ANDERSON EQUIPMENT COMPANY (NY), INC. | | |

**ANDERSON EQUIPMENT COMPANY (NY), INC. (Continued)** A100183665

| | | | |
|---|---|---|---|
| Mailing Address: | 101 GREAT ARROW AVENUE<br>BUFFALO, NY 14216 | | |
| Mailing Contact: | BILL SNOWBERGER | | |
| Mailing Telephone: | (716) 877-1992 | | |
| Owner Mark: | First Owner | Expiration Date: | 08/08/2006 |
| Certification Flag: | False | Certification Date: | 08/17/2001 |
| Renew Flag: | False | Renew Date: | / / |
| Lat/Long: | Not reported | | |
| Dead Letter: | False | | |
| Facility Screen: | No data missing | | |
| Owner Screen: | No data missing | | |
| Tank Screen: | No data missing | | |
| Town or City: | OLEAN (C) | | |
| Town or City Code: | 12 | | |
| County Code: | 04 | | |
| Region: | 9 | | |

Fiscal Amount for Registration Fee is Correct: True

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**E16** **ADVANCED MONOLYTHIC CERAMICS** RCRA-SQG 1001118557
**SSE** **1010 WAYNE ST** FINDS NYR000028449
**1/4-1/2** **OLEAN, NY 14760**
**1947 ft.**

Site 1 of 3 in cluster E

**Relative:**
**Higher**

**Actual:**
**1428 ft.**

RCRAInfo:

| | |
|---|---|
| Owner: | CATTARAUGUS ECONOMIC DEVELOPMENT<br>(716) 373-9260 |
| EPA ID: | NYR000028449 |
| Contact: | DANIEL JORDAN<br>(716) 312-5225 |
| Classification: | Small Quantity Generator |
| TSDF Activities: | Not reported |
| Violation Status: | No violations found |

FINDS:

Other Pertinent Environmental Activity Identified at Site:
RESOURCE CONSERVATION AND RECOVERY ACT INFORMATION SYSTEM

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**F17** **NYS POLICE WESTERN REGIONAL CRIME LAB** RCRA-SQG 1007264861
**NW** **722 HOMER ST** NYR000123232
**1/4-1/2** **OLEAN, NY 14760**
**1959 ft.**

Site 1 of 4 in cluster F

**Relative:**
**Higher**

**Actual:**
**1428 ft.**

NYS POLICE WESTERN REGIONAL CRIME LAB (Continued) 1007264861

RCRAInfo:
Owner: CITY OF OLEAN
(716) 373-5525
EPA ID: NYR000123232
Contact: ROBERT CAMPBELL
(716) 373-5525
Classification: Conditionally Exempt Small Quantity Generator
TSDF Activities: Not reported
Violation Status: No violations found

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F18 WESTERN REGIONAL CRIME LABORATORY UST U003316674
NW 722 HOMER STREET N/A
1/4-1/2 OLEAN, NY 14760
1959 ft.

Site 2 of 4 in cluster F

Relative:
Higher

Actual:
1428 ft.

PBS UST:

| | | | |
|---|---|---|---|
| PBS Number: | 9-059706 | CBS Number: | Not reported |
| SPDES Number: | Not reported | SWIS ID: | 0466 |
| Operator: | NEW YORK STATE POLICE<br>(716) 373-5525 | | |
| Emergency Contact: | STATION COMMANDER<br>(716) 373-5525 | | |
| Total Tanks: | 0 | | |
| Owner: | NYS DIV STATE POLICE- DIV HQ<br>BLDG 22 STATE CAMPUS<br>ALBANY, NY 12226<br>(518) 457-6811 | | |
| Owner Type: | State Government | | |
| Owner Mark: | First Owner | | |
| Owner Subtype: | NYS Division of State Police | | |
| Mailing Address: | NYS DIV STATE POLICE - DIV.HQ<br>ATTN: MAJOR-ADMINISTRATION<br>BLDG 22 STATE CAMPUS<br>1220 WASHINGTON AVE<br>ALBANY, NY 12226<br>(518) 457-6811 | | |
| Tank Status: | Closed - Removed | | |
| Capacity (gals): | 2000 | | |
| Tank Location: | UNDERGROUND | | |
| Tank Id: | 1 | Install Date: | 07/01/1986 |
| Tank Type: | Steel/carbon steel | Product Stored: | UNLEADED GASOLINE |
| Tank Internal: | FIBERGLASS LINER [FRP] | Pipe Internal: | NONE |
| Pipe Location: | Above/Underground Combination | Pipe Type: | STEEL/IRON |
| Tank External: | NONE | | |
| Missing Data for Tank: | No Missing Data | | |
| Pipe External: | NONE | | |
| Second Containment: | NONE | | |
| Leak Detection: | NONE | | |
| Overfill Prot: | Product Level Gauge | Dispenser: | Suction |
| Date Tested: | 05/01/1993 | Next Test Date: | Not reported |
| Date Closed: | 09/01/1998 | Test Method: | HORNER |
| Deleted: | False | Updated: | True |
| Dead Letter: | False | Owner Screen: | No data missing |
| FAMT: | Fiscal amount for registration fee is correct | | |
| Total Capacity: | 0 | Renewal Date: | 10/17/1991 |

**WESTERN REGIONAL CRIME LABORATORY (Continued)** U003316674

| | | | |
|---|---|---|---|
| Tank Screen: | 0 | Federal ID: | Not reported |
| Renew Flag: | Renwal has not been printed | Facility Screen: | No data missing |
| Certification Flag: | False | Certification Date: | 02/20/1998 |
| Old PBS Number: | Not reported | Expiration Date: | 12/30/2001 |
| Inspected Date: | 10/16/1996 | Inspector: | BAJ |
| Inspection Result: | Not reported | | |
| Lat/long: | Not reported | | |
| Facility Type: | OTHER | | |
| Town or City: | OLEAN | | |
| Town or City Code: | 66 | | |
| County Code: | 04 | | |
| Region: | 9 | | |

F19
NW
1/4-1/2
1959 ft.

**NYS POLICE/NYSOGS** LTANKS S103479565
**722 HOMER STREET** HIST LTANKS N/A
**OLEAN, NY**

Site 3 of 4 in cluster F

Relative:
Higher

Actual:
1428 ft.

LTANKS:

| | | | |
|---|---|---|---|
| Spill Number: | 9807382 | Region of Spill: | 9 |
| Facility ID : | 9807382 | DER Facility ID : | 100593 |
| Site ID : | 115435 | CID : | 31 |
| Spill Date: | 09/16/98 | Reported to Dept: | 09/16/98 |
| Referred To : | Not reported | DEC Region : | 9 |
| Water Affected: | Not reported | Spill Source: | INSTITUTIONAL, EDUCATIONAL, GOV., OTHER |
| Spill Cause: | TANK FAILURE | | |
| Facility Address 2: | Not reported | Facility Tele: | Not reported |
| Investigator: | JFOTTO | SWIS: | 0566 |
| Caller Name: | MATT BOKUS | Caller Agency: | FLOOR DANIEL GTI |
| Caller Phone: | (518) 370-5631 | Caller Extension: | Not reported |
| Notifier Name: | Not reported | Notifier Agency: | Not reported |
| Notifier Phone: | Not reported | Notifier Extension: | Not reported |
| Spiller Contact: | MIKE BECHELLI | Spiller Phone: | (716) 373-5525 |
| Spiller: | OWEN BYRNE | | |
| Spiller Company : | NYS POLICE/NYSOGS | | |
| Spiller Address: | 722 HOMER STREET<br>OLEAN, NY | | |
| Spiller County : | 001 | | |
| Spill Class: | Known release that creates potential for fire or hazard. DEC Response.<br>Willing Responsible Party. Corrective action taken. | | |
| **Spill Closed Dt:** | **03/17/99** | | |
| Spill Notifier: | RESPONSIBLE PARTY | | |
| Cleanup Ceased: | / / | | |
| Last Inspection: | 09/18/98 | | |
| Cleanup Meets Standard: | True | | |
| Recommended Penalty: | Penalty Not Recommended | | |
| UST Involvement: | True | | |
| Spill Record Last Update: | 07/21/00 | | |
| Date Spill Entered In Computer Data File: | 09/16/98 | | |
| Remediation Phase : | 0 | | |
| Program Number : | 9807382 | | |

Material

| | |
|---|---|
| Material ID : | 318473 |
| Site ID : | 115435 |
| Operable Unit : | 01 |
| Operable Unit ID : | 1064952 |
| Material Code : | 0009 |
| Material Name : | Gasoline |

**NYS POLICE/NYSOGS (Continued)** **S103479565**

Case No. : Not reported
Material FA : Petroleum
Quantity : Not reported
Units : G
Recovered : Not reported
Resource Affected - Soil : Yes
Resource Affected - Air : No
Resource Affected - Indoor Air : No
Resource Affected - Groundwater : No
Resource Affected - Surface Water : No
Resource Affected - Drinking Wtr : No
Resource Affected - Sewer : No
Resource Affected - Impervious Surface : No
Resource Affected - Subway : No
Resource Affected - Utility : No
Resource Affected - Impervious Surface : No
Oxygenate : False
Tank Test
Spill Tank Test : Not reported
Site ID : Not reported
Tank Number : Not reported
Tank Size : Not reported
Test Method : Not reported
Leak Rate : Not reported
Gross Fail : Not reported
Modified By : Not reported
Last Modified : Not reported
Test Method : Not reported
DEC Remarks : Prior to Sept, 2004 data translation this spill Lead DEC Field was "JFO"
09/16/98: JFO NOTE, SPILL ORIGINALLY SENT TO REGION 7, BOB CORCORAN CORRECTED 09/18/98: JFO ON SITE, MET WITH MIKE BICELLI WITH THE STATE TROOPERS. HOLE BACKFILLED AND SAM
PLES TAKEN. SOIL STAGED ON PLASTIC. 02/04/99: JFO RECEIVED CLOSURE REPORT WITH REQUEST FOR NO FURTHER ACTION LETTER. REPORT DOESN'T CONTAIN THE DISPOSAL RECEIPTS FOR SOIL. 02/05/99: JFO CALL TO OWEN BYRNE (OGS), NOT IN, LEFT MESSAGE ON MACHI
NE. 02/08/99: JFO CALL TO JOHN WAECHTER (SUBMITTED REPORT). NOT IN, LEFT MESSAGE ON MACHINE. 02/10/99: JFO CALL TO OWEN BYRNE. HE WILL FORWARD RECEIPTS WHEN HE FINDS THEM. 02/24/99: JFO SENT LETTER TO CONFIRM OUR TELEPHONE CONVERSATION.
03/17/99: JFO RECEIVED DISPOSAL RECEIPTS FOR CONTAMINATED SOIL. SENT CLOSURE LETTER. NO FURTHER ACTION REQUIRED. CLOSED
Remark: caller pulling tank, found contamination.

HIST LTANKS:

| | | | |
|---|---|---|---|
| Spill Number: | 9807382 | Region of Spill: | 9 |
| Spill Date: | 09/16/1998 13:00 | Reported to Dept: | 09/16/98 13:13 |
| Water Affected: | Not reported | Spill Source: | Other Non Commercial/Industrial |
| Resource Affecld: | On Land | | |
| Spill Cause: | Tank Failure | | |
| Facility Contact: | OWEN BYRNE | Facility Tele: | ( ) - |
| Investigator: | JFO | SWIS: | 04 |
| Caller Name: | Not reported | Caller Agency: | Not reported |
| Caller Phone: | Not reported | Caller Extension: | Not reported |
| Notifier Name: | Not reported | Notifier Agency: | Not reported |
| Notifier Phone: | Not reported | Notifier Extension: | Not reported |
| Spiller Contact: | MIKE BECHELLI | Spiller Phone: | (716) 373-5525 |
| Spiller: | NYS POLICE/NYSOGS | | |

**NYS POLICE/NYSOGS (Continued)** **S103479565**

Spiller Address: 722 HOMER STREET
OLEAN, NY
Spill Class: Known release that creates potential for fire or hazard. DEC Response. Willing Responsible Party. Corrective action taken.
Spill Closed Dt: 03/17/99
Spill Notifier: Responsible Party PBS Number: Not reported
Cleanup Ceased: / /
Last Inspection: 09/18/98
Cleanup Meets Standard: True
Recommended Penalty: Penalty Not Recommended
Spiller Cleanup Date: / /
Enforcement Date: / /
Investigation Complete: / /
UST Involvement: True
Spill Record Last Update: 07/21/00
Is Updated: False
Corrective Action Plan Submitted: / /
Date Spill Entered In Computer Data File: 09/16/98
Date Region Sent Summary to Central Office: / /
Tank Test:
PBS Number: Not reported
Tank Number: Not reported
Test Method: Not reported
Capacity of Failed Tank: Not reported
Leak Rate Failed Tank: Not reported
Gross Leak Rate: Not reported
Material:
Material Class Type: 1
Quantity Spilled: 0
Units: Gallons
Unknown Qty Spilled: No
Quantity Recovered: 0
Unknown Qty Recovered: True
Material: GASOLINE
Class Type: Petroleum
Chem Abstract Service Number: GASOLINE
Last Date: 09/29/1994
Num Times Material Entry In File: 21329
DEC Remarks: 09/16/98: JFO NOTE, SPILL ORIGINALLY SENT TO REGION 7, BOB CORCORAN CORR ECTED 09/18/98: JFO ON SITE, MET WITH MIKE BICELLI WITH THE STATE TROOPE RS. HOLE BACKFILLED AND SAMPLES TAKEN. SOIL STAGED ON PLASTIC. 02/04/9 9: JFO RECEIVED CLOSURE REPORT WITH REQUEST FOR NO FURTHER ACTION LETTER . REPORT DOESN T CONTAIN THE DISPOSAL RECEIPTS FOR SOIL. 02/05/99: JFO CALL TO OWEN BYRNE OGS), NOT IN, LEFT MESSAGE ON MACHINE. 02/08/99: JFO CALL TO JOHN WAECHTER SUBMITTED REPORT). NOT IN, LEFT MESSAGE ONMACHINE . 02/10/99: JFO CALL TO OWEN BYRNE. HE WILL FORWARD RECEIPTS WHEN HE FI NDS THEM. 02/24/99: JFO SENT LETTER TO CONFIRM OUR TELEPHONE CONVERSATIO N. 03/17/99: JFO RECEIVED DISPOSAL RECEIPTS FOR CONTAMINATED SOIL. SENT CLOSURE LETTER. NO FURTHER ACTION REQUIRED. CLOSED
Spill Cause: caller pulling tank, found contamination.

F20
NW
1/4-1/2
1959 ft.

**NYS POLICE WESTERN CRIME LABORATORY**
**722 HOMER ST**
**OLEAN, NY 14760**

RCRA-SQG 1004763079
FINDS NYU005001011

**Site 4 of 4 in cluster F**

Relative:
Higher

Actual:
1428 ft.

RCRAInfo:
Owner: NON REGULATED
(716) 555-1212
EPA ID: NYU005001011

Contact: Not reported

Classification: Conditionally Exempt Small Quantity Generator
TSDF Activities: Not reported

Violation Status: No violations found

FINDS:
Other Pertinent Environmental Activity Identified at Site:
RESOURCE CONSERVATION AND RECOVERY ACT INFORMATION SYSTEM

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G21
East
1/4-1/2
1960 ft.

**R G SCOTT**
**314 PENN AVE**
**OLEAN, NY 14760**

RCRA-SQG 1000140752
RAATS NYD071468292

**Site 1 of 5 in cluster G**

Relative:
Higher

Actual:
1430 ft.

RCRAInfo:
Owner: VAN DER HORST CORPORATION OF AMERICA
(716) 372-5200
EPA ID: NYD071468292

Contact: ROBERT BUSH
(716) 372-2946

Classification: Small Quantity Generator
TSDF Activities: Not reported

Violation Status: Violations exist

Regulation Violated: Not reported
Area of Violation: GENERATOR-ALL REQUIREMENTS (OVERSIGHT)
Date Violation Determined: 01/31/1983
Actual Date Achieved Compliance: 01/11/1984

Enforcement Action: FINAL 3008(A) COMPLIANCE ORDER
Enforcement Action Date: 11/14/1983
Penalty Type: Final Monetary Penalty

Enforcement Action: INITIAL 3008(A) COMPLIANCE ORDER
Enforcement Action Date: 10/17/1983
Penalty Type: Final Monetary Penalty

There are 1 violation record(s) reported at this site:

| Evaluation | Area of Violation | Date of Compliance |
|---|---|---|
| Financial Record Review | GENERATOR-ALL REQUIREMENTS (OVERSIGHT) | 19840111 |

NY MANIFEST

Click this hyperlink while viewing on your computer to access additional NY MANIFEST detail in the EDR Site Report.

**G22**
**East**
**1/4-1/2**
**1960 ft.**

**Relative:**
**Higher**

**Actual:**
**1430 ft.**

**VAN DER HORST CORP OF AMERICA**
**314 PENN AVENUE**
**OLEAN, NY 14760**

**Site 2 of 5 in cluster G**

**CERCLIS** **1000110509**
**RCRA-SQG** **NYD980780928**
**FINDS**
**UST**
**AST**

CERCLIS Classification Data:
Federal Facility: Not a Federal Facility
Non NPL Status: Other Cleanup Activity: State-Lead Cleanup
NPL Status: Not on the NPL
Site Description: VAN DER HORST #1 WAS AN OPERATING PLATING FACILITY UNTIL JULY OF 1987, WHEN STRIKE CLOSED THE PLANT. AFTER A PROBLEM WITH THE SPRINKLER SYSTEM DREW ATTETION TO THE PLANT IN 1988, NYSDEC CONDUCT A SITE INVESTIGATION WHICH CONFIRMED THAT MANY

CERCLIS Assessment History:

| | | | |
|---|---|---|---|
| Assessment: | DISCOVERY | Completed: | 09/01/1984 |
| Assessment: | PRELIMINARY ASSESSMENT | Completed: | 09/01/1984 |
| Assessment: | SITE INSPECTION | Completed: | 05/01/1991 |
| Assessment: | REMOVAL | Completed: | 04/30/1992 |
| Assessment: | PREPARATION OF COST DOCM PKGE | Completed: | 02/14/1995 |
| Assessment: | NON-NPL PRP SEARCH | Completed: | 09/28/1995 |

CERCLIS Site Status:
Not reported
CERCLIS Alias Name(s):
VAN DER HORST #1

RCRAInfo:
Contact: REPORTING SECTION
(518) 457-0532

Classification: Small Quantity Generator
TSDF Activities: Not reported

Violation Status: No violations found

FINDS:
Other Pertinent Environmental Activity Identified at Site:
COMPREHENSIVE ENVIRONMENTAL RESPONSE, COMPENSATION AND INFORMATION SYSTEM
NEW YORK-FACILITY INFORMATION SYSTEM
RESOURCE CONSERVATION AND RECOVERY ACT INFORMATION SYSTEM

PBS UST:

| | | | |
|---|---|---|---|
| PBS Number: | 9-224162 | CBS Number: | Not reported |
| SPDES Number: | Not reported | SWIS ID: | 0466 |
| Operator: | VAN DER HORST CORP OF AMERICA<br>(716) 372-5200 | | |
| Emergency Contact: | ROBERT BUSH<br>(716) 372-5200 | | |
| Total Tanks: | 0 | | |
| Owner: | VAN DER HORST CORP OF AMERICA<br>314 PENN AVE<br>OLEAN, NY 14760<br>(716) 372-5200 | | |
| Owner Type: | Not reported | | |
| Owner Mark: | First Owner | | |
| Owner Subtype: | Not reported | | |
| Mailing Address: | VAN DER HORST CORP OF AMERICA<br>314 PENN AVE<br>OLEAN, NY 14760<br>(716) 372-5200 | | |
| Tank Status: | Closed - Removed | | |

VAN DER HORST CORP OF AMERICA (Continued) 1000110509

| | | | |
|---|---|---|---|
| Capacity (gals): | 10000 | | |
| Tank Location: | UNDERGROUND | | |
| Tank Id: | 101 | Install Date: | Not reported |
| Tank Type: | Steel/carbon steel | Product Stored: | NOS 1,2, OR 4 FUEL OIL |
| Tank Internal: | Not reported | Pipe Internal: | Not reported |
| Pipe Location: | Not reported | Pipe Type: | Not reported |
| Tank External: | Not reported | | |
| Missing Data for Tank: | Minor Data Missing | | |
| Pipe External: | Not reported | | |
| Second Containment: | NONE | | |
| Leak Detection: | NONE | | |
| Overfill Prot: | 2 | Dispenser: | Suction |
| Date Tested: | Not reported | Next Test Date: | Not reported |
| Date Closed: | 12/01/1996 | Test Method: | Not reported |
| Deleted: | False | Updated: | True |
| Dead Letter: | True | Owner Screen: | Minor data missing |
| FAMT: | Fiscal amount for registration fee is correct | | |
| Total Capacity: | 0 | Renewal Date: | 05/27/1992 |
| Tank Screen: | 0 | Federal ID: | Not reported |
| Renew Flag: | Renwal has not been printed | Facility Screen: | Minor data missing |
| Certification Flag: | False | Certification Date: | 08/17/1987 |
| Old PBS Number: | Not reported | Expiration Date: | 08/17/1992 |
| Inspected Date: | Not reported | Inspector: | Not reported |
| Inspection Result: | Not reported | | |
| Lat/long: | Not reported | | |
| Facility Type: | Not reported | | |
| Town or City: | OLEAN | | |
| Town or City Code: | 66 | | |
| County Code: | 04 | | |
| Region: | 9 | | |

PBS AST:

| | | | |
|---|---|---|---|
| PBS Number: | 9-224162 | CBS Number: | Not reported |
| SPDES Number: | Not reported | SWIS Code: | 0466 |
| Federal ID: | Not reported | Previous PBS#: | Not reported |
| Facility Status: | 2 - Unregulated by PBS (the total capacity is less than 1,101 gallons) and Subpart 360-14. | | |
| Facility Type: | Not reported | | |
| Owner Type: | Not reported | | |
| Owner Sub Type: | Not reported | | |
| Owner: | VAN DER HORST CORP OF AMERICA<br>314 PENN AVE<br>OLEAN, NY 14760 | | |
| Owner Phone: | (716) 372-5200 | | |
| Facility Phone: | (716) 372-5200 | | |
| Operator: | VAN DER HORST CORP OF AMERICA | | |
| Emergency Name: | ROBERT BUSH | | |
| Emergency Phone: | (716) 372-5200 | | |
| Total Tanks: | 0 | | |
| Total Capacity: | 0 | | |
| Tank ID: | 102 | | |
| Capacity (Gal): | 500 | | |
| Missing Data for Tank : | Minor data missing | | |
| Tank Location: | ABOVEGROUND | | |
| Product Stored: | NOS 1,2, OR 4 FUEL OIL | | |
| Tank Type: | Steel/carbon steel | | |
| Install Date: | / / | | |
| Tank Internal: | Not reported | | |

**VAN DER HORST CORP OF AMERICA (Continued)** **1000110509**

| | | | |
|---|---|---|---|
| Tank External: | Not reported | | |
| Tank Containment: | NONE | | |
| Pipe Type: | GALVANIZED STEEL | | |
| Pipe Location: | Not reported | | |
| Pipe Internal: | Not reported | | |
| Pipe External: | Not reported | | |
| Leak Detection: | NONE | | |
| Overfill Protection: | Product Level Gauge | | |
| Dispenser Method: | Gravity | | |
| Date Tested: | / / | Next Test Date: | / / |
| Date Closed: | / / | Test Method: | Not reported |
| Updated: | True | Deleted: | False |
| Date Inspected: | Not reported | Inspector: | Not reported |
| Result of Inspection: | Not reported | | |
| Mailing Name: | VAN DER HORST CORP OF AMERICA | | |
| Mailing Address: | 314 PENN AVE<br>OLEAN, NY 14760 | | |
| Mailing Contact: | Not reported | | |
| Mailing Telephone: | (716) 372-5200 | | |
| Owner Mark: | First Owner | Expiration Date: | 08/17/1992 |
| Certification Flag: | False | Certification Date: | 08/17/1987 |
| Renew Flag: | False | Renew Date: | 05/27/1992 |
| Lat/Long: | Not reported | | |
| Dead Letter: | True | | |
| Facility Screen: | Minor data missing | | |
| Owner Screen: | Minor data missing | | |
| Tank Screen: | 0 | | |
| Town or City: | OLEAN | | |
| Town or City Code: | 66 | | |
| County Code: | 04 | | |
| Region: | 9 | | |

Fiscal Amount for Registration Fee is Correct: True

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**G23** **VAN DER HORS** RCRA-SQG 1007204998
East **314 PENN AVENUE** NYP000791871
1/4-1/2 **OLEAN, NY 14760**
1960 ft.

**Site 3 of 5 in cluster G**

Relative:
Higher

RCRAInfo:
Contact: JACK D HARMON
(908) 321-6789

Actual:
1430 ft.

Classification: Small Quantity Generator
TSDF Activities: Not reported

Violation Status: No violations found

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**G24** **VAN DER HORST CORPORATION** SHWS S101657953
East **314 PENN AVENUE** N/A
1/4-1/2 **OLEAN, NY 14760**
1960 ft.

**Site 4 of 5 in cluster G**

Relative:
Higher

SHWS:
Region: 9
Actual:
1430 ft.
Classification SITE IS PROPERLY CLOSED - REQUIRES CONTINUED MANAGEMENT
Acres: 2

**VAN DER HORST CORPORATION (Continued)** **S101657953**

Program: HW
Site Code: 56516
Site Description : The site is the former location of chromium plating facility located adjacent to a residential area. It is alleged that spent chromic acid solutions and contaminated waste water were disposed at the site. The facility was operated from the early 19 40s to June 1987. A full-scale Remedial Investigation / Feasibility Study was initiated by the NYSDEC in late 1988. EPA completed an emergency removal action in 1991 to mitigate the imminent threat posed by the chemicals stored inside of the build ing. Phase I and Phase II Remedial Investigations (RI) confirmed contamination in the soils, groundwater and City storm sewers around the site. Contamination was also detected in the sediments of Olean Creek. A Phase III RI was completed in June 1991 to determine the contamination of the building structure. A Record of Decision was signed on March 26, 1992 and called for asbestos removal and building demolition (for off-site disposal); the excavation of contaminated soil and sediment from Olean Creek for off site disposal; the extraction and treatment of contaminated groundwater (if required); and long term monitoring. Contaminated residential soils have been removed and above grade structures demolished. Final residential yard res torations were completed in spring 1995. Remedial construction, to remove contaminated subsurface soils, began in September 1996 and was completed in mid 1997. During this remedial work, a large mass of soil contaminated with very high levels of c hromium was identified. This 'monolith' of highly contaminated soil was approximately 4000 cubic yards in size and was located 18 ft. below the ground surface. Remedial construction was initiated in April of 1999 and was completed by October 1999. A total of 31,539 tons of contaminated building and soil has been removed from the site at a cost of approximately $9,767,837.00. Annual groundwater monitoring is in progress to determine the effectiveness of the remediation and evaluate post reme diation groundwater conditions on the site.
Health Problems Assesment : Residential surface soil adjacent to the site showed elevated levels of arsenic, lead and chromium confirming airborne transport of site-related contaminants. Soil removal from and restoration of the residential yards was completed in July 1995. R emoval of on-site surface soil and restoration was completed in 1997. The groundwater has been contaminated with chromium, lead and tetrachloroethene. Human exposures via drinking water are not expected because homes in the area are served by publ ic water. The NYSDOH completed a health evaluation of residents within the historic area of air emission deposition and concluded that respiratory health effects from the exposure to the substances emitted could result in chronic effects on the res idents. The NYSDOH completed a cancer incidence study of the City of Olean in May 1990 and concluded that overall cancer incidence in the City of Olean did not differ from other comparable areas of NYS between 1976-86. Results of air monitoring du ring excavation work indicated nothing of public health significance in airborne dust.
Environmental Problems : All contaminated surface soil has been removed, as well as the sub-surface chromium monolith. The site is in long-term O&M and annual sampling has shown chromium levels in groundwater leveling off.

VAN DER HORST CORPORATION (Continued) S101657953

HW Extra
Site Code : 56516
HW Code : 905008
Dump : True
Structure : False
Lagoon : False
Landfill : False
Pond : False
Disp Start : 1941
Disp Term : 1952
Lat/Long : 42:05:26:0 / 78:26:15:0
Dell : F
Record Add : 11/18/99
Record Upd : 11/18/99
Updated By : INITIAL

Owner Operator
Site Code : 56516
HW Code : 905008
Own Op : 01
Seq no : 0000000
Sub Type : E
Name : Not reported
Company : VAN DER HORST CORPORATION
Address : 11818 RIDGEVIEW
MESQUITE, TX 75149
Country : United States of America

Site Code : 56516
HW Code : 905008
Own Op : 01
Seq no : 0000001
Sub Type : E
Name : Not reported
Company : RG Scott, Inc.
Address : 11818 Ridgeview
Mesquite, TX 75149
Country : United States of America

Site Code : 56516
HW Code : 905008
Own Op : 01
Seq no : 0000001
Sub Type : NNN
Name : Not reported
Company : RG Scott, Inc.
Address : 11818 Ridgeview
Mesquite, TX 75149
Country : United States of America

Site Code : 56516
HW Code : 905008
Own Op : 03
Seq no : 0000000
Sub Type : NNN
Name : Not reported
Company : VAN DER HORST CORPORATION
Address : ZZ
Country : United States of America

Site Code : 56516
HW Code : 905008

**VAN DER HORST CORPORATION (Continued)** S101657953

| | |
|---|---|
| Own Op : | 04 |
| Seq no : | 0000001 |
| Sub Type : | E |
| Name : | Not reported |
| Company : | VAN DER HORST CORPORATION |
| Address : | 314 PENN AVE. |
| | OLEAN, NY 14760 |
| Country : | United States of America |
| Site Code : | 56516 |
| HW Code : | 905008 |
| Own Op : | 04 |
| Seq no : | 0000001 |
| Sub Type : | NNN |
| Name : | Not reported |
| Company : | Van Der Horst Corporation |
| Address : | 314 Penn Avenue |
| | Olean, NY 14760 |
| Country : | United States of America |
| Material | |
| Site Code : | 56516 |
| HW Code : | 905008 |
| Waste Name : | WASTE CHROMIC ACID |
| Waste Quan : | UNKNOWN |
| Waste Code : | Not reported |
| Site Code : | 56516 |
| HW Code : | 905008 |
| Waste Name : | CHROMIC ACID CONTAMINATED WASTEWATER |
| Waste Quan : | UNKNOWN |
| Waste Code : | Not reported |
| Cross Ref | |
| Site Code : | 56516 |
| HW Code : | 905008 |
| Crossref ID : | NYD980780928 |
| Type Code : | 05 |
| Xref Type : | EPA Site ID |
| Record Add : | 05/10/01 |
| Record Upd : | 02/24/05 |
| Updated By : | REGTRANS |

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**E25** **UNI-MART #05019** UST U003318489
**SSE** **9TH AT WAYNE ST.** N/A
**1/4-1/2** **OLEAN, NY 14760**
**1971 ft.**

**Site 2 of 3 in cluster E**

**Relative:**
**Higher**

PBS UST:

| | | | |
|---|---|---|---|
| PBS Number: | 9-488844 | CBS Number: | Not reported |
| SPDES Number: | Not reported | SWIS ID: | 0466 |
| Operator: | UNI-MARTS, INC. | | |
| | (716) 373-5002 | | |
| Emergency Contact: | CHARLES BOWER | | |
| | (814) 234-6000 | | |
| Total Tanks: | 3 | | |
| Owner: | UNI-MARTS, INC. | | |
| | 477 EAST BEAVER AVENUE | | |
| | STATE COLLEGE, PA 16801 | | |
| | (814) 234-6000 | | |
| Owner Type: | Corporate/Commercial | | |
| Owner Mark: | First Owner | | |

**Actual:**
**1428 ft.**

**UNI-MART #05019 (Continued)** U003318489

| | | | |
|---|---|---|---|
| Owner Subtype: | Not reported | | |
| Mailing Address: | UNI-MARTS, INC.<br>ATTN: CHARLES BOWER<br>477 EAST BEAVER AVENUE<br>STATE COLLEGE, PA 16801<br>(814) 234-6000 | | |
| Tank Status: | In Service | | |
| Capacity (gals): | 10000 | | |
| Tank Location: | UNDERGROUND | | |
| Tank Id: | 1 | Install Date: | 10/01/1988 |
| Tank Type: | Steel/carbon steel | Product Stored: | UNLEADED GASOLINE |
| Tank Internal: | NONE | Pipe Internal: | FIBERGLASS LINER [FRP] |
| Pipe Location: | Underground | Pipe Type: | FIBERGLASS [FRP] |
| Tank External: | SACRIFICIAL ANODE/NONE | | |
| Missing Data for Tank: | No Missing Data | | |
| Pipe External: | FIBERGLASS/NONE | | |
| Second Containment: | DOUBLED-WALLED TANK/NONE | | |
| Leak Detection: | GROUNDWATER WELL/IN-TANK SYSTEM | | |
| Overfill Prot: | Product Level Gauge, Automatic Shut-Off | Dispenser: | Submersible |
| Date Tested: | Not reported | Next Test Date: | Not reported |
| Date Closed: | Not reported | Test Method: | Not reported |
| Deleted: | False | Updated: | True |
| Dead Letter: | False | Owner Screen: | No data missing |
| FAMT: | Fiscal amount for registration fee is correct | | |
| Total Capacity: | 30000 | Renewal Date: | Not reported |
| Tank Screen: | No data missing | Federal ID: | Not reported |
| Renew Flag: | Renwal has not been printed | Facility Screen: | No data missing |
| Certification Flag: | False | Certification Date: | 09/30/1999 |
| Old PBS Number: | Not reported | Expiration Date: | 06/23/2004 |
| Inspected Date: | 09/16/1996 | Inspector: | BAJ |
| Inspection Result: | Not reported | | |
| Lat/long: | Not reported | | |
| Facility Type: | RETAIL GASOLINE SALES | | |
| Town or City: | OLEAN | | |
| Town or City Code: | 66 | | |
| County Code: | 04 | | |
| Region: | 9 | | |
| PBS Number: | 9-488844 | CBS Number: | Not reported |
| SPDES Number: | Not reported | SWIS ID: | 0466 |
| Operator: | UNI-MARTS, INC.<br>(716) 373-5002 | | |
| Emergency Contact: | CHARLES BOWER<br>(814) 234-6000 | | |
| Total Tanks: | 3 | | |
| Owner: | UNI-MARTS, INC.<br>477 EAST BEAVER AVENUE<br>STATE COLLEGE, PA 16801<br>(814) 234-6000 | | |
| Owner Type: | Corporate/Commercial | | |
| Owner Mark: | First Owner | | |
| Owner Subtype: | Not reported | | |
| Mailing Address: | UNI-MARTS, INC.<br>ATTN: CHARLES BOWER<br>477 EAST BEAVER AVENUE<br>STATE COLLEGE, PA 16801<br>(814) 234-6000 | | |

**UNI-MART #05019 (Continued)** U003318489

| | | | |
|---|---|---|---|
| Tank Status: | In Service | | |
| Capacity (gals): | 10000 | | |
| Tank Location: | UNDERGROUND | | |
| Tank Id: | 2 | Install Date: | 10/01/1988 |
| Tank Type: | Steel/carbon steel | Product Stored: | UNLEADED GASOLINE |
| Tank Internal: | NONE | Pipe Internal: | FIBERGLASS LINER [FRP] |
| Pipe Location: | Underground | Pipe Type: | FIBERGLASS [FRP] |
| Tank External: | SACRIFICIAL ANODE/NONE | | |
| Missing Data for Tank: | No Missing Data | | |
| Pipe External: | FIBERGLASS/NONE | | |
| Second Containment: | DOUBLED-WALLED TANK/NONE | | |
| Leak Detection: | GROUNDWATER WELL/IN-TANK SYSTEM | | |
| Overfill Prot: | Product Level Gauge, Automatic Shut-Off | Dispenser: | Submersible |
| Date Tested: | Not reported | Next Test Date: | Not reported |
| Date Closed: | Not reported | Test Method: | Not reported |
| Deleted: | False | Updated: | True |
| Dead Letter: | False | Owner Screen: | No data missing |
| FAMT: | Fiscal amount for registration fee is correct | | |
| Total Capacity: | 30000 | Renewal Date: | Not reported |
| Tank Screen: | No data missing | Federal ID: | Not reported |
| Renew Flag: | Renwal has not been printed | Facility Screen: | No data missing |
| Certification Flag: | False | Certification Date: | 09/30/1999 |
| Old PBS Number: | Not reported | Expiration Date: | 06/23/2004 |
| Inspected Date: | 09/16/1996 | Inspector: | BAJ |
| Inspection Result: | Not reported | | |
| Lat/long: | Not reported | | |
| Facility Type: | RETAIL GASOLINE SALES | | |
| Town or City: | OLEAN | | |
| Town or City Code: | 66 | | |
| County Code: | 04 | | |
| Region: | 9 | | |

| | | | |
|---|---|---|---|
| PBS Number: | 9-488844 | CBS Number: | Not reported |
| SPDES Number: | Not reported | SWIS ID: | 0466 |
| Operator: | UNI-MARTS, INC.<br>(716) 373-5002 | | |
| Emergency Contact: | CHARLES BOWER<br>(814) 234-6000 | | |
| Total Tanks: | 3 | | |
| Owner: | UNI-MARTS, INC.<br>477 EAST BEAVER AVENUE<br>STATE COLLEGE, PA 16801<br>(814) 234-6000 | | |
| Owner Type: | Corporate/Commercial | | |
| Owner Mark: | First Owner | | |
| Owner Subtype: | Not reported | | |
| Mailing Address: | UNI-MARTS, INC.<br>ATTN: CHARLES BOWER<br>477 EAST BEAVER AVENUE<br>STATE COLLEGE, PA 16801<br>(814) 234-6000 | | |
| Tank Status: | In Service | | |
| Capacity (gals): | 10000 | | |
| Tank Location: | UNDERGROUND | | |
| Tank Id: | 3 | Install Date: | 10/01/1988 |
| Tank Type: | Steel/carbon steel | Product Stored: | UNLEADED GASOLINE |
| Tank Internal: | NONE | Pipe Internal: | FIBERGLASS LINER [FRP] |

**UNI-MART #05019 (Continued)** U003318489

| | | | |
|---|---|---|---|
| Pipe Location: | Underground | Pipe Type: | FIBERGLASS [FRP] |
| Tank External: | SACRIFICIAL ANODE/NONE | | |
| Missing Data for Tank: | No Missing Data | | |
| Pipe External: | FIBERGLASS/NONE | | |
| Second Containment: | DOUBLED-WALLED TANK/NONE | | |
| Leak Detection: | GROUNDWATER WELL/IN-TANK SYSTEM | | |
| Overfill Prot: | Product Level Gauge, Automatic Shut-Off | Dispenser: | Submersible |
| Date Tested: | Not reported | Next Test Date: | Not reported |
| Date Closed: | Not reported | Test Method: | Not reported |
| Deleted: | False | Updated: | True |
| Dead Letter: | False | Owner Screen: | No data missing |
| FAMT: | Fiscal amount for registration fee is correct | | |
| Total Capacity: | 30000 | Renewal Date: | Not reported |
| Tank Screen: | No data missing | Federal ID: | Not reported |
| Renew Flag: | Renwal has not been printed | Facility Screen: | No data missing |
| Certification Flag: | False | Certification Date: | 09/30/1999 |
| Old PBS Number: | Not reported | Expiration Date: | 06/23/2004 |
| Inspected Date: | 09/16/1996 | Inspector: | BAJ |
| Inspection Result: | Not reported | | |
| Lat/long: | Not reported | | |
| Facility Type: | RETAIL GASOLINE SALES | | |
| Town or City: | OLEAN | | |
| Town or City Code: | 66 | | |
| County Code: | 04 | | |
| Region: | 9 | | |

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**E26** **UNI-MARTS INC** RCRA-SQG 1004759883
**SSE** **9TH AT WAYNE STS** FINDS NYR000024414
**1/4-1/2** **OLEAN, NY 14760**
**1971 ft.**

**Site 3 of 3 in cluster E**

**Relative:** **Higher**

**Actual:** **1428 ft.**

RCRAInfo:
Owner: UNI-MARTS INC
(800) 494-1500
EPA ID: NYR000024414

Contact: GARY LEARN
(814) 234-6000

Classification: Conditionally Exempt Small Quantity Generator
TSDF Activities: Not reported

Violation Status: No violations found

FINDS:
Other Pertinent Environmental Activity Identified at Site:
RESOURCE CONSERVATION AND RECOVERY ACT INFORMATION SYSTEM

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**G27** **MCKEAN MACHINERY SALES, INC.** UST U003318195
**East** **921 N.4TH ST.** LTANKS N/A
**1/4-1/2** **OLEAN, NY 14760** HIST LTANKS
**1986 ft.**

**Site 5 of 5 in cluster G**

**Relative:** **Higher**

**Actual:** **1430 ft.**

LTANKS:

| | | | |
|---|---|---|---|
| Spill Number: | 9610968 | Region of Spill: | 9 |
| Facility ID : | 9610968 | DER Facility ID : | 152862 |
| Site ID : | 182426 | CID : | 31 |

**MCKEAN MACHINERY SALES, INC. (Continued)** **U003318195**

Spill Date: 12/05/96
Referred To : Not reported
Water Affected: Not reported
Spill Cause: TANK FAILURE
Facility Address 2: Not reported
Investigator: PRINGLE
Caller Name: KEVIN GLASER
Caller Phone: (716) 373-4319
Notifier Name: Not reported
Notifier Phone: Not reported
Spiller Contact: Not reported
Spiller: DAN FOWLER
Spiller Company : MCKEAN MACHINE
Spiller Address: 921 NORTH FOURTH STREET
OLEAN, NY
Spiller County : 001
Spill Class: Known release that creates potential for fire or hazard. DEC Response. Willing Responsible Party. Corrective action taken.
**Spill Closed Dt: 02/12/98**
Spill Notifier: DEC
Cleanup Ceased: / /
Last Inspection: 02/26/97
Cleanup Meets Standard: False
Recommended Penalty: Penalty Not Recommended
UST Involvement: False
Spill Record Last Update: 09/08/98
Date Spill Entered In Computer Data File: 12/05/96
Remediation Phase : 0
Program Number : 9610968
Material
Material ID : 343182
Site ID : 182426
Operable Unit : 01
Operable Unit ID : 1038871
Material Code : 0001
Material Name : #2 Fuel Oil
Case No. : Not reported
Material FA : Petroleum
Quantity : Not reported
Units : G
Recovered : Not reported
Resource Affected - Soil : No
Resource Affected - Air : No
Resource Affected - Indoor Air : No
Resource Affected - Groundwater : Yes
Resource Affected - Surface Water : No
Resource Affected - Drinking Wtr : No
Resource Affected - Sewer : No
Resource Affected - Impervious Surface : No
Resource Affected - Subway : No
Resource Affected - Utility : No
Resource Affected - Impervious Surface : No
Oxygenate : False
Tank Test
Spill Tank Test : Not reported
Site ID : Not reported
Tank Number : Not reported

Reported to Dept: 12/05/96
DEC Region : 9
Spill Source: COMMERCIAL/INDUSTRIAL
Facility Tele: (716) 372-7733
SWIS: 0566
Caller Agency: NYSDEC
Caller Extension: Not reported
Notifier Agency: Not reported
Notifier Extension: Not reported
Spiller Phone: Not reported

MCKEAN MACHINERY SALES, INC. (Continued) U003318195

Tank Size : Not reported
Test Method : Not reported
Leak Rate : Not reported
Gross Fail : Not reported
Modified By : Not reported
Last Modified : Not reported
Test Method : Not reported
DEC Remarks : Prior to Sept, 2004 data translation this spill Lead DEC Field was "MNP"
12/05/96: MNP INSP. MET W/ DAN FOWLER - MCKEAN MACHINE & KEVIN GLASER - DEC. MANHOLE OF ABANDONED FUEL OIL TANK EXPOSED. TANK FULL OF WATER W/ LAYER OF OIL. NO INFORMATION AVAI
LABLE ABOUT TANK. I TOLD FOWLER THAT TANK MUST BE EMPTIED ASAP TO PREVENT OVERFLOW OF OIL WHEN IT RAINS. TANK MUST BE REMOVED WIN 30 DAYS. ANY CONTAMINATED SOIL MUST BE STAGED FOR DISPOSAL OR TREATMENT. LETTER TO BE SENT. 01/16/97: MNP TELECON W
/ DAN FOWLER - MCKEAN MACHINE. HE SPOKE W/ GARY WILLIAMS - WORK & SILVAS. THEY PLAN TO CLOSE TANK IN PLACE. I ADVISED FOWLER THAT SAMPLING NEXT TO TANK MUST BE DONE PRIOR TO TANK CLOSURE. IF SAMPLE RESULTS ARE OK, THEN TANK CLEANING & CLOSURE CAN BE
GIN. LETTER ALREADY SENT. 01/22/97: MNP INSP. MET W/ DAN FOWLER - MCKEAN MACHINE & GARY WILLIAMS - WORK & SILVAS. W&S EXCAVATED NEXT TO 8' DIAM X 10' LENGTH VERTICAL TANK. BLACK OILY STAINED SOIL FOUND AT BOTTOM OF TANK. I REQUESTED TANK REMOVAL
TO COMPLETELY EXCAVATE THE CONTAMINATED SOIL. FOWLER AGREED TO DO WORK & WILLIAMS WILL SCHEDULE WORK. WE DISCUSSED SAMPLING & DISPOSAL REQUIREMENTS. TO SEND CLEANUP LETTER. NOTE: CHECK W/ KEVIN GLASER & SW ABOUT ANY ADDITIONAL ANALYSES RECOMMENDE
D. 02/26/97: MNP INSP. W&S ON SITE EXCAVATING SOIL AROUND TANK SO IT CAN BE REMOVED, CONTAMINATED SOIL ENCOUNTERED AT BOTTOM OF TANK & SOUTH SIDE OF EXCAVATION WHERE IT WAS PUT DURING TEST PIT DIG. I LEFT SITE TO CHECK AGAIN LATER. 02/26/97: M
NP INSP. W&S STILL EXCAVTING CONTAMINATED SOIL. 6 DRUMS OF OIL & SLUDGE REMOVED FROM THE TANK BOTTOM, STILL 18" OF SLUDGE REMAIN IN TANK. AFTER TANK WAS REMOVED W&S EXCAVATED DOWN 17 FT., BUT CONTAMINATED SOIL REMAINED. UNABLE TO CONTINUE DIGGING BE
CAUSE OF ADJCENT BUILDING FOUNDATION & GRAVEL SIDES CAVING IN. GW BELIEVED TO BE AT APPROX.18-19 FT. SOIL SAMPLES COLLECTED FOR EPA 8021 & 8270 ANALYSIS, AS WELL AS DOH 310-13. ADDITIONAL REMEDIATION NEEDED. RECOMEND INSTALLATION OF MWS, BUT WILL W
AIT FOR SAMPLE RESULTS BEFORE PROCEEDING. 02/04/98: MNP & RNL DISCUSSION. SITE IS LOCATED ON FORMER OIL REFINERY. HISTORICAL SPILLAGE WELL KNOWN IN NORTERN OLEAN. NO FURTHER CLEANUP WARRANTED. I WILL CHECK FILE FOR DOCUMENTATION & SPEAK W/ KEVIN
GLASER. 02/12/98: MNP DISCUSSION W/ KEVIN GLASER - HWR. THEY FOUND OLD OIL CONTAMINATED SOIL FROM 12-15' DOWN ALL OVER THE SITE. THIS IS TYPICAL FOR NORTH OLEAN DUE TO THE OIL REFINERIES THAT WERE THERE. THIS HISTORICAL SPILLAGE WILL NOT REQUIR
E CLEANUP. NO FURTHER WORK REQUIRED. SITE CAN BE CLOSED AS INACTIVE. 09/08/98: RNL REVIEW, NO INACTIVE LETTER, RNL SENT 09/10/98, CLOSEOUT
Remark: DISCOVERED ABANDONED FUEL OIL UST FULL OF WATER SPILL FAXED FROM REGION 9

HIST LTANKS:

Spill Number: 9610968
Spill Date: 12/05/1996 07:00
Water Affected: Not reported
Resource Affectd: Groundwater
Spill Cause: Tank Failure
Region of Spill: 9
Reported to Dept: 12/05/96 09:40
Spill Source: Other Commercial/Industrial

**MCKEAN MACHINERY SALES, INC. (Continued)** **U003318195**

Facility Contact: DAN FOWLER
Facility Tele: (716) 372-7733
Investigator: MNP
SWIS: 04
Caller Name: Not reported
Caller Agency: Not reported
Caller Phone: Not reported
Caller Extension: Not reported
Notifier Name: Not reported
Notifier Agency: Not reported
Notifier Phone: Not reported
Notifier Extension: Not reported
Spiller Contact: Not reported
Spiller Phone: Not reported
Spiller: MCKEAN MACHINE
Spiller Address: 921 NORTH FOURTH STREET
OLEAN, NY
Spill Class: Known release that creates potential for fire or hazard. DEC Response. Willing Responsible Party. Corrective action taken.
Spill Closed Dt: 02/12/98
Spill Notifier: DEC
PBS Number: Not reported
Cleanup Ceased: / /
Last Inspection: 02/26/97
Cleanup Meets Standard: False
Recommended Penalty: Penalty Not Recommended
Spiller Cleanup Date: / /
Enforcement Date: / /
Investigation Complete: / /
UST Involvement: False
Spill Record Last Update: 09/08/98
Is Updated: False
Corrective Action Plan Submitted: / /
Date Spill Entered In Computer Data File: 12/05/96
Date Region Sent Summary to Central Office: / /
Tank Test:
PBS Number: Not reported
Tank Number: Not reported
Test Method: Not reported
Capacity of Failed Tank: Not reported
Leak Rate Failed Tank: Not reported
Gross Leak Rate: Not reported
Material:
Material Class Type: 1
Quantity Spilled: 0
Units: Gallons
Unknown Qty Spilled: No
Quantity Recovered: 0
Unknown Qty Recovered: True
Material: #2 FUEL OIL
Class Type: Petroleum
Chem Abstract Service Number: #2 FUEL OIL
Last Date: 12/07/1994
Num Times Material Entry In File: 24464
Spill Cause: DISCOVERED ABANDONED FUEL OIL UST FULL OF WATER SPILL FAXED FROM REGION 9

Click this hyperlink while viewing on your computer to access additional HIST LTANKS detail in the EDR Site Report.

PBS UST:
PBS Number: 9-439843
CBS Number: Not reported
SPDES Number: Not reported
SWIS ID: 0466
Operator: MCKEAN MACHINERY SALES, INC.
(716) 372-7733
Emergency Contact: DAN FOWLER

**MCKEAN MACHINERY SALES, INC. (Continued)** U003318195

| | | | |
|---|---|---|---|
| | (716) 372-8543 | | |
| Total Tanks: | 0 | | |
| Owner: | ARTHUR ROSEN<br>921 N. 4TH ST.<br>OLEAN, NY 14760<br>(716) 372-7733 | | |
| Owner Type: | Corporate/Commercial | | |
| Owner Mark: | First Owner | | |
| Owner Subtype: | Not reported | | |
| Mailing Address: | ARTHUR ROSEN<br>921 N. 4TH ST.<br>OLEAN, NY 14760<br>(716) 372-7733 | | |
| Tank Status: | Closed - Removed | | |
| Capacity (gals): | 8000 | | |
| Tank Location: | UNDERGROUND | | |
| Tank Id: | 001 | Install Date: | 01/01/1973 |
| Tank Type: | Steel/carbon steel | Product Stored: | NOS 1,2, OR 4 FUEL OIL |
| Tank Internal: | NONE | Pipe Internal: | NONE |
| Pipe Location: | Underground | Pipe Type: | STEEL/IRON |
| Tank External: | PAINTED/ASPHALT COATING/NONE | | |
| Missing Data for Tank: | No Missing Data | | |
| Pipe External: | NONE/NONE | | |
| Second Containment: | NONE/NONE | | |
| Leak Detection: | NONE/NONE | | |
| Overfill Prot: | Product Level Gauge, None | Dispenser: | Suction |
| Date Tested: | Not reported | Next Test Date: | Not reported |
| Date Closed: | 05/01/1990 | Test Method: | Not reported |
| Deleted: | False | Updated: | True |
| Dead Letter: | False | Owner Screen: | Minor data missing |
| FAMT: | Fiscal amount for registration fee is correct | | |
| Total Capacity: | 0 | Renewal Date: | Not reported |
| Tank Screen: | 0 | Federal ID: | Not reported |
| Renew Flag: | Renwal has not been printed | Facility Screen: | No data missing |
| Certification Flag: | False | Certification Date: | 06/28/1988 |
| Old PBS Number: | Not reported | Expiration Date: | 06/28/1993 |
| Inspected Date: | 10/04/1989 | Inspector: | SIBBL |
| Inspection Result: | Not reported | | |
| Lat/long: | Not reported | | |
| Facility Type: | OTHER RETAIL SALES | | |
| Town or City: | OLEAN | | |
| Town or City Code: | 66 | | |
| County Code: | 04 | | |
| Region: | 9 | | |
| | | | |
| PBS Number: | 9-439843 | CBS Number: | Not reported |
| SPDES Number: | Not reported | SWIS ID: | 0466 |
| Operator: | MCKEAN MACHINERY SALES, INC.<br>(716) 372-7733 | | |
| Emergency Contact: | DAN FOWLER<br>(716) 372-8543 | | |
| Total Tanks: | 0 | | |
| Owner: | ARTHUR ROSEN<br>921 N. 4TH ST.<br>OLEAN, NY 14760<br>(716) 372-7733 | | |
| Owner Type: | Corporate/Commercial | | |

**MCKEAN MACHINERY SALES, INC. (Continued)** U003318195

| | | | |
|---|---|---|---|
| Owner Mark: | First Owner | | |
| Owner Subtype: | Not reported | | |
| Mailing Address: | ARTHUR ROSEN<br>921 N. 4TH ST.<br>OLEAN, NY 14760<br>(716) 372-7733 | | |
| Tank Status: | Closed - Removed | | |
| Capacity (gals): | 1000 | | |
| Tank Location: | UNDERGROUND | | |
| Tank Id: | 002 | Install Date: | 01/01/1973 |
| Tank Type: | Steel/carbon steel | Product Stored: | LEADED GASOLINE |
| Tank Internal: | NONE | Pipe Internal: | NONE |
| Pipe Location: | Underground | Pipe Type: | STEEL/IRON |
| Tank External: | PAINTED/ASPHALT COATING/NONE | | |
| Missing Data for Tank: | No Missing Data | | |
| Pipe External: | PAINTED/ASPHALT COATING/NONE | | |
| Second Containment: | NONE/NONE | | |
| Leak Detection: | NONE/NONE | | |
| Overfill Prot: | Product Level Gauge, None | Dispenser: | Suction |
| Date Tested: | Not reported | Next Test Date: | Not reported |
| Date Closed: | 05/01/1990 | Test Method: | Not reported |
| Deleted: | False | Updated: | True |
| Dead Letter: | False | Owner Screen: | Minor data missing |
| FAMT: | Fiscal amount for registration fee is correct | | |
| Total Capacity: | 0 | Renewal Date: | Not reported |
| Tank Screen: | 0 | Federal ID: | Not reported |
| Renew Flag: | Renwal has not been printed | Facility Screen: | No data missing |
| Certification Flag: | False | Certification Date: | 06/28/1988 |
| Old PBS Number: | Not reported | Expiration Date: | 06/28/1993 |
| Inspected Date: | 10/04/1989 | Inspector: | SIBBL |
| Inspection Result: | Not reported | | |
| Lat/long: | Not reported | | |
| Facility Type: | OTHER RETAIL SALES | | |
| Town or City: | OLEAN | | |
| Town or City Code: | 66 | | |
| County Code: | 04 | | |
| Region: | 9 | | |

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**28**
**WSW**
**1/4-1/2**
**2017 ft.**

**BELL ATLANTIC GARAGE**
**1480 BUFFALO STREET**
**OLEAN, NY**

**LTANKS** **S103239058**
**HIST LTANKS** **N/A**

**Relative:**
**Lower**

**Actual:**
**1421 ft.**

LTANKS:

| | | | |
|---|---|---|---|
| Spill Number: | 9800611 | Region of Spill: | 9 |
| Facility ID : | 9800611 | DER Facility ID : | 265699 |
| Site ID : | 330310 | CID : | 31 |
| Spill Date: | 04/14/98 | Reported to Dept: | 04/14/98 |
| Referred To : | Not reported | DEC Region : | 9 |
| Water Affected: | Not reported | Spill Source: | TANK TRUCK |
| Spill Cause: | TANK OVERFILL | | |
| Facility Address 2: | Not reported | Facility Tele: | (814) 726-1483 |
| Investigator: | JFOTTO | SWIS: | 0566 |
| Caller Name: | JOHN QUATRALE | Caller Agency: | BELL ATLANTIC |
| Caller Phone: | (212) 338-7141 | Caller Extension: | Not reported |
| Notifier Name: | Not reported | Notifier Agency: | Not reported |
| Notifier Phone: | Not reported | Notifier Extension: | Not reported |
| Spiller Contact: | Not reported | Spiller Phone: | Not reported |
| Spiller: | JERRY WHITE | | |

**BELL ATLANTIC GARAGE (Continued)** **S103239058**

Spiller Company : CROSSETT FUEL OIL
Spiller Address: ZZ
Spiller County : 001
Spill Class: Known release with minimal potential for fire or hazard. DEC Response. Willing Responsible Party. Corrective action taken.
**Spill Closed Dt: 08/05/98**
Spill Notifier: AFFECTED PERSONS
Cleanup Ceased: / /
Last Inspection: 04/14/98
Cleanup Meets Standard: True
Recommended Penalty: Penalty Not Recommended
UST Involvement: False
Spill Record Last Update: 02/20/02
Date Spill Entered In Computer Data File: 04/14/98
Remediation Phase : 0
Program Number : 9800611
Material
Material ID : 322566
Site ID : 330310
Operable Unit : 01
Operable Unit ID : 1057959
Material Code : 0009
Material Name : Gasoline
Case No. : Not reported
Material FA : Petroleum
Quantity : Not reported
Units : G
Recovered : Not reported
Resource Affected - Soil : Yes
Resource Affected - Air : No
Resource Affected - Indoor Air : No
Resource Affected - Groundwater : No
Resource Affected - Surface Water : No
Resource Affected - Drinking Wtr : No
Resource Affected - Sewer : No
Resource Affected - Impervious Surface : No
Resource Affected - Subway : No
Resource Affected - Utility : No
Resource Affected - Impervious Surface : No
Oxygenate : False
Tank Test
Spill Tank Test : Not reported
Site ID : Not reported
Tank Number : Not reported
Tank Size : Not reported
Test Method : Not reported
Leak Rate : Not reported
Gross Fail : Not reported
Modified By : Not reported
Last Modified : Not reported
Test Method : Not reported
DEC Remarks : Prior to Sept, 2004 data translation this spill Lead DEC Field was "JFO MNP" 04/14/98 MNP AND RNL SITE VISIT. EP&S HIRED TO CLEANUP SPILL, FOUND GASOLINE IN STORM SEWER, PLACED PADS IN STORM CATCH BASINS, COULD NOT FIND STROM SEWER OUTLET, DETER
MINED CROSSETT HA DNOT STUCK TANK BEFORE FILLING, ALSO, HIGH LEVEL ALARM NOT WORKING, THEY WILL CORRECT, MNP LEFT SITE DURING EP&S ONGOING

**BELL ATLANTIC GARAGE (Continued)** S103239058

CLEANUP 07/27/98 JFO RECEIVED DISPOSAL RECEIPTS. NO FURTHER ACTION REQUIRED, CLOSED
Remark: Not reported

HIST LTANKS:
Spill Number: 9800611 Region of Spill: 9
Spill Date: 04/14/1998 21:00 Reported to Dept: 04/14/98 22:52
Water Affected: Not reported Spill Source: Tank Truck
Resource Affectd: On Land
Spill Cause: Tank Overfill
Facility Contact: JERRY WHITE Facility Tele: (814) 726-1483
Investigator: JFO MNP SWIS: 04
Caller Name: Not reported Caller Agency: Not reported
Caller Phone: Not reported Caller Extension: Not reported
Notifier Name: Not reported Notifier Agency: Not reported
Notifier Phone: Not reported Notifier Extension: Not reported
Spiller Contact: Not reported Spiller Phone: Not reported
Spiller: CROSSETT FUEL OIL
Spiller Address: Not reported
Spill Class: Known release with minimal potential for fire or hazard. DEC Response. Willing Responsible Party. Corrective action taken.
Spill Closed Dt: 08/05/98
Spill Notifier: Affected Persons PBS Number: Not reported
Cleanup Ceased: / /
Last Inspection: 04/14/98
Cleanup Meets Standard: True
Recommended Penalty: Penalty Not Recommended
Spiller Cleanup Date: / /
Enforcement Date: / /
Investigation Complete: / /
UST Involvement: False
Spill Record Last Update: 08/26/98
Is Updated: False
Corrective Action Plan Submitted: / /
Date Spill Entered In Computer Data File: 04/14/98
Date Region Sent Summary to Central Office: / /
Tank Test:
PBS Number: Not reported
Tank Number: Not reported
Test Method: Not reported
Capacity of Failed Tank: Not reported
Leak Rate Failed Tank: Not reported
Gross Leak Rate: Not reported
Material:
Material Class Type: 1
Quantity Spilled: 25
Units: Gallons
Unknown Qty Spilled: 25
Quantity Recovered: 25
Unknown Qty Recovered: False
Material: GASOLINE
Class Type: Petroleum
Chem Abstract Service Number: GASOLINE
Last Date: 09/29/1994
Num Times Material Entry In File: 21329
DEC Remarks: 04/14/98 MNP AND RNL SITE VISIT. EP S HIRED TO CLEANUP SPILL, FOUND GA SOLINE IN STORM SEWER, PLACED PADS IN STORM CATCH BASINS, COULD NOT FIND STROM SEWER OUTLET, DETERMINED CROSSETT HA DNOT STUCK TANK BEFORE FILLIN

**BELL ATLANTIC GARAGE (Continued)** **S103239058**

G, ALSO, HIGH LEVEL ALARM NOT WORKING, THEY WILL CORRECT, MNP LEFT SITE DURING EP S ONGOING CLEANUP 07/27/98 JFO RECEIVED DISPOSAL RECEIPTS. N O FURTHER ACTION REQUIRED, CLOSED

Spill Cause: Not reported

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**D29** **LOCTITE CORPORATION** FINDS 1000400702
**NNE** **211 FRANKLIN STREET** RCRA-LQG 14760HYSLL21
**1/4-1/2** **OLEAN, NY 14760** TRIS
**2053 ft.** CORRACTS

**Site 3 of 3 in cluster D**

**Relative: Higher**

CORRACTS Data:

**Actual: 1430 ft.**

| | |
|---|---|
| EPA Id: | NYD042569079 |
| Region: | 02 |
| Area Name: | SITEWIDE |
| Actual Date: | 02/02/1994 |
| Corrective Action: | CA075LO - CA Prioritization, Facility or area was assigned a low corrective action priority |
| 2002 NAICS Title: | Custom Compounding of Purchased Resins<br>Adhesive Manufacturing<br>Paint and Coating Manufacturing<br>Plastics Material and Resin Manufacturing |

| | |
|---|---|
| EPA Id: | NYD042569079 |
| Region: | 02 |
| Area Name: | SITEWIDE |
| Actual Date: | 07/19/1994 |
| Corrective Action: | CA070NO - RFA Determination Of Need For An RFI, RFI is Not Necessary |
| 2002 NAICS Title: | Custom Compounding of Purchased Resins<br>Adhesive Manufacturing<br>Paint and Coating Manufacturing<br>Plastics Material and Resin Manufacturing |

| | |
|---|---|
| EPA Id: | NYD042569079 |
| Region: | 02 |
| Area Name: | SITEWIDE |
| Actual Date: | 09/08/1993 |
| Corrective Action: | CA075LO - CA Prioritization, Facility or area was assigned a low corrective action priority |
| 2002 NAICS Title: | Custom Compounding of Purchased Resins<br>Adhesive Manufacturing<br>Paint and Coating Manufacturing<br>Plastics Material and Resin Manufacturing |

| | |
|---|---|
| EPA Id: | NYD042569079 |
| Region: | 02 |
| Area Name: | SITEWIDE |
| Actual Date: | 09/22/1992 |
| Corrective Action: | CA050 - RFA Completed |
| 2002 NAICS Title: | Custom Compounding of Purchased Resins<br>Adhesive Manufacturing<br>Paint and Coating Manufacturing<br>Plastics Material and Resin Manufacturing |

LOCTITE CORPORATION (Continued) 1000400702

RCRAInfo Corrective Action Summary:
Event: RFA Determination Of Need For An RFI, RFI is Not Necessary;
Event Date: 07/19/1994

Event: CA Prioritization, Facility or area was assigned a low corrective action priority.
Event Date: 02/02/1994

Event: CA Prioritization, Facility or area was assigned a low corrective action priority.
Event Date: 09/08/1993

Event: RFA Completed
Event Date: 09/22/1992

RCRAInfo:
Owner: 8
(716) 372-6300
EPA ID: NYD042569079

Contact: JAMES P HORNBURG
(716) 372-6300

Classification: Large Quantity Generator
TSDF Activities: Not reported

BIENNIAL REPORTS:
Last Biennial Reporting Year: 2003

| Waste | Quantity (Lbs) | Waste | Quantity (Lbs) |
|---|---|---|---|
| D001 | 95629.00 | D002 | 628.00 |
| D006 | 2952.00 | D035 | 9211.00 |
| F002 | 628.00 | F003 | 106129.00 |
| F005 | 66877.00 | U069 | 211.00 |
| U154 | 2251.00 | | |

Violation Status: Violations exist

Regulation Violated: 372.2(a)(8)(i)(a);374-3.2(e)(
Area of Violation: GENERATOR-OTHER REQUIREMENTS
Date Violation Determined: 07/17/2001
Actual Date Achieved Compliance: 07/17/2001

Enforcement Action: WRITTEN INFORMAL
Enforcement Action Date: 07/19/2001
Penalty Type: Not reported

Regulation Violated: Not reported
Area of Violation: GENERATOR-ALL REQUIREMENTS (OVERSIGHT)
Date Violation Determined: 09/26/1999
Actual Date Achieved Compliance: 09/30/1999

Enforcement Action: WRITTEN INFORMAL
Enforcement Action Date: 09/30/1999
Penalty Type: Not reported

Regulation Violated: Not reported
Area of Violation: GENERATOR-ALL REQUIREMENTS (OVERSIGHT)
Date Violation Determined: 07/24/1990
Actual Date Achieved Compliance: 04/22/1991

Enforcement Action: FINAL 3008(A) COMPLIANCE ORDER
Enforcement Action Date: 03/13/1991
Penalty Type: Final Monetary Penalty

**LOCTITE CORPORATION (Continued)** **1000400702**

Enforcement Action: INITIAL 3008(A) COMPLIANCE ORDER
Enforcement Action Date: 09/24/1990
Penalty Type: Final Monetary Penalty

Regulation Violated: Not reported
Area of Violation: GENERATOR-ALL REQUIREMENTS (OVERSIGHT)
Date Violation Determined: 06/20/1988
Actual Date Achieved Compliance: 09/02/1988

Enforcement Action: WRITTEN INFORMAL
Enforcement Action Date: 06/20/1988
Penalty Type: Not reported

Regulation Violated: Not reported
Area of Violation: GENERATOR-ALL REQUIREMENTS (OVERSIGHT)
Date Violation Determined: 10/16/1985
Actual Date Achieved Compliance: 02/20/1986

Enforcement Action: WRITTEN INFORMAL
Enforcement Action Date: 01/15/1986
Penalty Type: Not reported

Regulation Violated: Not reported
Area of Violation: GENERATOR-ALL REQUIREMENTS (OVERSIGHT)
Date Violation Determined: 01/07/1985
Actual Date Achieved Compliance: 02/13/1985

Enforcement Action: WRITTEN INFORMAL
Enforcement Action Date: 01/07/1985
Penalty Type: Not reported

Penalty Summary:

| Penalty Description | Penalty Date | Penalty Amount | Lead Agency |
|---|---|---|---|
| Final Monetary Penalty | 3/13/1991 | 6000 | STATE |

*There are 6 violation record(s) reported at this site:*

| Evaluation | Area of Violation | Date of Compliance |
|---|---|---|
| Compliance Evaluation Inspection | GENERATOR-OTHER REQUIREMENTS | 20010717 |
| Compliance Evaluation Inspection | GENERATOR-ALL REQUIREMENTS (OVERSIGHT) | 19990930 |
| Compliance Evaluation Inspection | GENERATOR-ALL REQUIREMENTS (OVERSIGHT) | 19910422 |
| Non-Financial Record Review | GENERATOR-ALL REQUIREMENTS (OVERSIGHT) | 19880902 |
| Compliance Evaluation Inspection | GENERATOR-ALL REQUIREMENTS (OVERSIGHT) | 19860220 |
| Non-Financial Record Review | GENERATOR-ALL REQUIREMENTS (OVERSIGHT) | 19850213 |

NY MANIFEST

Click this hyperlink while viewing on your computer to access additional NY MANIFEST detail in the EDR Site Report.

FINDS:
Other Pertinent Environmental Activity Identified at Site:
AEROMETRIC INFORMATION RETRIEVAL SYSTEM/AIRS FACILITY SYSTEM
NATIONAL COMPLIANCE DATABASE SYSTEM
NATIONAL ENVIRONMENTAL PERFORMANCE TRACK
RESOURCE CONSERVATION AND RECOVERY ACT INFORMATION SYSTEM
TOXIC CHEMICAL RELEASE INVENTORY SYSTEM

30 South 1/4-1/2 2374 ft.
PROPOSED HAMPTON INN SITE
1128 BUFFALO STREET
OLEAN, NY

LTANKS S102245550
HIST LTANKS N/A

Relative: Higher

Actual: 1436 ft.

LTANKS:

| | | | |
|---|---|---|---|
| Spill Number: | 9604257 | Region of Spill: | 9 |
| Facility ID : | 9604257 | DER Facility ID : | 243044 |
| Site ID : | 300487 | CID : | 31 |
| Spill Date: | 06/28/96 | Reported to Dept: | 06/28/96 |
| Referred To : | Not reported | DEC Region : | 9 |
| Water Affected: | Not reported | Spill Source: | COMMERCIAL/INDUSTRIAL |
| Spill Cause: | TANK FAILURE | | |
| Facility Address 2: | Not reported | Facility Tele: | Not reported |
| Investigator: | FXGALLEG | SWIS: | 0566 |
| Caller Name: | MAXIM TECHNOLOGIES | Caller Agency: | CONSULTATNT |
| Caller Phone: | ( ) 649-8110 | Caller Extension: | Not reported |
| Notifier Name: | Not reported | Notifier Agency: | Not reported |
| Notifier Phone: | Not reported | Notifier Extension: | Not reported |
| Spiller Contact: | Not reported | Spiller Phone: | Not reported |
| Spiller: | Not reported | | |

Spiller Company : URBAN RENEWAL AGENCY
Spiller Address: MUNICIPAL BLDG
OLEAN, NY 14760
Spiller County : 001
Spill Class: *Known release that creates potential for fire or hazard. DEC Response. Willing Responsible Party. Corrective action taken.*
Spill Closed Dt: 06/28/96
Spill Notifier: OTHER
Cleanup Ceased: 06/28/96
Last Inspection: / /
Cleanup Meets Standard: True
Recommended Penalty: Penalty Not Recommended
UST Involvement: False
Spill Record Last Update: 10/08/99
Date Spill Entered In Computer Data File: 06/28/96
Remediation Phase : 0
Program Number : 9604257
Material
Material ID : 350545
Site ID : 300487
Operable Unit : 01
Operable Unit ID : 1031904
Material Code : 0066A
Material Name : UNKNOWN PETROLEUM
Case No. : Not reported
Material FA : Petroleum
Quantity : Not reported
Units : G
Recovered : Not reported
Resource Affected - Soil : No
Resource Affected - Air : No
Resource Affected - Indoor Air : No
Resource Affected - Groundwater : Yes
Resource Affected - Surface Water : No
Resource Affected - Drinking Wtr : No
Resource Affected - Sewer : No
Resource Affected - Impervious Surface : No
Resource Affected - Subway : No

**PROPOSED HAMPTON INN SITE (Continued)** S102245550

Resource Affected - Utility : No
Resource Affected - Impervious Surface : No
Oxygenate : False
Tank Test
Spill Tank Test : Not reported
Site ID : Not reported
Tank Number : Not reported
Tank Size : Not reported
Test Method : Not reported
Leak Rate : Not reported
Gross Fail : Not reported
Modified By : Not reported
Last Modified : Not reported
Test Method : Not reported
DEC Remarks : Prior to Sept, 2004 data translation this spill Lead DEC Field was "FG"
6/28/96 THIS SPILL IS A DUPICATE OF SPILL #9515882. SEE THAT SPILL FOR ALL INFORMATION. THIS SPILL, #9604257, IS CLOSED.
Remark: SITE ASSESSMENT COMPLETED BY MAXIM IDENTIFIED TWO BORINGS WITH SHEEN AND PETROLEUM ODOR AT A 24 FOOT DEPTH

HIST LTANKS:
Spill Number: 9604257 Region of Spill: 9
Spill Date: 06/01/1996 12:00 Reported to Dept: 06/28/96 12:00
Water Affected: Not reported Spill Source: Other Commercial/Industrial
Resource Affectd: Groundwater
Spill Cause: Tank Failure
Facility Contact: Not reported Facility Tele: Not reported
Investigator: FG SWIS: 04
Caller Name: Not reported Caller Agency: Not reported
Caller Phone: Not reported Caller Extension: Not reported
Notifier Name: Not reported Notifier Agency: Not reported
Notifier Phone: Not reported Notifier Extension: Not reported
Spiller Contact: Not reported Spiller Phone: Not reported
Spiller: URBAN RENEWAL AGENCY
Spiller Address: MUNICIPAL BLDG
OLEAN, NY 14760
Spill Class: Known release that creates potential for fire or hazard. DEC Response. Willing Responsible Party. Corrective action taken.
Spill Closed Dt: 06/28/96
Spill Notifier: Other PBS Number: Not reported
Cleanup Ceased: 06/28/96
Last Inspection: / /
Cleanup Meets Standard: True
Recommended Penalty: Penalty Not Recommended
Spiller Cleanup Date: / /
Enforcement Date: / /
Investigation Complete: / /
UST Involvement: False
Spill Record Last Update: 10/08/99
Is Updated: False
Corrective Action Plan Submitted: / /
Date Spill Entered In Computer Data File: 06/28/96
Date Region Sent Summary to Central Office: / /
Tank Test:
PBS Number: Not reported
Tank Number: Not reported
Test Method: Not reported
Capacity of Failed Tank: Not reported

**PROPOSED HAMPTON INN SITE (Continued)** **S102245550**

Leak Rate Failed Tank: Not reported
Gross Leak Rate: Not reported
Material:
Material Class Type: 1
Quantity Spilled: 0
Units: Gallons
Unknown Qty Spilled: No
Quantity Recovered: 0
Unknown Qty Recovered: True
Material: UNKNOWN PETROLEUM
Class Type: Petroleum
Chem Abstract Service Number: UNKNOWN PETROLEUM
Last Date: 09/29/1994
Num Times Material Entry In File: 16414
DEC Remarks: 6/28/96 THIS SPILL IS A DUPICATE OF SPILL 9515882. SEE THAT SPILL FOR ALL INFORMATION. THIS SPILL, 9604257, IS CLOSED.
Spill Cause: SITE ASSESSMENT COMPLETED BY MAXIM IDENTIFIED TWO BORINGS WITH SHEEN AND PETROLEUM ODOR AT A 24 FOOT DEPTH

ORPHAN SUMMARY

| City | EDR ID | Site Name | Site Address | Zip | Database(s) |
|---|---|---|---|---|---|
| OLEAN | 1000447228 | MEYER BARNARD CHEV GEO INC | RTE 16N | 14760 | RCRA-SQG, FINDS |
| OLEAN | 1000191694 | NYSDOT | RTE 17 VARIOUS LOCATIONS | 14760 | RCRA-SQG, FINDS |
| OLEAN | 1000553040 | NYSDOT | RTE 17 OVER OLEAN CRK | 14760 | RCRA-SQG, FINDS |
| OLEAN | 1004762235 | NYSDOT BIN 1092061&2 | RTE 17 OVER JOHNSON ST | 14760 | RCRA-SQG, FINDS |
| OLEAN | S103557927 | LEAKING TRUCK ON ROUTE 16 | ROUTE 17 | 14760 | LTANKS, HIST LTANKS |
| OLEAN | S102132459 | OIL IN CREEK | ROUTE 29 / STATE LINE | 14760 | NY Spills, NY Hist Spills |
| OLEAN | S104553836 | OIL IN POND IN FORNESS PK | ROUTE 417 | 14760 | NY Spills, NY Hist Spills |
| OLEAN | S103562591 | CATTARAUGUS COUNTY DEV. | ROUTE 417 | 14760 | NY Spills, NY Hist Spills |
| OLEAN | 1004762234 | NYSDOT BIN 1092040 | N 7TH ST OVER RTE 17 | 14760 | RCRA-SQG, FINDS |
| OLEAN | S103572072 | OIL IN GRAVEL PIT WATER | BACK HINSDALE ROAD | 14760 | NY Spills, NY Hist Spills |
| OLEAN | S104282995 | CRUDE OIL WELL | BARNUM ROAD | 14760 | NY Spills, NY Hist Spills |
| OLEAN | S106468041 | CONRAIL | BUFFALO STREET | 14760 | NY Spills, NY Hist Spills |
| OLEAN | S105912694 | LEE'S SEPTIC SERVICE | DIRT ROAD | 14760 | SWF/LF |
| OLEAN | S107488998 | ANTIFREEZE SPILL | EXIT 25 ROUTE 17 | 14760 | NY Spills |
| OLEAN | S103562556 | HASTING ROAD BRIDGE | HASTING ROAD / RTE 17 | 14760 | NY Spills, NY Hist Spills |
| OLEAN | S106967706 | FORMER SOCONY VACUUM | JOHNSON ST | 14760 | NY Spills |
| OLEAN | S105585480 | VAN DER HORST PLANT NO. 2 | JOHNSON ROAD | 14760 | SHWS |
| OLEAN | S105586253 | OLEAN WELL FIELD; TCE CONTAMINATIO | MULTIPLE SITES | 14760 | SHWS |
| OLEAN | 1007111861 | C G S T - HEBRON MEASURING STATION | NYS RTE 16 N 1 MI N OF OLEAN | 14760 | RCRA-SQG |
| OLEAN | S105235953 | FORMER HONDA DEALER | OLEAN PORTVILLE ROAD | 14760 | NY Spills, NY Hist Spills |
| OLEAN | S107416550 | CRUDE OIL LEAK | OREGON ROAD | 14760 | LTANKS |
| OLEAN | S103482422 | JOHN WISE OIL LEASE | OREGON ROAD | 14760 | NY Spills, NY Hist Spills |
| OLEAN | S102134610 | OIL WELL-OLEAN | OREGON ROAD | 14760 | NY Spills, NY Hist Spills |
| OLEAN | 1000553042 | NYSDOT | RAMP J OVER RTE 17 | 14760 | RCRA-SQG, FINDS |
| OLEAN | S102245084 | NYSEG - CRUDE OIL LINE | RIVER ROAD | 14760 | NY Spills, NY Hist Spills |
| OLEAN | S103568965 | NYSEG CRUDE OIL #2 | RIVERSIDE DR NEAR RT 16 | 14760 | NY Spills, NY Hist Spills |
| OLEAN | 1000990464 | NYSDOT D256580 BIN 1092071 | WB RTE 17 BRIDGE OVER | 14760 | RCRA-SQG, FINDS |
| OLEAN | 1000990465 | NYSDOT D256580 BIN 1092072 | EB RTE 17 BRIDGE OVER | 14760 | RCRA-SQG, FINDS |
| OLEAN | 1000990466 | NYSDOT D256580 BIN 1092081 | WB RTE 17 BRIDGE OVER OLEAN | 14760 | RCRA-SQG, FINDS |
| OLEAN | 1000990467 | NYSDOT D256580 BIN 1092082 | EB RTE 17 BRIDGE OVER OLEAN | 14760 | RCRA-SQG, FINDS |
| OLEAN | S102133229 | CAMPBELL OIL CO | EAST STATE STREET | 14760 | NY Spills, NY Hist Spills |
| OLEAN | S102133228 | CAMPBELL OIL | EAST STATE STREET | 14760 | NY Spills, NY Hist Spills |
| OLEAN | 1000872183 | OLEAN STEEL SALES & SERVICE | E STATE ST 1/10 MILE OF DUGAN | 14760 | CERCLIS, RCRA-SQG, FINDS |
| OLEAN | S102132336 | BRADNER STATIUM | EAST STATE STREET | 14760 | NY Spills, NY Hist Spills |
| OLEAN | S102134060 | OLEAN STEEL SALES | EAST STATE ROAD | 14760 | NY Spills, NY Hist Spills |
| OLEAN | S102134352 | TERRY'S AUTOMOTIVE | STATE STREET | 14760 | NY Spills, NY Hist Spills |
| OLEAN | S102245629 | COLUMBIA GAS TRANSMISSION | EAST STATE STREET | 14760 | NY Spills, NY Hist Spills |
| OLEAN | S103484126 | ROUTE 17 | STATE 17 EXIT 27 | 14760 | NY Spills, NY Hist Spills |
| OLEAN | S103562175 | ROUNDS GARAGE | EAST STATE STREET | 14760 | NY Spills, NY Hist Spills |
| OLEAN | S103562767 | NIAGARA MOHAWK POLE | WEST STATE STREET | 14760 | NY Spills, NY Hist Spills |
| OLEAN | S103562957 | NYSDEC - OLEAN | STATE STREET | 14760 | NY Spills, NY Hist Spills |
| OLEAN | S103936344 | GREAT WALL CHINESE REST. | WEST STATE STREET | 14760 | NY Spills, NY Hist Spills |
| OLEAN | S106698748 | ON THE ROADWAY | WEST STATE ST. | 14760 | NY Spills |

ORPHAN SUMMARY

| City | EDR ID | Site Name | Site Address | Zip | Database(s) |
|---|---|---|---|---|---|
| OLEAN | S102134142 | OIL DUMPING - STORM SEWER | TOMPKINS STREET | 14760 | NY Spills, NY Hist Spills |
| OLEAN | S104653967 | CRUDE OIL LEAK - PIPELINE | TWO MILE ROAD | 14760 | NY Spills, NY Hist Spills |
| OLEAN | S102132176 | OIL IN PIPE OUTFALL | SOUTH UNION STREET | 14760 | NY Spills, NY Hist Spills |

# EPA Waste Codes Addendum

| Code | Description |
|---|---|
| D001 | IGNITABLE HAZARDOUS WASTES ARE THOSE WASTES WHICH HAVE A FLASHPOINT OF LESS THAN 140 DEGREES FAHRENHEIT AS DETERMINED BY A PENSKY-MARTENS CLOSED CUP FLASH POINT TESTER. ANOTHER METHOD OF DETERMINING THE FLASH POINT OF A WASTE IS TO REVIEW THE MATERIAL SAFETY DATA SHEET, WHICH CAN BE OBTAINED FROM THE MANUFACTURER OR DISTRIBUTOR OF THE MATERIAL. LACQUER THINNER IS AN EXAMPLE OF A COMMONLY USED SOLVENT WHICH WOULD BE CONSIDERED AS IGNITABLE HAZARDOUS WASTE. |
| D002 | A WASTE WHICH HAS A PH OF LESS THAN 2 OR GREATER THAN 12.5 IS CONSIDERED TO BE A CORROSIVE HAZARDOUS WASTE. SODIUM HYDROXIDE, A CAUSTIC SOLUTION WITH A HIGH PH, IS OFTEN USED BY INDUSTRIES TO CLEAN OR DEGREASE PARTS. HYDROCHLORIC ACID, A SOLUTION WITH A LOW PH, IS USED BY MANY INDUSTRIES TO CLEAN METAL PARTS PRIOR TO PAINTING. WHEN THESE CAUSTIC OR ACID SOLUTIONS BECOME CONTAMINATED AND MUST BE DISPOSED, THE WASTE WOULD BE A CORROSIVE HAZARDOUS WASTE. |
| D003 | A MATERIAL IS CONSIDERED TO BE A REACTIVE HAZARDOUS WASTE IF IT IS NORMALLY UNSTABLE, REACTS VIOLENTLY WITH WATER, GENERATES TOXIC GASES WHEN EXPOSED TO WATER OR CORROSIVE MATERIALS, OR IF IT IS CAPABLE OF DETONATION OR EXPLOSION WHEN EXPOSED TO HEAT OR A FLAME. ONE EXAMPLE OF SUCH WASTE WOULD BY WASTE GUNPOWDER. |
| D005 | BARIUM |
| D006 | CADMIUM |
| D007 | CHROMIUM |
| D008 | LEAD |
| D009 | MERCURY |
| D011 | SILVER |
| D018 | BENZENE |
| D022 | CHLOROFORM |
| D035 | METHYL ETHYL KETONE |
| D040 | TRICHLOROETHYLENE |
| F002 | THE FOLLOWING SPENT HALOGENATED SOLVENTS: TETRACHLOROETHYLENE, METHYLENE CHLORIDE, TRICHLOROETHYLENE, 1,1,1-TRICHLOROETHANE, CHLOROBENZENE, 1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE, ORTHO-DICHLOROBENZENE, TRICHLOROFLUOROMETHANE, AND 1,1,2-TRICHLOROETHANE; ALL SPENT SOLVENT MIXTURES/BLENDS CONTAINING, BEFORE USE, A TOTAL OF TEN PERCENT OR MORE (BY VOLUME) OF ONE OR MORE OF THE ABOVE HALOGENATED SOLVENTS OR THOSE LISTED IN F001, F004, OR F005, AND STILL BOTTOMS FROM THE RECOVERY OF THESE SPENT SOLVENTS AND SPENT SOLVENT MIXTURES. |
| F003 | THE FOLLOWING SPENT NON-HALOGENATED SOLVENTS: XYLENE, ACETONE, ETHYL |

# EPA Waste Codes Addendum

| Code | Description |
|---|---|
| | ACETATE, ETHYL BENZENE, ETHYL ETHER, METHYL ISOBUTYL KETONE, N-BUTYL ALCOHOL, CYCLOHEXANONE, AND METHANOL; ALL SPENT SOLVENT MIXTURES/BLENDS CONTAINING, BEFORE USE, ONLY THE ABOVE SPENT NON-HALOGENATED SOLVENTS; AND ALL SPENT SOLVENT MIXTURES/BLENDS CONTAINING, BEFORE USE, ONE OR MORE OF THE ABOVE NON-HALOGENATED SOLVENTS, AND, A TOTAL OF TEN PERCENT OR MORE (BY VOLUME) OF ONE OR MORE OF THOSE SOLVENTS LISTED IN F001, F002, F004, AND F005, AND STILL BOTTOMS FROM THE RECOVERY OF THESE SPENT SOLVENTS AND SPENT SOLVENT MIXTURES. |
| F005 | THE FOLLOWING SPENT NON-HALOGENATED SOLVENTS: TOLUENE, METHYL ETHYL KETONE, CARBON DISULFIDE, ISOBUTANOL, PYRIDINE, BENZENE, 2-ETHOXYETHANOL, AND 2-NITROPROPANE; ALL SPENT SOLVENT MIXTURES/BLENDS CONTAINING, BEFORE USE, A TOTAL OF TEN PERCENT OR MORE (BY VOLUME) OF ONE OR MORE OF THE ABOVE NON-HALOGENATED SOLVENTS OR THOSE SOLVENTS LISTED IN F001, F002, OR F004; AND STILL BOTTOMS FROM THE RECOVERY OF THESE SPENT SOLVENTS AND SPENT SOLVENT MIXTURES. |
| U069 | 1,2-BENZENEDICARBOXYLIC ACID, DIBUTYL ESTER |
| U069 | DIBUTYL PHTHALATE |
| U153 | METHANETHIOL (I, T) |
| U153 | THIOMETHANOL (I,T) |
| U154 | METHANOL (I) |
| U154 | METHYL ALCOHOL (I) |
| U158 | BENZENAMINE, 4,4'-METHYLENEBIS[2-CHLORO- |
| U158 | 4,4'-METHYLENEBIS(2-CHLOROANILINE) |
| U223 | BENZENE, 1,3-DIISOCYANATOMETHYL- (R,T) |
| U223 | TOLUENE DIISOCYANATE (R,T) |

# GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

To maintain currency of the following federal and state databases, EDR contacts the appropriate governmental agency on a monthly or quarterly basis, as required.

**Number of Days to Update:** Provides confirmation that EDR is reporting records that have been updated within 90 days from the date the government agency made the information available to the public.

## FEDERAL RECORDS

**NPL:** National Priority List

National Priorities List (Superfund). The NPL is a subset of CERCLIS and identifies over 1,200 sites for priority cleanup under the Superfund Program. NPL sites may encompass relatively large areas. As such, EDR provides polygon coverage for over 1,000 NPL site boundaries produced by EPA's Environmental Photographic Interpretation Center (EPIC) and regional EPA offices.

Date of Government Version: 10/14/05
Date Data Arrived at EDR: 11/02/05
Date Made Active in Reports: 12/07/05
Number of Days to Update: 35

Source: EPA
Telephone: N/A
Last EDR Contact: 01/31/06
Next Scheduled EDR Contact: 05/01/06
Data Release Frequency: Quarterly

**NPL Site Boundaries**

Sources:

EPA's Environmental Photographic Interpretation Center (EPIC)
Telephone: 202-564-7333

EPA Region 1
Telephone 617-918-1143

EPA Region 6
Telephone: 214-655-6659

EPA Region 3
Telephone 215-814-5418

EPA Region 8
Telephone: 303-312-6774

EPA Region 4
Telephone 404-562-8033

**Proposed NPL:** Proposed National Priority List Sites

Date of Government Version: 10/14/05
Date Data Arrived at EDR: 11/02/05
Date Made Active in Reports: 12/07/05
Number of Days to Update: 35

Source: EPA
Telephone: N/A
Last EDR Contact: 01/31/06
Next Scheduled EDR Contact: 05/01/06
Data Release Frequency: Quarterly

**DELISTED NPL:** National Priority List Deletions

The National Oil and Hazardous Substances Pollution Contingency Plan (NCP) establishes the criteria that the EPA uses to delete sites from the NPL. In accordance with 40 CFR 300.425.(e), sites may be deleted from the NPL where no further response is appropriate.

Date of Government Version: 10/14/05
Date Data Arrived at EDR: 11/02/05
Date Made Active in Reports: 12/07/05
Number of Days to Update: 35

Source: EPA
Telephone: N/A
Last EDR Contact: 01/31/06
Next Scheduled EDR Contact: 05/01/06
Data Release Frequency: Quarterly

**NPL LIENS:** Federal Superfund Liens

Federal Superfund Liens. Under the authority granted the USEPA by the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) of 1980, the USEPA has the authority to file liens against real property in order to recover remedial action expenditures or when the property owner receives notification of potential liability. USEPA compiles a listing of filed notices of Superfund Liens.

Date of Government Version: 10/15/91
Date Data Arrived at EDR: 02/02/94
Date Made Active in Reports: 03/30/94
Number of Days to Update: 56

Source: EPA
Telephone: 202-564-4267
Last EDR Contact: 11/21/05
Next Scheduled EDR Contact: 02/20/06
Data Release Frequency: No Update Planned

**CERCLIS:** Comprehensive Environmental Response, Compensation, and Liability Information System

CERCLIS contains data on potentially hazardous waste sites that have been reported to the USEPA by states, municipalities, private companies and private persons, pursuant to Section 103 of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). CERCLIS contains sites which are either proposed to or on the National Priorities List (NPL) and sites which are in the screening and assessment phase for possible inclusion on the NPL.

Date of Government Version: 10/24/05
Date Data Arrived at EDR: 12/21/05
Date Made Active in Reports: 01/30/06
Number of Days to Update: 40

Source: EPA
Telephone: 703-413-0223
Last EDR Contact: 12/21/05
Next Scheduled EDR Contact: 03/20/06
Data Release Frequency: Quarterly

**CERCLIS-NFRAP:** CERCLIS No Further Remedial Action Planned

As of February 1995, CERCLIS sites designated "No Further Remedial Action Planned" (NFRAP) have been removed from CERCLIS. NFRAP sites may be sites where, following an initial investigation, no contamination was found, contamination was removed quickly without the need for the site to be placed on the NPL, or the contamination was not serious enough to require Federal Superfund action or NPL consideration. EPA has removed approximately 25,000 NFRAP sites to lift the unintended barriers to the redevelopment of these properties and has archived them as historical records so EPA does not needlessly repeat the investigations in the future. This policy change is part of the EPA's Brownfields Redevelopment Program to help cities, states, private investors and affected citizens to promote economic redevelopment of unproductive urban sites.

Date of Government Version: 10/24/05
Date Data Arrived at EDR: 12/21/05
Date Made Active in Reports: 01/30/06
Number of Days to Update: 40

Source: EPA
Telephone: 703-413-0223
Last EDR Contact: 12/21/05
Next Scheduled EDR Contact: 03/20/06
Data Release Frequency: Quarterly

**CORRACTS:** Corrective Action Report

CORRACTS identifies hazardous waste handlers with RCRA corrective action activity.

Date of Government Version: 10/13/05
Date Data Arrived at EDR: 10/27/05
Date Made Active in Reports: 12/07/05
Number of Days to Update: 41

Source: EPA
Telephone: 800-424-9346
Last EDR Contact: 12/06/05
Next Scheduled EDR Contact: 03/06/06
Data Release Frequency: Quarterly

**RCRA:** Resource Conservation and Recovery Act Information

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. RCRAInfo replaces the data recording and reporting abilities of the Resource Conservation and Recovery Information System (RCRIS). The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Conditionally exempt small quantity generators (CESQGs) generate less than 100 kg of hazardous waste, or less than 1 kg of acutely hazardous waste per month. Small quantity generators (SQGs) generate between 100 kg and 1,000 kg of hazardous waste per month. Large quantity generators (LQGs) generate over 1,000 kilograms (kg) of hazardous waste, or over 1 kg of acutely hazardous waste per month. Transporters are individuals or entities that move hazardous waste from the generator off-site to a facility that can recycle, treat, store, or dispose of the waste. TSDFs treat, store, or dispose of the waste.

Date of Government Version: 12/15/05
Date Data Arrived at EDR: 12/28/05
Date Made Active in Reports: 01/30/06
Number of Days to Update: 33

Source: EPA
Telephone: 800-424-9346
Last EDR Contact: 12/28/05
Next Scheduled EDR Contact: 02/27/06
Data Release Frequency: Quarterly

**ERNS:** Emergency Response Notification System

Emergency Response Notification System. ERNS records and stores information on reported releases of oil and hazardous substances.

Date of Government Version: 12/31/04
Date Data Arrived at EDR: 01/27/05
Date Made Active in Reports: 03/24/05
Number of Days to Update: 56

Source: National Response Center, United States Coast Guard
Telephone: 202-260-2342
Last EDR Contact: 01/12/06
Next Scheduled EDR Contact: 04/24/06
Data Release Frequency: Annually

**HMIRS:** Hazardous Materials Information Reporting System

Hazardous Materials Incident Report System. HMIRS contains hazardous material spill incidents reported to DOT.

Date of Government Version: 08/17/05
Date Data Arrived at EDR: 10/18/05
Date Made Active in Reports: 12/07/05
Number of Days to Update: 50

Source: U.S. Department of Transportation
Telephone: 202-366-4555
Last EDR Contact: 01/16/06
Next Scheduled EDR Contact: 04/17/06
Data Release Frequency: Annually

**US ENG CONTROLS:** Engineering Controls Sites List

A listing of sites with engineering controls in place. Engineering controls include various forms of caps, building foundations, liners, and treatment methods to create pathway elimination for regulated substances to enter environmental media or effect human health.

Date of Government Version: 08/02/05
Date Data Arrived at EDR: 08/12/05
Date Made Active in Reports: 10/06/05
Number of Days to Update: 55

Source: Environmental Protection Agency
Telephone: 703-603-8867
Last EDR Contact: 01/24/06
Next Scheduled EDR Contact: 04/03/06
Data Release Frequency: Varies

**US INST CONTROL:** Sites with Institutional Controls

A listing of sites with institutional controls in place. Institutional controls include administrative measures, such as groundwater use restrictions, construction restrictions, property use restrictions, and post remediation care requirements intended to prevent exposure to contaminants remaining on site. Deed restrictions are generally required as part of the institutional controls.

Date of Government Version: 01/10/05
Date Data Arrived at EDR: 02/11/05
Date Made Active in Reports: 04/06/05
Number of Days to Update: 54

Source: Environmental Protection Agency
Telephone: 703-603-8867
Last EDR Contact: 01/20/06
Next Scheduled EDR Contact: 04/03/06
Data Release Frequency: Varies

# GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

**DOD:** Department of Defense Sites

This data set consists of federally owned or administered lands, administered by the Department of Defense, that have any area equal to or greater than 640 acres of the United States, Puerto Rico, and the U.S. Virgin Islands.

Date of Government Version: 12/31/04
Date Data Arrived at EDR: 02/08/05
Date Made Active in Reports: 08/04/05
Number of Days to Update: 177

Source: USGS
Telephone: 703-692-8801
Last EDR Contact: 02/06/06
Next Scheduled EDR Contact: 05/08/06
Data Release Frequency: Semi-Annually

**FUDS:** Formerly Used Defense Sites

The listing includes locations of Formerly Used Defense Sites properties where the US Army Corps of Engineers is actively working or will take necessary cleanup actions.

Date of Government Version: 12/31/04
Date Data Arrived at EDR: 06/29/05
Date Made Active in Reports: 08/08/05
Number of Days to Update: 40

Source: U.S. Army Corps of Engineers
Telephone: 202-528-4285
Last EDR Contact: 01/19/06
Next Scheduled EDR Contact: 04/03/06
Data Release Frequency: Varies

**US BROWNFIELDS:** A Listing of Brownfields Sites

Included in the listing are brownfields properties addresses by Cooperative Agreement Recipients and brownfields properties addressed by Targeted Brownfields Assessments. Targeted Brownfields Assessments-EPA's Targeted Brownfields Assessments (TBA) program is designed to help states, tribes, and municipalities--especially those without EPA Brownfields Assessment Demonstration Pilots--minimize the uncertainties of contamination often associated with brownfields. Under the TBA program, EPA provides funding and/or technical assistance for environmental assessments at brownfields sites throughout the country. Targeted Brownfields Assessments supplement and work with other efforts under EPA's Brownfields Initiative to promote cleanup and redevelopment of brownfields. Cooperative Agreement Recipients-States, political subdivisions, territories, and Indian tribes become Brownfields Cleanup Revolving Loan Fund (BCRLF) cooperative agreement recipients when they enter into BCRLF cooperative agreements with the U.S. EPA. EPA selects BCRLF cooperative agreement recipients based on a proposal and application process. BCRLF cooperative agreement recipients must use EPA funds provided through BCRLF cooperative agreement for specified brownfields-related cleanup activities.

Date of Government Version: 11/29/05
Date Data Arrived at EDR: 12/05/05
Date Made Active in Reports: 01/30/06
Number of Days to Update: 56

Source: Environmental Protection Agency
Telephone: 202-566-2777
Last EDR Contact: 11/30/05
Next Scheduled EDR Contact: 03/13/06
Data Release Frequency: Semi-Annually

**CONSENT:** Superfund (CERCLA) Consent Decrees

Major legal settlements that establish responsibility and standards for cleanup at NPL (Superfund) sites. Released periodically by United States District Courts after settlement by parties to litigation matters.

Date of Government Version: 12/14/04
Date Data Arrived at EDR: 02/15/05
Date Made Active in Reports: 04/25/05
Number of Days to Update: 69

Source: Department of Justice, Consent Decree Library
Telephone: Varies
Last EDR Contact: 01/26/06
Next Scheduled EDR Contact: 04/24/06
Data Release Frequency: Varies

**ROD:** Records Of Decision

Record of Decision. ROD documents mandate a permanent remedy at an NPL (Superfund) site containing technical and health information to aid in the cleanup.

Date of Government Version: 10/07/05
Date Data Arrived at EDR: 10/20/05
Date Made Active in Reports: 12/07/05
Number of Days to Update: 48

Source: EPA
Telephone: 703-416-0223
Last EDR Contact: 01/04/06
Next Scheduled EDR Contact: 04/03/06
Data Release Frequency: Annually

# GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

**UMTRA:** Uranium Mill Tailings Sites

Uranium ore was mined by private companies for federal government use in national defense programs. When the mills shut down, large piles of the sand-like material (mill tailings) remain after uranium has been extracted from the ore. Levels of human exposure to radioactive materials from the piles are low; however, in some cases tailings were used as construction materials before the potential health hazards of the tailings were recognized.

Date of Government Version: 11/04/05
Date Data Arrived at EDR: 11/28/05
Date Made Active in Reports: 01/30/06
Number of Days to Update: 63

Source: Department of Energy
Telephone: 505-845-0011
Last EDR Contact: 10/28/05
Next Scheduled EDR Contact: 12/19/05
Data Release Frequency: Varies

**ODI:** Open Dump Inventory

An open dump is defined as a disposal facility that does not comply with one or more of the Part 257 or Part 258 Subtitle D Criteria.

Date of Government Version: 06/30/85
Date Data Arrived at EDR: 08/09/04
Date Made Active in Reports: 09/17/04
Number of Days to Update: 39

Source: Environmental Protection Agency
Telephone: 800-424-9346
Last EDR Contact: 06/09/04
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

**TRIS:** Toxic Chemical Release Inventory System

Toxic Release Inventory System. TRIS identifies facilities which release toxic chemicals to the air, water and land in reportable quantities under SARA Title III Section 313.

Date of Government Version: 12/31/03
Date Data Arrived at EDR: 07/13/05
Date Made Active in Reports: 08/17/05
Number of Days to Update: 35

Source: EPA
Telephone: 202-566-0250
Last EDR Contact: 12/21/05
Next Scheduled EDR Contact: 03/20/06
Data Release Frequency: Annually

**TSCA:** Toxic Substances Control Act

Toxic Substances Control Act. TSCA identifies manufacturers and importers of chemical substances included on the TSCA Chemical Substance Inventory list. It includes data on the production volume of these substances by plant site.

Date of Government Version: 12/31/02
Date Data Arrived at EDR: 04/27/04
Date Made Active in Reports: 05/21/04
Number of Days to Update: 24

Source: EPA
Telephone: 202-260-5521
Last EDR Contact: 01/30/06
Next Scheduled EDR Contact: 04/17/06
Data Release Frequency: Every 4 Years

**FTTS:** FIFRA/ TSCA Tracking System - FIFRA (Federal Insecticide, Fungicide, & Rodenticide Act)/TSCA (Toxic Substances Control Act)

FTTS tracks administrative cases and pesticide enforcement actions and compliance activities related to FIFRA, TSCA and EPCRA (Emergency Planning and Community Right-to-Know Act). To maintain currency, EDR contacts the Agency on a quarterly basis.

Date of Government Version: 10/12/05
Date Data Arrived at EDR: 10/31/05
Date Made Active in Reports: 12/20/05
Number of Days to Update: 50

Source: EPA/Office of Prevention, Pesticides and Toxic Substances
Telephone: 202-566-1667
Last EDR Contact: 12/20/05
Next Scheduled EDR Contact: 03/20/06
Data Release Frequency: Quarterly

**FTTS INSP:** FIFRA/ TSCA Tracking System - FIFRA (Federal Insecticide, Fungicide, & Rodenticide Act)/TSCA (Toxic Substances Control Act)

Date of Government Version: 10/12/05
Date Data Arrived at EDR: 10/31/05
Date Made Active in Reports: 12/20/05
Number of Days to Update: 50

Source: EPA
Telephone: 202-566-1667
Last EDR Contact: 12/20/05
Next Scheduled EDR Contact: 03/20/06
Data Release Frequency: Quarterly

# GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

**SSTS:** Section 7 Tracking Systems

Section 7 of the Federal Insecticide, Fungicide and Rodenticide Act, as amended (92 Stat. 829) requires all registered pesticide-producing establishments to submit a report to the Environmental Protection Agency by March 1st each year. Each establishment must report the types and amounts of pesticides, active ingredients and devices being produced, and those having been produced and sold or distributed in the past year.

Date of Government Version: 12/31/03
Date Data Arrived at EDR: 01/03/05
Date Made Active in Reports: 01/25/05
Number of Days to Update: 22

Source: EPA
Telephone: 202-564-4203
Last EDR Contact: 01/16/06
Next Scheduled EDR Contact: 04/17/06
Data Release Frequency: Annually

**PADS:** PCB Activity Database System

PCB Activity Database. PADS identifies generators, transporters, commercial storers and/or brokers and disposers of PCB's who are required to notify the EPA of such activities.

Date of Government Version: 08/30/05
Date Data Arrived at EDR: 09/13/05
Date Made Active in Reports: 10/27/05
Number of Days to Update: 44

Source: EPA
Telephone: 202-564-3887
Last EDR Contact: 12/29/05
Next Scheduled EDR Contact: 02/06/06
Data Release Frequency: Annually

**MLTS:** Material Licensing Tracking System

MLTS is maintained by the Nuclear Regulatory Commission and contains a list of approximately 8,100 sites which possess or use radioactive materials and which are subject to NRC licensing requirements. To maintain currency, EDR contacts the Agency on a quarterly basis.

Date of Government Version: 10/18/05
Date Data Arrived at EDR: 10/31/05
Date Made Active in Reports: 12/20/05
Number of Days to Update: 50

Source: Nuclear Regulatory Commission
Telephone: 301-415-7169
Last EDR Contact: 01/03/06
Next Scheduled EDR Contact: 04/03/06
Data Release Frequency: Quarterly

**MINES:** Mines Master Index File

Contains all mine identification numbers issued for mines active or opened since 1971. The data also includes violation information.

Date of Government Version: 11/08/05
Date Data Arrived at EDR: 12/27/05
Date Made Active in Reports: 01/30/06
Number of Days to Update: 34

Source: Department of Labor, Mine Safety and Health Administration
Telephone: 303-231-5959
Last EDR Contact: 12/27/05
Next Scheduled EDR Contact: 03/27/06
Data Release Frequency: Semi-Annually

**FINDS:** Facility Index System/Facility Registry System

Facility Index System. FINDS contains both facility information and 'pointers' to other sources that contain more detail. EDR includes the following FINDS databases in this report: PCS (Permit Compliance System), AIRS (Aerometric Information Retrieval System), DOCKET (Enforcement Docket used to manage and track information on civil judicial enforcement cases for all environmental statutes), FURS (Federal Underground Injection Control), C-DOCKET (Criminal Docket System used to track criminal enforcement actions for all environmental statutes), FFIS (Federal Facilities Information System), STATE (State Environmental Laws and Statutes), and PADS (PCB Activity Data System).

Date of Government Version: 09/29/05
Date Data Arrived at EDR: 10/04/05
Date Made Active in Reports: 11/14/05
Number of Days to Update: 41

Source: EPA
Telephone: N/A
Last EDR Contact: 01/03/06
Next Scheduled EDR Contact: 04/03/06
Data Release Frequency: Quarterly

**RAATS:** RCRA Administrative Action Tracking System

RCRA Administration Action Tracking System. RAATS contains records based on enforcement actions issued under RCRA pertaining to major violators and includes administrative and civil actions brought by the EPA. For administration actions after September 30, 1995, data entry in the RAATS database was discontinued. EPA will retain a copy of the database for historical records. It was necessary to terminate RAATS because a decrease in agency resources made it impossible to continue to update the information contained in the database.

Date of Government Version: 04/17/95
Date Data Arrived at EDR: 07/03/95
Date Made Active in Reports: 08/07/95
Number of Days to Update: 35

Source: EPA
Telephone: 202-564-4104
Last EDR Contact: 12/05/05
Next Scheduled EDR Contact: 03/06/06
Data Release Frequency: No Update Planned

**BRS:** Biennial Reporting System

The Biennial Reporting System is a national system administered by the EPA that collects data on the generation and management of hazardous waste. BRS captures detailed data from two groups: Large Quantity Generators (LQG) and Treatment, Storage, and Disposal Facilities.

Date of Government Version: 12/31/03
Date Data Arrived at EDR: 06/17/05
Date Made Active in Reports: 08/04/05
Number of Days to Update: 48

Source: EPA/NTIS
Telephone: 800-424-9346
Last EDR Contact: 09/12/05
Next Scheduled EDR Contact: 12/12/05
Data Release Frequency: Biennially

## STATE AND LOCAL RECORDS

**HSWDS:** Hazardous Substance Waste Disposal Site Inventory

The list includes any known or suspected hazardous substance waste disposal sites. Also included are sites delisted from the Registry of Inactive Hazardous Waste Disposal Sites and non-Registry sites that U.S. EPA Preliminary Assessment (PA) reports or Site Investigation (SI) reports were prepared. Hazardous Substance Waste Disposal Sites are eligible to be Superfund sites now that the New York State Superfund has been refinanced and changed. This means that the study inventory has served its purpose and will no longer be maintained as a separate entity. The last version of the study inventory is frozen in time. The sites on the study will not automatically be made Superfund sites, rather each site will be further evaluated for listing on the Registry. So overtime they will be added to the registry or not.

Date of Government Version: 09/01/02
Date Data Arrived at EDR: 10/15/02
Date Made Active in Reports: 10/30/02
Number of Days to Update: 15

Source: Department of Environmental Conservation
Telephone: 518-402-9564
Last EDR Contact: 11/30/05
Next Scheduled EDR Contact: 02/27/06
Data Release Frequency: No Update Planned

**SHWS:** Inactive Hazardous Waste Disposal Sites in New York State

Referred to as the State Superfund Program, the Inactive Hazardous Waste Disposal Site Remedial Program is the cleanup program for inactive hazardous waste sites and now includes hazardous substance sites

Date of Government Version: 12/30/05
Date Data Arrived at EDR: 01/23/06
Date Made Active in Reports: 02/07/06
Number of Days to Update: 15

Source: Department of Environmental Conservation
Telephone: 518-402-9622
Last EDR Contact: 01/05/06
Next Scheduled EDR Contact: 03/13/06
Data Release Frequency: Annually

**DEL SHWS:** Delisted Registry Sites

A database listing of sites delisted from the Registry of Inactive Hazardous Waste Disposal Sites.

Date of Government Version: 12/30/05
Date Data Arrived at EDR: 01/23/06
Date Made Active in Reports: 02/07/06
Number of Days to Update: 15

Source: Department of Environmental Conservation
Telephone: 518-402-9622
Last EDR Contact: 01/05/06
Next Scheduled EDR Contact: 03/13/06
Data Release Frequency: Annually

**SWF/LF:** Facility Register

Solid Waste Facilities/Landfill Sites. SWF/LF type records typically contain an inventory of solid waste disposal facilities or landfills in a particular state. Depending on the state, these may be active or inactive facilities or open dumps that failed to meet RCRA Subtitle D Section 4004 criteria for solid waste landfills or disposal sites.

Date of Government Version: 11/01/05
Date Data Arrived at EDR: 11/01/05
Date Made Active in Reports: 12/08/05
Number of Days to Update: 37

Source: Department of Environmental Conservation
Telephone: 518-457-2051
Last EDR Contact: 01/30/06
Next Scheduled EDR Contact: 05/01/06
Data Release Frequency: Semi-Annually

**SWRCY:** Registered Recycling Facility List
A listing of recycling facilities.

Date of Government Version: 11/01/05
Date Data Arrived at EDR: 11/15/05
Date Made Active in Reports: 12/08/05
Number of Days to Update: 23

Source: Department of Environmental Conservation
Telephone: 518-402-8705
Last EDR Contact: 01/30/06
Next Scheduled EDR Contact: 05/01/06
Data Release Frequency: Semi-Annually

**SWTIRE:** Registered Waste Tire Storage & Facility List

Date of Government Version: 04/01/04
Date Data Arrived at EDR: 05/19/04
Date Made Active in Reports: 06/25/04
Number of Days to Update: 37

Source: Department of Environmental Conservation
Telephone: 518-402-8694
Last EDR Contact: 11/18/05
Next Scheduled EDR Contact: 02/13/06
Data Release Frequency: Annually

**LTANKS:** Spills Information Database
Leaking Storage Tank Incident Reports. These records contain an inventory of reported leaking storage tank incidents reported from 4/1/86 through the most recent update. They can be either leaking underground storage tanks or leaking aboveground storage tanks. The causes of the incidents are tank test failures, tank failures or tank overfills.

Date of Government Version: 12/08/05
Date Data Arrived at EDR: 01/05/06
Date Made Active in Reports: 02/07/06
Number of Days to Update: 33

Source: Department of Environmental Conservation
Telephone: 518-402-9549
Last EDR Contact: 01/05/06
Next Scheduled EDR Contact: 02/20/06
Data Release Frequency: Varies

**HIST LTANKS:** Listing of Leaking Storage Tanks
A listing of leaking underground and aboveground storage tanks. The causes of the incidents are tank test failures, tank failures or tank overfills. In 2002, the Department of Environmental Conservation stopped providing updates to its original Spills Information Database. This database includes fields that are no longer available from the NYDEC as of January 1, 2002. Current information may be found in the NY LTANKS database. Department of Environmental Conservation.

Date of Government Version: 01/01/02
Date Data Arrived at EDR: 07/08/05
Date Made Active in Reports: 07/14/05
Number of Days to Update: 6

Source: Department of Environmental Conservation
Telephone: 518-402-9549
Last EDR Contact: 07/07/05
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

**UST:** Petroleum Bulk Storage (PBS) Database
Facilities that have petroleum storage capacities in excess of 1,100 gallons and less than 400,000 gallons.

Date of Government Version: 01/01/02
Date Data Arrived at EDR: 02/20/02
Date Made Active in Reports: 03/22/02
Number of Days to Update: 30

Source: Department of Environmental Conservation
Telephone: 518-402-9549
Last EDR Contact: 01/23/06
Next Scheduled EDR Contact: 04/24/06
Data Release Frequency: No Update Planned

**CBS UST:** Chemical Bulk Storage Database
Facilities that store regulated hazardous substances in underground tanks of any size

Date of Government Version: 01/01/02
Date Data Arrived at EDR: 02/20/02
Date Made Active in Reports: 03/22/02
Number of Days to Update: 30

Source: NYSDEC
Telephone: 518-402-9549
Last EDR Contact: 10/24/05
Next Scheduled EDR Contact: 01/23/06
Data Release Frequency: No Update Planned

**MOSF UST:** Major Oil Storage Facilities Database

Facilities that may be onshore facilities or vessels, with petroleum storage capacities of 400,000 gallons or greater.

Date of Government Version: 01/01/02
Date Data Arrived at EDR: 02/20/02
Date Made Active in Reports: 03/22/02
Number of Days to Update: 30

Source: NYSDEC
Telephone: 518-402-9549
Last EDR Contact: 07/25/05
Next Scheduled EDR Contact: 10/24/05
Data Release Frequency: Varies

**AST:** Petroleum Bulk Storage

Registered Aboveground Storage Tanks.

Date of Government Version: 01/01/02
Date Data Arrived at EDR: 02/20/02
Date Made Active in Reports: 03/22/02
Number of Days to Update: 30

Source: Department of Environmental Conservation
Telephone: 518-402-9549
Last EDR Contact: 01/23/06
Next Scheduled EDR Contact: 04/24/06
Data Release Frequency: No Update Planned

**CBS AST:** Chemical Bulk Storage Database

Facilities that store regulated hazardous substances in aboveground tanks with capacities of 185 gallons or greater, and/or in underground tanks of any size.

Date of Government Version: 01/01/02
Date Data Arrived at EDR: 02/20/02
Date Made Active in Reports: 03/22/02
Number of Days to Update: 30

Source: NYSDEC
Telephone: 518-402-9549
Last EDR Contact: 07/25/05
Next Scheduled EDR Contact: 10/24/05
Data Release Frequency: No Update Planned

**MOSF AST:** Major Oil Storage Facilities Database

Facilities that may be onshore facilities or vessels, with petroleum storage capacities of 400,000 gallons or greater.

Date of Government Version: 01/01/02
Date Data Arrived at EDR: 02/20/02
Date Made Active in Reports: 03/22/02
Number of Days to Update: 30

Source: NYSDEC
Telephone: 518-402-9549
Last EDR Contact: 07/25/05
Next Scheduled EDR Contact: 10/24/05
Data Release Frequency: No Update Planned

**SPILLS:** Spills Information Database

Data collected on spills reported to NYSDEC as required by one or more of the following: Article 12 of the Navigation Law, 6 NYCRR Section 613.8 (from PBS regs), or 6 NYCRR Section 595.2 (from CBS regs). It includes spills active as of April 1, 1986, as well as spills occurring since this date.

Date of Government Version: 12/08/05
Date Data Arrived at EDR: 01/05/06
Date Made Active in Reports: 02/07/06
Number of Days to Update: 33

Source: Department of Environmental Conservation
Telephone: 518-402-9549
Last EDR Contact: 01/05/06
Next Scheduled EDR Contact: 02/20/06
Data Release Frequency: Varies

**HIST SPILLS:** SPILLS Database

This database contains records of chemical and petroleum spill incidents. Under State law, petroleum and hazardous chemical spills that can impact the waters of the state must be reported by the spiller (and, in some cases, by anyone who has knowledge of the spills). In 2002, the Department of Environmental Conservation stopped providing updates to its original Spills Information Database. This database includes fields that are no longer available from the NYDEC as of January 1, 2002. Current information may be found in the NY SPILLS database. Department of Environmental Conservation.

Date of Government Version: 01/01/02
Date Data Arrived at EDR: 07/08/05
Date Made Active in Reports: 07/14/05
Number of Days to Update: 6

Source: Department of Environmental Conservation
Telephone: 518-402-9549
Last EDR Contact: 07/07/05
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

**ENG CONTROLS:** Registry of Engineering Controls
Environmental Remediation sites that have engineering controls in place.

Date of Government Version: 12/30/05
Date Data Arrived at EDR: 01/23/06
Date Made Active in Reports: 02/07/06
Number of Days to Update: 15

Source: Department of Environmental Conservation
Telephone: 518-402-9553
Last EDR Contact: 01/05/06
Next Scheduled EDR Contact: 03/13/06
Data Release Frequency: Quarterly

**INST CONTROL:** Registry of Institutional Controls
Environmental Remediation sites that have institutional controls in place.

Date of Government Version: 12/30/05
Date Data Arrived at EDR: 01/23/06
Date Made Active in Reports: 02/07/06
Number of Days to Update: 15

Source: Department of Environmental Conservation
Telephone: 518-402-9553
Last EDR Contact: 01/05/06
Next Scheduled EDR Contact: 03/13/06
Data Release Frequency: Quarterly

**VCP:** Voluntary Cleanup Agreements
New York established its Voluntary Cleanup Program (VCP) to address the environmental, legal and financial barriers that often hinder the redevelopment and reuse of contaminated properties. The Voluntary Cleanup Program was developed to enhance private sector cleanup of brownfields by enabling parties to remediate sites using private rather than public funds and to reduce the development pressures on "greenfield" sites.

Date of Government Version: 12/30/05
Date Data Arrived at EDR: 01/05/06
Date Made Active in Reports: 02/07/06
Number of Days to Update: 33

Source: Department of Environmental Conservation
Telephone: 518-402-9711
Last EDR Contact: 01/05/06
Next Scheduled EDR Contact: 03/13/06
Data Release Frequency: Semi-Annually

**DRYCLEANERS:** Registered Drycleaners
A listing of all registered drycleaning facilities.

Date of Government Version: 06/15/04
Date Data Arrived at EDR: 06/15/04
Date Made Active in Reports: 07/29/04
Number of Days to Update: 44

Source: Department of Environmental Conservation
Telephone: 518-402-8403
Last EDR Contact: 05/21/04
Next Scheduled EDR Contact: N/A
Data Release Frequency: Varies

**Brownfields:** Brownfields Site List
A Brownfield is any real property where redevelopment or re-use may be complicated by the presence or potential presence of a hazardous waste, petroleum, pollutant, or contaminant.

Date of Government Version: 12/30/05
Date Data Arrived at EDR: 01/23/06
Date Made Active in Reports: 02/07/06
Number of Days to Update: 15

Source: Department of Environmental Conservation
Telephone: 518-402-9764
Last EDR Contact: 01/23/06
Next Scheduled EDR Contact: 03/13/06
Data Release Frequency: Semi-Annually

**SPDES:** State Pollutant Discharge Elimination System
New York State has a state program which has been approved by the United States Environmental Protection Agency for the control of wastewater and stormwater discharges in accordance with the Clean Water Act. Under New York State law the program is known as the State Pollutant Discharge Elimination System (SPDES) and is broader in scope than that required by the Clean Water Act in that it controls point source discharges to groundwaters as well as surface waters.

Date of Government Version: 12/01/05
Date Data Arrived at EDR: 12/01/05
Date Made Active in Reports: 01/10/06
Number of Days to Update: 40

Source: Department of Environmental Conservation
Telephone: 518-402-8233
Last EDR Contact: 02/06/06
Next Scheduled EDR Contact: 05/08/06
Data Release Frequency: No Update Planned

**AIRS:** Air Emissions Data

Date of Government Version: 12/31/02
Date Data Arrived at EDR: 09/13/04
Date Made Active in Reports: 10/18/04
Number of Days to Update: 35

Source: Department of Environmental Conservation
Telephone: 518-402-8452
Last EDR Contact: 11/21/05
Next Scheduled EDR Contact: 02/20/06
Data Release Frequency: Annually

## TRIBAL RECORDS

**INDIAN RESERV:** Indian Reservations

This map layer portrays Indian administered lands of the United States that have any area equal to or greater than 640 acres.

Date of Government Version: 12/31/04
Date Data Arrived at EDR: 02/08/05
Date Made Active in Reports: 08/04/05
Number of Days to Update: 177

Source: USGS
Telephone: 202-208-3710
Last EDR Contact: 02/06/06
Next Scheduled EDR Contact: 05/08/06
Data Release Frequency: Semi-Annually

## EDR PROPRIETARY RECORDS

**Manufactured Gas Plants:** EDR Proprietary Manufactured Gas Plants

The EDR Proprietary Manufactured Gas Plant Database includes records of coal gas plants (manufactured gas plants) compiled by EDR's researchers. Manufactured gas sites were used in the United States from the 1800's to 1950's to produce a gas that could be distributed and used as fuel. These plants used whale oil, rosin, coal, or a mixture of coal, oil, and water that also produced a significant amount of waste. Many of the byproducts of the gas production, such as coal tar (oily waste containing volatile and non-volatile chemicals), sludges, oils and other compounds are potentially hazardous to human health and the environment. The byproduct from this process was frequently disposed of directly at the plant site and can remain or spread slowly, serving as a continuous source of soil and groundwater contamination.

Date of Government Version: 11/15/05
Date Data Arrived at EDR: 12/05/05
Date Made Active in Reports: 12/28/05
Number of Days to Update: 23

Source: EDR, Inc.
Telephone: N/A
Last EDR Contact: 01/25/06
Next Scheduled EDR Contact: 04/24/06
Data Release Frequency: No Update Planned

**EDR Auto Stations:** EDR Proprietary Historic Gas Stations

EDR has searched selected national collections of business directories and has collected listings of potential gas station/filling station/service station sites that were available to EDR researchers. EDR's review was limited to those categories of sources that might, in EDR's opinion, include gas station/filling station/service station establishments. The categories reviewed included, but were not limited to gas, gas station, gasoline station, filling station, auto, automobile repair, auto service station, service station, etc.

Date of Government Version: 12/05/05
Date Data Arrived at EDR: 12/14/05
Date Made Active in Reports: 01/30/06
Number of Days to Update: 47

Source: EDR, Inc.
Telephone: N/A
Last EDR Contact: 02/06/06
Next Scheduled EDR Contact: 05/08/06
Data Release Frequency: Varies

**EDR Cleaners:** EDR Proprietary Historic Dry Cleaners

EDR has searched selected national collections of business directories and has collected listings of potential dry cleaner sites that were available to EDR researchers. EDR's review was limited to those categories of sources that might, in EDR's opinion, include dry cleaning establishments. The categories reviewed included, but were not limited to dry cleaners, cleaners, laundry, laundromat, cleaning/laundry, wash & dry etc.

Date of Government Version: 12/05/05
Date Data Arrived at EDR: 12/14/05
Date Made Active in Reports: 01/30/06
Number of Days to Update: 47

Source: EDR, Inc.
Telephone: N/A
Last EDR Contact: 02/06/06
Next Scheduled EDR Contact: 05/08/06
Data Release Frequency: Varies

COUNTY RECORDS

CORTLAND COUNTY:

Cortland County Storage Tank Listing

Date of Government Version: 01/06/06
Date Data Arrived at EDR: 01/11/06
Date Made Active in Reports: 02/01/06
Number of Days to Update: 21

Source: Cortland County Health Department
Telephone: 607-753-5035
Last EDR Contact: 11/28/05
Next Scheduled EDR Contact: 02/27/06
Data Release Frequency: Quarterly

ESE COUNTY:

Cortland County Storage Tank Listing

Date of Government Version: 01/06/06
Date Data Arrived at EDR: 01/11/06
Date Made Active in Reports: 02/01/06
Number of Days to Update: 21

Source: Cortland County Health Department
Telephone: 607-753-5035
Last EDR Contact: 11/28/05
Next Scheduled EDR Contact: 02/27/06
Data Release Frequency: Quarterly

NASSAU COUNTY:

Registered Tank Database

Date of Government Version: 05/21/03
Date Data Arrived at EDR: 05/27/03
Date Made Active in Reports: 06/09/03
Number of Days to Update: 13

Source: Nassau County Health Department
Telephone: 516-571-3314
Last EDR Contact: 01/30/06
Next Scheduled EDR Contact: 05/01/06
Data Release Frequency: No Update Planned

Registered Tank Database

Date of Government Version: 05/21/03
Date Data Arrived at EDR: 05/27/03
Date Made Active in Reports: 06/09/03
Number of Days to Update: 13

Source: Nassau County Health Department
Telephone: 516-571-3314
Last EDR Contact: 01/30/06
Next Scheduled EDR Contact: 05/01/06
Data Release Frequency: No Update Planned

Storage Tank Database

Date of Government Version: 05/25/04
Date Data Arrived at EDR: 06/08/04
Date Made Active in Reports: 07/29/04
Number of Days to Update: 51

Source: Nassau County Office of the Fire Marshal
Telephone: 516-572-1000
Last EDR Contact: 12/23/05
Next Scheduled EDR Contact: 02/06/06
Data Release Frequency: Varies

Storage Tank Database

Date of Government Version: 05/25/04
Date Data Arrived at EDR: 06/08/04
Date Made Active in Reports: 07/29/04
Number of Days to Update: 51

Source: Nassau County Office of the Fire Marshal
Telephone: 516-572-1000
Last EDR Contact: 12/23/05
Next Scheduled EDR Contact: 02/06/06
Data Release Frequency: Varies

ROCKLAND COUNTY:

Petroleum Bulk Storage Database

Date of Government Version: 10/19/05
Date Data Arrived at EDR: 10/20/05
Date Made Active in Reports: 11/22/05
Number of Days to Update: 33

Source: Rockland County Health Department
Telephone: 914-364-2605
Last EDR Contact: 01/03/06
Next Scheduled EDR Contact: 04/03/06
Data Release Frequency: Quarterly

Petroleum Bulk Storage Database

Date of Government Version: 10/19/05
Date Data Arrived at EDR: 10/20/05
Date Made Active in Reports: 11/18/05
Number of Days to Update: 29

Source: Rockland County Health Department
Telephone: 914-364-2605
Last EDR Contact: 01/03/06
Next Scheduled EDR Contact: 04/03/06
Data Release Frequency: Quarterly

SUFFOLK COUNTY:

Storage Tank Database

Date of Government Version: 06/21/05
Date Data Arrived at EDR: 09/19/05
Date Made Active in Reports: 11/03/05
Number of Days to Update: 45

Source: Suffolk County Department of Health Services
Telephone: 631-854-2521
Last EDR Contact: 12/02/05
Next Scheduled EDR Contact: 02/27/06
Data Release Frequency: Annually

Storage Tank Database

Date of Government Version: 06/21/05
Date Data Arrived at EDR: 09/19/05
Date Made Active in Reports: 11/03/05
Number of Days to Update: 45

Source: Suffolk County Department of Health Services
Telephone: 631-854-2521
Last EDR Contact: 09/01/05
Next Scheduled EDR Contact: 11/28/05
Data Release Frequency: Annually

WESTCHESTER COUNTY:

Listing of Storage Tanks
Listing of underground storage tanks in Westchester County.

Date of Government Version: 05/05/05
Date Data Arrived at EDR: 05/31/05
Date Made Active in Reports: 06/30/05
Number of Days to Update: 30

Source: Westchester County Department of Health
Telephone: 914-813-5161
Last EDR Contact: 11/28/05
Next Scheduled EDR Contact: 02/27/06
Data Release Frequency: Varies

Listing of Storage Tanks
Listing of aboveground storage tanks in Westchester County.

Date of Government Version: 05/05/05
Date Data Arrived at EDR: 05/31/05
Date Made Active in Reports: 06/30/05
Number of Days to Update: 30

Source: Westchester County Department of Health
Telephone: 914-813-5161
Last EDR Contact: 11/28/05
Next Scheduled EDR Contact: 02/27/06
Data Release Frequency: Varies

OTHER DATABASE(S)

Depending on the geographic area covered by this report, the data provided in these specialty databases may or may not be complete. For example, the existence of wetlands information data in a specific report does not mean that all wetlands in the area covered by the report are included. Moreover, the absence of any reported wetlands information does not necessarily mean that wetlands do not exist in the area covered by the report.

**Oil/Gas Pipelines:** This data was obtained by EDR from the USGS in 1994. It is referred to by USGS as GeoData Digital Line Graphs from 1:100,000-Scale Maps. It was extracted from the transportation category including some oil, but primarily gas pipelines.

**Electric Power Transmission Line Data**
Source: PennWell Corporation
Telephone: (800) 823-6277
This map includes information copyrighted by PennWell Corporation. This information is provided on a best effort basis and PennWell Corporation does not guarantee its accuracy nor warrant its fitness for any particular purpose. Such information has been reprinted with the permission of PennWell.

**Sensitive Receptors:** There are individuals deemed sensitive receptors due to their fragile immune systems and special sensitivity to environmental discharges. These sensitive receptors typically include the elderly, the sick, and children. While the location of all sensitive receptors cannot be determined, EDR indicates those buildings and facilities - schools, daycares, hospitals, medical centers, and nursing homes - where individuals who are sensitive receptors are likely to be located.

**AHA Hospitals:**
Source: American Hospital Association, Inc.
Telephone: 312-280-5991
The database includes a listing of hospitals based on the American Hospital Association's annual survey of hospitals.

**Medical Centers: Provider of Services Listing**
Source: Centers for Medicare & Medicaid Services
Telephone: 410-786-3000
A listing of hospitals with Medicare provider number, produced by Centers of Medicare & Medicaid Services, a federal agency within the U.S. Department of Health and Human Services.

**Nursing Homes**
Source: National Institutes of Health
Telephone: 301-594-6248
Information on Medicare and Medicaid certified nursing homes in the United States.

**Public Schools**
Source: National Center for Education Statistics
Telephone: 202-502-7300
The National Center for Education Statistics' primary database on elementary and secondary public education in the United States. It is a comprehensive, annual, national statistical database of all public elementary and secondary schools and school districts, which contains data that are comparable across all states.

**Private Schools**
Source: National Center for Education Statistics
Telephone: 202-502-7300
The National Center for Education Statistics' primary database on private school locations in the United States.

**Daycare Centers: Day Care Providers**
Source: Department of Health
Telephone: 212-676-2444

**Flood Zone Data:** This data, available in select counties across the country, was obtained by EDR in 1999 from the Federal Emergency Management Agency (FEMA). Data depicts 100-year and 500-year flood zones as defined by FEMA.

**NWI:** National Wetlands Inventory. This data, available in select counties across the country, was obtained by EDR in 2002 from the U.S. Fish and Wildlife Service.

**State Wetlands Data: Freshwater Wetlands**
Source: Department of Environmental Conservation
Telephone: 518-402-8961

# GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

STREET AND ADDRESS INFORMATION

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# GEOCHECK ®- PHYSICAL SETTING SOURCE ADDENDUM

**TARGET PROPERTY ADDRESS**

FORMER VACUUM OIL COMPANY
BUFFALO STREET/WAYNE STREET
OLEAN, NY 14760

**TARGET PROPERTY COORDINATES**

| | |
|---|---|
| Latitude (North): | 42.090302 - 42' 5' 25.1" |
| Longitude (West): | 78.443199 - 78' 26' 35.5" |
| Universal Tranverse Mercator: | Zone 17 |
| UTM X (Meters): | 711461.6 |
| UTM Y (Meters): | 4662752.0 |
| Elevation: | 1427 ft. above sea level |

EDR's GeoCheck Physical Setting Source Addendum is provided to assist the environmental professional in forming an opinion about the impact of potential contaminant migration.

Assessment of the impact of contaminant migration generally has two principle investigative components:

1. Groundwater flow direction, and
2. Groundwater flow velocity.

Groundwater flow direction may be impacted by surface topography, hydrology, hydrogeology, characteristics of the soil, and nearby wells. Groundwater flow velocity is generally impacted by the nature of the geologic strata.

# GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

## GROUNDWATER FLOW DIRECTION INFORMATION

Groundwater flow direction for a particular site is best determined by a qualified environmental professional using site-specific well data. If such data is not reasonably ascertainable, it may be necessary to rely on other sources of information, such as surface topographic information, hydrologic information, hydrogeologic data collected on nearby properties, and regional groundwater flow information (from deep aquifers).

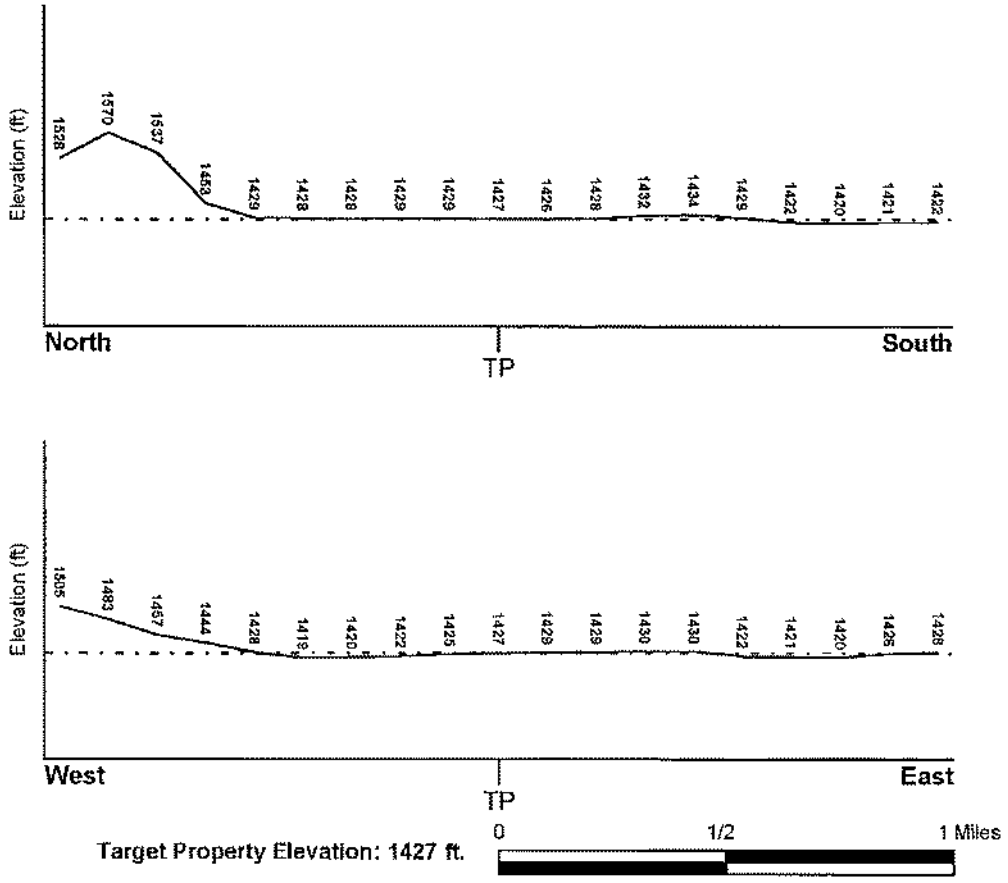
## TOPOGRAPHIC INFORMATION

Surface topography may be indicative of the direction of surficial groundwater flow. This information can be used to assist the environmental professional in forming an opinion about the impact of nearby contaminated properties or, should contamination exist on the target property, what downgradient sites might be impacted.

### TARGET PROPERTY TOPOGRAPHY

| | |
|---|---|
| USGS Topographic Map: | 42078-A4 OLEAN, NY |
| General Topographic Gradient: | General West |
| Source: | USGS 7.5 min quad index |

### SURROUNDING TOPOGRAPHY: ELEVATION PROFILES




Source: Topography has been determined from the USGS 7.5' Digital Elevation Model and should be evaluated on a relative (not an absolute) basis. Relative elevation information between sites of close proximity should be field verified.

# GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

## HYDROLOGIC INFORMATION

Surface water can act as a hydrologic barrier to groundwater flow. Such hydrologic information can be used to assist the environmental professional in forming an opinion about the impact of nearby contaminated properties or, should contamination exist on the target property, what downgradient sites might be impacted.

Refer to the Physical Setting Source Map following this summary for hydrologic information (major waterways and bodies of water).

### FEMA FLOOD ZONE

| Target Property County | FEMA Flood Electronic Data |
|---|---|
| CATTARAUGUS, NY | YES - refer to the Overview Map and Detail Map |

Flood Plain Panel at Target Property: 3600880001B

Additional Panels in search area: 3600890005B

### NATIONAL WETLAND INVENTORY

| NWI Quad at Target Property | NWI Electronic Data Coverage |
|---|---|
| OLEAN | Not Available |

## HYDROGEOLOGIC INFORMATION

Hydrogeologic information obtained by installation of wells on a specific site can often be an indicator of groundwater flow direction in the immediate area. Such hydrogeologic information can be used to assist the environmental professional in forming an opinion about the impact of nearby contaminated properties or, should contamination exist on the target property, what downgradient sites might be impacted.

***Site-Specific Hydrogeological Data*:***

Search Radius: 1.25 miles
Status: Not found

## AQUIFLOW®

Search Radius: 1.000 Mile.

EDR has developed the AQUIFLOW Information System to provide data on the general direction of groundwater flow at specific points. EDR has reviewed reports submitted by environmental professionals to regulatory authorities at select sites and has extracted the date of the report, groundwater flow direction as determined hydrogeologically, and the depth to water table.

| MAP ID | LOCATION FROM TP | GENERAL DIRECTION GROUNDWATER FLOW |
|---|---|---|
| Not Reported | | |

* ©1996 Site-specific hydrogeological data gathered by CERCLIS Alerts, Inc., Bainbridge Island, WA. All rights reserved. All of the information and opinions presented are those of the cited EPA report(s), which were completed under a Comprehensive Environmental Response Compensation and Liability Information System (CERCLIS) investigation.

# GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

## GROUNDWATER FLOW VELOCITY INFORMATION

Groundwater flow velocity information for a particular site is best determined by a qualified environmental professional using site specific geologic and soil strata data. If such data are not reasonably ascertainable, it may be necessary to rely on other sources of information, including geologic age identification, rock stratigraphic unit and soil characteristics data collected on nearby properties and regional soil information. In general, contaminant plumes move more quickly through sandy-gravelly types of soils than silty-clayey types of soils.

## GEOLOGIC INFORMATION IN GENERAL AREA OF TARGET PROPERTY

Geologic information can be used by the environmental professional in forming an opinion about the relative speed at which contaminant migration may be occurring.

### ROCK STRATIGRAPHIC UNIT

### GEOLOGIC AGE IDENTIFICATION

| | | | |
|---|---|---|---|
| Era: | Paleozoic | Category: | Stratified Sequence |
| System: | Devonian | | |
| Series: | Upper Devonian | | |
| Code: | D3 *(decoded above as Era, System & Series)* | | |

Geologic Age and Rock Stratigraphic Unit Source: P.G. Schruben, R.E. Arndt and W.J. Bawiec, Geology of the Conterminous U.S. at 1:2,500,000 Scale - a digital representation of the 1974 P.B. King and H.M. Beikman Map, USGS Digital Data Series DDS - 11 (1994).

### DOMINANT SOIL COMPOSITION IN GENERAL AREA OF TARGET PROPERTY

The U.S. Department of Agriculture's (USDA) Soil Conservation Service (SCS) leads the National Cooperative Soil Survey (NCSS) and is responsible for collecting, storing, maintaining and distributing soil survey information for privately owned lands in the United States. A soil map in a soil survey is a representation of soil patterns in a landscape. Soil maps for STATSGO are compiled by generalizing more detailed (SSURGO) soil survey maps. The following information is based on Soil Conservation Service STATSGO data.

| | |
|---|---|
| Soil Component Name: | URBAN LAND |
| Soil Surface Texture: | variable |
| Hydrologic Group: | Not reported |
| Soil Drainage Class: | Not reported |

Hydric Status: Soil does not meet the requirements for a hydric soil.

| | |
|---|---|
| Corrosion Potential - Uncoated Steel: | Not Reported |
| Depth to Bedrock Min: | > 10 inches |
| Depth to Bedrock Max: | > 10 inches |

# GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

| Soil Layer Information | | | | | | | |
|---|---|---|---|---|---|---|---|
| | Boundary | | | Classification | | | |
| Layer | Upper | Lower | Soil Texture Class | AASHTO Group | Unified Soil | Permeability Rate (in/hr) | Soil Reaction (pH) |
| 1 | 0 inches | 6 inches | variable | Not reported | Not reported | Max: 0.00<br>Min: 0.00 | Max: 0.00<br>Min: 0.00 |

OTHER SOIL TYPES IN AREA

Based on Soil Conservation Service STATSGO data, the following additional subordinant soil types may appear within the general area of target property.

Soil Surface Textures: silt loam
loamy fine sand
channery - silt loam

Surficial Soil Types: silt loam
loamy fine sand
channery - silt loam

Shallow Soil Types: loam
silt loam
channery - silt loam

Deeper Soil Types: silt loam
fine sand
silty clay
unweathered bedrock
very channery - loam
gravelly - loam

LOCAL / REGIONAL WATER AGENCY RECORDS

EDR Local/Regional Water Agency records provide water well information to assist the environmental professional in assessing sources that may impact ground water flow direction, and in forming an opinion about the impact of contaminant migration on nearby drinking water wells.

WELL SEARCH DISTANCE INFORMATION

| DATABASE | SEARCH DISTANCE (miles) |
|---|---|
| Federal USGS | 1.000 |
| Federal FRDS PWS | Nearest PWS within 1 mile |
| State Database | 1.000 |

FEDERAL USGS WELL INFORMATION

| MAP ID | WELL ID | LOCATION FROM TP |
|---|---|---|

# GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

## FEDERAL USGS WELL INFORMATION

| MAP ID | WELL ID | LOCATION FROM TP |
|---|---|---|
| A1 | USGS2242084 | 0 - 1/8 Mile NNE |
| A2 | USGS2242087 | 0 - 1/8 Mile North |
| 3 | USGS2242090 | 0 - 1/8 Mile NE |
| 4 | USGS2242083 | 1/8 - 1/4 Mile East |
| 5 | USGS2242081 | 1/8 - 1/4 Mile WSW |
| B6 | USGS2242096 | 1/8 - 1/4 Mile NNE |
| 7 | USGS2242085 | 1/8 - 1/4 Mile East |
| 8 | USGS2242094 | 1/8 - 1/4 Mile ENE |
| B9 | USGS2242097 | 1/4 - 1/2 Mile NNE |
| 10 | USGS2242079 | 1/4 - 1/2 Mile WSW |
| 11 | USGS2242076 | 1/4 - 1/2 Mile SW |
| 12 | USGS2242098 | 1/4 - 1/2 Mile NNE |
| 13 | USGS2242067 | 1/4 - 1/2 Mile SSE |
| 14 | USGS2242075 | 1/4 - 1/2 Mile ESE |
| 16 | USGS2242082 | 1/2 - 1 Mile West |
| 17 | USGS2242060 | 1/2 - 1 Mile SSE |
| 18 | USGS2242068 | 1/2 - 1 Mile SW |
| 19 | USGS2242059 | 1/2 - 1 Mile SSW |
| 20 | USGS2242103 | 1/2 - 1 Mile NE |
| 21 | USGS2242058 | 1/2 - 1 Mile SSW |
| 22 | USGS2242106 | 1/2 - 1 Mile NE |
| 23 | USGS2242249 | 1/2 - 1 Mile SW |
| 24 | USGS2242104 | 1/2 - 1 Mile NW |
| C25 | USGS2242243 | 1/2 - 1 Mile SSE |
| 26 | USGS2242111 | 1/2 - 1 Mile NE |
| C27 | USGS2242242 | 1/2 - 1 Mile SSE |

## FEDERAL FRDS PUBLIC WATER SUPPLY SYSTEM INFORMATION

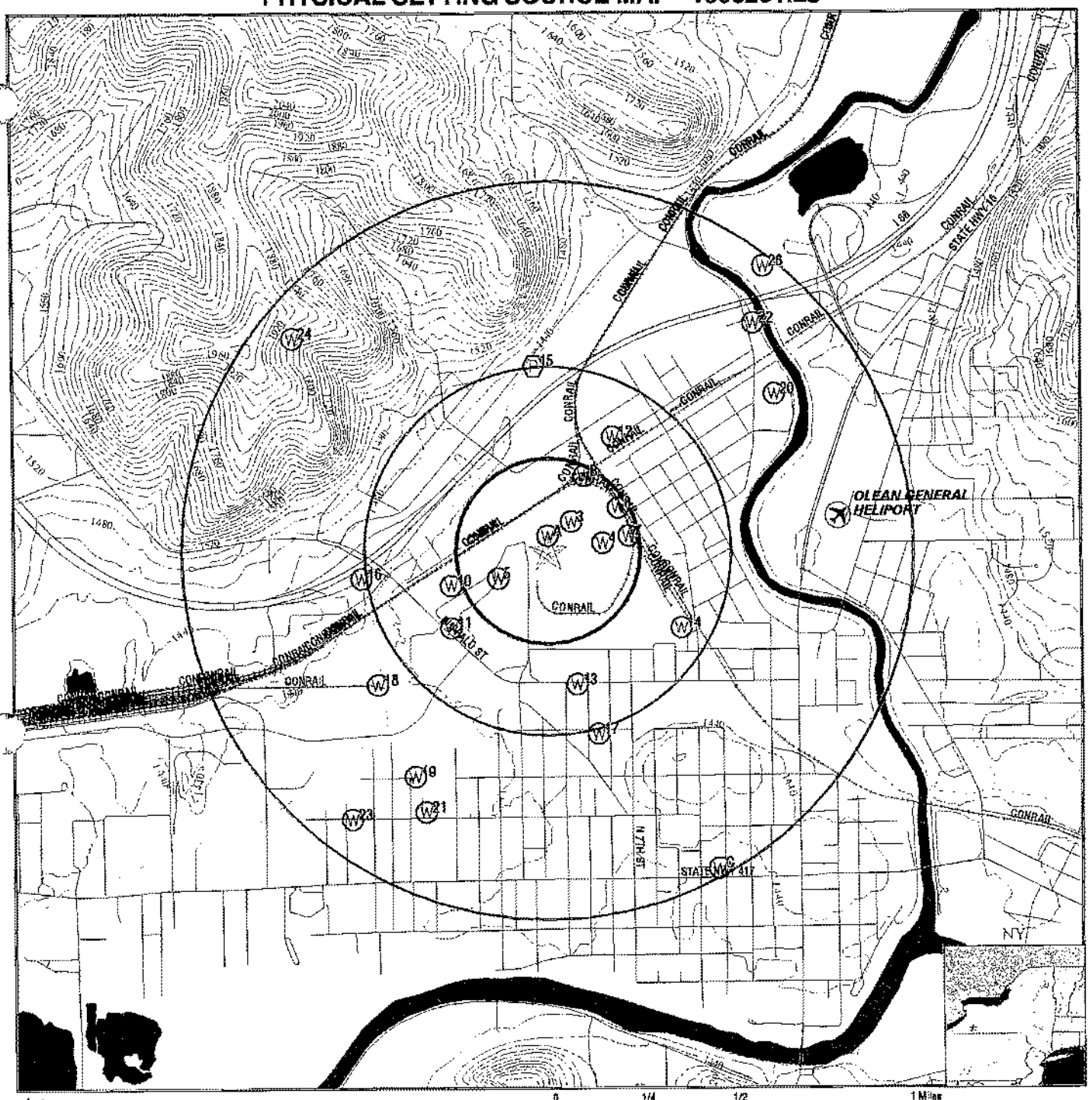
| MAP ID | WELL ID | LOCATION FROM TP |
|---|---|---|
| 15 | NY0000345 | 1/2 - 1 Mile North |

Note: PWS System location is not always the same as well location.

## STATE DATABASE WELL INFORMATION

| MAP ID | WELL ID | LOCATION FROM TP |
|---|---|---|
| No Wells Found | | |

# PHYSICAL SETTING SOURCE MAP - 1608251.2s




- County Boundary
- Major Roads
- Contour Lines
- Airports
- Earthquake epicenter, Richter 5 or greater
- Water Wells
- Public Water Supply Wells
- Cluster of Multiple Icons

- Groundwater Flow Direction
- Indeterminate Groundwater Flow at Location
- Groundwater Flow Varies at Location
- Closest Hydrogeological Data

N

| | |
|---|---|
| SITE NAME: Former Vacuum Oil Company | CLIENT: AMEC Earth & Environmental |
| ADDRESS: Buffalo Street/Wayne Street<br>Olean NY 14760 | CONTACT: Christy Benes |
| LAT/LONG: 42.0903 / 78.4432 | INQUIRY #: 1608251.2s<br>DATE: February 07, 2006 |

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# GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS

Map ID
Direction
Distance
Elevation

| | Database | EDR ID Number |
|---|---|---|
| **A1**<br>**NNE**<br>**0 - 1/8 Mile**<br>**Higher** | **FED USGS** | **USGS2242084** |

| | | | |
|---|---|---|---|
| Agency cd: | USGS | Site no: | 420526078263601 |
| Site name: | CT 58 | | |
| Latitude: | 420526 | | |
| Longitude: | 0782636 | Dec lat: | 42.09062057 |
| Dec lon: | -78.44307576 | Coor meth: | M |
| Coor accr: | S | Latlong datum: | NAD27 |
| Dec latlong datum: | NAD83 | District: | 36 |
| State: | 36 | County: | 009 |
| Country: | US | Land net: | Not Reported |
| Location map: | OLEAN M-07-4 | Map scale: | Not Reported |
| Altitude: | 1430.00 | Altitude method: | M |
| Altitude accuracy: | 10 | Altitude datum: | NGVD29 |
| Hydrologic: | Upper Allegheny, Pennsylvania, New York. Area = 2560 sq.mi. | | |
| Topographic: | Valley flat | | |
| Site type: | Ground-water other than Spring | Date construction: | 19660101 |
| Date inventoried: | Not Reported | Mean greenwich time offset: | EST |
| Local standard time flag: | N | | |
| Type of ground water site: | Single well, other than collector or Ranney type | | |
| Aquifer Type: | Not Reported | | |
| Aquifer: | OUTWASH | | |
| Well depth: | 82.0 | Hole depth: | Not Reported |
| Source of depth data: | Not Reported | Project number: | Not Reported |
| Real time data flag: | 0 | Daily flow data begin date: | 0000-00-00 |
| Daily flow data end date: | 0000-00-00 | Daily flow data count: | 0 |
| Peak flow data begin date: | 0000-00-00 | Peak flow data end date: | 0000-00-00 |
| Peak flow data count: | 0 | Water quality data begin date: | 0000-00-00 |
| Water quality data end date: | 0000-00-00 | Water quality data count: | 0 |
| Ground water data begin date: | 1966-01-01 | Ground water data end date: | 1966-01-01 |
| Ground water data count: | 1 | | |

Ground-water levels, Number of Measurements: 1

| Date | Feet below Surface | Feet to Sealevel |
|---|---|---|
| 1966-01-01 | 22.00 | |

| | Database | EDR ID Number |
|---|---|---|
| **A2**<br>**North**<br>**0 - 1/8 Mile**<br>**Higher** | **FED USGS** | **USGS2242087** |

| | | | |
|---|---|---|---|
| Agency cd: | USGS | Site no: | 420528078263701 |
| Site name: | CT 350 | | |
| Latitude: | 420528 | | |
| Longitude: | 0782637 | Dec lat: | 42.09117613 |
| Dec lon: | -78.44335355 | Coor meth: | M |
| Coor accr: | S | Latlong datum: | NAD27 |
| Dec latlong datum: | NAD83 | District: | 36 |
| State: | 36 | County: | 009 |
| Country: | US | Land net: | Not Reported |
| Location map: | OLEAN M-07-4 | Map scale: | Not Reported |

| | | | |
|---|---|---|---|
| Altitude: | 1430.00 | Altitude method: | M |
| Altitude accuracy: | 10 | Altitude datum: | NGVD29 |
| Hydrologic: | Upper Allegheny. Pennsylvania, New York. Area = 2560 sq.mi. | | |
| Topographic: | Valley flat | | |
| Site type: | Ground-water other than Spring | Date construction: | 19240101 |
| Date inventoried: | Not Reported | Mean greenwich time offset: | EST |
| Local standard time flag: | N | | |
| Type of ground water site: | Single well, other than collector or Ranney type | | |
| Aquifer Type: | Not Reported | | |
| Aquifer: | OUTWASH | | |
| Well depth: | 86.0 | Hole depth: | Not Reported |
| Source of depth data: | Not Reported | Project number: | Not Reported |
| Real time data flag: | 0 | Daily flow data begin date: | 0000-00-00 |
| Daily flow data end date: | 0000-00-00 | Daily flow data count: | 0 |
| Peak flow data begin date: | 0000-00-00 | Peak flow data end date: | 0000-00-00 |
| Peak flow data count: | 0 | Water quality data begin date: | 0000-00-00 |
| Water quality data end date: | 0000-00-00 | Water quality data count: | 0 |
| Ground water data begin date: | 1924-10-01 | Ground water data end date: | 1924-10-01 |
| Ground water data count: | 1 | | |

Ground-water levels, Number of Measurements: 1

| Date | Feet below Surface | Feet to Sealevel |
|---|---|---|
| 1924-10-01 | 21.00 | |

---

**3**
**NE**
**0 - 1/8 Mile**
**Higher**

**FED USGS** **USGS2242090**

| | | | |
|---|---|---|---|
| Agency cd: | USGS | Site no: | 420529078263201 |
| Site name: | CT 61 | | |
| Latitude: | 420529 | | |
| Longitude: | 0782632 | Dec lat: | 42.09145392 |
| Dec lon: | -78.44196461 | Coor meth: | M |
| Coor accr: | S | Latlong datum: | NAD27 |
| Dec latlong datum: | NAD83 | District: | 36 |
| State: | 36 | County: | 009 |
| Country: | US | Land net: | Not Reported |
| Location map: | OLEAN M-07-4 | Map scale: | Not Reported |
| Altitude: | 1430.00 | Altitude method: | M |
| Altitude accuracy: | 10 | Altitude datum: | NGVD29 |
| Hydrologic: | Upper Allegheny. Pennsylvania, New York. Area = 2560 sq.mi. | | |
| Topographic: | Valley flat | | |
| Site type: | Ground-water other than Spring | Date construction: | 19660101 |
| Date inventoried: | Not Reported | Mean greenwich time offset: | EST |
| Local standard time flag: | N | | |
| Type of ground water site: | Single well, other than collector or Ranney type | | |
| Aquifer Type: | Not Reported | | |
| Aquifer: | OUTWASH | | |
| Well depth: | 73.0 | Hole depth: | Not Reported |
| Source of depth data: | Not Reported | Project number: | Not Reported |
| Real time data flag: | 0 | Daily flow data begin date: | 0000-00-00 |
| Daily flow data end date: | 0000-00-00 | Daily flow data count: | 0 |
| Peak flow data begin date: | 0000-00-00 | Peak flow data end date: | 0000-00-00 |
| Peak flow data count: | 0 | Water quality data begin date: | 0000-00-00 |
| Water quality data end date: | 0000-00-00 | Water quality data count: | 0 |
| Ground water data begin date: | 1966-09-01 | Ground water data end date: | 1966-09-01 |
| Ground water data count: | 1 | | |

Ground-water levels, Number of Measurements: 1

| Date | Feet below Surface | Feet to Sealevel |
|---|---|---|
| 1966-09-01 | 21.00 | |

---

4
East
1/8 - 1/4 Mile
Higher

FED USGS USGS2242083

| | | | |
|---|---|---|---|
| Agency cd: | USGS | Site no: | 420526078262601 |
| Site name: | CT 512 | | |
| Latitude: | 420526 | | |
| Longitude: | 0782626 | Dec lat: | 42.09062059 |
| Dec lon: | -78.44029788 | Coor meth: | M |
| Coor accr: | F | Latlong datum: | NAD27 |
| Dec latlong datum: | NAD83 | District: | 36 |
| State: | 36 | County: | 009 |
| Country: | US | Land net: | Not Reported |
| Location map: | OLEAN M-07-4 | Map scale: | Not Reported |
| Altitude: | 1430.00 | Altitude method: | M |
| Altitude accuracy: | 10 | Altitude datum: | NGVD29 |
| Hydrologic: | Upper Allegheny. Pennsylvania, New York. Area = 2560 sq.mi. | | |
| Topographic: | Valley flat | | |
| Site type: | Ground-water other than Spring | Date construction: | 19660101 |
| Date inventoried: | Not Reported | Mean greenwich time offset: | EST |
| Local standard time flag: | N | | |
| Type of ground water site: | Single well, other than collector or Ranney type | | |
| Aquifer Type: | Not Reported | | |
| Aquifer: | OUTWASH | | |
| Well depth: | 67.0 | Hole depth: | Not Reported |
| Source of depth data: | Not Reported | Project number: | Not Reported |
| Real time data flag: | 0 | Daily flow data begin date: | 0000-00-00 |
| Daily flow data end date: | 0000-00-00 | Daily flow data count: | 0 |
| Peak flow data begin date: | 0000-00-00 | Peak flow data end date: | 0000-00-00 |
| Peak flow data count: | 0 | Water quality data begin date: | 0000-00-00 |
| Water quality data end date: | 0000-00-00 | Water quality data count: | 0 |
| Ground water data begin date: | 1966-03-01 | Ground water data end date: | 1966-03-01 |
| Ground water data count: | 1 | | |

Ground-water levels, Number of Measurements: 1

| Date | Feet below Surface | Feet to Sealevel |
|---|---|---|
| 1966-03-01 | 18.00 | |

---

5
WSW
1/8 - 1/4 Mile
Lower

FED USGS USGS2242081

| | | | |
|---|---|---|---|
| Agency cd: | USGS | Site no: | 420521078264601 |
| Site name: | CT 511 | | |
| Latitude: | 420521 | | |
| Longitude: | 0782646 | Dec lat: | 42.08923166 |
| Dec lon: | -78.44585363 | Coor meth: | M |
| Coor accr: | S | Latlong datum: | NAD27 |
| Dec latlong datum: | NAD83 | District: | 36 |
| State: | 36 | County: | 009 |
| Country: | US | Land net: | Not Reported |
| Location map: | OLEAN M-07-4 | Map scale: | Not Reported |
| Altitude: | 1425.00 | Altitude method: | M |
| Altitude accuracy: | 10 | Altitude datum: | NGVD29 |
| Hydrologic: | Upper Allegheny, Pennsylvania, New York. Area = 2560 sq.mi. | | |
| Topographic: | Valley flat | | |
| Site type: | Ground-water other than Spring | Date construction: | 19240101 |
| Date inventoried: | Not Reported | Mean greenwich time offset: | EST |
| Local standard time flag: | N | | |
| Type of ground water site: | Single well, other than collector or Ranney type | | |
| Aquifer Type: | Not Reported | | |
| Aquifer: | QUATERNARY | | |
| Well depth: | 104 | Hole depth: | Not Reported |
| Source of depth data: | Not Reported | Project number: | Not Reported |
| Real time data flag: | 0 | Daily flow data begin date: | 0000-00-00 |
| Daily flow data end date: | 0000-00-00 | Daily flow data count: | 0 |
| Peak flow data begin date: | 0000-00-00 | Peak flow data end date: | 0000-00-00 |
| Peak flow data count: | 0 | Water quality data begin date: | 0000-00-00 |
| Water quality data end date: | 0000-00-00 | Water quality data count: | 0 |
| Ground water data begin date: | 1924-10-01 | Ground water data end date: | 1924-10-01 |
| Ground water data count: | 1 | | |

Ground-water levels, Number of Measurements: 1

| Date | Feet below Surface | Feet to Sealevel |
|---|---|---|
| 1924-10-01 | 23.00 | |

---

**B6**
**NNE**
**1/8 - 1/4 Mile**
**Higher**

**FED USGS** **USGS2242096**

| | | | |
|---|---|---|---|
| Agency cd: | USGS | Site no: | 420534078263001 |
| Site name: | CT 66 | | |
| Latitude: | 420534 | | |
| Longitude: | 0782630 | Dec lat: | 42.09284282 |
| Dec lon: | -78.44140905 | Coor meth: | M |
| Coor accr: | S | Latlong datum: | NAD27 |
| Dec latlong datum: | NAD83 | District: | 36 |
| State: | 36 | County: | 009 |
| Country: | US | Land net: | Not Reported |
| Location map: | OLEAN M-07-4 | Map scale: | Not Reported |
| Altitude: | 1430.00 | Altitude method: | M |
| Altitude accuracy: | 10 | Altitude datum: | NGVD29 |
| Hydrologic: | Upper Allegheny, Pennsylvania, New York. Area = 2560 sq.mi. | | |
| Topographic: | Valley flat | | |
| Site type: | Ground-water other than Spring | Date construction: | 19660101 |
| Date inventoried: | Not Reported | Mean greenwich time offset: | EST |

| | | | |
|---|---|---|---|
| Local standard time flag: | N | | |
| Type of ground water site: | Single well, other than collector or Ranney type | | |
| Aquifer Type: | Not Reported | | |
| Aquifer: | OUTWASH | | |
| Well depth: | 72.0 | Hole depth: | Not Reported |
| Source of depth data: | Not Reported | Project number: | Not Reported |
| Real time data flag: | 0 | Daily flow data begin date: | 0000-00-00 |
| Daily flow data end date: | 0000-00-00 | Daily flow data count: | 0 |
| Peak flow data begin date: | 0000-00-00 | Peak flow data end date: | 0000-00-00 |
| Peak flow data count: | 0 | Water quality data begin date: | 0000-00-00 |
| Water quality data end date: | 0000-00-00 | Water quality data count: | 0 |
| Ground water data begin date: | 1966-09-01 | Ground water data end date: | 1966-09-01 |
| Ground water data count: | 1 | | |

Ground-water levels, Number of Measurements: 1

| Date | Feet below Surface | Feet to Sealevel |
|---|---|---|
| 1966-09-01 | 22.00 | |

---

**7**
**East**
**1/8 - 1/4 Mile**
**Higher**

**FED USGS** **USGS2242085**

| | | | |
|---|---|---|---|
| Agency cd: | USGS | Site no: | 420527078262101 |
| Site name: | CT 59 | | |
| Latitude: | 420527 | | |
| Longitude: | 0782621 | Dec lat: | 42.09089838 |
| Dec lon: | -78.43890895 | Coor meth: | M |
| Coor accr: | S | Latlong datum: | NAD27 |
| Dec latlong datum: | NAD83 | District: | 36 |
| State: | 36 | County: | 009 |
| Country: | US | Land net: | Not Reported |
| Location map: | OLEAN M-07-4 | Map scale: | Not Reported |
| Altitude: | 1430.00 | Altitude method: | M |
| Altitude accuracy: | 10 | Altitude datum: | NGVD29 |
| Hydrologic: | Upper Allegheny, Pennsylvania, New York. Area = 2560 sq.mi. | | |
| Topographic: | Valley flat | | |
| Site type: | Ground-water other than Spring | Date construction: | 19660101 |
| Date inventoried: | Not Reported | Mean greenwich time offset: | EST |
| Local standard time flag: | N | | |
| Type of ground water site: | Single well, other than collector or Ranney type | | |
| Aquifer Type: | Not Reported | | |
| Aquifer: | OUTWASH | | |
| Well depth: | 67.0 | Hole depth: | Not Reported |
| Source of depth data: | Not Reported | Project number: | Not Reported |
| Real time data flag: | 0 | Daily flow data begin date: | 0000-00-00 |
| Daily flow data end date: | 0000-00-00 | Daily flow data count: | 0 |
| Peak flow data begin date: | 0000-00-00 | Peak flow data end date: | 0000-00-00 |
| Peak flow data count: | 0 | Water quality data begin date: | 0000-00-00 |
| Water quality data end date: | 0000-00-00 | Water quality data count: | 0 |
| Ground water data begin date: | 1966-03-01 | Ground water data end date: | 1966-03-01 |
| Ground water data count: | 1 | | |

Ground-water levels, Number of Measurements: 1

| Date | Feet below Surface | Feet to Sealevel |
|---|---|---|
| 1966-03-01 | 18.00 | |

---

8
ENE
1/8 - 1/4 Mile
Higher

FED USGS USGS2242094

| | | | |
|---|---|---|---|
| Agency cd: | USGS | Site no: | 420531078262301 |
| Site name: | CT 362 | | |
| Latitude: | 420531 | | |
| Longitude: | 0782623 | Dec lat: | 42.09200949 |
| Dec lon: | -78.43946453 | Coor meth: | M |
| Coor accr: | F | Latlong datum: | NAD27 |
| Dec latlong datum: | NAD83 | District: | 36 |
| State: | 36 | County: | 009 |
| Country: | US | Land net: | Not Reported |
| Location map: | OLEAN M-07-4 | Map scale: | Not Reported |
| Altitude: | 1430.00 | Altitude method: | M |
| Altitude accuracy: | 10 | Altitude datum: | NGVD29 |
| Hydrologic: | Upper Allegheny. Pennsylvania, New York. Area = 2560 sq.mi. | | |
| Topographic: | Valley flat | | |
| Site type: | Ground-water other than Spring | Date construction: | 19660101 |
| Date inventoried: | Not Reported | Mean greenwich time offset: | EST |
| Local standard time flag: | N | | |
| Type of ground water site: | Single well, other than collector or Ranney type | | |
| Aquifer Type: | Not Reported | | |
| Aquifer: | OUTWASH | | |
| Well depth: | 72.0 | Hole depth: | Not Reported |
| Source of depth data: | Not Reported | Project number: | Not Reported |
| Real time data flag: | 0 | Daily flow data begin date: | 0000-00-00 |
| Daily flow data end date: | 0000-00-00 | Daily flow data count: | 0 |
| Peak flow data begin date: | 0000-00-00 | Peak flow data end date: | 0000-00-00 |
| Peak flow data count: | 0 | Water quality data begin date: | 0000-00-00 |
| Water quality data end date: | 0000-00-00 | Water quality data count: | 0 |
| Ground water data begin date: | 1966-03-01 | Ground water data end date: | 1966-03-01 |
| Ground water data count: | 1 | | |

Ground-water levels, Number of Measurements: 1

| Date | Feet below Surface | Feet to Sealevel |
|---|---|---|
| 1966-03-01 | 21.00 | |

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B9
NNE
1/4 - 1/2 Mile
Higher

FED USGS USGS2242097

| | | | |
|---|---|---|---|
| Agency cd: | USGS | Site no: | 420537078262901 |
| Site name: | CT 385 | | |
| Latitude: | 420537 | | |
| Longitude: | 0782629 | Dec lat: | 42.09367616 |
| Dec lon: | -78.44113126 | Coor meth: | M |
| Coor accr: | F | Latlong datum: | NAD27 |
| Dec latlong datum: | NAD83 | District: | 36 |
| State: | 36 | County: | 009 |
| Country: | US | Land net: | Not Reported |
| Location map: | OLEAN M-07-4 | Map scale: | Not Reported |
| Altitude: | 1433.00 | Altitude method: | M |
| Altitude accuracy: | 10 | Altitude datum: | NGVD29 |
| Hydrologic: | Upper Allegheny, Pennsylvania, New York. Area = 2560 sq.mi. | | |
| Topographic: | Valley flat | | |
| Site type: | Ground-water other than Spring | Date construction: | 19281012 |
| Date inventoried: | Not Reported | Mean greenwich time offset: | EST |
| Local standard time flag: | N | | |
| Type of ground water site: | Single well, other than collector or Ranney type | | |
| Aquifer Type: | Not Reported | | |
| Aquifer: | OUTWASH | | |
| Well depth: | 70.0 | Hole depth: | Not Reported |
| Source of depth data: | Not Reported | Project number: | Not Reported |
| Real time data flag: | 0 | Daily flow data begin date: | 0000-00-00 |
| Daily flow data end date: | 0000-00-00 | Daily flow data count: | 0 |
| Peak flow data begin date: | 0000-00-00 | Peak flow data end date: | 0000-00-00 |
| Peak flow data count: | 0 | Water quality data begin date: | 0000-00-00 |
| Water quality data end date: | 0000-00-00 | Water quality data count: | 0 |
| Ground water data begin date: | 1928-09-01 | Ground water data end date: | 1928-09-01 |
| Ground water data count: | 1 | | |

Ground-water levels, Number of Measurements: 1

| Date | Feet below Surface | Feet to Sealevel |
|---|---|---|
| 1928-09-01 | 31.00 | |

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10
WSW
1/4 - 1/2 Mile
Lower

FED USGS USGS2242079

| | | | |
|---|---|---|---|
| Agency cd: | USGS | Site no: | 420520078265501 |
| Site name: | CT 55 | | |
| Latitude: | 420520 | | |
| Longitude: | 0782655 | Dec lat: | 42.08895386 |
| Dec lon: | -78.44835372 | Coor meth: | M |
| Coor accr: | S | Latlong datum: | NAD27 |
| Dec latlong datum: | NAD83 | District: | 36 |
| State: | 36 | County: | 009 |
| Country: | US | Land net: | Not Reported |
| Location map: | OLEAN M-07-4 | Map scale: | Not Reported |
| Altitude: | 1425.00 | Altitude method: | M |
| Altitude accuracy: | 10 | Altitude datum: | NGVD29 |
| Hydrologic: | Upper Allegheny, Pennsylvania, New York. Area = 2560 sq.mi. | | |
| Topographic: | Valley flat | | |
| Site type: | Ground-water other than Spring | Date construction: | 19240101 |
| Date inventoried: | Not Reported | Mean greenwich time offset: | EST |

| | | | |
|---|---|---|---|
| Local standard time flag: | N | | |
| Type of ground water site: | Single well, other than collector or Ranney type | | |
| Aquifer Type: | Not Reported | | |
| Aquifer: | OUTWASH | | |
| Well depth: | 82.0 | Hole depth: | Not Reported |
| Source of depth data: | Not Reported | Project number: | Not Reported |
| Real time data flag: | 0 | Daily flow data begin date: | 0000-00-00 |
| Daily flow data end date: | 0000-00-00 | Daily flow data count: | 0 |
| Peak flow data begin date: | 0000-00-00 | Peak flow data end date: | 0000-00-00 |
| Peak flow data count: | 0 | Water quality data begin date: | 0000-00-00 |
| Water quality data end date: | 0000-00-00 | Water quality data count: | 0 |
| Ground water data begin date: | 1924-09-01 | Ground water data end date: | 1924-09-01 |
| Ground water data count: | 1 | | |

Ground-water levels, Number of Measurements: 1

| Date | Feet below Surface | Feet to Sealevel |
|---|---|---|
| 1924-09-01 | 23.00 | |

---

11
SW
1/4 - 1/2 Mile
Lower

**FED USGS** **USGS2242076**

| | | | |
|---|---|---|---|
| Agency cd: | USGS | Site no: | 420514078265501 |
| Site name: | CT 327 | | |
| Latitude: | 420514 | | |
| Longitude: | 0782655 | Dec lat: | 42.08728719 |
| Dec lon: | -78.44835371 | Coor meth: | M |
| Coor accr: | S | Latlong datum: | NAD27 |
| Dec latlong datum: | NAD83 | District: | 36 |
| State: | 36 | County: | 009 |
| Country: | US | Land net: | Not Reported |
| Location map: | OLEAN M-07-4 | Map scale: | Not Reported |
| Altitude: | 1425.00 | Altitude method: | M |
| Altitude accuracy: | 10 | Altitude datum: | NGVD29 |
| Hydrologic: | Upper Allegheny. Pennsylvania, New York. Area = 2560 sq.mi. | | |
| Topographic: | Valley flat | | |
| Site type: | Ground-water other than Spring | Date construction: | 19250101 |
| Date inventoried: | Not Reported | Mean greenwich time offset: | EST |
| Local standard time flag: | N | | |
| Type of ground water site: | Single well, other than collector or Ranney type | | |
| Aquifer Type: | Not Reported | | |
| Aquifer: | OUTWASH | | |
| Well depth: | 93.0 | Hole depth: | Not Reported |
| Source of depth data: | Not Reported | Project number: | Not Reported |
| Real time data flag: | 0 | Daily flow data begin date: | 0000-00-00 |
| Daily flow data end date: | 0000-00-00 | Daily flow data count: | 0 |
| Peak flow data begin date: | 0000-00-00 | Peak flow data end date: | 0000-00-00 |
| Peak flow data count: | 0 | Water quality data begin date: | 0000-00-00 |
| Water quality data end date: | 0000-00-00 | Water quality data count: | 0 |
| Ground water data begin date: | 1925-04-01 | Ground water data end date: | 1925-04-01 |
| Ground water data count: | 1 | | |

Ground-water levels, Number of Measurements: 1

| Date | Feet below Surface | Feet to Sealevel |
|---|---|---|
| 1925-04-01 | 17.00 | |

**12**
**NNE**
**1/4 - 1/2 Mile**
**Higher**

**FED USGS** **USGS2242098**

| | | | |
|---|---|---|---|
| Agency cd: | USGS | Site no: | 420541078262401 |
| Site name: | CT 68 | | |
| Latitude: | 420541 | | |
| Longitude: | 0782624 | Dec lat: | 42.09478728 |
| Dec lon: | -78.43974233 | Coor meth: | M |
| Coor accr: | F | Latlong datum: | NAD27 |
| Dec latlong datum: | NAD83 | District: | 36 |
| State: | 36 | County: | 009 |
| Country: | US | Land net: | Not Reported |
| Location map: | OLEAN M-07-4 | Map scale: | Not Reported |
| Altitude: | 1430.00 | Altitude method: | M |
| Altitude accuracy: | 5. | Altitude datum: | NGVD29 |
| Hydrologic: | Upper Allegheny, Pennsylvania, New York, Area = 2560 sq.mi. | | |
| Topographic: | Valley flat | | |
| Site type: | Ground-water other than Spring | Date construction: | 19450101 |
| Date inventoried: | Not Reported | Mean greenwich time offset: | EST |
| Local standard time flag: | N | | |
| Type of ground water site: | Single well, other than collector or Ranney type | | |
| Aquifer Type: | Not Reported | | |
| Aquifer: | OUTWASH | | |
| Well depth: | 70.0 | Hole depth: | Not Reported |
| Source of depth data: | Not Reported | Project number: | Not Reported |
| Real time data flag: | 0 | Daily flow data begin date: | 0000-00-00 |
| Daily flow data end date: | 0000-00-00 | Daily flow data count: | 0 |
| Peak flow data begin date: | 0000-00-00 | Peak flow data end date: | 0000-00-00 |
| Peak flow data count: | 0 | Water quality data begin date: | 0000-00-00 |
| Water quality data end date: | 0000-00-00 | Water quality data count: | 0 |
| Ground water data begin date: | 1974-00-00 | Ground water data end date: | 1974-00-00 |
| Ground water data count: | 1 | | |

Ground-water levels, Number of Measurements: 1

| Date | Feet below Surface | Feet to Sealevel |
|---|---|---|
| 1974 | 32.00 | |

**13**
**SSE**
**1/4 - 1/2 Mile**
**Higher**

**FED USGS** **USGS2242067**

| | | | |
|---|---|---|---|
| Agency cd: | USGS | Site no: | 420506078263101 |
| Site name: | CT 345 | | |
| Latitude: | 420506 | | |
| Longitude: | 0782631 | Dec lat: | 42.08506499 |
| Dec lon: | -78.4416868 | Coor meth: | M |
| Coor accr: | F | Latlong datum: | NAD27 |
| Dec latlong datum: | NAD83 | District: | 36 |
| State: | 36 | County: | 009 |
| Country: | US | Land net: | Not Reported |
| Location map: | OLEAN M-07-4 | Map scale: | 24000 |
| Altitude: | 1426.00 | Altitude method: | M |
| Altitude accuracy: | 10 | Altitude datum: | NGVD29 |
| Hydrologic: | Not Reported | | |
| Topographic: | Not Reported | | |
| Site type: | Ground-water other than Spring | Date construction: | Not Reported |
| Date inventoried: | Not Reported | Mean greenwich time offset: | EST |
| Local standard time flag: | N | | |
| Type of ground water site: | Single well, other than collector or Ranney type | | |
| Aquifer Type: | Not Reported | | |
| Aquifer: | Not Reported | | |
| Well depth: | 64.6 | Hole depth: | Not Reported |
| Source of depth data: | driller | Project number: | Not Reported |
| Real time data flag: | 0 | Daily flow data begin date: | 0000-00-00 |
| Daily flow data end date: | 0000-00-00 | Daily flow data count: | 0 |
| Peak flow data begin date: | 0000-00-00 | Peak flow data end date: | 0000-00-00 |
| Peak flow data count: | 0 | Water quality data begin date: | 0000-00-00 |
| Water quality data end date: | 0000-00-00 | Water quality data count: | 0 |
| Ground water data begin date: | 1971-04-15 | Ground water data end date: | 1971-04-15 |
| Ground water data count: | 1 | | |

Ground-water levels, Number of Measurements: 1

| Date | Feet below Surface | Feet to Sealevel |
|---|---|---|
| 1971-04-15 | 33 | |

Note: A nearby site that taps the same aquifer had been pumped recently.

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**14**
**ESE**
**1/4 - 1/2 Mile**
**Higher**

**FED USGS** **USGS2242075**

| | | | |
|---|---|---|---|
| Agency cd: | USGS | Site no: | 420514078261101 |
| Site name: | CT 366 | | |
| Latitude: | 420514 | | |
| Longitude: | 0782611 | Dec lat: | 42.08728726 |
| Dec lon: | -78.43613105 | Coor meth: | M |
| Coor accr: | F | Latlong datum: | NAD27 |
| Dec latlong datum: | NAD83 | District: | 36 |
| State: | 36 | County: | 009 |
| Country: | US | Land net: | Not Reported |
| Location map: | OLEAN M-07-4 | Map scale: | Not Reported |
| Altitude: | 1430.00 | Altitude method: | M |
| Altitude accuracy: | 5. | Altitude datum: | NGVD29 |
| Hydrologic: | Upper Allegheny. Pennsylvania, New York. Area = 2560 sq.mi. | | |
| Topographic: | Valley flat | | |
| Site type: | Ground-water other than Spring | Date construction: | 19380101 |
| Date inventoried: | Not Reported | Mean greenwich time offset: | EST |

| | | | |
|---|---|---|---|
| Local standard time flag: | N | | |
| Type of ground water site: | Single well, other than collector or Ranney type | | |
| Aquifer Type: | Not Reported | | |
| Aquifer: | OUTWASH | | |
| Well depth: | 83.0 | Hole depth: | Not Reported |
| Source of depth data: | Not Reported | Project number: | Not Reported |
| Real time data flag: | 0 | Daily flow data begin date: | 0000-00-00 |
| Daily flow data end date: | 0000-00-00 | Daily flow data count: | 0 |
| Peak flow data begin date: | 0000-00-00 | Peak flow data end date: | 0000-00-00 |
| Peak flow data count: | 0 | Water quality data begin date: | 1946-03-00 |
| Water quality data end date: | 1946-03-00 | Water quality data count: | 1 |
| Ground water data begin date: | 1974-00-00 | Ground water data end date: | 1974-00-00 |
| Ground water data count: | 1 | | |

Ground-water levels, Number of Measurements: 1

| Date | Feet below Surface | Feet to Sealevel |
|---|---|---|
| 1974 | 20 00 | |

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**15**
**North**
**1/2 - 1 Mile**
**Higher**

**FRDS PWS** **NY0000345**

| | | | |
|---|---|---|---|
| PWS ID: | NY0000345 | PWS Status: | Active |
| Date Initiated: | Not Reported | Date Deactivated: | Not Reported |
| PWS Name: | OLEAN CITY<br>P.O. BOX 668 MUNICIPAL BLDG.<br>OLEAN, NY 14760 | | |
| Addressee / Facility: | System Owner/Responsible Party<br>MARCUS PETER<br>CITY OF OLEAN<br>P.O. BOX 668 MUNICIPAL BLDG.<br>OLEAN, NY 14760 | | |
| Facility Latitude: | 42 04 19 | Facility Longitude: | 078 24 15 |
| Facility Latitude: | 42 04 07 | Facility Longitude: | 078 24 10 |
| Facility Latitude: | 42 04 19 | Facility Longitude: | 078 24 23 |
| Facility Latitude: | 42 05 51 | Facility Longitude: | 078 26 39 |
| City Served: | OLEAN (C) | | |
| Treatment Class | Not Reported | Population: | Not Reported |

PWS currently has or had major violation(s) or enforcement: No

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**16**
**West**
**1/2 - 1 Mile**
**Lower**

**FED USGS** **USGS2242082**

| | | | |
|---|---|---|---|
| Agency cd: | USGS | Site no: | 420521078271201 |
| Site name: | CT 357 | | |
| Latitude: | 420521 | | |
| Longitude: | 0782712 | Dec lat: | 42.08923161 |
| Dec lon: | -78.45307611 | Coor meth: | M |
| Coor accr: | F | Latlong datum: | NAD27 |
| Dec latlong datum: | NAD83 | District: | 36 |
| State: | 36 | County: | 009 |
| Country: | US | Land net: | Not Reported |
| Location map: | OLEAN M-07-4 | Map scale: | 24000 |
| Altitude: | 1410.00 | Altitude method: | M |
| Altitude accuracy: | 2 | Altitude datum: | NGVD29 |
| Hydrologic: | Not Reported | | |
| Topographic: | Not Reported | | |
| Site type: | Ground-water other than Spring | Date construction: | Not Reported |
| Date inventoried: | 19770819 | Mean greenwich time offset: | EST |
| Local standard time flag: | N | | |
| Type of ground water site: | Single well, other than collector or Ranney type | | |
| Aquifer Type: | Unconfined single aquifer | | |
| Aquifer: | Not Reported | | |
| Well depth: | 22.75 | Hole depth: | 22.75 |
| Source of depth data: | reporting agency (generally USGS) | Project number: | Not Reported |
| Real time data flag: | 0 | Daily flow data begin date: | 0000-00-00 |
| Daily flow data end date: | 0000-00-00 | Daily flow data count: | 0 |
| Peak flow data begin date: | 0000-00-00 | Peak flow data end date: | 0000-00-00 |
| Peak flow data count: | 0 | Water quality data begin date: | 0000-00-00 |
| Water quality data end date: | 0000-00-00 | Water quality data count: | 0 |
| Ground water data begin date: | 1977-08-19 | Ground water data end date: | 1977-08-19 |
| Ground water data count: | 1 | | |

Ground-water levels, Number of Measurements: 1

| Date | Feet below Surface | Feet to Sealevel |
|---|---|---|
| 1977-08-19 | 11.28 | |

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**17**
**SSE**
**1/2 - 1 Mile**
**Higher**

**FED USGS** **USGS2242060**

| | | | |
|---|---|---|---|
| Agency cd: | USGS | Site no: | 420459078262701 |
| Site name: | CT 487 | | |
| Latitude: | 420459 | | |
| Longitude: | 0782627 | Dec lat: | 42.08312055 |
| Dec lon: | -78.44057564 | Coor meth: | M |
| Coor accr: | F | Latlong datum: | NAD27 |
| Dec latlong datum: | NAD83 | District: | 36 |
| State: | 36 | County: | 009 |
| Country: | US | Land net: | Not Reported |
| Location map: | OLEAN M-07-4 | Map scale: | Not Reported |
| Altitude: | 1430.00 | Altitude method: | M |
| Altitude accuracy: | 20 | Altitude datum: | NGVD29 |
| Hydrologic: | Upper Allegheny. Pennsylvania, New York. Area = 2560 sq.mi. | | |
| Topographic: | Valley flat | | |
| Site type: | Ground-water other than Spring | Date construction: | 19320101 |
| Date inventoried: | Not Reported | Mean greenwich time offset: | EST |

| | | | |
|---|---|---|---|
| Local standard time flag: | N | | |
| Type of ground water site: | Single well, other than collector or Ranney type | | |
| Aquifer Type: | Not Reported | | |
| Aquifer: | OUTWASH | | |
| Well depth: | 118 | Hole depth: | Not Reported |
| Source of depth data: | Not Reported | Project number: | Not Reported |
| Real time data flag: | 0 | Daily flow data begin date: | 0000-00-00 |
| Daily flow data end date: | 0000-00-00 | Daily flow data count: | 0 |
| Peak flow data begin date: | 0000-00-00 | Peak flow data end date: | 0000-00-00 |
| Peak flow data count: | 0 | Water quality data begin date: | 1946-03-00 |
| Water quality data end date: | 1946-03-00 | Water quality data count: | 1 |
| Ground water data begin date: | 1974-00-00 | Ground water data end date: | 1974-00-00 |
| Ground water data count: | 1 | | |

Ground-water levels, Number of Measurements: 1

| Date | Feet below Surface | Feet to Sealevel |
|---|---|---|
| 1974 | 22.00 | |

---

**18**
**SW**
**1/2 - 1 Mile**
**Lower**

**FED USGS** **USGS2242068**

| | | | |
|---|---|---|---|
| Agency cd: | USGS | Site no: | 420506078270901 |
| Site name: | CT 121 | | |
| Latitude: | 420506 | | |
| Longitude: | 0782709 | Dec lat: | 42.08506493 |
| Dec lon: | -78.45224273 | Coor meth: | M |
| Coor accr: | F | Latlong datum: | NAD27 |
| Dec latlong datum: | NAD83 | District: | 36 |
| State: | 36 | County: | 009 |
| Country: | US | Land net: | Not Reported |
| Location map: | OLEAN M-07-4 | Map scale: | 24000 |
| Altitude: | 1418.00 | Altitude method: | M |
| Altitude accuracy: | 10 | Altitude datum: | NGVD29 |
| Hydrologic: | Not Reported | | |
| Topographic: | Not Reported | | |
| Site type: | Ground-water other than Spring | Date construction: | Not Reported |
| Date inventoried: | Not Reported | Mean greenwich time offset: | EST |
| Local standard time flag: | N | | |
| Type of ground water site: | Single well, other than collector or Ranney type | | |
| Aquifer Type: | Not Reported | | |
| Aquifer: | Not Reported | | |
| Well depth: | 60 | Hole depth: | Not Reported |
| Source of depth data: | driller | Project number: | Not Reported |
| Real time data flag: | 0 | Daily flow data begin date: | 0000-00-00 |
| Daily flow data end date: | 0000-00-00 | Daily flow data count: | 0 |
| Peak flow data begin date: | 0000-00-00 | Peak flow data end date: | 0000-00-00 |
| Peak flow data count: | 0 | Water quality data begin date: | 0000-00-00 |
| Water quality data end date: | 0000-00-00 | Water quality data count: | 0 |
| Ground water data begin date: | 1970-02-00 | Ground water data end date: | 1970-02-00 |
| Ground water data count: | 1 | | |

Ground-water levels, Number of Measurements: 1

| Date | Feet below Surface | Feet to Sealevel |
|---|---|---|
| 1970-02 | 29.73 | |

Note: A nearby site that taps the same aquifer had been pumped recently.

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**19**
**SSW**
**1/2 - 1 Mile**
**Lower**

**FED USGS** **USGS2242059**

| | | | |
|---|---|---|---|
| Agency cd: | USGS | Site no: | 420453078270201 |
| Site name: | CT 313 | | |
| Latitude: | 420453 | | |
| Longitude: | 0782702 | Dec lat: | 42.08145381 |
| Dec lon: | -78.4502982 | Coor meth: | M |
| Coor accr: | F | Latlong datum: | NAD27 |
| Dec latlong datum: | NAD83 | District: | 36 |
| State: | 36 | County: | 009 |
| Country: | US | Land net: | Not Reported |
| Location map: | OLEAN M-07-4 | Map scale: | 24000 |
| Altitude: | Not Reported | Altitude method: | Not Reported |
| Altitude accuracy: | Not Reported | Altitude datum: | Not Reported |
| Hydrologic: | Not Reported | | |
| Topographic: | Not Reported | | |
| Site type: | Ground-water other than Spring | Date construction: | Not Reported |
| Date inventoried: | Not Reported | Mean greenwich time offset: | EST |
| Local standard time flag: | N | | |
| Type of ground water site: | Single well, other than collector or Ranney type | | |
| Aquifer Type: | Not Reported | | |
| Aquifer: | Not Reported | | |
| Well depth: | Not Reported | Hole depth: | Not Reported |
| Source of depth data: | Not Reported | Project number: | Not Reported |
| Real time data flag: | 0 | Daily flow data begin date: | 0000-00-00 |
| Daily flow data end date: | 0000-00-00 | Daily flow data count: | 0 |
| Peak flow data begin date: | 0000-00-00 | Peak flow data end date: | 0000-00-00 |
| Peak flow data count: | 0 | Water quality data begin date: | 0000-00-00 |
| Water quality data end date: | 0000-00-00 | Water quality data count: | 0 |
| Ground water data begin date: | 1971-02-19 | Ground water data end date: | 1971-02-19 |
| Ground water data count: | 1 | | |

Ground-water levels, Number of Measurements: 1

| Date | Feet below Surface | Feet to Sealevel |
|---|---|---|
| 1971-02-19 | 19.83 | |

---

**20**
**NE**
**1/2 - 1 Mile**
**Lower**

**FED USGS** **USGS2242103**

| | | | |
|---|---|---|---|
| Agency cd: | USGS | Site no: | 420547078255301 |
| Site name: | CT 71 | | |
| Latitude: | 420547 | | |
| Longitude: | 0782553 | Dec lat: | 42.09645401 |
| Dec lon: | -78.43113092 | Coor meth: | M |
| Coor accr: | F | Latlong datum: | NAD27 |
| Dec latlong datum: | NAD83 | District: | 36 |
| State: | 36 | County: | 009 |
| Country: | US | Land net: | Not Reported |
| Location map: | OLEAN M-07-4 | Map scale: | Not Reported |
| Altitude: | 1423.00 | Altitude method: | M |
| Altitude accuracy: | 10 | Altitude datum: | NGVD29 |
| Hydrologic: | Upper Allegheny. Pennsylvania, New York. Area = 2560 sq.mi. | | |
| Topographic: | Valley flat | | |
| Site type: | Ground-water other than Spring | Date construction: | 19380101 |
| Date inventoried: | Not Reported | Mean greenwich time offset: | EST |
| Local standard time flag: | N | | |
| Type of ground water site: | Single well, other than collector or Ranney type | | |
| Aquifer Type: | Not Reported | | |
| Aquifer: | OUTWASH | | |
| Well depth: | 265 | Hole depth: | Not Reported |
| Source of depth data: | Not Reported | Project number: | Not Reported |
| Real time data flag: | 0 | Daily flow data begin date: | 0000-00-00 |
| Daily flow data end date: | 0000-00-00 | Daily flow data count: | 0 |
| Peak flow data begin date: | 0000-00-00 | Peak flow data end date: | 0000-00-00 |
| Peak flow data count: | 0 | Water quality data begin date: | 0000-00-00 |
| Water quality data end date: | 0000-00-00 | Water quality data count: | 0 |
| Ground water data begin date: | 1938-01-01 | Ground water data end date: | 1938-01-01 |
| Ground water data count: | 1 | | |

Ground-water levels, Number of Measurements: 1

| Date | Feet below Surface | Feet to Sealevel |
|---|---|---|
| 1938-01-01 | 18.00 | |

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21
SSW
1/2 - 1 Mile
Lower

FED USGS USGS2242068

| | | | |
|---|---|---|---|
| Agency cd: | USGS | Site no: | 420448078270001 |
| Site name: | CT 378 | | |
| Latitude: | 420448 | | |
| Longitude: | 0782700 | Dec lat: | 42.08006492 |
| Dec lon: | -78.44974262 | Coor meth: | M |
| Coor accr: | F | Latlong datum: | NAD27 |
| Dec latlong datum: | NAD83 | District: | 36 |
| State: | 36 | County: | 009 |
| Country: | US | Land net: | Not Reported |
| Location map: | OLEAN M-07-4 | Map scale: | 24000 |
| Altitude: | 1415.00 | Altitude method: | M |
| Altitude accuracy: | 2 | Altitude datum: | NGVD29 |
| Hydrologic: | Not Reported | | |
| Topographic: | Not Reported | | |
| Site type: | Ground-water other than Spring | Date construction: | Not Reported |
| Date inventoried: | 197708 | Mean greenwich time offset: | EST |

| | | | |
|---|---|---|---|
| Local standard time flag: | N | | |
| Type of ground water site: | Test hole, not completed as a well | | |
| Aquifer Type: | Not Reported | | |
| Aquifer: | QUATERNARY | | |
| Well depth: | Not Reported | Hole depth: | Not Reported |
| Source of depth data: | Not Reported | Project number: | Not Reported |
| Real time data flag: | Not Reported | Daily flow data begin date: | Not Reported |
| Daily flow data end date: | Not Reported | Daily flow data count: | Not Reported |
| Peak flow data begin date: | Not Reported | Peak flow data end date: | Not Reported |
| Peak flow data count: | Not Reported | Water quality data begin date: | Not Reported |
| Water quality data end date: | Not Reported | Water quality data count: | Not Reported |
| Ground water data begin date: | Not Reported | Ground water data end date: | Not Reported |
| Ground water data count: | Not Reported | | |

Ground-water levels, Number of Measurements: 0

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**22**
**NE**
**1/2 - 1 Mile**
**Lower**

**FED USGS** **USGS2242106**

| | | | |
|---|---|---|---|
| Agency cd: | USGS | Site no: | 420557078255701 |
| Site name: | CT 433 | | |
| Latitude: | 420557 | | |
| Longitude: | 0782557 | Dec lat: | 42.0992318 |
| Dec lon: | -78.43224208 | Coor meth: | M |
| Coor accr: | F | Latlong datum: | NAD27 |
| Dec latlong datum: | NAD83 | District: | 36 |
| State: | 36 | County: | 009 |
| Country: | US | Land net: | Not Reported |
| Location map: | OLEAN M-07-4 | Map scale: | Not Reported |
| Altitude: | 1421.00 | Altitude method: | M |
| Altitude accuracy: | 10 | Altitude datum: | NGVD29 |
| Hydrologic: | Upper Allegheny. Pennsylvania, New York. Area = 2560 sq.mi. | | |
| Topographic: | Valley flat | | |
| Site type: | Ground-water other than Spring | Date construction: | 19380101 |
| Date inventoried: | Not Reported | Mean greenwich time offset: | EST |
| Local standard time flag: | N | | |
| Type of ground water site: | Single well, other than collector or Ranney type | | |
| Aquifer Type: | Not Reported | | |
| Aquifer: | OUTWASH | | |
| Well depth: | 266 | Hole depth: | Not Reported |
| Source of depth data: | Not Reported | Project number: | Not Reported |
| Real time data flag: | Not Reported | Daily flow data begin date: | Not Reported |
| Daily flow data end date: | Not Reported | Daily flow data count: | Not Reported |
| Peak flow data begin date: | Not Reported | Peak flow data end date: | Not Reported |
| Peak flow data count: | Not Reported | Water quality data begin date: | Not Reported |
| Water quality data end date: | Not Reported | Water quality data count: | Not Reported |
| Ground water data begin date: | Not Reported | Ground water data end date: | Not Reported |
| Ground water data count: | Not Reported | | |

Ground-water levels, Number of Measurements: 0

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**23**
**SW**
**1/2 - 1 Mile**
**Lower**

**FED USGS** **USGS2242249**

| | | | |
|---|---|---|---|
| Agency cd: | USGS | Site no: | 420447078271401 |
| Site name: | CT 356 | | |
| Latitude: | 420447 | | |
| Longitude: | 0782714 | Dec lat: | 42.07978712 |
| Dec lon: | -78.45363165 | Coor meth: | M |
| Coor accr: | F | Latlong datum: | NAD27 |
| Dec latlong datum: | NAD83 | District: | 36 |
| State: | 36 | County: | 009 |
| Country: | US | Land net: | Not Reported |
| Location map: | OLEAN M-07-4 | Map scale: | 24000 |
| Altitude: | 1415.00 | Altitude method: | M |
| Altitude accuracy: | 2 | Altitude datum: | NGVD29 |
| Hydrologic: | Not Reported | | |
| Topographic: | Not Reported | | |
| Site type: | Ground-water other than Spring | Date construction: | 19780920 |
| Date inventoried: | 19781016 | Mean greenwich time offset: | EST |
| Local standard time flag: | N | | |
| Type of ground water site: | Single well, other than collector or Ranney type | | |
| Aquifer Type: | Not Reported | | |
| Aquifer: | QUATERNARY | | |
| Well depth: | 106 | Hole depth: | 106 |
| Source of depth data: | Not Reported | Project number: | Not Reported |
| Real time data flag: | 0 | Daily flow data begin date: | 0000-00-00 |
| Daily flow data end date: | 0000-00-00 | Daily flow data count: | 0 |
| Peak flow data begin date: | 0000-00-00 | Peak flow data end date: | 0000-00-00 |
| Peak flow data count: | 0 | Water quality data begin date: | 0000-00-00 |
| Water quality data end date: | 0000-00-00 | Water quality data count: | 0 |
| Ground water data begin date: | 1978-11-01 | Ground water data end date: | 1978-11-01 |
| Ground water data count: | 1 | | |

Ground-water levels, Number of Measurements: 1

| Date | Feet below Surface | Feet to Sealevel |
|---|---|---|
| 1978-11-01 | 22.5 | |

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24
NW
1/2 - 1 Mile
Higher

**FED USGS** **USGS2242104**

| | | | |
|---|---|---|---|
| Agency cd: | USGS | Site no: | 420555078272501 |
| Site name: | CT 63 | | |
| Latitude: | 420555 | | |
| Longitude: | 0782725 | Dec lat: | 42.09867609 |
| Dec lon: | -78.4566874 | Coor meth: | M |
| Coor accr: | F | Latlong datum: | NAD27 |
| Dec latlong datum: | NAD83 | District: | 36 |
| State: | 36 | County: | 009 |
| Country: | US | Land net: | Not Reported |
| Location map: | OLEAN M-07-4 | Map scale: | 24000 |
| Altitude: | 1417.00 | Altitude method: | M |
| Altitude accuracy: | 10 | Altitude datum: | NGVD29 |
| Hydrologic: | Not Reported | | |
| Topographic: | Not Reported | | |
| Site type: | Ground-water other than Spring | Date construction: | Not Reported |
| Date inventoried: | Not Reported | Mean greenwich time offset: | EST |

| | | | |
|---|---|---|---|
| Local standard time flag: | N | | |
| Type of ground water site: | Single well, other than collector or Ranney type | | |
| Aquifer Type: | Not Reported | | |
| Aquifer: | Not Reported | | |
| Well depth: | Not Reported | Hole depth: | Not Reported |
| Source of depth data: | Not Reported | Project number: | Not Reported |
| Real time data flag: | 0 | Daily flow data begin date: | 0000-00-00 |
| Daily flow data end date: | 0000-00-00 | Daily flow data count: | 0 |
| Peak flow data begin date: | 0000-00-00 | Peak flow data end date: | 0000-00-00 |
| Peak flow data count: | 0 | Water quality data begin date: | 0000-00-00 |
| Water quality data end date: | 0000-00-00 | Water quality data count: | 0 |
| Ground water data begin date: | 1971-02-02 | Ground water data end date: | 1971-02-02 |
| Ground water data count: | 1 | | |

Ground-water levels, Number of Measurements: 1

| Date | Feet below Surface | Feet to Sealevel |
|---|---|---|
| 1971-02-02 | 23.58 | |

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**C25**
**SSE**
**1/2 - 1 Mile**
**Higher**

**FED USGS** **USGS2242243**

| | | | |
|---|---|---|---|
| Agency cd: | USGS | Site no: | 420440078260601 |
| Site name: | CT 464 | | |
| Latitude: | 420440 | | |
| Longitude: | 0782606 | Dec lat: | 42.07784277 |
| Dec lon: | -78.43474207 | Coor meth: | M |
| Coor accr: | F | Latlong datum: | NAD27 |
| Dec latlong datum: | NAD83 | District: | 36 |
| State: | 36 | County: | 009 |
| Country: | US | Land net: | Not Reported |
| Location map: | OLEAN M-07-4 | Map scale: | Not Reported |
| Altitude: | 1430.00 | Altitude method: | M |
| Altitude accuracy: | 10 | Altitude datum: | NGVD29 |
| Hydrologic: | Upper Allegheny. Pennsylvania, New York. Area = 2560 sq.mi. | | |
| Topographic: | Valley flat | | |
| Site type: | Ground-water other than Spring | Date construction: | 19390101 |
| Date inventoried: | Not Reported | Mean greenwich time offset: | EST |
| Local standard time flag: | N | | |
| Type of ground water site: | Single well, other than collector or Ranney type | | |
| Aquifer Type: | Not Reported | | |
| Aquifer: | OUTWASH | | |
| Well depth: | 77.0 | Hole depth: | Not Reported |
| Source of depth data: | Not Reported | Project number: | Not Reported |
| Real time data flag: | 0 | Daily flow data begin date: | 0000-00-00 |
| Daily flow data end date: | 0000-00-00 | Daily flow data count: | 0 |
| Peak flow data begin date: | 0000-00-00 | Peak flow data end date: | 0000-00-00 |
| Peak flow data count: | 0 | Water quality data begin date: | 0000-00-00 |
| Water quality data end date: | 0000-00-00 | Water quality data count: | 0 |
| Ground water data begin date: | 1974-00-00 | Ground water data end date: | 1974-00-00 |
| Ground water data count: | 1 | | |

Ground-water levels, Number of Measurements: 1

| Date | Feet below Surface | Feet to Seallevel |
|---|---|---|
| 1974 | 15.00 | |

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**26**
**NE**
**1/2 - 1 Mile**
**Lower**

**FED USGS** **USGS2242111**

| | | | |
|---|---|---|---|
| Agency cd: | USGS | Site no: | 420605078255501 |
| Site name: | CT 340 | | |
| Latitude: | 420605 | | |
| Longitude: | 0782555 | Dec lat: | 42.10145403 |
| Dec lon: | -78.43168651 | Coor meth: | M |
| Coor accr: | F | Latlong datum: | NAD27 |
| Dec latlong datum: | NAD83 | District: | 36 |
| State: | 36 | County: | 009 |
| Country: | US | Land net: | Not Reported |
| Location map: | OLEAN M-07-4 | Map scale: | Not Reported |
| Altitude: | 1421.00 | Altitude method: | M |
| Altitude accuracy: | 10 | Altitude datum: | NGVD29 |
| Hydrologic: | Upper Allegheny. Pennsylvania, New York. Area = 2560 sq.mi. | | |
| Topographic: | Valley flat | | |
| Site type: | Ground-water other than Spring | Date construction: | 19380101 |
| Date inventoried: | Not Reported | Mean greenwich time offset: | EST |
| Local standard time flag: | N | | |
| Type of ground water site: | Single well, other than collector or Ranney type | | |
| Aquifer Type: | Not Reported | | |
| Aquifer: | Not Reported | | |
| Well depth: | 182 | Hole depth: | Not Reported |
| Source of depth data: | Not Reported | Project number: | Not Reported |
| Real time data flag: | Not Reported | Daily flow data begin date: | Not Reported |
| Daily flow data end date: | Not Reported | Daily flow data count: | Not Reported |
| Peak flow data begin date: | Not Reported | Peak flow data end date: | Not Reported |
| Peak flow data count: | Not Reported | Water quality data begin date: | Not Reported |
| Water quality data end date: | Not Reported | Water quality data count: | Not Reported |
| Ground water data begin date: | Not Reported | Ground water data end date: | Not Reported |
| Ground water data count: | Not Reported | | |

Ground-water levels, Number of Measurements: 0

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**C27**
**SSE**
**1/2 - 1 Mile**
**Higher**

**FED USGS** **USGS2242242**

| | | | |
|---|---|---|---|
| Agency cd: | USGS | Site no: | 420440078260201 |
| Site name: | CT 37 | | |
| Latitude: | 420440 | | |
| Longitude: | 0782602 | Dec lat: | 42.07784278 |
| Dec lon: | -78.43383092 | Coor meth: | M |
| Coor accr: | S | Latlong datum: | NAD27 |
| Dec latlong datum: | NAD83 | District: | 36 |
| State: | 36 | County: | 009 |
| Country: | US | Land net: | Not Reported |
| Location map: | OLEAN M-07-4 | Map scale: | Not Reported |

# GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS

| | | | |
|---|---|---|---|
| Altitude: | 1428.00 | Altitude method: | M |
| Altitude accuracy: | 5. | Altitude datum: | NGVD29 |
| Hydrologic: | Upper Allegheny. Pennsylvania, New York. Area = 2560 sq.mi. | | |
| Topographic: | Valley flat | | |
| Site type: | Ground-water other than Spring | Date construction: | 19640101 |
| Date inventoried: | Not Reported | Mean greenwich time offset: | EST |
| Local standard time flag: | N | | |
| Type of ground water site: | Single well, other than collector or Ranney type | | |
| Aquifer Type: | Not Reported | | |
| Aquifer: | OUTWASH | | |
| Well depth: | 95.0 | Hole depth: | Not Reported |
| Source of depth data: | Not Reported | Project number: | Not Reported |
| Real time data flag: | 0 | Daily flow data begin date: | 0000-00-00 |
| Daily flow data end date: | 0000-00-00 | Daily flow data count: | 0 |
| Peak flow data begin date: | 0000-00-00 | Peak flow data end date: | 0000-00-00 |
| Peak flow data count: | 0 | Water quality data begin date: | 1967-10-02 |
| Water quality data end date: | 1967-10-02 | Water quality data count: | 1 |
| Ground water data begin date: | 1974-00-00 | Ground water data end date: | 1974-00-00 |
| Ground water data count: | 1 | | |

Ground-water levels, Number of Measurements: 1

| Date | Feet below Surface | Feet to Sealevel |
|---|---|---|
| 1974 | 40.00 | |

# GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS
## RADON

**AREA RADON INFORMATION**

State Database: NY Radon

Radon Test Results

| Zip | Num Sites | < 4 Pci/L | >= 4 Pci/L | >= 20 Pci/L | Avg > 4 Pci/L | Max Pci/L |
|---|---|---|---|---|---|---|
| 14760 | 346 | 235 (67.9%) | 100 (28.9%) | 11 (3.2%) | 4.26 | 56.2 |
| 14760 | 2 | 0 (0%) | 2 (100%) | 0 (0%) | 7.10 | 9.9 |

Federal EPA Radon Zone for CATTARAUGUS County: 1

Note: Zone 1 indoor average level > 4 pCi/L.
: Zone 2 indoor average level >= 2 pCi/L and <= 4 pCi/L.
: Zone 3 indoor average level < 2 pCi/L.

Federal Area Radon Information for CATTARAUGUS COUNTY, NY

Number of sites tested: 65

| Area | Average Activity | % <4 pCi/L | % 4-20 pCi/L | % >20 pCi/L |
|---|---|---|---|---|
| Living Area | 1.780 pCi/L | 83% | 17% | 0% |
| Basement | 2.760 pCi/L | 62% | 31% | 8% |

# PHYSICAL SETTING SOURCE RECORDS SEARCHED

## TOPOGRAPHIC INFORMATION

**USGS 7.5' Digital Elevation Model (DEM)**
Source: United States Geologic Survey
EDR acquired the USGS 7.5' Digital Elevation Model in 2002. 7.5-Minute DEMs correspond to the USGS 1:24,000- and 1:25,000-scale topographic quadrangle maps.

## HYDROLOGIC INFORMATION

**Flood Zone Data:** This data, available in select counties across the country, was obtained by EDR in 1999 from the Federal Emergency Management Agency (FEMA). Data depicts 100-year and 500-year flood zones as defined by FEMA.

**NWI:** National Wetlands Inventory. This data, available in select counties across the country, was obtained by EDR in 2002 from the U.S. Fish and Wildlife Service.

**State Wetlands Data: Freshwater Wetlands**
Source: Department of Environmental Conservation
Telephone: 518-402-8961

## HYDROGEOLOGIC INFORMATION

**AQUIFLOW$^R$ Information System**
Source: EDR proprietary database of groundwater flow information
EDR has developed the AQUIFLOW Information System (AIS) to provide data on the general direction of groundwater flow at specific points. EDR has reviewed reports submitted to regulatory authorities at select sites and has extracted the date of the report, hydrogeologically determined groundwater flow direction and depth to water table information.

## GEOLOGIC INFORMATION

**Geologic Age and Rock Stratigraphic Unit**
Source: P.G. Schruben, R.E. Arndt and W.J. Bawiec, Geology of the Conterminous U.S. at 1:2,500,000 Scale - A digital representation of the 1974 P.B. King and H.M. Beikman Map, USGS Digital Data Series DDS - 11 (1994).

**STATSGO:** State Soil Geographic Database
Source: Department of Agriculture, Natural Resources Conservation Services
The U.S. Department of Agriculture's (USDA) Natural Resources Conservation Service (NRCS) leads the national Conservation Soil Survey (NCSS) and is responsible for collecting, storing, maintaining and distributing soil survey information for privately owned lands in the United States. A soil map in a soil survey is a representation of soil patterns in a landscape. Soil maps for STATSGO are compiled by generalizing more detailed (SSURGO) soil survey maps.

**SSURGO:** Soil Survey Geographic (SSURGO) Database
Source: Department of Agriculture, Natural Resources Conservation Services
Telephone: 800-672-5559
SSURGO depicts information about soil features on or near the surface of the Earth.

## LOCAL / REGIONAL WATER AGENCY RECORDS

**FEDERAL WATER WELLS**

**PWS:** Public Water Systems
Source: EPA/Office of Drinking Water
Telephone: 202-564-3750
Public Water System data from the Federal Reporting Data System. A PWS is any water system which provides water to at least 25 people for at least 60 days annually. PWSs provide water from wells, rivers and other sources.

# PHYSICAL SETTING SOURCE RECORDS SEARCHED

**PWS ENF:** Public Water Systems Violation and Enforcement Data
Source: EPA/Office of Drinking Water
Telephone: 202-564-3750
Violation and Enforcement data for Public Water Systems from the Safe Drinking Water Information System (SDWIS) after August 1995. Prior to August 1995, the data came from the Federal Reporting Data System (FRDS).

**USGS Water Wells:** USGS National Water Inventory System (NWIS)
This database contains descriptive information on sites where the USGS collects or has collected data on surface water and/or groundwater. The groundwater data includes information on wells, springs, and other sources of groundwater.

**STATE RECORDS**

**New York Public Water Wells**
Source: New York Department of Health
Telephone: 518-458-6731

**OTHER STATE DATABASE INFORMATION**

**RADON**

**State Database: NY Radon**
Source: Department of Health
Telephone: 518-402-7556
Radon Test Results

**Area Radon Information**
Source: USGS
Telephone: 703-356-4020
The National Radon Database has been developed by the U.S. Environmental Protection Agency (USEPA) and is a compilation of the EPA/State Residential Radon Survey and the National Residential Radon Survey. The study covers the years 1986 - 1992. Where necessary data has been supplemented by information collected at private sources such as universities and research institutions.

**EPA Radon Zones**
Source: EPA
Telephone: 703-356-4020
Sections 307 & 309 of IRAA directed EPA to list and identify areas of U.S. with the potential for elevated indoor radon levels.

**OTHER**

**Airport Landing Facilities:** Private and public use landing facilities
Source: Federal Aviation Administration, 800-457-6656

**Epicenters:** World earthquake epicenters, Richter 5 or greater
Source: Department of Commerce, National Oceanic and Atmospheric Administration

# *Appendix C*

# *Statement By George S. Dunham, Director in Charge of Manufacturing Socony-Vacuum Oil Company, Inc., May 11, 1954*

STATEMENT BY GEORGE S. DUNHAM,
DIRECTOR IN CHARGE OF MANUFACTURING
SOCONY-VACUUM OIL COMPANY, INC.,
MAY 11, 1954

TO OLEAN REFINERY EMPLOYEES:

As most of you know, the closing of the Olean refinery has been under consideration by Socony-Vacuum for a number of years because of the plant's continuing operating losses.

Since the end of World War II repeated efforts have been made to improve operating efficiency so that the plant would pay its own way. Since 1949 engineers and technicians have almost continuously been analyzing operations here. From time to time numerous changes in operating methods and procedures directed toward reducing costs and increasing efficiency have been made and put into effect. As one result of these changes during the last few years the Olean payroll has gradually been brought down from over 500 people to fewer than 350.

In spite of these efforts, the refinery has continued to operate in the red year after year, and our analyses point toward mounting operating losses at the plant from now on.

The decision to close was postponed until such time as it could be done with the least hardship to employees.

We believe that time has now come, and we are therefore taking preliminary steps to prepare for the eventual shutdown of the plant.

As you know, we are building a new 35,000-barrel refinery at Ferndale, Washington. We expect that it will be ready to begin

THE UNIVERSITY OF TEXAS AT AUSTIN

operations late this fall. As the new plant approaches completion, many new jobs will open up.

It has therefore been decided to dovetail the closing of Olean with the opening of Ferndale, and thus make possible the transfer of a substantial number of Olean people to the new refinery.

By making public the company's decision well in advance, we hope to make things easier for all concerned.

You people have been loyal to Socony-Vacuum. Let me assure you that Socony-Vacuum will be loyal to you. While we cannot promise all of you jobs and pay rates equivalent to those you have now, we can and do promise that every physically qualified employee in Olean who wants a job will be offered one either at Ferndale or elsewhere in the Socony-Vacuum organization. The only exceptions will be people for whom special retirement or termination arrangements will be made on account of age or physical disabilities.

The new refinery will be operated by General Petroleum Corporation, our wholly-owned affiliate on the West Coast. It will be the first such plant in the Pacific Northwest.

To help you make up your minds about moving to Ferndale -- which, by the way, we think is an exceptionally attractive community -- four or five of you, from among those who may be interested in relocating there, will be given an opportunity within the next week or so to visit the Puget Sound area, with your wives, to see what it is like and to report your observations to your fellow employees upon your return.

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Soon afterwards, management representatives of the Ferndale refinery will come to Olean to interview those of you who are interested in moving to the Pacific Northwest.

If you choose to take new jobs with Socony-Vacuum, whether at Ferndale or elsewhere, the company will pay transportation costs for you and your immediate families, as well as the costs of shipping your furniture and household effects. In addition, the company will pay you a sum equal to one month's wages or salary to compensate you for extraordinary expenses incident to moving -- for example, alterations to your curtains and rugs, or the purchase of electric stoves, which are standard kitchen equipment in the Ferndale area.

We hope that most of you will decide to transfer to new jobs in the Socony-Vacuum organization. By doing so you will retain your status under the company's Annuities and Insurance Plan, the Employees Savings Plan, the Hospitalization Insurance Plan, and other employee benefits. For its part, the company will benefit by retaining your experience, skills, and know-how.

On the other hand, I want to emphasize that whether you take a new job with the company elsewhere or stay here in Olean is entirely up to you. Those of you who want to stay will receive either the company's regular termination allowances or, if you are eligible, special retirement benefits.

People who are now within six years of normal or optional retirement will be offered accelerated retirement under the company's retirement plan. Our records show that 79 Olean employees are in this category.

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As all of you probably know, the company and its domestic affiliates operate refineries at the following places: Augusta, Kansas; Beaumont, Texas; Brooklyn and Buffalo, New York; Casper, Wyoming; East Chicago, Indiana; East Providence, Rhode Island; East St. Louis, Illinois; Paulsboro, New Jersey; Torrance, California; and Trenton, Michigan.

The company will do what it can to assist in finding jobs for employees who are not eligible for accelerated retirement and who do not wish to transfer to other jobs in the Socony-Vacuum organization. People finding jobs with other employers will be released immediately, regardless of the importance of their work here, and will receive termination allowances and other company benefits equal to what they would have received if the company itself had initiated the termination.

We deeply regret the decision that economic forces have compelled us to make. We have been in Olean a long time. The people here have been good neighbors to us, and we have tried to be a good neighbor, too. We are proud of the contribution you people have made to the civic life of the community, as well as the contribution of the company itself toward the community's development and prosperity for three-quarters of a century.

As we leave Olean, it will be evident that we are trying to close down our operations in such a way as to cause the least possible dislocation to the economic life of the community.

We are making detailed plans not only to minimize hardship for you, our Olean employees, but also to cushion the effects of the shutdown on the community. I know that the news I have given you

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will raise many questions in your minds about the future. I can't answer all of them today, and many of the answers in any event will depend on individual circumstances. But you may rest assured that we will work out our plans and give you answers as fast as we can. And in the days and weeks ahead, Mr. Wanner and his staff will meet individually with every one of you to talk about your particular problems and what can be done to deal with them.

## ## ##

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# *Appendix D*

# *Personal Letter From Paul Wollstadt to a Mr. Holton. Dated December 2, 1954*

Refineries - Olean Closing Exploration - Reader's Digest

HISTORICAL FILE US--NY--Mg --Olean--Closing

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December 2, 1954

Mr. Holton:

Donald Wharton of the Reader's Digest is at Ferndale with Bryant Putney. Mr. Wharton has asked three groups of questions about the Olean closing which Mr. Putney has referred back to us.

We have already answered the first group, which related to statistics on the Pennsylvania oil fields.

Our proposed answers to the second and third groups are attached. We would appreciate your comments on them. Subject to your approval, we will ask Mr. Strohsahl to try to determine how many times the Olean closing was considered by the Board. Incidentally, we don't think the number of times the closing was considered is significant, but we believe it would be good public relations to try to meet Mr. Wharton's request for this information.

In addition, Mr. Wharton would like the text of the Board minutes on the Olean closing, also any quotations from Board members reflecting their attitude toward the need to close the refinery. Would you approve giving him the text of the minutes? Do you recall any comment by yourself or another member of the Board which might be suitable for Mr. Wharton to quote in his article?

Paul Wollstadt

PW:amf

NUMBERED PARAGRAPH 1:

a. What and when was the peak yield of the Pennsylvania oil fields?

ANSWER: This question is interpreted as referring to the fields in Pennsylvania, New York, Ohio, and parts of Virginia and West Virginia that produce "Pennsylvania grade" crude. The peak year was 1900, when production averaged 99,269 barrels a day, or 57% of total U.S. output.

b. What was the yield last year?

ANSWER: Average: 51,485 barrels a day, or .8% of total U.S. production.

c. What was the capacity of the Olean refinery and how did that compare with the throughput in the last year of operations?

ANSWER: Olean was rated at 6,500 barrels a day; throughput in 1953 averaged 2,600 barrels a day and in the first five months of 1954, 2,300 barrels a day.

d. Why was it uneconomic for us to import crude to the Olean refinery from the mid-continent or abroad?

ANSWER: Olean had no facilities for processing the light Mid-Continent crude nor Middle East crudes. To process crude from either of these sources would have required installation of costly new equipment, and Olean was not properly located with respect to crude supply routes nor to markets to justify construction of what would have amounted to a new refinery there. It would have been particularly difficult to lay Middle East crude down at Olean. As for Venezuelan crude, there would have been the same transportation problem (no pipelines from Atlantic Coast deep water to Olean) plus the fact that Venezuelan crudes are not good for lubricant manufacture, and Olean was a lube plant primarily.

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PARAGRAPH 2:

4. What evidence is there that the way Socony-Vacuum handled the closing of the Olean refinery reflected a predetermined philosophy of the Board of Directors rather than merely astute public relations thinking at the time the Olean problem arose? That is, what is the link between the philosophy and the deed?

ANSWER: Statement by George McDaniel, general manager, Eastern Region of Socony-Vacuum Marketing, before Empire State Petroleum Association, October 6, 1953: "I don't have the figures for any other company, but I should like to have you know that in our Eastern Region, our indirect heating oil business in the period from June 1, 1947 through January, 1948, increased 43.3 percent, while our direct operation gallonage increased only 7.5 percent in the same period. I might also recall to you that, based on our marketing studies, we determined six years ago that we could not operate profitably, on either a direct or indirect basis in the Piedmont section of North and South Carolina and in portions of Eastern Tennessee. We discussed the problem very frankly with our distributors in that area and told them that we would continue to supply them until the situation was such that they could get other good sources of supply. It may interest you to know that the last of those accounts was supplied until September, 1952--five years after our decision to withdraw from those areas."

Statement by Albert L. Nickerson, Vice-president and Director in charge of Foreign Trade, Socony-Vacuum, before College English Association, October 16, 1953: "I am convinced, and I think a great many businessmen will agree, that the overriding problems of business in the years to come will be those centering around human relations and human values. We have crossed the threshold of an era of scientific

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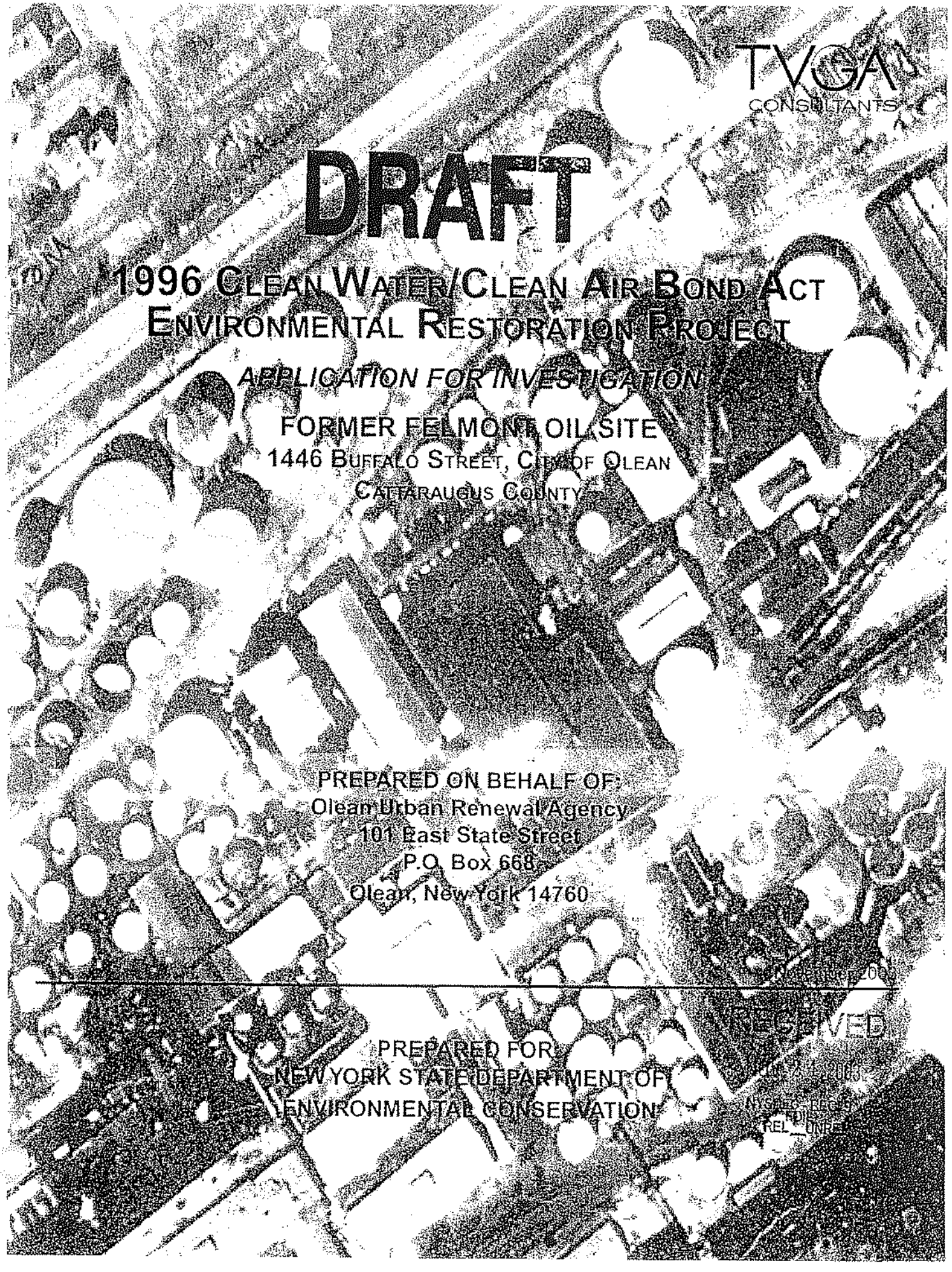
echnological development that is altering the world we live in more sharply than at any time in man's history. It is imperative that this knowledge be based on sound moral values. We must continue to raise the standard of living in a world whose population is growing prodigiously and, by means of this standard, to preserve and enlarge further the freedom of the individual."

In the 1920's and 1930's, when the Company was moving from direct to indirect operations in its marketing of kerosine in New York and New England, it turned this business in many areas over to its drivers, who became distributors -- initially of kerosine, later of fuel oils as well.

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# *Appendix E*

# *TVGA Consultants Bond Act Application – Project Description Report Submitted in December, 2003*



TVGA CONSULTANTS

# DRAFT

## 1996 Clean Water/Clean Air Bond Act
## Environmental Restoration Project

*APPLICATION FOR INVESTIGATION*

FORMER FELMONT OIL SITE
1446 Buffalo Street, City of Olean
Cattaraugus County

PREPARED ON BEHALF OF:
Olean Urban Renewal Agency
101 East State Street
P.O. Box 668
Olean, New York 14760

PREPARED FOR:
NEW YORK STATE DEPARTMENT OF
ENVIRONMENTAL CONSERVATION

RECEIVED
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## APPLICATION CONTENTS


SECTION 1: APPLICATION FORM

SECTION 2: CERTIFIED MUNICIPAL AUTHORIZATION

SECTION 3: PROJECT DESCRIPTION

SECTION 4: SUMMARY OF ENVIRONMENTAL HISTORY

SECTION 5: STATEMENT OF WORK FOR SI/RAR

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

# ENVIRONMENTAL RESTORATION PROGRAM (ERP) APPLICATION

## 1996 CLEAN WATER/CLEAN AIR BOND ACT

ECL ARTICLE 56 - 6NYCRR 375-4

10/9/03

| Applicant Information | | | |
|---|---|---|---|
| NAME OF MUNICIPALITY | Olean Urban Renewal Agency | | |
| NAME OF INDIVIDUAL AUTHORIZED TO SIGN APPLICATION | John J. Sayegh | | |
| TITLE OF AUTHORIZED INDIVIDUAL | Executive Director | | |
| ADDRESS | 101 East State Street, Olean Municipal Building, PO Box 668 | | |
| CITY/TOWN | Olean | ZIP CODE | 14760-0668 |
| PHONE | (716) 373-9260 | FAX (716) 372-7912 | E-MAIL jsayegh@oleanny.com |
| NAME OF COMMUNITY BASED ORGANIZATION (IF APPLICABLE) | | | |
| COMMUNITY BASED ORGANIZATION'S REPRESENTATIVE | | | |
| ADDRESS | | | |
| CITY/TOWN | | ZIP CODE | |
| PHONE | | FAX | E-MAIL |

| Site Information | | | |
|---|---|---|---|
| SITE NAME | Former Felmont Oil Site | | |
| SITE ADDRESS | 1446 Buffalo Street | | |
| CITY/TOWN | Olean | ZIP CODE | 14760 |
| COUNTY | Cattaraugus | SIZE (ACRES) | Approx 21.7 |
| LATITUDE | 42° 05' 17" N | LONGITUDE | 78° 26' 58" W |

PLEASE ATTACH A COUNTY TAX MAP WITH IDENTIFIER NUMBERS, ALONG WITH ANY FIGURES NEEDED TO SHOW THE LOCATION AND BOUNDARIES OF THE SITE. ALSO INCLUDE A USGS 7.5 MINUTE QUAD MAP IN WHICH THE SITE IS LOCATED.

1. DO THE SITE BOUNDARIES CORRESPOND TO TAX MAP METES AND BOUNDS? ☒YES ☐NO
   IF NO, PLEASE ATTACH A METES AND BOUNDS DESCRIPTION OF THE SITE.
2. IS THE SITE PART OF A DESIGNATED BROWNFIELD OPPORTUNITY AREA PURSUANT TO GML970-R? IF YES, IDENTIFY AREA (NAME)_____ ☐YES ☒NO
3. IS THE SITE LISTED ON THE NYS REGISTRY OF INACTIVE HAZARDOUS WASTE DISPOSAL SITES? ☐YES ☒NO
   IF YES, FILL IN CURRENT REGISTRY SITE NUMBER AND CLASSIFICATION.

   REGISTRY SITE NUMBER:_____ CLASSIFICATION:_____

## Applicant Eligibility Information

1. HAS THE APPLICANT GENERATED, TRANSPORTED OR DISPOSED OF, OR ARRANGED FOR OR CAUSED THE GENERATION, TRANSPORTATION OR DISPOSAL OF, HAZARDOUS WASTE OR PETROLEUM ON THE SITE? ☐YES ☒NO

2. HAS THE APPLICANT UNDERTAKEN, OR INTEND TO UNDERTAKE, ANY INDEMNIFICATION OBLIGATION RESPECTING A PARTY RESPONSIBLE UNDER LAW FOR THE REMEDIATION OF THE SITE? ☐YES ☒NO

3. HAS THE APPLICANT LEASED THE SITE TO ANOTHER PARTY THAT GENERATED, TRANSPORTED OR DISPOSED OF, OR THAT ARRANGED FOR OR CAUSED THE GENERATION, TRANSPORTATION OR DISPOSAL OF HAZARDOUS WASTE OR PETROLEUM ON THE SITE? IF YES, CHECK ONE OF THE FOLLOWING: ☐YES ☒NO

   ☐ A. THE APPLICANT DID NOT KNOW THAT SUCH OTHER PARTY GENERATED, TRANSPORTED OR DISPOSED OF, OR ARRANGED FOR OR CAUSED THE GENERATION, TRANSPORTATION OR DISPOSAL OF SUCH HAZARDOUS WASTE OR PETROLEUM.

   ☐ B. THE APPLICANT KNEW THAT SUCH OTHER PARTY GENERATED, TRANSPORTED OR DISPOSED OF, OR ARRANGED FOR OR CAUSED THE GENERATION, TRANSPORTATION OR DISPOSAL OF SUCH HAZARDOUS WASTE OR PETROLEUM AND DID NOT TAKE ACTION TO REMEDIATE OR CAUSE THE REMEDIATION OF SUCH HAZARDOUS WASTE OR PETROLEUM.

   ☐ C. THE APPLICANT KNEW THAT SUCH OTHER PARTY GENERATED, TRANSPORTED OR DISPOSED OF, OR ARRANGED FOR OR CAUSED THE GENERATION, TRANSPORTATION OR DISPOSAL OF SUCH HAZARDOUS WASTE OR PETROLEUM AND TOOK ACTION TO REMEDIATE OR CAUSE THE REMEDIATION OF SUCH HAZARDOUS WASTE OR PETROLEUM.

4. DOES THE APPLICANT CURRENTLY OWN THE SITE OR HAS IT OBTAINED TEMPORARY INCIDENTS OF OWNERSHIP FOR AN INVESTIGATION PURSUANT TO ECL 56-0508? ☐YES ☒NO *

## Project Description

PLEASE ATTACH A DESCRIPTION OF THE PROJECT WHICH INCLUDES THE FOLLOWING INFORMATION (REFER TO THE ENVIRONMENTAL RESTORATION PROGRAM PROCEDURES HANDBOOK FOR DETAILED INSTRUCTIONS).

- PURPOSE AND SCOPE OF THE PROJECT;
- CURRENT AND PROPOSED FUTURE USE OF THE SITE (RESIDENTIAL, COMMERCIAL, INDUSTRIAL);
- ESTIMATED PROJECT COST (INCLUDE ANY RESPONSIBLE PARTY COST RECOVERY PAYMENTS RECEIVED OR ANTICIPATED, AS WELL AS ANY OTHER ACTUAL OR POTENTIAL FUNDING SOURCES FOR THE PROJECT);
- HOW THE PROJECT WOULD SATISFY THE CRITERIA OF ECL 56-0505; AND
- ESTIMATED PROJECT SCHEDULE (FIELD WORK MUST BEGIN WITHIN 12 MONTHS OF THE APPLICATION APPROVAL DATE)

## Site Investigation Information

TO THE EXTENT THAT EXISTING INFORMATION/STUDIES/REPORTS ARE AVAILABLE TO THE APPLICANT, PLEASE ATTACH THE FOLLOWING:

1. **ENVIRONMENTAL DATA**
   A PHASE I ENVIRONMENTAL SITE ASSESSMENT REPORT PREPARED IN ACCORDANCE WITH ASTM E 1527 (American Society for Testing and Materials: Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process), AND ALL ENVIRONMENTAL REPORTS RELATED TO CONTAMINANTS ON OR EMANATING FROM THE SITE.
2. **OWNERS**
   A LIST OF PREVIOUS OWNERS WITH NAMES, LAST KNOWN ADDRESSES AND TELEPHONE NUMBERS (DESCRIBE APPLICANT'S RELATIONSHIP, IF ANY, TO EACH PREVIOUS OWNER LISTED. IF NO RELATIONSHIP, PUT "NONE").
3. **OPERATORS**
   A LIST OF PREVIOUS OPERATORS WITH NAMES, LAST KNOWN ADDRESSES AND TELEPHONE NUMBER (DESCRIBE APPLICANT'S RELATIONSHIP, IF ANY, TO EACH PREVIOUS OPERATOR LISTED. IF NO RELATIONSHIP, PUT "NONE").

*** Applicant intends to obtain temporary incidents of ownership for an investigation following approval of this application.**

## Contaminant Information

INDICATE KNOWN OR SUSPECTED CONTAMINANTS AND THE MEDIA WHICH ARE KNOWN OR SUSPECTED TO HAVE BEEN AFFECTED:

| Contaminant Category | Soil | Groundwater | Surface Water | Sediment | Soil Gas |
|---|---|---|---|---|---|
| Petroleum | X | X | | | |
| Chlorinated Solvents | X | X | | | |
| Other VOCs | | | | | |
| SVOCs | X | X | | X | |
| Metals | X | X | | | |
| Pesticides | | | | | |
| PCBs | X | | | X | |
| Other*_____ | | X | | | |

*PLEASE DESCRIBE: Ammonia and nitrate

## Remedial Information (Complete for Remediation Projects Only)

1. HAS THE DEC ISSUED A RECORD OF DECISION FOR THE SITE UNDER THE ERP? ☐YES ☐NO
2. HAS GROUNDWATER OR A SURFACE WATER BODY BEEN CONTAMINATED ABOVE STANDARDS? ☐YES ☐NO
   IF YES, CHECK ALL THAT APPLY:
   - ☐ A. THE INFLUENT TO A PUBLIC OR PRIVATE WATER SUPPLY HAS BEEN CONTAMINATED OR THREATENED.
   - ☐ B. A CLASS A OR AA SURFACE WATER BODY OR A PRIMARY OR PRINCIPAL AQUIFER HAS BEEN CONTAMINATED WITHOUT AFFECTING AN EXISTING WATER SUPPLY.
   - ☐ C. GROUNDWATER HAS BEEN CONTAMINATED ABOVE STANDARDS OR A SURFACE WATER HAS BEEN IMPACTED.
3. HAVE ENDANGERED, THREATENED OR RARE SPECIES, STATE PROTECTED STREAMS, OR STATE REGULATED WETLANDS BEEN IMPACTED BY RELEASES FROM THE SITE? ☐YES ☐NO
4. ARE CONTAMINANTS PRESENT IN SOILS/WASTE AT LEVELS THAT EXCEED DEC DIVISION OF ENVIRONMENTAL REMEDIATION GUIDANCE VALUES? ☐YES ☐NO
5. IS THE SITE LOCATED IN A DESIGNATED EMPIRE ZONE? ☐YES ☐NO
6. IS THE SITE LOCATED IN A DESIGNATED EN-ZONE PURSUANT TO TL § 21 (b)(6)? ☐YES ☐NO
7. HAS ALL OR PART OF THE SITE BEEN IDLE OR ABANDONED FOR MORE THAN ONE YEAR? ☐YES ☐NO
7. HAS THE APPLICANT SIGNED AN AGREEMENT WITH A PRIVATE PARTY TO REUSE THE SITE ONCE IT IS RESTORED? ☐YES ☐NO
8. HAS THE APPLICANT COMMITTED TO A NEW PUBLIC OR RECREATIONAL USE? ☐YES ☐NO
9. HAS THE APPLICANT COMPLIED WITH THE STATE ENVIRONMENTAL QUALITY REVIEW ACT (SEQRA) REGARDING THIS ACTION? IF YES, INCLUDE THE DETERMINATION (NEGATIVE DECLARATION OR FINDINGS STATEMENT) IN THE ATTACHED PROJECT DESCRIPTION AND IDENTIFY ALL INVOLVED AGENCIES IN THE COORDINATED REVIEW. ☐YES ☐NO
10. IS THE APPLICANT AWARE OF OTHER FUNDING SOURCES FOR REMEDIATING THE SITE? IF YES, PROVIDE SOURCES(S) AND DOLLAR AMOUNT IN THE ATTACHED PROJECT DESCRIPTION. ☐YES ☐NO

## Municipality Certification

The undersigned on behalf of the applicant does hereby certify that:

- All statements made for the purpose of obtaining State assistance for the proposed project either are set out in full in this application, or are set out in full in exhibits attached to this application and incorporated by this reference; and
- The individual whose signature appears hereon is authorized to sign this application for the municipality.

A FALSE STATEMENT MADE HEREIN IS PUNISHABLE AS A CLASS "A" MISDEMEANOR PURSUANT TO SECTION 210.45 OF THE PENAL LAW.

_____ _____

Signature of Individual Authorized to Sign the Application — Date

## Community Based Organization Certification (if applicable)

The undersigned on behalf of the Community Based Organization acting in partnership with the municipality does hereby certify that:

- The Community Based Organization is a not-for-profit corporation, exempt from taxation under section 501(c)(3) of the internal revenue code whose stated mission is promoting reuse of brownfield sites within a specified geographic area in which the Community Based Organization is located, which has 25% or more of its board of directors residing in the community in such area;
- The Community Based Organization represents a community with a demonstrated financial need;
- Not more than 25% of the members, officers or directors of the Community Based Organization are or were employed by or receiving compensation from any person responsible for a site under title 13 or title 14 of article 27 of the Environmental Conservation Law, article 12 of the navigation law or under applicable principles of statutory or common law liability; and
- The individual whose signature appears hereon is authorized to sign this application for the Community Based Organization.

A FALSE STATEMENT MADE HEREIN IS PUNISHABLE AS A CLASS "A" MISDEMEANOR PURSUANT TO SECTION 210.45 OF THE PENAL LAW.

_____ _____

Signature of Individual Authorized to Sign for the Community Based Organization — Date

**SUBMITTAL INFORMATION:**

**Four (4)** complete copies, one with original signatures, are required.

- **Three (3)** of the copies, one with original signatures, must be sent to:

  Chief, Site Control Section
  New York State Department of Environmental Conservation
  Division of Environmental Remediation
  625 Broadway
  Albany, NY 12233-7020

- **One (1)** copy must be sent to the DEC regional contact in the regional office covering the county in which the site is located. Please check our website for the address of our regional offices: http://www.dec.state.ny.us/website/der/index.html

**FOR DEPARTMENT USE ONLY:**

**ERP SITE NO:**_____ **ERP SITE T&A CODE:**_____ **PROJECT MANAGER:**_____

CERTIFIED MUNICIPAL AUTHORIZATION
TO BE PROVIDED AT A LATER DATE

## A. PURPOSE AND SCOPE

The purpose of this project is to further investigate known and suspected contamination at the former Felmont Oil Site (subject site) located at 1446 Buffalo Street, Olean, New York (Figure 1). The subject site consists of three contiguous properties with an approximate area of 22 acres located in a historically industrial area of Olean. The City of Olean and Cattaraugus County have identified the subject site as a prime candidate for restoration and redevelopment. The subject site's attributes include its size; the presence of existing infrastructure (e.g., municipal sanitary sewer, water, etc.); position within an Empire Zone; and proximity to an existing Interstate 86 interchange. However, a number of issues continue to block efforts to advance redevelopment efforts at the subject site. These issues center on the suspected presence of environmental contamination and the associated short and long term liability.

The location and configuration of the tax parcels that comprise the subject site is depicted on Figure 2. The subject site consists of three parcels identified by SBL numbers 94.47-2-28.1, 94.47-2-30 and 94.48-1-1.1. Figure 3 includes an aerial photograph of the area with the subject site identified.

The City of Olean is considering the acquisition of the Felmont Oil parcels via tax foreclosure. The actions of the City of Olean and Cattaraugus County with respect to the acquisition of these three parcels have been coordinated with the intent of consolidating the subject site under the control of the Olean Urban Renewal Agency (URA).

The project site has a long history of industrial use, having been utilized by various companies for petroleum refining from 1917 to 1955 and by the Felmont Oil Corporation for the production of anhydrous ammonia from 1964 until 1983. The Felmont Oil Corporation was listed as a large quantity hazardous waste generator on the Federal RCRIS database. To the Applicant's knowledge, the project site has not been the subject of previous environmental assessments and/or investigations. However, investigations of several adjacent former industrial properties, including the Agway Nitrogen Complex and the Van Der Horst Plant 1 and 2 Sites have confirmed the presence of surface/subsurface soil contamination, groundwater contamination, and sediment contamination within Two-Mile Creek, which is located about 0.25 miles west of the subject site's western boundary. Based upon the historical use of the project site and the results of the investigations of the adjacent former industrial sites, the following potential environmental concerns were identified in connection with the project site:

- The potential for surface and subsurface contamination in connection with the former use of the site for industrial purposes for over 85-years, including, but not limited to, spills and/or leaks from extensive petrochemical storage and processing facilities formerly located on the project site;
- The potential presence of potential underground storage tanks (USTs) and/or process piping;
- The potential for contamination associated with the former rail facilities that serviced the project site;

- The potential for contaminant migration from the Van Der Horst sites onto the project site via groundwater;
- The documented occurrence of PCBs and semi-volatile organic compounds (SVOCs) in soil on the adjacent Agway site, which was originally part of the larger refinery complex that formerly contained the project site;
- The documented occurrence of groundwater contamination by ammonia and nitrate on the adjacent Agway site;
- Potential presence of contaminated sediments sludges and/or wastewater within the remaining components of the on-site drainage system;

The scope of the site investigation developed to address these environmental concerns is detailed in the attached Draft Statement of Work for the Site Investigation/Remedial Alternatives Report (SI/RAR), and includes:

- Detailed review of historical information pertaining to the subject site;
- Site reconnaissance;
- Completion of a boundary and topographic survey;
- Development of a final SI/RAR Work Plan;
- Performance of a passive soil gas survey to identify areas containing organic contamination for further investigation;
- A limited geophysical survey to investigate areas of potential USTs;
- Completion of a subsurface investigation to further characterize the physical and chemical properties of the soil and groundwater beneath the subject site;
- A sampling and analysis program to characterize the chemistry of surface soil and potential fill materials;
- Sampling and chemical analysis of sediments from the on-site drainage control system; and
- Surface water and sediment sampling of Two-Mile Creek, which reportedly received discharges from the subject site.

## B. INTENDED FUTURE USE

The primary goals of this brownfield restoration project are to identify and remediate threats to public health, safety and the environment posed by current on site conditions, and return the property to productive commercial and/or industrial use. The latter objective will likely be accomplished through redevelopment of the subject site for commercial and/or industrial use following the completion of any required site remediation. One possible scenario for redevelopment that has been preliminarily identified by the City of Olean involves the construction of an outlet mall on the project site.

The subject site represents a viable candidate for restoration and redevelopment based upon a number of factors. The subject site's positive attributes include:

- Overall size;

- Presence of existing infrastructure (e.g. sanitary sewer, water, electric, natural gas, etc.);
- Position within an Empire Zone; and
- Proximity to an existing Interstate 86 interchange and a rail corridor.

## C. COST ESTIMATE

The estimated cost for completing the SI/RAR for the project is presented in Table 1. The estimated costs should only be used as a budgetary guideline. These costs are based upon related project experience and anticipated field conditions without the formal solicitation of contractor bids.

## D. FUNDING SOURCES

The subject site has been largely unoccupied, mostly vacant, and significantly under-utilized for over a decade. There is also substantial debt associated with the subject site, as the current owner of the subject site is several years delinquent with real property tax payments. Consequently, it is doubtful that either the current owners or the previous owner/tenants have the financial resources to correct the adverse conditions or satisfy outstanding debts associated with the subject site. Furthermore, the debt and environmental history of the subject site are likely to continue to hinder privately funded remediation and redevelopment. Therefore, the 1996 Clean Water/Clean Air Bond Act Environmental Restoration Program is the proposed primary funding source available for this project.

The Olean URA intends to fund the Site Investigation pursuant to Resolution No. _____, which provides for $176,200 to be applied to the investigation of the subject site, and authorizes the appropriation of the City's 10% share under the bond act.

## E. PROJECT BENEFITS

The proposed restoration project satisfies the criteria relating to environmental and economic benefits established in the Environmental Conservation Law (ECL) 56-0505. Additionally, the lack of opportunities for funding sources other than the 1996 Clean Water/Clean Air Bond Act Environmental Restoration Program, as discussed in the previous section, indicates that the project is a suitable candidate for funding under this program. Pursuant to the *Brownfields Procedures Handbook*, the following paragraphs provide a brief discussion concerning the project's compliance with the criteria established in ECL 56-0505.

This environmental restoration project will result in a benefit to public health, safety and the environment through the remediation of potential sources of soil, surface water and groundwater contamination occurring on the subject site. As such, the project will address historic contamination that might otherwise go unmitigated.

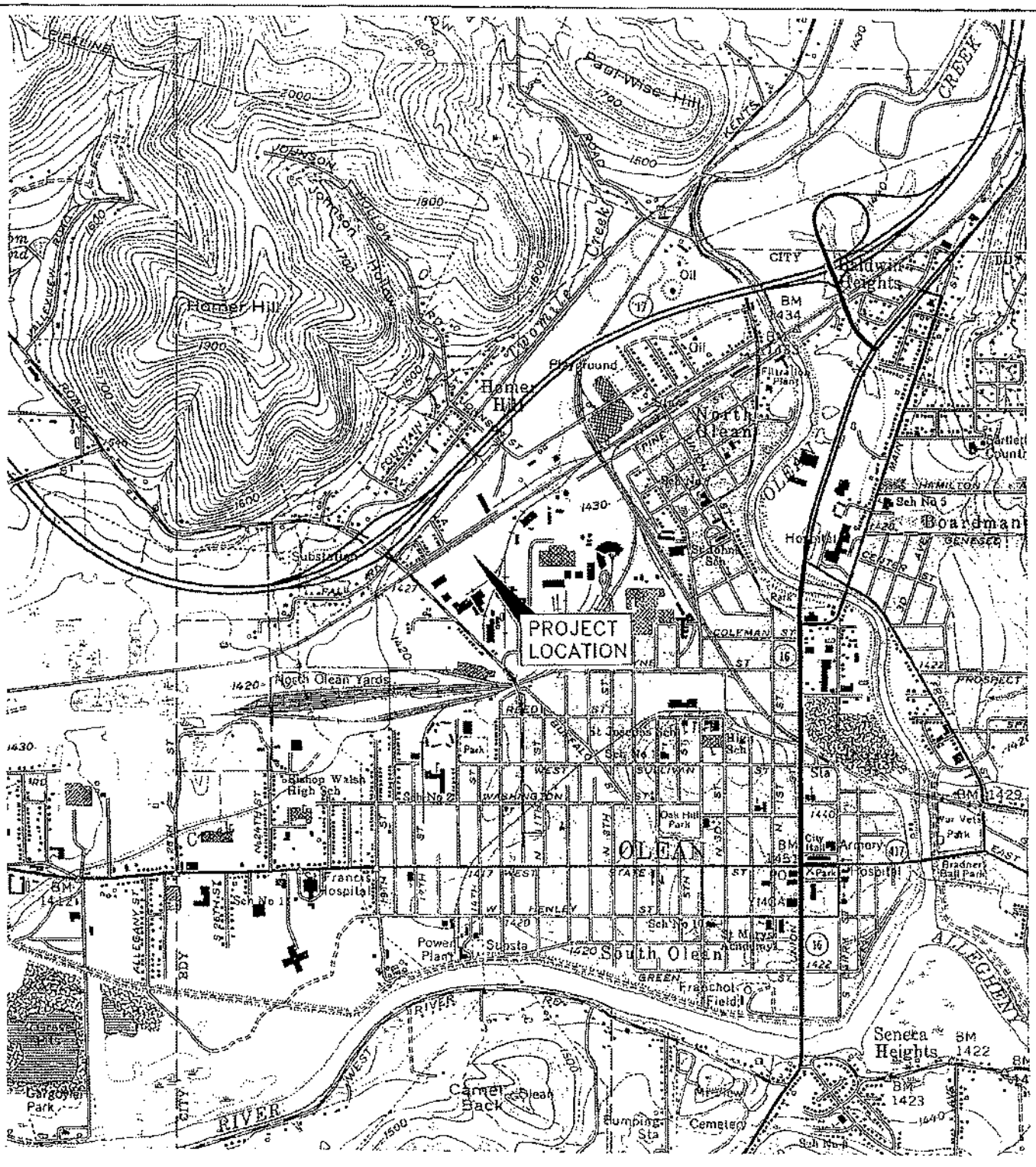
The return of the subject site to a productive use will also result in economic benefits to the community and New York State in the form of increased employment and tax revenues. Lastly the redevelopment of the subject site will take advantage of the area's existing infrastructure,

which for the most part is currently underutilized, while avoiding the potential impacts and additional costs associated with construction on undeveloped green space.

## F. ESTIMATED PROJECT SCHEDULE

The scoping and preparation of the Draft SI/RAR Work Plan would be in initiated within one month of the NYSDEC's approval of this application, and it is anticipated that the Work Plan would be finalized and approved within three months of the application approval date. Field work would be initiated within four months of application approval date, and the SI/RAR is expected to be complete within 9-12 months of this date.

# FIGURES

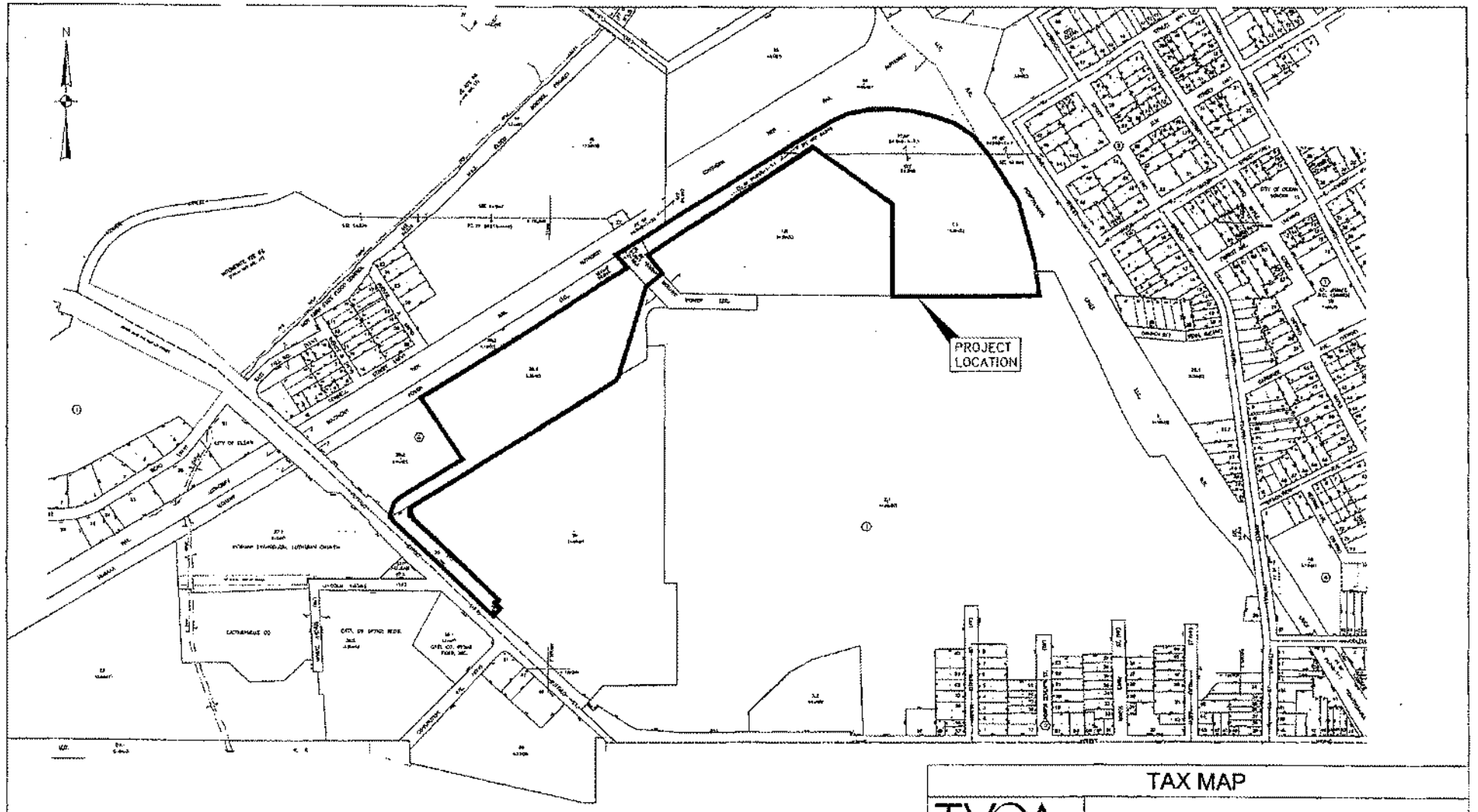



# USGS TOPOGRAPHIC MAP

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FELMONT OIL
CITY OF OLEAN, NEW YORK

| PROJECT NO. | SCALE: 1" = 2000' | DATE: 10/20/03 | FIGURE NO. 1 |
|---|---|---|---|

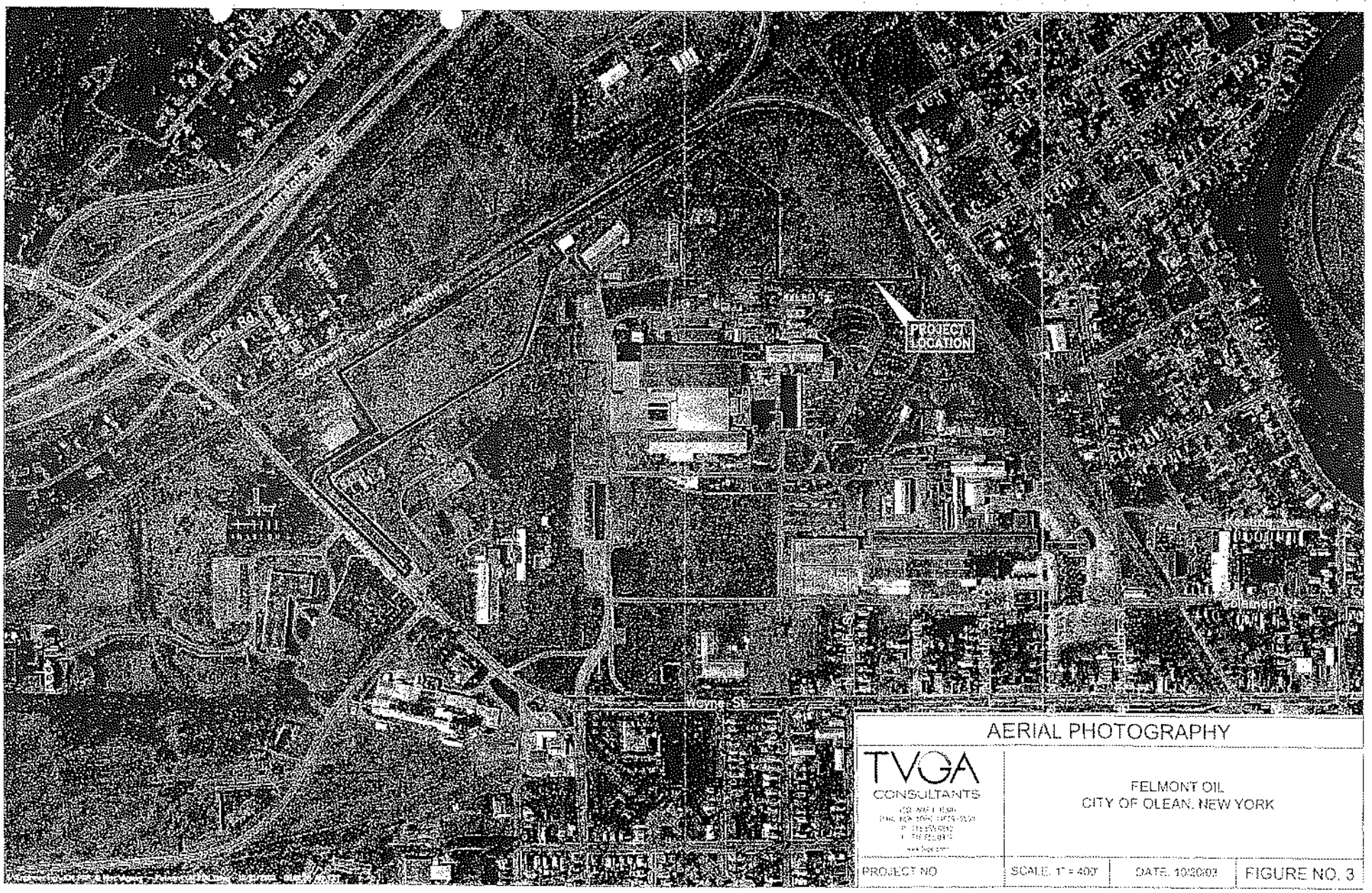



# TAX MAP

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FELMONT OIL
CITY OF OLEAN, NEW YORK

| PROJECT NO. | SCALE: 1" = 400' | DATE: 10/20/03 | FIGURE NO. 2 |
|---|---|---|---|




# AERIAL PHOTOGRAPHY

TVGA CONSULTANTS

FELMONT OIL
CITY OF OLEAN, NEW YORK

| PROJECT NO | SCALE: 1" = 400' | DATE: 10/20/07 | FIGURE NO. 3 |
|---|---|---|---|

# TABLE 1

# Table 1 - Estimated Project Cost

## SI/RAR Former Felmont Oil Site

| PHASE | TASKS | COST BREAKDOWN | | SUBTOTAL |
|---|---|---|---|---|
| SI Scoping | Historical Information Review | Labor | $6,000 | $16,500 |
| | Site Reconnaissance. | Expenses | $500 | |
| | Topographic and Boundary Survey | Survey | $10,000 | |
| SI/RAR Work Plan | SI Work Plan | Labor | $8,000 | $8,500 |
| | Field Sampling Plan | Expenses | $500 | |
| | QA/QC Plan | | | |
| | Health and Safety Plan | | | |
| | Citizen Participation Plan | | | |
| Site Investigation | Geophysical Survey | Labor | $25,000 | $99,000 |
| | Passive Soil Gas Survey | Expenses and Equipment | $4,000 | |
| | Test Pits | Geophysical | $8,000 | |
| | Soil Probes/Test Borings | Passive Soil Gas Survey | $10,000 | |
| | Monitoring Well Installation | Drilling | $10,000 | |
| | Subsurface Soil Sampling | Excavation | $2,000 | |
| | Groundwater Sampling | Laboratory and Validation | $40,000 | |
| | Surface Soil Sampling | | | |
| | Drains/Sump Sampling | | | |
| | Surface Water/Sediment Sampling | | | |
| | Survey Sample Locations | | | |
| Draft SI Report | Data Review and Evaluation | Labor | $30,000 | $30,400 |
| | Risk Assessment | Expenses | $400 | |
| | Report Preparation | | | |
| Draft RA Report | Identify/Analyze Remedial Alternatives | Labor | $17,000 | $17,400 |
| | Report Preparation | Expenses | $400 | |
| Final SI/RA Report | Finalization of Draft Reports | Labor | $4,000 | $4,400 |
| | | Expenses | $400 | |
| ***TOTAL ESTIMATED COST*** | | | | **$176,200** |
| ***NYSDEC PORTION (90%)*** | | | | **$158,580** |
| ***OLEAN URBAN RENEWAL AGENCY PORTION (10%)*** | | | | **$17,620** |

## A. SUMMARY OF ENVIRONMENTAL HISTORY

The former Felmont Oil site (project site) has been used for various industrial purposes from at least 1917 to 1983. From 1917 to 1955, the subject site was owned by several oil companies including the Standard Oil Company (SOCONY Vacuum Corporation), which conducted oil refining operations at the subject site. Historical aerial photography of the project site from 1938 depicts the presence of numerous above ground storage tanks (ASTs) and extensive refinery facilities on the project site and adjoining properties to the south and west. These large-volume ASTs were likely utilized in conjunction with refinery operations for petrochemical storage.

In 1956, the subject site was sold to the Simpson Grain Corporation, which later sold the subject site to Olean Industries in 1958. Olean Industries sold the subject site to Felmont Oil in 1964, which in turn sold the western portion of the subject site to Agway Inc. (Agway) in 1966, while continuing to conduct operations on the eastern portion of the subject site.

Felmont Oil and Agway enjoyed a symbiotic working relationship and entered into a joint venture for the production of nitrogen fertilizer. Felmont purchased natural gas that was used in combination with atmospheric air to produce anhydrous ammonia. Agway then purchased the anhydrous ammonia and carbon dioxide by-product from Felmont Oil to synthesize ammonium nitrate and urea to make urea prills, urea liquid, ammonium nitrate liquid and various nitrogen mixes. Additionally, Agway purchased water from Felmont Oil and sold steam back to Felmont Oil. Both of these facilities ceased operations in the early to mid-1980's.

A production well field was operated on the Felmont Oil facility from 1966 to 1985 to produce cooling water. The continued pumping of this well field may have resulted in drawing chromium-contaminated groundwater from the adjacent Van Der Horst No. 1 Plant Site onto the subject site. The Felmont production wells were reportedly contaminated with chromium within one year of installation in 1966.

The Felmont Oil facility reportedly operated a machine shop and compressor facilities and contained multiple electrical transformers, as well as numerous petroleum containing ASTs. This indicates the past potential for the on site storage and use of solvents, the presence of PCB-containing electrical equipment, and the use of petroleum products. Furthermore, the Felmont Oil Corporation was listed as a large quantity hazardous waste generator on the Federal RCRIS database.

To the Applicant's knowledge, the project site has not been the subject of previous environmental assessments and/or investigations. However, investigations of several adjacent former industrial properties, including the Agway Nitrogen Complex and the Van Der Horst Plant 1 and 2 Sites have confirmed the presence of surface/subsurface soil contamination, groundwater contamination, and sediment contamination within Two-Mile Creek, which is located about 0.25 miles west of the subject site's western boundary. Based upon the historical use of the project site and the results of the investigations of the adjacent former industrial sites, the following potential environmental concerns were identified in connection with the project site:

- The potential for surface and subsurface contamination in connection with the former use of the site for industrial purposes for over 85-years, including, but not limited to, spills and/or leaks from extensive petrochemical storage and processing facilities formerly located on the project site;
- The potential presence of potential underground storage tanks (USTs) and/or process piping;
- The potential for contamination associated with the former rail facilities that serviced the project site;
- The potential for contaminant migration from the Van Der Horst sites onto the project site via groundwater;
- The documented occurrence of PCBs and semi-volatile organic compounds (SVOCs) in soil on the adjacent Agway site, which was originally part of the larger refinery complex that formerly contained the project site;
- The documented occurrence of groundwater contamination by ammonia and nitrate on the adjacent Agway site;
- Potential presence of contaminated sediments sludges and/or wastewater within the remaining components of the on-site drainage system;

A site investigation, however, is necessary to confirm or deny the presence of contamination on the project site, as well as to define the magnitude and extent of any contamination encountered.

# *PRELIMINARY STATEMENT OF WORK*

## *SITE INVESTIGATION/ REMEDIAL ALTERNATIVES REPORT*

*FORMER FELMONT OIL SITE*
*1446 BUFFALO STREET, CITY OF OLEAN*
*CATTARAUGUS COUNTY, NEW YORK*

Prepared for:

**OLEAN URBAN RENEWAL AGENCY**
101 EAST STATE STREET
P.O. BOX 668
OLEAN, NY 14760-0668

Prepared by:

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November 2003

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**FIGURES**

FIGURE 1: SITE LOCATION MAP

ATTACHMENT A: SI REPORT TABLE OF CONTENTS
ATTACHMENT B: RA REPORT TABLE OF CONTENTS

## 1.0 GENERAL DISCUSSION

The *Statement of Work* (SOW) outlined herein has been developed by TVGA Consultants for the completion of a *Site Investigation/Remedial Alternatives Report* (SI/RAR) for the former Felmont Oil Site located at 1446 Buffalo Street in the City of Olean, Cattaraugus County, New York (project site). Figure 1 is included as a Site Location Map. This SOW has been prepared on behalf of the Olean Urban Renewal Agency (URA) in association with the possible environmental restoration and redevelopment of the project site under the Brownfields Program administered by the New York State Department of Environmental Conservation (NYSDEC). The Olean URA is applying to the NYSDEC for State financial assistance under Title 5 of the Clean Water/Clean Air Bond Act of 1996 for the investigation of the project site. The purpose of the SI/RAR is to investigate the nature and extent of suspected contamination at the project site and to develop and evaluate remedial alternatives, as appropriate.

The project site consists of approximately 22-acres situated in a historically industrial area of Olean. The site is currently vacant except for the remnants of a former industrial complex, including a number of former building foundations and probable buried utilities.

The project site has a long history of industrial use, having been utilized by various companies for petroleum refining from 1917 to 1955 and by the Felmont Oil Corporation for the production of anhydrous ammonia from 1964 until 1983. The Felmont Oil Corporation was listed as a large quantity hazardous waste generator on the Federal RCRIS database. To the Applicant's knowledge, the project site has not been the subject of previous environmental assessments and/or investigations. However, investigations of several adjacent former industrial properties, including the Agway Nitrogen Complex and the Van Der Horst Plant 1 and 2 Sites have confirmed the presence of surface/subsurface soil contamination, groundwater contamination, and sediment contamination within Two-Mile Creek, which is located about 0.25 miles west of the subject site's western boundary. Based upon the historical use of the project site and the results of the investigations of the adjacent former industrial sites, the following potential environmental concerns were identified in connection with the project site:

- The potential for surface and subsurface contamination in connection with the former use of the site for industrial purposes for over 85-years, including, but not limited to, spills and/or leaks from extensive petrochemical storage and processing facilities formerly located on the project site;
- The potential presence of potential underground storage tanks (USTs) and/or process piping;
- The potential for contamination associated with the former rail facilities that serviced the project site;
- The potential for contaminant migration from the Van Der Horst sites onto the project site via groundwater;
- The documented occurrence of PCBs and semi-volatile organic compounds (SVOCs) in soil on the adjacent Agway site, which was originally part of the larger refinery complex that formerly contained the project site;
- The documented occurrence of groundwater contamination by ammonia and nitrate on the adjacent Agway site;
- Potential presence of contaminated sediments sludges and/or wastewater within the remaining

components of the on-site drainage system;

The following sections outline the primary tasks associated with the completion of the SI/RAR for the project site. As such, information and data obtained during preliminary stages of the site investigation (e.g., review of historical records) will direct the nature and extent of subsequent phases of the investigation.

## 2.0 SITE INVESTIGATION/REMEDIAL ALTERNATIVES REPORT WORK PLAN

TVGA will prepare a *SI/RAR Work Plan* that provides a detailed description of the approach to be employed in completing the SI/RAR. The Work Plan will be prepared for NYSDEC review and will include the items discussed below.

### 2.1 Scoping of SI/RAR

Scoping of the SI/RAR will involve a detailed review of historical information, completion of a site reconnaissance, and completion of a boundary/topographical survey.

TVGA will complete a review of historical information pertaining to the subject site and operations occurring thereon. Existing data concerning historical site operations contained in environmental reports previously completed for the property and nearby properties will be the primary source of information relative to on-site chemical use and storage, waste generation and disposal, and environmental discharges. If necessary, this information will be supplemented through the review of additional records and the performance of additional interviews with former facility employees.

A site reconnaissance will be completed to familiarize ourselves with the subject site, assess the subject site for recognized environmental conditions, and evaluate for equipment access during the site investigation phase of work.

A boundary and topographical survey of the entire subject site will be performed by a New York State licensed land surveyor for the purpose of developing an accurate base map and locating the horizontal and vertical position of relevant site features. Elevations will be relative to a regional, local or project specific datum. USGS benchmarks will be used if present within 0.5 miles of the subject site, and will take precedence over the use of project specific datum.

Based upon this information, and in consultation with the Olean URA and the NYSDEC, TVGA will define the remedial goals of the project consistent with 6 NYCRR Part 375 and reflective of the intended end use of the property, and will identify likely decisions, data requirements and the schedule for the project.

### 2.2 Site Investigation Work Plan

TVGA will prepare a *Site Investigation* (SI) *Work Plan* detailing the methods to be employed to characterize the subject site. The SI Work Plan will present the initial evaluation of the

existing data and background information performed during the scoping process, and will define the scope and objectives of site characterization activities, to the extent possible. Because the SI/RAR process is dynamic and iterative, the *SI Work Plan* will be modified during the site characterization process to incorporate new information and refined project objectives, as necessary.

The SI Work Plan will identify the methods to be utilized to generate sufficient information to:

- Identify and characterize the sources of contamination;
- Describe the amount, concentration, persistence, mobility, state, and other significant characteristics of the contamination present;
- Evaluate the extent to which contaminants have migrated or are expected to migrate and whether future migration may pose a threat to human health or the environment;
- Identify all actual routes of exposure;
- Identify actual populations and environmental receptors which may be at risk;
- Define hydrogeological factors (e.g., soil permeability, depth to saturated zone, hydrologic gradients, proximity to a drinking water aquifer, flood plain, or wetland);
- Describe groundwater characteristics and current and potential groundwater use;
- Identify active private wells within 1,000 feet of the subject site and be prepared to develop an appropriate sampling plan for them, if necessary;
- Identify potentially affected surface water classifications and existing use designations;
- Quantitatively describe the property's contribution to an air, land, water, biota, or food chain contamination problem;
- Determine the extent to which contamination levels pose an unacceptable risk to public health and/or the environment;
- Identify local ordinances and rules which may pertain to the site; and
- Discuss other appropriate factors.

## 2.3 Site Specific Field Sampling Plan

The *Field Sampling Plan* (FSP) will be prepared to identify and describe: (1) sampling objectives; (2) sampling equipment and methods; (3) sample types, locations and frequency;

(4) sample identification system; (5) sample handling and analysis; (6) field documentation and record keeping procedures; and (7) a schedule of events and deliverables.

2.4 Quality Assurance/Quality Control Plan

The *Quality Assurance/Quality Control* (QA/QC) *Plan* will address all elements of the site investigation and will include:

- A project description;
- A project organization chart illustrating the lines of responsibility of the sampling personnel;
- Quality assurance objectives for data;
- Sample custody procedures;
- The type and frequency of calibration procedures for field and laboratory instruments, internal quality control checks, and quality assurance performance audits and system audits;
- Preventative maintenance procedures and schedule and corrective action procedures for the field and laboratory instruments;
- Specific procedures to assess data precision, representativeness, comparability, accuracy, and completeness of specific measurement parameters; and
- Data documentation and tracking procedures.

2.5 Health And Safety Plan

A site specific *Health and Safety Plan* (HASP) complying with 29 CFR 1910.120 will be prepared prior to the commencement of field activities. The HASP will provide a site background discussion and describe personnel responsibilities, protective equipment, health and safety procedures and protocols, decontamination procedures, personnel training, and type and extent of any necessary medical surveillance. Procedures for protecting third parties, such as visitors or the surrounding community, will also be specified in the HASP.

2.6 Citizen Participation Plan

The *Citizen Participation* (CP) *Plan* will describe the types of information to be provided to the public and outline the opportunities for community comment and input during the SI/RAR. This Plan will include a preliminary list of potentially interested parties, a list of information repositories, community outreach, and other appropriate citizen participation activities. Furthermore, the CP Plan will describe the procedures to be used to ensure that:

- Pertinent documents will be readily available to the public;
- Communication with the public takes place at critical decision points in the remedial program;
- Informational notices are mailed out and/or announced in the local media;
- Project staff are identified and made accessible to the public; and
- Interested and/or affected parties are identified.

## 3.0 SITE INVESTIGATION

The site investigation will be performed in accordance with the *SI/RAR Work Plan* and will involve the field work necessary to complete the site characterization program, including but not limited to: a geophysical survey, test borings, monitoring well installation, test pit excavations, environmental sampling and measurement, field screening, laboratory analyses, surveying, and data validation. The site investigation will provide sufficient information to:

- Further identify the study area of the SI/RAR;
- Identify potential remedial alternatives;
- Identify probable remedial goals and determine the extent to which they have been exceeded or contravened; and
- Perform a qualitative health and environmental risk assessment, as necessary.

### 3.1 Preliminary Scope of Site Investigation

The preliminary scope of the site characterization program to be detailed in the *SI/RAR Work Plan* is outlined in the following subsections. This preliminary scope is intended to define the initial extent of site characterization activities and will be modified as necessary to account for information obtained during project scoping. Data gathered as a result of these activities will be utilized to determine the necessity for additional investigation of the subject site.

#### 3.1.1 Subsurface Investigation

A subsurface investigation will be conducted to characterize soil and groundwater conditions occurring on the subject site. The investigation will include the performance of a limited geophysical survey to investigate for potential metallic anomalies; and the installation of test pits, soil probes, test borings and monitoring

wells to facilitate the collection and chemical analysis of soil/fill and groundwater samples. The preliminary scope of the subsurface investigation will include the following:

- A site-wide passive soil gas survey will be performed using sorbent-based vapor collectors to identify potential areas of concern. The vapor collectors will be placed in both suspect areas of the subject site that are identified during the historical review and on a grid pattern to provide general coverage across the subject site. Approximately 50 vapor collectors will be installed. After approximately 10 days, the vapor collectors will be retrieved and analyzed for volatile organic compounds and semi-volatile organic compounds. The results from the survey will be utilized to focus the remainder of the subsurface investigation activities.

- A limited geophysical survey will be completed to investigate metallic anomalies (e.g. buried drums or abandoned USTs) potentially present in suspect areas identified during the historical review and site reconnaissance. The site has been used for various industrial purposes for over 85 years, including oil refining which indicates the potential for the presence of USTs.

- Test pits will be completed in areas of the subject site where the geophysical survey results define metallic anomalies. Additionally, test pits will be excavated in areas where soil probes and/or test borings might prove ineffective (i.e. within former building footprints). This task will facilitate the investigation of metallic anomalies; investigation of the nature and thickness of debris/fill; and the collection, screening and chemical analysis of soil and/or fill samples. It is anticipated that this will include one day of test pit excavations.

- A network of test probes will be advanced across the property using direct hydraulic-push sampling equipment (e.g., geoprobe or earthprobe) to collect continuous subsurface soil samples. The test probing will be completed in an effort to: characterize surficial geology across the site; define the areal extent and thickness of fill material, if any; and identify and delineate areas of subsurface contamination via field screening of soil gas and soil samples, and the chemical analysis soil samples. The location of the test probes will be selected based upon a grid system, the results of the soil gas survey and previously identified areas of concern. It is anticipated that this will include approximately two days of test probing.

- Eight (8) test borings will be drilled on the project site with a drill rig to facilitate the classification, field screening and collection of subsurface soil samples for laboratory analysis. All eight (8) of the test borings will be completed with groundwater monitoring wells to enable the determination of

groundwater flow direction and gradient, and the hydraulic conductivity of the upper-most water-bearing zone, as well as the collection of groundwater samples for chemical analysis.

Test boring and monitoring well locations will be based upon the project objectives, ease of access, freedom from obstructions, and safety considerations (appropriate set backs from overhead wires and buried services). Based upon the previous drilling program on the subject property, the depth to groundwater is around 20 feet below ground surface (bgs). Therefore, it is assumed that the average depth of the monitoring wells will be 30 feet bgs. All test borings will be advanced using 4-1/4-inch I.D. hollow stem augers with continuous split spoon sampling. The wells will be constructed of 2-inch Schedule 40 screens and risers, and will be fitted with locking caps.

- All subsurface soil/fill samples collected from test pits, soil probes and test borings will be screened for Total Organic Vapors (TOVs) using a photoionization detector. Visual observations will also be made to evaluate for discolored or stained soils. Field screening results will be used to select up to 15 soil samples for chemical analysis.

- The eight (8) newly installed monitoring wells will be developed and gauged to determine static water levels for the purpose of identifying groundwater flow direction and gradient.

- In-situ hydraulic conductivity tests will be completed on a portion of the existing wells and all eight (8) new monitoring wells to determine the permeability of the upper most water-bearing unit.

- Representative groundwater samples will be obtained from the eight (8) newly installed monitoring wells for chemical analysis.

- Soil/fill and groundwater samples will be submitted and analyzed for volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs) and PCBs appearing on the Target Compound List (TCL) using NYSDEC Analytical Services Protocol (ASP) Method 2000. The samples will also be analyzed for the metals appearing on the Target Analyte List (TAL) using ASP methods. Groundwater samples will also be analyzed for Total Organic Nitrogen (TON). All chemical analyses will be performed by a laboratory that is accredited under the New York State Environmental Laboratory Approval Program (ELAP) Contract Laboratory Program (CLP).

- A survey will be completed to locate the actual location of the test borings, monitoring wells, monitoring well casing elevations, test pits, soil probes and

building sample locations. These locations will be superimposed on the base map.

3.1.2 Surface Soil/Fill Investigation

A sampling and analysis program will be implemented to characterize the chemistry of surface soil and/or fill materials. Grab samples will be collected from previously identified areas of concern (e.g., locations of former ASTs, areas of stained soil, etc.), as well as from points selected to represent conditions across the subject site. We have estimated that ten (10) surface soil samples will be collected for analysis. In addition, five (5) background soil samples will be collected from appropriate locations for the purpose of defining local baseline soil conditions. These samples will be analyzed for SVOCs and PCBs appearing on the TCL and metals appearing on the TAL.

3.1.3 Drains, Sewers and Sumps Investigation

TVGA will visually inspect remaining floor drains, sewers, sumps, vaults and accessible utility conduits in an effort to identify and sample suspect solids, liquids and/or sludges that may be present. The resulting samples will be chemically analyzed to characterize the materials that are present in these structures. The method of sample collection will be determined based upon the type of matrix (e.g., aqueous or non-aqueous). TVGA has estimated that five (5) samples will collected for analysis.

Collected samples will be submitted and analyzed for analyzed for VOCs, SVOCs and PCBs appearing on the TCL and metals appearing on the TAL

3.1.4 Surface Water/Sediment Sampling

TVGA will conduct a reconnaissance of Two Mile Creek in an attempt to locate point source discharge locations other than the known discharge pipe. Additionally, interviews with former employees and a review of any historical plans obtained will be completed to ascertain the source, location and end point of any discharges to the creek other than the known location. One (1) surface water sample will be collected up-stream and down-stream from the known discharge pipe and one (1) sample will be collected at the discharge point. Sediment samples will be collected from each of the surface water sampling stations. Additional samples may be collected based on the outcome of the reconnaissance.

TVGA has assumed that five (5) surface water and five (5) sediment samples will be collected from Two Mile Creek. The sediment and surface water samples will be collected as grab samples, and will be analyzed for VOCs, SVOCs and PCBs appearing on the TCL and metals appearing on the TAL.

## 4.0 DATA EVALUATION AND ASSESSMENT OF RISKS

Once the accuracy and precision of the data has been verified, evaluation of the data will be performed. All site investigation data will be analyzed and the results of the analyses will be presented in an organized and logical manner so that the relationship between site investigation results for each medium are apparent. Typical activities associated with data evaluation include:

- Data review, reduction and tabulation;
- Comparison with applicable regulatory levels; and
- Environmental fate and transport modeling/evaluation.

Using these data, a risk assessment will be performed to qualitatively assess the potential human health and environmental risks associated with the site. The following activities are typically associated with this task:

- Identification of contaminants of concern;
- Exposure assessment;
- Toxicity assessment; and
- Risk Characterization.

## 5.0 SITE INVESTIGATION REPORT

A SI Report will be prepared which: (1) summarizes and documents the investigative methods employed to Characterize the site; (2) describes the physical characteristics of the site; (3) defines the nature and extent of contamination; (4) presents the results of contaminant fate and transport modeling/evaluations; (5) identifies potential health and environmental risks posed by the site; and (6) provides recommendations relative to future work requirements and remedial action objectives. A draft Table of Contents for the SI Report is presented in Attachment A.

## 6.0 DEVELOPMENT AND ANALYSIS OF REMEDIAL ALTERNATIVES

### 6.1 Development of Alternatives

A range of remedial alternatives will be developed to address contaminated media at the site, as deemed necessary in the SI, and to provide adequate protection of human health and the environment. The potential alternatives will encompass a range of alternatives including treatment, containment and removal options.

General response actions will be identified for each medium of interest. General response actions typically include containment, excavation, extraction, treatment, disposal or other

actions, singly or in combination to satisfy remedial action objectives. Volumes or areas of media to which general response actions may apply will be identified. Subsequently, treatment technologies for each general response action will be identified and screened relative to their technical and economic feasibility for implementation at the site, and the potential technologies will be combined into media-specific or site-wide alternatives. The alternatives will be screened on a general basis with respect to their effectiveness, implementability, and cost, to limit the number of alternatives that undergo the detailed analysis and to provide consideration of the most promising options.

### 6.2 Detailed Analysis of Alternatives

A detailed analysis of each alternative will be completed in accordance with the requirements outlined in 6 NYCRR Part 375-1.10, Remedy Selection. An individual analysis of each alternative will be performed relative to the following criteria:

- Overall protection of human health and the environment;
- Compliance with Standards, Criteria and Guidance;
- Short-term effectiveness;
- Long-term effectiveness and permanence;
- Reduction of toxicity, mobility, or volume;
- Feasibility;
- Community Acceptance.

Furthermore, a comparative analysis of all of the remedial alternatives with respect to each other will be completed in terms of the above listed criteria.

## 7.0 REMEDIAL ALTERNATIVES REPORT

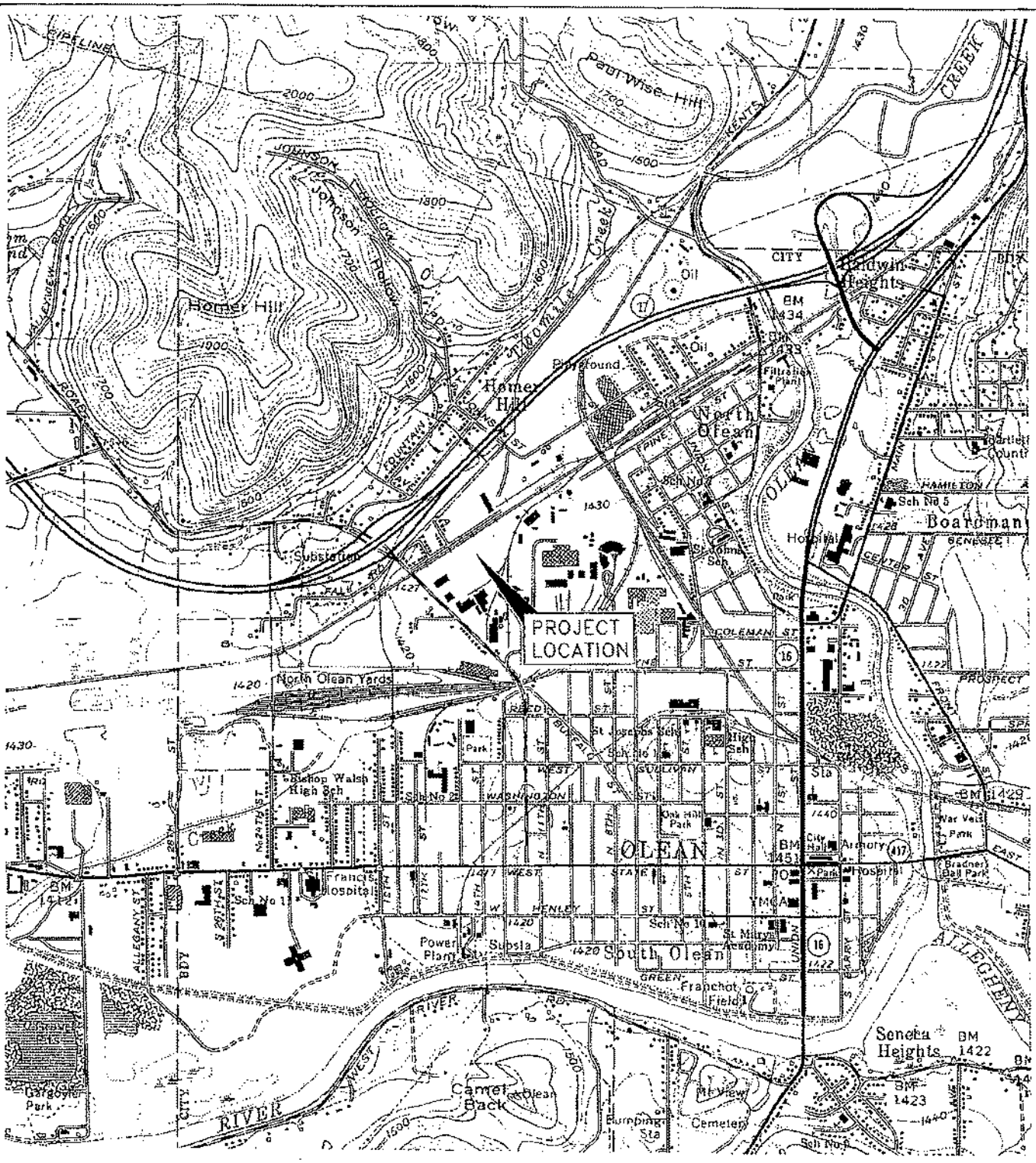
A *Remedial Alternatives Report* (RAR) will be prepared that describes the process utilized to develop and screen remedial alternatives, presents the results of the detailed analysis of alternatives, and identifies the most suitable remedy considering the remedial action objectives. A draft Table of Contents for the RAR is presented in Attachment B. The RAR will present sufficient information to enable the preparation of a *Proposed Remedial Action Plan* (PRAP), which summarizes the proposed remedy for public review and comment.

## 8.0 FINAL SI/RAR

A final SI/RAR that addresses comments from the NYSDEC, NYSDOH and the Olean URA will be prepared. As part of this process, responses to one (1) round of comments on the draft reports from each of these

agencies will be prepared, and the documents will be revised after obtaining agency concurrence on said responses. The Final SI/RAR will serve as the bases for the PRAP and *Record of Decision* (ROD) for the project.

# FIGURES




# USGS TOPOGRAPHIC MAP

TVGA CONSULTANTS
1000 MAPLE ROAD
ELMA, NEW YORK 14059-9530
P. 716.655.8842
F. 716.655.0937
www.tvga.com

FELMONT OIL
CITY OF OLEAN, NEW YORK

| PROJECT NO. | SCALE: 1" = 2000' | DATE: 10/20/03 | FIGURE NO. 1 |
|---|---|---|---|

# ATTACHMENT A

# SITE INVESTIGATION REPORT
# TABLE OF CONTENTS

**SITE INVESTIGATION REPORT**
**TABLE OF CONTENTS**


Executive Summary

1. Introduction

    1.1 Purpose of Report
    1.2 Site Background
        1.2.1 Site Description
        1.2.2 Site History
        1.2.3 Previous Investigations
    1.3 Report Organization

2. Study Area Investigation

    2.1 Includes field activities associated with site Characterization. These may include physical and chemical monitoring of some, but not necessarily all, of the following:
        2.1.1 Surface Features (topographic mapping, etc.) natural and manmade features
        2.1.2 Contaminant Source Investigations
        2.1.3 Meteorological Investigations
        2.1.4 Surface-Water and Sediment Investigations
        2.1.5 Geological Investigations
        2.1.6 Soil and Vadose Zone Investigations
        2.1.7 Groundwater Investigations
        2.1.8 Human Population Surveys
        2.1.9 Ecological Investigations
    2.2 If technical correspondence documenting field activities were prepared, they may be included in an appendix and summarized in this report chapter.

3. Physical Characteristics of the Study Area

    3.1 Includes results of field activities to determine physical characteristics. These may include some, but not necessarily all, of the following:
        3.1.1 Surface Features
        3.1.2 Meteorology
        3.1.3 Surface Water Hydrology
        3.1.4 Geology
        3.1.5 Soils
        3.1.6 Hydrogeology
        3.1.7 Demography and Land Use
        3.1.8 Ecology

4. Nature and Extent of Contamination

4.1 Presents the results of site Characterization, both natural chemical components and contaminants in some, but not necessarily all, of the following media:

- 4.1.1 Sources (lagoons, sludges, tanks, etc.)
- 4.1.2 Soils and Vadose Zone
- 4.1.3 Groundwater
- 4.1.4 Surface Water and Sediments
- 4.1.5 Air

5. Contaminant Fate and Transport

- 5.1 Potential Routes of Migration (i.e., air, groundwater, etc.)
- 5.2 Contaminant Persistence
  - 5.2.1 If they are applicable (i.e., for organic contaminants), describe estimated persistence in the study area environment and physical, chemical, and/or biological factors of importance for the media of interest.
- 5.3 Contaminant Migration
  - 5.3.1 Discuss factors affecting media of importance (e.g., sorption onto soils, solubility in water, movement of groundwater, etc.)
  - 5.3.2 Discuss modeling methods and results, if applicable.

6. Baseline Risk Assessment (if necessary)

- 6.1 Public Health Evaluation
  - 6.1.1 Exposure Assessment
  - 6.1.2 Toxicity Assessment
  - 6.1.3 Risk Characterization
- 6.2 Environmental Assessment

7. Summary and Conclusions

- 7.1 Summary
  - 7.1.1 Nature and extent of Contamination
  - 7.1.2 Fate and Transport
  - 7.1.3 Risk Assessment
- 7.2 Conclusions
  - 7.2.1 Data Limitations and Recommendations for Future Work
  - 7.2.2 Recommended Remedial Action Objectives

Appendices

A. Technical Correspondence on Field Activities (if applicable)
B. Analytical Data and QA/QC Evaluation Results
C. Risk Assessment Methods

# ATTACHMENT B

# REMEDIAL ALTERNATIVES REPORT
# TABLE OF CONTENTS

**REMEDIAL ALTERNATIVES REPORT**
**TABLE OF CONTENTS**


Executive Summary

1. Introduction
   - 1.1 Purpose and Organization of Report
   - 1.2 Background Information (Summarized from SI Report)
     - 1.2.1 Site Description
     - 1.2.2 Site History
     - 1.2.3 Nature and extent of Contamination
     - 1.2.4 Contaminant Fate and Transport
     - 1.2.5 Baseline Risk Assessment (if appropriate)

2. Identification and Development of Alternatives
   - 2.1 Introduction
   - 2.2 Remedial Action Objectives

     Presents the development of remedial action objectives for each medium of interest (i.e., groundwater, soil, surface water, air, etc.) For each medium, the following should be discusses:
     - Contaminants of interest
     - Development of remediation goals
   - 2.3 General Response Actions

     For each medium of interest, describes the estimation of areas or volumes to which treatment, containment, or exposure reduction technologies may be applied.
   - 2.4 Development of Alternatives

     Describes rationale for combination of general response actions into alternatives. Note: This discussion may be by medium or for the property as a whole.

3. Detailed Analysis of Alternatives
   - 3.1 Introduction
   - 3.2 Individual Analysis of Alternatives
     - 3.2.1 Alternative 1
       - 3.2.1.1 Description
       - 3.2.1.2 Assessment
     - 3.2.2 Alternative 2
       - 3.2.2.1 Description
       - 3.2.2.2 Assessment
     - 3.2.3 Alternative 3
   - 3.3 Comparative Analysis

Bibliography

**Appendices**

# *Appendix F*

# *Letter Addressed to Mrs. Christy Benes of AMEC from Susan J. Beates, Historian/Curator II of the Drake Well Museum*

Commonwealth of Pennsylvania
**Pennsylvania Historical and Museum Commission**
**Drake Well Museum**
202 Museum Lane, Titusville Pennsylvania 16354-8902
(814) 827-2797 Fax (814) 827-4888
Website: www.drakewell.org
E-mail: drakewell@usachoice.net

March 10, 2006

Ms. Christy Benes
Environmental Science Professional III
AMEC Earth & Environmental, Inc.
285 Davidson Ave., Suite 100
Somerset, NJ 08873

Dear Ms. Benes,

After four hours of searching texts, the enclosed and the information below is all we have been able to find. I hope other institutions have been able to provide more help than Drake Well has. The following entries at least provide dates which could be examined in the newspapers of the era for additional information. There were no entries for the Eclipse Refinery.

*Derrick's Handbook of Petroleum* (Oil City: Derrick Publ. Co., 1898), p. 547 1892 June 9, fire at Acme Refinery, an employee burned to death. Loss $50,000

*Derrick's Handbook of Petroleum* v.II (1900), p. 393 1882 July 27, A tank and 23,000 bbls. of benzine burned at the Acme refinery, Olean, having been struck by lightning.

p. 49 1899 Jan. 22 Fire at Acme Oil Refinery, Olean, destroys several tanks and stills and 15 cars, entailing a loss of $50,000.

*The Petroleum Age* (Bradford) 1886 contains a full page ad for the Acme Oil Company manufacturers of the Crown Acme Oil – "Best Illuminator in the World", Works at Olean, NY and Titusville, PA, main office, 26 Broadway, NY (Standard Oil) so they made kerosene there. In the October, 1885 issue, p. 1121, there's a detailed description of the company "of Titusville" but it mentions the Olean works. Their illuminating oil (kerosene) supplied the domestic market. "It would be difficult to call for any product of petroleum that the Acme Oil Company does not manufacture or supply to its trade including refined oils of all grades-napthas, crude, redistilled and deodorized, gasolines and lubricating oils, including cylinder oils of the following brands: "Capital," "Omega," "Model," "Eclipse," "Valve" and "Matchless", the world-renowned "Eldorado" engine oil, wool, spindle, miners' sewing-machine, rubbing, harness, screw-cutting, torch, neutral, signal, paraffine and black oils; white paraffine wax, opaline, hoof ointment (petrolatum) and mica axle grease."

Pipelines led to and from every refinery by the 1880s. The United Pipe Lines dominated the Olean area field and had a huge tank farm outside of town. The United Pipelines eventually became part of National Transit.

Your company may pay by credit card or check made payable to: The Friends of Drake Well, Inc. I wish you good luck on your project.

Sincerely,

Susan J. Beates

Susan J. Beates
Historian/Curator II

# *Appendix G*

# *Manuscript of an Olean Refinery Tour Written Circa 1952*

Olean Refinery is one of sixteen refineries of the Socony-Vacuum Oil Company, Incorporated which are engaged in the manufacture of finished petroleum products from crude oil. We are one of the medium sized refineries of the Company. It is interesting to know that an integrated company is one which participates in every phase of the industry from securing the raw materials to the sale of the finished product to the consumer.

Functionally, the oil industry is divided into five major divisions, namely Research, Production, Transportation, Marketing and Manufacturing. Our Company engages in each of these activities. Of these divisions we are especially interested in the manufacturing as it concerns each of us. The major petroleum products are vapor gas, gasoline, kerosene, fuel oils, lubricating oils, wax, greases and asphalts which are produced in one or another of the sixteen plants. Socony-Vacuum's two major products, gasolines and motor oils, are marketed under the names of Mobilgas and Mobiloil. Socony-Vacuum trademarks, the Flying Red Horse and the Gargoyle, are two of the best known in the world. The Flying Red Horse is the Pegasus of Greek mythology. The Gargoyle is the symbol of the triumph of good over evil.

The Olean Refinery began to process oil about seventy-six years ago. The present Olean Refinery is a consolidation of two refineries built in the oil boom days of the Pennsylvania and New York State oil fields and was started approximately twenty years after the discovery in 1859 of the now famous Drake well near Titusville, Penna.

The portion of the Refinery now known as #1 Works was started in 1876 by Wing, Wilbur & Company of Franklin, Pennsylvania and was named the Eclipse Lubricating Oil Co., Ltd. The portion of the Refinery known as #2 and #3 Works was started by Wing, Wilbur & Company of Franklin, Penna. in 1877. In 1878 the property was purchased by the Acme Oil Company of New York which was an affiliate of the Standard Oil Company. In 1902 the Acme Works was consolidated with the Vacuum Oil Company and was operated under the name of the Vacuum Oil Company, which name was held until the consolidation with the Standard Oil Company of New York and in 1931 became a part of the present Socony-Vacuum Oil Company of New York.

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## CRUDE PIPE STILL

The Crude Pipe Still is the primary or first distillation process of the crude oil as it is received in the refinery. Here we see the several components as the crude oil is processed in the unit. (With the exception of the cylinder stocks and gases, you will see them in the look boxes as they are produced). The look boxes afford the Stillman the opportunity to observe the color and volume of the products as they are separated from the crude oil in the towers of the still. We process through this still, which was built in 1928, only 100% Pennsylvania Crude Oil for which this unit was primarily built and no crude other than Pennsylvania has ever been run in this Crude Still.

## SOLVENT TREATING PLANT

The Solvent Treating Plant was completed in 1934. There have been several modifications and changes since that time, the changes dealing primarily with the type of solvents used to remove the tar and sludge from the base stocks, and the installation of new equipment to increase production. This unit is one of the many important processing operations in the manufacture of petroleum products.

## #2 WORKS

#2 Works now consists of bulk oil loading, treating, and storage departments. The distillate that you observed at the Crude Pipe Still is treated in the continuous agitators and the finished product is known as Mobil Kerosene and Diesel Fuels. Here we also blend to proper specifications the household fuel oil that you may use in heating your home. The other storage tanks contain raw and finished products, others awaiting shipment or further processing.

## CENTRAL BOILER HOUSE

The Central Boiler House provides air, steam, and electric power for the refinery. The latest additions were completed in 1932, and since that time it has been considered one of the better equipped power houses in this area. It contains seven 800 horse-power boilers operating at 215 pounds pressure and three electric generators with a total capacity of 3300 kilowatts.

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## CAFETERIA

The Cafeteria provides noon-day lunches for all who wish to use this facility. The meals are well prepared and are served at below cost to the employees of the refinery.

## CENTRAL SHOPS

The Central Shops service the various units of the Refinery and house the Tool Room, Carpenter, Machine, Welding, Boiler, Blacksmith and Electrical Shops. Here you see the various types of work in progress and stages of completion.

## B-K PLANT

The Benzol-Ketone dewaxing plant was completed in 1936. Here we remove wax and petrolatum from the base stocks and oil solutions. The household wax you may purchase at your local stores could have been produced at this unit. The modern oil you use in your auto has to meet severe climatic changes. It is at this unit we remove the wax to meet cold test specifications.

## #1 DISTILLATION DEPARTMENT

When you approach the Distillation Department of #1 Works you will hear the roaring of the fires in the furnaces which assures you that one of the many products produced is now in the making. Normally we fractionate distillate and oil-naphtha solutions through these units.

## LABORATORY

The Works Laboratory personnel inspect samples of all products produced in the refinery. Here we may see several of the tests as they are being conducted. This work is very exacting and requires constant observation as it is here we control the product from the raw to the finished state.

## SPECIALTY DEPARTMENT

Our Refinery of today has seen several changes over the years, several buildings and tanks have been dismantled to make way for new and modern improvements. #1 Works has the addition of the Specialty Department where you will see the filling and packaging of several products familiar to all of you. Possibly today there will be filling of Mobil Radiator Flush, Mobil Hydrotone, Mobilgloss, Sova-Suds, or other products that you have used in your home or your car.

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## PACKAGE DEPARTMENT

The Package and Filling Department has been revised and several modern improvements such as the automatic weighing scales, barrel conveyors, filling machines, and larger loading platforms have been installed. It is in this department that the compounding and blending procedures are carried out, and the base stocks and chemicals are mixed according to formula. After examination and approval by the laboratory the finished product is filled. The filling may be either in tank car lots or in containers ranging in size from 1 qt. cans to 50 gallon drums or barrels. Here we also have the rail service which removes and replaces the tank and box cars. The products shipped from this department bear the famous trademarks of Socony-Vacuum and are shipped to points all over the world.

## FILTER DEPARTMENT

The Filter Department has been enlarged to meet the demands of production through technological changes. It is in this department we decolorize the oil by use of a filtering process. The filter clay that has been used is reactivated by a burning process, removing the impurities collected during the filtering operation and returned to bins for reuse in filters. The same clay may be used for 25 to 30 times before discarding. The filter clay used in this process is a special type of clay brought in from Florida or Arkansas and would resemble sand from our local sources.

During your tour of Socony-Vacuum Oil Company's Olean Refinery we have tried to show you some of the operations that are performed within our gates that you may better understand how your family plays an important part in the operation of our refinery.

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# *Appendix H*

# *Untitled Two Page Document*

# *Dated August 23, 1944*

The Olean Refinery dates back to 1878. The then Standard Oil Company erecting a refinery on the site now know as No. 2 Works. Later, the Eclipse Oil Company erected a similar refinery on the site now known as No. 1 Works. In 1891 the Vacuum Oil Company purchased the Eclipse Oil Company, and continued to operate the Olean Plant under the name of the Vacuum Oil Company.

In the meantime the Standard Oil Company had acquired ownership of the Vacuum Oil Company, and in 1911, by a decision of Judge Kenesaw M. Landis, the Standard Oil Company was dissolved. The Vacuum Oil Company again became a separate company operating both plants of the Olean Refinery and continued as a separate company until the merger with the Standard Oil Company of New York in 1931.

This refinery originally operated with the various crudes - Lima Crude with its high sulphur, necessitating a sweetening process, one part of the Works today still carries the name of Sweeteners, then the Mid-Continent Crudes with its asphalt base requiring an acid treat and the tar and pitch stills to handle this base stock, and finally the Pennsylvania Crude with its paraffine base. The entire plant was converted to Pennsylvania Crude operation in 1927 when a modern continuous two stage pipe still was erected. With the advent of this method of refining all batch or shell stills became obsolete. This one unit had a rated capacity of 6600 barrels per day.

Just previous to this installation "cracking" was introduced to the refinery process, and in 1924 an Ellis Cracking Still was erected, followed immediately in 1925 with a second unit which was a Gross, and a second Gross Unit was erected one year later in 1926. These three units continued to operate until the development of Catalytic Cracking and the Houdry Process.

In 1927 a P-Oil reducing still was erected with a rated capacity of 1100 barrels per day, and in 1929 a Solution Reducing Still was erected with a rated capacity of 2500 barrels per day.

In 1921 certain operations were added to the Olean Refinery that had been handled in the Rochester Refinery of the Company. The Percolation Filter Plant, with its clay handling, burning and storing facilities was installed, and with this was added a Compounding, Filling and Shipping Department. In 1929 the Filter Department capacity was increased 100%.

In 1936, with the introduction of Solvent-Dewaxing, a three filter Benzol Acetone Dewaxing Plant was erected replacing an eleven chiller and wax press installation.

The Olean Refinery today produces the high quality lubricating oils required in airplane and automobile engines, steam turbines, and all types of steam engines, the greases used in the treatment of leathers, the waxes used in the treatment of fabrics for tent and tarpaulin manufacture and the many Specialty Products used by the armed forces as well as every household.

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One hundred and five employees of this refinery have answered the call of their Country. Two have thus far made the supreme sacrifice.

In 1922 this Company realizing the importance of obtaining Pennsylvania Crude Oil installed a Crude Oil Gathering System in the Bradford Field with gathering districts in Duke Center and Indian Creek. These districts pump direct to the refinery . The Company owns and maintains approximately 36½ miles of gathering lines in the two districts.

8/23/44

# *Appendix I*

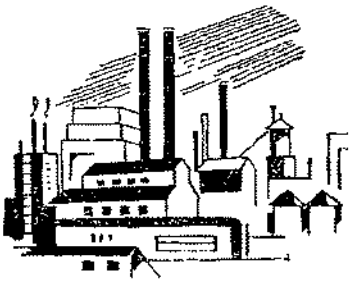
# *Excerpts From Four Sovoc-tivities Newsletters, Early 1950's.*

SOCONY-VACUUM OIL CO. INC.
PUBLIC RELATIONS DEPT
FILES

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# The Olean Refinery



In our last issue we discussed No. 3 Works, and this time we will consider some of the chief points of historical interest in connection with that section of the Olean Refinery known as No. 2 Works, which embraces the area enclosed by the Main Line of the Erie Railroad—New York to Chicago, the Buffalo Division of the Pennsylvania Railroad, and the Pennsylvania Railroad Shops on the south. This triangular piece extends west as far as the present boiler house.

In our plan to eliminate surplus buildings, etc. some of the tanks and buildings now standing at No. 2 Works will be dismantled, and we thought this an opportune time to outline some of the previous equipment installed at No. 2 Works and orient it with reference to equipment which is still in place and which may soon disappear.

The large brick building at No. 2 Works which was used during the war years by the Hydrocarbon Research people was originally No. 2 Works Boiler House and housed ten handfired Geary water tube boilers of 200 and 300 HP. To the south end of this building was attached a large pump house in which were located boiler feed pumps, air compressors, and other miscellaneous equipment, and immediately south of this pump room was an ell-shaped wing extending to the east, the western portion of which housed No. 2 Works pipe shop, and the eastern portion of this—somewhat offset to the north—housed No. 2 Works machine shop, which was in charge of C. Elmer Beardsley who was later transferred to the Central Shops to succeed William Kershner. The pipe shop was in charge of Jim Ward, and later Andy Fitzpatrick.

The wooden frame metal-covered building south of the present No. 2 Works foam building was used as a boiler shop to serve No. 2 and No. 3 Works, which you will recall from our previous history of the plant was operated by the Standard Oil Company while No. 1 Works, tho owned by Standard from 1879 to 1911, was operated by the Vacuum Oil Company. In this shop were handled all the repairs for the shell stills, con-

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densers, etc. for the chief work of the boiler makers in those days consisted of the building and maintenance of storage tanks, condenser boxes, and the replacement of still bottoms which was almost a continuous operation thruout the plant. This shop was for many years under the supervision of Bill Glavin, who retired in 1930. In the southwest corner of this boiler shop a room was partioned off for the No. 2 Works carpenter shop, and was in charge of Ed Barten.

A short distance west of the old No. 2 Works Boiler House was located a very long shed starting almost at the edge of the present main No. 2 Works plant road and extending nearly to the present lime building. This housed the shell stills, of which there were ten 12 ft. in diameter and 30 ft. long, and fifteen 12 ft. in diameter and 32 ft. long, and on the south end of the main still house was the enclosure containing four 8 ft. in diameter by 16 ft. long sludge stills.

The shell stills at No. 2 Works were used for running crude and also in rerunning many stocks, as it was necessary in the shell still days to re-run many of the cuts from crude. Wax distillate, for example, was always re-run, the expression used to describe the operation being called "cracking" the wax distillate. This, however, was not an actual cracking but a further re-distillation to increase the accuracy of the fractionation and improve the pressability of the wax distillate.

It was also impossible with the regular shell stills to cut the front ends of the crude correctly. The product known as Stove Distillate was made, containing most of the kerosene and gasoline. This product was re-run in steam stills where the source of heat was steam and it was possible to better control fractionation as there was less chance of over-heating.

In the original shell still operation the instrumentation was practically zero. Some of the shell stills had thermometer wells into which a mercury thermometer could be placed if any one was sufficiently interested in the temperature in the stills. Most of the controlling of the still was done by watching the gravity of the overhead stream coming into the running room from the stills, and adjusting the quantity of coal used and the draft. It was not until 1916 that the stills thruout the plant were finally equipped with recording chart thermometers. These were of rather inferior quality and not too dependable as the recording thermometer had not been perfected to its present point.

West of the south end of the group of twenty-five shell stills was located a battery of seven steam stills of varying size and design, all of



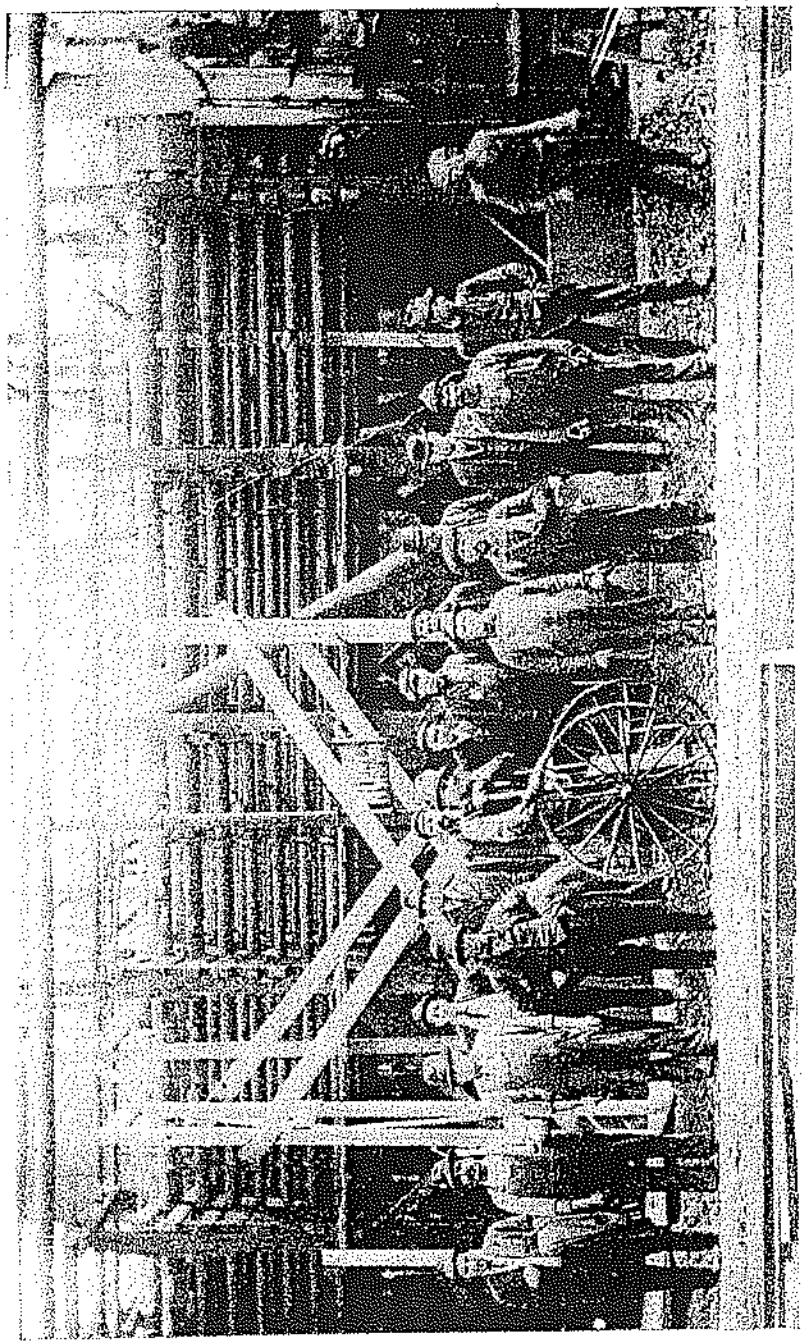
which were used to rerun Stove Distillate and make straight run gasoline and kerosene. Two of these were 12 ft. in diameter and 30 ft. long, one was 13 ft. in diameter and 50 ft. long, and four were 13 ft. in diameter and 40 ft. long. Installed on some of these stills were fractionating towers which were among the first attempts to improve the overhead product from a shell still. These towers were about 3 ft. in diameter and 20 to 30 ft. high, and were packed with coarse river gravel or small stones. The installation of these towers did actually improve fractionation, probably because of their heat retention and smoothing out of surges in the product leaving the top of the still.

Some of the stills on the south end of the main still battery were equipped with what was probably the grand-daddy of the present heat exchanger. These were large steel shells supported on top of the condenser boxes which at that time were steel, and in these tanks or shells was installed a considerable quantity of cast iron pipe. The crude entering the stills was pumped thru the pipes into these shell stills, and the shells themselves were cut into the vapor line before it entered the condenser box. These Vorwarmers were brought from Germany, and it is our understanding that they were introduced by George W. Hooker about 1902 when he was superintendent of the No. 2 Works plant.

The condensers on the shell stills and also on the steam stills were generally a continuous worm of pipe starting out at 10 or 12 inches, and eventually reducing to 3 or 4 inches by the time the material was condensed and cooled and ready to leave the condenser. The original condensers consisted of shallow wooden boxes containing the coils and were supported on elevated platforms or structures, as visible on the south end of the stills in the picture showing No. 2 Works entrance in the last issue of "Sovac-tivities." The reason for elevating the condensers was to permit the discharge of the condensers to flow to the running room, or tail house as it was called in those days, and then after flowing thru the look-box, passed on to the storage tanks. By mounting the condenser boxes in this manner a gravity flow was secured from the time the petroleum product left the condenser box until it entered the run tank, which even tho they were fairly small, required the elevation of the condensers to obtain any reasonable capacity in the shell height which would be permitted in the rundown tank.

There was also in use at that time a circular condenser box made of wrought iron which in most cases rested directly on the ground. These had a wooden tongue and groove floor about 2 inches thick which was

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OLEAN REFINERY — 1913

Front Row: Leon Rowe; Not Known; Bat Dempsey; Not Known; Neal Dempsey; Pat Shea; Joe Reed; Not Known; Not Known
Back Row: Pete Gilbert; J. F. Turner; Sullivan; Mike Cashmere; Jim Kane; Clint Service; Not Known; Jim Ward; George Hannigan



assembled on the tank site and caulked similar to a ship to reduce leakage. A groove about ¾ inch deep and ½ inch wide, and of the same diameter as the shell of the tank was then routed into this wooden floor. The shell of the tank rested in this groove and was caulked in with cotton wick and white lead. The shell was not attached to the bottom in any way other than by the gravity action on the shell and any supports that might be attached to the shell and carrying pipe. In the circular condensers were placed the worms of two or three stills depending on the size of the condenser.

One of these old circular condensers is shown being dismantled in the picture on the opposite page. Part of the tank shell is still visible on the right hand side of the picture where a portion of the shell is still standing. This picture was taken in March of 1913.

About 1913 to 1916 all the old condenser boxes were replaced with modern steel condenser boxes erected on concrete or brick piers about ten feet high. The height as in the earlier condensers was necessary to permit the product to gravity thru the running room and into the run tanks.

Immediately west of about the center of the battery of twenty-five shell stills is located No. 2 Works Pump House. The major portion of this building is still standing, and some of the old pumps are still in place. It was customary during the period when this pump house was built to use vertical triplex pumps for practically all transfers, these in turn being generally driven by a steam engine. The pumps were connected to the line shaft with friction clutches driving either gears or silent chain. The line shaft in this pump house was driven by a 150 HP Skinner steam engine originally located at the east end of the shaft and housed in a lean-to. The engine itself was also connected to the line shaft thru a friction clutch.

About 1933 the engine was removed and a 100 HP motor installed on the west end of this shaft. The need of this pump house and the number of pumps in it has decreased considerably over the original installation which was in use when the shell and steam stills referred to above were in operation. After the crude still was built at No. 3 Works the shell and steam stills were dismantled, and many other changes were made at No. 2 Works, such as the discontinuance of the sludge stills, the mechanical shops, etc.

The lean-to on the north side of the pump house was built primarily to house the gauger's office and the electric light plant which was installed

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in 1913. Previous to the installation of this lighting system what few lights and motors existing in the refinery were direct current, and produced by a belted D. C. generator driven from the line shaft in the Wax Works at No. 1 Works. For an oil refinery the use of direct current is of course extremely hazardous, and lines were too long for the low voltages used in transmission. It was decided to convert the refinery to alternating current and distribute this current from No. 2 Works Pump House generators under ground in lead covered cables at 2200 volts to sub-stations around the plant where it could be transformed to 220 and 110 volts for use in motors, lights, etc.

Twenty-five cycle current was selected because the City of Olean at that time was on 25 cycle and some of the electricity used at the refinery came from City lines from Niagara Falls and the refinery had a tie-in connection with the City's electric light plant.

The original generators consisted of two 187½ KVA 2200 volt Westinghouse marine type gear driven steam turbine units. The turbines operated at 6000 RPM and this speed was reduced to 750 RPM thru reduction gears. The switching was all done with oil switches which were installed on the switchboard also located in the lean-to housing the turbines. As the electric load grew it was found necessary in 1920 to install an additional turbo-generator of 300 KW. This was a Kerr-Allis geared unit with a turbine speed of 3600 RPM.

*(To be continued)*

## GREEN — ATTOLINI



On April 22nd Miss Julia Attolini and Robert Green were married in St. Mary of the Angels Church of Olean. Mrs. Stewart Loper, sister of the bride, was matron of honor, and John Greeen was his brother's best man. Bob comes from Portville, is a veteran of World War II—having served in the European Theatre, and for the past five years has been employed in the Olean Refinery's Power House. To Bob and his bride we all extend best wishes for a happy married life.

SOCONY-VACUUM OIL CO., INC.
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FILES

SOVAC-TIVITIES
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THE UNIVERSITY OF TEXAS AT AUSTIN



# The Olean Refinery

*(Continued from previous issues)*

## The Central Boiler House

The site at the junction of Number 1 and Number 2 Works was selected for the Boiler House because it was near the center of the load for the refinery, and for this reason required the minimum expenditure for distribution lines.

The boiler house was originally planned for eight boilers arranged with four on each side of a center firing aisle. Provisions were also included for a power wing which was planned for the electrical equipment, electrical switching and bus facilities, and auxiliary equipment such as air compressors, frequency changers, etc. on the ground floor. The second floor was designed for the turbo-generators and control switchboard as the refinery has practically always, except for short periods, produced all the electricity which it has used.

This plant was built in two steps. The original construction consisted of the space now occupied by Boilers Number 1, Number 2 and Number 3, and that portion of the coal bin necessary for these three boilers. At that time the north smoke stack was built and a portion of the coal and ash handling machinery was installed. The east crusher and its elevator were installed in connection with the initial unit. At the same time the original concrete ash bin, later replaced, was also installed. The west and south ends of the building were closed with temporary walls and there was of course no power wing. This part of the central boiler house was completed in 1922.

In anticipation of the building of the first unit of the central boiler house, a large steam boiler was installed some years before in the old hand-fired boiler house at Number 1 Works and fired with hand stokers known as Files. The boiler was selected of such design that it could later be moved to the central boiler house, and provision was made in the construction of the boiler to later install a superheater.

The large Babcock and Wilcox boiler installed at Number 1 Works was moved to the central boiler house as soon as boilers number 1 and number 2 were completed and on stream. The boiler house operated



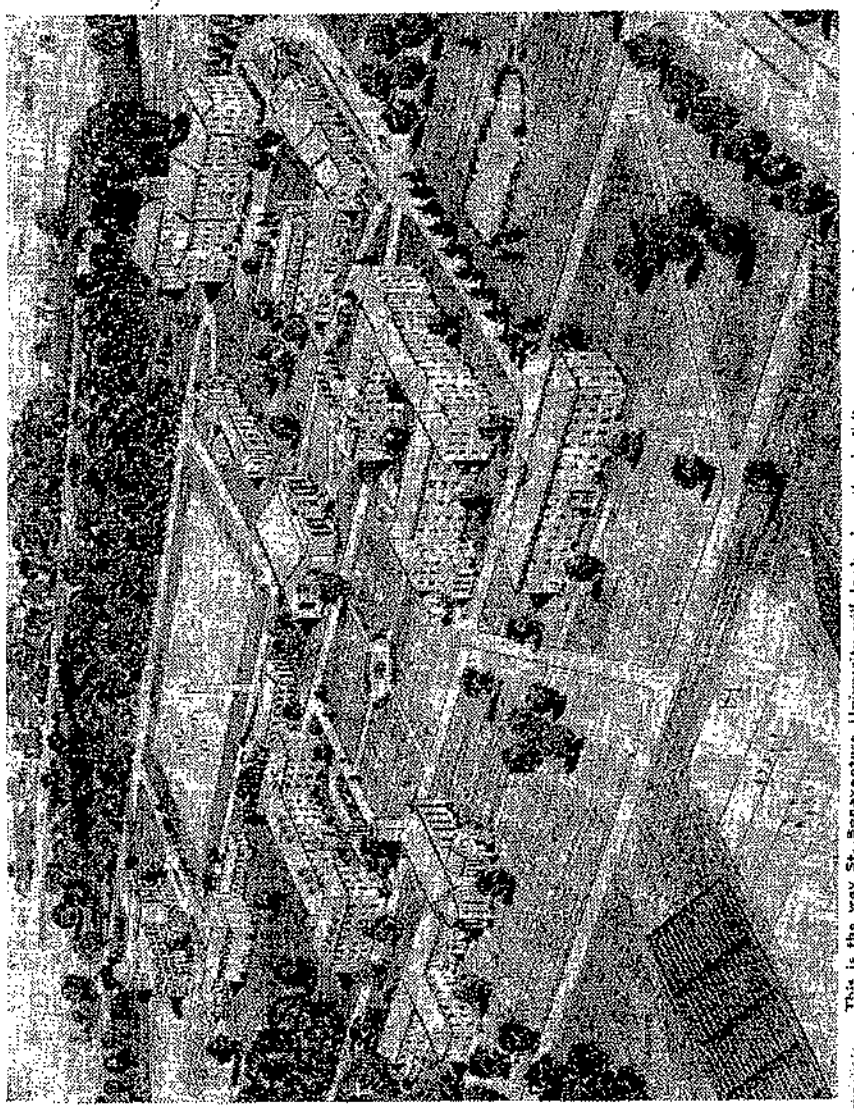
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The top picture shows the site of the present Central Boiler House. In our last article we referred to the sand shed used for cleaning cars. This is shown on the right in the top picture. In the center background can be seen the horse barn, and on the left side is the wagon shed. The bottom picture shows the firing floor in the Central Boiler House.

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FROM THE COLLECTIONS IN THE CENTER FOR AMERICAN HISTORY
THE UNIVERSITY OF TEXAS AT AUSTIN



This is the way St. Bonaventure University will look when the building program has been completed.



with these three boilers, serving only a portion of the plant, until 1924 when the boiler house was enlarged and the four boilers on the south side of the firing aisle, and the south stack and the power wing were added. At that time the boiler plant was extended westward to permit the installation of the present number 8 boiler and a space left for the possible later installation of a number 4 boiler. The second unit of the coal handling equipment was then added, consisting of a crusher under the north coal track, and the canopy over the tracks was built.

It might be of interest to mention some of the outstanding features of the original installation compared with what the refinery had in use previously. At the time this central boiler house was started there were 22 steam boilers in the refinery, seven at Number 1 Works, ten at Number 2 and five at Number 3 Works. All of the boilers were hand fired with Files stokers and the largest were 300 HP Geary boilers. All the boilers were of the water-tube type and there were two small boilers of 165 HP Babcock and Wilcox design at Number 1 Works.

The steam pressures employed in the plant at that time were 100 pounds for the high pressure steam and 50 pounds for the low pressure steam, low pressure steam being used almost exclusively for the purpose of blowing in the shell stills.

The boilers in the central boiler house are rated at 803 HP and there are 5621 boiler horsepower in boilers installed in the plant.

There was considerable hesitation at the time previous to the construction of the central boiler house concerning the continuity of service which could be expected, as previous experience had shown that occasionally an entire boiler house might have to come down to change a valve or for some similar change, necessitating shutting down that part of the plant. Due to the small size of each of the three old boiler houses and the fact that the load on each was quite large compared with the installed boiler horsepower, the steam in the plant was seldom up to pressure. Since the installation of the central boiler house there has never been a time when the pressure thruout the entire plant has not been up to normal except during an emergency when it was necessary to change the drums on the boilers. Since the central boiler house was started in 1922 there has never been a failure of high pressure steam in the plant due to any cause whatsoever except in the emergency mentioned above, when pressure was lowered temporarily but did not fail.

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The necessity of changing the boiler drums was brought about by the discovery of caustic embrittlement in the riveted drums on these boilers. Caustic embrittlement is a phenomenon of high pressure steam generation and is not met with at the low pressures originally employed in the plant— in fact it is very unusual except where feed water conditions and treatment are such that this deterioration in the steel takes place. It was necessary when the drums were changed to bring in some locomotives and distribute them around the plant, and to reduce the maximum distribution pressure to 125 pounds. After the new drums were installed, the plant pressure was raised from 175 which was the original pressure, to 200 pounds. The steam is distributed about the plant in 8 inch lines, all of which are installed so that they operate as loops, and there has never been a failure in any of the high pressure steam lines, as they are arranged with sectionalizing valves so that the replacement or repair of valves etc. is possible at any place in the high pressure steam system.

The steam for the refinery use is reduced at Number 1, Number 2 and Number 3 Works to 125 pounds. Charts recording the reduced pressure show the pressure to be so steady that one would almost think they had been drawn with a compass or that the recording gauge was not working.

The coal bin which extends over the length of the boiler house is 100 feet long and will hold ten tons for each foot of coal bin, or a total of 1000 tons. The coal bin is served by two crushers and two elevators, and a distributing conveyor over the top of the coal bunker.

The boilers are all fired by seven retort Westinghouse underfed stokers driven normally by electric motors, but so arranged that in case of failure of electricity any or all boilers can be run by steam from emergency steam engines. The two stacks are each 215 feet high and 12 feet in diameter at the top.

Like the distribution system in the plant, the steam headers, high and low pressure water headers and all similar piping in power house are arranged in the form of loops so that any portion of the system can be worked on without interfering with the operation of the steam plant.

The air required for burning the coal on the stokers is supplied by motor and steam turbine driven fans, and the air can be taken from the ceiling of the power plant to improve the operating conditions in the power plant and to conserve coal required to heat the air needed for combustion.

The electrical generating plant consists of three steam turbine driven

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# The Olean Refinery

*(Continued from previous issues)*

## THE CENTRAL SHOPS

The Vacuum Oil Company for a number of years repaired its own tank cars, and for this purpose a large brick building with steel roof was built. The building is adjacent to the site for the Central Power House which was shown in a picture in the last issue of SOVAC-TIVITIES, and the sand shed shown in this view was a part of the tank car repair effort described in one of our previous issues.

The tank car repairing was taken over by the Union Tank Car Company about 1913, who continued the activity in this building until 1921 when they decided to erect a building of their own on land leased from us and from the Pennsylvania Railroad in 1916. The entire effort of the Union Tank Car Company in Olean was discontinued this year due to changes in requirements for tank cars in the various areas thruout the nation and their buildings here have been dismantled, and tank car storage tracks removed.

The building built by our Company to repair tank cars originally consisted of a building approximately 260 feet x 70 feet built in 1911, and with a lean-to, 37 feet x 200 feet added in 1912, and there were three railroad tracks thru the building so that cars to be repaired could be brought in from either end, and three lines of cars could be worked on simultaneously. The repair shops, storehouse and tool room in connection with the effort when the building was in use as a tank car repair shop were in the lean-to on the north side of the main building, and in the eastern end of this lean-to was located the office. The Union Tank Car Company shops were in charge of Mr. H. O. Bonhoff for many years, and his assistant was Glenn Gault, who became head of the shops upon the retirement of Mr. Bonhoff. After Glenn Gault's death in April 1947, R. L. Chittenden took over the management of the local shops, which position he held until the shops were dismantled this year.

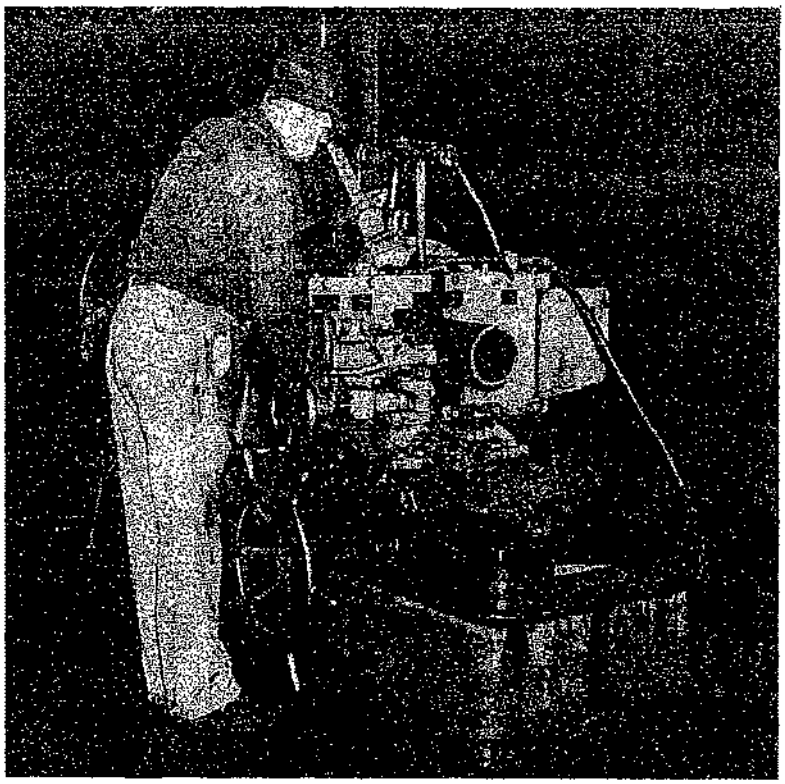
With this large building made available to the refinery, it was decided to start consolidating the shops and eliminate the various separate ones

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MACHINE SHOP—General view looking southeast from foreman's gallery. Pipe Shop and Carpenter Shop in the background. →

throout the plant, starting with the boiler shops due to their large floor space requirement. There was at this time at No. 1 Works a carpenter shop in charge of Tom Olson (father of King and Tom Olson); a boiler shop in charge of John Degnan (father of our present John Degnan); a machine shop in charge of J. W. Kershner; a pipe shop with Homer Parker in charge.

At No. 2 Works there was a similar set-up, the machine shop there being in charge of Elmer Beardsley; a carpenter shop headed by Edward Barten; a boiler shop in charge of William Glavin; and a pipe shop with Andrew Fitzpatrick in charge.



PIPE SHOP—Ed Noonan cutting off a piece of pipe preparatory to cutting the thread on the 6-inch pipe machine.

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At No. 3 Works there was a similar arrangement, except that there was no boiler shop, but there was a carpenter shop, a pipe shop, and a lead shop.

The shops at No. 1 Works were in the building now housing the laboratory, but there were some small buildings in which certain of the tools were installed which could not be placed in the shops. Practically all of the employees will remember the garage between the main office and the laboratory, which was originally the shelter for the cold saw, the bulldozer and similar equipment.

In moving the various departments to the new location it was decided where possible to eliminate as much of the belting, counter-shaft, etc. as possible and use direct drive. This plan was carried out in installing the boiler shop and relocating No. 1 Machine Shop in No. 1 Boiler Shop, No. 1 Carpenter Shop, and in several other cases where the adaptation of the machinery to motor drive was feasible with reasonable expenditure.

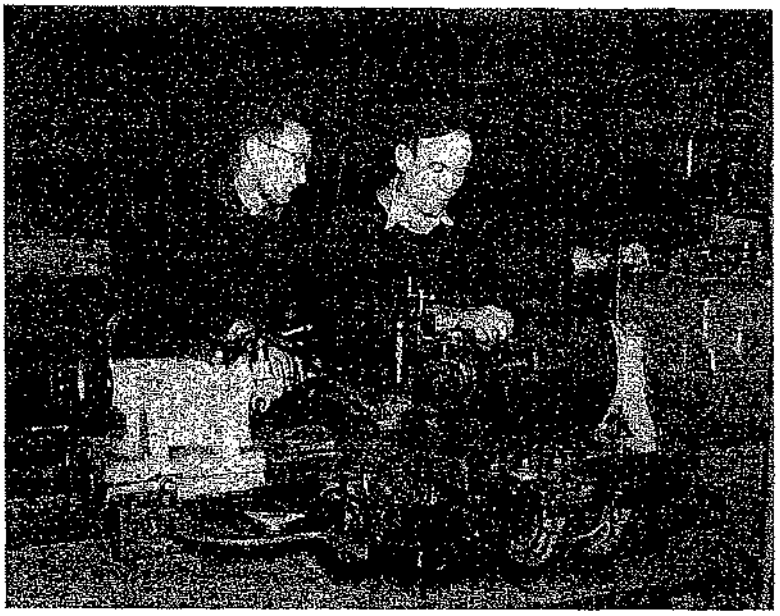
A wall was put in the middle of the main shop building to separate the boiler shop from the east half of the shop then used for cooperage storage to insure cleanliness. In 1924 it was decided to relocate all the remaining shops thruout the refinery. The carpentry shops were located in the east end of the main building. The drive belts and counter shafts for the carpenter shop machinery in the new centralized location were installed in trenches in the floor.

The section west of the carpenter shop was planned for the pipe shop. Most of the pipe shop machinery did not lend itself to direct drive, so that in this installation most of the pipe machines were driven by overhead counter shafts, which were gradually eliminated as new machines were purchased by arranging these for direct motor drive.

The space between the pipe shop and the east wall of the boiler shop was allocated to the machine shop. The best of the machines from the various shops were retained, a few new ones purchased, and because of the nature of most of the machine shop tools, which required variable speed obtained by using stepped cone pulleys, the belts in this department were retained. As new machinery was purchased for the machine shop, however, where possible direct motor drive has been installed.

The machine and pipe shops are served by a mono-rail system, with necessary switches, so that heavy parts, etc. can be transferred between

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MACHINE SHOP—James Marron showing Raymond Woods how he grinds off a collar on one of our more recent mechanical gear change lathes.

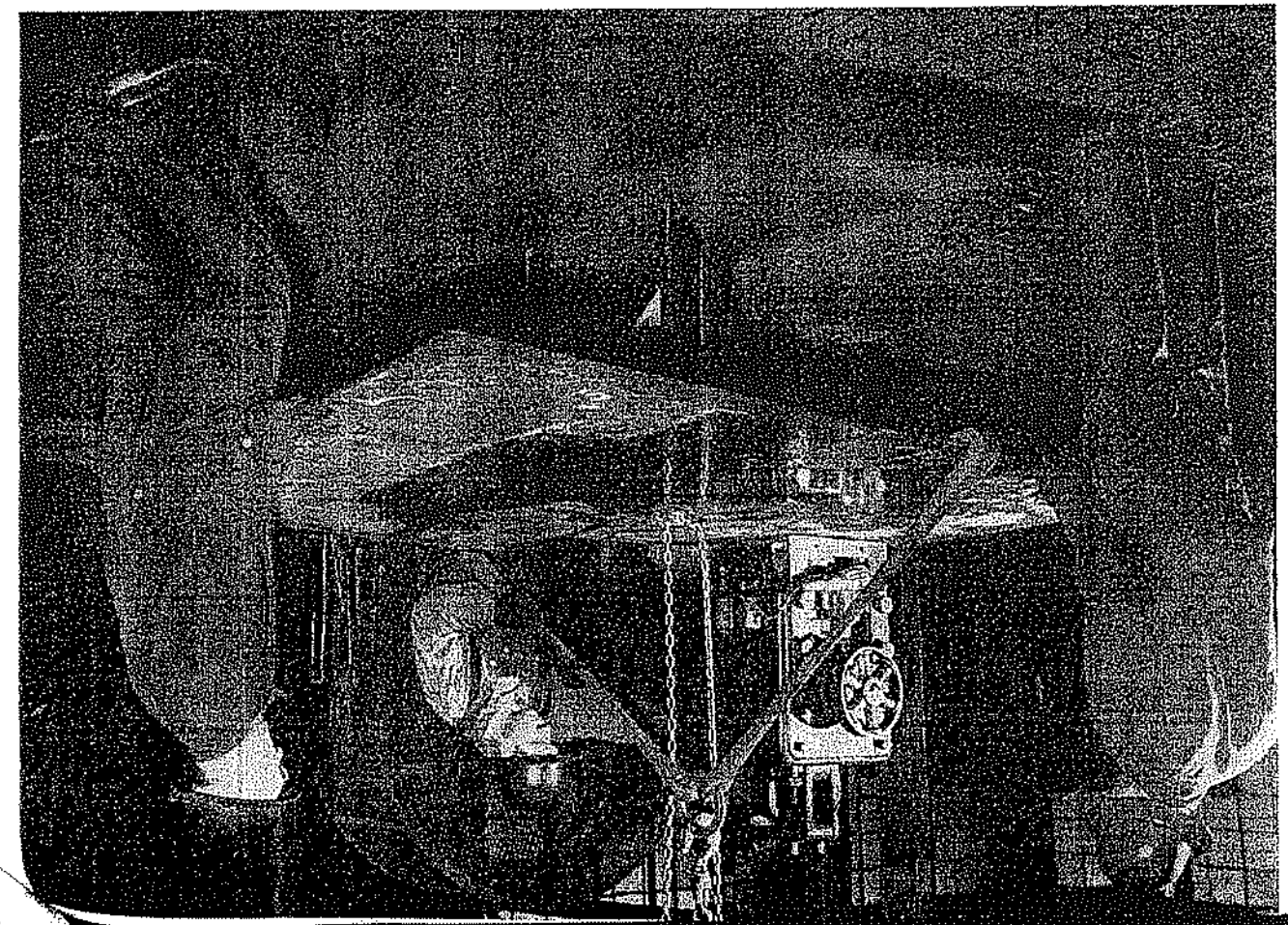
shops, and this is also set up so that pipe, pumps, and other material can be delivered out-of-doors and loaded onto trucks, and also can serve the pipe rack located just south of the present pipe shop south door.

When the equipment used in the boiler shop was installed at No. 1 and No. 2 Works, and most of the equipment which is there now was originally in these locations, it was all belt driven. This, however, was very unsatisfactory, and resulted in reduced production and high maintenance costs. It was decided to motorize all of the boiler shop machinery and convert it to gear drive. Practically all of the boiler shop machinery is driven by bakelite silent gears which have been in continuous operation without failure since 1917.

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BOILER SHOP—Don Ward, Pete Firos and Charles Schifley shearing heavy steel plate on motor driven sheer. Machine can also be converted to punch holes in heavy plate by removing shear parts and substituting punch and die. →

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Space activities

Most of the machinery in the boiler shop, such as the shears, punches, flange punch, bulldozer, and similar equipment, is driven by constant speed motors. Because of the nature of the load on the bevel shear and the plate rolls, these two machines are operated by slip ring variable speed motors with reversing drum type controllers. For handling the work on the various machines, jib cranes have been installed for each machine, as the mono-rail system would not be sufficiently versatile to serve the equipment because of the tremendous variation in the type of material being handled, such as I-beams, plates, dished heads, etc.

The boiler shop is rather large for present needs; however, at the time it was planned the refinery built practically all its own tanks and vessels, and also all structural steel work was fabricated and erected by our own crews. Due to the tremendous surplus of tanks in Olean in the early days when the requirements for crude oil storage were reduced, many tanks were cut down, rivet holes sheared off, sheets repunched, and tanks re-erected in the refinery or at other plants of the Vacuum Oil Company.

At the west end of the boiler shop an erecting yard was set aside out-of-doors, served by a Gantry crane which could serve not only the equipment being erected, but also serve the plate storage racks to permit safe and efficient removal of the plates from the storage yard to the shops for fabrication, or remove material from freight cars.

On this same end of the shops the hydraulic press and flange fires were installed, this type of equipment being much in demand in the shell still days, also when most tanks erected in the refinery, both large and small were made here. Hillside flanges and all types of special flanges were forged by hand to fit the contour of the vessel on which they were to be mounted. Even standard manholes for tanks were forged by hand at that time.

In order to provide a centralized space for the foremen of the various departments, the foremen's gallery was installed, with space for each foreman, master mechanic, and clerk, all in one large, long and narrow room.

The space in the east end of the tool room originally occupied by the office of the Union Tank Car Company was made into the electrician shop. In this location, in addition to the battery chargers for charging hand

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lanterns and other batteries, is also located the automatic telephone switchboard. The original board was installed with 50 lines; however, as the demand for telephone service grew, it was necessary to rebuild this into a 100 line board.



BLACKSMITH SHOP—Mike Cashimere forging a machine part on the Helve Hammer.

The space immediately west of the electricians shop was made into a tool room and repair shop for checking out and reconditioning various hand tools returned to the shop, particularly various types of air tools.

The extreme west end of the lean-to was arranged to house the blacksmith shop, as at that time there was a considerable demand for blacksmith work. This shop was equipped with three forges, a helve hammer and a steam hammer. The helve hammer was a belt driven hammer operating at constant speed, and not particularly useful in miscellaneous repair work; however, the addition of the steam hammer which is extremely versatile has remedied this condition. In order to permit repair of the long parts, such as the side rods on the old conventional wax filter presses, the doors were so located that these long rods could be handled with a small shop, and a jib crane was installed to assist in handling the heavy parts.

The space immediately east of the blacksmith shop was arranged for a welding shop, the west room being reserved primarily for acetylene welding, while the east room is devoted almost entirely to electric arc welding. This shop is also served by a mono-rail system to assist in moving work in and out of the shops and onto trucks.

Between the tool room and the welding shop are three rooms, one of which is used as a tool room for the machine shop, the center one is a toilet room, and the third room is a locker and wash room for all of the shops.

When used for a tank car repair shop, this building was heated by direct radiation mounted on the walls, and consisted of hundreds of feet of pipe with headers at each end to form radiators. This method of heating proved to be very unsatisfactory for the shops because of the tremendously high ceiling and the corrugated sheet iron ceiling construction. With apparently ample heating surface, water which froze on the floor in winter would not melt for weeks. The heating system was then replaced by two units, one in the boiler shop, and one in the pipe shop. This system was installed with fans to blow the air thru the heater, with ducts to discharge this air at various locations thruout the building and near the floor so that the heat was directed where required. With the installation of the duct system the building was made livable in winter for the first time.

The refinery was headquarters for lead work required by our other plants during the Vacuum Oil operations and many of our men were

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frequently called upon to line agitators, tanks and similar equipment at other plants of the Company, or to fabricate lead products for them. The need for the lead shop was also extensive in the early days because of the use of the acid pan houses for concentrating acid, and because of the many lead lines about the plant, between lubricating oil department at No. 1 Works, refined oil department at No. 2 Works and acid plant at No. 3 Works.

We are very proud of our Central Shops, as we feel that they are about the best among the older refineries of the Company, and that the feature of having the main departments of the shops, carpenter, pipe, machine, boiler, welding, electricians, and tool room in one building, served by mono-rail and jib crane, is highly desirable for the convenient and economical handling of material between departments. This also reduces delay and expense which occurs where material has to be transferred between departments by means of vehicle which is not always obtainable at the time the workmen have the machinery on the hoists ready to move.

♦ ♦

## Union Elects Officers for 1950

The results of the election for officers of the Independent Union of S/V Workers at Olean were announced at their regular November meeting. The officers of the Organization for 1950 will be as follows:

President ..... W. F. Feser
Vice-President ..... Henry Barten
Secretary ..... E. G. Driscoll
Treasurer ..... F. J. Horan

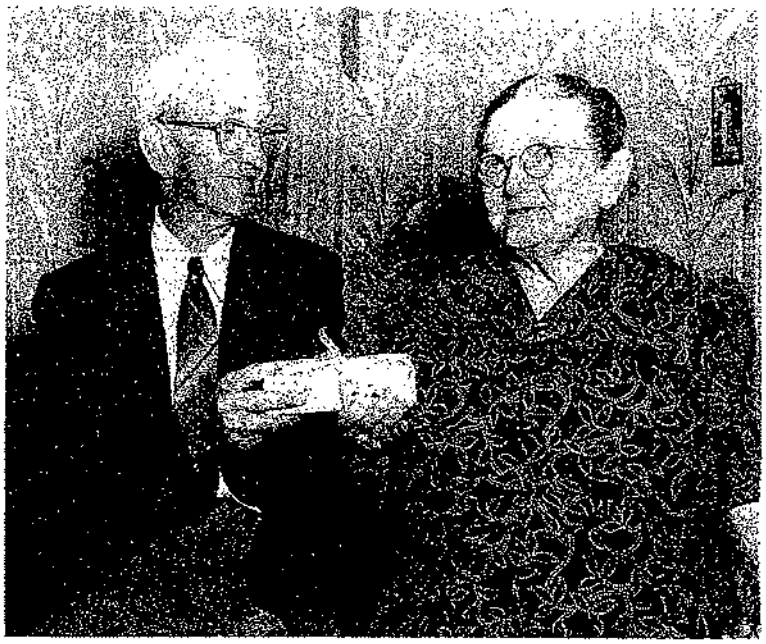
Representatives:

Division No. 1 ..... Tom Gerry
Division No. 2 ..... Max Crainer
Division No. 3 ..... Jos. Morabito
Division No. 4 ..... Ray Russell
Division No. 5 ..... John Degnan

Auditors:

John S. Maroney, William Donnelly, James Kent

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## Among the Annuitants

Above you will see Mr. and Mrs. Edward Gardiner as they celebrate their fifty-eighth wedding anniversary. The Gardiners were married in Buffalo, October 26, 1892. Among the guests at the reception held in their honor were the couple's seven children and their families. Mr. Gardiner was born August 7, 1875, and at the time of his retirement, July 1, 1940, was a Filterman at the Wax Works. Our congratulations to the happy couple—may they enjoy many more anniversaries together!

The Annuitants of the Olean Refinery held another social meeting at Gargoyle Park on October 28th. Frank Smith was the Chairman, and was assisted by Oscar Miller, Charles Bauer, John Threehouse and Pete Wenke. The committee provided a very appetizing roast-beef dinner for the thirty-six who were present. We don't know whether to believe them or not, but they tell us Chuck Welch and Josh Bair won the bridge game—and that Leon Rowe and Dick Trostle ran away with the euchre game. No committee was appointed for the next gathering, as it was felt that with

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# The Olean Refinery

*(Continued from previous issues)*

In our last issue we discussed the Central Shops and the large building which houses them, the construction of the building for tank car repairs, and the changes in the tank car repair situation which made the building available to us for the Central Shops. The site of the present Central Shops had been used previously as a building site, for it was on this plot that the wood barrel factory was located which was one of the major efforts in this plant years ago. On the next page you will see a picture of this building, which was completed in 1880.

The wood barrel played a very important part in the early history of petroleum, and especially in the Pennsylvania field where the petroleum industry started in the United States. At that time the petroleum industry was not only new to this country but also to the world. Petroleum products had been used thruout the world only in small quantities, mostly in the heavy evaporated form found on the surface of the earth, for the calking of ships and other uses. The Pennsylvania oil boom was therefore probably the first the world had known, and for that reason it had to make a small start and feel its way along until the technical aspects of crude oil production, distillation and finishing had been developed, and until the refiners of the crude oil could find general acceptance of the products which they were marketing.

The country at that time was still largely agricultural, and the mechanical age which we now know and take for granted had hardly begun. Practically all of the early crude production in the area of the Drake well of 1859 was transported in barrels to the place of use, either for refining or in the very earliest days for use in medicinal oils such as the bottled product sold in the Pittsburgh area and known as Rock Oil.

Today the educational work required to convince industry that petroleum lubricating oils were just as satisfactory as the animal and vegetable oils for machine lubrication is practically forgotten, but this was once a real problem. Even the obtaining of friendly reception in the automobile industry in the days as far back as the Selden patents required much work on the part of the original Vacuum Oil Company sales organization.

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The same situation which existed thruout the United States also was true in the case of foreign shipping, for the beginning there also had to be small. There were as yet no tankers for shipping oil to foreign countries, and again the light weight, conveniently sized wood barrel was used. Barrels of oil were transferred from ship to shore on lighters, and in some instances were thrown overboard and then hauled to shore. In the Orient and similar places the barrels traveled inland on camels, and as in the case of China, much of the oil is delivered by wheelbarrows.

Crude Oil in those early days was sold by the barrel, a barrel furnished by the customer. Often there was a variation of several gallons in the capacity of the barrels brought to the well for loading, for these were vinegar barrels, pork barrels, or whatever the buyer could obtain. In 1866 at a meeting of the Venango County oil producers, a resolution was adopted to standardize the capacity of an oil barrel at 40 gallons, with two additional gallons to cover leakage and evaporation, and this has never been changed—to this day when an oil man speaks of a barrel of oil you can know that it's a 42-gallon barrel he means.

Most of the crude oil was barged down the creeks and streams in barrels, much of it going toward Pittsburgh and similar points south of the Titusville area, such as Oil City. Where water was not available the oil was moved in barrels on wagons or sleds to the small neighboring refineries which sprang up in the area where the oil was produced.

After the oil was refined it was again put into wood barrels to be shipped to the cities where it was to be used. Until the volume grew to the point where the use of pipe lines and tank cars became justified and economical, it was the barrel that moved the entire oil production, crude and refined, to its destination.

This sudden demand for wood barrels created by the new oil industry caused a great boom in the cooperage business, and barrels were rushed to the Pennsylvania field from many parts of the country. Large rafts were floated down the Allegany River from a barrel factory on the Indian Reservation at West Salamanca.

The most largely used product from crude at the beginning of the oil industry was burning or illuminating oil, and at one time this was almost the only product which the early refineries made and for which a market could be found. It was natural then that kerosene, the first product shipped domestic and foreign was in barrels, for in most

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instances it went to small consumers, and was used largely for home lighting. Some of us can still remember when we were sent to the store with the kerosene can to buy oil for the lamps, and the custom of sticking a potatoe on the spout to prevent slopping of the oil.

The refineries found it necessary in many instances to build their own barrel factories, and this was the case with our Rochester Refinery, where was located what was said to be the second largest barrel factory in this country.

About 1879, after Mr. W. M. Irish became head of the Acme Works, began the erection of a barrel factory along the Erie Railroad right-of-way at the site of our present Central Shops. After completion, this factory had a capacity of 3,500 barrels a day, utilizing 70,000 oak staves and 30,000 pounds of iron hoops each 24 hours.

The barrels were made of white oak, with iron hoops, and sprayed with glue on the inside. These barrels, with blue bodies and white heads were known all over the world for the quality of their contents, usually kerosene. At first they were made by hand, but eventually various machines were developed for cutting the staves, cutting the croze, turning the outside of the barrel, etc. The value of the barrel was based on its size—2½ cents a gallon or $1.05 for the standard oil barrel—and many of these were returned to the refinery to be recoopered or redriven and used again and again. The barrels made at Olean, over and above the requirements of the Olean Refinery, were shipped to the Company's other plants at Buffalo and Rochester, and were loaded in box cars and even cattle cars. Old records have shown that at one time as many as 70 trains of about 50 cars each left Olean in one day, most of these of course carrying either crude oil or refined products in barrels.

The building, the west end of which is used for the Paint Shop, and the remainder for storage space for the various mechanical departments, is still referred to as the dry kiln building. This building, of one story construction with saw-tooth roof, was built for use in kiln drying the lumber which was to be used in the making of staves and heading. Up until about twenty years ago some of the rooms were still equipped with the old wood grating which covered all the floors in the building and on which the lumber to be dried was piled. Hot air was pumped thru trenches under this wood grating, and was blown up thru the grating with a large fan driven by a steam engine, and the lumber thus dried until it was suitable for use in the making of barrels.

THE UNIVERSITY OF TEXAS AT AUSTIN

## A.2. TurnKey Environmental Restoration, LLC. (2020). Subsurface Environmental Investigation Report, 1641 River Street Site, Olean, New York, January.

# Subsurface Environmental Investigation Report

*1641 RIVER STREET*
*OLEAN, NEW YORK*

JANUARY 2020 0518-019-001

Prepared For: 1641 RIVER STREET LLC



Prepared By:

BENCHMARK ENVIRONMENTAL ENGINEERING & SCIENCE, PLLC

TURNKEY ENVIRONMENTAL RESTORATION, LLC

2558 Hamburg Turnpike, Suite 300, Buffalo, New York | phone: (716) 856-0635 | fax: (716) 856-0583

# SUBSURFACE ENVIRONMENTAL INVESTIGATION REPORT

## 1641 River Street Site
## Olean, New York

January 2020 0518-019-001

Prepared for:

**1641 River Street, LLC**

# SUBSURFACE ENVIRONMENTAL INVESTIGATION REPORT

## 1641 River Street

## Olean, New York

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# 1.0 BACKGROUND AND SITE DESCRIPTION

TurnKey Environmental Restoration, LLC (TurnKey), on behalf of 1641 River Street, LLC, performed a Subsurface Environmental Investigation at a property located at 1641 River Street in Olean, Cattaraugus County, New York (Site, see Figure 1 and 2). This investigation was completed as part of the property pre-purchase due diligence. At the time of the investigation, the Site was owned by Blue Bird Industrial Park, Inc., which purchased the subject property in 2005 according to the Cattaraugus County Real Property & GIS Web page (http://www.cattco.org/real-property-and-gis).

Based on the presence of petroleum product encountered during this investigation, the New York State Department of Environmental Conservation (NYSDEC) was notified and Spill No. 1908813 was assigned to the Site.

## 1.1 Site Description

The Site is comprised of an approximate 24.7-acre parcel of land (Tax ID # 94.032-1-5) located in a former heavy industrial area in the City of Olean. Based on our review of an historical aerial photograph from the 1950s obtained from the City of Olean and an historic USGS topographic map from 1898, the Site appears to be located within the area of a larger former petroleum refining and storage facility located in northern Olean that operated from approximately 1876 to 1954. The historic aerial photograph and map show numerous (approximately 20) large petroleum storage tanks that were located on and/or adjacent to the Site (see Figure 3 and Appendix D). Review of a map within an historic 2005 abstract of title shows a former pump station on the northern portion of the property in the vicinity where Oregon Road and River Street converge (see Figure 3 and Appendix D).

The Site is currently developed with one commercial structure, which is apparently used for storage by Park Centre Development, Inc. (a company related to Blue Bird Industrial Park, Inc.). An access road and parking lot are located adjacent to the structure. The remaining area is vegetated vacant land, with some evidence of former berms. The Site is bordered by Oregon Road and River Street to the north/northeast, the Southern Tier Rail Authority (STRA) railroad to the west/northwest and residential properties to the south. New York State Route I-86 bisects the parcel.

### 1.2 Scope of Work

This investigation was completed on behalf of 1641 River Street, LLC to assess potential environmental impacts associated with the historic use of the Site as a petroleum bulk storage facility. This investigation included completion of test pits, field screening, soil sampling, and analysis for volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), and metals.

## 2.0 METHODS OF INVESTIGATION

### 2.1 Test Pit Excavation

A test pit investigation was conducted on December 9, 2019 to investigate surface and subsurface conditions at the Site. Nine test pits, designated as TP-1 through TP-9, were excavated on the northern portion of the Site (see Figure 4). Test pit locations were selected based on review of historic aerial photographs, and Site accessibility.

The physical characteristics of test pits were classified using the ASTM D2488 Visual-Manual Procedure Description. TurnKey personnel screened soils from each test pit via headspace screening using a MiniRae 2000 Photoionization Detector (PID) equipped with a 10.6 eV lamp and noted visual and/or olfactory observations. The PID is capable of detecting the presence of contaminants that emit volatile organics such as petroleum products and solvents with ionization potentials less than 10.6 eV. Field observations, including lithology, depths, PID scan results, etc., at each test pit location are summarized in the test pit log sheets provided in Appendix A. Photographs taken during the test pit investigation are included in Appendix B.

### 2.2 Soil Sampling and Analysis

Soil samples were collected during the test pits using dedicated stainless-steel sampling tools. Representative soil samples were placed in pre-cleaned sample jars. Fourteen soil samples were submitted under chain-of-custody to Alpha analytical, Inc. including, seven surface soil samples for analysis of Resource Conservation and Recovery Act (RCRA) metals and seven subsurface samples for analysis of Target Compound List (TCL) plus NYSDEC CP-51 List VOCs, VOC Tentatively Identified Compounds (TICs), TCL SVOCs, and SVOC TICs.

The soil samples were analyzed via United States Environmental Protection Agency (USEPA) SW-846 methods. The laboratory analytical reports are provided in Appendix C.

## 3.0 INVESTIGATION FINDINGS

A summary of the test pit qualitative soil screening and soil sample analytical results are presented on Table 1. Compounds that were analyzed for and detected above their respective laboratory reporting limit are listed on Table 1 with their associated results. The NYSDEC 6NYCRR Part 375 soil cleanup objectives (SCOs) are presented on Table 1 for comparison purposes. The soil sample results are discussed below.

### 3.1 Qualitative Soil Screening

During test pit excavation activities, elevated PID readings, discolored soil and olfactory evidence of impacts were observed in subsurface soil. Mild to strong petroleum odors were observed in the subsurface soil at all test pits except TP-6 (refusal met at 4.5 feet below ground surface (fbgs)) and TP-8. Mobile light non-aqueous phase liquid (LNAPL) (apparent petroleum) was observed at TP-1, TP-3, TP-4, TP-5, TP-7, and TP-9. TP-9 appeared to be the most impacted sample location based on the amount of LNAPL observed. TP-9 was excavated within a former tank area based on its location within an obvious bermed area.

Above-grade piping was observed proximate TP-2 and subsurface piping was encountered in TP-3, TP-4 and TP-6. TP-6 was excavated in the vicinity of a former pump station, based on historic maps reviewed as part of this investigation.

Soil samples were screened for total organic compounds using a MiniRae 2000 PID. As shown on Table 1, the highest PID measurement, 990 parts per million (ppm), was observed at TP-9 at approximately 10 fbgs. Elevated PID measurements greater than 100 ppm were observed in the subsurface at all test pits except TP-6 and TP-8.

### 3.2 Soil Analytical Results

As shown on Table 1, RCRA metals including arsenic, barium, cadmium, chromium, lead, mercury, and selenium were detected above method detection levels (MDLs) at all seven surface soil sample locations. Arsenic exceeded its 6 NYCRR Part 375 Commercial SCO (CSCO) of 16 mg/kg at two surface soil locations, TP-2 Surface and TP-5 Surface, with concentrations of 17.2 mg/kg and 49.4 mg/kg, respectively. Mercury exceeded its Unrestricted SCO (USCO) of 0.18 mg/kg at TP-4 Surface with a concentration of 0.197 mg/kg.

VOCs and SVOCs were detected above MDLs at all seven subsurface soil samples. Acetone exceeded its USCO of 0.05 mg/kg at all subsurface sample locations except TP-9; 1,2,4-Trimethylbenzene (1,2,4-TMB) exceeded its USCO of 3.6 mg/kg at TP-9 (72 mg/kg); and chrysene exceeded its USCO of 1 mg/kg at TP-9 (1.3 mg/kg). Elevated VOC and SVOC TICs were observed in the subsurface at all test pit locations. The VOC TIC concentrations ranged from 20.5 mg/kg at TP-7 to 763 mg/kg at TP-9, The SVOC TIC concentrations ranged from 21.4 mg/kg at TP-7 to 983 mg/kg at TP-9.

## 3.3 Site Geology/Hydrogeology

The overburden geology is generally described as topsoil overlying gravel mixed with sand, silt, and cobbles to approximately 6 fbgs, and fine sand with gravel and clay below. Fill material with construction debris (cables, bricks, cinder blocks, piping, dismantled drum) was observed in TP-5 and TP-6 located east/southeast of the existing building and parking lot. Bedrock was not encountered during the test pit investigation.

Groundwater monitoring wells were not installed as part of this investigation. Perched groundwater was encountered at approximately 6 fbgs at TP-1 and approximately 8 fbgs at TP-7. Based on TurnKey's knowledge of local groundwater flow direction, we estimate groundwater flows in a south/southwest direction.

## 4.0 CONCLUSIONS

Based on the results of this investigation, TurnKey offers the following conclusions and recommendations:

- The Site appears to have been a part of a larger petroleum refining and storage facility that operated from 1876-1954. The Site itself historically contained 20+/- aboveground petroleum storage tanks and berm areas.
- Elevated PID reading over 100 ppm were measured in subsurface soil in seven of the nine test pits, with the highest reading of 990 ppm at TP-9. Mild to strong petroleum odors were observed in the subsurface soil at all test pits except TP-6 and TP-8.
- Mobile LNAPL (petroleum) was observed at TP-1, TP-3, TP-4, TP-5, TP-7, and TP-9. TP-9 appeared to be the most impacted sample location based on the amount of LNAPL observed. TP-9 was excavated within a former tank area based on its location within an obvious bermed area.
- Based on the presence of petroleum product encountered during this investigation, the NYSDEC was notified and Spill No. 1908813 was assigned to the Site.
- Arsenic exceeded its CSCO at two surface soil locations and mercury exceeded its USCO at one surface soil location.
- Elevated VOC TICSs and SVOC TICs were observed in the subsurface at all test pit locations. Based on our experience at other nearby sites, these results are indicative of weathered petroleum in the subsurface.
- Based on the evidence of petroleum odors, discolored soil, elevated PID measurements, subsurface and above grade piping, and the presence of mobile LNAPL. The environmental impacts can reasonably be attributed to the historical use of the Site as a petroleum bulk storage and transmission facility.
- Based on the results of this investigation, remedial work appears warranted. A copy of this report should be provided to the NYSDEC for their review and comment.
- The appears to be a good candidate for the New York Brownfield Cleanup Program (BCP). However, if the Site does not enter the BCP, environmental contamination will need be addressed through the New York Spills Progam.

## 5.0 LIMITATIONS

This report has been prepared for the exclusive use of 1641 River Street LLC. The contents of this report are limited to information available at the time of the Site investigation activities and to data referenced herein, and assume all referenced information sources to be true and accurate. The findings herein may be relied upon only at the discretion of 1641 River. Use of or reliance upon this report or its findings by any other person or entity is prohibited without written permission of TurnKey Environmental Restoration, LLC.

# TABLES

**TABLE 1**

**SUMMARY OF SOIL/FILL SAMPLE ANALYTICAL RESULTS**

**SUBSURFACE INVESTIGATION REPORT**

**1641 RIVER STREET SITE**

**OLEAN, NEW YORK**

| PARAMETER[1] | Unrestricted Use SCOs [2] | Commercial Use SCOs [2] | TP-1 SURFACE | TP-1 | TP-2 SURFACE | TP-2 | TP-3 SURFACE | TP-3 | TP-4 SURFACE | TP-4 | TP-5 SURFACE | TP-5 | TP-7 SURFACE | TP-7 | TP-9 SURFACE | TP-9 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | 0 - 2" | 6 fbgs | 0 - 2" | 12 fbgs | 0 - 2" | 9 fbgs | 0 - 2" | 9 fbgs | 0 - 2" | 12 fbgs | 0 - 2" | 8 fbgs | 0 - 2" | 10 fbgs |
| | | | 12/9/2019 | | | | | | | | | | | | | |
| ***Filed Screening Results*** | | | | | | | | | | | | | | | | |
| Maximum PID Reading (ppm) | -- | -- | 0 | 130 | 0 | 208 | 0 | 193 | 0 | 387 | 0 | 800 | 0 | 400 | 0 | 990 |
| ***Volatile Organic Compounds (VOCs) - mg/Kg*** [3] | | | | | | | | | | | | | | | | |
| 1,2,4-Trimethylbenzene | **3.6** | **190** | -- | 0.037 J | -- | 1.1 D | -- | 0.059 J | -- | 0.15 | -- | 0.092 J D | -- | 0.18 | -- | **72 D** |
| Acetone | **0.05** | **500** | -- | **4.3** | -- | **1.1 D** | -- | **3** | -- | **4.4** | -- | **1.3 D** | -- | **2.1** | -- | *ND* |
| Bromomethane (Methyl bromide) | -- | -- | -- | 0.041 J | -- | *ND* | -- | 0.031 J | -- | *ND* | -- | *ND* | -- | *ND* | -- | *ND* |
| Cyclohexane | -- | -- | -- | *ND* | -- | *ND* | -- | *ND* | -- | *ND* | -- | *ND* | -- | *ND* | -- | 1.9 J D |
| Methyl acetate | -- | -- | -- | 17 D | -- | 6.1 D | -- | 13 | -- | 17 | -- | 7.6 D | -- | 10 | -- | 6.7 D |
| Methylcyclohexane | -- | -- | -- | 2.1 | -- | 17 D | -- | 1.9 | -- | 2.8 | -- | 7.1 D | -- | 0.44 | -- | 210 D |
| n-Butylbenzene | **12** | **500** | -- | 0.042 J | -- | *ND* | -- | *ND* | -- | *ND* | -- | 0.083 J D | -- | 0.011 J | -- | 0.76 D |
| sec-Butylbenzene | **11** | **500** | -- | 0.18 | -- | 0.042 J D | -- | 0.081 | -- | 0.064 | -- | 0.48 D | -- | 0.025 J | -- | 3.6 D |
| Total VOC TICs | -- | -- | -- | 50.5 J | -- | 59.4 J D | -- | 43.7 J | -- | 44.2 J | -- | 142 J D | -- | 20.5 J | -- | 763 J D |
| ***Semi-Volatile Organic Compounds (SVOCs) - mg/Kg*** [3] | | | | | | | | | | | | | | | | |
| 2-Methylnaphthalene | -- | -- | -- | *ND* | -- | *ND* | -- | *ND* | -- | *ND* | -- | *ND* | -- | *ND* | -- | 0.3 J D |
| Anthracene | **100** | **500** | -- | *ND* | -- | *ND* | -- | *ND* | -- | *ND* | -- | *ND* | -- | *ND* | -- | 0.37 J D |
| Chrysene | **1** | **56** | -- | *ND* | -- | *ND* | -- | *ND* | -- | *ND* | -- | 0.19 | -- | *ND* | -- | **1.3 J D** |
| Dibenzofuran | **7** | **350** | -- | 0.054 J | -- | *ND* | -- | *ND* | -- | *ND* | -- | *ND* | -- | 0.033 J | -- | 1.6 J D |
| Fluorene | **30** | **500** | -- | *ND* | -- | *ND* | -- | *ND* | -- | 0.21 | -- | *ND* | -- | 0.044 J | -- | 2.4 D |
| Naphthalene | **12** | **500** | -- | *ND* | -- | *ND* | -- | 0.044 J | -- | 0.047 J | -- | 0.16 J | -- | *ND* | -- | *ND* |
| Phenanthrene | **100** | **500** | -- | 0.084 J | -- | 0.06 J | -- | 0.21 | -- | 0.15 | -- | 1.2 | -- | 0.072 J | -- | 6.5 D |
| Pyrene | **100** | **500** | -- | *ND* | -- | *ND* | -- | *ND* | -- | *ND* | -- | 0.095 J | -- | *ND* | -- | *ND* |
| Total SVOC TICs | -- | -- | -- | 29.8 J | -- | 33.3 J | -- | 60.5 J | -- | 58.8 J | -- | 80.6 J | -- | 21.4 J | -- | 983 J D |
| ***Metals - mg/Kg*** | | | | | | | | | | | | | | | | |
| Arsenic | **13** | **16** | 10.6 | -- | **17.2** | -- | 15.5 | -- | 2.77 | -- | **49.4** | -- | 8.69 | -- | 5.05 | -- |
| Barium | **350** | **400** | 88.1 | -- | 214 | -- | 64.6 | -- | 29.7 | -- | 194 | -- | 90 | -- | 35.7 | -- |
| Cadmium | **2.5** | **9.3** | 0.915 | -- | 1.17 | -- | 1.05 | -- | 0.454 | -- | 1.16 | -- | 0.84 | -- | 0.524 | -- |
| Chromium | **30** | **1500** | 11.7 | -- | 14 | -- | 6.84 | -- | 8.34 | -- | 9.47 | -- | 12.2 | -- | 5.91 | -- |
| Lead | **63** | **1000** | 22.2 | -- | 48.7 | -- | 40.4 | -- | 6.42 | -- | 57.7 | -- | 23.6 | -- | 16.5 | -- |
| Mercury | **0.18** | **2.8** | *ND* | -- | 0.177 | -- | 0.124 | -- | **0.197** | -- | 0.146 | -- | *ND* | -- | *ND* | -- |
| Selenium | **3.9** | **1500** | *ND* | -- | 0.419 J | -- | 0.348 J | -- | *ND* | -- | 0.581 J | -- | *ND* | -- | *ND* | -- |

**Notes:**

1. Only those parameters detected at a minimum of one sample location are presented in this table; other compounds were reported as non-detect.
2. Values per NYSDEC Part 375 Soil Cleanup Objectives (SCOs).
3. Sample results were reported by the laboratory in ug/kg and converted to mg/kg for comparisons to SCOs.

**Definitions:**

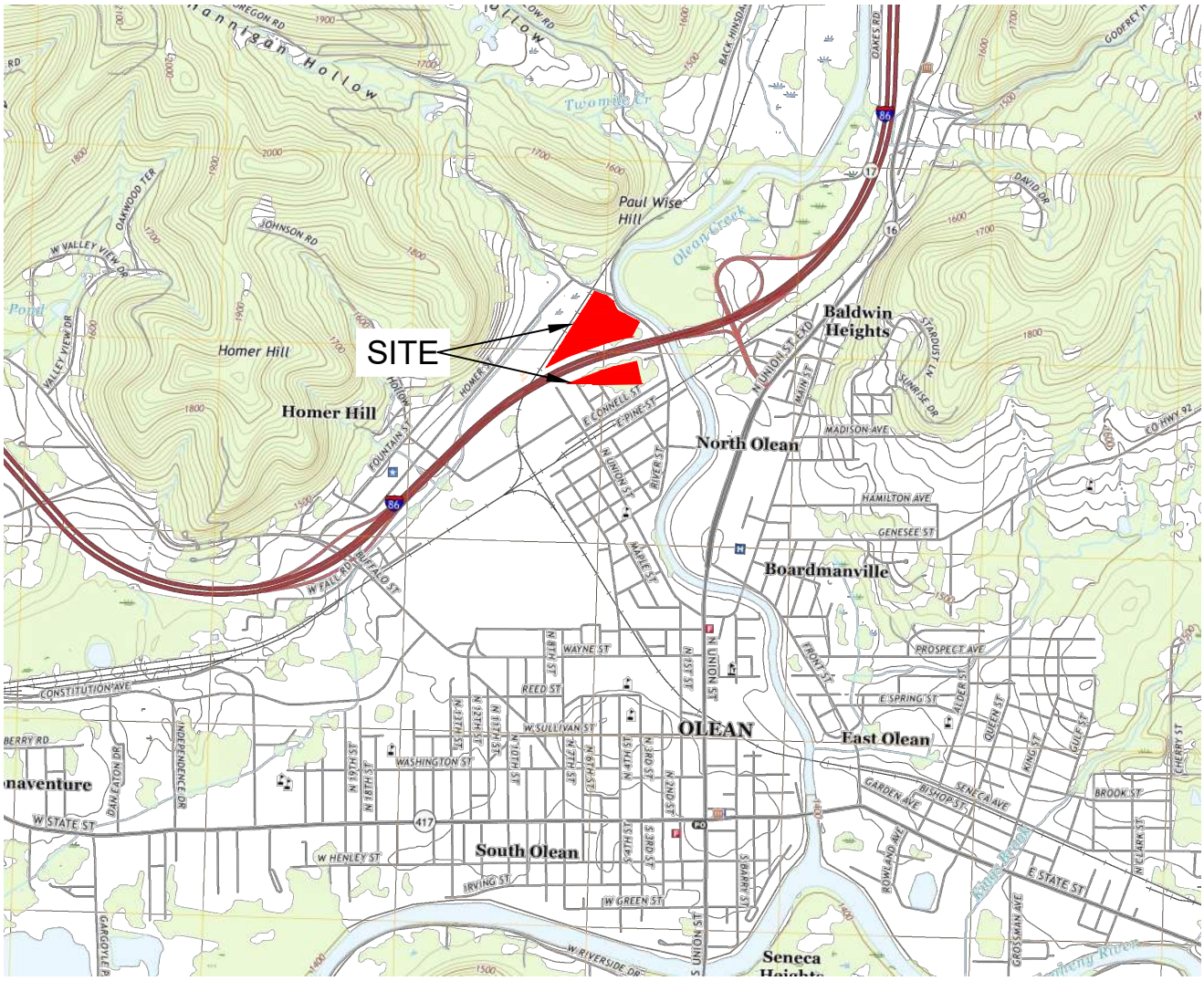
fbgs = feet below ground surface
PID = photoionization detector
ppm = parts per million
*ND* = Not detected at the Method Detection Limit (MDL) for the sample, or Estimated Detection Limit (EDL) for SPME-related analyses.
"--" = No value available for the parameter. Or parameter not analysed for.
J = Estimated value. The Target analyte concentration is below the quantitation limit (RL), but above the Method Detection Limit (MDL) or Estimated Detection Limit (EDL) for SPME-related analyses. This represents an estimated concentration for Tentatively Identified Compounds (TICs).
D = Concentration of analyte was quantified from diluted analysis

| | |
|---|---|
| **Bold** | = Result exceeds Unrestricted Use SCOs. |
| **Bold** | = Result exceeds Commercial Use SCOs. |

# FIGURES

F:\CAD\TurnKey\1641 River Street\Phase II Environmental Investigation Report\Figure 1; Site Location & Vicinity Map.dwg, 12/31/2019 7:35:44 AM

# FIGURE 1




SCALE: 1 INCH = 3,000 FEET
SCALE IN FEET
(approximate)

U.S. DEPARTMENT OF THE INTERIOR
U.S. GEOLOGICAL SURVEY

OLEAN QUADRANGLE
NEW YORK - CATTARAUGUS COUNTY
7.5-MINUTE SERIES

USGS
science for a changing world




QUADRANGLE LOCATION

TurnKey Environmental Restoration, LLC
2558 HAMBURG TURNPIKE
SUITE 300
BUFFALO, NY 14218
(716) 856-0635

PROJECT NO.: 0518-019-001

DATE: JANUARY 2020

DRAFTED BY: CCB

## SITE LOCATION & VICINITY MAP

SUBSURFACE ENVIRONMENTAL INVESTIGATION REPORT

1641 RIVER STREET SITE
OLEAN, NEW YORK

PREPARED FOR
1641 RIVER STREET LLC

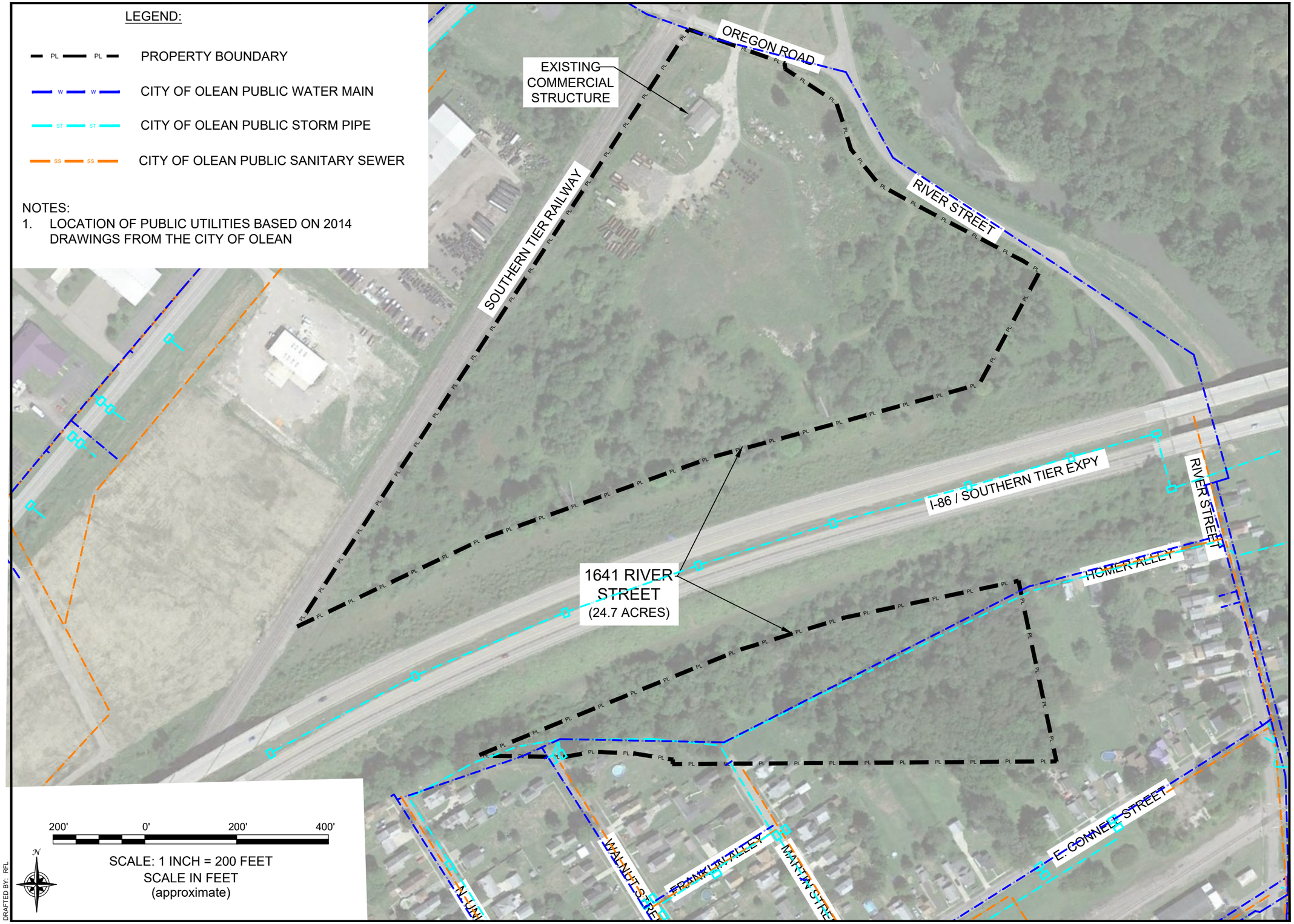
*DISCLAIMER:*
*PROPERTY OF TURNKEY ENVIRONMENTAL RESTORATION, LLC. IMPORTANT: THIS DRAWING PRINT IS LOANED FOR MUTUAL ASSISTANCE AND AS SUCH IS SUBJECT TO RECALL AT ANY TIME. INFORMATION CONTAINED HEREON IS NOT TO BE DISCLOSED OR REPRODUCED IN ANY FORM FOR THE BENEFIT OF PARTIES OTHER THAN NECESSARY SUBCONTRACTORS & SUPPLIERS WITHOUT THE WRITTEN CONSENT OF TURNKEY ENVIRONMENTAL RESTORATION, LLC.*

F:\CAD\TurnKey\1641 River Street\Phase II Environmental Investigation Report\Figure 2; Site Plan (Aerial).dwg, 1/2/2020 11:21:35 AM

LEGEND:

- PROPERTY BOUNDARY
- CITY OF OLEAN PUBLIC WATER MAIN
- CITY OF OLEAN PUBLIC STORM PIPE
- CITY OF OLEAN PUBLIC SANITARY SEWER

NOTES:
1. LOCATION OF PUBLIC UTILITIES BASED ON 2014 DRAWINGS FROM THE CITY OF OLEAN




200' 0' 200' 400'

SCALE: 1 INCH = 200 FEET
SCALE IN FEET
(approximate)

DATE: JANUARY 2020
DRAFTED BY: RFL


2558 HAMBURG TURNPIKE
SUITE 300
BUFFALO, NY 14218
(716) 856-0635


JOB NO.: 0518-019-001

# SITE PLAN (AERIAL)

SUBSURFACE ENVIRONMENTAL INVESTIGATION REPORT

1641 RIVER STREET SITE
OLEAN, NEW YORK

PREPARED FOR
1641 RIVER STREET LLC

**FIGURE 2**


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F:\CAD\TurnKey\1641 River Street\Phase I Environmental Investigation Report\FIGURE 3. INVESTIGATION LOCATIONS.dwg, 1/7/2020 10:17:48 AM

LEGEND:

- PL — PROPERTY BOUNDARY
- HISTORIC TANK LOCATION FROM 1898 USGS MAP (SEE NOTE 1)
- HISTORIC TANK LOCATION FROM 1955 AERIAL (SEE NOTE 1)
- APPROX. BERM LOCATION (SEE NOTE 1)
- APPROX. FORMER PETROLEUM PUMP STATION (SEE NOTE 2)

NOTES:
1. LOCATION OF TANKS BASED ON AERIAL IMAGERY AND HISTORICAL USGS QUADRANGLE MAPS.
2. LOCATION OF FORMER PETROLEUM PUMP STATION BASED ON A MAP WITHIN HISTORICAL 2005 ABSTRACT OF TITLE (MAP# 319)
3. ALL LOCATIONS OF TANKS AND BERMS ARE APPROXIMATE.

1641 RIVER STREET (24.7 ACRES)

200' 0' 200' 400'

SCALE: 1 INCH = 200 FEET
SCALE IN FEET
(approximate)

N

DATE: DECEMBER 2019
DRAFTED BY: RFL

# HISTORICAL SITE FEATURES

SUBSURFACE ENVIRONMENTAL INVESTIGATION REPORT

1641 RIVER STREET SITE
OLEAN, NEW YORK

PREPARED FOR
1641 RIVER STREET LLC

**FIGURE 3**


2558 HAMBURG TURNPIKE
SUITE 300
BUFFALO, NY 14218
(716) 856-0635


TURNKEY ENVIRONMENTAL RESTORATION, LLC

JOB NO.: 0518-019-001


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F:\CAD\TurnKey\1641 River Street\Phase II Environmental Investigation Report\Figure 4; Investigation Locations.dwg, 1/2/2020 1:54:06 PM

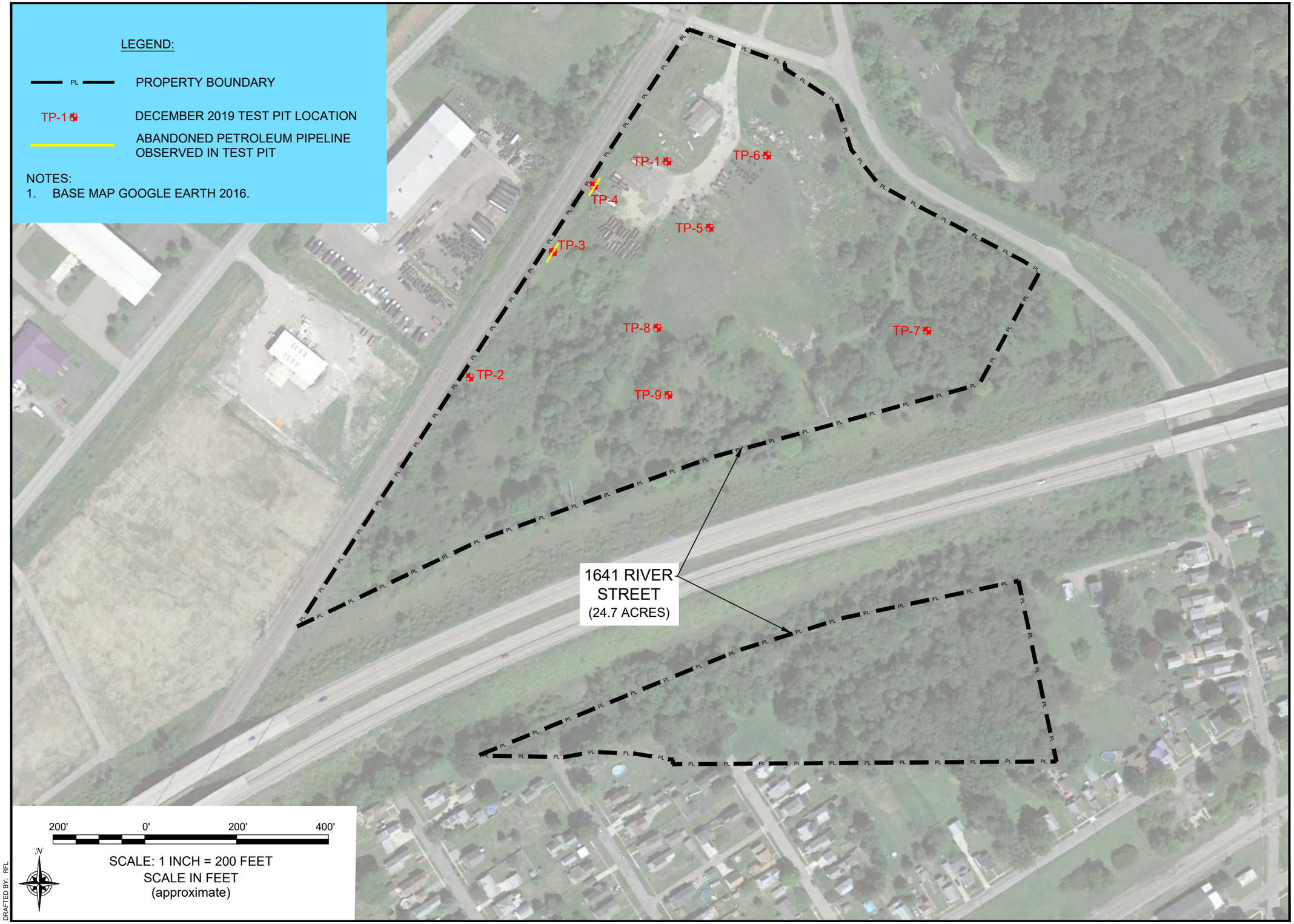
LEGEND:

PL — PROPERTY BOUNDARY

TP-1 — DECEMBER 2019 TEST PIT LOCATION

ABANDONED PETROLEUM PIPELINE OBSERVED IN TEST PIT

NOTES:
1. BASE MAP GOOGLE EARTH 2016.




200' 0' 200' 400'

SCALE: 1 INCH = 200 FEET
SCALE IN FEET
(approximate)

N

DATE: JANUARY 2020
DRAFTED BY: RFL


2558 HAMBURG TURNPIKE
SUITE 300
BUFFALO, NY 14218
(716) 856-0635


TURNKEY ENVIRONMENTAL RESTORATION, LLC

JOB NO.: 0518-019-001

# INVESTIGATION LOCATIONS

SUBSURFACE ENVIRONMENTAL INVESTIGATION REPORT

1641 RIVER STREET SITE
OLEAN, NEW YORK

PREPARED FOR
1641 RIVER STREET LLC

**FIGURE 4**


DISCLAIMER:
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# APPENDIX A

## TEST PIT EXCAVATION LOGS

# TEST PIT EXCAVATION LOG

***Project No:*** T0518-019-001

***Project:*** 1641 River Street Site

***Client:*** 1641 River Street LLC

***Site Location:*** Olean, New York

***Test Pit I.D.:*** TP-1

***Logged By:*** CFD

***Checked By:*** RFL

**TurnKey Environmental Restoration, LLC**
**2558 Hamburg Turnpike, Suite 300**
**Buffalo, NY 14218**
**(716) 856-0635**

## SUBSURFACE PROFILE

| Depth (fbgs) | Elev. /Depth | Description (ASTM D2488: Visual-Manual Procedure) | Lithologic Symbol | PID VOCs (ppm) | Lab Sample | Remarks |
|---|---|---|---|---|---|---|
| 0.0 | 0.0 | Ground Surface | | | | |
| | 0.0 | ***Topsoil*** Dark brown, wet, soft, organic matter (vegetation, rootlets), fine sand. No odor. | | 0 | TP-1 SURFACE | |
| | -1.0 / 1.0 | ***Sub-Rounded Gravel w/ Fine Sand*** Light brown, moist, mostly sub-rounded gravel with fine sand. Mild petroleum odor. | | 4.5 | | |
| | -3.0 / 3.0 | ***Sandy Lean Clay*** Grey, moist, low plasticity fines, little fine sand, little sub-rounded gravel. Petroleum odor. | | 56 | | |
| 5.0 | -5.0 / 5.0 | ***Fine Sand w/ Gravel*** Blueish grey, wet, mostly fine sand, some sub-rounded gravel. Strong petroleum odor. Visible product on top of groundwater. | | 130 | TP-1 | |
| | -6.0 / 6.0 | End of Test Pit | | | | |
| 10.0 | | | | | | |
| 15.0 | | | | | | |

***Excavated By: Benson Construction***
***Excavator Type: Komatsu PC138USLC***
***Excavation Date(s): 12/6/2019***
***Comments:***

***Length: 6.0 feet***
***Width: 2.0 feet***
***Depth: 6.0 feet***

***Depth to Water: 6.0 feet***
***Visual Impacts: Product on top of groundwater***
***Olfactory Observations: Strong petroleum odor at 5-6 feet***

***Sheet: 1 of 1***

# TEST PIT EXCAVATION LOG

***Project No:*** T0518-019-001

***Project:*** 1641 River Street Site

***Client:*** 1641 River Street LLC

***Site Location:*** Olean, New York

***Test Pit I.D.:*** TP-2

***Logged By:*** CFD

***Checked By:*** RFL

**TurnKey Environmental Restoration, LLC**
**2558 Hamburg Turnpike, Suite 300**
**Buffalo, NY 14218**
**(716) 856-0635**

## SUBSURFACE PROFILE

| Depth (fbgs) | Elev. /Depth | Description (ASTM D2488: Visual-Manual Procedure) | Lithologic Symbol | PID VOCs (ppm) | Lab Sample | Remarks |
|---|---|---|---|---|---|---|
| 0.0 | 0.0 | Ground Surface | | | | |
| | 0.0 | ***Topsoil*** Black soil, wet, soft, organic matter (vegetation, rootlets), fine sand. No odor. | | 0 | TP-2 SURFACE | |
| | -1.0 1.0 | ***Fine Sand w/ Gravel*** Tan, moist, mostly fine sand, some sub-rounded gravel. No odor. | | 0 | | |
| | -4.0 4.0 | ***Fine Sand w/ Gravel*** Blueish grey, moist, mostly fine sand, some sub-rounded gravel. Mild petroleum odor. | | 2.4 | | |
| 5.0 | | | | | | |
| | -8.0 8.0 | ***Fine Sand w/ Gravel*** Dark grey, moist, mostly fine sand, some sub-rounded gravel. Strong petroleum odor. | | | | |
| 10.0 | | | | 208 | TP-2 | |
| | -12.0 12.0 | End of Test Pit | | | | |
| 15.0 | | | | | | |

***Excavated By: Benson Construction***
***Excavator Type: Komatsu PC138USLC***
***Excavation Date(s): 12/6/2019***
***Comments: Pipes observed protruding from ground***

***Length: 12.0 feet***
***Width: 2.0 feet***
***Depth: 12.0 feet***

***Depth to Water: NA***
***Visual Impacts: NA***
***Olfactory Observations: Strong petroleum odor at 8-12 feet***

# TEST PIT EXCAVATION LOG

***Project No:*** T0518-019-001

***Project:*** 1641 River Street Site

***Client:*** 1641 River Street LLC

***Site Location:*** Olean, New York

***Test Pit I.D.:*** TP-3

***Logged By:*** CFD

***Checked By:*** RFL

**TurnKey Environmental Restoration, LLC**
**2558 Hamburg Turnpike, Suite 300**
**Buffalo, NY 14218**
**(716) 856-0635**

## SUBSURFACE PROFILE

| Depth (fbgs) | Elev. /Depth | Description (ASTM D2488: Visual-Manual Procedure) | Lithologic Symbol | PID VOCs (ppm) | Lab Sample | Remarks |
|---|---|---|---|---|---|---|
| 0.0 | 0.0 | Ground Surface | | | | |
| | 0.0 | ***Topsoil*** Brown, moist, soft, low plasticity fines, little fine sand, trace organic matter (vegetation, rootlets). No odor. | | 0 | | |
| | -1.1 1.1 | ***Fine Sand w/ Gravel*** Black fine sand, little silt, moist, little sub-rounded gravel. No odor. | | 0 | TP-3 SURFACE | |
| | -2.0 2.0 | ***Silty Sand w/ Gravel*** Tan, dry, mostly fine sand and silt, some sub-rounded gravel. Mild petroleum odor. 6-inch pipe observed at 3.0 feet. | | 6.7 | | |
| | -4.0 4.0 | ***Fine Sand w/ Gravel*** Light blueish grey, moist, mostly fine sand, some sub-rounded gravel, some large cobbles. Petroleum odor. Visible mobile petroleum product seep at 6.0 feet. | | 67 | | |
| 5.0 | -6.0 6.0 | ***Fine Sand w/ Gravel*** Dark Blueish grey, wet, mostly fine sand, some sub-rounded gravel. Strong petroleum odor. | | 193 | TP-3 | |
| | -9.0 9.0 | End of Test Pit | | | | |
| 10.0 | | | | | | |
| 15.0 | | | | | | |

***Excavated By: Benson Construction***
***Excavator Type: Komatsu PC138USLC***
***Excavation Date(s): 12/6/2019***
***Comments: 6-inch pipe found at 3.0 feet***

***Length: 9.0 feet***
***Width: 2.0 feet***
***Depth: 9.0 feet***

***Depth to Water: NA***
***Visual Impacts: Mobile petroleum product at 6.0 feet***
***Olfactory Observations: Petroleum odor***

# TEST PIT EXCAVATION LOG

***Project No:*** T0518-019-001

***Project:*** 1641 River Street Site

***Client:*** 1641 River Street LLC

***Site Location:*** Olean, New York

***Test Pit I.D.:*** TP-4

***Logged By:*** CFD

***Checked By:*** RFL

**TurnKey Environmental Restoration, LLC**
**2558 Hamburg Turnpike, Suite 300**
**Buffalo, NY 14218**
**(716) 856-0635**

## SUBSURFACE PROFILE

| Depth (fbgs) | Elev. /Depth | Description (ASTM D2488: Visual-Manual Procedure) | Lithologic Symbol | PID VOCs (ppm) | Lab Sample | Remarks |
|---|---|---|---|---|---|---|
| 0.0 | 0.0 | Ground Surface | | | | |
| | 0.0 | ***Topsoil*** Dark brown, soft, low plasticity fines, little fine sand, trace organic matter (vegetation, rootlets). No odor. Top 1- to 2-inches covered w/ broken asphalt. | | 0 | TP-4 SURFACE | |
| | -1.0 1.0 | ***Sub-Rounded Gravel w/ Fine Sand*** Tan, light, moist, mostly sub-rounded gravel, fine sand. Mild petroleum odor. | | 10.5 | | |
| | -4.0 4.0 | ***Fine Sand w/ Gravel*** Dark brown, moist, mostly fine sand,some sub-rounded gravel, oily. Strong petroleum odor. | | 120 | | |
| 5.0 | -6.0 6.0 | ***Fine Sand w/ Gravel*** Blueish grey, moist, mostly fine sand, some sub-rounded gravel. Strong petroleum odor. Mobile petroleum product seep at 6 feet. | | 387 | TP-4 | |
| | -9.0 9.0 | End of Test Pit | | | | |
| 10.0 | | | | | | |
| 15.0 | | | | | | |

PID VOCs scale: 0 100 300 500 ppm

***Excavated By: Benson Construction***
***Excavator Type: Komatsu PC138USLC***
***Excavation Date(s): 12/6/2019***
***Comments: 6-inch pipe found at 3.0 feet***

***Length: 9.0 feet***
***Width: 2.0 feet***
***Depth: 9.0 feet***

***Depth to Water: NA***
***Visual Impacts: Mobile petroleum product at 6.0 feet***
***Olfactory Observations: Strong petroleum odor***

# TEST PIT EXCAVATION LOG

***Project No:*** T0518-019-001 | ***Test Pit I.D.:*** TP-5

***Project:*** 1641 River Street Site | ***Logged By:*** CFD

***Client:*** 1641 River Street LLC | ***Checked By:*** RFL

***Site Location:*** Olean, New York

**TurnKey Environmental Restoration, LLC**
**2558 Hamburg Turnpike, Suite 300**
**Buffalo, NY 14218**
**(716) 856-0635**

## SUBSURFACE PROFILE

| Depth (fbgs) | Elev. /Depth | Description (ASTM D2488: Visual-Manual Procedure) | Lithologic Symbol | PID VOCs (ppm) | Lab Sample | Remarks |
|---|---|---|---|---|---|---|
| 0.0 | 0.0 | Ground Surface | | | | |
| | 0.0 | ***Topsoil*** Light brown, moist, soft, low plasticity fines, little fine sand, trace organic matter (vegetation, rootlets). No odor. | | 0.0 | TP-5 SURFACE | |
| | -1.0 1.0 | | | 10.5 | | |
| | -2.0 2.0 | ***Sub-Rounded Gravel*** Grey, moist, mostly sub-rounded gravel, some fine sand, low plasticity fines. Mild petroleum odor. | | | | |
| | | ***Impacted Fill Material w/ Construction Debris*** Black fill material, soft, medium plasticity fines, and construction debris including cables, bricks, cinder blocks, dismantled drum. Petroleum odor. | | 240 | | |
| 5.0 | | | | | | |
| | -6.0 6.0 | ***Sub-Rounded Gravel w/ Sand*** Dark grey, wet, sub-rounded gravel, fine sand, low plasticity fines, few cobbles. Strong petroleum odor. | | 650 | | |
| 10.0 | -10.0 10.0 | ***Fine Sand w/ Gravel*** Dark blue/grey, mostly fine sand, some sub-rounded gravel. Strong petroleum odor. Gravel coated with petroleum product observed 11.0 to 14.0 feet. | | | TP-5 | |
| | -14.0 14.0 | End of Test Pit | | 800 | | |
| 15.0 | | | | | | |

***Excavated By: Benson Construction*** | ***Length: 14.0 feet*** | ***Depth to Water: NA***

***Excavator Type: Komatsu PC138USLC*** | ***Width: 2.0 feet*** | ***Visual Impacts: Petroleum product observed 11.0 to 14.0 feet***

***Excavation Date(s): 12/6/2019*** | ***Depth: 14.0 feet*** | ***Olfactory Observations: Petroleum odor***

***Comments: Construction debris observed from 2.0 to 6.0 feet, gravel coated with petroleum product from 11.0 to 14.0 feet***

# TEST PIT EXCAVATION LOG

***Project No:*** T0518-019-001

***Project:*** 1641 River Street Site

***Client:*** 1641 River Street LLC

***Site Location:*** Olean, New York

***Test Pit I.D.:*** TP-6

***Logged By:*** CFD

***Checked By:*** RFL

**TurnKey Environmental Restoration, LLC**
**2558 Hamburg Turnpike, Suite 300**
**Buffalo, NY 14218**
**(716) 856-0635**

## SUBSURFACE PROFILE

| Depth (fbgs) | Elev. /Depth | Description (ASTM D2488: Visual-Manual Procedure) | Lithologic Symbol | PID VOCs (ppm) | Lab Sample | Remarks |
|---|---|---|---|---|---|---|
| 0.0 | 0.0 / 0.0 | Ground Surface | | | | |
| | -1.0 / 1.0 | ***Topsoil*** Brown, moist to dry, soft, little fine sand, low plasticity fines, trace organic matter (rootlets). No odor. | | 0.0 | | |
| | | ***Fill w/ Construction Debris*** Black/brown fill with bricks, piping, wood. 6-inch pipe observed at 3.0 feet. Foundation observed at 3.0 to 4.5 feet. | | | | |
| | -4.5 / 4.5 | End of Test Pit | | 0.0 | | |
| 5.0 | | | | | | |
| 10.0 | | | | | | |
| 15.0 | | | | | | |

PID VOCs: 0 100 300 500 ppm

***Excavated By: Benson Construction***
***Excavator Type: Komatsu PC138USLC***
***Excavation Date(s): 12/6/2019***
***Comments: 6-inch pipe observed at 3.0 feet***

***Length: 5.0 feet***
***Width: 2.0 feet***
***Depth: 4.5 feet***

***Depth to Water: NA***
***Visual Impacts: NA***
***Olfactory Observations: NA***

# TEST PIT EXCAVATION LOG

***Project No:*** T0518-019-001

***Project:*** 1641 River Street Site

***Client:*** 1641 River Street LLC

***Site Location:*** Olean, New York

***Test Pit I.D.:*** TP-7

***Logged By:*** CFD

***Checked By:*** RFL

**TurnKey Environmental Restoration, LLC**
**2558 Hamburg Turnpike, Suite 300**
**Buffalo, NY 14218**
**(716) 856-0635**

## SUBSURFACE PROFILE

| Depth (fbgs) | Elev. /Depth | Description (ASTM D2488: Visual-Manual Procedure) | Lithologic Symbol | PID VOCs (ppm) | Lab Sample | Remarks |
|---|---|---|---|---|---|---|
| 0.0 | 0.0 | Ground Surface | | | | |
| | 0.0 | ***Topsoil*** Brown, moist, little fine sand, low plasticity fines, soft, trace organic matter (rootlets). No odor. | | 0 | TP-7 SURFACE | |
| | -1.0 / 1.0 | ***Silty Sand w/ Gravel*** Tan, moist to dry, mostly fine sand with silt, some sub-rounded gravel, organic matter (rootlets). Mild petroleum odor. | | 60 | | |
| | -3.0 / 3.0 | ***Fine Sand w/ Gravel*** Grey, moist, mostly fine sand, some sub-rounded gravel, some cobbles. Strong petroleum odor. | | 178 | | |
| 5.0 | | | | | | |
| | -6.0 / 6.0 | ***Fine Sand w/ Gravel*** Blueish grey, wet, mostly fine sand, some sub-rounded gravel. Strong petroleum odor. Visible mobile petroleum product on side wall at 7.5 to 8.0 feet and on top of groundwater. | | 400 | TP-7 | |
| | -8.0 / 8.0 | End of Test Pit | | | | |
| 10.0 | | | | | | |
| 15.0 | | | | | | |

***Excavated By: Benson Construction***
***Excavator Type: Komatsu PC138USLC***
***Excavation Date(s): 12/6/2019***
***Length: 8.0 feet***
***Width: 2.0 feet***
***Depth: 8.0 feet***
***Depth to Water: 8.0 feet***
***Visual Impacts: Petroleum product (sidewall & groundwater)***
***Olfactory Observations: Strong petroleum odor at 3.0-8.0 feet***
***Comments: Petroleum Product observed on sidewall and on top of groundwater***

# TEST PIT EXCAVATION LOG

***Project No:*** T0518-019-001

***Project:*** 1641 River Street Site

***Client:*** 1641 River Street LLC

***Site Location:*** Olean, New York

***Test Pit I.D.:*** TP-8

***Logged By:*** CFD

***Checked By:*** RFL

**TurnKey Environmental Restoration, LLC**
**2558 Hamburg Turnpike, Suite 300**
**Buffalo, NY 14218**
**(716) 856-0635**

## SUBSURFACE PROFILE

| Depth (fbgs) | Elev. /Depth | Description (ASTM D2488: Visual-Manual Procedure) | Lithologic Symbol | PID VOCs (ppm) | Lab Sample | Remarks |
|---|---|---|---|---|---|---|
| 0.0 | 0.0 | Ground Surface | | | | |
| | 0.0 | ***Topsoil*** Black, moist to dry, soft, low plasticity fines, little fine sand, trace organic matter (rootlets). No odor. | | 0.0 | | |
| | -1.0 1.0 | ***Fill/Construction Debris*** Brown to blackish fill, some fine sand, some sub-rounded gravel, and debris including bricks, broken piping. | | 0.0 | | |
| 5.0 | -5.0 5.0 | ***Fine Sand w/ Gravel*** Tan/brown, moist, mostly fine sand, sub-rounded gravel. | | 0.0 | | |
| | -8.0 8.0 | End of Test Pit | | | | |
| 10.0 | | | | | | |
| 15.0 | | | | | | |

PID VOCs: ppm, 0 100 300 500

***Excavated By: Benson Construction***
***Excavator Type: Komatsu PC138USLC***
***Excavation Date(s): 12/6/2019***
***Comments: Not sampled***

***Length: 8.0 feet***
***Width: 2.0 feet***
***Depth: 8.0 feet***

***Depth to Water:***
***Visual Impacts: NA***
***Olfactory Observations: NA***

# TEST PIT EXCAVATION LOG

***Project No:*** T0518-019-001 | ***Test Pit I.D.:*** TP-9

***Project:*** 1641 River Street Site | ***Logged By:*** CFD

***Client:*** 1641 River Street LLC | ***Checked By:*** RFL

***Site Location:*** Olean, New York

**TurnKey Environmental Restoration, LLC**
**2558 Hamburg Turnpike, Suite 300**
**Buffalo, NY 14218**
**(716) 856-0635**

## SUBSURFACE PROFILE

| Depth (fbgs) | Elev. /Depth | Description (ASTM D2488: Visual-Manual Procedure) | Lithologic Symbol | PID VOCs (ppm) | Lab Sample | Remarks |
|---|---|---|---|---|---|---|
| 0.0 | 0.0 | Ground Surface | | | | |
| | 0.0 | ***Topsoil*** Brown, moist, soft, low plasticity fines, little fine sand, trace organic matter (vegetation, rootlets). No odor. | | 0.0 | TP-9 SURFACE | |
| | -1.0 / 1.0 | ***Sub-Rounded Gravel*** Tan, moist, mostly sub-rounded gravel, some fine sand. Mild petroleum odor. | | 350 | | |
| | -2.5 / 2.5 | ***Fine Sand w/ Gravel*** Grey, moist, mostly fine sand, little sub-rounded gravel. Moderate petroleum odor. | | 550 | | |
| 5.0 | -5.0 / 5.0 | ***Fine Sand*** Grey, moist, mostly fine sand, few medium plasticity fines. Strong petroleum odor. Mobile petroleum product observed at 8.0 feet. | | 780 | | |
| | -9.2 / 9.2 | ***Fine Sand w/ Gravel*** Dark grey/black, moist, mostly fine sand, some sub-rounded gravel. Strong petroleum odor. Mobile petroleum product observed on sidewalls and excavator bucket from 9.0 to 10.0 feet. | | 990 | TP-9 | |
| 10.0 | -10.0 / 10.0 | End of Test Pit | | | | |
| 15.0 | | | | | | |

***Excavated By: Benson Construction*** | ***Length: 10.0 feet*** | ***Depth to Water: NA***

***Excavator Type: Komatsu PC138USLC*** | ***Width: 2.0 feet*** | ***Visual Impacts: Mobile petroleum product at 8.0 to 10.0 feet***

***Excavation Date(s): 12/6/2019*** | ***Depth: 10.0 feet*** | ***Olfactory Observations: Strong petroleum odor***

***Comments: Test Pit located within bermed area (apparent former tank berm)***

# APPENDIX B

## PHOTO LOG

# SITE PHOTOGRAPHS

**Photo 1:**



**Photo 2:**




**Photo 3:**



**Photo 4:**



Photo 1: Mobile petroleum observed in TP-1.

Photo 2: Excavation of TP-2 (note pipes protruding from ground).

Photo 3: Excavation of TP-2, petroleum-impacted soil encountered.

Photo 4: Subsurface piping and impacted soil observed at TP-3.

| | |
|---|---|
| **1641 River Street Site**<br>**Olean, New York**<br><br>Photo Date: December 9, 2019 | TurnKey Environmental Restoration, LLC |

# SITE PHOTOGRAPHS

**Photo 5:**



**Photo 6:**



**Photo 7:**



**Photo 8:**



Photo 5: Impacts noted in TP-3.

Photo 6: Impacts noted in TP-4.

Photo 7: Debris (including apparent drum carcass) noted at TP-5.

Photo 8: Gravel coated with petroleum observed at TP-5.

# SITE PHOTOGRAPHS

**Photo 9:**



**Photo 10:**



**Photo 11:**

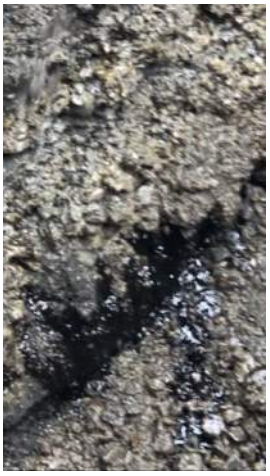


**Photo 12:**



Photo 9: Petroleum noted in TP-7.

Photo 10: Brick and fill materials noted in TP-8.

Photo 11: Petroleum product noted at TP-9.

Photo 12: Gravel and excavator bucket coated with petroleum at TP-9.

# APPENDIX C

## LABORATORY ANALYTICAL REPORT

# ANALYTICAL REPORT

| | |
|---|---|
| Lab Number: | L1959111 |
| Client: | Turnkey Environmental Restoration, LLC<br>2558 Hamburg Turnpike<br>Suite 300<br>Buffalo, NY 14218 |
| ATTN: | Mike Lesakowski |
| Phone: | (716) 856-0599 |
| Project Name: | RIVER ROAD |
| Project Number: | 0518-019-001 |
| Report Date: | 12/18/19 |

The original project report/data package is held by Alpha Analytical. This report/data package is paginated and should be reproduced only in its entirety. Alpha Analytical holds no responsibility for results and/or data that are not consistent with the original.

Certifications & Approvals: MA (M-MA086), NH NELAP (2064), CT (PH-0574), IL (200077), ME (MA00086), MD (348), NJ (MA935), NY (11148), NC (25700/666), PA (68-03671), RI (LAO00065), TX (T104704476), VT (VT-0935), VA (460195), USDA (Permit #P330-17-00196).

Eight Walkup Drive, Westborough, MA 01581-1019
508-898-9220 (Fax) 508-898-9193 800-624-9220 - www.alphalab.com

**Project Name:** RIVER ROAD
**Project Number:** 0518-019-001

**Lab Number:** L1959111
**Report Date:** 12/18/19

| Alpha Sample ID | Client ID | Matrix | Sample Location | Collection Date/Time | Receive Date |
|---|---|---|---|---|---|
| L1959111-01 | TP 1 | SOIL | OLEAN, NY | 12/09/19 10:15 | 12/10/19 |
| L1959111-02 | TP 1 SURFACE | SOIL | OLEAN, NY | 12/09/19 10:20 | 12/10/19 |
| L1959111-03 | TP 2 | SOIL | OLEAN, NY | 12/09/19 10:30 | 12/10/19 |
| L1959111-04 | TP 2 SURFACE | SOIL | OLEAN, NY | 12/09/19 10:35 | 12/10/19 |
| L1959111-05 | TP 3 | SOIL | OLEAN, NY | 12/09/19 10:45 | 12/10/19 |
| L1959111-06 | TP 3 SURFACE | SOIL | OLEAN, NY | 12/09/19 10:50 | 12/10/19 |
| L1959111-07 | TP 4 | SOIL | OLEAN, NY | 12/09/19 11:00 | 12/10/19 |
| L1959111-08 | TP 4 SURFACE | SOIL | OLEAN, NY | 12/09/19 11:05 | 12/10/19 |
| L1959111-09 | TP 5 | SOIL | OLEAN, NY | 12/09/19 11:10 | 12/10/19 |
| L1959111-10 | TP 5 SURFACE | SOIL | OLEAN, NY | 12/09/19 11:15 | 12/10/19 |
| L1959111-11 | TP 7 | SOIL | OLEAN, NY | 12/09/19 11:25 | 12/10/19 |
| L1959111-12 | TP 7 SURFACE | SOIL | OLEAN, NY | 12/09/19 11:30 | 12/10/19 |
| L1959111-13 | TP 9 | SOIL | OLEAN, NY | 12/09/19 11:40 | 12/10/19 |
| L1959111-14 | TP 9 SURFACE | SOIL | OLEAN, NY | 12/09/19 11:45 | 12/10/19 |

| | | | |
|---|---|---|---|
| **Project Name:** | RIVER ROAD | **Lab Number:** | L1959111 |
| **Project Number:** | 0518-019-001 | **Report Date:** | 12/18/19 |

## Case Narrative

The samples were received in accordance with the Chain of Custody and no significant deviations were encountered during the preparation or analysis unless otherwise noted. Sample Receipt, Container Information, and the Chain of Custody are located at the back of the report.

Results contained within this report relate only to the samples submitted under this Alpha Lab Number and meet NELAP requirements for all NELAP accredited parameters unless otherwise noted in the following narrative. The data presented in this report is organized by parameter (i.e. VOC, SVOC, etc.). Sample specific Quality Control data (i.e. Surrogate Spike Recovery) is reported at the end of the target analyte list for each individual sample, followed by the Laboratory Batch Quality Control at the end of each parameter. Tentatively Identified Compounds (TICs), if requested, are reported for compounds identified to be present and are not part of the method/program Target Compound List, even if only a subset of the TCL are being reported. If a sample was re-analyzed or re-extracted due to a required quality control corrective action and if both sets of data are reported, the Laboratory ID of the re-analysis or re-extraction is designated with an "R" or "RE", respectively.

When multiple Batch Quality Control elements are reported (e.g. more than one LCS), the associated samples for each element are noted in the grey shaded header line of each data table. Any Laboratory Batch, Sample Specific % recovery or RPD value that is outside the listed Acceptance Criteria is bolded in the report. In reference to questions H (CAM) or 4 (RCP) when "NO" is checked, the performance criteria for CAM and RCP methods allow for some quality control failures to occur and still be within method compliance. In these instances, the specific failure is not narrated but noted in the associated QC Outlier Summary Report, located directly after the Case Narrative. QC information is also incorporated in the Data Usability Assessment table (Format 11) of our Data Merger tool, where it can be reviewed in conjunction with the sample result, associated regulatory criteria and any associated data usability implications.

Soil/sediments, solids and tissues are reported on a dry weight basis unless otherwise noted. Definitions of all data qualifiers and acronyms used in this report are provided in the Glossary located at the back of the report.

HOLD POLICY - For samples submitted on hold, Alpha's policy is to hold samples (with the exception of Air canisters) free of charge for 21 calendar days from the date the project is completed. After 21 calendar days, we will dispose of all samples submitted including those put on hold unless you have contacted your Alpha Project Manager and made arrangements for Alpha to continue to hold the samples. Air canisters will be disposed after 3 business days from the date the project is completed.

Please contact Project Management at 800-624-9220 with any questions.

| | | | |
|---|---|---|---|
| **Project Name:** | RIVER ROAD | **Lab Number:** | L1959111 |
| **Project Number:** | 0518-019-001 | **Report Date:** | 12/18/19 |

**Case Narrative (continued)**

Report Submission

The project number was provided by the client.

All non-detect (ND) or estimated concentrations (J-qualified) have been quantitated to the limit noted in the MDL column.

Volatile Organics

Any reported concentrations that are below 200 ug/kg may be biased low due to the sample not being collected according to 5035-L/5035A-L low-level specifications.

L1959111-01: The surrogate recovery is outside the acceptance criteria for 4-bromofluorobenzene (176%); however, the sample was not re-analyzed due to coelution with an obvious interference. A copy of the chromatogram is included as an attachment to this report.

L1959111-01D: The surrogate recovery is outside the acceptance criteria for 4-bromofluorobenzene (132%); however, the sample was not re-analyzed due to coelution with an obvious interference. A copy of the chromatogram is included as an attachment to this report.

L1959111-05: The surrogate recovery is outside the acceptance criteria for 4-bromofluorobenzene (148%); however, the sample was not re-analyzed due to coelution with an obvious interference. A copy of the chromatogram is included as an attachment to this report.

L1959111-09: The sample has elevated detection limits due to the dilution required by the elevated concentrations of non-target compounds in the sample.

L1959111-09: The surrogate recovery is outside the acceptance criteria for 4-bromofluorobenzene (171%); however, the sample was not re-analyzed due to coelution with an obvious interference. A copy of the chromatogram is included as an attachment to this report.

L1959111-11: The surrogate recovery is outside the acceptance criteria for 4-bromofluorobenzene (143%); however, the sample was not re-analyzed due to coelution with an obvious interference. A copy of the chromatogram is included as an attachment to this report.

| | | | |
|---|---|---|---|
| **Project Name:** | RIVER ROAD | **Lab Number:** | L1959111 |
| **Project Number:** | 0518-019-001 | **Report Date:** | 12/18/19 |

**Case Narrative (continued)**

Semivolatile Organics

L1959111-13: The sample has elevated detection limits due to the dilution required by the matrix interferences encountered during the concentration of the sample and the analytical dilution required by the sample matrix.

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

Authorized Signature: Cristin Walker

Title: Technical Director/Representative Date: 12/18/19

# ORGANICS

# VOLATILES

**Project Name:** RIVER ROAD
**Project Number:** 0518-019-001
**Lab Number:** L1959111
**Report Date:** 12/18/19

## SAMPLE RESULTS

Lab ID: L1959111-01
Client ID: TP 1
Sample Location: OLEAN, NY
Date Collected: 12/09/19 10:15
Date Received: 12/10/19
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8260C
Analytical Date: 12/15/19 13:00
Analyst: MV
Percent Solids: 83%

| Parameter | Result | Qualifier | Units | RL | MDL | Dilution Factor |
|---|---|---|---|---|---|---|
| **Volatile Organics by GC/MS - Westborough Lab** | | | | | | |
| Methylene chloride | ND | | ug/kg | 320 | 150 | 1 |
| 1,1-Dichloroethane | ND | | ug/kg | 64 | 9.2 | 1 |
| Chloroform | ND | | ug/kg | 96 | 8.9 | 1 |
| Carbon tetrachloride | ND | | ug/kg | 64 | 15. | 1 |
| 1,2-Dichloropropane | ND | | ug/kg | 64 | 8.0 | 1 |
| Dibromochloromethane | ND | | ug/kg | 64 | 8.9 | 1 |
| 1,1,2-Trichloroethane | ND | | ug/kg | 64 | 17. | 1 |
| Tetrachloroethene | ND | | ug/kg | 32 | 12. | 1 |
| Chlorobenzene | ND | | ug/kg | 32 | 8.1 | 1 |
| Trichlorofluoromethane | ND | | ug/kg | 260 | 44. | 1 |
| 1,2-Dichloroethane | ND | | ug/kg | 64 | 16. | 1 |
| 1,1,1-Trichloroethane | ND | | ug/kg | 32 | 11. | 1 |
| Bromodichloromethane | ND | | ug/kg | 32 | 7.0 | 1 |
| trans-1,3-Dichloropropene | ND | | ug/kg | 64 | 17. | 1 |
| cis-1,3-Dichloropropene | ND | | ug/kg | 32 | 10. | 1 |
| Bromoform | ND | | ug/kg | 260 | 16. | 1 |
| 1,1,2,2-Tetrachloroethane | ND | | ug/kg | 32 | 10. | 1 |
| Benzene | ND | | ug/kg | 32 | 10. | 1 |
| Toluene | ND | | ug/kg | 64 | 35. | 1 |
| Ethylbenzene | ND | | ug/kg | 64 | 9.0 | 1 |
| Chloromethane | ND | | ug/kg | 260 | 59. | 1 |
| Bromomethane | 41 | J | ug/kg | 130 | 37. | 1 |
| Vinyl chloride | ND | | ug/kg | 64 | 21. | 1 |
| Chloroethane | ND | | ug/kg | 130 | 29. | 1 |
| 1,1-Dichloroethene | ND | | ug/kg | 64 | 15. | 1 |
| trans-1,2-Dichloroethene | ND | | ug/kg | 96 | 8.7 | 1 |
| Trichloroethene | ND | | ug/kg | 32 | 8.7 | 1 |
| 1,2-Dichlorobenzene | ND | | ug/kg | 130 | 9.2 | 1 |

**Project Name:** RIVER ROAD
**Project Number:** 0518-019-001
**Lab Number:** L1959111
**Report Date:** 12/18/19

## SAMPLE RESULTS

Lab ID: L1959111-01
Client ID: TP 1
Sample Location: OLEAN, NY
Date Collected: 12/09/19 10:15
Date Received: 12/10/19
Field Prep: Not Specified

Sample Depth:

| Parameter | Result | Qualifier | Units | RL | MDL | Dilution Factor |
|---|---|---|---|---|---|---|
| **Volatile Organics by GC/MS - Westborough Lab** | | | | | | |
| 1,3-Dichlorobenzene | ND | | ug/kg | 130 | 9.4 | 1 |
| 1,4-Dichlorobenzene | ND | | ug/kg | 130 | 11. | 1 |
| Methyl tert butyl ether | ND | | ug/kg | 130 | 13. | 1 |
| p/m-Xylene | ND | | ug/kg | 130 | 36. | 1 |
| o-Xylene | ND | | ug/kg | 64 | 18. | 1 |
| cis-1,2-Dichloroethene | ND | | ug/kg | 64 | 11. | 1 |
| Styrene | ND | | ug/kg | 64 | 12. | 1 |
| Dichlorodifluoromethane | ND | | ug/kg | 640 | 58. | 1 |
| Acetone | 4300 | | ug/kg | 640 | 310 | 1 |
| Carbon disulfide | ND | | ug/kg | 640 | 290 | 1 |
| 2-Butanone | ND | | ug/kg | 640 | 140 | 1 |
| 4-Methyl-2-pentanone | ND | | ug/kg | 640 | 82. | 1 |
| 2-Hexanone | ND | | ug/kg | 640 | 75. | 1 |
| Bromochloromethane | ND | | ug/kg | 130 | 13. | 1 |
| 1,2-Dibromoethane | ND | | ug/kg | 64 | 18. | 1 |
| n-Butylbenzene | 42 | J | ug/kg | 64 | 11. | 1 |
| sec-Butylbenzene | 180 | | ug/kg | 64 | 9.3 | 1 |
| 1,2-Dibromo-3-chloropropane | ND | | ug/kg | 190 | 64. | 1 |
| Isopropylbenzene | ND | | ug/kg | 64 | 7.0 | 1 |
| p-Isopropyltoluene | ND | | ug/kg | 64 | 7.0 | 1 |
| n-Propylbenzene | ND | | ug/kg | 64 | 11. | 1 |
| 1,2,3-Trichlorobenzene | ND | | ug/kg | 130 | 20. | 1 |
| 1,2,4-Trichlorobenzene | ND | | ug/kg | 130 | 17. | 1 |
| 1,3,5-Trimethylbenzene | ND | | ug/kg | 130 | 12. | 1 |
| 1,2,4-Trimethylbenzene | 37 | J | ug/kg | 130 | 21. | 1 |
| Methyl Acetate | 20000 | E | ug/kg | 260 | 61. | 1 |
| Cyclohexane | ND | | ug/kg | 640 | 35. | 1 |
| 1,4-Dioxane | ND | | ug/kg | 5100 | 2200 | 1 |
| Freon-113 | ND | | ug/kg | 260 | 44. | 1 |
| Methyl cyclohexane | 2100 | | ug/kg | 260 | 38. | 1 |

**Project Name:** RIVER ROAD
**Project Number:** 0518-019-001
**Lab Number:** L1959111
**Report Date:** 12/18/19

## SAMPLE RESULTS

Lab ID: L1959111-01
Client ID: TP 1
Sample Location: OLEAN, NY
Date Collected: 12/09/19 10:15
Date Received: 12/10/19
Field Prep: Not Specified

Sample Depth:

| Parameter | Result | Qualifier | Units | RL | MDL | Dilution Factor |
|---|---|---|---|---|---|---|
| **Volatile Organics by GC/MS - Westborough Lab** | | | | | | |
| Tentatively Identified Compounds | | | | | | |
| Total TIC Compounds | 50500 | J | ug/kg | | | 1 |
| Unknown Cycloalkane | 4730 | J | ug/kg | | | 1 |
| Unknown Cycloalkane | 5380 | J | ug/kg | | | 1 |
| Unknown | 4160 | J | ug/kg | | | 1 |
| Unknown | 5960 | J | ug/kg | | | 1 |
| Unknown Aromatic | 5060 | J | ug/kg | | | 1 |
| Unknown | 4620 | J | ug/kg | | | 1 |
| Unknown | 5880 | J | ug/kg | | | 1 |
| Unknown | 5900 | J | ug/kg | | | 1 |
| Unknown | 4780 | J | ug/kg | | | 1 |
| Unknown Naphthalene | 4040 | J | ug/kg | | | 1 |

| Surrogate | % Recovery | Qualifier | Acceptance Criteria |
|---|---|---|---|
| 1,2-Dichloroethane-d4 | 120 | | 70-130 |
| Toluene-d8 | 100 | | 70-130 |
| 4-Bromofluorobenzene | **176** | Q | 70-130 |
| Dibromofluoromethane | 130 | | 70-130 |

**Project Name:** RIVER ROAD
**Project Number:** 0518-019-001
**Lab Number:** L1959111
**Report Date:** 12/18/19

## SAMPLE RESULTS

Lab ID: L1959111-01 D
Client ID: TP 1
Sample Location: OLEAN, NY

Date Collected: 12/09/19 10:15
Date Received: 12/10/19
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8260C
Analytical Date: 12/16/19 09:01
Analyst: MV
Percent Solids: 83%

| Parameter | Result | Qualifier | Units | RL | MDL | Dilution Factor |
|---|---|---|---|---|---|---|
| **Volatile Organics by GC/MS - Westborough Lab** | | | | | | |
| Methyl Acetate | 17000 | | ug/kg | 510 | 120 | 2 |

| Surrogate | % Recovery | Qualifier | Acceptance Criteria |
|---|---|---|---|
| 1,2-Dichloroethane-d4 | 113 | | 70-130 |
| Toluene-d8 | 102 | | 70-130 |
| 4-Bromofluorobenzene | **132** | Q | 70-130 |
| Dibromofluoromethane | 108 | | 70-130 |

**Project Name:** RIVER ROAD
**Project Number:** 0518-019-001
**Lab Number:** L1959111
**Report Date:** 12/18/19

## SAMPLE RESULTS

Lab ID: L1959111-03 D
Client ID: TP 2
Sample Location: OLEAN, NY

Date Collected: 12/09/19 10:30
Date Received: 12/10/19
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8260C
Analytical Date: 12/15/19 13:26
Analyst: MV
Percent Solids: 93%

| Parameter | Result | Qualifier | Units | RL | MDL | Dilution Factor |
|---|---|---|---|---|---|---|
| **Volatile Organics by GC/MS - Westborough Lab** | | | | | | |
| Methylene chloride | ND | | ug/kg | 420 | 190 | 2 |
| 1,1-Dichloroethane | ND | | ug/kg | 85 | 12. | 2 |
| Chloroform | ND | | ug/kg | 130 | 12. | 2 |
| Carbon tetrachloride | ND | | ug/kg | 85 | 20. | 2 |
| 1,2-Dichloropropane | ND | | ug/kg | 85 | 11. | 2 |
| Dibromochloromethane | ND | | ug/kg | 85 | 12. | 2 |
| 1,1,2-Trichloroethane | ND | | ug/kg | 85 | 23. | 2 |
| Tetrachloroethene | ND | | ug/kg | 42 | 17. | 2 |
| Chlorobenzene | ND | | ug/kg | 42 | 11. | 2 |
| Trichlorofluoromethane | ND | | ug/kg | 340 | 59. | 2 |
| 1,2-Dichloroethane | ND | | ug/kg | 85 | 22. | 2 |
| 1,1,1-Trichloroethane | ND | | ug/kg | 42 | 14. | 2 |
| Bromodichloromethane | ND | | ug/kg | 42 | 9.3 | 2 |
| trans-1,3-Dichloropropene | ND | | ug/kg | 85 | 23. | 2 |
| cis-1,3-Dichloropropene | ND | | ug/kg | 42 | 13. | 2 |
| Bromoform | ND | | ug/kg | 340 | 21. | 2 |
| 1,1,2,2-Tetrachloroethane | ND | | ug/kg | 42 | 14. | 2 |
| Benzene | ND | | ug/kg | 42 | 14. | 2 |
| Toluene | ND | | ug/kg | 85 | 46. | 2 |
| Ethylbenzene | ND | | ug/kg | 85 | 12. | 2 |
| Chloromethane | ND | | ug/kg | 340 | 79. | 2 |
| Bromomethane | ND | | ug/kg | 170 | 49. | 2 |
| Vinyl chloride | ND | | ug/kg | 85 | 28. | 2 |
| Chloroethane | ND | | ug/kg | 170 | 38. | 2 |
| 1,1-Dichloroethene | ND | | ug/kg | 85 | 20. | 2 |
| trans-1,2-Dichloroethene | ND | | ug/kg | 130 | 12. | 2 |
| Trichloroethene | ND | | ug/kg | 42 | 12. | 2 |
| 1,2-Dichlorobenzene | ND | | ug/kg | 170 | 12. | 2 |

**Project Name:** RIVER ROAD **Lab Number:** L1959111

**Project Number:** 0518-019-001 **Report Date:** 12/18/19

## SAMPLE RESULTS

Lab ID: L1959111-03 D Date Collected: 12/09/19 10:30
Client ID: TP 2 Date Received: 12/10/19
Sample Location: OLEAN, NY Field Prep: Not Specified

Sample Depth:

| Parameter | Result | Qualifier | Units | RL | MDL | Dilution Factor |
|---|---|---|---|---|---|---|
| **Volatile Organics by GC/MS - Westborough Lab** | | | | | | |
| 1,3-Dichlorobenzene | ND | | ug/kg | 170 | 12. | 2 |
| 1,4-Dichlorobenzene | ND | | ug/kg | 170 | 14. | 2 |
| Methyl tert butyl ether | ND | | ug/kg | 170 | 17. | 2 |
| p/m-Xylene | ND | | ug/kg | 170 | 48. | 2 |
| o-Xylene | ND | | ug/kg | 85 | 25. | 2 |
| cis-1,2-Dichloroethene | ND | | ug/kg | 85 | 15. | 2 |
| Styrene | ND | | ug/kg | 85 | 17. | 2 |
| Dichlorodifluoromethane | ND | | ug/kg | 850 | 78. | 2 |
| Acetone | 1100 | | ug/kg | 850 | 410 | 2 |
| Carbon disulfide | ND | | ug/kg | 850 | 390 | 2 |
| 2-Butanone | ND | | ug/kg | 850 | 190 | 2 |
| 4-Methyl-2-pentanone | ND | | ug/kg | 850 | 110 | 2 |
| 2-Hexanone | ND | | ug/kg | 850 | 100 | 2 |
| Bromochloromethane | ND | | ug/kg | 170 | 17. | 2 |
| 1,2-Dibromoethane | ND | | ug/kg | 85 | 24. | 2 |
| n-Butylbenzene | ND | | ug/kg | 85 | 14. | 2 |
| sec-Butylbenzene | 42 | J | ug/kg | 85 | 12. | 2 |
| 1,2-Dibromo-3-chloropropane | ND | | ug/kg | 260 | 85. | 2 |
| Isopropylbenzene | ND | | ug/kg | 85 | 9.3 | 2 |
| p-Isopropyltoluene | ND | | ug/kg | 85 | 9.3 | 2 |
| n-Propylbenzene | ND | | ug/kg | 85 | 14. | 2 |
| 1,2,3-Trichlorobenzene | ND | | ug/kg | 170 | 27. | 2 |
| 1,2,4-Trichlorobenzene | ND | | ug/kg | 170 | 23. | 2 |
| 1,3,5-Trimethylbenzene | ND | | ug/kg | 170 | 16. | 2 |
| 1,2,4-Trimethylbenzene | 1100 | | ug/kg | 170 | 28. | 2 |
| Methyl Acetate | 6100 | | ug/kg | 340 | 81. | 2 |
| Cyclohexane | ND | | ug/kg | 850 | 46. | 2 |
| 1,4-Dioxane | ND | | ug/kg | 6800 | 3000 | 2 |
| Freon-113 | ND | | ug/kg | 340 | 59. | 2 |
| Methyl cyclohexane | 17000 | | ug/kg | 340 | 51. | 2 |

**Project Name:** RIVER ROAD
**Project Number:** 0518-019-001
**Lab Number:** L1959111
**Report Date:** 12/18/19

## SAMPLE RESULTS

Lab ID: L1959111-03 D
Client ID: TP 2
Sample Location: OLEAN, NY
Date Collected: 12/09/19 10:30
Date Received: 12/10/19
Field Prep: Not Specified

Sample Depth:

| Parameter | Result | Qualifier | Units | RL | MDL | Dilution Factor |
|---|---|---|---|---|---|---|
| **Volatile Organics by GC/MS - Westborough Lab** | | | | | | |
| Tentatively Identified Compounds | | | | | | |
| Total TIC Compounds | 59400 | J | ug/kg | | | 2 |
| Unknown | 3440 | J | ug/kg | | | 2 |
| Unknown | 3760 | J | ug/kg | | | 2 |
| Unknown Cyclohexane | 6730 | J | ug/kg | | | 2 |
| Unknown Naphthalene | 2690 | J | ug/kg | | | 2 |
| Unknown Naphthalene | 2900 | J | ug/kg | | | 2 |
| Hexane, 2,4-dimethyl- | 3260 | NJ | ug/kg | | | 2 |
| Unknown | 2720 | J | ug/kg | | | 2 |
| Unknown Cyclohexane | 25700 | J | ug/kg | | | 2 |
| Cyclohexane, 1,1-dimethyl- | 5260 | NJ | ug/kg | | | 2 |
| Unknown | 2980 | J | ug/kg | | | 2 |

| Surrogate | % Recovery | Qualifier | Acceptance Criteria |
|---|---|---|---|
| 1,2-Dichloroethane-d4 | 110 | | 70-130 |
| Toluene-d8 | 105 | | 70-130 |
| 4-Bromofluorobenzene | 125 | | 70-130 |
| Dibromofluoromethane | 88 | | 70-130 |

**Project Name:** RIVER ROAD
**Project Number:** 0518-019-001
**Lab Number:** L1959111
**Report Date:** 12/18/19

## SAMPLE RESULTS

Lab ID: L1959111-05
Client ID: TP 3
Sample Location: OLEAN, NY
Date Collected: 12/09/19 10:45
Date Received: 12/10/19
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8260C
Analytical Date: 12/15/19 13:52
Analyst: MV
Percent Solids: 91%

| Parameter | Result | Qualifier | Units | RL | MDL | Dilution Factor |
|---|---|---|---|---|---|---|
| **Volatile Organics by GC/MS - Westborough Lab** | | | | | | |
| Methylene chloride | ND | | ug/kg | 260 | 120 | 1 |
| 1,1-Dichloroethane | ND | | ug/kg | 52 | 7.6 | 1 |
| Chloroform | ND | | ug/kg | 78 | 7.3 | 1 |
| Carbon tetrachloride | ND | | ug/kg | 52 | 12. | 1 |
| 1,2-Dichloropropane | ND | | ug/kg | 52 | 6.5 | 1 |
| Dibromochloromethane | ND | | ug/kg | 52 | 7.3 | 1 |
| 1,1,2-Trichloroethane | ND | | ug/kg | 52 | 14. | 1 |
| Tetrachloroethene | ND | | ug/kg | 26 | 10. | 1 |
| Chlorobenzene | ND | | ug/kg | 26 | 6.6 | 1 |
| Trichlorofluoromethane | ND | | ug/kg | 210 | 36. | 1 |
| 1,2-Dichloroethane | ND | | ug/kg | 52 | 13. | 1 |
| 1,1,1-Trichloroethane | ND | | ug/kg | 26 | 8.7 | 1 |
| Bromodichloromethane | ND | | ug/kg | 26 | 5.7 | 1 |
| trans-1,3-Dichloropropene | ND | | ug/kg | 52 | 14. | 1 |
| cis-1,3-Dichloropropene | ND | | ug/kg | 26 | 8.2 | 1 |
| Bromoform | ND | | ug/kg | 210 | 13. | 1 |
| 1,1,2,2-Tetrachloroethane | ND | | ug/kg | 26 | 8.7 | 1 |
| Benzene | ND | | ug/kg | 26 | 8.7 | 1 |
| Toluene | ND | | ug/kg | 52 | 28. | 1 |
| Ethylbenzene | ND | | ug/kg | 52 | 7.4 | 1 |
| Chloromethane | ND | | ug/kg | 210 | 49. | 1 |
| Bromomethane | 31 | J | ug/kg | 100 | 30. | 1 |
| Vinyl chloride | ND | | ug/kg | 52 | 17. | 1 |
| Chloroethane | ND | | ug/kg | 100 | 24. | 1 |
| 1,1-Dichloroethene | ND | | ug/kg | 52 | 12. | 1 |
| trans-1,2-Dichloroethene | ND | | ug/kg | 78 | 7.2 | 1 |
| Trichloroethene | ND | | ug/kg | 26 | 7.2 | 1 |
| 1,2-Dichlorobenzene | ND | | ug/kg | 100 | 7.5 | 1 |

**Project Name:** RIVER ROAD
**Project Number:** 0518-019-001
**Lab Number:** L1959111
**Report Date:** 12/18/19

## SAMPLE RESULTS

Lab ID: L1959111-05
Client ID: TP 3
Sample Location: OLEAN, NY
Date Collected: 12/09/19 10:45
Date Received: 12/10/19
Field Prep: Not Specified

Sample Depth:

| Parameter | Result | Qualifier | Units | RL | MDL | Dilution Factor |
|---|---|---|---|---|---|---|
| **Volatile Organics by GC/MS - Westborough Lab** | | | | | | |
| 1,3-Dichlorobenzene | ND | | ug/kg | 100 | 7.7 | 1 |
| 1,4-Dichlorobenzene | ND | | ug/kg | 100 | 8.9 | 1 |
| Methyl tert butyl ether | ND | | ug/kg | 100 | 10. | 1 |
| p/m-Xylene | ND | | ug/kg | 100 | 29. | 1 |
| o-Xylene | ND | | ug/kg | 52 | 15. | 1 |
| cis-1,2-Dichloroethene | ND | | ug/kg | 52 | 9.1 | 1 |
| Styrene | ND | | ug/kg | 52 | 10. | 1 |
| Dichlorodifluoromethane | ND | | ug/kg | 520 | 48. | 1 |
| Acetone | 3000 | | ug/kg | 520 | 250 | 1 |
| Carbon disulfide | ND | | ug/kg | 520 | 240 | 1 |
| 2-Butanone | ND | | ug/kg | 520 | 120 | 1 |
| 4-Methyl-2-pentanone | ND | | ug/kg | 520 | 67. | 1 |
| 2-Hexanone | ND | | ug/kg | 520 | 62. | 1 |
| Bromochloromethane | ND | | ug/kg | 100 | 11. | 1 |
| 1,2-Dibromoethane | ND | | ug/kg | 52 | 14. | 1 |
| n-Butylbenzene | ND | | ug/kg | 52 | 8.7 | 1 |
| sec-Butylbenzene | 81 | | ug/kg | 52 | 7.6 | 1 |
| 1,2-Dibromo-3-chloropropane | ND | | ug/kg | 160 | 52. | 1 |
| Isopropylbenzene | ND | | ug/kg | 52 | 5.7 | 1 |
| p-Isopropyltoluene | ND | | ug/kg | 52 | 5.7 | 1 |
| n-Propylbenzene | ND | | ug/kg | 52 | 8.9 | 1 |
| 1,2,3-Trichlorobenzene | ND | | ug/kg | 100 | 17. | 1 |
| 1,2,4-Trichlorobenzene | ND | | ug/kg | 100 | 14. | 1 |
| 1,3,5-Trimethylbenzene | ND | | ug/kg | 100 | 10. | 1 |
| 1,2,4-Trimethylbenzene | 59 | J | ug/kg | 100 | 17. | 1 |
| Methyl Acetate | 13000 | | ug/kg | 210 | 50. | 1 |
| Cyclohexane | ND | | ug/kg | 520 | 28. | 1 |
| 1,4-Dioxane | ND | | ug/kg | 4200 | 1800 | 1 |
| Freon-113 | ND | | ug/kg | 210 | 36. | 1 |
| Methyl cyclohexane | 1900 | | ug/kg | 210 | 31. | 1 |

**Project Name:** RIVER ROAD
**Project Number:** 0518-019-001
**Lab Number:** L1959111
**Report Date:** 12/18/19

## SAMPLE RESULTS

Lab ID: L1959111-05
Client ID: TP 3
Sample Location: OLEAN, NY
Date Collected: 12/09/19 10:45
Date Received: 12/10/19
Field Prep: Not Specified

Sample Depth:

| Parameter | Result | Qualifier | Units | RL | MDL | Dilution Factor |
|---|---|---|---|---|---|---|
| **Volatile Organics by GC/MS - Westborough Lab** | | | | | | |
| Tentatively Identified Compounds | | | | | | |
| Total TIC Compounds | 43700 | J | ug/kg | | | 1 |
| Hexane, 2,4-dimethyl- | 3420 | NJ | ug/kg | | | 1 |
| Unknown | 3880 | J | ug/kg | | | 1 |
| Unknown | 3600 | J | ug/kg | | | 1 |
| Unknown | 3410 | J | ug/kg | | | 1 |
| Unknown Benzene | 3660 | J | ug/kg | | | 1 |
| Cyclohexane, 1,1-dimethyl- | 4960 | NJ | ug/kg | | | 1 |
| Unknown Cyclohexane | 3380 | J | ug/kg | | | 1 |
| Unknown Cyclohexane | 10800 | J | ug/kg | | | 1 |
| Unknown | 3330 | J | ug/kg | | | 1 |
| Unknown | 3280 | J | ug/kg | | | 1 |

| Surrogate | % Recovery | Qualifier | Acceptance Criteria |
|---|---|---|---|
| 1,2-Dichloroethane-d4 | 121 | | 70-130 |
| Toluene-d8 | 85 | | 70-130 |
| 4-Bromofluorobenzene | **148** | Q | 70-130 |
| Dibromofluoromethane | 114 | | 70-130 |

**Project Name:** RIVER ROAD
**Project Number:** 0518-019-001
**Lab Number:** L1959111
**Report Date:** 12/18/19

## SAMPLE RESULTS

Lab ID: L1959111-07
Client ID: TP 4
Sample Location: OLEAN, NY

Date Collected: 12/09/19 11:00
Date Received: 12/10/19
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8260C
Analytical Date: 12/15/19 14:18
Analyst: MV
Percent Solids: 84%

| Parameter | Result | Qualifier | Units | RL | MDL | Dilution Factor |
|---|---|---|---|---|---|---|
| **Volatile Organics by GC/MS - Westborough Lab** | | | | | | |
| Methylene chloride | ND | | ug/kg | 300 | 140 | 1 |
| 1,1-Dichloroethane | ND | | ug/kg | 60 | 8.7 | 1 |
| Chloroform | ND | | ug/kg | 90 | 8.4 | 1 |
| Carbon tetrachloride | ND | | ug/kg | 60 | 14. | 1 |
| 1,2-Dichloropropane | ND | | ug/kg | 60 | 7.5 | 1 |
| Dibromochloromethane | ND | | ug/kg | 60 | 8.4 | 1 |
| 1,1,2-Trichloroethane | ND | | ug/kg | 60 | 16. | 1 |
| Tetrachloroethene | ND | | ug/kg | 30 | 12. | 1 |
| Chlorobenzene | ND | | ug/kg | 30 | 7.6 | 1 |
| Trichlorofluoromethane | ND | | ug/kg | 240 | 42. | 1 |
| 1,2-Dichloroethane | ND | | ug/kg | 60 | 15. | 1 |
| 1,1,1-Trichloroethane | ND | | ug/kg | 30 | 10. | 1 |
| Bromodichloromethane | ND | | ug/kg | 30 | 6.5 | 1 |
| trans-1,3-Dichloropropene | ND | | ug/kg | 60 | 16. | 1 |
| cis-1,3-Dichloropropene | ND | | ug/kg | 30 | 9.4 | 1 |
| Bromoform | ND | | ug/kg | 240 | 15. | 1 |
| 1,1,2,2-Tetrachloroethane | ND | | ug/kg | 30 | 9.9 | 1 |
| Benzene | ND | | ug/kg | 30 | 9.9 | 1 |
| Toluene | ND | | ug/kg | 60 | 32. | 1 |
| Ethylbenzene | ND | | ug/kg | 60 | 8.4 | 1 |
| Chloromethane | ND | | ug/kg | 240 | 56. | 1 |
| Bromomethane | ND | | ug/kg | 120 | 35. | 1 |
| Vinyl chloride | ND | | ug/kg | 60 | 20. | 1 |
| Chloroethane | ND | | ug/kg | 120 | 27. | 1 |
| 1,1-Dichloroethene | ND | | ug/kg | 60 | 14. | 1 |
| trans-1,2-Dichloroethene | ND | | ug/kg | 90 | 8.2 | 1 |
| Trichloroethene | ND | | ug/kg | 30 | 8.2 | 1 |
| 1,2-Dichlorobenzene | ND | | ug/kg | 120 | 8.6 | 1 |

**Project Name:** RIVER ROAD **Lab Number:** L1959111

**Project Number:** 0518-019-001 **Report Date:** 12/18/19

## SAMPLE RESULTS

Lab ID: L1959111-07 Date Collected: 12/09/19 11:00

Client ID: TP 4 Date Received: 12/10/19

Sample Location: OLEAN, NY Field Prep: Not Specified

Sample Depth:

| Parameter | Result | Qualifier | Units | RL | MDL | Dilution Factor |
|---|---|---|---|---|---|---|
| **Volatile Organics by GC/MS - Westborough Lab** | | | | | | |
| 1,3-Dichlorobenzene | ND | | ug/kg | 120 | 8.8 | 1 |
| 1,4-Dichlorobenzene | ND | | ug/kg | 120 | 10. | 1 |
| Methyl tert butyl ether | ND | | ug/kg | 120 | 12. | 1 |
| p/m-Xylene | ND | | ug/kg | 120 | 33. | 1 |
| o-Xylene | ND | | ug/kg | 60 | 17. | 1 |
| cis-1,2-Dichloroethene | ND | | ug/kg | 60 | 10. | 1 |
| Styrene | ND | | ug/kg | 60 | 12. | 1 |
| Dichlorodifluoromethane | ND | | ug/kg | 600 | 55. | 1 |
| Acetone | 4400 | | ug/kg | 600 | 290 | 1 |
| Carbon disulfide | ND | | ug/kg | 600 | 270 | 1 |
| 2-Butanone | ND | | ug/kg | 600 | 130 | 1 |
| 4-Methyl-2-pentanone | ND | | ug/kg | 600 | 76. | 1 |
| 2-Hexanone | ND | | ug/kg | 600 | 70. | 1 |
| Bromochloromethane | ND | | ug/kg | 120 | 12. | 1 |
| 1,2-Dibromoethane | ND | | ug/kg | 60 | 17. | 1 |
| n-Butylbenzene | ND | | ug/kg | 60 | 10. | 1 |
| sec-Butylbenzene | 64 | | ug/kg | 60 | 8.7 | 1 |
| 1,2-Dibromo-3-chloropropane | ND | | ug/kg | 180 | 60. | 1 |
| Isopropylbenzene | ND | | ug/kg | 60 | 6.5 | 1 |
| p-Isopropyltoluene | ND | | ug/kg | 60 | 6.5 | 1 |
| n-Propylbenzene | ND | | ug/kg | 60 | 10. | 1 |
| 1,2,3-Trichlorobenzene | ND | | ug/kg | 120 | 19. | 1 |
| 1,2,4-Trichlorobenzene | ND | | ug/kg | 120 | 16. | 1 |
| 1,3,5-Trimethylbenzene | ND | | ug/kg | 120 | 12. | 1 |
| 1,2,4-Trimethylbenzene | 150 | | ug/kg | 120 | 20. | 1 |
| Methyl Acetate | 17000 | | ug/kg | 240 | 57. | 1 |
| Cyclohexane | ND | | ug/kg | 600 | 32. | 1 |
| 1,4-Dioxane | ND | | ug/kg | 4800 | 2100 | 1 |
| Freon-113 | ND | | ug/kg | 240 | 41. | 1 |
| Methyl cyclohexane | 2800 | | ug/kg | 240 | 36. | 1 |

**Project Name:** RIVER ROAD
**Project Number:** 0518-019-001
**Lab Number:** L1959111
**Report Date:** 12/18/19

## SAMPLE RESULTS

Lab ID: L1959111-07
Client ID: TP 4
Sample Location: OLEAN, NY
Date Collected: 12/09/19 11:00
Date Received: 12/10/19
Field Prep: Not Specified

Sample Depth:

| Parameter | Result | Qualifier | Units | RL | MDL | Dilution Factor |
|---|---|---|---|---|---|---|
| **Volatile Organics by GC/MS - Westborough Lab** | | | | | | |
| Tentatively Identified Compounds | | | | | | |
| Total TIC Compounds | 44200 | J | ug/kg | | | 1 |
| Unknown | 5310 | J | ug/kg | | | 1 |
| Unknown Alkane | 3940 | J | ug/kg | | | 1 |
| Unknown | 5040 | J | ug/kg | | | 1 |
| Unknown | 3820 | J | ug/kg | | | 1 |
| Unknown | 3300 | J | ug/kg | | | 1 |
| Unknown | 3220 | J | ug/kg | | | 1 |
| Unknown | 3790 | J | ug/kg | | | 1 |
| Cyclohexane, 1,1-dimethyl- | 5300 | NJ | ug/kg | | | 1 |
| Unknown | 3740 | J | ug/kg | | | 1 |
| Unknown | 6740 | J | ug/kg | | | 1 |

| Surrogate | % Recovery | Qualifier | Acceptance Criteria |
|---|---|---|---|
| 1,2-Dichloroethane-d4 | 108 | | 70-130 |
| Toluene-d8 | 118 | | 70-130 |
| 4-Bromofluorobenzene | 124 | | 70-130 |
| Dibromofluoromethane | 97 | | 70-130 |

**Project Name:** RIVER ROAD
**Project Number:** 0518-019-001
**Lab Number:** L1959111
**Report Date:** 12/18/19

## SAMPLE RESULTS

Lab ID: L1959111-09 D
Client ID: TP 5
Sample Location: OLEAN, NY

Date Collected: 12/09/19 11:10
Date Received: 12/10/19
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8260C
Analytical Date: 12/15/19 14:44
Analyst: MV
Percent Solids: 89%

| Parameter | Result | Qualifier | Units | RL | MDL | Dilution Factor |
|---|---|---|---|---|---|---|
| **Volatile Organics by GC/MS - Westborough Lab** | | | | | | |
| Methylene chloride | ND | | ug/kg | 580 | 260 | 2 |
| 1,1-Dichloroethane | ND | | ug/kg | 120 | 17. | 2 |
| Chloroform | ND | | ug/kg | 170 | 16. | 2 |
| Carbon tetrachloride | ND | | ug/kg | 120 | 27. | 2 |
| 1,2-Dichloropropane | ND | | ug/kg | 120 | 14. | 2 |
| Dibromochloromethane | ND | | ug/kg | 120 | 16. | 2 |
| 1,1,2-Trichloroethane | ND | | ug/kg | 120 | 31. | 2 |
| Tetrachloroethene | ND | | ug/kg | 58 | 23. | 2 |
| Chlorobenzene | ND | | ug/kg | 58 | 15. | 2 |
| Trichlorofluoromethane | ND | | ug/kg | 460 | 80. | 2 |
| 1,2-Dichloroethane | ND | | ug/kg | 120 | 30. | 2 |
| 1,1,1-Trichloroethane | ND | | ug/kg | 58 | 19. | 2 |
| Bromodichloromethane | ND | | ug/kg | 58 | 13. | 2 |
| trans-1,3-Dichloropropene | ND | | ug/kg | 120 | 32. | 2 |
| cis-1,3-Dichloropropene | ND | | ug/kg | 58 | 18. | 2 |
| Bromoform | ND | | ug/kg | 460 | 28. | 2 |
| 1,1,2,2-Tetrachloroethane | ND | | ug/kg | 58 | 19. | 2 |
| Benzene | ND | | ug/kg | 58 | 19. | 2 |
| Toluene | ND | | ug/kg | 120 | 63. | 2 |
| Ethylbenzene | ND | | ug/kg | 120 | 16. | 2 |
| Chloromethane | ND | | ug/kg | 460 | 110 | 2 |
| Bromomethane | ND | | ug/kg | 230 | 67. | 2 |
| Vinyl chloride | ND | | ug/kg | 120 | 39. | 2 |
| Chloroethane | ND | | ug/kg | 230 | 52. | 2 |
| 1,1-Dichloroethene | ND | | ug/kg | 120 | 28. | 2 |
| trans-1,2-Dichloroethene | ND | | ug/kg | 170 | 16. | 2 |
| Trichloroethene | ND | | ug/kg | 58 | 16. | 2 |
| 1,2-Dichlorobenzene | ND | | ug/kg | 230 | 17. | 2 |

**Project Name:** RIVER ROAD **Lab Number:** L1959111

**Project Number:** 0518-019-001 **Report Date:** 12/18/19

## SAMPLE RESULTS

Lab ID: L1959111-09 D Date Collected: 12/09/19 11:10
Client ID: TP 5 Date Received: 12/10/19
Sample Location: OLEAN, NY Field Prep: Not Specified

Sample Depth:

| Parameter | Result | Qualifier | Units | RL | MDL | Dilution Factor |
|---|---|---|---|---|---|---|
| **Volatile Organics by GC/MS - Westborough Lab** | | | | | | |
| 1,3-Dichlorobenzene | ND | | ug/kg | 230 | 17. | 2 |
| 1,4-Dichlorobenzene | ND | | ug/kg | 230 | 20. | 2 |
| Methyl tert butyl ether | ND | | ug/kg | 230 | 23. | 2 |
| p/m-Xylene | ND | | ug/kg | 230 | 65. | 2 |
| o-Xylene | ND | | ug/kg | 120 | 34. | 2 |
| cis-1,2-Dichloroethene | ND | | ug/kg | 120 | 20. | 2 |
| Styrene | ND | | ug/kg | 120 | 23. | 2 |
| Dichlorodifluoromethane | ND | | ug/kg | 1200 | 100 | 2 |
| Acetone | 1300 | | ug/kg | 1200 | 560 | 2 |
| Carbon disulfide | ND | | ug/kg | 1200 | 530 | 2 |
| 2-Butanone | ND | | ug/kg | 1200 | 260 | 2 |
| 4-Methyl-2-pentanone | ND | | ug/kg | 1200 | 150 | 2 |
| 2-Hexanone | ND | | ug/kg | 1200 | 140 | 2 |
| Bromochloromethane | ND | | ug/kg | 230 | 24. | 2 |
| 1,2-Dibromoethane | ND | | ug/kg | 120 | 32. | 2 |
| n-Butylbenzene | 83 | J | ug/kg | 120 | 19. | 2 |
| sec-Butylbenzene | 480 | | ug/kg | 120 | 17. | 2 |
| 1,2-Dibromo-3-chloropropane | ND | | ug/kg | 350 | 120 | 2 |
| Isopropylbenzene | ND | | ug/kg | 120 | 13. | 2 |
| p-Isopropyltoluene | ND | | ug/kg | 120 | 13. | 2 |
| n-Propylbenzene | ND | | ug/kg | 120 | 20. | 2 |
| 1,2,3-Trichlorobenzene | ND | | ug/kg | 230 | 37. | 2 |
| 1,2,4-Trichlorobenzene | ND | | ug/kg | 230 | 31. | 2 |
| 1,3,5-Trimethylbenzene | ND | | ug/kg | 230 | 22. | 2 |
| 1,2,4-Trimethylbenzene | 92 | J | ug/kg | 230 | 39. | 2 |
| Methyl Acetate | 7600 | | ug/kg | 460 | 110 | 2 |
| Cyclohexane | ND | | ug/kg | 1200 | 63. | 2 |
| 1,4-Dioxane | ND | | ug/kg | 9300 | 4100 | 2 |
| Freon-113 | ND | | ug/kg | 460 | 80. | 2 |
| Methyl cyclohexane | 7100 | | ug/kg | 460 | 70. | 2 |

**Project Name:** RIVER ROAD
**Project Number:** 0518-019-001
**Lab Number:** L1959111
**Report Date:** 12/18/19

## SAMPLE RESULTS

Lab ID: L1959111-09 D
Client ID: TP 5
Sample Location: OLEAN, NY
Date Collected: 12/09/19 11:10
Date Received: 12/10/19
Field Prep: Not Specified

Sample Depth:

| Parameter | Result | Qualifier | Units | RL | MDL | Dilution Factor |
|---|---|---|---|---|---|---|
| **Volatile Organics by GC/MS - Westborough Lab** | | | | | | |
| Tentatively Identified Compounds | | | | | | |
| Total TIC Compounds | 142000 | J | ug/kg | | | 2 |
| Unknown | 11200 | J | ug/kg | | | 2 |
| Unknown | 10500 | J | ug/kg | | | 2 |
| Unknown | 10600 | J | ug/kg | | | 2 |
| Unknown Cyclohexane | 17600 | J | ug/kg | | | 2 |
| Unknown | 10100 | J | ug/kg | | | 2 |
| Unknown Cyclohexane | 22500 | J | ug/kg | | | 2 |
| Unknown Benzene | 18100 | J | ug/kg | | | 2 |
| Unknown Cycloalkane | 16000 | J | ug/kg | | | 2 |
| Unknown | 9660 | J | ug/kg | | | 2 |
| Unknown | 16100 | J | ug/kg | | | 2 |

| Surrogate | % Recovery | Qualifier | Acceptance Criteria |
|---|---|---|---|
| 1,2-Dichloroethane-d4 | 99 | | 70-130 |
| Toluene-d8 | 120 | | 70-130 |
| 4-Bromofluorobenzene | **171** | Q | 70-130 |
| Dibromofluoromethane | 91 | | 70-130 |

**Project Name:** RIVER ROAD
**Project Number:** 0518-019-001
**Lab Number:** L1959111
**Report Date:** 12/18/19

## SAMPLE RESULTS

Lab ID: L1959111-11
Client ID: TP 7
Sample Location: OLEAN, NY

Date Collected: 12/09/19 11:25
Date Received: 12/10/19
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8260C
Analytical Date: 12/15/19 15:09
Analyst: MV
Percent Solids: 82%

| Parameter | Result | Qualifier | Units | RL | MDL | Dilution Factor |
|---|---|---|---|---|---|---|
| **Volatile Organics by GC/MS - Westborough Lab** | | | | | | |
| Methylene chloride | ND | | ug/kg | 280 | 130 | 1 |
| 1,1-Dichloroethane | ND | | ug/kg | 57 | 8.2 | 1 |
| Chloroform | ND | | ug/kg | 85 | 8.0 | 1 |
| Carbon tetrachloride | ND | | ug/kg | 57 | 13. | 1 |
| 1,2-Dichloropropane | ND | | ug/kg | 57 | 7.1 | 1 |
| Dibromochloromethane | ND | | ug/kg | 57 | 8.0 | 1 |
| 1,1,2-Trichloroethane | ND | | ug/kg | 57 | 15. | 1 |
| Tetrachloroethene | ND | | ug/kg | 28 | 11. | 1 |
| Chlorobenzene | ND | | ug/kg | 28 | 7.2 | 1 |
| Trichlorofluoromethane | ND | | ug/kg | 230 | 40. | 1 |
| 1,2-Dichloroethane | ND | | ug/kg | 57 | 15. | 1 |
| 1,1,1-Trichloroethane | ND | | ug/kg | 28 | 9.5 | 1 |
| Bromodichloromethane | ND | | ug/kg | 28 | 6.2 | 1 |
| trans-1,3-Dichloropropene | ND | | ug/kg | 57 | 16. | 1 |
| cis-1,3-Dichloropropene | ND | | ug/kg | 28 | 9.0 | 1 |
| Bromoform | ND | | ug/kg | 230 | 14. | 1 |
| 1,1,2,2-Tetrachloroethane | ND | | ug/kg | 28 | 9.4 | 1 |
| Benzene | ND | | ug/kg | 28 | 9.4 | 1 |
| Toluene | ND | | ug/kg | 57 | 31. | 1 |
| Ethylbenzene | ND | | ug/kg | 57 | 8.0 | 1 |
| Chloromethane | ND | | ug/kg | 230 | 53. | 1 |
| Bromomethane | ND | | ug/kg | 110 | 33. | 1 |
| Vinyl chloride | ND | | ug/kg | 57 | 19. | 1 |
| Chloroethane | ND | | ug/kg | 110 | 26. | 1 |
| 1,1-Dichloroethene | ND | | ug/kg | 57 | 14. | 1 |
| trans-1,2-Dichloroethene | ND | | ug/kg | 85 | 7.8 | 1 |
| Trichloroethene | ND | | ug/kg | 28 | 7.8 | 1 |
| 1,2-Dichlorobenzene | ND | | ug/kg | 110 | 8.2 | 1 |

**Project Name:** RIVER ROAD
**Project Number:** 0518-019-001
**Lab Number:** L1959111
**Report Date:** 12/18/19

## SAMPLE RESULTS

Lab ID: L1959111-11
Client ID: TP 7
Sample Location: OLEAN, NY
Date Collected: 12/09/19 11:25
Date Received: 12/10/19
Field Prep: Not Specified

Sample Depth:

| Parameter | Result | Qualifier | Units | RL | MDL | Dilution Factor |
|---|---|---|---|---|---|---|
| **Volatile Organics by GC/MS - Westborough Lab** | | | | | | |
| 1,3-Dichlorobenzene | ND | | ug/kg | 110 | 8.4 | 1 |
| 1,4-Dichlorobenzene | ND | | ug/kg | 110 | 9.7 | 1 |
| Methyl tert butyl ether | ND | | ug/kg | 110 | 11. | 1 |
| p/m-Xylene | ND | | ug/kg | 110 | 32. | 1 |
| o-Xylene | ND | | ug/kg | 57 | 16. | 1 |
| cis-1,2-Dichloroethene | ND | | ug/kg | 57 | 10. | 1 |
| Styrene | ND | | ug/kg | 57 | 11. | 1 |
| Dichlorodifluoromethane | ND | | ug/kg | 570 | 52. | 1 |
| Acetone | 2100 | | ug/kg | 570 | 270 | 1 |
| Carbon disulfide | ND | | ug/kg | 570 | 260 | 1 |
| 2-Butanone | ND | | ug/kg | 570 | 130 | 1 |
| 4-Methyl-2-pentanone | ND | | ug/kg | 570 | 73. | 1 |
| 2-Hexanone | ND | | ug/kg | 570 | 67. | 1 |
| Bromochloromethane | ND | | ug/kg | 110 | 12. | 1 |
| 1,2-Dibromoethane | ND | | ug/kg | 57 | 16. | 1 |
| n-Butylbenzene | 11 | J | ug/kg | 57 | 9.5 | 1 |
| sec-Butylbenzene | 25 | J | ug/kg | 57 | 8.3 | 1 |
| 1,2-Dibromo-3-chloropropane | ND | | ug/kg | 170 | 57. | 1 |
| Isopropylbenzene | ND | | ug/kg | 57 | 6.2 | 1 |
| p-Isopropyltoluene | ND | | ug/kg | 57 | 6.2 | 1 |
| n-Propylbenzene | ND | | ug/kg | 57 | 9.7 | 1 |
| 1,2,3-Trichlorobenzene | ND | | ug/kg | 110 | 18. | 1 |
| 1,2,4-Trichlorobenzene | ND | | ug/kg | 110 | 15. | 1 |
| 1,3,5-Trimethylbenzene | ND | | ug/kg | 110 | 11. | 1 |
| 1,2,4-Trimethylbenzene | 180 | | ug/kg | 110 | 19. | 1 |
| Methyl Acetate | 10000 | | ug/kg | 230 | 54. | 1 |
| Cyclohexane | ND | | ug/kg | 570 | 31. | 1 |
| 1,4-Dioxane | ND | | ug/kg | 4600 | 2000 | 1 |
| Freon-113 | ND | | ug/kg | 230 | 39. | 1 |
| Methyl cyclohexane | 440 | | ug/kg | 230 | 34. | 1 |

**Project Name:** RIVER ROAD
**Project Number:** 0518-019-001
**Lab Number:** L1959111
**Report Date:** 12/18/19

## SAMPLE RESULTS

Lab ID: L1959111-11
Client ID: TP 7
Sample Location: OLEAN, NY
Date Collected: 12/09/19 11:25
Date Received: 12/10/19
Field Prep: Not Specified

Sample Depth:

| Parameter | Result | Qualifier | Units | RL | MDL | Dilution Factor |
|---|---|---|---|---|---|---|
| **Volatile Organics by GC/MS - Westborough Lab** | | | | | | |
| Tentatively Identified Compounds | | | | | | |
| Total TIC Compounds | 20500 | J | ug/kg | | | 1 |
| Unknown | 1630 | J | ug/kg | | | 1 |
| Unknown Naphthalene | 1700 | J | ug/kg | | | 1 |
| Unknown Aromatic | 1680 | J | ug/kg | | | 1 |
| Unknown | 1820 | J | ug/kg | | | 1 |
| Unknown | 1970 | J | ug/kg | | | 1 |
| Unknown Benzene | 2930 | J | ug/kg | | | 1 |
| Unknown Cyclohexane | 1610 | J | ug/kg | | | 1 |
| Unknown | 3810 | J | ug/kg | | | 1 |
| Unknown Cyclohexane | 1700 | J | ug/kg | | | 1 |
| Unknown Cyclohexane | 1660 | J | ug/kg | | | 1 |

| Surrogate | % Recovery | Qualifier | Acceptance Criteria |
|---|---|---|---|
| 1,2-Dichloroethane-d4 | 111 | | 70-130 |
| Toluene-d8 | 107 | | 70-130 |
| 4-Bromofluorobenzene | **143** | Q | 70-130 |
| Dibromofluoromethane | 88 | | 70-130 |

**Project Name:** RIVER ROAD
**Project Number:** 0518-019-001
**Lab Number:** L1959111
**Report Date:** 12/18/19

## SAMPLE RESULTS

Lab ID: L1959111-13 D2
Client ID: TP 9
Sample Location: OLEAN, NY
Date Collected: 12/09/19 11:40
Date Received: 12/10/19
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8260C
Analytical Date: 12/16/19 15:59
Analyst: JC
Percent Solids: 86%

| Parameter | Result | Qualifier | Units | RL | MDL | Dilution Factor |
|---|---|---|---|---|---|---|
| **Volatile Organics by GC/MS - Westborough Lab** | | | | | | |
| Methyl cyclohexane | 210000 | | ug/kg | 12000 | 1800 | 50 |

| Surrogate | % Recovery | Qualifier | Acceptance Criteria |
|---|---|---|---|
| 1,2-Dichloroethane-d4 | 113 | | 70-130 |
| Toluene-d8 | 106 | | 70-130 |
| 4-Bromofluorobenzene | 101 | | 70-130 |
| Dibromofluoromethane | 108 | | 70-130 |

**Project Name:** RIVER ROAD
**Project Number:** 0518-019-001
**Lab Number:** L1959111
**Report Date:** 12/18/19

## SAMPLE RESULTS

Lab ID: L1959111-13 D
Client ID: TP 9
Sample Location: OLEAN, NY

Date Collected: 12/09/19 11:40
Date Received: 12/10/19
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8260C
Analytical Date: 12/16/19 07:43
Analyst: MV
Percent Solids: 86%

| Parameter | Result | Qualifier | Units | RL | MDL | Dilution Factor |
|---|---|---|---|---|---|---|
| **Volatile Organics by GC/MS - Westborough Lab** | | | | | | |
| Methylene chloride | ND | | ug/kg | 2900 | 1300 | 10 |
| 1,1-Dichloroethane | ND | | ug/kg | 580 | 84. | 10 |
| Chloroform | ND | | ug/kg | 870 | 82. | 10 |
| Carbon tetrachloride | ND | | ug/kg | 580 | 130 | 10 |
| 1,2-Dichloropropane | ND | | ug/kg | 580 | 73. | 10 |
| Dibromochloromethane | ND | | ug/kg | 580 | 82. | 10 |
| 1,1,2-Trichloroethane | ND | | ug/kg | 580 | 160 | 10 |
| Tetrachloroethene | ND | | ug/kg | 290 | 110 | 10 |
| Chlorobenzene | ND | | ug/kg | 290 | 74. | 10 |
| Trichlorofluoromethane | ND | | ug/kg | 2300 | 400 | 10 |
| 1,2-Dichloroethane | ND | | ug/kg | 580 | 150 | 10 |
| 1,1,1-Trichloroethane | ND | | ug/kg | 290 | 97. | 10 |
| Bromodichloromethane | ND | | ug/kg | 290 | 64. | 10 |
| trans-1,3-Dichloropropene | ND | | ug/kg | 580 | 160 | 10 |
| cis-1,3-Dichloropropene | ND | | ug/kg | 290 | 92. | 10 |
| Bromoform | ND | | ug/kg | 2300 | 140 | 10 |
| 1,1,2,2-Tetrachloroethane | ND | | ug/kg | 290 | 97. | 10 |
| Benzene | ND | | ug/kg | 290 | 97. | 10 |
| Toluene | ND | | ug/kg | 580 | 320 | 10 |
| Ethylbenzene | ND | | ug/kg | 580 | 82. | 10 |
| Chloromethane | ND | | ug/kg | 2300 | 540 | 10 |
| Bromomethane | ND | | ug/kg | 1200 | 340 | 10 |
| Vinyl chloride | ND | | ug/kg | 580 | 200 | 10 |
| Chloroethane | ND | | ug/kg | 1200 | 260 | 10 |
| 1,1-Dichloroethene | ND | | ug/kg | 580 | 140 | 10 |
| trans-1,2-Dichloroethene | ND | | ug/kg | 870 | 80. | 10 |
| Trichloroethene | ND | | ug/kg | 290 | 80. | 10 |
| 1,2-Dichlorobenzene | ND | | ug/kg | 1200 | 84. | 10 |

**Project Name:** RIVER ROAD **Lab Number:** L1959111

**Project Number:** 0518-019-001 **Report Date:** 12/18/19

## SAMPLE RESULTS

Lab ID: L1959111-13 D Date Collected: 12/09/19 11:40
Client ID: TP 9 Date Received: 12/10/19
Sample Location: OLEAN, NY Field Prep: Not Specified

Sample Depth:

| Parameter | Result | Qualifier | Units | RL | MDL | Dilution Factor |
|---|---|---|---|---|---|---|
| **Volatile Organics by GC/MS - Westborough Lab** | | | | | | |
| 1,3-Dichlorobenzene | ND | | ug/kg | 1200 | 86. | 10 |
| 1,4-Dichlorobenzene | ND | | ug/kg | 1200 | 100 | 10 |
| Methyl tert butyl ether | ND | | ug/kg | 1200 | 120 | 10 |
| p/m-Xylene | ND | | ug/kg | 1200 | 330 | 10 |
| o-Xylene | ND | | ug/kg | 580 | 170 | 10 |
| cis-1,2-Dichloroethene | ND | | ug/kg | 580 | 100 | 10 |
| Styrene | ND | | ug/kg | 580 | 110 | 10 |
| Dichlorodifluoromethane | ND | | ug/kg | 5800 | 530 | 10 |
| Acetone | ND | | ug/kg | 5800 | 2800 | 10 |
| Carbon disulfide | ND | | ug/kg | 5800 | 2600 | 10 |
| 2-Butanone | ND | | ug/kg | 5800 | 1300 | 10 |
| 4-Methyl-2-pentanone | ND | | ug/kg | 5800 | 750 | 10 |
| 2-Hexanone | ND | | ug/kg | 5800 | 690 | 10 |
| Bromochloromethane | ND | | ug/kg | 1200 | 120 | 10 |
| 1,2-Dibromoethane | ND | | ug/kg | 580 | 160 | 10 |
| n-Butylbenzene | 760 | | ug/kg | 580 | 97. | 10 |
| sec-Butylbenzene | 3600 | | ug/kg | 580 | 85. | 10 |
| 1,2-Dibromo-3-chloropropane | ND | | ug/kg | 1700 | 580 | 10 |
| Isopropylbenzene | ND | | ug/kg | 580 | 64. | 10 |
| p-Isopropyltoluene | ND | | ug/kg | 580 | 64. | 10 |
| n-Propylbenzene | ND | | ug/kg | 580 | 100 | 10 |
| 1,2,3-Trichlorobenzene | ND | | ug/kg | 1200 | 190 | 10 |
| 1,2,4-Trichlorobenzene | ND | | ug/kg | 1200 | 160 | 10 |
| 1,3,5-Trimethylbenzene | ND | | ug/kg | 1200 | 110 | 10 |
| 1,2,4-Trimethylbenzene | 72000 | | ug/kg | 1200 | 190 | 10 |
| Methyl Acetate | 6700 | | ug/kg | 2300 | 550 | 10 |
| Cyclohexane | 1900 | J | ug/kg | 5800 | 320 | 10 |
| 1,4-Dioxane | ND | | ug/kg | 47000 | 20000 | 10 |
| Freon-113 | ND | | ug/kg | 2300 | 400 | 10 |
| Methyl cyclohexane | 220000 | E | ug/kg | 2300 | 350 | 10 |

**Project Name:** RIVER ROAD
**Project Number:** 0518-019-001
**Lab Number:** L1959111
**Report Date:** 12/18/19

## SAMPLE RESULTS

Lab ID: L1959111-13 D
Client ID: TP 9
Sample Location: OLEAN, NY
Date Collected: 12/09/19 11:40
Date Received: 12/10/19
Field Prep: Not Specified

Sample Depth:

| Parameter | Result | Qualifier | Units | RL | MDL | Dilution Factor |
|---|---|---|---|---|---|---|
| **Volatile Organics by GC/MS - Westborough Lab** | | | | | | |
| Tentatively Identified Compounds | | | | | | |
| Total TIC Compounds | 763000 | J | ug/kg | | | 10 |
| Unknown Cyclopentane | 58500 | J | ug/kg | | | 10 |
| Unknown Cyclohexane | 245000 | J | ug/kg | | | 10 |
| Unknown Alkane | 46200 | J | ug/kg | | | 10 |
| Unknown Alkane | 73400 | J | ug/kg | | | 10 |
| Unknown Benzene | 54700 | J | ug/kg | | | 10 |
| Unknown | 48300 | J | ug/kg | | | 10 |
| Unknown Cyclohexane | 76800 | J | ug/kg | | | 10 |
| Unknown Cyclopentane | 61900 | J | ug/kg | | | 10 |
| Unknown Cyclopentane | 58700 | J | ug/kg | | | 10 |
| Unknown Benzene | 39800 | J | ug/kg | | | 10 |

| Surrogate | % Recovery | Qualifier | Acceptance Criteria |
|---|---|---|---|
| 1,2-Dichloroethane-d4 | 127 | | 70-130 |
| Toluene-d8 | 109 | | 70-130 |
| 4-Bromofluorobenzene | 113 | | 70-130 |
| Dibromofluoromethane | 109 | | 70-130 |

**Project Name:** RIVER ROAD
**Project Number:** 0518-019-001

**Lab Number:** L1959111
**Report Date:** 12/18/19

# Method Blank Analysis
## Batch Quality Control

Analytical Method: 1,8260C
Analytical Date: 12/15/19 11:16
Analyst: MV

| Parameter | Result | Qualifier | Units | RL | MDL |
|---|---|---|---|---|---|
| Volatile Organics by EPA 5035 High - Westborough Lab for sample(s): 01,03,05,07,09,11 Batch: WG1321305-5 | | | | | |
| Methylene chloride | ND | | ug/kg | 250 | 110 |
| 1,1-Dichloroethane | ND | | ug/kg | 50 | 7.2 |
| Chloroform | ND | | ug/kg | 75 | 7.0 |
| Carbon tetrachloride | ND | | ug/kg | 50 | 12. |
| 1,2-Dichloropropane | ND | | ug/kg | 50 | 6.2 |
| Dibromochloromethane | ND | | ug/kg | 50 | 7.0 |
| 1,1,2-Trichloroethane | ND | | ug/kg | 50 | 13. |
| Tetrachloroethene | ND | | ug/kg | 25 | 9.8 |
| Chlorobenzene | ND | | ug/kg | 25 | 6.4 |
| Trichlorofluoromethane | ND | | ug/kg | 200 | 35. |
| 1,2-Dichloroethane | ND | | ug/kg | 50 | 13. |
| 1,1,1-Trichloroethane | ND | | ug/kg | 25 | 8.4 |
| Bromodichloromethane | ND | | ug/kg | 25 | 5.4 |
| trans-1,3-Dichloropropene | ND | | ug/kg | 50 | 14. |
| cis-1,3-Dichloropropene | ND | | ug/kg | 25 | 7.9 |
| Bromoform | ND | | ug/kg | 200 | 12. |
| 1,1,2,2-Tetrachloroethane | ND | | ug/kg | 25 | 8.3 |
| Benzene | ND | | ug/kg | 25 | 8.3 |
| Toluene | ND | | ug/kg | 50 | 27. |
| Ethylbenzene | ND | | ug/kg | 50 | 7.0 |
| Chloromethane | ND | | ug/kg | 200 | 47. |
| Bromomethane | 49 | J | ug/kg | 100 | 29. |
| Vinyl chloride | ND | | ug/kg | 50 | 17. |
| Chloroethane | ND | | ug/kg | 100 | 23. |
| 1,1-Dichloroethene | ND | | ug/kg | 50 | 12. |
| trans-1,2-Dichloroethene | ND | | ug/kg | 75 | 6.8 |
| Trichloroethene | ND | | ug/kg | 25 | 6.8 |
| 1,2-Dichlorobenzene | ND | | ug/kg | 100 | 7.2 |
| 1,3-Dichlorobenzene | ND | | ug/kg | 100 | 7.4 |

**Project Name:** RIVER ROAD
**Project Number:** 0518-019-001

**Lab Number:** L1959111
**Report Date:** 12/18/19

# Method Blank Analysis
## Batch Quality Control

Analytical Method: 1,8260C
Analytical Date: 12/15/19 11:16
Analyst: MV

| Parameter | Result | Qualifier | Units | RL | MDL |
|---|---|---|---|---|---|
| Volatile Organics by EPA 5035 High - Westborough Lab for sample(s): 01,03,05,07,09,11 Batch: WG1321305-5 | | | | | |
| 1,4-Dichlorobenzene | ND | | ug/kg | 100 | 8.6 |
| Methyl tert butyl ether | 14 | J | ug/kg | 100 | 10. |
| p/m-Xylene | ND | | ug/kg | 100 | 28. |
| o-Xylene | ND | | ug/kg | 50 | 14. |
| cis-1,2-Dichloroethene | ND | | ug/kg | 50 | 8.8 |
| Styrene | ND | | ug/kg | 50 | 9.8 |
| Dichlorodifluoromethane | ND | | ug/kg | 500 | 46. |
| Acetone | ND | | ug/kg | 500 | 240 |
| Carbon disulfide | ND | | ug/kg | 500 | 230 |
| 2-Butanone | ND | | ug/kg | 500 | 110 |
| 4-Methyl-2-pentanone | ND | | ug/kg | 500 | 64. |
| 2-Hexanone | ND | | ug/kg | 500 | 59. |
| Bromochloromethane | ND | | ug/kg | 100 | 10. |
| 1,2-Dibromoethane | ND | | ug/kg | 50 | 14. |
| n-Butylbenzene | ND | | ug/kg | 50 | 8.4 |
| sec-Butylbenzene | ND | | ug/kg | 50 | 7.3 |
| 1,2-Dibromo-3-chloropropane | ND | | ug/kg | 150 | 50. |
| Isopropylbenzene | ND | | ug/kg | 50 | 5.4 |
| p-Isopropyltoluene | ND | | ug/kg | 50 | 5.4 |
| n-Propylbenzene | ND | | ug/kg | 50 | 8.6 |
| 1,2,3-Trichlorobenzene | ND | | ug/kg | 100 | 16. |
| 1,2,4-Trichlorobenzene | ND | | ug/kg | 100 | 14. |
| 1,3,5-Trimethylbenzene | ND | | ug/kg | 100 | 9.6 |
| 1,2,4-Trimethylbenzene | ND | | ug/kg | 100 | 17. |
| Methyl Acetate | ND | | ug/kg | 200 | 48. |
| Cyclohexane | ND | | ug/kg | 500 | 27. |
| 1,4-Dioxane | ND | | ug/kg | 4000 | 1800 |
| Freon-113 | ND | | ug/kg | 200 | 35. |
| Methyl cyclohexane | ND | | ug/kg | 200 | 30. |

**Project Name:** RIVER ROAD
**Project Number:** 0518-019-001
**Lab Number:** L1959111
**Report Date:** 12/18/19

# Method Blank Analysis
## Batch Quality Control

Analytical Method: 1,8260C
Analytical Date: 12/15/19 11:16
Analyst: MV

| Parameter | Result | Qualifier | Units | RL | MDL |
|---|---|---|---|---|---|
| Volatile Organics by EPA 5035 High - Westborough Lab for sample(s): 01,03,05,07,09,11 Batch: WG1321305-5 | | | | | |
| Tentatively Identified Compounds | | | | | |
| Total TIC Compounds | 107 | J | ug/kg | | |
| Cyclotrisiloxane, Hexamethyl- | 107 | NJ | ug/kg | | |

| Surrogate | %Recovery | Qualifier | Acceptance Criteria |
|---|---|---|---|
| 1,2-Dichloroethane-d4 | 123 | | 70-130 |
| Toluene-d8 | 88 | | 70-130 |
| 4-Bromofluorobenzene | 99 | | 70-130 |
| Dibromofluoromethane | 111 | | 70-130 |

**Project Name:** RIVER ROAD
**Project Number:** 0518-019-001

**Lab Number:** L1959111
**Report Date:** 12/18/19

# Method Blank Analysis
## Batch Quality Control

Analytical Method: 1,8260C
Analytical Date: 12/16/19 07:17
Analyst: MV

| Parameter | Result | Qualifier | Units | RL | MDL |
|---|---|---|---|---|---|
| Volatile Organics by EPA 5035 High - Westborough Lab for sample(s): 01,13 Batch: WG1321425-5 | | | | | |
| Methylene chloride | ND | | ug/kg | 250 | 110 |
| 1,1-Dichloroethane | ND | | ug/kg | 50 | 7.2 |
| Chloroform | ND | | ug/kg | 75 | 7.0 |
| Carbon tetrachloride | ND | | ug/kg | 50 | 12. |
| 1,2-Dichloropropane | ND | | ug/kg | 50 | 6.2 |
| Dibromochloromethane | ND | | ug/kg | 50 | 7.0 |
| 1,1,2-Trichloroethane | ND | | ug/kg | 50 | 13. |
| Tetrachloroethene | ND | | ug/kg | 25 | 9.8 |
| Chlorobenzene | ND | | ug/kg | 25 | 6.4 |
| Trichlorofluoromethane | ND | | ug/kg | 200 | 35. |
| 1,2-Dichloroethane | ND | | ug/kg | 50 | 13. |
| 1,1,1-Trichloroethane | ND | | ug/kg | 25 | 8.4 |
| Bromodichloromethane | ND | | ug/kg | 25 | 5.4 |
| trans-1,3-Dichloropropene | ND | | ug/kg | 50 | 14. |
| cis-1,3-Dichloropropene | ND | | ug/kg | 25 | 7.9 |
| Bromoform | ND | | ug/kg | 200 | 12. |
| 1,1,2,2-Tetrachloroethane | ND | | ug/kg | 25 | 8.3 |
| Benzene | ND | | ug/kg | 25 | 8.3 |
| Toluene | ND | | ug/kg | 50 | 27. |
| Ethylbenzene | ND | | ug/kg | 50 | 7.0 |
| Chloromethane | ND | | ug/kg | 200 | 47. |
| Bromomethane | 50 | J | ug/kg | 100 | 29. |
| Vinyl chloride | ND | | ug/kg | 50 | 17. |
| Chloroethane | ND | | ug/kg | 100 | 23. |
| 1,1-Dichloroethene | ND | | ug/kg | 50 | 12. |
| trans-1,2-Dichloroethene | ND | | ug/kg | 75 | 6.8 |
| Trichloroethene | ND | | ug/kg | 25 | 6.8 |
| 1,2-Dichlorobenzene | ND | | ug/kg | 100 | 7.2 |
| 1,3-Dichlorobenzene | ND | | ug/kg | 100 | 7.4 |

**Project Name:** RIVER ROAD
**Project Number:** 0518-019-001

**Lab Number:** L1959111
**Report Date:** 12/18/19

# Method Blank Analysis
## Batch Quality Control

Analytical Method: 1,8260C
Analytical Date: 12/16/19 07:17
Analyst: MV

| Parameter | Result | Qualifier | Units | RL | MDL |
|---|---|---|---|---|---|
| Volatile Organics by EPA 5035 High - Westborough Lab for sample(s): 01,13 Batch: WG1321425-5 | | | | | |
| 1,4-Dichlorobenzene | ND | | ug/kg | 100 | 8.6 |
| Methyl tert butyl ether | 11 | J | ug/kg | 100 | 10. |
| p/m-Xylene | ND | | ug/kg | 100 | 28. |
| o-Xylene | ND | | ug/kg | 50 | 14. |
| cis-1,2-Dichloroethene | ND | | ug/kg | 50 | 8.8 |
| Styrene | ND | | ug/kg | 50 | 9.8 |
| Dichlorodifluoromethane | ND | | ug/kg | 500 | 46. |
| Acetone | ND | | ug/kg | 500 | 240 |
| Carbon disulfide | ND | | ug/kg | 500 | 230 |
| 2-Butanone | ND | | ug/kg | 500 | 110 |
| 4-Methyl-2-pentanone | ND | | ug/kg | 500 | 64. |
| 2-Hexanone | ND | | ug/kg | 500 | 59. |
| Bromochloromethane | ND | | ug/kg | 100 | 10. |
| 1,2-Dibromoethane | ND | | ug/kg | 50 | 14. |
| n-Butylbenzene | ND | | ug/kg | 50 | 8.4 |
| sec-Butylbenzene | ND | | ug/kg | 50 | 7.3 |
| 1,2-Dibromo-3-chloropropane | ND | | ug/kg | 150 | 50. |
| Isopropylbenzene | ND | | ug/kg | 50 | 5.4 |
| p-Isopropyltoluene | ND | | ug/kg | 50 | 5.4 |
| n-Propylbenzene | ND | | ug/kg | 50 | 8.6 |
| 1,2,3-Trichlorobenzene | ND | | ug/kg | 100 | 16. |
| 1,2,4-Trichlorobenzene | ND | | ug/kg | 100 | 14. |
| 1,3,5-Trimethylbenzene | ND | | ug/kg | 100 | 9.6 |
| 1,2,4-Trimethylbenzene | ND | | ug/kg | 100 | 17. |
| Methyl Acetate | ND | | ug/kg | 200 | 48. |
| Cyclohexane | ND | | ug/kg | 500 | 27. |
| 1,4-Dioxane | ND | | ug/kg | 4000 | 1800 |
| Freon-113 | ND | | ug/kg | 200 | 35. |
| Methyl cyclohexane | ND | | ug/kg | 200 | 30. |

**Project Name:** RIVER ROAD
**Project Number:** 0518-019-001

**Lab Number:** L1959111
**Report Date:** 12/18/19

# Method Blank Analysis
## Batch Quality Control

Analytical Method: 1,8260C
Analytical Date: 12/16/19 07:17
Analyst: MV

| Parameter | Result | Qualifier | Units | RL | MDL |
|---|---|---|---|---|---|
| Volatile Organics by EPA 5035 High - Westborough Lab for sample(s): 01,13 Batch: WG1321425-5 | | | | | |
| Tentatively Identified Compounds | | | | | |
| No Tentatively Identified Compounds | ND | | ug/kg | | |

| Surrogate | %Recovery | Qualifier | Acceptance Criteria |
|---|---|---|---|
| 1,2-Dichloroethane-d4 | 119 | | 70-130 |
| Toluene-d8 | 101 | | 70-130 |
| 4-Bromofluorobenzene | 95 | | 70-130 |
| Dibromofluoromethane | 110 | | 70-130 |

# Lab Control Sample Analysis
## Batch Quality Control

**Project Name:** RIVER ROAD
**Project Number:** 0518-019-001

**Lab Number:** L1959111
**Report Date:** 12/18/19

| Parameter | LCS %Recovery | Qual | LCSD %Recovery | Qual | %Recovery Limits | RPD | Qual | RPD Limits |
|---|---|---|---|---|---|---|---|---|
| Volatile Organics by EPA 5035 High - Westborough Lab Associated sample(s): 01,03,05,07,09,11 Batch: WG1321305-3 WG1321305-4 | | | | | | | | |
| Methylene chloride | 103 | | 97 | | 70-130 | 6 | | 30 |
| 1,1-Dichloroethane | 113 | | 112 | | 70-130 | 1 | | 30 |
| Chloroform | 106 | | 104 | | 70-130 | 2 | | 30 |
| Carbon tetrachloride | 100 | | 100 | | 70-130 | 0 | | 30 |
| 1,2-Dichloropropane | 113 | | 112 | | 70-130 | 1 | | 30 |
| Dibromochloromethane | 104 | | 103 | | 70-130 | 1 | | 30 |
| 1,1,2-Trichloroethane | 105 | | 101 | | 70-130 | 4 | | 30 |
| Tetrachloroethene | 100 | | 98 | | 70-130 | 2 | | 30 |
| Chlorobenzene | 98 | | 96 | | 70-130 | 2 | | 30 |
| Trichlorofluoromethane | 110 | | 110 | | 70-139 | 0 | | 30 |
| 1,2-Dichloroethane | 116 | | 116 | | 70-130 | 0 | | 30 |
| 1,1,1-Trichloroethane | 100 | | 98 | | 70-130 | 2 | | 30 |
| Bromodichloromethane | 100 | | 100 | | 70-130 | 0 | | 30 |
| trans-1,3-Dichloropropene | 105 | | 102 | | 70-130 | 3 | | 30 |
| cis-1,3-Dichloropropene | 103 | | 101 | | 70-130 | 2 | | 30 |
| Bromoform | 102 | | 100 | | 70-130 | 2 | | 30 |
| 1,1,2,2-Tetrachloroethane | 93 | | 92 | | 70-130 | 1 | | 30 |
| Benzene | 98 | | 96 | | 70-130 | 2 | | 30 |
| Toluene | 100 | | 97 | | 70-130 | 3 | | 30 |
| Ethylbenzene | 100 | | 99 | | 70-130 | 1 | | 30 |
| Chloromethane | 106 | | 102 | | 52-130 | 4 | | 30 |
| Bromomethane | 112 | | 104 | | 57-147 | 7 | | 30 |
| Vinyl chloride | 115 | | 112 | | 67-130 | 3 | | 30 |

# Lab Control Sample Analysis
## Batch Quality Control

**Project Name:** RIVER ROAD
**Project Number:** 0518-019-001

**Lab Number:** L1959111
**Report Date:** 12/18/19

| Parameter | LCS %Recovery | Qual | LCSD %Recovery | Qual | %Recovery Limits | RPD | Qual | RPD Limits |
|---|---|---|---|---|---|---|---|---|
| Volatile Organics by EPA 5035 High - Westborough Lab Associated sample(s): 01,03,05,07,09,11 Batch: WG1321305-3 WG1321305-4 | | | | | | | | |
| Chloroethane | 120 | | 116 | | 50-151 | 3 | | 30 |
| 1,1-Dichloroethene | 96 | | 88 | | 65-135 | 9 | | 30 |
| trans-1,2-Dichloroethene | 101 | | 97 | | 70-130 | 4 | | 30 |
| Trichloroethene | 100 | | 98 | | 70-130 | 2 | | 30 |
| 1,2-Dichlorobenzene | 101 | | 98 | | 70-130 | 3 | | 30 |
| 1,3-Dichlorobenzene | 101 | | 99 | | 70-130 | 2 | | 30 |
| 1,4-Dichlorobenzene | 101 | | 99 | | 70-130 | 2 | | 30 |
| Methyl tert butyl ether | 104 | | 102 | | 66-130 | 2 | | 30 |
| p/m-Xylene | 100 | | 98 | | 70-130 | 2 | | 30 |
| o-Xylene | 96 | | 95 | | 70-130 | 1 | | 30 |
| cis-1,2-Dichloroethene | 102 | | 100 | | 70-130 | 2 | | 30 |
| Styrene | 98 | | 97 | | 70-130 | 1 | | 30 |
| Dichlorodifluoromethane | 75 | | 72 | | 30-146 | 4 | | 30 |
| Acetone | 140 | | 129 | | 54-140 | 8 | | 30 |
| Carbon disulfide | 90 | | 83 | | 59-130 | 8 | | 30 |
| 2-Butanone | 124 | | 127 | | 70-130 | 2 | | 30 |
| 4-Methyl-2-pentanone | 111 | | 106 | | 70-130 | 5 | | 30 |
| 2-Hexanone | 101 | | 99 | | 70-130 | 2 | | 30 |
| Bromochloromethane | 107 | | 103 | | 70-130 | 4 | | 30 |
| 1,2-Dibromoethane | 102 | | 101 | | 70-130 | 1 | | 30 |
| n-Butylbenzene | 99 | | 99 | | 70-130 | 0 | | 30 |
| sec-Butylbenzene | 93 | | 93 | | 70-130 | 0 | | 30 |
| 1,2-Dibromo-3-chloropropane | 96 | | 98 | | 68-130 | 2 | | 30 |

# Lab Control Sample Analysis
## Batch Quality Control

**Project Name:** RIVER ROAD
**Project Number:** 0518-019-001

**Lab Number:** L1959111
**Report Date:** 12/18/19

| Parameter | LCS %Recovery | Qual | LCSD %Recovery | Qual | %Recovery Limits | RPD | Qual | RPD Limits |
|---|---|---|---|---|---|---|---|---|
| Volatile Organics by EPA 5035 High - Westborough Lab Associated sample(s): 01,03,05,07,09,11 Batch: WG1321305-3 WG1321305-4 | | | | | | | | |
| Isopropylbenzene | 91 | | 92 | | 70-130 | 1 | | 30 |
| p-Isopropyltoluene | 96 | | 95 | | 70-130 | 1 | | 30 |
| n-Propylbenzene | 94 | | 95 | | 70-130 | 1 | | 30 |
| 1,2,3-Trichlorobenzene | 106 | | 107 | | 70-130 | 1 | | 30 |
| 1,2,4-Trichlorobenzene | 107 | | 108 | | 70-130 | 1 | | 30 |
| 1,3,5-Trimethylbenzene | 96 | | 96 | | 70-130 | 0 | | 30 |
| 1,2,4-Trimethylbenzene | 96 | | 96 | | 70-130 | 0 | | 30 |
| Methyl Acetate | 125 | | 126 | | 51-146 | 1 | | 30 |
| Cyclohexane | 110 | | 109 | | 59-142 | 1 | | 30 |
| 1,4-Dioxane | 113 | | 110 | | 65-136 | 3 | | 30 |
| Freon-113 | 98 | | 92 | | 50-139 | 6 | | 30 |
| Methyl cyclohexane | 92 | | 91 | | 70-130 | 1 | | 30 |

| Surrogate | LCS %Recovery | Qual | LCSD %Recovery | Qual | Acceptance Criteria |
|---|---|---|---|---|---|
| 1,2-Dichloroethane-d4 | 110 | | 114 | | 70-130 |
| Toluene-d8 | 100 | | 101 | | 70-130 |
| 4-Bromofluorobenzene | 95 | | 96 | | 70-130 |
| Dibromofluoromethane | 107 | | 109 | | 70-130 |

# Lab Control Sample Analysis
## Batch Quality Control

**Project Name:** RIVER ROAD
**Project Number:** 0518-019-001

**Lab Number:** L1959111
**Report Date:** 12/18/19

| Parameter | LCS %Recovery | Qual | LCSD %Recovery | Qual | %Recovery Limits | RPD | Qual | RPD Limits |
|---|---|---|---|---|---|---|---|---|
| Volatile Organics by EPA 5035 High - Westborough Lab Associated sample(s): 01,13 Batch: WG1321425-3 WG1321425-4 | | | | | | | | |
| Methylene chloride | 104 | | 96 | | 70-130 | 8 | | 30 |
| 1,1-Dichloroethane | 115 | | 104 | | 70-130 | 10 | | 30 |
| Chloroform | 114 | | 106 | | 70-130 | 7 | | 30 |
| Carbon tetrachloride | 118 | | 111 | | 70-130 | 6 | | 30 |
| 1,2-Dichloropropane | 108 | | 105 | | 70-130 | 3 | | 30 |
| Dibromochloromethane | 98 | | 100 | | 70-130 | 2 | | 30 |
| 1,1,2-Trichloroethane | 96 | | 99 | | 70-130 | 3 | | 30 |
| Tetrachloroethene | 96 | | 95 | | 70-130 | 1 | | 30 |
| Chlorobenzene | 95 | | 92 | | 70-130 | 3 | | 30 |
| Trichlorofluoromethane | **163** | Q | **152** | Q | 70-139 | 7 | | 30 |
| 1,2-Dichloroethane | 123 | | 119 | | 70-130 | 3 | | 30 |
| 1,1,1-Trichloroethane | 111 | | 107 | | 70-130 | 4 | | 30 |
| Bromodichloromethane | 103 | | 99 | | 70-130 | 4 | | 30 |
| trans-1,3-Dichloropropene | 97 | | 100 | | 70-130 | 3 | | 30 |
| cis-1,3-Dichloropropene | 104 | | 97 | | 70-130 | 7 | | 30 |
| Bromoform | 102 | | 89 | | 70-130 | 14 | | 30 |
| 1,1,2,2-Tetrachloroethane | 93 | | 82 | | 70-130 | 13 | | 30 |
| Benzene | 99 | | 94 | | 70-130 | 5 | | 30 |
| Toluene | 91 | | 92 | | 70-130 | 1 | | 30 |
| Ethylbenzene | 99 | | 96 | | 70-130 | 3 | | 30 |
| Chloromethane | 110 | | 90 | | 52-130 | 20 | | 30 |
| Bromomethane | 137 | | 119 | | 57-147 | 14 | | 30 |
| Vinyl chloride | 126 | | 108 | | 67-130 | 15 | | 30 |

# Lab Control Sample Analysis
## Batch Quality Control

**Project Name:** RIVER ROAD
**Project Number:** 0518-019-001

**Lab Number:** L1959111
**Report Date:** 12/18/19

| Parameter | LCS %Recovery | Qual | LCSD %Recovery | Qual | %Recovery Limits | RPD | Qual | RPD Limits |
|---|---|---|---|---|---|---|---|---|
| Volatile Organics by EPA 5035 High - Westborough Lab Associated sample(s): 01,13 Batch: WG1321425-3 WG1321425-4 | | | | | | | | |
| Chloroethane | **160** | Q | 150 | | 50-151 | 6 | | 30 |
| 1,1-Dichloroethene | 104 | | 96 | | 65-135 | 8 | | 30 |
| trans-1,2-Dichloroethene | 103 | | 95 | | 70-130 | 8 | | 30 |
| Trichloroethene | 102 | | 96 | | 70-130 | 6 | | 30 |
| 1,2-Dichlorobenzene | 97 | | 92 | | 70-130 | 5 | | 30 |
| 1,3-Dichlorobenzene | 100 | | 95 | | 70-130 | 5 | | 30 |
| 1,4-Dichlorobenzene | 99 | | 94 | | 70-130 | 5 | | 30 |
| Methyl tert butyl ether | 105 | | 99 | | 66-130 | 6 | | 30 |
| p/m-Xylene | 93 | | 93 | | 70-130 | 0 | | 30 |
| o-Xylene | 88 | | 90 | | 70-130 | 2 | | 30 |
| cis-1,2-Dichloroethene | 105 | | 98 | | 70-130 | 7 | | 30 |
| Styrene | 90 | | 92 | | 70-130 | 2 | | 30 |
| Dichlorodifluoromethane | 95 | | 83 | | 30-146 | 13 | | 30 |
| Acetone | **142** | Q | 124 | | 54-140 | 14 | | 30 |
| Carbon disulfide | 96 | | 87 | | 59-130 | 10 | | 30 |
| 2-Butanone | 119 | | 126 | | 70-130 | 6 | | 30 |
| 4-Methyl-2-pentanone | 93 | | 101 | | 70-130 | 8 | | 30 |
| 2-Hexanone | 104 | | 96 | | 70-130 | 8 | | 30 |
| Bromochloromethane | 108 | | 106 | | 70-130 | 2 | | 30 |
| 1,2-Dibromoethane | 106 | | 102 | | 70-130 | 4 | | 30 |
| n-Butylbenzene | 108 | | 98 | | 70-130 | 10 | | 30 |
| sec-Butylbenzene | 100 | | 93 | | 70-130 | 7 | | 30 |
| 1,2-Dibromo-3-chloropropane | 105 | | 84 | | 68-130 | 22 | | 30 |

# Lab Control Sample Analysis
## Batch Quality Control

**Project Name:** RIVER ROAD
**Project Number:** 0518-019-001

**Lab Number:** L1959111
**Report Date:** 12/18/19

| Parameter | LCS %Recovery | Qual | LCSD %Recovery | Qual | %Recovery Limits | RPD | Qual | RPD Limits |
|---|---|---|---|---|---|---|---|---|
| Volatile Organics by EPA 5035 High - Westborough Lab Associated sample(s): 01,13 Batch: WG1321425-3 WG1321425-4 | | | | | | | | |
| Isopropylbenzene | 95 | | 81 | | 70-130 | 16 | | 30 |
| p-Isopropyltoluene | 103 | | 93 | | 70-130 | 10 | | 30 |
| n-Propylbenzene | 101 | | 84 | | 70-130 | 18 | | 30 |
| 1,2,3-Trichlorobenzene | 108 | | 89 | | 70-130 | 19 | | 30 |
| 1,2,4-Trichlorobenzene | 116 | | 89 | | 70-130 | 26 | | 30 |
| 1,3,5-Trimethylbenzene | 98 | | 82 | | 70-130 | 18 | | 30 |
| 1,2,4-Trimethylbenzene | 103 | | 95 | | 70-130 | 8 | | 30 |
| Methyl Acetate | 116 | | 113 | | 51-146 | 3 | | 30 |
| Cyclohexane | 117 | | 114 | | 59-142 | 3 | | 30 |
| 1,4-Dioxane | 87 | | 88 | | 65-136 | 1 | | 30 |
| Freon-113 | 115 | | 102 | | 50-139 | 12 | | 30 |
| Methyl cyclohexane | 103 | | 97 | | 70-130 | 6 | | 30 |

| Surrogate | LCS %Recovery | Qual | LCSD %Recovery | Qual | Acceptance Criteria |
|---|---|---|---|---|---|
| 1,2-Dichloroethane-d4 | 121 | | 123 | | 70-130 |
| Toluene-d8 | 95 | | 100 | | 70-130 |
| 4-Bromofluorobenzene | 97 | | 88 | | 70-130 |
| Dibromofluoromethane | 115 | | 118 | | 70-130 |

# SEMIVOLATILES

**Project Name:** RIVER ROAD
**Project Number:** 0518-019-001
**Lab Number:** L1959111
**Report Date:** 12/18/19

## SAMPLE RESULTS

Lab ID: L1959111-01
Client ID: TP 1
Sample Location: OLEAN, NY

Date Collected: 12/09/19 10:15
Date Received: 12/10/19
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8270D
Analytical Date: 12/14/19 07:37
Analyst: ALS
Percent Solids: 83%

Extraction Method: EPA 3546
Extraction Date: 12/11/19 18:16

| Parameter | Result | Qualifier | Units | RL | MDL | Dilution Factor |
|---|---|---|---|---|---|---|
| **Semivolatile Organics by GC/MS - Westborough Lab** | | | | | | |
| Acenaphthene | ND | | ug/kg | 160 | 20. | 1 |
| Hexachlorobenzene | ND | | ug/kg | 120 | 22. | 1 |
| Bis(2-chloroethyl)ether | ND | | ug/kg | 180 | 27. | 1 |
| 2-Chloronaphthalene | ND | | ug/kg | 200 | 19. | 1 |
| 3,3'-Dichlorobenzidine | ND | | ug/kg | 200 | 52. | 1 |
| 2,4-Dinitrotoluene | ND | | ug/kg | 200 | 39. | 1 |
| 2,6-Dinitrotoluene | ND | | ug/kg | 200 | 34. | 1 |
| Fluoranthene | ND | | ug/kg | 120 | 22. | 1 |
| 4-Chlorophenyl phenyl ether | ND | | ug/kg | 200 | 21. | 1 |
| 4-Bromophenyl phenyl ether | ND | | ug/kg | 200 | 30. | 1 |
| Bis(2-chloroisopropyl)ether | ND | | ug/kg | 240 | 34. | 1 |
| Bis(2-chloroethoxy)methane | ND | | ug/kg | 210 | 20. | 1 |
| Hexachlorobutadiene | ND | | ug/kg | 200 | 29. | 1 |
| Hexachlorocyclopentadiene | ND | | ug/kg | 560 | 180 | 1 |
| Hexachloroethane | ND | | ug/kg | 160 | 32. | 1 |
| Isophorone | ND | | ug/kg | 180 | 26. | 1 |
| Naphthalene | ND | | ug/kg | 200 | 24. | 1 |
| Nitrobenzene | ND | | ug/kg | 180 | 29. | 1 |
| NDPA/DPA | ND | | ug/kg | 160 | 22. | 1 |
| n-Nitrosodi-n-propylamine | ND | | ug/kg | 200 | 30. | 1 |
| Bis(2-ethylhexyl)phthalate | ND | | ug/kg | 200 | 68. | 1 |
| Butyl benzyl phthalate | ND | | ug/kg | 200 | 50. | 1 |
| Di-n-butylphthalate | ND | | ug/kg | 200 | 37. | 1 |
| Di-n-octylphthalate | ND | | ug/kg | 200 | 67. | 1 |
| Diethyl phthalate | ND | | ug/kg | 200 | 18. | 1 |
| Dimethyl phthalate | ND | | ug/kg | 200 | 41. | 1 |
| Benzo(a)anthracene | ND | | ug/kg | 120 | 22. | 1 |
| Benzo(a)pyrene | ND | | ug/kg | 160 | 48. | 1 |

**Project Name:** RIVER ROAD **Lab Number:** L1959111

**Project Number:** 0518-019-001 **Report Date:** 12/18/19

## SAMPLE RESULTS

Lab ID: L1959111-01 Date Collected: 12/09/19 10:15

Client ID: TP 1 Date Received: 12/10/19

Sample Location: OLEAN, NY Field Prep: Not Specified

Sample Depth:

| Parameter | Result | Qualifier | Units | RL | MDL | Dilution Factor |
|---|---|---|---|---|---|---|
| **Semivolatile Organics by GC/MS - Westborough Lab** | | | | | | |
| Benzo(b)fluoranthene | ND | | ug/kg | 120 | 33. | 1 |
| Benzo(k)fluoranthene | ND | | ug/kg | 120 | 31. | 1 |
| Chrysene | ND | | ug/kg | 120 | 20. | 1 |
| Acenaphthylene | ND | | ug/kg | 160 | 30. | 1 |
| Anthracene | ND | | ug/kg | 120 | 38. | 1 |
| Benzo(ghi)perylene | ND | | ug/kg | 160 | 23. | 1 |
| Fluorene | ND | | ug/kg | 200 | 19. | 1 |
| Phenanthrene | 84 | J | ug/kg | 120 | 24. | 1 |
| Dibenzo(a,h)anthracene | ND | | ug/kg | 120 | 23. | 1 |
| Indeno(1,2,3-cd)pyrene | ND | | ug/kg | 160 | 27. | 1 |
| Pyrene | ND | | ug/kg | 120 | 20. | 1 |
| Biphenyl | ND | | ug/kg | 450 | 46. | 1 |
| 4-Chloroaniline | ND | | ug/kg | 200 | 36. | 1 |
| 2-Nitroaniline | ND | | ug/kg | 200 | 38. | 1 |
| 3-Nitroaniline | ND | | ug/kg | 200 | 37. | 1 |
| 4-Nitroaniline | ND | | ug/kg | 200 | 81. | 1 |
| Dibenzofuran | 54 | J | ug/kg | 200 | 18. | 1 |
| 2-Methylnaphthalene | ND | | ug/kg | 240 | 24. | 1 |
| 1,2,4,5-Tetrachlorobenzene | ND | | ug/kg | 200 | 20. | 1 |
| Acetophenone | ND | | ug/kg | 200 | 24. | 1 |
| 2,4,6-Trichlorophenol | ND | | ug/kg | 120 | 37. | 1 |
| p-Chloro-m-cresol | ND | | ug/kg | 200 | 29. | 1 |
| 2-Chlorophenol | ND | | ug/kg | 200 | 23. | 1 |
| 2,4-Dichlorophenol | ND | | ug/kg | 180 | 32. | 1 |
| 2,4-Dimethylphenol | ND | | ug/kg | 200 | 65. | 1 |
| 2-Nitrophenol | ND | | ug/kg | 420 | 74. | 1 |
| 4-Nitrophenol | ND | | ug/kg | 280 | 80. | 1 |
| 2,4-Dinitrophenol | ND | | ug/kg | 940 | 92. | 1 |
| 4,6-Dinitro-o-cresol | ND | | ug/kg | 510 | 94. | 1 |
| Pentachlorophenol | ND | | ug/kg | 160 | 43. | 1 |
| Phenol | ND | | ug/kg | 200 | 30. | 1 |
| 2-Methylphenol | ND | | ug/kg | 200 | 30. | 1 |
| 3-Methylphenol/4-Methylphenol | ND | | ug/kg | 280 | 31. | 1 |
| 2,4,5-Trichlorophenol | ND | | ug/kg | 200 | 38. | 1 |
| Carbazole | ND | | ug/kg | 200 | 19. | 1 |
| Atrazine | ND | | ug/kg | 160 | 69. | 1 |
| Benzaldehyde | ND | | ug/kg | 260 | 53. | 1 |

**Project Name:** RIVER ROAD
**Project Number:** 0518-019-001
**Lab Number:** L1959111
**Report Date:** 12/18/19

## SAMPLE RESULTS

Lab ID: L1959111-01
Client ID: TP 1
Sample Location: OLEAN, NY
Date Collected: 12/09/19 10:15
Date Received: 12/10/19
Field Prep: Not Specified

Sample Depth:

| Parameter | Result | Qualifier | Units | RL | MDL | Dilution Factor |
|---|---|---|---|---|---|---|
| **Semivolatile Organics by GC/MS - Westborough Lab** | | | | | | |
| Caprolactam | ND | | ug/kg | 200 | 60. | 1 |
| 2,3,4,6-Tetrachlorophenol | ND | | ug/kg | 200 | 40. | 1 |
| **Tentatively Identified Compounds** | | | | | | |
| Total TIC Compounds | 29800 | J | ug/kg | | | 1 |
| Unknown | 2370 | J | ug/kg | | | 1 |
| Unknown Cycloalkane | 1580 | J | ug/kg | | | 1 |
| Unknown | 1340 | J | ug/kg | | | 1 |
| Unknown Alkane | 2820 | J | ug/kg | | | 1 |
| Unknown Alkane | 2910 | J | ug/kg | | | 1 |
| Unknown Cycloalkane | 1710 | J | ug/kg | | | 1 |
| Unknown Alkane | 1930 | J | ug/kg | | | 1 |
| Unknown Alkane | 1690 | J | ug/kg | | | 1 |
| Unknown Alkane | 3080 | J | ug/kg | | | 1 |
| Unknown Naphthalene | 1900 | J | ug/kg | | | 1 |
| Unknown | 1920 | J | ug/kg | | | 1 |
| Unknown Alkane | 1730 | J | ug/kg | | | 1 |
| Unknown Cycloalkane | 1670 | J | ug/kg | | | 1 |
| Unknown Naphthalene | 1720 | J | ug/kg | | | 1 |
| Unknown | 1470 | J | ug/kg | | | 1 |

| Surrogate | % Recovery | Qualifier | Acceptance Criteria |
|---|---|---|---|
| 2-Fluorophenol | 69 | | 25-120 |
| Phenol-d6 | 73 | | 10-120 |
| Nitrobenzene-d5 | 76 | | 23-120 |
| 2-Fluorobiphenyl | 48 | | 30-120 |
| 2,4,6-Tribromophenol | 50 | | 10-136 |
| 4-Terphenyl-d14 | 40 | | 18-120 |

**Project Name:** RIVER ROAD
**Project Number:** 0518-019-001
**Lab Number:** L1959111
**Report Date:** 12/18/19

## SAMPLE RESULTS

Lab ID: L1959111-03
Client ID: TP 2
Sample Location: OLEAN, NY

Date Collected: 12/09/19 10:30
Date Received: 12/10/19
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8270D
Analytical Date: 12/14/19 02:33
Analyst: ALS
Percent Solids: 93%

Extraction Method: EPA 3546
Extraction Date: 12/11/19 18:16

| Parameter | Result | Qualifier | Units | RL | MDL | Dilution Factor |
|---|---|---|---|---|---|---|
| **Semivolatile Organics by GC/MS - Westborough Lab** | | | | | | |
| Acenaphthene | ND | | ug/kg | 140 | 18. | 1 |
| Hexachlorobenzene | ND | | ug/kg | 110 | 20. | 1 |
| Bis(2-chloroethyl)ether | ND | | ug/kg | 160 | 24. | 1 |
| 2-Chloronaphthalene | ND | | ug/kg | 180 | 18. | 1 |
| 3,3'-Dichlorobenzidine | ND | | ug/kg | 180 | 47. | 1 |
| 2,4-Dinitrotoluene | ND | | ug/kg | 180 | 35. | 1 |
| 2,6-Dinitrotoluene | ND | | ug/kg | 180 | 30. | 1 |
| Fluoranthene | ND | | ug/kg | 110 | 20. | 1 |
| 4-Chlorophenyl phenyl ether | ND | | ug/kg | 180 | 19. | 1 |
| 4-Bromophenyl phenyl ether | ND | | ug/kg | 180 | 27. | 1 |
| Bis(2-chloroisopropyl)ether | ND | | ug/kg | 210 | 30. | 1 |
| Bis(2-chloroethoxy)methane | ND | | ug/kg | 190 | 18. | 1 |
| Hexachlorobutadiene | ND | | ug/kg | 180 | 26. | 1 |
| Hexachlorocyclopentadiene | ND | | ug/kg | 510 | 160 | 1 |
| Hexachloroethane | ND | | ug/kg | 140 | 29. | 1 |
| Isophorone | ND | | ug/kg | 160 | 23. | 1 |
| Naphthalene | ND | | ug/kg | 180 | 22. | 1 |
| Nitrobenzene | ND | | ug/kg | 160 | 26. | 1 |
| NDPA/DPA | ND | | ug/kg | 140 | 20. | 1 |
| n-Nitrosodi-n-propylamine | ND | | ug/kg | 180 | 27. | 1 |
| Bis(2-ethylhexyl)phthalate | ND | | ug/kg | 180 | 61. | 1 |
| Butyl benzyl phthalate | ND | | ug/kg | 180 | 45. | 1 |
| Di-n-butylphthalate | ND | | ug/kg | 180 | 34. | 1 |
| Di-n-octylphthalate | ND | | ug/kg | 180 | 60. | 1 |
| Diethyl phthalate | ND | | ug/kg | 180 | 16. | 1 |
| Dimethyl phthalate | ND | | ug/kg | 180 | 37. | 1 |
| Benzo(a)anthracene | ND | | ug/kg | 110 | 20. | 1 |
| Benzo(a)pyrene | ND | | ug/kg | 140 | 43. | 1 |

**Project Name:** RIVER ROAD **Lab Number:** L1959111

**Project Number:** 0518-019-001 **Report Date:** 12/18/19

## SAMPLE RESULTS

Lab ID: L1959111-03 Date Collected: 12/09/19 10:30

Client ID: TP 2 Date Received: 12/10/19

Sample Location: OLEAN, NY Field Prep: Not Specified

Sample Depth:

| Parameter | Result | Qualifier | Units | RL | MDL | Dilution Factor |
|---|---|---|---|---|---|---|
| **Semivolatile Organics by GC/MS - Westborough Lab** | | | | | | |
| Benzo(b)fluoranthene | ND | | ug/kg | 110 | 30. | 1 |
| Benzo(k)fluoranthene | ND | | ug/kg | 110 | 28. | 1 |
| Chrysene | ND | | ug/kg | 110 | 18. | 1 |
| Acenaphthylene | ND | | ug/kg | 140 | 27. | 1 |
| Anthracene | ND | | ug/kg | 110 | 34. | 1 |
| Benzo(ghi)perylene | ND | | ug/kg | 140 | 21. | 1 |
| Fluorene | ND | | ug/kg | 180 | 17. | 1 |
| Phenanthrene | 60 | J | ug/kg | 110 | 22. | 1 |
| Dibenzo(a,h)anthracene | ND | | ug/kg | 110 | 20. | 1 |
| Indeno(1,2,3-cd)pyrene | ND | | ug/kg | 140 | 25. | 1 |
| Pyrene | ND | | ug/kg | 110 | 18. | 1 |
| Biphenyl | ND | | ug/kg | 400 | 41. | 1 |
| 4-Chloroaniline | ND | | ug/kg | 180 | 32. | 1 |
| 2-Nitroaniline | ND | | ug/kg | 180 | 34. | 1 |
| 3-Nitroaniline | ND | | ug/kg | 180 | 33. | 1 |
| 4-Nitroaniline | ND | | ug/kg | 180 | 73. | 1 |
| Dibenzofuran | ND | | ug/kg | 180 | 17. | 1 |
| 2-Methylnaphthalene | ND | | ug/kg | 210 | 21. | 1 |
| 1,2,4,5-Tetrachlorobenzene | ND | | ug/kg | 180 | 18. | 1 |
| Acetophenone | ND | | ug/kg | 180 | 22. | 1 |
| 2,4,6-Trichlorophenol | ND | | ug/kg | 110 | 34. | 1 |
| p-Chloro-m-cresol | ND | | ug/kg | 180 | 26. | 1 |
| 2-Chlorophenol | ND | | ug/kg | 180 | 21. | 1 |
| 2,4-Dichlorophenol | ND | | ug/kg | 160 | 28. | 1 |
| 2,4-Dimethylphenol | ND | | ug/kg | 180 | 58. | 1 |
| 2-Nitrophenol | ND | | ug/kg | 380 | 66. | 1 |
| 4-Nitrophenol | ND | | ug/kg | 250 | 72. | 1 |
| 2,4-Dinitrophenol | ND | | ug/kg | 850 | 82. | 1 |
| 4,6-Dinitro-o-cresol | ND | | ug/kg | 460 | 85. | 1 |
| Pentachlorophenol | ND | | ug/kg | 140 | 39. | 1 |
| Phenol | ND | | ug/kg | 180 | 27. | 1 |
| 2-Methylphenol | ND | | ug/kg | 180 | 27. | 1 |
| 3-Methylphenol/4-Methylphenol | ND | | ug/kg | 260 | 28. | 1 |
| 2,4,5-Trichlorophenol | ND | | ug/kg | 180 | 34. | 1 |
| Carbazole | ND | | ug/kg | 180 | 17. | 1 |
| Atrazine | ND | | ug/kg | 140 | 62. | 1 |
| Benzaldehyde | ND | | ug/kg | 230 | 48. | 1 |

**Project Name:** RIVER ROAD
**Project Number:** 0518-019-001
**Lab Number:** L1959111
**Report Date:** 12/18/19

## SAMPLE RESULTS

Lab ID: L1959111-03
Client ID: TP 2
Sample Location: OLEAN, NY
Date Collected: 12/09/19 10:30
Date Received: 12/10/19
Field Prep: Not Specified

Sample Depth:

| Parameter | Result | Qualifier | Units | RL | MDL | Dilution Factor |
|---|---|---|---|---|---|---|
| **Semivolatile Organics by GC/MS - Westborough Lab** | | | | | | |
| Caprolactam | ND | | ug/kg | 180 | 54. | 1 |
| 2,3,4,6-Tetrachlorophenol | ND | | ug/kg | 180 | 36. | 1 |
| **Tentatively Identified Compounds** | | | | | | |
| Total TIC Compounds | 33300 | J | ug/kg | | | 1 |
| Unknown Alkane | 3420 | J | ug/kg | | | 1 |
| Unknown Alkane | 1620 | J | ug/kg | | | 1 |
| Unknown Alkane | 2550 | J | ug/kg | | | 1 |
| Unknown Alkane | 3720 | J | ug/kg | | | 1 |
| Unknown Alkane | 3310 | J | ug/kg | | | 1 |
| Unknown Alkane | 2340 | J | ug/kg | | | 1 |
| Unknown Cycloalkane | 2050 | J | ug/kg | | | 1 |
| Unknown Alkane | 1940 | J | ug/kg | | | 1 |
| Unknown Cycloalkane | 1950 | J | ug/kg | | | 1 |
| Unknown Cycloalkane | 2060 | J | ug/kg | | | 1 |
| Unknown Naphthalene | 1600 | J | ug/kg | | | 1 |
| Unknown | 1750 | J | ug/kg | | | 1 |
| Unknown | 1850 | J | ug/kg | | | 1 |
| Unknown | 1590 | J | ug/kg | | | 1 |
| Unknown Cycloalkane | 1580 | J | ug/kg | | | 1 |

| Surrogate | % Recovery | Qualifier | Acceptance Criteria |
|---|---|---|---|
| 2-Fluorophenol | 65 | | 25-120 |
| Phenol-d6 | 73 | | 10-120 |
| Nitrobenzene-d5 | 70 | | 23-120 |
| 2-Fluorobiphenyl | 51 | | 30-120 |
| 2,4,6-Tribromophenol | 39 | | 10-136 |
| 4-Terphenyl-d14 | 42 | | 18-120 |

**Project Name:** RIVER ROAD
**Project Number:** 0518-019-001
**Lab Number:** L1959111
**Report Date:** 12/18/19

## SAMPLE RESULTS

Lab ID: L1959111-05
Client ID: TP 3
Sample Location: OLEAN, NY

Date Collected: 12/09/19 10:45
Date Received: 12/10/19
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8270D
Analytical Date: 12/14/19 05:30
Analyst: CB
Percent Solids: 91%

Extraction Method: EPA 3546
Extraction Date: 12/11/19 19:42

| Parameter | Result | Qualifier | Units | RL | MDL | Dilution Factor |
|---|---|---|---|---|---|---|
| **Semivolatile Organics by GC/MS - Westborough Lab** | | | | | | |
| Acenaphthene | ND | | ug/kg | 140 | 18. | 1 |
| Hexachlorobenzene | ND | | ug/kg | 110 | 20. | 1 |
| Bis(2-chloroethyl)ether | ND | | ug/kg | 160 | 24. | 1 |
| 2-Chloronaphthalene | ND | | ug/kg | 180 | 18. | 1 |
| 3,3'-Dichlorobenzidine | ND | | ug/kg | 180 | 48. | 1 |
| 2,4-Dinitrotoluene | ND | | ug/kg | 180 | 36. | 1 |
| 2,6-Dinitrotoluene | ND | | ug/kg | 180 | 31. | 1 |
| Fluoranthene | ND | | ug/kg | 110 | 20. | 1 |
| 4-Chlorophenyl phenyl ether | ND | | ug/kg | 180 | 19. | 1 |
| 4-Bromophenyl phenyl ether | ND | | ug/kg | 180 | 27. | 1 |
| Bis(2-chloroisopropyl)ether | ND | | ug/kg | 210 | 30. | 1 |
| Bis(2-chloroethoxy)methane | ND | | ug/kg | 190 | 18. | 1 |
| Hexachlorobutadiene | ND | | ug/kg | 180 | 26. | 1 |
| Hexachlorocyclopentadiene | ND | | ug/kg | 510 | 160 | 1 |
| Hexachloroethane | ND | | ug/kg | 140 | 29. | 1 |
| Isophorone | ND | | ug/kg | 160 | 23. | 1 |
| Naphthalene | 44 | J | ug/kg | 180 | 22. | 1 |
| Nitrobenzene | ND | | ug/kg | 160 | 26. | 1 |
| NDPA/DPA | ND | | ug/kg | 140 | 20. | 1 |
| n-Nitrosodi-n-propylamine | ND | | ug/kg | 180 | 28. | 1 |
| Bis(2-ethylhexyl)phthalate | ND | | ug/kg | 180 | 62. | 1 |
| Butyl benzyl phthalate | ND | | ug/kg | 180 | 45. | 1 |
| Di-n-butylphthalate | ND | | ug/kg | 180 | 34. | 1 |
| Di-n-octylphthalate | ND | | ug/kg | 180 | 61. | 1 |
| Diethyl phthalate | ND | | ug/kg | 180 | 16. | 1 |
| Dimethyl phthalate | ND | | ug/kg | 180 | 38. | 1 |
| Benzo(a)anthracene | ND | | ug/kg | 110 | 20. | 1 |
| Benzo(a)pyrene | ND | | ug/kg | 140 | 44. | 1 |

**Project Name:** RIVER ROAD **Lab Number:** L1959111

**Project Number:** 0518-019-001 **Report Date:** 12/18/19

## SAMPLE RESULTS

Lab ID: L1959111-05 Date Collected: 12/09/19 10:45

Client ID: TP 3 Date Received: 12/10/19

Sample Location: OLEAN, NY Field Prep: Not Specified

Sample Depth:

| Parameter | Result | Qualifier | Units | RL | MDL | Dilution Factor |
|---|---|---|---|---|---|---|
| **Semivolatile Organics by GC/MS - Westborough Lab** | | | | | | |
| Benzo(b)fluoranthene | ND | | ug/kg | 110 | 30. | 1 |
| Benzo(k)fluoranthene | ND | | ug/kg | 110 | 28. | 1 |
| Chrysene | ND | | ug/kg | 110 | 18. | 1 |
| Acenaphthylene | ND | | ug/kg | 140 | 28. | 1 |
| Anthracene | ND | | ug/kg | 110 | 35. | 1 |
| Benzo(ghi)perylene | ND | | ug/kg | 140 | 21. | 1 |
| Fluorene | ND | | ug/kg | 180 | 17. | 1 |
| Phenanthrene | 210 | | ug/kg | 110 | 22. | 1 |
| Dibenzo(a,h)anthracene | ND | | ug/kg | 110 | 21. | 1 |
| Indeno(1,2,3-cd)pyrene | ND | | ug/kg | 140 | 25. | 1 |
| Pyrene | ND | | ug/kg | 110 | 18. | 1 |
| Biphenyl | ND | | ug/kg | 410 | 41. | 1 |
| 4-Chloroaniline | ND | | ug/kg | 180 | 32. | 1 |
| 2-Nitroaniline | ND | | ug/kg | 180 | 34. | 1 |
| 3-Nitroaniline | ND | | ug/kg | 180 | 34. | 1 |
| 4-Nitroaniline | ND | | ug/kg | 180 | 74. | 1 |
| Dibenzofuran | ND | | ug/kg | 180 | 17. | 1 |
| 2-Methylnaphthalene | ND | | ug/kg | 210 | 22. | 1 |
| 1,2,4,5-Tetrachlorobenzene | ND | | ug/kg | 180 | 19. | 1 |
| Acetophenone | ND | | ug/kg | 180 | 22. | 1 |
| 2,4,6-Trichlorophenol | ND | | ug/kg | 110 | 34. | 1 |
| p-Chloro-m-cresol | ND | | ug/kg | 180 | 27. | 1 |
| 2-Chlorophenol | ND | | ug/kg | 180 | 21. | 1 |
| 2,4-Dichlorophenol | ND | | ug/kg | 160 | 29. | 1 |
| 2,4-Dimethylphenol | ND | | ug/kg | 180 | 59. | 1 |
| 2-Nitrophenol | ND | | ug/kg | 380 | 67. | 1 |
| 4-Nitrophenol | ND | | ug/kg | 250 | 73. | 1 |
| 2,4-Dinitrophenol | ND | | ug/kg | 860 | 83. | 1 |
| 4,6-Dinitro-o-cresol | ND | | ug/kg | 460 | 86. | 1 |
| Pentachlorophenol | ND | | ug/kg | 140 | 39. | 1 |
| Phenol | ND | | ug/kg | 180 | 27. | 1 |
| 2-Methylphenol | ND | | ug/kg | 180 | 28. | 1 |
| 3-Methylphenol/4-Methylphenol | ND | | ug/kg | 260 | 28. | 1 |
| 2,4,5-Trichlorophenol | ND | | ug/kg | 180 | 34. | 1 |
| Carbazole | ND | | ug/kg | 180 | 17. | 1 |
| Atrazine | ND | | ug/kg | 140 | 62. | 1 |
| Benzaldehyde | ND | | ug/kg | 240 | 48. | 1 |

**Project Name:** RIVER ROAD
**Project Number:** 0518-019-001
**Lab Number:** L1959111
**Report Date:** 12/18/19

## SAMPLE RESULTS

Lab ID: L1959111-05
Client ID: TP 3
Sample Location: OLEAN, NY
Date Collected: 12/09/19 10:45
Date Received: 12/10/19
Field Prep: Not Specified

Sample Depth:

| Parameter | Result | Qualifier | Units | RL | MDL | Dilution Factor |
|---|---|---|---|---|---|---|
| **Semivolatile Organics by GC/MS - Westborough Lab** | | | | | | |
| Caprolactam | ND | | ug/kg | 180 | 54. | 1 |
| 2,3,4,6-Tetrachlorophenol | ND | | ug/kg | 180 | 36. | 1 |
| **Tentatively Identified Compounds** | | | | | | |
| Total TIC Compounds | 60500 | J | ug/kg | | | 1 |
| Unknown Alkane | 2690 | J | ug/kg | | | 1 |
| Unknown Alkane | 4750 | J | ug/kg | | | 1 |
| Unknown Alkane | 3230 | J | ug/kg | | | 1 |
| Unknown Alkane | 6160 | J | ug/kg | | | 1 |
| Unknown | 3150 | J | ug/kg | | | 1 |
| Unknown | 5540 | J | ug/kg | | | 1 |
| Unknown | 3670 | J | ug/kg | | | 1 |
| Unknown Alkane | 8560 | J | ug/kg | | | 1 |
| Unknown Cyclohexane | 2780 | J | ug/kg | | | 1 |
| Unknown Cyclohexane | 4350 | J | ug/kg | | | 1 |
| Unknown Naphthalene | 3820 | J | ug/kg | | | 1 |
| Unknown | 2500 | J | ug/kg | | | 1 |
| Unknown | 2630 | J | ug/kg | | | 1 |
| Unknown Cyclohexane | 3660 | J | ug/kg | | | 1 |
| Unknown | 3050 | J | ug/kg | | | 1 |

| Surrogate | % Recovery | Qualifier | Acceptance Criteria |
|---|---|---|---|
| 2-Fluorophenol | 32 | | 25-120 |
| Phenol-d6 | 54 | | 10-120 |
| Nitrobenzene-d5 | 76 | | 23-120 |
| 2-Fluorobiphenyl | 61 | | 30-120 |
| 2,4,6-Tribromophenol | 24 | | 10-136 |
| 4-Terphenyl-d14 | 58 | | 18-120 |

**Project Name:** RIVER ROAD
**Project Number:** 0518-019-001
**Lab Number:** L1959111
**Report Date:** 12/18/19

## SAMPLE RESULTS

Lab ID: L1959111-07
Client ID: TP 4
Sample Location: OLEAN, NY

Date Collected: 12/09/19 11:00
Date Received: 12/10/19
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8270D
Analytical Date: 12/14/19 06:16
Analyst: CB
Percent Solids: 84%

Extraction Method: EPA 3546
Extraction Date: 12/11/19 19:42

| Parameter | Result | Qualifier | Units | RL | MDL | Dilution Factor |
|---|---|---|---|---|---|---|
| **Semivolatile Organics by GC/MS - Westborough Lab** | | | | | | |
| Acenaphthene | ND | | ug/kg | 160 | 20. | 1 |
| Hexachlorobenzene | ND | | ug/kg | 120 | 22. | 1 |
| Bis(2-chloroethyl)ether | ND | | ug/kg | 180 | 27. | 1 |
| 2-Chloronaphthalene | ND | | ug/kg | 200 | 20. | 1 |
| 3,3'-Dichlorobenzidine | ND | | ug/kg | 200 | 52. | 1 |
| 2,4-Dinitrotoluene | ND | | ug/kg | 200 | 39. | 1 |
| 2,6-Dinitrotoluene | ND | | ug/kg | 200 | 34. | 1 |
| Fluoranthene | ND | | ug/kg | 120 | 23. | 1 |
| 4-Chlorophenyl phenyl ether | ND | | ug/kg | 200 | 21. | 1 |
| 4-Bromophenyl phenyl ether | ND | | ug/kg | 200 | 30. | 1 |
| Bis(2-chloroisopropyl)ether | ND | | ug/kg | 240 | 34. | 1 |
| Bis(2-chloroethoxy)methane | ND | | ug/kg | 210 | 20. | 1 |
| Hexachlorobutadiene | ND | | ug/kg | 200 | 29. | 1 |
| Hexachlorocyclopentadiene | ND | | ug/kg | 560 | 180 | 1 |
| Hexachloroethane | ND | | ug/kg | 160 | 32. | 1 |
| Isophorone | ND | | ug/kg | 180 | 26. | 1 |
| Naphthalene | 47 | J | ug/kg | 200 | 24. | 1 |
| Nitrobenzene | ND | | ug/kg | 180 | 29. | 1 |
| NDPA/DPA | ND | | ug/kg | 160 | 22. | 1 |
| n-Nitrosodi-n-propylamine | ND | | ug/kg | 200 | 30. | 1 |
| Bis(2-ethylhexyl)phthalate | ND | | ug/kg | 200 | 68. | 1 |
| Butyl benzyl phthalate | ND | | ug/kg | 200 | 50. | 1 |
| Di-n-butylphthalate | ND | | ug/kg | 200 | 37. | 1 |
| Di-n-octylphthalate | ND | | ug/kg | 200 | 67. | 1 |
| Diethyl phthalate | ND | | ug/kg | 200 | 18. | 1 |
| Dimethyl phthalate | ND | | ug/kg | 200 | 41. | 1 |
| Benzo(a)anthracene | ND | | ug/kg | 120 | 22. | 1 |
| Benzo(a)pyrene | ND | | ug/kg | 160 | 48. | 1 |

**Project Name:** RIVER ROAD **Lab Number:** L1959111

**Project Number:** 0518-019-001 **Report Date:** 12/18/19

**SAMPLE RESULTS**

Lab ID: L1959111-07 Date Collected: 12/09/19 11:00

Client ID: TP 4 Date Received: 12/10/19

Sample Location: OLEAN, NY Field Prep: Not Specified

Sample Depth:

| Parameter | Result | Qualifier | Units | RL | MDL | Dilution Factor |
|---|---|---|---|---|---|---|
| Semivolatile Organics by GC/MS - Westborough Lab | | | | | | |
| Benzo(b)fluoranthene | ND | | ug/kg | 120 | 33. | 1 |
| Benzo(k)fluoranthene | ND | | ug/kg | 120 | 32. | 1 |
| Chrysene | ND | | ug/kg | 120 | 20. | 1 |
| Acenaphthylene | ND | | ug/kg | 160 | 30. | 1 |
| Anthracene | ND | | ug/kg | 120 | 38. | 1 |
| Benzo(ghi)perylene | ND | | ug/kg | 160 | 23. | 1 |
| Fluorene | 210 | | ug/kg | 200 | 19. | 1 |
| Phenanthrene | 150 | | ug/kg | 120 | 24. | 1 |
| Dibenzo(a,h)anthracene | ND | | ug/kg | 120 | 23. | 1 |
| Indeno(1,2,3-cd)pyrene | ND | | ug/kg | 160 | 28. | 1 |
| Pyrene | ND | | ug/kg | 120 | 20. | 1 |
| Biphenyl | ND | | ug/kg | 450 | 46. | 1 |
| 4-Chloroaniline | ND | | ug/kg | 200 | 36. | 1 |
| 2-Nitroaniline | ND | | ug/kg | 200 | 38. | 1 |
| 3-Nitroaniline | ND | | ug/kg | 200 | 37. | 1 |
| 4-Nitroaniline | ND | | ug/kg | 200 | 82. | 1 |
| Dibenzofuran | ND | | ug/kg | 200 | 19. | 1 |
| 2-Methylnaphthalene | ND | | ug/kg | 240 | 24. | 1 |
| 1,2,4,5-Tetrachlorobenzene | ND | | ug/kg | 200 | 21. | 1 |
| Acetophenone | ND | | ug/kg | 200 | 24. | 1 |
| 2,4,6-Trichlorophenol | ND | | ug/kg | 120 | 37. | 1 |
| p-Chloro-m-cresol | ND | | ug/kg | 200 | 29. | 1 |
| 2-Chlorophenol | ND | | ug/kg | 200 | 23. | 1 |
| 2,4-Dichlorophenol | ND | | ug/kg | 180 | 32. | 1 |
| 2,4-Dimethylphenol | ND | | ug/kg | 200 | 65. | 1 |
| 2-Nitrophenol | ND | | ug/kg | 430 | 74. | 1 |
| 4-Nitrophenol | ND | | ug/kg | 280 | 80. | 1 |
| 2,4-Dinitrophenol | ND | | ug/kg | 950 | 92. | 1 |
| 4,6-Dinitro-o-cresol | ND | | ug/kg | 510 | 95. | 1 |
| Pentachlorophenol | ND | | ug/kg | 160 | 43. | 1 |
| Phenol | ND | | ug/kg | 200 | 30. | 1 |
| 2-Methylphenol | ND | | ug/kg | 200 | 30. | 1 |
| 3-Methylphenol/4-Methylphenol | ND | | ug/kg | 280 | 31. | 1 |
| 2,4,5-Trichlorophenol | ND | | ug/kg | 200 | 38. | 1 |
| Carbazole | ND | | ug/kg | 200 | 19. | 1 |
| Atrazine | ND | | ug/kg | 160 | 69. | 1 |
| Benzaldehyde | ND | | ug/kg | 260 | 53. | 1 |

**Project Name:** RIVER ROAD
**Project Number:** 0518-019-001
**Lab Number:** L1959111
**Report Date:** 12/18/19

## SAMPLE RESULTS

Lab ID: L1959111-07
Client ID: TP 4
Sample Location: OLEAN, NY
Date Collected: 12/09/19 11:00
Date Received: 12/10/19
Field Prep: Not Specified

Sample Depth:

| Parameter | Result | Qualifier | Units | RL | MDL | Dilution Factor |
|---|---|---|---|---|---|---|
| **Semivolatile Organics by GC/MS - Westborough Lab** | | | | | | |
| Caprolactam | ND | | ug/kg | 200 | 60. | 1 |
| 2,3,4,6-Tetrachlorophenol | ND | | ug/kg | 200 | 40. | 1 |
| **Tentatively Identified Compounds** | | | | | | |
| Total TIC Compounds | 58800 | J | ug/kg | | | 1 |
| Unknown | 2250 | J | ug/kg | | | 1 |
| Unknown | 3200 | J | ug/kg | | | 1 |
| Unknown Alkane | 5550 | J | ug/kg | | | 1 |
| Unknown | 4620 | J | ug/kg | | | 1 |
| Unknown | 2710 | J | ug/kg | | | 1 |
| Unknown | 4460 | J | ug/kg | | | 1 |
| Unknown Alkane | 6090 | J | ug/kg | | | 1 |
| Unknown Cyclohexane | 4120 | J | ug/kg | | | 1 |
| Unknown Naphthalene | 3210 | J | ug/kg | | | 1 |
| Unknown | 2380 | J | ug/kg | | | 1 |
| Unknown | 5270 | J | ug/kg | | | 1 |
| Unknown Naphthalene | 2660 | J | ug/kg | | | 1 |
| Unknown | 2220 | J | ug/kg | | | 1 |
| Unknown | 3200 | J | ug/kg | | | 1 |
| Unknown Alkane | 6900 | J | ug/kg | | | 1 |

| Surrogate | % Recovery | Qualifier | Acceptance Criteria |
|---|---|---|---|
| 2-Fluorophenol | 75 | | 25-120 |
| Phenol-d6 | 72 | | 10-120 |
| Nitrobenzene-d5 | 75 | | 23-120 |
| 2-Fluorobiphenyl | 65 | | 30-120 |
| 2,4,6-Tribromophenol | 79 | | 10-136 |
| 4-Terphenyl-d14 | 57 | | 18-120 |

**Project Name:** RIVER ROAD
**Project Number:** 0518-019-001
**Lab Number:** L1959111
**Report Date:** 12/18/19

## SAMPLE RESULTS

Lab ID: L1959111-09
Client ID: TP 5
Sample Location: OLEAN, NY

Date Collected: 12/09/19 11:10
Date Received: 12/10/19
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8270D
Analytical Date: 12/14/19 07:14
Analyst: ALS
Percent Solids: 89%

Extraction Method: EPA 3546
Extraction Date: 12/13/19 09:17

| Parameter | Result | Qualifier | Units | RL | MDL | Dilution Factor |
|---|---|---|---|---|---|---|
| **Semivolatile Organics by GC/MS - Westborough Lab** | | | | | | |
| Acenaphthene | ND | | ug/kg | 150 | 19. | 1 |
| Hexachlorobenzene | ND | | ug/kg | 110 | 21. | 1 |
| Bis(2-chloroethyl)ether | ND | | ug/kg | 160 | 25. | 1 |
| 2-Chloronaphthalene | ND | | ug/kg | 180 | 18. | 1 |
| 3,3'-Dichlorobenzidine | ND | | ug/kg | 180 | 49. | 1 |
| 2,4-Dinitrotoluene | ND | | ug/kg | 180 | 37. | 1 |
| 2,6-Dinitrotoluene | ND | | ug/kg | 180 | 32. | 1 |
| Fluoranthene | ND | | ug/kg | 110 | 21. | 1 |
| 4-Chlorophenyl phenyl ether | ND | | ug/kg | 180 | 20. | 1 |
| 4-Bromophenyl phenyl ether | ND | | ug/kg | 180 | 28. | 1 |
| Bis(2-chloroisopropyl)ether | ND | | ug/kg | 220 | 31. | 1 |
| Bis(2-chloroethoxy)methane | ND | | ug/kg | 200 | 18. | 1 |
| Hexachlorobutadiene | ND | | ug/kg | 180 | 27. | 1 |
| Hexachlorocyclopentadiene | ND | | ug/kg | 530 | 170 | 1 |
| Hexachloroethane | ND | | ug/kg | 150 | 30. | 1 |
| Isophorone | ND | | ug/kg | 160 | 24. | 1 |
| Naphthalene | 160 | J | ug/kg | 180 | 22. | 1 |
| Nitrobenzene | ND | | ug/kg | 160 | 27. | 1 |
| NDPA/DPA | ND | | ug/kg | 150 | 21. | 1 |
| n-Nitrosodi-n-propylamine | ND | | ug/kg | 180 | 28. | 1 |
| Bis(2-ethylhexyl)phthalate | ND | | ug/kg | 180 | 64. | 1 |
| Butyl benzyl phthalate | ND | | ug/kg | 180 | 46. | 1 |
| Di-n-butylphthalate | ND | | ug/kg | 180 | 35. | 1 |
| Di-n-octylphthalate | ND | | ug/kg | 180 | 63. | 1 |
| Diethyl phthalate | ND | | ug/kg | 180 | 17. | 1 |
| Dimethyl phthalate | ND | | ug/kg | 180 | 39. | 1 |
| Benzo(a)anthracene | ND | | ug/kg | 110 | 21. | 1 |
| Benzo(a)pyrene | ND | | ug/kg | 150 | 45. | 1 |

**Project Name:** RIVER ROAD **Lab Number:** L1959111

**Project Number:** 0518-019-001 **Report Date:** 12/18/19

## SAMPLE RESULTS

Lab ID: L1959111-09 Date Collected: 12/09/19 11:10

Client ID: TP 5 Date Received: 12/10/19

Sample Location: OLEAN, NY Field Prep: Not Specified

Sample Depth:

| Parameter | Result | Qualifier | Units | RL | MDL | Dilution Factor |
|---|---|---|---|---|---|---|
| **Semivolatile Organics by GC/MS - Westborough Lab** | | | | | | |
| Benzo(b)fluoranthene | ND | | ug/kg | 110 | 31. | 1 |
| Benzo(k)fluoranthene | ND | | ug/kg | 110 | 29. | 1 |
| Chrysene | 190 | | ug/kg | 110 | 19. | 1 |
| Acenaphthylene | ND | | ug/kg | 150 | 28. | 1 |
| Anthracene | ND | | ug/kg | 110 | 36. | 1 |
| Benzo(ghi)perylene | ND | | ug/kg | 150 | 22. | 1 |
| Fluorene | ND | | ug/kg | 180 | 18. | 1 |
| Phenanthrene | 1200 | | ug/kg | 110 | 22. | 1 |
| Dibenzo(a,h)anthracene | ND | | ug/kg | 110 | 21. | 1 |
| Indeno(1,2,3-cd)pyrene | ND | | ug/kg | 150 | 26. | 1 |
| Pyrene | 95 | J | ug/kg | 110 | 18. | 1 |
| Biphenyl | ND | | ug/kg | 420 | 43. | 1 |
| 4-Chloroaniline | ND | | ug/kg | 180 | 34. | 1 |
| 2-Nitroaniline | ND | | ug/kg | 180 | 36. | 1 |
| 3-Nitroaniline | ND | | ug/kg | 180 | 35. | 1 |
| 4-Nitroaniline | ND | | ug/kg | 180 | 76. | 1 |
| Dibenzofuran | ND | | ug/kg | 180 | 17. | 1 |
| 2-Methylnaphthalene | ND | | ug/kg | 220 | 22. | 1 |
| 1,2,4,5-Tetrachlorobenzene | ND | | ug/kg | 180 | 19. | 1 |
| Acetophenone | ND | | ug/kg | 180 | 23. | 1 |
| 2,4,6-Trichlorophenol | ND | | ug/kg | 110 | 35. | 1 |
| p-Chloro-m-cresol | ND | | ug/kg | 180 | 27. | 1 |
| 2-Chlorophenol | ND | | ug/kg | 180 | 22. | 1 |
| 2,4-Dichlorophenol | ND | | ug/kg | 160 | 30. | 1 |
| 2,4-Dimethylphenol | ND | | ug/kg | 180 | 61. | 1 |
| 2-Nitrophenol | ND | | ug/kg | 400 | 69. | 1 |
| 4-Nitrophenol | ND | | ug/kg | 260 | 75. | 1 |
| 2,4-Dinitrophenol | ND | | ug/kg | 880 | 86. | 1 |
| 4,6-Dinitro-o-cresol | ND | | ug/kg | 480 | 88. | 1 |
| Pentachlorophenol | ND | | ug/kg | 150 | 40. | 1 |
| Phenol | ND | | ug/kg | 180 | 28. | 1 |
| 2-Methylphenol | ND | | ug/kg | 180 | 28. | 1 |
| 3-Methylphenol/4-Methylphenol | ND | | ug/kg | 260 | 29. | 1 |
| 2,4,5-Trichlorophenol | ND | | ug/kg | 180 | 35. | 1 |
| Carbazole | ND | | ug/kg | 180 | 18. | 1 |
| Atrazine | ND | | ug/kg | 150 | 64. | 1 |
| Benzaldehyde | ND | | ug/kg | 240 | 50. | 1 |

**Project Name:** RIVER ROAD
**Project Number:** 0518-019-001
**Lab Number:** L1959111
**Report Date:** 12/18/19

## SAMPLE RESULTS

Lab ID: L1959111-09
Client ID: TP 5
Sample Location: OLEAN, NY
Date Collected: 12/09/19 11:10
Date Received: 12/10/19
Field Prep: Not Specified

Sample Depth:

| Parameter | Result | Qualifier | Units | RL | MDL | Dilution Factor |
|---|---|---|---|---|---|---|
| **Semivolatile Organics by GC/MS - Westborough Lab** | | | | | | |
| Caprolactam | ND | | ug/kg | 180 | 56. | 1 |
| 2,3,4,6-Tetrachlorophenol | ND | | ug/kg | 180 | 37. | 1 |
| **Tentatively Identified Compounds** | | | | | | |
| Total TIC Compounds | 80600 | J | ug/kg | | | 1 |
| Unknown Alkane | 3650 | J | ug/kg | | | 1 |
| Unknown Naphthalene | 3550 | J | ug/kg | | | 1 |
| Unknown Cycloalkane | 4150 | J | ug/kg | | | 1 |
| Unknown | 7420 | J | ug/kg | | | 1 |
| Unknown Naphthalene | 6350 | J | ug/kg | | | 1 |
| Unknown | 5560 | J | ug/kg | | | 1 |
| Unknown Alkane | 3710 | J | ug/kg | | | 1 |
| Unknown Cycloalkane | 5040 | J | ug/kg | | | 1 |
| Unknown | 6570 | J | ug/kg | | | 1 |
| Unknown Alkane | 6530 | J | ug/kg | | | 1 |
| Unknown Cycloalkane | 3320 | J | ug/kg | | | 1 |
| Unknown Cycloalkane | 3390 | J | ug/kg | | | 1 |
| Unknown | 5980 | J | ug/kg | | | 1 |
| Unknown Cycloalkane | 7490 | J | ug/kg | | | 1 |
| Unknown Alkane | 7910 | J | ug/kg | | | 1 |

| Surrogate | % Recovery | Qualifier | Acceptance Criteria |
|---|---|---|---|
| 2-Fluorophenol | 67 | | 25-120 |
| Phenol-d6 | 78 | | 10-120 |
| Nitrobenzene-d5 | **129** | Q | 23-120 |
| 2-Fluorobiphenyl | 48 | | 30-120 |
| 2,4,6-Tribromophenol | 50 | | 10-136 |
| 4-Terphenyl-d14 | 49 | | 18-120 |

**Project Name:** RIVER ROAD
**Project Number:** 0518-019-001
**Lab Number:** L1959111
**Report Date:** 12/18/19

## SAMPLE RESULTS

Lab ID: L1959111-11
Client ID: TP 7
Sample Location: OLEAN, NY

Date Collected: 12/09/19 11:25
Date Received: 12/10/19
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8270D
Analytical Date: 12/14/19 03:43
Analyst: ALS
Percent Solids: 82%

Extraction Method: EPA 3546
Extraction Date: 12/13/19 09:17

| Parameter | Result | Qualifier | Units | RL | MDL | Dilution Factor |
|---|---|---|---|---|---|---|
| **Semivolatile Organics by GC/MS - Westborough Lab** | | | | | | |
| Acenaphthene | ND | | ug/kg | 160 | 21. | 1 |
| Hexachlorobenzene | ND | | ug/kg | 120 | 22. | 1 |
| Bis(2-chloroethyl)ether | ND | | ug/kg | 180 | 27. | 1 |
| 2-Chloronaphthalene | ND | | ug/kg | 200 | 20. | 1 |
| 3,3'-Dichlorobenzidine | ND | | ug/kg | 200 | 53. | 1 |
| 2,4-Dinitrotoluene | ND | | ug/kg | 200 | 40. | 1 |
| 2,6-Dinitrotoluene | ND | | ug/kg | 200 | 34. | 1 |
| Fluoranthene | ND | | ug/kg | 120 | 23. | 1 |
| 4-Chlorophenyl phenyl ether | ND | | ug/kg | 200 | 21. | 1 |
| 4-Bromophenyl phenyl ether | ND | | ug/kg | 200 | 30. | 1 |
| Bis(2-chloroisopropyl)ether | ND | | ug/kg | 240 | 34. | 1 |
| Bis(2-chloroethoxy)methane | ND | | ug/kg | 220 | 20. | 1 |
| Hexachlorobutadiene | ND | | ug/kg | 200 | 29. | 1 |
| Hexachlorocyclopentadiene | ND | | ug/kg | 570 | 180 | 1 |
| Hexachloroethane | ND | | ug/kg | 160 | 32. | 1 |
| Isophorone | ND | | ug/kg | 180 | 26. | 1 |
| Naphthalene | ND | | ug/kg | 200 | 24. | 1 |
| Nitrobenzene | ND | | ug/kg | 180 | 30. | 1 |
| NDPA/DPA | ND | | ug/kg | 160 | 23. | 1 |
| n-Nitrosodi-n-propylamine | ND | | ug/kg | 200 | 31. | 1 |
| Bis(2-ethylhexyl)phthalate | ND | | ug/kg | 200 | 69. | 1 |
| Butyl benzyl phthalate | ND | | ug/kg | 200 | 50. | 1 |
| Di-n-butylphthalate | ND | | ug/kg | 200 | 38. | 1 |
| Di-n-octylphthalate | ND | | ug/kg | 200 | 68. | 1 |
| Diethyl phthalate | ND | | ug/kg | 200 | 18. | 1 |
| Dimethyl phthalate | ND | | ug/kg | 200 | 42. | 1 |
| Benzo(a)anthracene | ND | | ug/kg | 120 | 22. | 1 |
| Benzo(a)pyrene | ND | | ug/kg | 160 | 49. | 1 |

**Project Name:** RIVER ROAD **Lab Number:** L1959111

**Project Number:** 0518-019-001 **Report Date:** 12/18/19

**SAMPLE RESULTS**

Lab ID: L1959111-11 Date Collected: 12/09/19 11:25
Client ID: TP 7 Date Received: 12/10/19
Sample Location: OLEAN, NY Field Prep: Not Specified

Sample Depth:

| Parameter | Result | Qualifier | Units | RL | MDL | Dilution Factor |
|---|---|---|---|---|---|---|
| Semivolatile Organics by GC/MS - Westborough Lab | | | | | | |
| Benzo(b)fluoranthene | ND | | ug/kg | 120 | 34. | 1 |
| Benzo(k)fluoranthene | ND | | ug/kg | 120 | 32. | 1 |
| Chrysene | ND | | ug/kg | 120 | 21. | 1 |
| Acenaphthylene | ND | | ug/kg | 160 | 31. | 1 |
| Anthracene | ND | | ug/kg | 120 | 39. | 1 |
| Benzo(ghi)perylene | ND | | ug/kg | 160 | 24. | 1 |
| Fluorene | 44 | J | ug/kg | 200 | 19. | 1 |
| Phenanthrene | 72 | J | ug/kg | 120 | 24. | 1 |
| Dibenzo(a,h)anthracene | ND | | ug/kg | 120 | 23. | 1 |
| Indeno(1,2,3-cd)pyrene | ND | | ug/kg | 160 | 28. | 1 |
| Pyrene | ND | | ug/kg | 120 | 20. | 1 |
| Biphenyl | ND | | ug/kg | 460 | 46. | 1 |
| 4-Chloroaniline | ND | | ug/kg | 200 | 36. | 1 |
| 2-Nitroaniline | ND | | ug/kg | 200 | 39. | 1 |
| 3-Nitroaniline | ND | | ug/kg | 200 | 38. | 1 |
| 4-Nitroaniline | ND | | ug/kg | 200 | 83. | 1 |
| Dibenzofuran | 33 | J | ug/kg | 200 | 19. | 1 |
| 2-Methylnaphthalene | ND | | ug/kg | 240 | 24. | 1 |
| 1,2,4,5-Tetrachlorobenzene | ND | | ug/kg | 200 | 21. | 1 |
| Acetophenone | ND | | ug/kg | 200 | 25. | 1 |
| 2,4,6-Trichlorophenol | ND | | ug/kg | 120 | 38. | 1 |
| p-Chloro-m-cresol | ND | | ug/kg | 200 | 30. | 1 |
| 2-Chlorophenol | ND | | ug/kg | 200 | 24. | 1 |
| 2,4-Dichlorophenol | ND | | ug/kg | 180 | 32. | 1 |
| 2,4-Dimethylphenol | ND | | ug/kg | 200 | 66. | 1 |
| 2-Nitrophenol | ND | | ug/kg | 430 | 75. | 1 |
| 4-Nitrophenol | ND | | ug/kg | 280 | 82. | 1 |
| 2,4-Dinitrophenol | ND | | ug/kg | 960 | 93. | 1 |
| 4,6-Dinitro-o-cresol | ND | | ug/kg | 520 | 96. | 1 |
| Pentachlorophenol | ND | | ug/kg | 160 | 44. | 1 |
| Phenol | ND | | ug/kg | 200 | 30. | 1 |
| 2-Methylphenol | ND | | ug/kg | 200 | 31. | 1 |
| 3-Methylphenol/4-Methylphenol | ND | | ug/kg | 290 | 31. | 1 |
| 2,4,5-Trichlorophenol | ND | | ug/kg | 200 | 38. | 1 |
| Carbazole | ND | | ug/kg | 200 | 19. | 1 |
| Atrazine | ND | | ug/kg | 160 | 70. | 1 |
| Benzaldehyde | ND | | ug/kg | 260 | 54. | 1 |

**Project Name:** RIVER ROAD
**Project Number:** 0518-019-001
**Lab Number:** L1959111
**Report Date:** 12/18/19

## SAMPLE RESULTS

Lab ID: L1959111-11
Client ID: TP 7
Sample Location: OLEAN, NY
Date Collected: 12/09/19 11:25
Date Received: 12/10/19
Field Prep: Not Specified

Sample Depth:

| Parameter | Result | Qualifier | Units | RL | MDL | Dilution Factor |
|---|---|---|---|---|---|---|
| **Semivolatile Organics by GC/MS - Westborough Lab** | | | | | | |
| Caprolactam | ND | | ug/kg | 200 | 61. | 1 |
| 2,3,4,6-Tetrachlorophenol | ND | | ug/kg | 200 | 40. | 1 |
| **Tentatively Identified Compounds** | | | | | | |
| Total TIC Compounds | 21400 | J | ug/kg | | | 1 |
| Unknown | 2600 | J | ug/kg | | | 1 |
| Unknown | 880 | J | ug/kg | | | 1 |
| Unknown Alkane | 1130 | J | ug/kg | | | 1 |
| Unknown Alkane | 1660 | J | ug/kg | | | 1 |
| Unknown Alkane | 2420 | J | ug/kg | | | 1 |
| Unknown Cycloalkane | 1170 | J | ug/kg | | | 1 |
| Unknown | 960 | J | ug/kg | | | 1 |
| Unknown Alkane | 2040 | J | ug/kg | | | 1 |
| Unknown Cycloalkane | 983 | J | ug/kg | | | 1 |
| Unknown Alkane | 811 | J | ug/kg | | | 1 |
| Unknown Alkane | 1540 | J | ug/kg | | | 1 |
| Unknown Cyclohexane | 1150 | J | ug/kg | | | 1 |
| Unknown | 1610 | J | ug/kg | | | 1 |
| Unknown Naphthalene | 1010 | J | ug/kg | | | 1 |
| Unknown Alkane | 1470 | J | ug/kg | | | 1 |

| Surrogate | % Recovery | Qualifier | Acceptance Criteria |
|---|---|---|---|
| 2-Fluorophenol | 68 | | 25-120 |
| Phenol-d6 | 72 | | 10-120 |
| Nitrobenzene-d5 | 71 | | 23-120 |
| 2-Fluorobiphenyl | 51 | | 30-120 |
| 2,4,6-Tribromophenol | 54 | | 10-136 |
| 4-Terphenyl-d14 | 44 | | 18-120 |

**Project Name:** RIVER ROAD
**Project Number:** 0518-019-001
**Lab Number:** L1959111
**Report Date:** 12/18/19

## SAMPLE RESULTS

Lab ID: L1959111-13 D
Client ID: TP 9
Sample Location: OLEAN, NY

Date Collected: 12/09/19 11:40
Date Received: 12/10/19
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8270D
Analytical Date: 12/17/19 15:57
Analyst: EK
Percent Solids: 86%

Extraction Method: EPA 3546
Extraction Date: 12/13/19 09:17

| Parameter | Result | Qualifier | Units | RL | MDL | Dilution Factor |
|---|---|---|---|---|---|---|
| **Semivolatile Organics by GC/MS - Westborough Lab** | | | | | | |
| Acenaphthene | ND | | ug/kg | 1500 | 200 | 10 |
| Hexachlorobenzene | ND | | ug/kg | 1200 | 220 | 10 |
| Bis(2-chloroethyl)ether | ND | | ug/kg | 1700 | 260 | 10 |
| 2-Chloronaphthalene | ND | | ug/kg | 1900 | 190 | 10 |
| 3,3'-Dichlorobenzidine | ND | | ug/kg | 1900 | 510 | 10 |
| 2,4-Dinitrotoluene | ND | | ug/kg | 1900 | 380 | 10 |
| 2,6-Dinitrotoluene | ND | | ug/kg | 1900 | 330 | 10 |
| Fluoranthene | ND | | ug/kg | 1200 | 220 | 10 |
| 4-Chlorophenyl phenyl ether | ND | | ug/kg | 1900 | 200 | 10 |
| 4-Bromophenyl phenyl ether | ND | | ug/kg | 1900 | 290 | 10 |
| Bis(2-chloroisopropyl)ether | ND | | ug/kg | 2300 | 330 | 10 |
| Bis(2-chloroethoxy)methane | ND | | ug/kg | 2100 | 190 | 10 |
| Hexachlorobutadiene | ND | | ug/kg | 1900 | 280 | 10 |
| Hexachlorocyclopentadiene | ND | | ug/kg | 5500 | 1700 | 10 |
| Hexachloroethane | ND | | ug/kg | 1500 | 310 | 10 |
| Isophorone | ND | | ug/kg | 1700 | 250 | 10 |
| Naphthalene | ND | | ug/kg | 1900 | 230 | 10 |
| Nitrobenzene | ND | | ug/kg | 1700 | 280 | 10 |
| NDPA/DPA | ND | | ug/kg | 1500 | 220 | 10 |
| n-Nitrosodi-n-propylamine | ND | | ug/kg | 1900 | 300 | 10 |
| Bis(2-ethylhexyl)phthalate | ND | | ug/kg | 1900 | 660 | 10 |
| Butyl benzyl phthalate | ND | | ug/kg | 1900 | 480 | 10 |
| Di-n-butylphthalate | ND | | ug/kg | 1900 | 360 | 10 |
| Di-n-octylphthalate | ND | | ug/kg | 1900 | 650 | 10 |
| Diethyl phthalate | ND | | ug/kg | 1900 | 180 | 10 |
| Dimethyl phthalate | ND | | ug/kg | 1900 | 400 | 10 |
| Benzo(a)anthracene | ND | | ug/kg | 1200 | 220 | 10 |
| Benzo(a)pyrene | ND | | ug/kg | 1500 | 470 | 10 |

**Project Name:** RIVER ROAD **Lab Number:** L1959111

**Project Number:** 0518-019-001 **Report Date:** 12/18/19

**SAMPLE RESULTS**

Lab ID: L1959111-13 D Date Collected: 12/09/19 11:40
Client ID: TP 9 Date Received: 12/10/19
Sample Location: OLEAN, NY Field Prep: Not Specified

Sample Depth:

| Parameter | Result | Qualifier | Units | RL | MDL | Dilution Factor |
|---|---|---|---|---|---|---|
| **Semivolatile Organics by GC/MS - Westborough Lab** | | | | | | |
| Benzo(b)fluoranthene | ND | | ug/kg | 1200 | 320 | 10 |
| Benzo(k)fluoranthene | ND | | ug/kg | 1200 | 310 | 10 |
| Chrysene | 1300 | | ug/kg | 1200 | 200 | 10 |
| Acenaphthylene | ND | | ug/kg | 1500 | 300 | 10 |
| Anthracene | 370 | J | ug/kg | 1200 | 370 | 10 |
| Benzo(ghi)perylene | ND | | ug/kg | 1500 | 220 | 10 |
| Fluorene | 2400 | | ug/kg | 1900 | 190 | 10 |
| Phenanthrene | 6500 | | ug/kg | 1200 | 230 | 10 |
| Dibenzo(a,h)anthracene | ND | | ug/kg | 1200 | 220 | 10 |
| Indeno(1,2,3-cd)pyrene | ND | | ug/kg | 1500 | 270 | 10 |
| Pyrene | ND | | ug/kg | 1200 | 190 | 10 |
| Biphenyl | ND | | ug/kg | 4400 | 440 | 10 |
| 4-Chloroaniline | ND | | ug/kg | 1900 | 350 | 10 |
| 2-Nitroaniline | ND | | ug/kg | 1900 | 370 | 10 |
| 3-Nitroaniline | ND | | ug/kg | 1900 | 360 | 10 |
| 4-Nitroaniline | ND | | ug/kg | 1900 | 800 | 10 |
| Dibenzofuran | 1600 | J | ug/kg | 1900 | 180 | 10 |
| 2-Methylnaphthalene | 300 | J | ug/kg | 2300 | 230 | 10 |
| 1,2,4,5-Tetrachlorobenzene | ND | | ug/kg | 1900 | 200 | 10 |
| Acetophenone | ND | | ug/kg | 1900 | 240 | 10 |
| 2,4,6-Trichlorophenol | ND | | ug/kg | 1200 | 360 | 10 |
| p-Chloro-m-cresol | ND | | ug/kg | 1900 | 290 | 10 |
| 2-Chlorophenol | ND | | ug/kg | 1900 | 230 | 10 |
| 2,4-Dichlorophenol | ND | | ug/kg | 1700 | 310 | 10 |
| 2,4-Dimethylphenol | ND | | ug/kg | 1900 | 630 | 10 |
| 2-Nitrophenol | ND | | ug/kg | 4100 | 720 | 10 |
| 4-Nitrophenol | ND | | ug/kg | 2700 | 780 | 10 |
| 2,4-Dinitrophenol | ND | | ug/kg | 9200 | 900 | 10 |
| 4,6-Dinitro-o-cresol | ND | | ug/kg | 5000 | 920 | 10 |
| Pentachlorophenol | ND | | ug/kg | 1500 | 420 | 10 |
| Phenol | ND | | ug/kg | 1900 | 290 | 10 |
| 2-Methylphenol | ND | | ug/kg | 1900 | 300 | 10 |
| 3-Methylphenol/4-Methylphenol | ND | | ug/kg | 2800 | 300 | 10 |
| 2,4,5-Trichlorophenol | ND | | ug/kg | 1900 | 370 | 10 |
| Carbazole | ND | | ug/kg | 1900 | 190 | 10 |
| Atrazine | ND | | ug/kg | 1500 | 670 | 10 |
| Benzaldehyde | ND | | ug/kg | 2500 | 520 | 10 |

**Project Name:** RIVER ROAD **Lab Number:** L1959111

**Project Number:** 0518-019-001 **Report Date:** 12/18/19

## SAMPLE RESULTS

Lab ID: L1959111-13 D Date Collected: 12/09/19 11:40
Client ID: TP 9 Date Received: 12/10/19
Sample Location: OLEAN, NY Field Prep: Not Specified

Sample Depth:

| Parameter | Result | Qualifier | Units | RL | MDL | Dilution Factor |
|---|---|---|---|---|---|---|
| **Semivolatile Organics by GC/MS - Westborough Lab** | | | | | | |
| Caprolactam | ND | | ug/kg | 1900 | 580 | 10 |
| 2,3,4,6-Tetrachlorophenol | ND | | ug/kg | 1900 | 390 | 10 |
| **Tentatively Identified Compounds** | | | | | | |
| Total TIC Compounds | 983000 | J | ug/kg | | | 10 |
| Unknown | 82500 | J | ug/kg | | | 10 |
| Unknown Alkane | 41800 | J | ug/kg | | | 10 |
| Unknown Alkane | 55400 | J | ug/kg | | | 10 |
| Unknown | 69100 | J | ug/kg | | | 10 |
| Unknown Alkane | 107000 | J | ug/kg | | | 10 |
| Unknown Cycloalkane | 48500 | J | ug/kg | | | 10 |
| Unknown Alkane | 89700 | J | ug/kg | | | 10 |
| Unknown Naphthalene | 54900 | J | ug/kg | | | 10 |
| Unknown | 75800 | J | ug/kg | | | 10 |
| Unknown Cycloalkane | 39300 | J | ug/kg | | | 10 |
| Unknown Cycloalkane | 64700 | J | ug/kg | | | 10 |
| Unknown Alkane | 54700 | J | ug/kg | | | 10 |
| Unknown Benzene | 66000 | J | ug/kg | | | 10 |
| Unknown | 58800 | J | ug/kg | | | 10 |
| Unknown | 74900 | J | ug/kg | | | 10 |

| Surrogate | % Recovery | Qualifier | Acceptance Criteria |
|---|---|---|---|
| 2-Fluorophenol | **135** | Q | 25-120 |
| Phenol-d6 | 110 | | 10-120 |
| Nitrobenzene-d5 | **193** | Q | 23-120 |
| 2-Fluorobiphenyl | 64 | | 30-120 |
| 2,4,6-Tribromophenol | 67 | | 10-136 |
| 4-Terphenyl-d14 | 58 | | 18-120 |

**Project Name:** RIVER ROAD
**Project Number:** 0518-019-001

**Lab Number:** L1959111
**Report Date:** 12/18/19

# Method Blank Analysis
## Batch Quality Control

Analytical Method: 1,8270D
Analytical Date: 12/13/19 23:27
Analyst: ALS

Extraction Method: EPA 3546
Extraction Date: 12/11/19 18:15

| Parameter | Result | Qualifier | Units | RL | MDL |
|---|---|---|---|---|---|
| Semivolatile Organics by GC/MS - Westborough Lab for sample(s): 01,03 Batch: WG1319650-1 | | | | | |
| Acenaphthene | ND | | ug/kg | 130 | 17. |
| Hexachlorobenzene | ND | | ug/kg | 98 | 18. |
| Bis(2-chloroethyl)ether | ND | | ug/kg | 150 | 22. |
| 2-Chloronaphthalene | ND | | ug/kg | 160 | 16. |
| 3,3'-Dichlorobenzidine | ND | | ug/kg | 160 | 44. |
| 2,4-Dinitrotoluene | ND | | ug/kg | 160 | 33. |
| 2,6-Dinitrotoluene | ND | | ug/kg | 160 | 28. |
| Fluoranthene | ND | | ug/kg | 98 | 19. |
| 4-Chlorophenyl phenyl ether | ND | | ug/kg | 160 | 18. |
| 4-Bromophenyl phenyl ether | ND | | ug/kg | 160 | 25. |
| Bis(2-chloroisopropyl)ether | ND | | ug/kg | 200 | 28. |
| Bis(2-chloroethoxy)methane | ND | | ug/kg | 180 | 16. |
| Hexachlorobutadiene | ND | | ug/kg | 160 | 24. |
| Hexachlorocyclopentadiene | ND | | ug/kg | 470 | 150 |
| Hexachloroethane | ND | | ug/kg | 130 | 26. |
| Isophorone | ND | | ug/kg | 150 | 21. |
| Naphthalene | ND | | ug/kg | 160 | 20. |
| Nitrobenzene | ND | | ug/kg | 150 | 24. |
| NDPA/DPA | ND | | ug/kg | 130 | 19. |
| n-Nitrosodi-n-propylamine | ND | | ug/kg | 160 | 25. |
| Bis(2-ethylhexyl)phthalate | ND | | ug/kg | 160 | 57. |
| Butyl benzyl phthalate | ND | | ug/kg | 160 | 41. |
| Di-n-butylphthalate | ND | | ug/kg | 160 | 31. |
| Di-n-octylphthalate | ND | | ug/kg | 160 | 56. |
| Diethyl phthalate | ND | | ug/kg | 160 | 15. |
| Dimethyl phthalate | ND | | ug/kg | 160 | 34. |
| Benzo(a)anthracene | ND | | ug/kg | 98 | 18. |
| Benzo(a)pyrene | ND | | ug/kg | 130 | 40. |
| Benzo(b)fluoranthene | ND | | ug/kg | 98 | 28. |

**Project Name:** RIVER ROAD
**Project Number:** 0518-019-001

**Lab Number:** L1959111
**Report Date:** 12/18/19

# Method Blank Analysis
## Batch Quality Control

Analytical Method: 1,8270D
Analytical Date: 12/13/19 23:27
Analyst: ALS

Extraction Method: EPA 3546
Extraction Date: 12/11/19 18:15

| Parameter | Result | Qualifier | Units | RL | MDL |
|---|---|---|---|---|---|
| Semivolatile Organics by GC/MS - Westborough Lab for sample(s): 01,03 Batch: WG1319650-1 | | | | | |
| Benzo(k)fluoranthene | ND | | ug/kg | 98 | 26. |
| Chrysene | ND | | ug/kg | 98 | 17. |
| Acenaphthylene | ND | | ug/kg | 130 | 25. |
| Anthracene | ND | | ug/kg | 98 | 32. |
| Benzo(ghi)perylene | ND | | ug/kg | 130 | 19. |
| Fluorene | ND | | ug/kg | 160 | 16. |
| Phenanthrene | ND | | ug/kg | 98 | 20. |
| Dibenzo(a,h)anthracene | ND | | ug/kg | 98 | 19. |
| Indeno(1,2,3-cd)pyrene | ND | | ug/kg | 130 | 23. |
| Pyrene | ND | | ug/kg | 98 | 16. |
| Biphenyl | ND | | ug/kg | 370 | 38. |
| 4-Chloroaniline | ND | | ug/kg | 160 | 30. |
| 2-Nitroaniline | ND | | ug/kg | 160 | 32. |
| 3-Nitroaniline | ND | | ug/kg | 160 | 31. |
| 4-Nitroaniline | ND | | ug/kg | 160 | 68. |
| Dibenzofuran | ND | | ug/kg | 160 | 16. |
| 2-Methylnaphthalene | ND | | ug/kg | 200 | 20. |
| 1,2,4,5-Tetrachlorobenzene | ND | | ug/kg | 160 | 17. |
| Acetophenone | ND | | ug/kg | 160 | 20. |
| 2,4,6-Trichlorophenol | ND | | ug/kg | 98 | 31. |
| p-Chloro-m-cresol | ND | | ug/kg | 160 | 24. |
| 2-Chlorophenol | ND | | ug/kg | 160 | 19. |
| 2,4-Dichlorophenol | ND | | ug/kg | 150 | 26. |
| 2,4-Dimethylphenol | ND | | ug/kg | 160 | 54. |
| 2-Nitrophenol | ND | | ug/kg | 350 | 62. |
| 4-Nitrophenol | ND | | ug/kg | 230 | 67. |
| 2,4-Dinitrophenol | ND | | ug/kg | 790 | 76. |
| 4,6-Dinitro-o-cresol | ND | | ug/kg | 430 | 79. |
| Pentachlorophenol | ND | | ug/kg | 130 | 36. |

**Project Name:** RIVER ROAD
**Project Number:** 0518-019-001

**Lab Number:** L1959111
**Report Date:** 12/18/19

# Method Blank Analysis
## Batch Quality Control

Analytical Method: 1,8270D
Analytical Date: 12/13/19 23:27
Analyst: ALS

Extraction Method: EPA 3546
Extraction Date: 12/11/19 18:15

| Parameter | Result | Qualifier | Units | RL | MDL |
|---|---|---|---|---|---|
| Semivolatile Organics by GC/MS - Westborough Lab for sample(s): 01,03 Batch: WG1319650-1 | | | | | |
| Phenol | ND | | ug/kg | 160 | 25. |
| 2-Methylphenol | ND | | ug/kg | 160 | 25. |
| 3-Methylphenol/4-Methylphenol | ND | | ug/kg | 240 | 26. |
| 2,4,5-Trichlorophenol | ND | | ug/kg | 160 | 31. |
| Carbazole | ND | | ug/kg | 160 | 16. |
| Atrazine | ND | | ug/kg | 130 | 57. |
| Benzaldehyde | ND | | ug/kg | 220 | 44. |
| Caprolactam | ND | | ug/kg | 160 | 50. |
| 2,3,4,6-Tetrachlorophenol | ND | | ug/kg | 160 | 33. |
| Tentatively Identified Compounds | | | | | |
| No Tentatively Identified Compounds | ND | | ug/kg | | |

| Surrogate | %Recovery | Qualifier | Acceptance Criteria |
|---|---|---|---|
| 2-Fluorophenol | 78 | | 25-120 |
| Phenol-d6 | 84 | | 10-120 |
| Nitrobenzene-d5 | 64 | | 23-120 |
| 2-Fluorobiphenyl | 56 | | 30-120 |
| 2,4,6-Tribromophenol | 64 | | 10-136 |
| 4-Terphenyl-d14 | 56 | | 18-120 |

**Project Name:** RIVER ROAD
**Project Number:** 0518-019-001

**Lab Number:** L1959111
**Report Date:** 12/18/19

# Method Blank Analysis
## Batch Quality Control

Analytical Method: 1,8270D
Analytical Date: 12/12/19 15:35
Analyst: IM

Extraction Method: EPA 3546
Extraction Date: 12/11/19 19:42

| Parameter | Result | Qualifier | Units | RL | MDL |
|---|---|---|---|---|---|
| Semivolatile Organics by GC/MS - Westborough Lab for sample(s): 05,07 Batch: WG1319660-1 | | | | | |
| Acenaphthene | ND | | ug/kg | 130 | 17. |
| Hexachlorobenzene | ND | | ug/kg | 98 | 18. |
| Bis(2-chloroethyl)ether | ND | | ug/kg | 150 | 22. |
| 2-Chloronaphthalene | ND | | ug/kg | 160 | 16. |
| 3,3'-Dichlorobenzidine | ND | | ug/kg | 160 | 44. |
| 2,4-Dinitrotoluene | ND | | ug/kg | 160 | 33. |
| 2,6-Dinitrotoluene | ND | | ug/kg | 160 | 28. |
| Fluoranthene | ND | | ug/kg | 98 | 19. |
| 4-Chlorophenyl phenyl ether | ND | | ug/kg | 160 | 18. |
| 4-Bromophenyl phenyl ether | ND | | ug/kg | 160 | 25. |
| Bis(2-chloroisopropyl)ether | ND | | ug/kg | 200 | 28. |
| Bis(2-chloroethoxy)methane | ND | | ug/kg | 180 | 16. |
| Hexachlorobutadiene | ND | | ug/kg | 160 | 24. |
| Hexachlorocyclopentadiene | ND | | ug/kg | 470 | 150 |
| Hexachloroethane | ND | | ug/kg | 130 | 26. |
| Isophorone | ND | | ug/kg | 150 | 21. |
| Naphthalene | ND | | ug/kg | 160 | 20. |
| Nitrobenzene | ND | | ug/kg | 150 | 24. |
| NDPA/DPA | ND | | ug/kg | 130 | 19. |
| n-Nitrosodi-n-propylamine | ND | | ug/kg | 160 | 25. |
| Bis(2-ethylhexyl)phthalate | ND | | ug/kg | 160 | 57. |
| Butyl benzyl phthalate | ND | | ug/kg | 160 | 41. |
| Di-n-butylphthalate | ND | | ug/kg | 160 | 31. |
| Di-n-octylphthalate | ND | | ug/kg | 160 | 56. |
| Diethyl phthalate | ND | | ug/kg | 160 | 15. |
| Dimethyl phthalate | ND | | ug/kg | 160 | 34. |
| Benzo(a)anthracene | ND | | ug/kg | 98 | 18. |
| Benzo(a)pyrene | ND | | ug/kg | 130 | 40. |
| Benzo(b)fluoranthene | ND | | ug/kg | 98 | 28. |

**Project Name:** RIVER ROAD
**Project Number:** 0518-019-001

**Lab Number:** L1959111
**Report Date:** 12/18/19

# Method Blank Analysis
## Batch Quality Control

Analytical Method: 1,8270D
Analytical Date: 12/12/19 15:35
Analyst: IM

Extraction Method: EPA 3546
Extraction Date: 12/11/19 19:42

| Parameter | Result | Qualifier | Units | RL | MDL |
|---|---|---|---|---|---|
| Semivolatile Organics by GC/MS - Westborough Lab for sample(s): 05,07 Batch: WG1319660-1 | | | | | |
| Benzo(k)fluoranthene | ND | | ug/kg | 98 | 26. |
| Chrysene | ND | | ug/kg | 98 | 17. |
| Acenaphthylene | ND | | ug/kg | 130 | 25. |
| Anthracene | ND | | ug/kg | 98 | 32. |
| Benzo(ghi)perylene | ND | | ug/kg | 130 | 19. |
| Fluorene | ND | | ug/kg | 160 | 16. |
| Phenanthrene | ND | | ug/kg | 98 | 20. |
| Dibenzo(a,h)anthracene | ND | | ug/kg | 98 | 19. |
| Indeno(1,2,3-cd)pyrene | ND | | ug/kg | 130 | 23. |
| Pyrene | ND | | ug/kg | 98 | 16. |
| Biphenyl | ND | | ug/kg | 370 | 38. |
| 4-Chloroaniline | ND | | ug/kg | 160 | 30. |
| 2-Nitroaniline | ND | | ug/kg | 160 | 32. |
| 3-Nitroaniline | ND | | ug/kg | 160 | 31. |
| 4-Nitroaniline | ND | | ug/kg | 160 | 68. |
| Dibenzofuran | ND | | ug/kg | 160 | 16. |
| 2-Methylnaphthalene | ND | | ug/kg | 200 | 20. |
| 1,2,4,5-Tetrachlorobenzene | ND | | ug/kg | 160 | 17. |
| Acetophenone | ND | | ug/kg | 160 | 20. |
| 2,4,6-Trichlorophenol | ND | | ug/kg | 98 | 31. |
| p-Chloro-m-cresol | ND | | ug/kg | 160 | 24. |
| 2-Chlorophenol | ND | | ug/kg | 160 | 19. |
| 2,4-Dichlorophenol | ND | | ug/kg | 150 | 26. |
| 2,4-Dimethylphenol | ND | | ug/kg | 160 | 54. |
| 2-Nitrophenol | ND | | ug/kg | 350 | 62. |
| 4-Nitrophenol | ND | | ug/kg | 230 | 67. |
| 2,4-Dinitrophenol | ND | | ug/kg | 790 | 76. |
| 4,6-Dinitro-o-cresol | ND | | ug/kg | 430 | 79. |
| Pentachlorophenol | ND | | ug/kg | 130 | 36. |

**Project Name:** RIVER ROAD
**Project Number:** 0518-019-001

**Lab Number:** L1959111
**Report Date:** 12/18/19

# Method Blank Analysis
## Batch Quality Control

Analytical Method: 1,8270D
Analytical Date: 12/12/19 15:35
Analyst: IM

Extraction Method: EPA 3546
Extraction Date: 12/11/19 19:42

| Parameter | Result | Qualifier | Units | RL | MDL |
|---|---|---|---|---|---|
| Semivolatile Organics by GC/MS - Westborough Lab for sample(s): 05,07 Batch: WG1319660-1 | | | | | |
| Phenol | ND | | ug/kg | 160 | 25. |
| 2-Methylphenol | ND | | ug/kg | 160 | 25. |
| 3-Methylphenol/4-Methylphenol | ND | | ug/kg | 240 | 26. |
| 2,4,5-Trichlorophenol | ND | | ug/kg | 160 | 31. |
| Carbazole | ND | | ug/kg | 160 | 16. |
| Atrazine | ND | | ug/kg | 130 | 57. |
| Benzaldehyde | ND | | ug/kg | 220 | 44. |
| Caprolactam | ND | | ug/kg | 160 | 50. |
| 2,3,4,6-Tetrachlorophenol | ND | | ug/kg | 160 | 33. |
| Tentatively Identified Compounds | | | | | |
| No Tentatively Identified Compounds | ND | | ug/kg | | |

| Surrogate | %Recovery | Qualifier | Acceptance Criteria |
|---|---|---|---|
| 2-Fluorophenol | 85 | | 25-120 |
| Phenol-d6 | 84 | | 10-120 |
| Nitrobenzene-d5 | 64 | | 23-120 |
| 2-Fluorobiphenyl | 67 | | 30-120 |
| 2,4,6-Tribromophenol | 96 | | 10-136 |
| 4-Terphenyl-d14 | 71 | | 18-120 |

**Project Name:** RIVER ROAD
**Project Number:** 0518-019-001

**Lab Number:** L1959111
**Report Date:** 12/18/19

# Method Blank Analysis
## Batch Quality Control

Analytical Method: 1,8270D
Analytical Date: 12/13/19 01:53
Analyst: SZ

Extraction Method: EPA 3546
Extraction Date: 12/12/19 12:41

| Parameter | Result | Qualifier | Units | RL | MDL |
|---|---|---|---|---|---|
| Semivolatile Organics by GC/MS - Westborough Lab for sample(s): 09,11,13 Batch: WG1320032-1 | | | | | |
| Acenaphthene | ND | | ug/kg | 130 | 17. |
| Hexachlorobenzene | ND | | ug/kg | 97 | 18. |
| Bis(2-chloroethyl)ether | ND | | ug/kg | 150 | 22. |
| 2-Chloronaphthalene | ND | | ug/kg | 160 | 16. |
| 3,3'-Dichlorobenzidine | ND | | ug/kg | 160 | 43. |
| 2,4-Dinitrotoluene | ND | | ug/kg | 160 | 32. |
| 2,6-Dinitrotoluene | ND | | ug/kg | 160 | 28. |
| Fluoranthene | ND | | ug/kg | 97 | 19. |
| 4-Chlorophenyl phenyl ether | ND | | ug/kg | 160 | 17. |
| 4-Bromophenyl phenyl ether | ND | | ug/kg | 160 | 25. |
| Bis(2-chloroisopropyl)ether | ND | | ug/kg | 190 | 28. |
| Bis(2-chloroethoxy)methane | ND | | ug/kg | 180 | 16. |
| Hexachlorobutadiene | ND | | ug/kg | 160 | 24. |
| Hexachlorocyclopentadiene | ND | | ug/kg | 460 | 150 |
| Hexachloroethane | ND | | ug/kg | 130 | 26. |
| Isophorone | ND | | ug/kg | 150 | 21. |
| Naphthalene | ND | | ug/kg | 160 | 20. |
| Nitrobenzene | ND | | ug/kg | 150 | 24. |
| NDPA/DPA | ND | | ug/kg | 130 | 18. |
| n-Nitrosodi-n-propylamine | ND | | ug/kg | 160 | 25. |
| Bis(2-ethylhexyl)phthalate | ND | | ug/kg | 160 | 56. |
| Butyl benzyl phthalate | ND | | ug/kg | 160 | 41. |
| Di-n-butylphthalate | ND | | ug/kg | 160 | 31. |
| Di-n-octylphthalate | ND | | ug/kg | 160 | 55. |
| Diethyl phthalate | ND | | ug/kg | 160 | 15. |
| Dimethyl phthalate | ND | | ug/kg | 160 | 34. |
| Benzo(a)anthracene | ND | | ug/kg | 97 | 18. |
| Benzo(a)pyrene | ND | | ug/kg | 130 | 40. |
| Benzo(b)fluoranthene | ND | | ug/kg | 97 | 27. |

**Project Name:** RIVER ROAD
**Project Number:** 0518-019-001

**Lab Number:** L1959111
**Report Date:** 12/18/19

# Method Blank Analysis
## Batch Quality Control

Analytical Method: 1,8270D
Analytical Date: 12/13/19 01:53
Analyst: SZ

Extraction Method: EPA 3546
Extraction Date: 12/12/19 12:41

| Parameter | Result | Qualifier | Units | RL | MDL |
|---|---|---|---|---|---|
| Semivolatile Organics by GC/MS - Westborough Lab for sample(s): 09,11,13 Batch: WG1320032-1 | | | | | |
| Benzo(k)fluoranthene | ND | | ug/kg | 97 | 26. |
| Chrysene | ND | | ug/kg | 97 | 17. |
| Acenaphthylene | ND | | ug/kg | 130 | 25. |
| Anthracene | ND | | ug/kg | 97 | 32. |
| Benzo(ghi)perylene | ND | | ug/kg | 130 | 19. |
| Fluorene | ND | | ug/kg | 160 | 16. |
| Phenanthrene | ND | | ug/kg | 97 | 20. |
| Dibenzo(a,h)anthracene | ND | | ug/kg | 97 | 19. |
| Indeno(1,2,3-cd)pyrene | ND | | ug/kg | 130 | 23. |
| Pyrene | ND | | ug/kg | 97 | 16. |
| Biphenyl | ND | | ug/kg | 370 | 38. |
| 4-Chloroaniline | ND | | ug/kg | 160 | 30. |
| 2-Nitroaniline | ND | | ug/kg | 160 | 31. |
| 3-Nitroaniline | ND | | ug/kg | 160 | 31. |
| 4-Nitroaniline | ND | | ug/kg | 160 | 67. |
| Dibenzofuran | ND | | ug/kg | 160 | 15. |
| 2-Methylnaphthalene | ND | | ug/kg | 190 | 20. |
| 1,2,4,5-Tetrachlorobenzene | ND | | ug/kg | 160 | 17. |
| Acetophenone | ND | | ug/kg | 160 | 20. |
| 2,4,6-Trichlorophenol | ND | | ug/kg | 97 | 31. |
| p-Chloro-m-cresol | ND | | ug/kg | 160 | 24. |
| 2-Chlorophenol | ND | | ug/kg | 160 | 19. |
| 2,4-Dichlorophenol | ND | | ug/kg | 150 | 26. |
| 2,4-Dimethylphenol | ND | | ug/kg | 160 | 54. |
| 2-Nitrophenol | ND | | ug/kg | 350 | 61. |
| 4-Nitrophenol | ND | | ug/kg | 230 | 66. |
| 2,4-Dinitrophenol | ND | | ug/kg | 780 | 76. |
| 4,6-Dinitro-o-cresol | ND | | ug/kg | 420 | 78. |
| Pentachlorophenol | ND | | ug/kg | 130 | 36. |

**Project Name:** RIVER ROAD
**Project Number:** 0518-019-001

**Lab Number:** L1959111
**Report Date:** 12/18/19

# Method Blank Analysis
## Batch Quality Control

Analytical Method: 1,8270D
Analytical Date: 12/13/19 01:53
Analyst: SZ

Extraction Method: EPA 3546
Extraction Date: 12/12/19 12:41

| Parameter | Result | Qualifier | Units | RL | MDL |
|---|---|---|---|---|---|
| Semivolatile Organics by GC/MS - Westborough Lab for sample(s): 09,11,13 Batch: WG1320032-1 | | | | | |
| Phenol | ND | | ug/kg | 160 | 24. |
| 2-Methylphenol | ND | | ug/kg | 160 | 25. |
| 3-Methylphenol/4-Methylphenol | ND | | ug/kg | 230 | 25. |
| 2,4,5-Trichlorophenol | ND | | ug/kg | 160 | 31. |
| Carbazole | ND | | ug/kg | 160 | 16. |
| Atrazine | ND | | ug/kg | 130 | 57. |
| Benzaldehyde | ND | | ug/kg | 210 | 44. |
| Caprolactam | ND | | ug/kg | 160 | 49. |
| 2,3,4,6-Tetrachlorophenol | ND | | ug/kg | 160 | 33. |
| Tentatively Identified Compounds | | | | | |
| No Tentatively Identified Compounds | ND | | ug/kg | | |

| Surrogate | %Recovery | Qualifier | Acceptance Criteria |
|---|---|---|---|
| 2-Fluorophenol | 83 | | 25-120 |
| Phenol-d6 | 82 | | 10-120 |
| Nitrobenzene-d5 | 75 | | 23-120 |
| 2-Fluorobiphenyl | 68 | | 30-120 |
| 2,4,6-Tribromophenol | 67 | | 10-136 |
| 4-Terphenyl-d14 | 78 | | 18-120 |

# Lab Control Sample Analysis
## Batch Quality Control

**Project Name:** RIVER ROAD
**Project Number:** 0518-019-001

**Lab Number:** L1959111
**Report Date:** 12/18/19

| Parameter | LCS %Recovery | Qual | LCSD %Recovery | Qual | %Recovery Limits | RPD | Qual | RPD Limits |
|---|---|---|---|---|---|---|---|---|
| Semivolatile Organics by GC/MS - Westborough Lab Associated sample(s): 01,03 Batch: WG1319650-2 WG1319650-3 | | | | | | | | |
| Acenaphthene | 72 | | 77 | | 31-137 | 7 | | 50 |
| Hexachlorobenzene | 62 | | 66 | | 40-140 | 6 | | 50 |
| Bis(2-chloroethyl)ether | 77 | | 78 | | 40-140 | 1 | | 50 |
| 2-Chloronaphthalene | 76 | | 77 | | 40-140 | 1 | | 50 |
| 3,3'-Dichlorobenzidine | 52 | | 50 | | 40-140 | 4 | | 50 |
| 2,4-Dinitrotoluene | 89 | | 91 | | 40-132 | 2 | | 50 |
| 2,6-Dinitrotoluene | 83 | | 84 | | 40-140 | 1 | | 50 |
| Fluoranthene | 69 | | 75 | | 40-140 | 8 | | 50 |
| 4-Chlorophenyl phenyl ether | 69 | | 71 | | 40-140 | 3 | | 50 |
| 4-Bromophenyl phenyl ether | 66 | | 70 | | 40-140 | 6 | | 50 |
| Bis(2-chloroisopropyl)ether | 106 | | 110 | | 40-140 | 4 | | 50 |
| Bis(2-chloroethoxy)methane | 82 | | 84 | | 40-117 | 2 | | 50 |
| Hexachlorobutadiene | 62 | | 62 | | 40-140 | 0 | | 50 |
| Hexachlorocyclopentadiene | 55 | | 59 | | 40-140 | 7 | | 50 |
| Hexachloroethane | 75 | | 73 | | 40-140 | 3 | | 50 |
| Isophorone | 85 | | 86 | | 40-140 | 1 | | 50 |
| Naphthalene | 74 | | 77 | | 40-140 | 4 | | 50 |
| Nitrobenzene | 80 | | 83 | | 40-140 | 4 | | 50 |
| NDPA/DPA | 73 | | 77 | | 36-157 | 5 | | 50 |
| n-Nitrosodi-n-propylamine | 84 | | 83 | | 32-121 | 1 | | 50 |
| Bis(2-ethylhexyl)phthalate | 87 | | 90 | | 40-140 | 3 | | 50 |
| Butyl benzyl phthalate | 79 | | 85 | | 40-140 | 7 | | 50 |
| Di-n-butylphthalate | 80 | | 86 | | 40-140 | 7 | | 50 |

# Lab Control Sample Analysis
## Batch Quality Control

**Project Name:** RIVER ROAD
**Project Number:** 0518-019-001

**Lab Number:** L1959111
**Report Date:** 12/18/19

| Parameter | LCS %Recovery | Qual | LCSD %Recovery | Qual | %Recovery Limits | RPD | Qual | RPD Limits |
|---|---|---|---|---|---|---|---|---|
| Semivolatile Organics by GC/MS - Westborough Lab Associated sample(s): 01,03 Batch: WG1319650-2 WG1319650-3 | | | | | | | | |
| Di-n-octylphthalate | 85 | | 88 | | 40-140 | 3 | | 50 |
| Diethyl phthalate | 77 | | 81 | | 40-140 | 5 | | 50 |
| Dimethyl phthalate | 77 | | 78 | | 40-140 | 1 | | 50 |
| Benzo(a)anthracene | 68 | | 71 | | 40-140 | 4 | | 50 |
| Benzo(a)pyrene | 63 | | 65 | | 40-140 | 3 | | 50 |
| Benzo(b)fluoranthene | 60 | | 64 | | 40-140 | 6 | | 50 |
| Benzo(k)fluoranthene | 73 | | 75 | | 40-140 | 3 | | 50 |
| Chrysene | 71 | | 75 | | 40-140 | 5 | | 50 |
| Acenaphthylene | 77 | | 78 | | 40-140 | 1 | | 50 |
| Anthracene | 74 | | 78 | | 40-140 | 5 | | 50 |
| Benzo(ghi)perylene | 73 | | 76 | | 40-140 | 4 | | 50 |
| Fluorene | 75 | | 78 | | 40-140 | 4 | | 50 |
| Phenanthrene | 70 | | 75 | | 40-140 | 7 | | 50 |
| Dibenzo(a,h)anthracene | 77 | | 77 | | 40-140 | 0 | | 50 |
| Indeno(1,2,3-cd)pyrene | 70 | | 73 | | 40-140 | 4 | | 50 |
| Pyrene | 68 | | 72 | | 35-142 | 6 | | 50 |
| Biphenyl | 74 | | 76 | | 37-127 | 3 | | 50 |
| 4-Chloroaniline | **39** | Q | **37** | Q | 40-140 | 5 | | 50 |
| 2-Nitroaniline | 88 | | 90 | | 47-134 | 2 | | 50 |
| 3-Nitroaniline | 66 | | 66 | | 26-129 | 0 | | 50 |
| 4-Nitroaniline | 76 | | 82 | | 41-125 | 8 | | 50 |
| Dibenzofuran | 74 | | 77 | | 40-140 | 4 | | 50 |
| 2-Methylnaphthalene | 76 | | 79 | | 40-140 | 4 | | 50 |

# Lab Control Sample Analysis
## Batch Quality Control

**Project Name:** RIVER ROAD
**Project Number:** 0518-019-001

**Lab Number:** L1959111
**Report Date:** 12/18/19

| Parameter | LCS %Recovery | Qual | LCSD %Recovery | Qual | %Recovery Limits | RPD | Qual | RPD Limits |
|---|---|---|---|---|---|---|---|---|
| Semivolatile Organics by GC/MS - Westborough Lab Associated sample(s): 01,03 Batch: WG1319650-2 WG1319650-3 | | | | | | | | |
| 1,2,4,5-Tetrachlorobenzene | 66 | | 68 | | 40-117 | 3 | | 50 |
| Acetophenone | 82 | | 84 | | 14-144 | 2 | | 50 |
| 2,4,6-Trichlorophenol | 73 | | 73 | | 30-130 | 0 | | 50 |
| p-Chloro-m-cresol | 85 | | 86 | | 26-103 | 1 | | 50 |
| 2-Chlorophenol | 87 | | 90 | | 25-102 | 3 | | 50 |
| 2,4-Dichlorophenol | 87 | | 89 | | 30-130 | 2 | | 50 |
| 2,4-Dimethylphenol | 86 | | 85 | | 30-130 | 1 | | 50 |
| 2-Nitrophenol | 101 | | 102 | | 30-130 | 1 | | 50 |
| 4-Nitrophenol | 79 | | 100 | | 11-114 | 23 | | 50 |
| 2,4-Dinitrophenol | 80 | | 85 | | 4-130 | 6 | | 50 |
| 4,6-Dinitro-o-cresol | 80 | | 85 | | 10-130 | 6 | | 50 |
| Pentachlorophenol | 62 | | 66 | | 17-109 | 6 | | 50 |
| Phenol | 84 | | 85 | | 26-90 | 1 | | 50 |
| 2-Methylphenol | 85 | | 89 | | 30-130. | 5 | | 50 |
| 3-Methylphenol/4-Methylphenol | 88 | | 88 | | 30-130 | 0 | | 50 |
| 2,4,5-Trichlorophenol | 78 | | 80 | | 30-130 | 3 | | 50 |
| Carbazole | 73 | | 78 | | 54-128 | 7 | | 50 |
| Atrazine | 65 | | 68 | | 40-140 | 5 | | 50 |
| Benzaldehyde | 71 | | 69 | | 40-140 | 3 | | 50 |
| Caprolactam | 100 | | 106 | | 15-130 | 6 | | 50 |
| 2,3,4,6-Tetrachlorophenol | 72 | | 75 | | 40-140 | 4 | | 50 |

# Lab Control Sample Analysis
## Batch Quality Control

**Project Name:** RIVER ROAD
**Project Number:** 0518-019-001

**Lab Number:** L1959111
**Report Date:** 12/18/19

| Parameter | LCS %Recovery | Qual | LCSD %Recovery | Qual | %Recovery Limits | RPD | Qual | RPD Limits |
|---|---|---|---|---|---|---|---|---|
| Semivolatile Organics by GC/MS - Westborough Lab Associated sample(s): 01,03 Batch: WG1319650-2 WG1319650-3 | | | | | | | | |

| Surrogate | LCS %Recovery | Qual | LCSD %Recovery | Qual | Acceptance Criteria |
|---|---|---|---|---|---|
| 2-Fluorophenol | 77 | | 78 | | 25-120 |
| Phenol-d6 | 81 | | 83 | | 10-120 |
| Nitrobenzene-d5 | 62 | | 64 | | 23-120 |
| 2-Fluorobiphenyl | 53 | | 54 | | 30-120 |
| 2,4,6-Tribromophenol | 60 | | 62 | | 10-136 |
| 4-Terphenyl-d14 | 49 | | 52 | | 18-120 |

# Lab Control Sample Analysis
## Batch Quality Control

**Project Name:** RIVER ROAD
**Project Number:** 0518-019-001

**Lab Number:** L1959111
**Report Date:** 12/18/19

| Parameter | LCS %Recovery | Qual | LCSD %Recovery | Qual | %Recovery Limits | RPD | Qual | RPD Limits |
|---|---|---|---|---|---|---|---|---|
| Semivolatile Organics by GC/MS - Westborough Lab Associated sample(s): 05,07 Batch: WG1319660-2 WG1319660-3 | | | | | | | | |
| Acenaphthene | 96 | | 86 | | 31-137 | 11 | | 50 |
| Hexachlorobenzene | 100 | | 91 | | 40-140 | 9 | | 50 |
| Bis(2-chloroethyl)ether | 82 | | 74 | | 40-140 | 10 | | 50 |
| 2-Chloronaphthalene | 99 | | 91 | | 40-140 | 8 | | 50 |
| 3,3'-Dichlorobenzidine | 68 | | 63 | | 40-140 | 8 | | 50 |
| 2,4-Dinitrotoluene | 113 | | 104 | | 40-132 | 8 | | 50 |
| 2,6-Dinitrotoluene | 113 | | 106 | | 40-140 | 6 | | 50 |
| Fluoranthene | 100 | | 90 | | 40-140 | 11 | | 50 |
| 4-Chlorophenyl phenyl ether | 102 | | 92 | | 40-140 | 10 | | 50 |
| 4-Bromophenyl phenyl ether | 101 | | 94 | | 40-140 | 7 | | 50 |
| Bis(2-chloroisopropyl)ether | 55 | | 49 | | 40-140 | 12 | | 50 |
| Bis(2-chloroethoxy)methane | 91 | | 81 | | 40-117 | 12 | | 50 |
| Hexachlorobutadiene | 82 | | 74 | | 40-140 | 10 | | 50 |
| Hexachlorocyclopentadiene | 135 | | 121 | | 40-140 | 11 | | 50 |
| Hexachloroethane | 76 | | 66 | | 40-140 | 14 | | 50 |
| Isophorone | 94 | | 84 | | 40-140 | 11 | | 50 |
| Naphthalene | 87 | | 79 | | 40-140 | 10 | | 50 |
| Nitrobenzene | 92 | | 80 | | 40-140 | 14 | | 50 |
| NDPA/DPA | 105 | | 95 | | 36-157 | 10 | | 50 |
| n-Nitrosodi-n-propylamine | 95 | | 83 | | 32-121 | 13 | | 50 |
| Bis(2-ethylhexyl)phthalate | 104 | | 94 | | 40-140 | 10 | | 50 |
| Butyl benzyl phthalate | 105 | | 94 | | 40-140 | 11 | | 50 |
| Di-n-butylphthalate | 101 | | 93 | | 40-140 | 8 | | 50 |

# Lab Control Sample Analysis
## Batch Quality Control

**Project Name:** RIVER ROAD
**Project Number:** 0518-019-001

**Lab Number:** L1959111
**Report Date:** 12/18/19

| Parameter | LCS %Recovery | Qual | LCSD %Recovery | Qual | %Recovery Limits | RPD | Qual | RPD Limits |
|---|---|---|---|---|---|---|---|---|
| Semivolatile Organics by GC/MS - Westborough Lab Associated sample(s): 05,07 Batch: WG1319660-2 WG1319660-3 | | | | | | | | |
| Di-n-octylphthalate | 108 | | 98 | | 40-140 | 10 | | 50 |
| Diethyl phthalate | 105 | | 96 | | 40-140 | 9 | | 50 |
| Dimethyl phthalate | 105 | | 95 | | 40-140 | 10 | | 50 |
| Benzo(a)anthracene | 95 | | 86 | | 40-140 | 10 | | 50 |
| Benzo(a)pyrene | 98 | | 89 | | 40-140 | 10 | | 50 |
| Benzo(b)fluoranthene | 98 | | 91 | | 40-140 | 7 | | 50 |
| Benzo(k)fluoranthene | 105 | | 94 | | 40-140 | 11 | | 50 |
| Chrysene | 98 | | 88 | | 40-140 | 11 | | 50 |
| Acenaphthylene | 102 | | 92 | | 40-140 | 10 | | 50 |
| Anthracene | 97 | | 88 | | 40-140 | 10 | | 50 |
| Benzo(ghi)perylene | 102 | | 92 | | 40-140 | 10 | | 50 |
| Fluorene | 103 | | 92 | | 40-140 | 11 | | 50 |
| Phenanthrene | 95 | | 87 | | 40-140 | 9 | | 50 |
| Dibenzo(a,h)anthracene | 103 | | 92 | | 40-140 | 11 | | 50 |
| Indeno(1,2,3-cd)pyrene | 103 | | 92 | | 40-140 | 11 | | 50 |
| Pyrene | 95 | | 88 | | 35-142 | 8 | | 50 |
| Biphenyl | 104 | | 93 | | 37-127 | 11 | | 50 |
| 4-Chloroaniline | 69 | | 62 | | 40-140 | 11 | | 50 |
| 2-Nitroaniline | 113 | | 103 | | 47-134 | 9 | | 50 |
| 3-Nitroaniline | 81 | | 73 | | 26-129 | 10 | | 50 |
| 4-Nitroaniline | 105 | | 94 | | 41-125 | 11 | | 50 |
| Dibenzofuran | 98 | | 90 | | 40-140 | 9 | | 50 |
| 2-Methylnaphthalene | 101 | | 90 | | 40-140 | 12 | | 50 |

# Lab Control Sample Analysis
## Batch Quality Control

**Project Name:** RIVER ROAD
**Project Number:** 0518-019-001

**Lab Number:** L1959111
**Report Date:** 12/18/19

| Parameter | LCS %Recovery | Qual | LCSD %Recovery | Qual | %Recovery Limits | RPD | Qual | RPD Limits |
|---|---|---|---|---|---|---|---|---|
| Semivolatile Organics by GC/MS - Westborough Lab Associated sample(s): 05,07 Batch: WG1319660-2 WG1319660-3 | | | | | | | | |
| 1,2,4,5-Tetrachlorobenzene | 99 | | 89 | | 40-117 | 11 | | 50 |
| Acetophenone | 96 | | 84 | | 14-144 | 13 | | 50 |
| 2,4,6-Trichlorophenol | 114 | | 105 | | 30-130 | 8 | | 50 |
| p-Chloro-m-cresol | **116** | Q | **105** | Q | 26-103 | 10 | | 50 |
| 2-Chlorophenol | 94 | | 85 | | 25-102 | 10 | | 50 |
| 2,4-Dichlorophenol | 104 | | 96 | | 30-130 | 8 | | 50 |
| 2,4-Dimethylphenol | 113 | | 99 | | 30-130 | 13 | | 50 |
| 2-Nitrophenol | 100 | | 87 | | 30-130 | 14 | | 50 |
| 4-Nitrophenol | **117** | Q | 108 | | 11-114 | 8 | | 50 |
| 2,4-Dinitrophenol | 110 | | 102 | | 4-130 | 8 | | 50 |
| 4,6-Dinitro-o-cresol | 111 | | 104 | | 10-130 | 7 | | 50 |
| Pentachlorophenol | 105 | | 95 | | 17-109 | 10 | | 50 |
| Phenol | **105** | Q | **93** | Q | 26-90 | 12 | | 50 |
| 2-Methylphenol | 100 | | 90 | | 30-130. | 11 | | 50 |
| 3-Methylphenol/4-Methylphenol | 102 | | 90 | | 30-130 | 13 | | 50 |
| 2,4,5-Trichlorophenol | 113 | | 101 | | 30-130 | 11 | | 50 |
| Carbazole | 98 | | 90 | | 54-128 | 9 | | 50 |
| Atrazine | 98 | | 92 | | 40-140 | 6 | | 50 |
| Benzaldehyde | 86 | | 78 | | 40-140 | 10 | | 50 |
| Caprolactam | 90 | | 84 | | 15-130 | 7 | | 50 |
| 2,3,4,6-Tetrachlorophenol | 108 | | 100 | | 40-140 | 8 | | 50 |

# Lab Control Sample Analysis
## Batch Quality Control

**Project Name:** RIVER ROAD
**Project Number:** 0518-019-001

**Lab Number:** L1959111
**Report Date:** 12/18/19

| Parameter | LCS %Recovery | Qual | LCSD %Recovery | Qual | %Recovery Limits | RPD | Qual | RPD Limits |
|---|---|---|---|---|---|---|---|---|
| Semivolatile Organics by GC/MS - Westborough Lab Associated sample(s): 05,07 Batch: WG1319660-2 WG1319660-3 | | | | | | | | |

| Surrogate | LCS %Recovery | Qual | LCSD %Recovery | Qual | Acceptance Criteria |
|---|---|---|---|---|---|
| 2-Fluorophenol | 88 | | 79 | | 25-120 |
| Phenol-d6 | 94 | | 84 | | 10-120 |
| Nitrobenzene-d5 | 68 | | 60 | | 23-120 |
| 2-Fluorobiphenyl | 72 | | 66 | | 30-120 |
| 2,4,6-Tribromophenol | 103 | | 96 | | 10-136 |
| 4-Terphenyl-d14 | 74 | | 69 | | 18-120 |

# Lab Control Sample Analysis
## Batch Quality Control

**Project Name:** RIVER ROAD
**Project Number:** 0518-019-001

**Lab Number:** L1959111
**Report Date:** 12/18/19

| Parameter | LCS %Recovery | Qual | LCSD %Recovery | Qual | %Recovery Limits | RPD | Qual | RPD Limits |
|---|---|---|---|---|---|---|---|---|
| Semivolatile Organics by GC/MS - Westborough Lab Associated sample(s): 09,11,13 Batch: WG1320032-2 WG1320032-3 | | | | | | | | |
| Acenaphthene | 92 | | 89 | | 31-137 | 3 | | 50 |
| Hexachlorobenzene | 90 | | 86 | | 40-140 | 5 | | 50 |
| Bis(2-chloroethyl)ether | 103 | | 93 | | 40-140 | 10 | | 50 |
| 2-Chloronaphthalene | 85 | | 82 | | 40-140 | 4 | | 50 |
| 3,3'-Dichlorobenzidine | 64 | | 57 | | 40-140 | 12 | | 50 |
| 2,4-Dinitrotoluene | 96 | | 93 | | 40-132 | 3 | | 50 |
| 2,6-Dinitrotoluene | 86 | | 80 | | 40-140 | 7 | | 50 |
| Fluoranthene | 91 | | 88 | | 40-140 | 3 | | 50 |
| 4-Chlorophenyl phenyl ether | 88 | | 85 | | 40-140 | 3 | | 50 |
| 4-Bromophenyl phenyl ether | 87 | | 82 | | 40-140 | 6 | | 50 |
| Bis(2-chloroisopropyl)ether | 86 | | 88 | | 40-140 | 2 | | 50 |
| Bis(2-chloroethoxy)methane | 96 | | 92 | | 40-117 | 4 | | 50 |
| Hexachlorobutadiene | 78 | | 71 | | 40-140 | 9 | | 50 |
| Hexachlorocyclopentadiene | 61 | | 57 | | 40-140 | 7 | | 50 |
| Hexachloroethane | 84 | | 77 | | 40-140 | 9 | | 50 |
| Isophorone | 99 | | 92 | | 40-140 | 7 | | 50 |
| Naphthalene | 85 | | 81 | | 40-140 | 5 | | 50 |
| Nitrobenzene | 88 | | 88 | | 40-140 | 0 | | 50 |
| NDPA/DPA | 97 | | 93 | | 36-157 | 4 | | 50 |
| n-Nitrosodi-n-propylamine | 96 | | 93 | | 32-121 | 3 | | 50 |
| Bis(2-ethylhexyl)phthalate | 105 | | 104 | | 40-140 | 1 | | 50 |
| Butyl benzyl phthalate | 103 | | 98 | | 40-140 | 5 | | 50 |
| Di-n-butylphthalate | 102 | | 99 | | 40-140 | 3 | | 50 |

# Lab Control Sample Analysis
## Batch Quality Control

**Project Name:** RIVER ROAD
**Project Number:** 0518-019-001

**Lab Number:** L1959111
**Report Date:** 12/18/19

| Parameter | LCS %Recovery | Qual | LCSD %Recovery | Qual | %Recovery Limits | RPD | Qual | RPD Limits |
|---|---|---|---|---|---|---|---|---|
| Semivolatile Organics by GC/MS - Westborough Lab Associated sample(s): 09,11,13 Batch: WG1320032-2 WG1320032-3 | | | | | | | | |
| Di-n-octylphthalate | 102 | | 102 | | 40-140 | 0 | | 50 |
| Diethyl phthalate | 98 | | 94 | | 40-140 | 4 | | 50 |
| Dimethyl phthalate | 83 | | 78 | | 40-140 | 6 | | 50 |
| Benzo(a)anthracene | 91 | | 87 | | 40-140 | 4 | | 50 |
| Benzo(a)pyrene | 93 | | 90 | | 40-140 | 3 | | 50 |
| Benzo(b)fluoranthene | 97 | | 95 | | 40-140 | 2 | | 50 |
| Benzo(k)fluoranthene | 93 | | 91 | | 40-140 | 2 | | 50 |
| Chrysene | 90 | | 85 | | 40-140 | 6 | | 50 |
| Acenaphthylene | 82 | | 78 | | 40-140 | 5 | | 50 |
| Anthracene | 95 | | 90 | | 40-140 | 5 | | 50 |
| Benzo(ghi)perylene | 92 | | 89 | | 40-140 | 3 | | 50 |
| Fluorene | 93 | | 90 | | 40-140 | 3 | | 50 |
| Phenanthrene | 95 | | 90 | | 40-140 | 5 | | 50 |
| Dibenzo(a,h)anthracene | 96 | | 92 | | 40-140 | 4 | | 50 |
| Indeno(1,2,3-cd)pyrene | 92 | | 89 | | 40-140 | 3 | | 50 |
| Pyrene | 90 | | 86 | | 35-142 | 5 | | 50 |
| Biphenyl | 76 | | 73 | | 37-127 | 4 | | 50 |
| 4-Chloroaniline | 79 | | 77 | | 40-140 | 3 | | 50 |
| 2-Nitroaniline | 88 | | 83 | | 47-134 | 6 | | 50 |
| 3-Nitroaniline | 74 | | 70 | | 26-129 | 6 | | 50 |
| 4-Nitroaniline | 95 | | 86 | | 41-125 | 10 | | 50 |
| Dibenzofuran | 94 | | 89 | | 40-140 | 5 | | 50 |
| 2-Methylnaphthalene | 83 | | 80 | | 40-140 | 4 | | 50 |

# Lab Control Sample Analysis
## Batch Quality Control

**Project Name:** RIVER ROAD
**Project Number:** 0518-019-001

**Lab Number:** L1959111
**Report Date:** 12/18/19

| Parameter | LCS %Recovery | Qual | LCSD %Recovery | Qual | %Recovery Limits | RPD | Qual | RPD Limits |
|---|---|---|---|---|---|---|---|---|
| Semivolatile Organics by GC/MS - Westborough Lab Associated sample(s): 09,11,13 Batch: WG1320032-2 WG1320032-3 | | | | | | | | |
| 1,2,4,5-Tetrachlorobenzene | 74 | | 68 | | 40-117 | 8 | | 50 |
| Acetophenone | 92 | | 85 | | 14-144 | 8 | | 50 |
| 2,4,6-Trichlorophenol | 82 | | 76 | | 30-130 | 8 | | 50 |
| p-Chloro-m-cresol | 92 | | 92 | | 26-103 | 0 | | 50 |
| 2-Chlorophenol | 98 | | 91 | | 25-102 | 7 | | 50 |
| 2,4-Dichlorophenol | 83 | | 79 | | 30-130 | 5 | | 50 |
| 2,4-Dimethylphenol | 96 | | 91 | | 30-130 | 5 | | 50 |
| 2-Nitrophenol | 89 | | 82 | | 30-130 | 8 | | 50 |
| 4-Nitrophenol | **120** | Q | 110 | | 11-114 | 9 | | 50 |
| 2,4-Dinitrophenol | 74 | | 64 | | 4-130 | 14 | | 50 |
| 4,6-Dinitro-o-cresol | 86 | | 82 | | 10-130 | 5 | | 50 |
| Pentachlorophenol | 97 | | 97 | | 17-109 | 0 | | 50 |
| Phenol | **96** | Q | 90 | | 26-90 | 6 | | 50 |
| 2-Methylphenol | 88 | | 87 | | 30-130. | 1 | | 50 |
| 3-Methylphenol/4-Methylphenol | 89 | | 86 | | 30-130 | 3 | | 50 |
| 2,4,5-Trichlorophenol | 84 | | 75 | | 30-130 | 11 | | 50 |
| Carbazole | 95 | | 93 | | 54-128 | 2 | | 50 |
| Atrazine | 75 | | 72 | | 40-140 | 4 | | 50 |
| Benzaldehyde | 78 | | 68 | | 40-140 | 14 | | 50 |
| Caprolactam | 84 | | 84 | | 15-130 | 0 | | 50 |
| 2,3,4,6-Tetrachlorophenol | 85 | | 82 | | 40-140 | 4 | | 50 |

# Lab Control Sample Analysis
## Batch Quality Control

**Project Name:** RIVER ROAD
**Project Number:** 0518-019-001

**Lab Number:** L1959111
**Report Date:** 12/18/19

| Parameter | LCS %Recovery | Qual | LCSD %Recovery | Qual | %Recovery Limits | RPD | Qual | RPD Limits |
|---|---|---|---|---|---|---|---|---|
| Semivolatile Organics by GC/MS - Westborough Lab Associated sample(s): 09,11,13 Batch: WG1320032-2 WG1320032-3 | | | | | | | | |

| Surrogate | LCS %Recovery | Qual | LCSD %Recovery | Qual | Acceptance Criteria |
|---|---|---|---|---|---|
| 2-Fluorophenol | 97 | | 92 | | 25-120 |
| Phenol-d6 | 101 | | 94 | | 10-120 |
| Nitrobenzene-d5 | 94 | | 92 | | 23-120 |
| 2-Fluorobiphenyl | 80 | | 75 | | 30-120 |
| 2,4,6-Tribromophenol | 87 | | 83 | | 10-136 |
| 4-Terphenyl-d14 | 89 | | 86 | | 18-120 |

# METALS

**Project Name:** RIVER ROAD
**Project Number:** 0518-019-001
**Lab Number:** L1959111
**Report Date:** 12/18/19

## SAMPLE RESULTS

Lab ID: L1959111-02
Client ID: TP 1 SURFACE
Sample Location: OLEAN, NY
Date Collected: 12/09/19 10:20
Date Received: 12/10/19
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Percent Solids: 79%

| Parameter | Result | Qualifier | Units | RL | MDL | Dilution Factor | Date Prepared | Date Analyzed | Prep Method | Analytical Method | Analyst |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Total Metals - Mansfield Lab** | | | | | | | | | | | |
| Arsenic, Total | 10.6 | | mg/kg | 0.497 | 0.103 | 1 | 12/12/19 19:28 | 12/17/19 16:56 | EPA 3050B | 1,6010D | LC |
| Barium, Total | 88.1 | | mg/kg | 0.497 | 0.087 | 1 | 12/12/19 19:28 | 12/17/19 16:56 | EPA 3050B | 1,6010D | LC |
| Cadmium, Total | 0.915 | | mg/kg | 0.497 | 0.049 | 1 | 12/12/19 19:28 | 12/17/19 16:56 | EPA 3050B | 1,6010D | LC |
| Chromium, Total | 11.7 | | mg/kg | 0.497 | 0.048 | 1 | 12/12/19 19:28 | 12/17/19 16:56 | EPA 3050B | 1,6010D | LC |
| Lead, Total | 22.2 | | mg/kg | 2.49 | 0.133 | 1 | 12/12/19 19:28 | 12/17/19 16:56 | EPA 3050B | 1,6010D | LC |
| Mercury, Total | ND | | mg/kg | 0.080 | 0.052 | 1 | 12/12/19 09:15 | 12/12/19 21:30 | EPA 7471B | 1,7471B | AL |
| Selenium, Total | ND | | mg/kg | 0.994 | 0.128 | 1 | 12/12/19 19:28 | 12/17/19 16:56 | EPA 3050B | 1,6010D | LC |
| Silver, Total | ND | | mg/kg | 0.497 | 0.141 | 1 | 12/12/19 19:28 | 12/17/19 16:56 | EPA 3050B | 1,6010D | LC |

**Project Name:** RIVER ROAD
**Project Number:** 0518-019-001
**Lab Number:** L1959111
**Report Date:** 12/18/19

## SAMPLE RESULTS

Lab ID: L1959111-04
Client ID: TP 2 SURFACE
Sample Location: OLEAN, NY
Date Collected: 12/09/19 10:35
Date Received: 12/10/19
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Percent Solids: 53%

| Parameter | Result | Qualifier | Units | RL | MDL | Dilution Factor | Date Prepared | Date Analyzed | Prep Method | Analytical Method | Analyst |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Total Metals - Mansfield Lab** | | | | | | | | | | | |
| Arsenic, Total | 17.2 | | mg/kg | 0.736 | 0.153 | 1 | 12/12/19 19:28 | 12/17/19 17:00 | EPA 3050B | 1,6010D | LC |
| Barium, Total | 214 | | mg/kg | 0.736 | 0.128 | 1 | 12/12/19 19:28 | 12/17/19 17:00 | EPA 3050B | 1,6010D | LC |
| Cadmium, Total | 1.17 | | mg/kg | 0.736 | 0.072 | 1 | 12/12/19 19:28 | 12/17/19 17:00 | EPA 3050B | 1,6010D | LC |
| Chromium, Total | 14.0 | | mg/kg | 0.736 | 0.071 | 1 | 12/12/19 19:28 | 12/17/19 17:00 | EPA 3050B | 1,6010D | LC |
| Lead, Total | 48.7 | | mg/kg | 3.68 | 0.197 | 1 | 12/12/19 19:28 | 12/17/19 17:00 | EPA 3050B | 1,6010D | LC |
| Mercury, Total | 0.177 | | mg/kg | 0.120 | 0.078 | 1 | 12/12/19 09:15 | 12/12/19 21:33 | EPA 7471B | 1,7471B | AL |
| Selenium, Total | 0.419 | J | mg/kg | 1.47 | 0.190 | 1 | 12/12/19 19:28 | 12/17/19 17:00 | EPA 3050B | 1,6010D | LC |
| Silver, Total | ND | | mg/kg | 0.736 | 0.208 | 1 | 12/12/19 19:28 | 12/17/19 17:00 | EPA 3050B | 1,6010D | LC |

**Project Name:** RIVER ROAD
**Project Number:** 0518-019-001
**Lab Number:** L1959111
**Report Date:** 12/18/19

## SAMPLE RESULTS

Lab ID: L1959111-06
Client ID: TP 3 SURFACE
Sample Location: OLEAN, NY
Date Collected: 12/09/19 10:50
Date Received: 12/10/19
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Percent Solids: 76%

| Parameter | Result | Qualifier | Units | RL | MDL | Dilution Factor | Date Prepared | Date Analyzed | Prep Method | Analytical Method | Analyst |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Total Metals - Mansfield Lab** | | | | | | | | | | | |
| Arsenic, Total | 15.5 | | mg/kg | 0.520 | 0.108 | 1 | 12/12/19 19:28 | 12/17/19 17:04 | EPA 3050B | 1,6010D | LC |
| Barium, Total | 64.6 | | mg/kg | 0.520 | 0.090 | 1 | 12/12/19 19:28 | 12/17/19 17:04 | EPA 3050B | 1,6010D | LC |
| Cadmium, Total | 1.05 | | mg/kg | 0.520 | 0.051 | 1 | 12/12/19 19:28 | 12/17/19 17:04 | EPA 3050B | 1,6010D | LC |
| Chromium, Total | 6.84 | | mg/kg | 0.520 | 0.050 | 1 | 12/12/19 19:28 | 12/17/19 17:04 | EPA 3050B | 1,6010D | LC |
| Lead, Total | 40.4 | | mg/kg | 2.60 | 0.139 | 1 | 12/12/19 19:28 | 12/17/19 17:04 | EPA 3050B | 1,6010D | LC |
| Mercury, Total | 0.124 | | mg/kg | 0.083 | 0.054 | 1 | 12/12/19 09:15 | 12/12/19 21:36 | EPA 7471B | 1,7471B | AL |
| Selenium, Total | 0.348 | J | mg/kg | 1.04 | 0.134 | 1 | 12/12/19 19:28 | 12/17/19 17:04 | EPA 3050B | 1,6010D | LC |
| Silver, Total | ND | | mg/kg | 0.520 | 0.147 | 1 | 12/12/19 19:28 | 12/17/19 17:04 | EPA 3050B | 1,6010D | LC |

**Project Name:** RIVER ROAD
**Project Number:** 0518-019-001
**Lab Number:** L1959111
**Report Date:** 12/18/19

## SAMPLE RESULTS

Lab ID: L1959111-08
Client ID: TP 4 SURFACE
Sample Location: OLEAN, NY
Date Collected: 12/09/19 11:05
Date Received: 12/10/19
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Percent Solids: 94%

| Parameter | Result | Qualifier | Units | RL | MDL | Dilution Factor | Date Prepared | Date Analyzed | Prep Method | Analytical Method | Analyst |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Total Metals - Mansfield Lab** | | | | | | | | | | | |
| Arsenic, Total | 2.77 | | mg/kg | 0.421 | 0.088 | 1 | 12/12/19 19:28 | 12/17/19 17:54 | EPA 3050B | 1,6010D | LC |
| Barium, Total | 29.7 | | mg/kg | 0.421 | 0.073 | 1 | 12/12/19 19:28 | 12/17/19 17:54 | EPA 3050B | 1,6010D | LC |
| Cadmium, Total | 0.454 | | mg/kg | 0.421 | 0.041 | 1 | 12/12/19 19:28 | 12/17/19 17:54 | EPA 3050B | 1,6010D | LC |
| Chromium, Total | 8.34 | | mg/kg | 0.421 | 0.040 | 1 | 12/12/19 19:28 | 12/17/19 17:54 | EPA 3050B | 1,6010D | LC |
| Lead, Total | 6.42 | | mg/kg | 2.10 | 0.113 | 1 | 12/12/19 19:28 | 12/17/19 17:54 | EPA 3050B | 1,6010D | LC |
| Mercury, Total | 0.197 | | mg/kg | 0.067 | 0.044 | 1 | 12/12/19 09:15 | 12/12/19 21:46 | EPA 7471B | 1,7471B | AL |
| Selenium, Total | ND | | mg/kg | 0.842 | 0.108 | 1 | 12/12/19 19:28 | 12/17/19 17:54 | EPA 3050B | 1,6010D | LC |
| Silver, Total | ND | | mg/kg | 0.421 | 0.119 | 1 | 12/12/19 19:28 | 12/17/19 17:54 | EPA 3050B | 1,6010D | LC |

**Project Name:** RIVER ROAD
**Project Number:** 0518-019-001
**Lab Number:** L1959111
**Report Date:** 12/18/19

## SAMPLE RESULTS

Lab ID: L1959111-10
Client ID: TP 5 SURFACE
Sample Location: OLEAN, NY
Date Collected: 12/09/19 11:15
Date Received: 12/10/19
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Percent Solids: 78%

| Parameter | Result | Qualifier | Units | RL | MDL | Dilution Factor | Date Prepared | Date Analyzed | Prep Method | Analytical Method | Analyst |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Total Metals - Mansfield Lab** | | | | | | | | | | | |
| Arsenic, Total | 49.4 | | mg/kg | 0.484 | 0.101 | 1 | 12/12/19 19:28 | 12/17/19 17:58 | EPA 3050B | 1,6010D | LC |
| Barium, Total | 194 | | mg/kg | 0.484 | 0.084 | 1 | 12/12/19 19:28 | 12/17/19 17:58 | EPA 3050B | 1,6010D | LC |
| Cadmium, Total | 1.16 | | mg/kg | 0.484 | 0.047 | 1 | 12/12/19 19:28 | 12/17/19 17:58 | EPA 3050B | 1,6010D | LC |
| Chromium, Total | 9.47 | | mg/kg | 0.484 | 0.046 | 1 | 12/12/19 19:28 | 12/17/19 17:58 | EPA 3050B | 1,6010D | LC |
| Lead, Total | 57.7 | | mg/kg | 2.42 | 0.130 | 1 | 12/12/19 19:28 | 12/17/19 17:58 | EPA 3050B | 1,6010D | LC |
| Mercury, Total | 0.146 | | mg/kg | 0.081 | 0.053 | 1 | 12/12/19 09:15 | 12/12/19 21:49 | EPA 7471B | 1,7471B | AL |
| Selenium, Total | 0.581 | J | mg/kg | 0.968 | 0.125 | 1 | 12/12/19 19:28 | 12/17/19 17:58 | EPA 3050B | 1,6010D | LC |
| Silver, Total | ND | | mg/kg | 0.484 | 0.137 | 1 | 12/12/19 19:28 | 12/17/19 17:58 | EPA 3050B | 1,6010D | LC |

**Project Name:** RIVER ROAD
**Project Number:** 0518-019-001
**Lab Number:** L1959111
**Report Date:** 12/18/19

## SAMPLE RESULTS

Lab ID: L1959111-12
Client ID: TP 7 SURFACE
Sample Location: OLEAN, NY
Date Collected: 12/09/19 11:30
Date Received: 12/10/19
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Percent Solids: 81%

| Parameter | Result | Qualifier | Units | RL | MDL | Dilution Factor | Date Prepared | Date Analyzed | Prep Method | Analytical Method | Analyst |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Total Metals - Mansfield Lab** | | | | | | | | | | | |
| Arsenic, Total | 8.69 | | mg/kg | 0.462 | 0.096 | 1 | 12/12/19 19:28 | 12/17/19 18:02 | EPA 3050B | 1,6010D | LC |
| Barium, Total | 90.0 | | mg/kg | 0.462 | 0.080 | 1 | 12/12/19 19:28 | 12/17/19 18:02 | EPA 3050B | 1,6010D | LC |
| Cadmium, Total | 0.840 | | mg/kg | 0.462 | 0.045 | 1 | 12/12/19 19:28 | 12/17/19 18:02 | EPA 3050B | 1,6010D | LC |
| Chromium, Total | 12.2 | | mg/kg | 0.462 | 0.044 | 1 | 12/12/19 19:28 | 12/17/19 18:02 | EPA 3050B | 1,6010D | LC |
| Lead, Total | 23.6 | | mg/kg | 2.31 | 0.124 | 1 | 12/12/19 19:28 | 12/17/19 18:02 | EPA 3050B | 1,6010D | LC |
| Mercury, Total | ND | | mg/kg | 0.077 | 0.050 | 1 | 12/12/19 09:15 | 12/12/19 21:53 | EPA 7471B | 1,7471B | AL |
| Selenium, Total | ND | | mg/kg | 0.923 | 0.119 | 1 | 12/12/19 19:28 | 12/17/19 18:02 | EPA 3050B | 1,6010D | LC |
| Silver, Total | ND | | mg/kg | 0.462 | 0.131 | 1 | 12/12/19 19:28 | 12/17/19 18:02 | EPA 3050B | 1,6010D | LC |

**Project Name:** RIVER ROAD
**Project Number:** 0518-019-001
**Lab Number:** L1959111
**Report Date:** 12/18/19

## SAMPLE RESULTS

Lab ID: L1959111-14
Client ID: TP 9 SURFACE
Sample Location: OLEAN, NY
Date Collected: 12/09/19 11:45
Date Received: 12/10/19
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Percent Solids: 83%

| Parameter | Result | Qualifier | Units | RL | MDL | Dilution Factor | Date Prepared | Date Analyzed | Prep Method | Analytical Method | Analyst |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Total Metals - Mansfield Lab** | | | | | | | | | | | |
| Arsenic, Total | 5.05 | | mg/kg | 0.476 | 0.099 | 1 | 12/12/19 19:28 | 12/17/19 18:07 | EPA 3050B | 1,6010D | LC |
| Barium, Total | 35.7 | | mg/kg | 0.476 | 0.083 | 1 | 12/12/19 19:28 | 12/17/19 18:07 | EPA 3050B | 1,6010D | LC |
| Cadmium, Total | 0.524 | | mg/kg | 0.476 | 0.047 | 1 | 12/12/19 19:28 | 12/17/19 18:07 | EPA 3050B | 1,6010D | LC |
| Chromium, Total | 5.91 | | mg/kg | 0.476 | 0.046 | 1 | 12/12/19 19:28 | 12/17/19 18:07 | EPA 3050B | 1,6010D | LC |
| Lead, Total | 16.5 | | mg/kg | 2.38 | 0.128 | 1 | 12/12/19 19:28 | 12/17/19 18:07 | EPA 3050B | 1,6010D | LC |
| Mercury, Total | ND | | mg/kg | 0.076 | 0.049 | 1 | 12/12/19 09:15 | 12/12/19 21:56 | EPA 7471B | 1,7471B | AL |
| Selenium, Total | ND | | mg/kg | 0.953 | 0.123 | 1 | 12/12/19 19:28 | 12/17/19 18:07 | EPA 3050B | 1,6010D | LC |
| Silver, Total | ND | | mg/kg | 0.476 | 0.135 | 1 | 12/12/19 19:28 | 12/17/19 18:07 | EPA 3050B | 1,6010D | LC |

**Project Name:** RIVER ROAD
**Project Number:** 0518-019-001
**Lab Number:** L1959111
**Report Date:** 12/18/19

# Method Blank Analysis
# Batch Quality Control

| Parameter | Result | Qualifier | Units | RL | MDL | Dilution Factor | Date Prepared | Date Analyzed | Analytical Method | Analyst |
|---|---|---|---|---|---|---|---|---|---|---|
| Total Metals - Mansfield Lab for sample(s): 02,04,06,08,10,12,14 Batch: WG1319796-1 | | | | | | | | | | |
| Mercury, Total | ND | | mg/kg | 0.083 | 0.054 | 1 | 12/12/19 09:15 | 12/12/19 20:30 | 1,7471B | AL |

**Prep Information**

Digestion Method: EPA 7471B

| Parameter | Result | Qualifier | Units | RL | MDL | Dilution Factor | Date Prepared | Date Analyzed | Analytical Method | Analyst |
|---|---|---|---|---|---|---|---|---|---|---|
| Total Metals - Mansfield Lab for sample(s): 02,04,06,08,10,12,14 Batch: WG1320172-1 | | | | | | | | | | |
| Arsenic, Total | 0.084 | J | mg/kg | 0.400 | 0.083 | 1 | 12/12/19 19:28 | 12/17/19 15:15 | 1,6010D | LC |
| Barium, Total | ND | | mg/kg | 0.400 | 0.070 | 1 | 12/12/19 19:28 | 12/17/19 15:15 | 1,6010D | LC |
| Cadmium, Total | ND | | mg/kg | 0.400 | 0.039 | 1 | 12/12/19 19:28 | 12/17/19 15:15 | 1,6010D | LC |
| Chromium, Total | 0.092 | J | mg/kg | 0.400 | 0.038 | 1 | 12/12/19 19:28 | 12/17/19 15:15 | 1,6010D | LC |
| Lead, Total | ND | | mg/kg | 2.00 | 0.107 | 1 | 12/12/19 19:28 | 12/17/19 15:15 | 1,6010D | LC |
| Selenium, Total | ND | | mg/kg | 0.800 | 0.103 | 1 | 12/12/19 19:28 | 12/17/19 15:15 | 1,6010D | LC |
| Silver, Total | ND | | mg/kg | 0.400 | 0.113 | 1 | 12/12/19 19:28 | 12/17/19 15:15 | 1,6010D | LC |

**Prep Information**

Digestion Method: EPA 3050B

# Lab Control Sample Analysis

## Batch Quality Control

**Project Name:** RIVER ROAD

**Project Number:** 0518-019-001

**Lab Number:** L1959111

**Report Date:** 12/18/19

| Parameter | LCS %Recovery | Qual | LCSD %Recovery | Qual | %Recovery Limits | RPD | Qual | RPD Limits |
|---|---|---|---|---|---|---|---|---|
| Total Metals - Mansfield Lab Associated sample(s): 02,04,06,08,10,12,14 Batch: WG1319796-2 SRM Lot Number: D105-540 | | | | | | | | |
| Mercury, Total | 94 | | - | | 60-141 | - | | |
| Total Metals - Mansfield Lab Associated sample(s): 02,04,06,08,10,12,14 Batch: WG1320172-2 SRM Lot Number: D105-540 | | | | | | | | |
| Arsenic, Total | 104 | | - | | 70-130 | - | | |
| Barium, Total | 96 | | - | | 75-125 | - | | |
| Cadmium, Total | 96 | | - | | 75-125 | - | | |
| Chromium, Total | 101 | | - | | 70-130 | - | | |
| Lead, Total | 98 | | - | | 71-128 | - | | |
| Selenium, Total | 102 | | - | | 63-137 | - | | |
| Silver, Total | 103 | | - | | 69-131 | - | | |

# Matrix Spike Analysis
## Batch Quality Control

**Project Name:** RIVER ROAD
**Project Number:** 0518-019-001

**Lab Number:** L1959111
**Report Date:** 12/18/19

| Parameter | Native Sample | MS Added | MS Found | MS %Recovery | Qual | MSD Found | MSD %Recovery | Qual | Recovery Limits | RPD | Qual | RPD Limits |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Total Metals - Mansfield Lab Associated sample(s): 02,04,06,08,10,12,14 QC Batch ID: WG1319796-3 WG1319796-4 QC Sample: L1959077-06 Client ID: MS Sample | | | | | | | | | | | | |
| Mercury, Total | 0.055J | 0.151 | 0.194 | **128** | Q | 0.324 | **214** | Q | 80-120 | **50** | Q | 20 |
| Total Metals - Mansfield Lab Associated sample(s): 02,04,06,08,10,12,14 QC Batch ID: WG1320172-3 QC Sample: L1959023-01 Client ID: MS Sample | | | | | | | | | | | | |
| Arsenic, Total | 3.70 | 12.1 | 16.0 | 102 | | - | - | | 75-125 | - | | 20 |
| Barium, Total | 143 | 201 | 355 | 105 | | - | - | | 75-125 | - | | 20 |
| Cadmium, Total | 0.711J | 5.14 | 5.52 | 107 | | - | - | | 75-125 | - | | 20 |
| Chromium, Total | 12.2 | 20.1 | 36.4 | 120 | | - | - | | 75-125 | - | | 20 |
| Lead, Total | 17.3 | 51.4 | 61.8 | 87 | | - | - | | 75-125 | - | | 20 |
| Selenium, Total | ND | 12.1 | 10.6 | 88 | | - | - | | 75-125 | - | | 20 |
| Silver, Total | ND | 30.2 | 30.8 | 102 | | - | - | | 75-125 | - | | 20 |

# Lab Duplicate Analysis

*Batch Quality Control*

**Project Name:** RIVER ROAD
**Project Number:** 0518-019-001

***Lab Number:*** L1959111
***Report Date:*** 12/18/19

| Parameter | Native Sample | Duplicate Sample | Units | RPD | Qual | RPD Limits |
|---|---|---|---|---|---|---|
| Total Metals - Mansfield Lab Associated sample(s): 02,04,06,08,10,12,14 QC Batch ID: WG1320172-4 QC Sample: L1959023-01 Client ID: DUP Sample | | | | | | |
| Arsenic, Total | 3.70 | 4.65 | mg/kg | **23** | Q | 20 |
| Barium, Total | 143 | 214 | mg/kg | **40** | Q | 20 |
| Cadmium, Total | 0.711J | 1.06 | mg/kg | NC | | 20 |
| Chromium, Total | 12.2 | 18.3 | mg/kg | **40** | Q | 20 |
| Lead, Total | 17.3 | 24.5 | mg/kg | **34** | Q | 20 |
| Selenium, Total | ND | ND | mg/kg | NC | | 20 |
| Silver, Total | ND | ND | mg/kg | NC | | 20 |

# INORGANICS
# &
# MISCELLANEOUS

**Project Name:** RIVER ROAD
**Project Number:** 0518-019-001

**Lab Number:** L1959111
**Report Date:** 12/18/19

## SAMPLE RESULTS

Lab ID: L1959111-01
Client ID: TP 1
Sample Location: OLEAN, NY

Date Collected: 12/09/19 10:15
Date Received: 12/10/19
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

| Parameter | Result | Qualifier | Units | RL | MDL | Dilution Factor | Date Prepared | Date Analyzed | Analytical Method | Analyst |
|---|---|---|---|---|---|---|---|---|---|---|
| **General Chemistry - Westborough Lab** | | | | | | | | | | |
| Solids, Total | 83.3 | | % | 0.100 | NA | 1 | - | 12/12/19 00:29 | 121,2540G | YA |

**Project Name:** RIVER ROAD
**Project Number:** 0518-019-001

**Lab Number:** L1959111
**Report Date:** 12/18/19

## SAMPLE RESULTS

Lab ID: L1959111-02
Client ID: TP 1 SURFACE
Sample Location: OLEAN, NY

Date Collected: 12/09/19 10:20
Date Received: 12/10/19
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

| Parameter | Result | Qualifier | Units | RL | MDL | Dilution Factor | Date Prepared | Date Analyzed | Analytical Method | Analyst |
|---|---|---|---|---|---|---|---|---|---|---|
| **General Chemistry - Westborough Lab** | | | | | | | | | | |
| Solids, Total | 78.8 | | % | 0.100 | NA | 1 | - | 12/12/19 00:29 | 121,2540G | YA |

**Project Name:** RIVER ROAD
**Project Number:** 0518-019-001

**Lab Number:** L1959111
**Report Date:** 12/18/19

## SAMPLE RESULTS

Lab ID: L1959111-03
Client ID: TP 2
Sample Location: OLEAN, NY

Date Collected: 12/09/19 10:30
Date Received: 12/10/19
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

| Parameter | Result | Qualifier | Units | RL | MDL | Dilution Factor | Date Prepared | Date Analyzed | Analytical Method | Analyst |
|---|---|---|---|---|---|---|---|---|---|---|
| **General Chemistry - Westborough Lab** | | | | | | | | | | |
| Solids, Total | 92.5 | | % | 0.100 | NA | 1 | - | 12/12/19 00:29 | 121,2540G | YA |

**Project Name:** RIVER ROAD
**Project Number:** 0518-019-001

**Lab Number:** L1959111
**Report Date:** 12/18/19

## SAMPLE RESULTS

Lab ID: L1959111-04
Client ID: TP 2 SURFACE
Sample Location: OLEAN, NY

Date Collected: 12/09/19 10:35
Date Received: 12/10/19
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

| Parameter | Result | Qualifier | Units | RL | MDL | Dilution Factor | Date Prepared | Date Analyzed | Analytical Method | Analyst |
|---|---|---|---|---|---|---|---|---|---|---|
| **General Chemistry - Westborough Lab** | | | | | | | | | | |
| Solids, Total | 52.6 | | % | 0.100 | NA | 1 | - | 12/12/19 00:29 | 121,2540G | YA |

**Project Name:** RIVER ROAD
**Project Number:** 0518-019-001

**Lab Number:** L1959111
**Report Date:** 12/18/19

## SAMPLE RESULTS

Lab ID: L1959111-05
Client ID: TP 3
Sample Location: OLEAN, NY

Date Collected: 12/09/19 10:45
Date Received: 12/10/19
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

| Parameter | Result | Qualifier | Units | RL | MDL | Dilution Factor | Date Prepared | Date Analyzed | Analytical Method | Analyst |
|---|---|---|---|---|---|---|---|---|---|---|
| **General Chemistry - Westborough Lab** | | | | | | | | | | |
| Solids, Total | 91.0 | | % | 0.100 | NA | 1 | - | 12/12/19 00:29 | 121,2540G | YA |

**Project Name:** RIVER ROAD
**Project Number:** 0518-019-001

**Lab Number:** L1959111
**Report Date:** 12/18/19

## SAMPLE RESULTS

Lab ID: L1959111-06
Client ID: TP 3 SURFACE
Sample Location: OLEAN, NY

Date Collected: 12/09/19 10:50
Date Received: 12/10/19
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

| Parameter | Result | Qualifier | Units | RL | MDL | Dilution Factor | Date Prepared | Date Analyzed | Analytical Method | Analyst |
|---|---|---|---|---|---|---|---|---|---|---|
| **General Chemistry - Westborough Lab** | | | | | | | | | | |
| Solids, Total | 75.9 | | % | 0.100 | NA | 1 | - | 12/12/19 00:29 | 121,2540G | YA |

**Project Name:** RIVER ROAD
**Project Number:** 0518-019-001

**Lab Number:** L1959111
**Report Date:** 12/18/19

## SAMPLE RESULTS

Lab ID: L1959111-07
Client ID: TP 4
Sample Location: OLEAN, NY

Date Collected: 12/09/19 11:00
Date Received: 12/10/19
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

| Parameter | Result | Qualifier | Units | RL | MDL | Dilution Factor | Date Prepared | Date Analyzed | Analytical Method | Analyst |
|---|---|---|---|---|---|---|---|---|---|---|
| **General Chemistry - Westborough Lab** | | | | | | | | | | |
| Solids, Total | 83.6 | | % | 0.100 | NA | 1 | - | 12/12/19 00:29 | 121,2540G | YA |

**Project Name:** RIVER ROAD
**Project Number:** 0518-019-001

**Lab Number:** L1959111
**Report Date:** 12/18/19

## SAMPLE RESULTS

Lab ID: L1959111-08
Client ID: TP 4 SURFACE
Sample Location: OLEAN, NY

Date Collected: 12/09/19 11:05
Date Received: 12/10/19
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

| Parameter | Result | Qualifier | Units | RL | MDL | Dilution Factor | Date Prepared | Date Analyzed | Analytical Method | Analyst |
|---|---|---|---|---|---|---|---|---|---|---|
| **General Chemistry - Westborough Lab** | | | | | | | | | | |
| Solids, Total | 93.7 | | % | 0.100 | NA | 1 | - | 12/12/19 00:29 | 121,2540G | YA |

**Project Name:** RIVER ROAD
**Project Number:** 0518-019-001

**Lab Number:** L1959111
**Report Date:** 12/18/19

## SAMPLE RESULTS

Lab ID: L1959111-09
Client ID: TP 5
Sample Location: OLEAN, NY

Date Collected: 12/09/19 11:10
Date Received: 12/10/19
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

| Parameter | Result | Qualifier | Units | RL | MDL | Dilution Factor | Date Prepared | Date Analyzed | Analytical Method | Analyst |
|---|---|---|---|---|---|---|---|---|---|---|
| **General Chemistry - Westborough Lab** | | | | | | | | | | |
| Solids, Total | 89.1 | | % | 0.100 | NA | 1 | - | 12/12/19 00:29 | 121,2540G | YA |

**Project Name:** RIVER ROAD
**Project Number:** 0518-019-001

**Lab Number:** L1959111
**Report Date:** 12/18/19

## SAMPLE RESULTS

Lab ID: L1959111-10
Client ID: TP 5 SURFACE
Sample Location: OLEAN, NY

Date Collected: 12/09/19 11:15
Date Received: 12/10/19
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

| Parameter | Result | Qualifier | Units | RL | MDL | Dilution Factor | Date Prepared | Date Analyzed | Analytical Method | Analyst |
|---|---|---|---|---|---|---|---|---|---|---|
| **General Chemistry - Westborough Lab** | | | | | | | | | | |
| Solids, Total | 77.7 | | % | 0.100 | NA | 1 | - | 12/12/19 00:29 | 121,2540G | YA |

**Project Name:** RIVER ROAD
**Project Number:** 0518-019-001

**Lab Number:** L1959111
**Report Date:** 12/18/19

## SAMPLE RESULTS

Lab ID: L1959111-11
Client ID: TP 7
Sample Location: OLEAN, NY

Date Collected: 12/09/19 11:25
Date Received: 12/10/19
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

| Parameter | Result | Qualifier | Units | RL | MDL | Dilution Factor | Date Prepared | Date Analyzed | Analytical Method | Analyst |
|---|---|---|---|---|---|---|---|---|---|---|
| **General Chemistry - Westborough Lab** | | | | | | | | | | |
| Solids, Total | 82.0 | | % | 0.100 | NA | 1 | - | 12/12/19 00:29 | 121,2540G | YA |

**Project Name:** RIVER ROAD
**Project Number:** 0518-019-001

**Lab Number:** L1959111
**Report Date:** 12/18/19

## SAMPLE RESULTS

Lab ID: L1959111-12
Client ID: TP 7 SURFACE
Sample Location: OLEAN, NY

Date Collected: 12/09/19 11:30
Date Received: 12/10/19
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

| Parameter | Result | Qualifier | Units | RL | MDL | Dilution Factor | Date Prepared | Date Analyzed | Analytical Method | Analyst |
|---|---|---|---|---|---|---|---|---|---|---|
| **General Chemistry - Westborough Lab** | | | | | | | | | | |
| Solids, Total | 81.2 | | % | 0.100 | NA | 1 | - | 12/12/19 00:29 | 121,2540G | YA |

**Project Name:** RIVER ROAD
**Project Number:** 0518-019-001

**Lab Number:** L1959111
**Report Date:** 12/18/19

## SAMPLE RESULTS

Lab ID: L1959111-13
Client ID: TP 9
Sample Location: OLEAN, NY

Date Collected: 12/09/19 11:40
Date Received: 12/10/19
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

| Parameter | Result | Qualifier | Units | RL | MDL | Dilution Factor | Date Prepared | Date Analyzed | Analytical Method | Analyst |
|---|---|---|---|---|---|---|---|---|---|---|
| **General Chemistry - Westborough Lab** | | | | | | | | | | |
| Solids, Total | 86.3 | | % | 0.100 | NA | 1 | - | 12/12/19 00:29 | 121,2540G | YA |

**Project Name:** RIVER ROAD
**Project Number:** 0518-019-001

**Lab Number:** L1959111
**Report Date:** 12/18/19

## SAMPLE RESULTS

Lab ID: L1959111-14
Client ID: TP 9 SURFACE
Sample Location: OLEAN, NY

Date Collected: 12/09/19 11:45
Date Received: 12/10/19
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

| Parameter | Result | Qualifier | Units | RL | MDL | Dilution Factor | Date Prepared | Date Analyzed | Analytical Method | Analyst |
|---|---|---|---|---|---|---|---|---|---|---|
| **General Chemistry - Westborough Lab** | | | | | | | | | | |
| Solids, Total | 83.0 | | % | 0.100 | NA | 1 | - | 12/12/19 00:29 | 121,2540G | YA |

# Lab Duplicate Analysis

***Batch Quality Control***

**Project Name:** RIVER ROAD
**Project Number:** 0518-019-001

***Lab Number:*** L1959111
***Report Date:*** 12/18/19

| Parameter | Native Sample | Duplicate Sample | Units | RPD | Qual | RPD Limits |
|---|---|---|---|---|---|---|
| General Chemistry - Westborough Lab Associated sample(s): 01-14 QC Batch ID: WG1319716-1 QC Sample: L1959111-01 Client ID: TP 1 | | | | | | |
| Solids, Total | 83.3 | 85.3 | % | 2 | | 20 |

**Project Name:** RIVER ROAD
**Project Number:** 0518-019-001

**Lab Number:** L1959111
**Report Date:** 12/18/19

## Sample Receipt and Container Information

Were project specific reporting limits specified? YES

### Cooler Information

| Cooler | Custody Seal |
|---|---|
| A | Absent |

### Container Information

| Container ID | Container Type | Cooler | Initial pH | Final pH | Temp deg C | Pres | Seal | Frozen Date/Time | Analysis(*) |
|---|---|---|---|---|---|---|---|---|---|
| L1959111-01A | Vial Large Septa unpreserved (4oz) | A | NA | | 3.8 | Y | Absent | | NYTCL-8260-R2(14) |
| L1959111-01B | Glass 250ml/8oz unpreserved | A | NA | | 3.8 | Y | Absent | | NYTCL-8270(14) |
| L1959111-01C | Plastic 2oz unpreserved for TS | A | NA | | 3.8 | Y | Absent | | TS(7) |
| L1959111-01X | Vial MeOH preserved split | A | NA | | 3.8 | Y | Absent | | NYTCL-8260-R2(14) |
| L1959111-01Y | Vial Water preserved split | A | NA | | 3.8 | Y | Absent | **12-DEC-19 08:02** | NYTCL-8260-R2(14) |
| L1959111-01Z | Vial Water preserved split | A | NA | | 3.8 | Y | Absent | **12-DEC-19 08:02** | NYTCL-8260-R2(14) |
| L1959111-02A | Vial Large Septa unpreserved (4oz) | A | NA | | 3.8 | Y | Absent | | TS(7) |
| L1959111-02B | Glass 60ml unpreserved split | A | NA | | 3.8 | Y | Absent | | BA-TI(180),AS-TI(180),AG-TI(180),CR-TI(180),PB-TI(180),SE-TI(180),HG-T(28),CD-TI(180) |
| L1959111-03A | Glass 120ml/4oz unpreserved | A | NA | | 3.8 | Y | Absent | | NYTCL-8260-R2(14) |
| L1959111-03B | Glass 120ml/4oz unpreserved | A | NA | | 3.8 | Y | Absent | | NYTCL-8270(14) |
| L1959111-03C | Glass 120ml/4oz unpreserved | A | NA | | 3.8 | Y | Absent | | TS(7) |
| L1959111-03X | Vial MeOH preserved split | A | NA | | 3.8 | Y | Absent | | NYTCL-8260-R2(14) |
| L1959111-03Y | Vial Water preserved split | A | NA | | 3.8 | Y | Absent | **12-DEC-19 08:02** | NYTCL-8260-R2(14) |
| L1959111-03Z | Vial Water preserved split | A | NA | | 3.8 | Y | Absent | **12-DEC-19 08:02** | NYTCL-8260-R2(14) |
| L1959111-04A | Glass 120ml/4oz unpreserved | A | NA | | 3.8 | Y | Absent | | TS(7) |
| L1959111-04B | Glass 60ml unpreserved split | A | NA | | 3.8 | Y | Absent | | BA-TI(180),AS-TI(180),AG-TI(180),CR-TI(180),PB-TI(180),SE-TI(180),HG-T(28),CD-TI(180) |
| L1959111-05A | Vial Large Septa unpreserved (4oz) | A | NA | | 3.8 | Y | Absent | | NYTCL-8260-R2(14) |
| L1959111-05B | Vial Large Septa unpreserved (4oz) | A | NA | | 3.8 | Y | Absent | | NYTCL-8270(14) |
| L1959111-05C | Vial Large Septa unpreserved (4oz) | A | NA | | 3.8 | Y | Absent | | TS(7) |
| L1959111-05X | Vial MeOH preserved split | A | NA | | 3.8 | Y | Absent | | NYTCL-8260-R2(14) |
| L1959111-05Y | Vial Water preserved split | A | NA | | 3.8 | Y | Absent | **12-DEC-19 08:02** | NYTCL-8260-R2(14) |



*Values in parentheses indicate holding time in days

**Project Name:** RIVER ROAD
**Project Number:** 0518-019-001

**Lab Number:** L1959111
**Report Date:** 12/18/19

## Container Information

| Container ID | Container Type | Cooler | Initial pH | Final pH | Temp deg C | Pres | Seal | Frozen Date/Time | Analysis(*) |
|---|---|---|---|---|---|---|---|---|---|
| L1959111-05Z | Vial Water preserved split | A | NA | | 3.8 | Y | Absent | **12-DEC-19 08:02** | NYTCL-8260-R2(14) |
| L1959111-06A | Vial Large Septa unpreserved (4oz) | A | NA | | 3.8 | Y | Absent | | TS(7) |
| L1959111-06B | Glass 60ml unpreserved split | A | NA | | 3.8 | Y | Absent | | AS-TI(180),BA-TI(180),AG-TI(180),CR-TI(180),PB-TI(180),SE-TI(180),HG-T(28),CD-TI(180) |
| L1959111-07A | Glass 120ml/4oz unpreserved | A | NA | | 3.8 | Y | Absent | | NYTCL-8260-R2(14) |
| L1959111-07B | Glass 120ml/4oz unpreserved | A | NA | | 3.8 | Y | Absent | | NYTCL-8270(14) |
| L1959111-07C | Glass 120ml/4oz unpreserved | A | NA | | 3.8 | Y | Absent | | TS(7) |
| L1959111-07X | Vial MeOH preserved split | A | NA | | 3.8 | Y | Absent | | NYTCL-8260-R2(14) |
| L1959111-07Y | Vial Water preserved split | A | NA | | 3.8 | Y | Absent | **12-DEC-19 08:02** | NYTCL-8260-R2(14) |
| L1959111-07Z | Vial Water preserved split | A | NA | | 3.8 | Y | Absent | **12-DEC-19 08:02** | NYTCL-8260-R2(14) |
| L1959111-08A | Glass 120ml/4oz unpreserved | A | NA | | 3.8 | Y | Absent | | TS(7) |
| L1959111-08B | Glass 60ml unpreserved split | A | NA | | 3.8 | Y | Absent | | BA-TI(180),AS-TI(180),AG-TI(180),CR-TI(180),PB-TI(180),SE-TI(180),HG-T(28),CD-TI(180) |
| L1959111-09A | Vial Large Septa unpreserved (4oz) | A | NA | | 3.8 | Y | Absent | | NYTCL-8260-R2(14) |
| L1959111-09B | Glass 120ml/4oz unpreserved | A | NA | | 3.8 | Y | Absent | | NYTCL-8270(14) |
| L1959111-09C | Glass 120ml/4oz unpreserved | A | NA | | 3.8 | Y | Absent | | TS(7) |
| L1959111-09X | Vial MeOH preserved split | A | NA | | 3.8 | Y | Absent | | NYTCL-8260-R2(14) |
| L1959111-09Y | Vial Water preserved split | A | NA | | 3.8 | Y | Absent | **12-DEC-19 08:02** | NYTCL-8260-R2(14) |
| L1959111-09Z | Vial Water preserved split | A | NA | | 3.8 | Y | Absent | **12-DEC-19 08:02** | NYTCL-8260-R2(14) |
| L1959111-10A | Vial Large Septa unpreserved (4oz) | A | NA | | 3.8 | Y | Absent | | TS(7) |
| L1959111-10B | Glass 60ml unpreserved split | A | NA | | 3.8 | Y | Absent | | BA-TI(180),AS-TI(180),AG-TI(180),CR-TI(180),SE-TI(180),PB-TI(180),HG-T(28),CD-TI(180) |
| L1959111-11A | Vial Large Septa unpreserved (4oz) | A | NA | | 3.8 | Y | Absent | | NYTCL-8260-R2(14) |
| L1959111-11B | Glass 120ml/4oz unpreserved | A | NA | | 3.8 | Y | Absent | | NYTCL-8270(14) |
| L1959111-11C | Glass 120ml/4oz unpreserved | A | NA | | 3.8 | Y | Absent | | TS(7) |
| L1959111-11X | Vial MeOH preserved split | A | NA | | 3.8 | Y | Absent | | NYTCL-8260-R2(14) |
| L1959111-11Y | Vial Water preserved split | A | NA | | 3.8 | Y | Absent | **12-DEC-19 08:02** | NYTCL-8260-R2(14) |
| L1959111-11Z | Vial Water preserved split | A | NA | | 3.8 | Y | Absent | **12-DEC-19 08:02** | NYTCL-8260-R2(14) |
| L1959111-12A | Vial Large Septa unpreserved (4oz) | A | NA | | 3.8 | Y | Absent | | TS(7) |



*Values in parentheses indicate holding time in days

**Project Name:** RIVER ROAD
**Project Number:** 0518-019-001

**Lab Number:** L1959111
**Report Date:** 12/18/19

### Container Information

| Container ID | Container Type | Cooler | Initial pH | Final pH | Temp deg C | Pres | Seal | Frozen Date/Time | Analysis(*) |
|---|---|---|---|---|---|---|---|---|---|
| L1959111-12B | Glass 60ml unpreserved split | A | NA | | 3.8 | Y | Absent | | BA-TI(180),AS-TI(180),AG-TI(180),CR-TI(180),PB-TI(180),SE-TI(180),HG-T(28),CD-TI(180) |
| L1959111-13A | Vial Large Septa unpreserved (4oz) | A | NA | | 3.8 | Y | Absent | | NYTCL-8260-R2(14) |
| L1959111-13B | Glass 120ml/4oz unpreserved | A | NA | | 3.8 | Y | Absent | | NYTCL-8270(14) |
| L1959111-13C | Glass 120ml/4oz unpreserved | A | NA | | 3.8 | Y | Absent | | TS(7) |
| L1959111-13X | Vial MeOH preserved split | A | NA | | 3.8 | Y | Absent | | NYTCL-8260-R2(14) |
| L1959111-13Y | Vial Water preserved split | A | NA | | 3.8 | Y | Absent | **12-DEC-19 08:02** | NYTCL-8260-R2(14) |
| L1959111-13Z | Vial Water preserved split | A | NA | | 3.8 | Y | Absent | **12-DEC-19 08:02** | NYTCL-8260-R2(14) |
| L1959111-14A | Vial Large Septa unpreserved (4oz) | A | NA | | 3.8 | Y | Absent | | TS(7) |
| L1959111-14B | Glass 60ml unpreserved split | A | NA | | 3.8 | Y | Absent | | AS-TI(180),BA-TI(180),AG-TI(180),CR-TI(180),PB-TI(180),SE-TI(180),HG-T(28),CD-TI(180) |



*Values in parentheses indicate holding time in days

| | | | |
|---|---|---|---|
| **Project Name:** | RIVER ROAD | **Lab Number:** | L1959111 |
| **Project Number:** | 0518-019-001 | **Report Date:** | 12/18/19 |

## GLOSSARY

***Acronyms***

| | |
|---|---|
| DL | - Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the limit of quantitation (LOQ). The DL includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.) |
| EDL | - Estimated Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The EDL includes any adjustments from dilutions, concentrations or moisture content, where applicable. The use of EDLs is specific to the analysis of PAHs using Solid-Phase Microextraction (SPME). |
| EMPC | - Estimated Maximum Possible Concentration: The concentration that results from the signal present at the retention time of an analyte when the ions meet all of the identification criteria except the ion abundance ratio criteria. An EMPC is a worst-case estimate of the concentration. |
| EPA | - Environmental Protection Agency. |
| LCS | - Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes. |
| LCSD | - Laboratory Control Sample Duplicate: Refer to LCS. |
| LFB | - Laboratory Fortified Blank: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes. |
| LOD | - Limit of Detection: This value represents the level to which a target analyte can reliably be detected for a specific analyte in a specific matrix by a specific method. The LOD includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.) |
| LOQ | - Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)<br><br>Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.) |
| MDL | - Method Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The MDL includes any adjustments from dilutions, concentrations or moisture content, where applicable. |
| MS | - Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available. For Method 332.0, the spike recovery is calculated using the native concentration, including estimated values. |
| MSD | - Matrix Spike Sample Duplicate: Refer to MS. |
| NA | - Not Applicable. |
| NC | - Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit. |
| NDPA/DPA | - N-Nitrosodiphenylamine/Diphenylamine. |
| NI | - Not Ignitable. |
| NP | - Non-Plastic: Term is utilized for the analysis of Atterberg Limits in soil. |
| RL | - Reporting Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RL includes any adjustments from dilutions, concentrations or moisture content, where applicable. |
| RPD | - Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report. |
| SRM | - Standard Reference Material: A reference sample of a known or certified value that is of the same or similar matrix as the associated field samples. |
| STLP | - Semi-dynamic Tank Leaching Procedure per EPA Method 1315. |
| TEF | - Toxic Equivalency Factors: The values assigned to each dioxin and furan to evaluate their toxicity relative to 2,3,7,8-TCDD. |
| TEQ | - Toxic Equivalent: The measure of a sample's toxicity derived by multiplying each dioxin and furan by its corresponding TEF and then summing the resulting values. |
| TIC | - Tentatively Identified Compound: A compound that has been identified to be present and is not part of the target compound list (TCL) for the method and/or program. All TICs are qualitatively identified and reported as estimated concentrations. |

***Footnotes***

*Report Format: DU Report with 'J' Qualifiers*

| | | | |
|---|---|---|---|
| **Project Name:** | RIVER ROAD | **Lab Number:** | L1959111 |
| **Project Number:** | 0518-019-001 | **Report Date:** | 12/18/19 |

1 - The reference for this analyte should be considered modified since this analyte is absent from the target analyte list of the original method.

***Terms***

Analytical Method: Both the document from which the method originates and the analytical reference method. (Example: EPA 8260B is shown as 1,8260B.) The codes for the reference method documents are provided in the References section of the Addendum.

Difference: With respect to Total Oxidizable Precursor (TOP) Assay analysis, the difference is defined as the Post-Treatment value minus the Pre-Treatment value.

Final pH: As it pertains to Sample Receipt & Container Information section of the report, Final pH reflects pH of container determined after adjustment at the laboratory, if applicable. If no adjustment required, value reflects Initial pH.

Frozen Date/Time: With respect to Volatile Organics in soil, Frozen Date/Time reflects the date/time at which associated Reagent Water-preserved vials were initially frozen. Note: If frozen date/time is beyond 48 hours from sample collection, value will be reflected in 'bold'.

Initial pH: As it pertains to Sample Receipt & Container Information section of the report, Initial pH reflects pH of container determined upon receipt, if applicable.

PAH Total: With respect to Alkylated PAH analyses, the 'PAHs, Total' result is defined as the summation of results for all or a subset of the following compounds: Naphthalene, C1-C4 Naphthalenes, 2-Methylnaphthalene, 1-Methylnaphthalene, Biphenyl, Acenaphthylene, Acenaphthene, Fluorene, C1-C3 Fluorenes, Phenanthrene, C1-C4 Phenanthrenes/Anthracenes, Anthracene, Fluoranthene, Pyrene, C1-C4 Fluoranthenes/Pyrenes, Benz(a)anthracene, Chrysene, C1-C4 Chrysenes, Benzo(b)fluoranthene, Benzo(j)+(k)fluoranthene, Benzo(e)pyrene, Benzo(a)pyrene, Perylene, Indeno(1,2,3-cd)pyrene, Dibenz(ah)+(ac)anthracene, Benzo(g,h,i)perylene. If a 'Total' result is requested, the results of its individual components will also be reported.

PFAS Total: With respect to PFAS analyses, the 'PFAS, Total (5)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA and PFOS. If a 'Total' result is requested, the results of its individual components will also be reported.

Total: With respect to Organic analyses, a 'Total' result is defined as the summation of results for individual isomers or Aroclors. If a 'Total' result is requested, the results of its individual components will also be reported. This is applicable to 'Total' results for methods 8260, 8081 and 8082.

***Data Qualifiers***

**A** - Spectra identified as "Aldol Condensates" are byproducts of the extraction/concentration procedures when acetone is introduced in the process.

**B** - The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For MCP-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank. For NJ-Air-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte above the reporting limit. For NJ-related projects (excluding Air), flag only applies to associated field samples that have detectable concentrations of the analyte, which was detected above the reporting limit in the associated method blank or above five times the reporting limit for common lab contaminants (Phthalates, Acetone, Methylene Chloride, 2-Butanone).

**C** - Co-elution: The target analyte co-elutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses.

**D** - Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.

**E** - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.

**G** - The concentration may be biased high due to matrix interferences (i.e, co-elution) with non-target compound(s). The result should be considered estimated.

**H** - The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.

**I** - The lower value for the two columns has been reported due to obvious interference.

**J** - Estimated value. The Target analyte concentration is below the quantitation limit (RL), but above the Method Detection Limit (MDL) or Estimated Detection Limit (EDL) for SPME-related analyses. This represents an estimated concentration for Tentatively Identified Compounds (TICs).

**M** - Reporting Limit (RL) exceeds the MCP CAM Reporting Limit for this analyte.

**ND** - Not detected at the method detection limit (MDL) for the sample, or estimated detection limit (EDL) for SPME-related analyses.

**NJ** - Presumptive evidence of compound. This represents an estimated concentration for Tentatively Identified Compounds (TICs), where the identification is based on a mass spectral library search.

**P** - The RPD between the results for the two columns exceeds the method-specified criteria.

**Q** - The quality control sample exceeds the associated acceptance criteria. For DOD-related projects, LCS and/or Continuing Calibration Standard exceedences are also qualified on all associated sample results. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RL. (Metals only.)

*Report Format: DU Report with 'J' Qualifiers*

| | | | |
|---|---|---|---|
| **Project Name:** | RIVER ROAD | **Lab Number:** | L1959111 |
| **Project Number:** | 0518-019-001 | **Report Date:** | 12/18/19 |

***Data Qualifiers***

**R** - Analytical results are from sample re-analysis.

**RE** - Analytical results are from sample re-extraction.

**S** - Analytical results are from modified screening analysis.

*Report Format: DU Report with 'J' Qualifiers*

| | | | |
|---|---|---|---|
| **Project Name:** | RIVER ROAD | **Lab Number:** | L1959111 |
| **Project Number:** | 0518-019-001 | **Report Date:** | 12/18/19 |

## REFERENCES


1 Test Methods for Evaluating Solid Waste: Physical/Chemical Methods. EPA SW-846. Third Edition. Updates I - IV, 2007.

121 Standard Methods for the Examination of Water and Wastewater. APHA-AWWA-WEF. Standard Methods Online.


## LIMITATION OF LIABILITIES

Alpha Analytical performs services with reasonable care and diligence normal to the analytical testing laboratory industry. In the event of an error, the sole and exclusive responsibility of Alpha Analytical shall be to re-perform the work at it's own expense. In no event shall Alpha Analytical be held liable for any incidental, consequential or special damages, including but not limited to, damages in any way connected with the use of, interpretation of, information or analysis provided by Alpha Analytical.

We strongly urge our clients to comply with EPA protocol regarding sample volume, preservation, cooling, containers, sampling procedures, holding time and splitting of samples in the field.

# Certification Information

**The following analytes are not included in our Primary NELAP Scope of Accreditation:**

**Westborough Facility**
**EPA 624/624.1:** m/p-xylene, o-xylene
**EPA 8260C:** NPW: 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene, Azobenzene; SCM: Iodomethane (methyl iodide), 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene.
**EPA 8270D:** NPW: Dimethylnaphthalene,1,4-Diphenylhydrazine; SCM: Dimethylnaphthalene,1,4-Diphenylhydrazine.
**SM4500**: NPW: Amenable Cyanide; SCM: Total Phosphorus, TKN, NO2, NO3.

**Mansfield Facility**
**SM 2540D:** TSS
**EPA 8082A:** NPW: PCB: 1, 5, 31, 87,101, 110, 141, 151, 153, 180, 183, 187.
**EPA TO-15:** Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene, 3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene.
**Biological Tissue Matrix:** EPA 3050B

**The following analytes are included in our Massachusetts DEP Scope of Accreditation**

**Westborough Facility:**

***Drinking Water***
**EPA 300.0**: Chloride, Nitrate-N, Fluoride, Sulfate; **EPA 353.2**: Nitrate-N, Nitrite-N; **SM4500NO3-F**: Nitrate-N, Nitrite-N; **SM4500F-C, SM4500CN-CE, EPA 180.1, SM2130B, SM4500Cl-D, SM2320B, SM2540C, SM4500H-B, SM4500NO2-B**
**EPA 332**: Perchlorate; **EPA 524.2:** THMs and VOCs; **EPA 504.1:** EDB, DBCP.
**Microbiology**: **SM9215B; SM9223-P/A, SM9223B-Colilert-QT,SM9222D**.

***Non-Potable Water***
**SM4500H,B, EPA 120.1, SM2510B, SM2540C, SM2320B, SM4500CL-E, SM4500F-BC, SM4500NH3-BH:** Ammonia-N and Kjeldahl-N, **EPA 350.1**: Ammonia-N, **LACHAT 10-107-06-1-B**: Ammonia-N, **EPA 351.1, SM4500NO3-F, EPA 353.2**: Nitrate-N**, SM4500P-E, SM4500P-B, E, SM4500SO4-E, SM5220D, EPA 410.4, SM5210B, SM5310C, SM4500CL-D, EPA 1664, EPA 420.1, SM4500-CN-CE, SM2540D, EPA 300: Chloride, Sulfate, Nitrate.**
**EPA 624.1**: Volatile Halocarbons & Aromatics,
**EPA 608.3**: Chlordane, Toxaphene, Aldrin, alpha-BHC, beta-BHC, gamma-BHC, delta-BHC, Dieldrin, DDD, DDE, DDT, Endosulfan I, Endosulfan II, Endosulfan sulfate, Endrin, Endrin Aldehyde, Heptachlor, Heptachlor Epoxide, PCBs
**EPA 625.1**: SVOC (Acid/Base/Neutral Extractables), **EPA 600/4-81-045**: PCB-Oil.
**Microbiology**: **SM9223B-Colilert-QT; Enterolert-QT, SM9221E, EPA 1600, EPA 1603.**

**Mansfield Facility:**

***Drinking Water***
**EPA 200.7:** Al, Ba, Cd, Cr, Cu, Fe, Mn, Ni, Na, Ag, Ca, Zn. **EPA 200.8:** Al, Sb, As, Ba, Be, Cd, Cr, Cu, Pb, Mn, Ni, Se, Ag, TL, Zn. **EPA 245.1** Hg.
**EPA 522.**

***Non-Potable Water***
**EPA 200.7:** Al, Sb, As, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Sr, TL, Ti, V, Zn.
**EPA 200.8:** Al, Sb**,** As, Be, Cd, Cr, Cu, Fe, Pb, Mn, Ni, K, Se, Ag, Na, TL, Zn.
**EPA 245.1** Hg.
**SM2340B**

For a complete listing of analytes and methods, please contact your Alpha Project Manager.

ALPHA

Westborough, MA 01581
8 Walkup Dr.
TEL: 508-898-9220
FAX: 508-898-9193

Mansfield, MA 02048
320 Forbes Blvd
TEL: 508-822-9300
FAX: 508-822-3288

# NEW YORK CHAIN OF CUSTODY

Service Centers
Mahwah, NJ 07430: 35 Whitney Rd, Suite 5
Albany, NY 12205: 14 Walker Way
Tonawanda, NY 14150: 275 Cooper Ave, Suite 105

Page 1 of 2

Date Rec'd in Lab 12/11/19

ALPHA Job # L1959111

**Client Information**
Client: Turnky Env. Restoration
Address: 7558 Hopkins Trail
Gas, NY 14218
Phone: (716) 697-5931
Fax:
Email: cburgel@gw-tk.com

**Project Information**
Project Name: River Road
Project Location: Olean, NY
Project #
(Use Project name as Project #) ☐
Project Manager: Mike Lobaugh
ALPHAQuote #:

**Turn-Around Time**
Standard ☒ Due Date:
Rush (only if pre approved) ☐ # of Days:

**Deliverables**
☐ ASP-A ☐ ASP-B
☐ EQuIS (1 File) ☐ EQuIS (4 File)
☐ Other

**Regulatory Requirement**
☐ NY TOGS ☐ NY Part 375
☐ AWQ Standards ☐ NY CP-51
☐ NY Restricted Use ☐ Other
☐ NY Unrestricted Use
☐ NYC Sewer Discharge

**Billing Information**
☐ Same as Client Info
PO #

**Disposal Site Information**
Please identify below location of applicable disposal facilities.
Disposal Facility:
☐ NJ ☐ NY
☐ Other:

These samples have been previously analyzed by Alpha ☐

**Other project specific requirements/comments:**
* Please be aware, Petro odor strength, + oil in some samples

**Please specify Metals or TAL.**

**ANALYSIS**

**Sample Filtration**
☐ Done
☐ Lab to do
*Preservation*
☐ Lab to do
*(Please Specify below)*

| ALPHA Lab ID (Lab Use Only) | Sample ID | Collection Date | Collection Time | Sample Matrix | Sampler's Initials | TCL + CP51 VOC 8260 TICs | TCL SVOCs 8270 TICs | RCRA Metals | Sample Specific Comments | Total Bottle |
|---|---|---|---|---|---|---|---|---|---|---|
| 59111-01 | TP 1 | 12-9-19 | 1015 | Soil | CFD | X | X | | OIL IN SAMPLE | 3 |
| -02 | TP 1 Surface | | 1020 | | | | | X | | 1 |
| -03 | TP 2 | | 1030 | | | X | X | | | 3 |
| -04 | TP 2 Surface | | 1035 | | | | | X | | 1 |
| -05 | TP 3 | | 1045 | | | X | X | | | 3 |
| -06 | TP 3 Surface | | 1050 | | | | | X | | 1 |
| -07 | TP 4 | | 1100 | | | X | X | | | 3 |
| -08 | TP 4 Surface | | 1105 | | | | | X | | 1 |
| -09 | TP 5 | | 1110 | | | X | X | | | 3 |
| -10 | TB 5 Surface | — | 1115 | — | — | | | X | | 1 |

Container Type: A A A
Preservative: A A A

Preservative Code:
A = None
B = HCl
C = $HNO_3$
D = $H_2SO_4$
E = NaOH
F = MeOH
G = $NaHSO_4$
H = $Na_2S_2O_3$
K/E = Zn Ac/NaOH
O = Other

Container Code
P = Plastic
A = Amber Glass
V = Vial
G = Glass
B = Bacteria Cup
C = Cube
O = Other
E = Encore
D = BOD Bottle

Westboro: Certification No: MA935
Mansfield: Certification No: MA015

| Relinquished By: | Date/Time | Received By: | Date/Time |
|---|---|---|---|
| | 12-10-19/1445 | | 12/10/19 1610 |
| | 12/11/19 0705 | | 12/11/19 0655 |

Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. BY EXECUTING THIS COC, THE CLIENT HAS READ AND AGREES TO BE BOUND BY ALPHA'S TERMS & CONDITIONS. (See reverse side.)

Form No: 01-25 HC (rev. 30-Sept-2013)

ALPHA ANALYTICAL

Westborough, MA 01581
8 Walkup Dr.
TEL: 508-898-9220
FAX: 508-898-9193

Mansfield, MA 02048
320 Forbes Blvd
TEL: 508-822-9300
FAX: 508-822-3288

# NEW YORK CHAIN OF CUSTODY

Service Centers
Mahwah, NJ 07430: 35 Whitney Rd, Suite 5
Albany, NY 12205: 14 Walker Way
Tonawanda, NY 14150: 275 Cooper Ave, Suite 105

Page 2 of 2

Date Rec'd in Lab 12/11/19

ALPHA Job # L1959111

**Client Information**
Client: Tenaka Env. Ross
Address: 2558 Hamburg Tpke
Buffalo NY 14218
Phone: (716) 697-5931
Fax:
Email: COBRIEN@bm-tk.com

**Project Information**
Project Name: River Road
Project Location: Olean, NY
Project #
(Use Project name as Project #) ☐
Project Manager: MIKE LOSTRACCHI
ALPHAQuote #:

**Turn-Around Time**
Standard ☒ Due Date:
Rush (only if pre approved) ☐ # of Days:

**Deliverables**
☐ ASP-A ☐ ASP-B
☐ EQuIS (1 File) ☐ EQuIS (4 File)
☐ Other

**Regulatory Requirement**
☐ NY TOGS ☐ NY Part 375
☐ AWQ Standards ☐ NY CP-51
☐ NY Restricted Use ☐ Other
☐ NY Unrestricted Use
☐ NYC Sewer Discharge

**Billing Information**
☐ Same as Client Info
PO #

**Disposal Site Information**
Please identify below location of applicable disposal facilities.
Disposal Facility:
☐ NJ ☐ NY
☐ Other:

These samples have been previously analyzed by Alpha ☐

**Other project specific requirements/comments:**
* PLEASE BE AWARE, STRONG PETRO ODOR, & OIL IN SOME BOTTLES

**Please specify Metals or TAL.**

**ANALYSIS**
TAL + CP51 VOC 8260 TICs
TCL SVOCs 8270 TICs
RCRA Metals

**Sample Filtration**
☐ Done
☐ Lab to do
*Preservation*
☐ Lab to do
*(Please Specify below)*

| ALPHA Lab ID (Lab Use Only) | Sample ID | Collection Date | Collection Time | Sample Matrix | Sampler's Initials | TAL+CP51 VOC 8260 TICs | TCL SVOCs 8270 TICs | RCRA Metals | Sample Specific Comments | Total Bottle |
|---|---|---|---|---|---|---|---|---|---|---|
| 59111-11 | TP 7 | 12-9-19 | 1125 | S | CFD | X | X | | OIL IN SAMPLE | 3 |
| -12 | TP 7 Surface | | 1130 | | | | | X | | 1 |
| -13 | TP 9 | | 1140 | | | X | X | | OIL IN SAMPLE | 3 |
| -14 | TP 9 Surface | | 1145 | | | | | X | | 1 |

Container Type: A A A
Preservative: A A A

Preservative Code:
A = None
B = HCl
C = $HNO_3$
D = $H_2SO_4$
E = NaOH
F = MeOH
G = $NaHSO_4$
H = $Na_2S_2O_3$
K/E = Zn Ac/NaOH
O = Other

Container Code
P = Plastic
A = Amber Glass
V = Vial
G = Glass
B = Bacteria Cup
C = Cube
O = Other
E = Encore
D = BOD Bottle

Westboro: Certification No: MA935
Mansfield: Certification No: MA015

| Relinquished By: | Date/Time | Received By: | Date/Time |
|---|---|---|---|
| | 12-10-19/1445 | | 12/10/19 1610 |
| | 12/10/19 1705 | | 12/11/19 0755 |

Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. BY EXECUTING THIS COC, THE CLIENT HAS READ AND AGREES TO BE BOUND BY ALPHA'S TERMS & CONDITIONS. (See reverse side.)

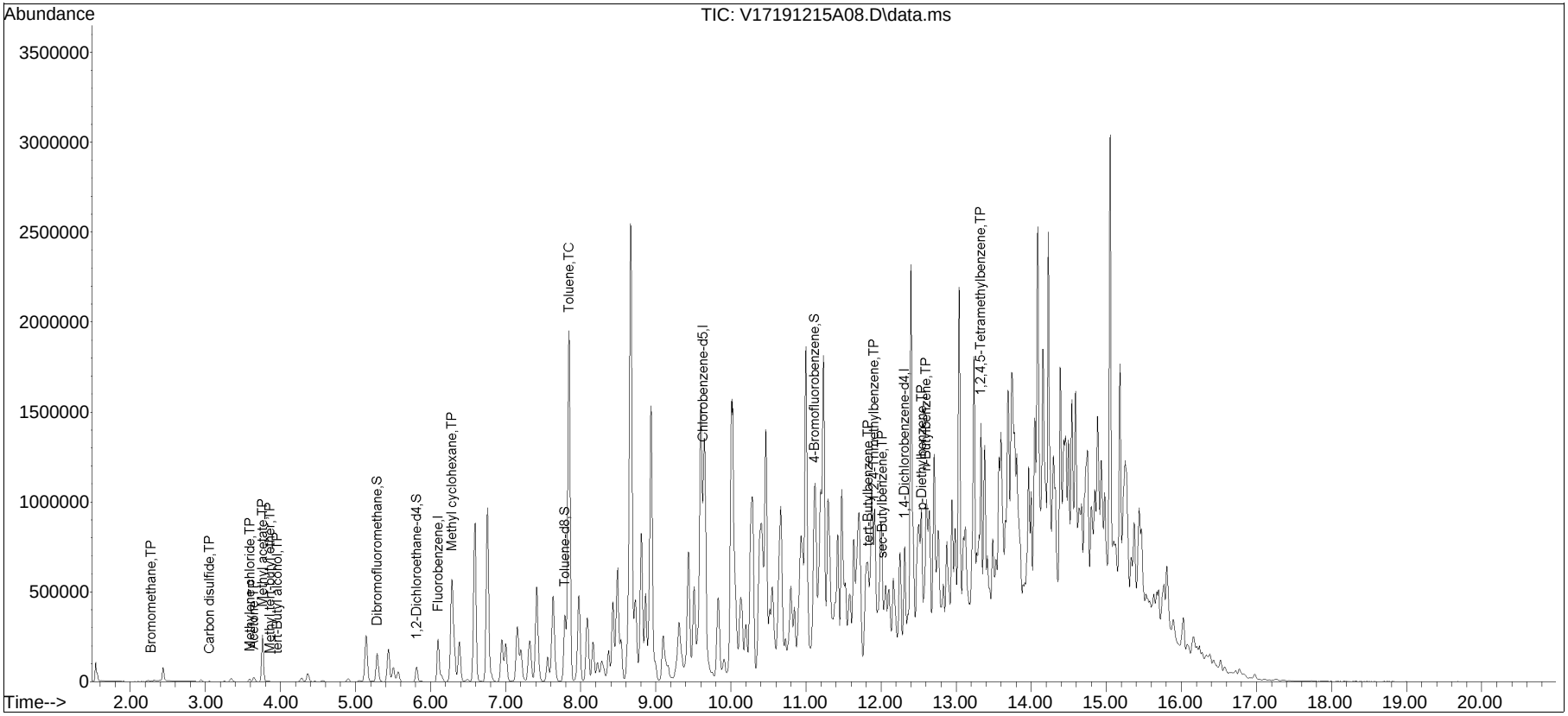
Form No: 01-25 HC (rev. 30-Sept-2013)

Quantitation Report (QT/LSC Reviewed)

Data Path : I:\VOLATILES\VOA117\2019\191215A\
Data File : V17191215A08.D
Acq On : 15 Dec 2019 01:00 pm
Operator : VOA117:MV
Sample : l1959111-01,31H,5.58,5,0.100,,x
Misc : WG1321305,ICAL15989
ALS Vial : 8 Sample Multiplier: 1

Quant Time: Dec 17 10:56:39 2019
Quant Method : I:\VOLATILES\VOA117\2019\191215A\V117_190726A_8260.m
Quant Title : VOLATILES BY GC/MS
QLast Update : Mon Jul 29 11:33:58 2019
Response via : Initial Calibration

Sub List : 8260-CurveSoil - Megamix plus Diox5A\V17191215A01.D•

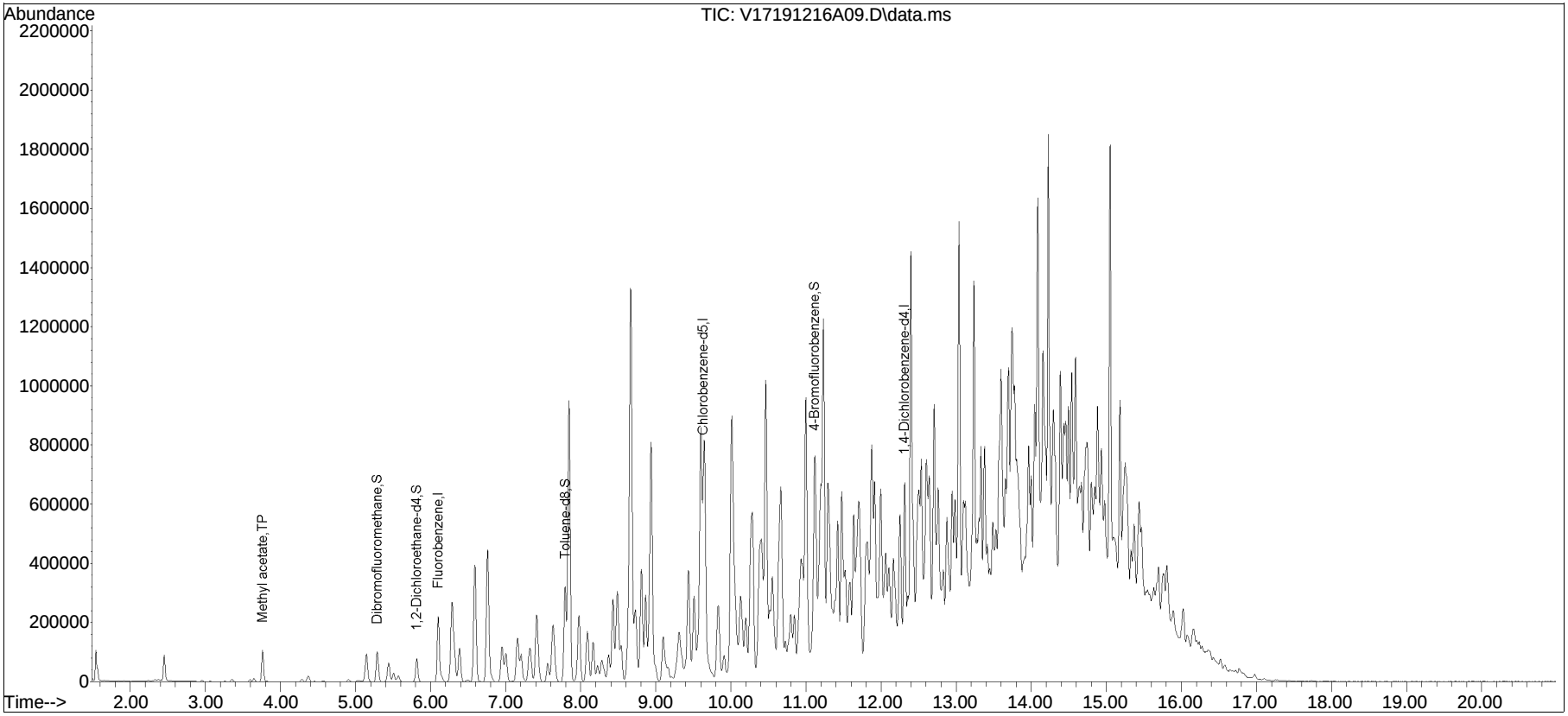


Quantitation Report (QT/LSC Reviewed)

Data Path : I:\VOLATILES\VOA117\2019\191216A\
Data File : V17191216A09.D
Acq On : 16 Dec 2019 09:01 am
Operator : VOA117:MV
Sample : l1959111-01D,31H,5.58,5,0.050,,x
Misc : WG1321425,ICAL15989
ALS Vial : 9 Sample Multiplier: 1

Quant Time: Dec 16 09:32:36 2019
Quant Method : I:\VOLATILES\VOA117\2019\191216A\V117_190726A_8260.m
Quant Title : VOLATILES BY GC/MS
QLast Update : Mon Jul 29 11:33:58 2019
Response via : Initial Calibration

Sub List : 8260-MA - MAILES\VOA117\2019\191216A\V17191216A01.D•

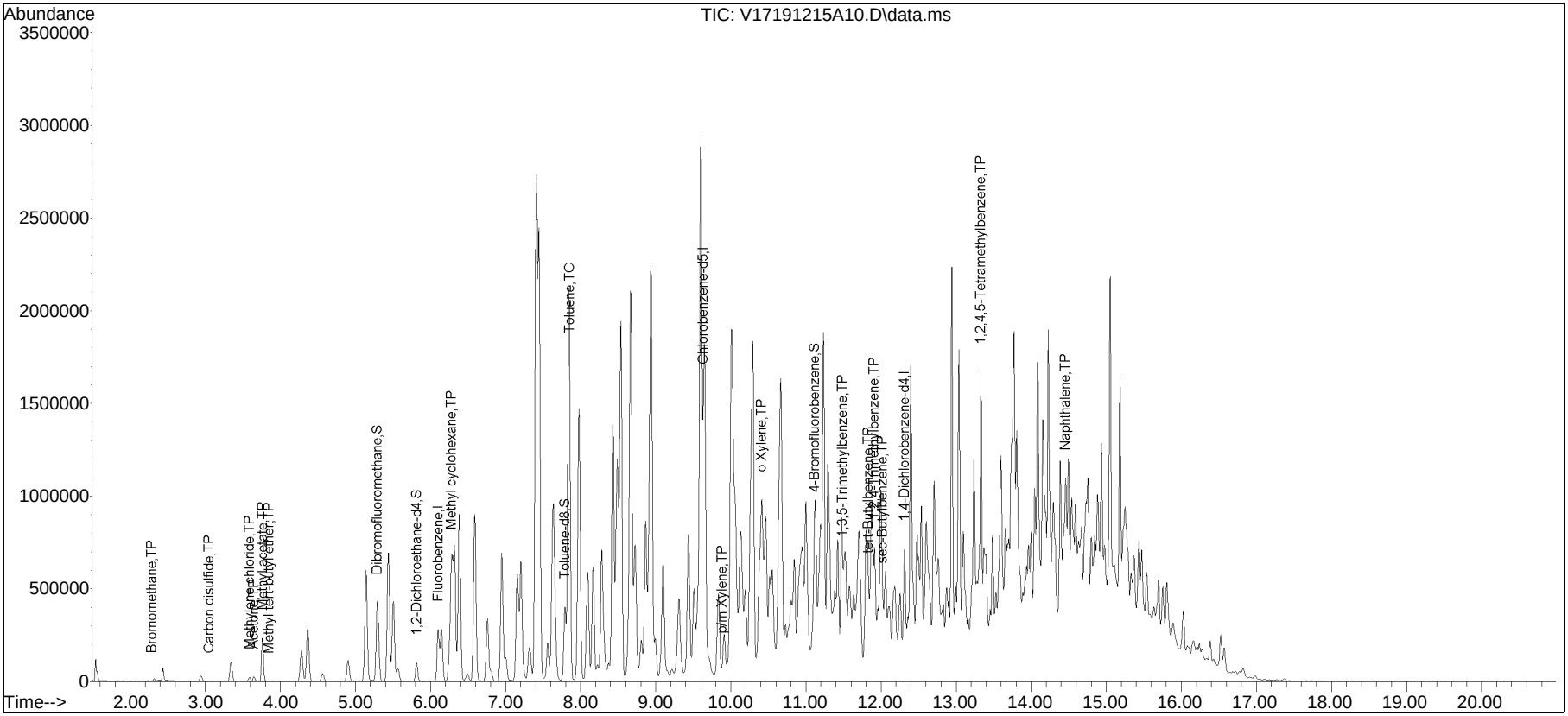


Quantitation Report (QT/LSC Reviewed)

Data Path : I:\VOLATILES\VOA117\2019\191215A\
Data File : V17191215A10.D
Acq On : 15 Dec 2019 01:52 pm
Operator : VOA117:MV
Sample : l1959111-05,31H,5.81,5,0.100,,x
Misc : WG1321305,ICAL15989
ALS Vial : 10 Sample Multiplier: 1

Quant Time: Dec 16 04:45:36 2019
Quant Method : I:\VOLATILES\VOA117\2019\191215A\V117_190726A_8260.m
Quant Title : VOLATILES BY GC/MS
QLast Update : Mon Jul 29 11:33:58 2019
Response via : Initial Calibration

Sub List : 8260-CurveSoil - Megamix plus Diox5A\V17191215A01.D•

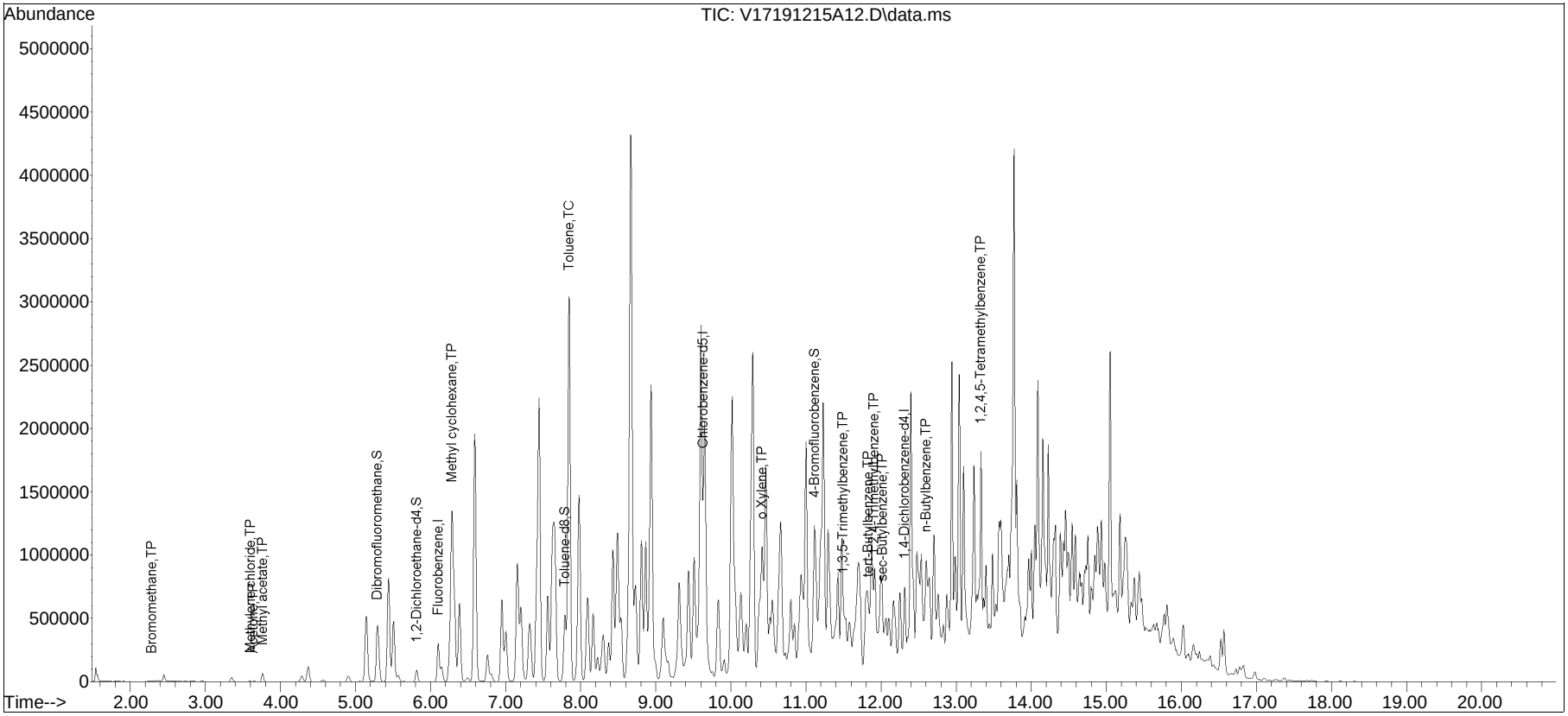


Quantitation Report (QT/LSC Reviewed)

Data Path : I:\VOLATILES\VOA117\2019\191215A\
Data File : V17191215A12.D
Acq On : 15 Dec 2019 02:44 pm
Operator : VOA117:MV
Sample : l1959111-09D,31H,5.42,5,0.050,,x
Misc : WG1321305,ICAL15989
ALS Vial : 12 Sample Multiplier: 1

Quant Time: Dec 16 18:02:02 2019
Quant Method : I:\VOLATILES\VOA117\2019\191215A\V117_190726A_8260.m
Quant Title : VOLATILES BY GC/MS
QLast Update : Mon Jul 29 11:33:58 2019
Response via : Initial Calibration

Sub List : 8260-CurveSoil - Megamix plus Diox5A\V17191215A01.D•

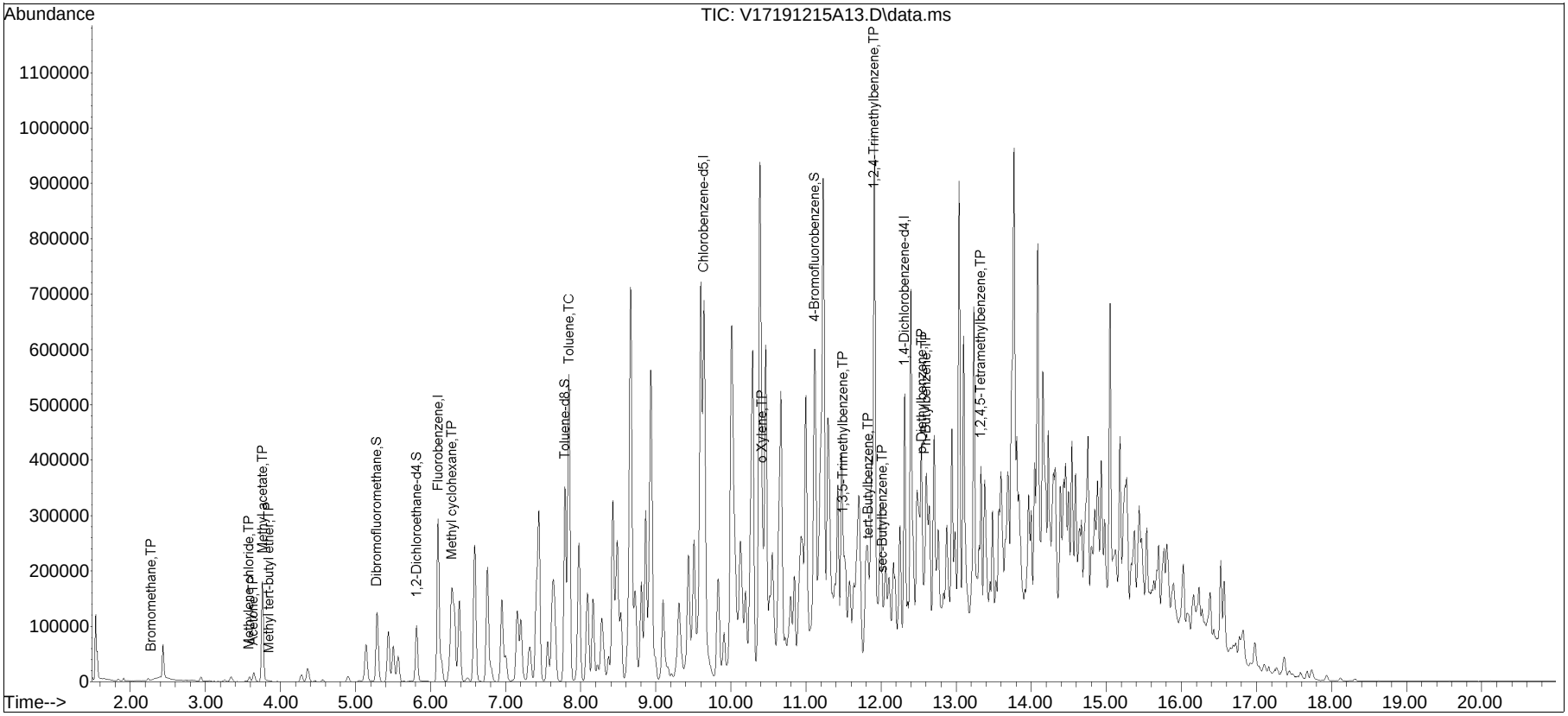


Quantitation Report (QT/LSC Reviewed)

Data Path : I:\VOLATILES\VOA117\2019\191215A\
Data File : V17191215A13.D
Acq On : 15 Dec 2019 03:09 pm
Operator : VOA117:MV
Sample : l1959111-11,31H,6.63,5,0.100,,x
Misc : WG1321305,ICAL15989
ALS Vial : 13 Sample Multiplier: 1

Quant Time: Dec 16 18:02:39 2019
Quant Method : I:\VOLATILES\VOA117\2019\191215A\V117_190726A_8260.m
Quant Title : VOLATILES BY GC/MS
QLast Update : Mon Jul 29 11:33:58 2019
Response via : Initial Calibration

Sub List : 8260-CurveSoil - Megamix plus Diox5A\V17191215A01.D•




V117_190726A_8260.m Mon Dec 16 18:02:51 2019 Page: 4

# APPENDIX D

## HISTORIC MAPS AND AERIAL PHOTOGRAPHS

OLEAN, N.Y. FLOOD PROTECTION PROJECT
Map No. 319 Parcel No. 340

| | | |
|---|---|---|
| Computed by: | I.S. Stalker | Date: 1-18-50 |
| Checked by: | V.P. Barbera | Date: 1-19-50 |
| Described by: | N.S. Denver | Date: 1-20-50 |
| Checked by: | J.P. Masse | Date: 1-20-50 |
| Traced by: | P.R. Schork | Date: 2- 6-50 |
| Checked by: | J.P. Masse | Date: 2- 6-50 |
| Typed by: | E.T. Kantorski | Date: 2- 6-50 |
| Checked by: | J. M. Coughlin | Date: 2- 6-50 |

Prepared by the City Engineer, City of Olean, N.Y. under direction of New York State Department of Public Works. Survey notes on file at New York State Department of Public Works District Office No. 5 located at Buffalo, New York.

870

OLEAN CREEK

RIVER STREET

OREGON

Dickran Arslanian & Lucy Arslanian (Reputed Owners)

New York Transit Co (Reputed Owner)

Oil Tank

New York Transit Company (Reputed Owner) Parcel No. 340 Area = 0.3401 Acre

Fence

Street Line

Edges of Creek Channel

Concrete Curb Wall

Drain

2-6" Oil Lines

Point of Beginning

Metal Shed

Gate

Metal Shed Pump Station

N 43° 18' 55" W 48.10'

N 14° 20' 08" W 92.29'

N 42° 26' 10" W 47.42'

N 55° 00' 29" W 36.62'

N 61° 11' 21" W 45.63'

N 61° 57' 51" W 201.05'

N 62° 18' 01" W 80.95

N 46° 55' 50" W 125.94

S 25° 30' 38" W 122.2'

S 56° 47' 12" E 377.65'

U. S. G. S.
FILE COPY
Inspection and Editing

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

STATE OF NEW YORK
REPRESENTED BY THE
DEPARTMENT OF PUBLIC WORKS

# NEW YORK
# OLEAN QUADRANGLE

(Ellicottville) (Franklinville) (Angelica)
(Sadamanca) (Belmont)
(Bradford) (Coudersport)

78°30' 25' 20' 78°15'
42°15' 10' 5' 42°00'

15 Miles 14 13 12 11 10 9 8 7 6 5 4 3 2 1 0

Lake Cuba
North Cuba
Tuscuna
Learn
Bozard Hill
Cooper Hill
Wrights Creek
OIL SPRING INDIAN RESERVATION
ROCHESTER DIV.
CUBA
Cuba Hill
ERIE R.R.
PENNA. R.R.
B.M.
Buffalo Creek
Joshua Creek
Gulf Brook
Firehole Creek
Dutch Hill
Cherry Valley
Scott
Oil Creek
NEW YORK AND PENNA. R.R.
WESTERN N.Y. AND PENNA. R.R.
CATTARAUGUS CO.
ALLEGANY CO.
Hinsdale
Haskell Flats
Fay Hollow
Morgan Hollow
Woodchuck Hollow
Scott Branch
Me Clure Hollow
Bennett Hollow
CLARKSVILLE
Haskell Creek
Ruth Creek
Wolf Creek
OIL TANKS
North Olean
ALLEGANY
Boardman
ERIE R.R. (ROCHESTER DIV.)
WESTERN N.Y. & PENNA. R.R.
OLEAN
East Olean
Typhahda Mt.
BOLIVAR LINE
Camel Back
ALLEGHENY RIVER
PORTVILLE
Deer Creek
Pantuckett Creek
Westons Mills
Mt. Herman
Bedford Corners
Dodge Creek
GENESEE
Portville
Mill Grove
Carroll
Narrow Gauge
Obi
Flatiron Rock
Fourmile
Rock City
Knapp Creek
Indian Branch
Hitchcock
Loucks Creek
Mill Creek
Waymans Branch
Bells Brook

Sutton
Cummin

H.M. Wilson Geographer in charge.
Triangulation by W.J. Peters.
Topography by R.D. Cummin and Frank Sutton.
Surveyed in 1896.

Scale 1/62500
1 0 1 2 3 4 Miles
1 0 1 2 3 4 5 Kilometers

Contour interval 20 feet.
*Datum is mean sea level.*
*(Readjustment indicates that elevations on this map should be decreased 6 feet.)*

Edition of May 1898, reprinted 1943
Polyconic projection.

USGS
Historical File
Topographic Division

OLEAN, NY.
N 4200—W 7815/15

JUN 25 1943 2630

U.S.G.S.
FILE COPY

## A.3. PTM Engineering, PLLC. (2025). Drum Investigation Report, 1641 River Street Site, Olean, New York, December.

**PTM Engineering PLLC**
2851 West Blood Rd.
E. Aurora, NY 14052

**Phone:** 716-867-2860
**Email:** ptmartin60@gmail.com

December 12, 2025

Mr Benjamin McPherson
Project Manager
New York State Department of Environmental Conservation
Division of Environmental Remediation
700 Delaware Ave.
Buffalo, New York 14209

Re: Drum Investigation Report -1641 River Street, Olean, New York (the Site)

Dear Mr. McPherson:

On behalf of our client, 1641 River Street LLC (1641 River Street), PTM Engineering, PLLC (PTM) has prepared this Drum Investigation Report summarizing the field activities and findings for the investigation performed on November 13, 2025 at the above-referenced Site.

**BACKGROUND**

The New York State Department of Environmental Conservation (NYSDEC) previously notified 1641 River Street LLC that they had information concerning a single drum that reportedly was buried on the Site containing chlorinated solvent material (carbon tetrachloride). It is our understanding that after meeting with the person who alleged to have buried this drum (reportedly over 15 years ago), 1641 River Street commissioned a ground penetrating radar (GPR) investigation in July 2025, the results of which were shared with the NYSDEC. This geophysics investigation identified a possible metallic drum signal in the general vicinity of the alleged burial location, in addition to suspected concrete signatures.

Based on discussions between representatives of 1641 River Street and the NYSDEC, it was agreed that a limited scope investigation would be conducted to assess the potential presence of the alleged single drum and/or any identified impacts from chlorinated solvent impacts. On October 27, 2025, PTM Engineering submitted a work plan to the NYSDEC for the proposed investigation of the suspected drum disposal area (the Work Plan). Following one round of NYSDEC comments, the Work Plan was revised and resubmitted on October 29, 2025, and approved for implementation by the NYSDEC on October 30, 2025.

**1.0 INVESTIGATION ACTIVITIES PERFORMED**

On November 13, 2025, crews from Trec Environmental Inc. (Trec) and Benson Construction and Development (Benson) were mobilized to implement the investigation activities proposed in the approved Work Plan, at the oversight and direction of PTM. Mr. Benjamin McPherson was present on-site for the investigation work on behalf of the NYSDEC.

Specifically, two deep test pits and one temporary groundwater monitoring well were planned to determine if impacts from the alleged drum disposal were present in the site soils or groundwater proximate to the suspected disposal area. The scope of work of the work completed is discussed below, and the final investigation and sample locations are shown on Figure 1.

**1.1 Test Pits**

Three (3) test pits (TP) were excavated by Benson in the area of the suspected drum location, as shown on Figure 1. The target excavation depth was between 10 to 15 feet below grade surface (bgs) based on information obtained from the former employee who allegedly buried the drum with a wheeled backhoe. Each test pit was excavated with a Komatsu PC 138 tracked excavator using a four-foot-wide bucket.

The first test pit location, TP-1, was located approximately 11 feet southwest of the previously staked anomaly location (from July 2025 geophysical investigation) where the temporary groundwater monitoring well (PZ-1) was installed. This spacing was discussed with the NYSDEC representative to minimize potential disturbance of the screened soil interval in the immediate vicinity of the temporary groundwater well. TP-1 was carefully advanced in roughly 6-inch deep increments to minimize the potential for damage if the drum was encountered; allow for thorough visual observation of the excavated soil/fill materials; and, allow for screening or sampling of the soils with a photoionization detector (PID) from a bucket of material obtained at each 2-foot depth interval. Final dimensions of TP-1 were approximately 20 feet long by 4 feet wide by 12 feet deep.

The following observations and data were obtained from the TP-1 excavation:

- Native soil mixed with a significant amount of fill materials (brick, vitreous clay pipe, concrete, and some small quantities of scrap steel) was observed from a depth of approximately 0-5 feet bgs. Native soils were observed from approximately 5 feet to 12 feet bgs, with these soils comprising primarily silty gravels, with small amounts of clay. The final 2 ft of silty gravel at the bottom of the test pit exhibited visual and olfactory impacts from petroleum. A distinct color change (light gray discoloration) was noted at this depth.
- PID readings from 2 feet to 10 feet bgs ranged from 0.4 to 0.8 ppm, and there were no volatile organic or petroleum odors noted from these strata. A PID reading of 22.1 ppm was recorded from what appeared to be 2 feet of petroleum impacted soils that were removed from the bottom of the test pit, approximately 10 to 12 feet bgs, and a soil sample was collected from this depth, as it was identified based on visual/olfactory and PID readings as the most impacted location in TP-1.
- No evidence of a drum or grossly contaminated material (GCM) was observed in the test pit.
- The final depth of TP-1 was approximately 12 feet bgs. Soil/fill removed from TP-1 was returned to the excavation in the general order that it was excavated/removed.
- A test pit log and photo log documenting the excavation of TP-1 is presented in Attachment 1 and Attachment 2, respectively.

After review of the anomalies detected during the geophysical investigation and discussion with the NYSDEC representative, TP-2, was located approximately 15 feet southwest of west edge of TP-1. This placed it approximately 26 feet southwest of the temporary groundwater monitoring well installation. TP-2 was excavated in the same manner as TP-1 to minimize the potential for damage if the drum was encountered; allow for thorough visual observation of the excavated soil/fill materials; and allow for screening or sampling

of the soils with a PID from a bucket of material obtained at each 2-foot depth interval. Final dimensions of TP-2 were approximately 15 feet long by 4 feet wide by 6 feet deep.

The following observations and data were recorded during the TP-2 excavation:

- Native soil mixed with very small quantities of fill materials (brick, vitreous clay pipe, crushed stone, and scrap steel) was observed from a depth of approximately 0-2.5 feet bgs. Native soils were encountered from approximately 2.5 feet to 6.5 feet bgs, with no observable visual or olfactory impacts at any depth. PID readings from 0 feet to 6.5 feet bgs ranged from 0.2 to 1.0 ppm.
- No evidence of a drum or GCM was observed in the test pit.
- Since little evidence of fill/disturbed soils were observed and no impacts were observed at any depth, it was agreed to terminate TP-2 at 6.5 feet bgs, with no sample collected. Soil/fill removed from TP-2 was returned to the excavation in the general order that it was excavated/removed.
- A test pit log and photo log documenting the excavation of TP-2 is presented in Attachment 1 and Attachment 2, respectively.

Based on the observations made at the TP-2 location, it was agreed with the NYSDEC representative, to perform one additional test pit to the east/northeast of the PZ-1 temporary monitoring well location in a final effort to locate the drum in the area of the geophysical anomalies. TP-3 was located approximately 10 feet northeast of the previously staked anomaly location where PZ-1 was installed. Similar to TP-1, this distance was confirmed with the NYSDEC representative as representing a reasonable approach to minimize potential disturbance of the screened soil interval and groundwater flow in the immediate vicinity of PZ-1. TP-3 was excavated in the same fashion as TP-1 and TP-2. The lithology of TP-3 closely matched that of TP-1 at each depth, with the observation of a thicker layer of crushed stone fill at a depth of 2.5 to 3 feet bgs. Final dimensions of TP-3 were (approximately), 15 feet long by 4 feet wide by 9.5 feet deep.

The following observations and data were obtained from the TP-3 excavation:

- Native soil mixed with a significant amount of fill materials (brick, concrete, and some small quantities of scrap steel) was observed from a depth of approximately 0-4.5 feet bgs. Native soils (primarily silty gravel with small amounts of clay) were encountered from approximately 4.5 feet to 9.5 feet bgs. The final 1 ft of silty gravel at the bottom of the test pit exhibited weathered petroleum impacts (both odor and light gray discoloration).
- Since the profile of TP-3 soils and fill closely matched that of TP-1, and there were no visual or olfactory impacts observed, PID readings were not obtained from 0 to 8.5 feet bgs. A PID reading of 0.9 ppm was obtained from the final 1 foot of petroleum impacted soils removed from the bottom of the test pit, at a depth of approximately 8.5 to 9.5 feet bgs. A soil sample was collected from this depth as it was identified based on visual/olfactory as the most impacted location in TP-3.
- No evidence of a drum or GCM was observed in the test pit.
- The final depth of TP-2 was approximately 9.5 feet bgs. Soil/fill removed from TP-3 was returned to the excavation in the general order that it was excavated/removed.
- A test pit log and photo log documenting the excavation of TP-3 is presented in Attachment 1 and Attachment 2, respectively.

The soil samples collected from TP-1 and TP-3 were submitted to the laboratory for analysis for Target Compound List (TCL) volatile organic compounds (VOCs). The results of these analyses are discussed in the Investigation Results section of this letter report.

### 1.2 Piezometer Installation

PZ-1 was installed in the location as shown on Figure 1, which was within 2 feet of the staked anomaly identified as the potential drum location during the July 2025 geophysical investigation. The PZ was installed in a 1.25" borehole drilled via direct push (Geoprobe®) equipment and constructed with 1-inch diameter Schedule (SCH) 40 PVC, with a 5-foot flush joint SCH 40 PVC 0.010-inch machine-slotted well screen. The depth of the PZ-1 was set to a depth of 16 feet bgs where groundwater was encountered by the driller. The well screen and attached riser was placed at the bottom of borehole and a silica sand filter pack (size #0) was installed from the base of the well to a maximum of two feet above the top of the screen. The remainder of the borehole and riser annulus was filled with bentonite chips to existing grade.

After completion of the test pits and approximately 3 hours after PZ-1 installation, the water level in the piezometer was recorded at 15.6 feet bgs or equivalent to approximately 0.016 gallons of well volume based on the 1-inch OD of the well riser. The PZ was then purged of approximately 10 well volumes (0.17 gallons) due to the initially high turbidity and presence of floating light non-aqueous phase liquid (LNAPL). Following the well development purging and observation that the turbidity had significantly decreased, PZ-1 was sampled using a dedicated polyethylene disposable bailer. The bailer was attached to a length of dedicated hollow-braid polypropylene rope and lowered into the well slowly so as not to agitate the groundwater or damage the well. The groundwater sample was submitted to the laboratory for analysis for TCL VOCs in accordance with USEPA SW 846 methodology. Purge water was collected in a 5-gallon bucket and inspected for both visual (i.e., NAPL) and olfactory impacts. The collected volume of approximately 0.17 gallons was discharged to grade in the vicinity of PZ-1, in the footprint of the TP-1 excavation.

A log illustration including the piezomenter completion details is provided in Attachment 2. Based on the results of the sampling, PZ-1 will be removed, and the borehole will be grouted with bentonite slurry to grade surface when weather permits.

## 2.0 ANALYTICAL RESULTS

### 2.1 TP-1 and TP-3 Test Pit Samples

Soil samples were collected from TP-1 (TP-1-12') at a depth of approximately 12 feet bgs and from TP-3 (TP-3-9.5') at a depth of approximately 9.5 feet bgs where petroleum impacts in each test pit were observed. Both samples were analyzed for TCL VOCs in accordance with EPA SW846 Method 8260C. A copy of the laboratory report is provided in Attachment 3.

Detection limits were significantly elevated in the TP-1 sample, and this is deemed to be attributed to interferences from the presence of observed weathered petroleum constituents at the sample depth, which compromises the sensitivity of the analysis. No detections of VOCs were reported in the TP-1-12' sample.

Two VOCs, chloroform and methylene chloride, were detected at estimated values of 0.84 and 5.3 ug/kg (ppb) in the TP-3-9.5' sample. These detections were below the applicable industrial, ecological or protection of groundwater 6 NYCRR Part 375 Soil Cleanup Objectives (SCOs).

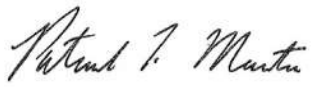
### 2.2 PZ-1 Groundwater Sample

One groundwater sample was collected from PZ-1 and analyzed for TCL VOCs in accordance with EPA SW846 Method 8260C. No detections of VOCs were reported in the groundwater sample.

**3.0 CONCLUSION**

The drum investigation at the Site did not find any physical evidence of the presence of the alleged drum disposal, nor did it identify any impacts associated with chlorinated solvents having occurred in the area of the reported burial. Furthermore, the absence of carbon tetrachloride or any other chlorinated compounds in both the soil and groundwater samples supports the finding that the disposal of the drum most likely did not occur at the site.

Respectfully Submitted,

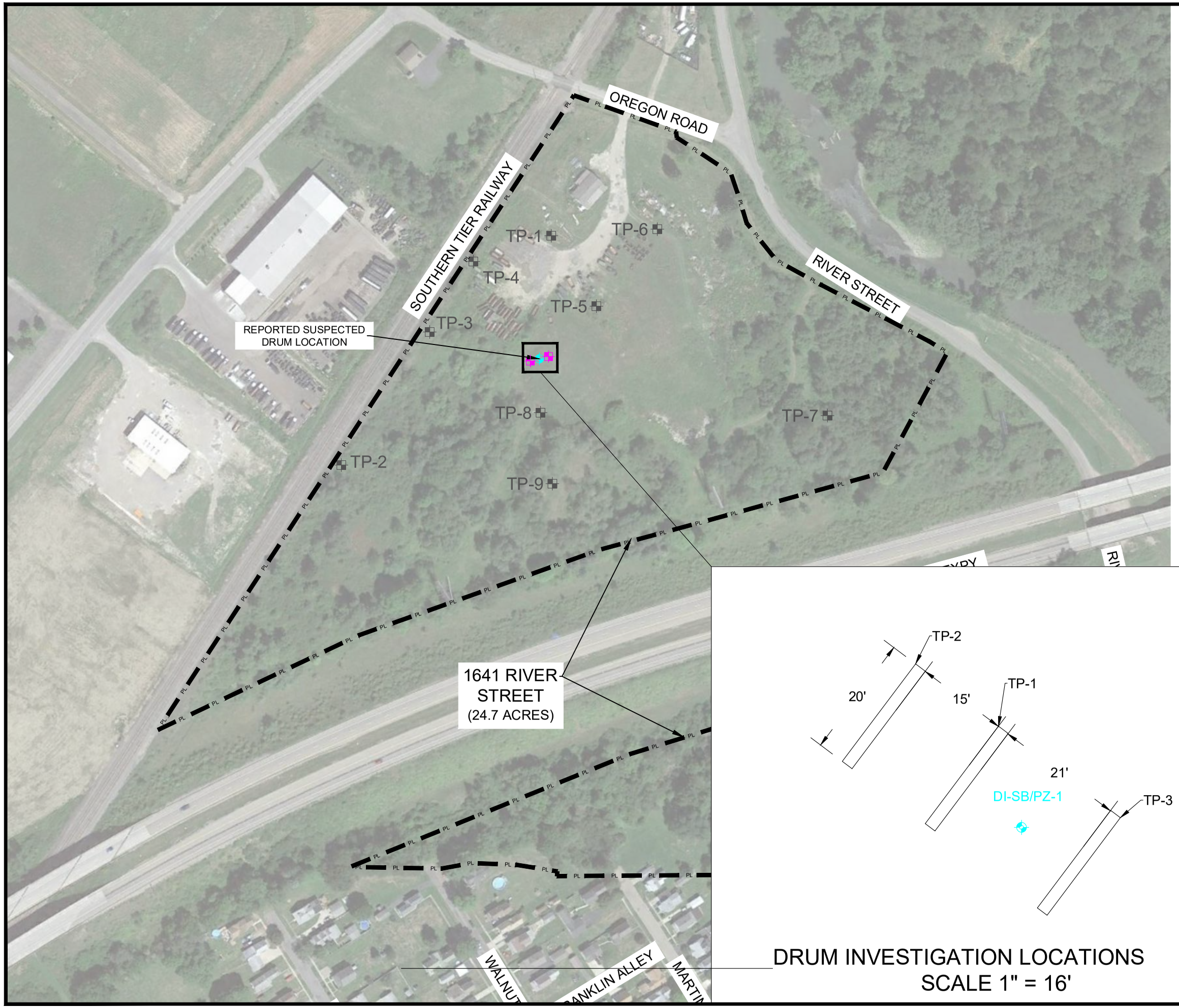


Patrick T. Martin, P.E.
Principal
PTM Engineering PLLC

ec: R. Donald Benson (1641 River Street LLC)
Michael J. Hecker, Esq. (Hodgson Russ LLP)

PTM Engineering is licensed to provide professional engineering services in the State of New York under The University of New York State Education Department Certificate Number 0021989 (4/1/24 through 3/31/27)

# FIGURE 1



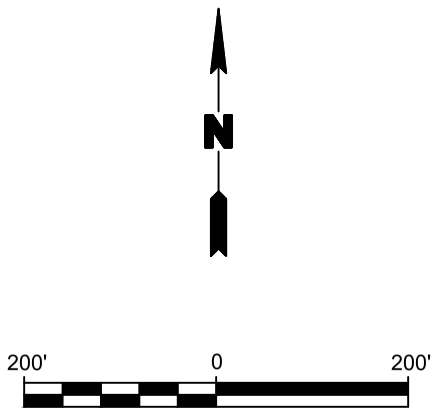

LEGEND:

| | |
|---|---|
| PL | PROPERTY BOUNDARY |
| TP-1 | DECEMBER 2019 TEST PIT LOCATION |
| TP-1 | NOV. 2025 DRUM INVEST. TEST PIT |
| DI-SB/PZ-1 | DRUM INVESTIGATION SOIL BORING/ PIEZOMETER |

NOTES:
1. BASE MAP GOOGLE EARTH 2016.




DRUM INVESTIGATION LOCATIONS
SCALE 1" = 16'




Title:
**DRUM INVESTIGATION LOCATIONS**

1641 RIVER STREET SITE
OLEAN, NEW YORK

Prepared for:
1641 RIVER STREET LLC

| | | | |
|---|---|---|---|
| | Compiled by: | Date: December 2025 | FIGURE |
| | Prepared by: | Scale: AS SHOWN | 1 |
| | Project Mgr: | Project: | |
| | File: FIGURE 1; INVESTIGATION LOCATIONS_R1.DWG | | |

# ATTACHMENT 1

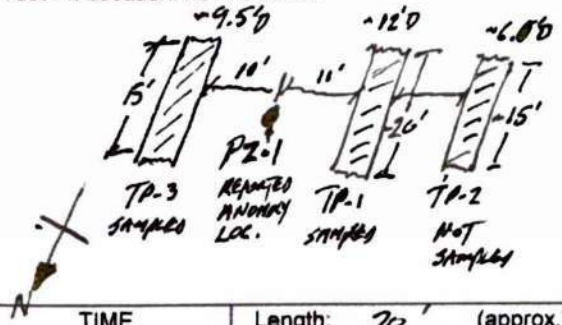
# Test Pit Logs
# Piezometer Completion Detail

PTM ENGINEERING PLLC

# TEST PIT EXCAVATION LOG

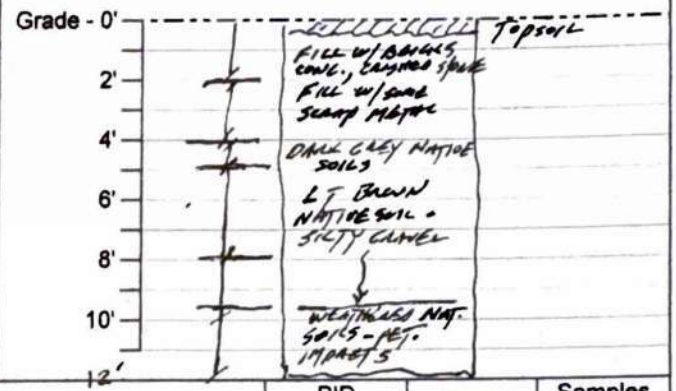
| | | | |
|---|---|---|---|
| Project: | 1641 River Street Drum Investigation | TEST PIT I.D.: | TP-1 |
| Project No.: | | Excavation Date: | 11/13/25 |
| Client: | 1641 River Street LLC | Excavation Method: | Tracked Excavator |
| Location: | 1641 River Street Site | Logged / Checked By: | P. Martin |

Test Pit Location: *NOT TO SCALE*




| TIME | | | | |
|---|---|---|---|---|
| Start: | 09:45 | Length: | 20' | (approx.) |
| End: | 10:45 | Width: | 4' | (approx.) |
| | | Depth: | 12' | (approx.) |

Test Pit Cross Section:




| Depth (fbgs) | USCS Symbol & Soil Description | PID Scan (ppm) | Photos Y / N | Samples Collected (fbgs) |
|---|---|---|---|---|
| 0'-2' | APPROX. 4-6" OF TOPSOIL, SIGNIFICANT QUANTITIES OF NON-NATIVE FILL BELOW (BRICKS, CLAY TILE PIPE, CONCRETE, ETC). NO IMPACTS OBSERVED | 0.4 | Y | — |
| 2'-4' | NON-NATIVE FILL DOWN TO 4' BGS, MIXED W/ DARK GREY NATIVE SOILS FROM ~2-4'. NO IMPACTS OBSERVED | 0.5 | Y | — |
| 4'-8' | NATIVE SOILS - LT. BROWN FROM ~5' TO 8' BGS SILTY GRAVEL. NO IMPACTS OBSERVED. | 0.8 | Y | — |
| 8'-12' | WEATHERED NATIVE SOILS IMPACTED BY PETROLEUM, PET. ODOR PRESENT. SOILS WERE LT. GRAY BUT SOME IMPACTED SILTY GRAVEL COMPOSITION AS LT BROWN STRATA ABOVE. | 22.1 | Y | 1 SOIL SAMPLE @ 12' |
| | | | | |

COMMENTS:

| | | | |
|---|---|---|---|
| GROUNDWATER ENCOUNTERED: | ☐ YES | ☒ NO | If yes, depth to GW: |
| VISUAL IMPACTS: | ☒ YES | ☐ NO | Describe: AT APPROX 9.5-12' BGS INTERVAL - GRAY WEATHERED SOILS |
| OLFACTORY OBSERVATIONS: | ☒ YES | ☐ NO | Describe: PETROLEUM ODOR |
| NON-NATIVE FILL ENCOUNTERED: | ☒ YES | ☐ NO | |
| OTHER OBSERVATIONS: | ☐ YES | ☒ NO | Describe: |
| SAMPLES COLLECTED: | SOIL GRAB FROM EXC. BUCKET | | Sample I.D.: TP-1-12' |
| | ANALYSIS: TCL VOLATILES | | Sample I.D.: |
| | | | Sample I.D.: |

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# TEST PIT EXCAVATION LOG

| | | | |
|---|---|---|---|
| Project: | 1641 River Street Drum Investigation | TEST PIT I.D.: | TP-2 |
| Project No.: | | Excavation Date: | 11/13/25 |
| Client: | 1641 River Street LLC | Excavation Method: | Tracked Excavator |
| Location: | 1641 River Street Site | Logged / Checked By: | P. Martin |

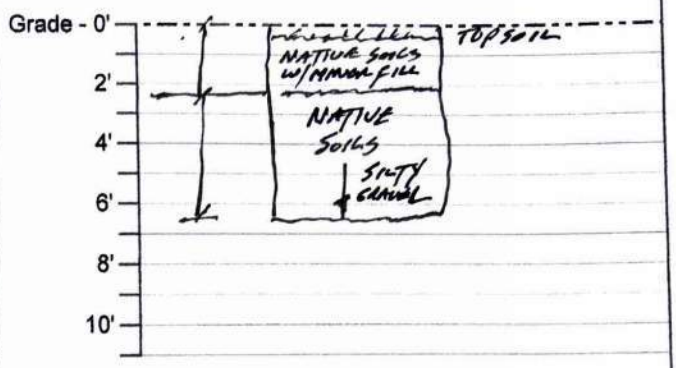
Test Pit Location: *NOT TO SCALE*

(SEE TP-1 SKETCH)

TIME
Start: 11:15
End: 12:00 PM

Length: 15' (approx.)
Width: 4' (approx.)
Depth: 6.5' (approx.)

Test Pit Cross Section:




| Depth (fbgs) | USCS Symbol & Soil Description | PID Scan (ppm) | Photos Y / N | Samples Collected (fbgs) |
|---|---|---|---|---|
| 0'-2' | TOPSOIL @ SURFACE, MINIMAL AMOUNT OF FILL MIXED W/NATIVE SOILS. NO IMPACTS OBSERVED | 0.2 | Y | — |
| 2-6.5' | NATIVE SOILS, LT. BROWN SILTY GRAVEL, NO DISTURBANCE OBSERVED. TP TERMINATED @ 6.5' | 0.3 | Y | — |
| 6.5' | TP STOPPED HERE & BACKFILLED | | | |
| | | | | |
| | | | | |

COMMENTS:

| | | | |
|---|---|---|---|
| GROUNDWATER ENCOUNTERED: | ☐ YES | ☒ NO | If yes, depth to GW: |
| VISUAL IMPACTS: | ☐ YES | ☒ NO | Describe: |
| OLFACTORY OBSERVATIONS: | ☐ YES | ☒ NO | Describe: |
| NON-NATIVE FILL ENCOUNTERED: | ☒ YES | ☐ NO | MINIMAL NEAR SURFACE |
| OTHER OBSERVATIONS: | ☐ YES | ☒ NO | Describe: |
| SAMPLES COLLECTED: | | | Sample I.D.: |
| | | | Sample I.D.: |
| | | | Sample I.D.: |

PTM ENGINEERING PLLC

# TEST PIT EXCAVATION LOG

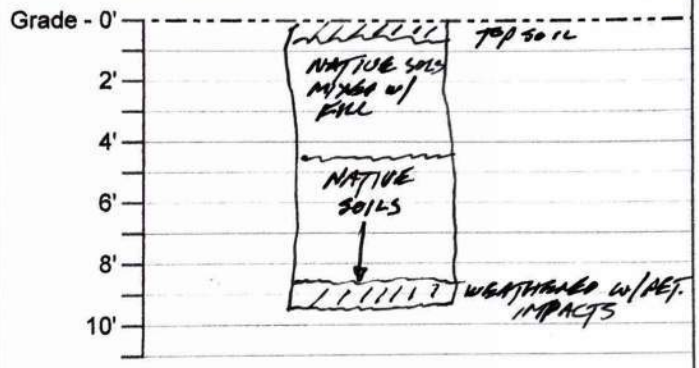
| | | | |
|---|---|---|---|
| Project: | 1641 River Street Drum Investigation | TEST PIT I.D.: | TP-3 |
| Project No.: | | Excavation Date: | 11/13/25 |
| Client: | 1641 River Street LLC | Excavation Method: | Tracked Excavator |
| Location: | 1641 River Street Site | Logged / Checked By: | P. Martin |

Test Pit Location: *NOT TO SCALE*

(SEE TP-1 SKETCH)

| TIME | | | |
|---|---|---|---|
| Start: | 12:15 PM | Length: 15 | (approx.) |
| End: | 1:00 PM | Width: 4 | (approx.) |
| | | Depth: 9.5 | (approx.) |

Test Pit Cross Section:




| Depth (fbgs) | USCS Symbol & Soil Description | PID Scan (ppm) | Photos Y / N | Samples Collected (fbgs) |
|---|---|---|---|---|
| 0'-4.5' | APPROX. 4-6" OF TOPSOIL, MIXED (NATIVE SOILS) W/ SIGNIFICANT QUANTITIES OF FILL (PRIMARILY BRICK, CONC., CRUSHED STONE). NO IMPACTS OBSERVED | [redacted] 0.2→0.4 | Y | |
| 4.5'-9.5' | NATIVE SOILS DOWN TO 9.5' BGS, WEATHERED W/ PETROLEUM IMPACTS @ 8.5-9.5'. NATIVE SOILS WERE PRIMARILY SILTY GRAVEL (LT. BROWN) | 1.0 | N | 1 SOIL SAMPLED 9.5' |
| | | | | |
| | | | | |
| | | | | |

COMMENTS:

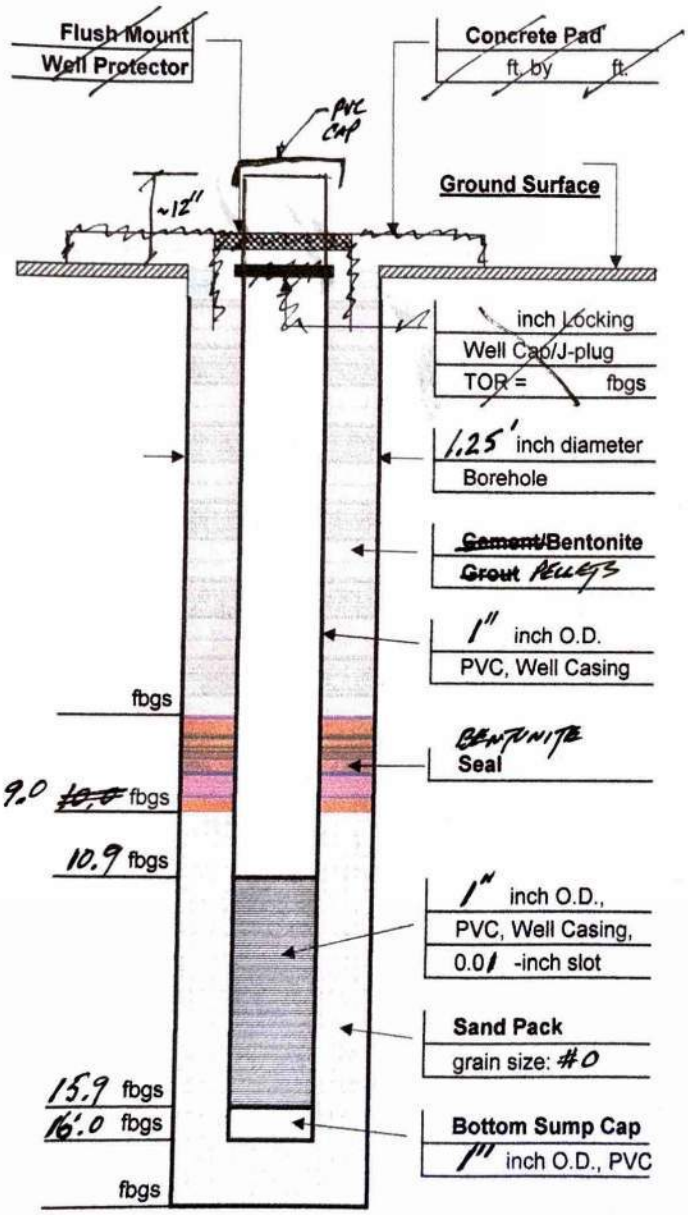
| | | | |
|---|---|---|---|
| GROUNDWATER ENCOUNTERED: | ☐ YES | ☒ NO | If yes, depth to GW: |
| VISUAL IMPACTS: | ☒ YES | ☐ NO | Describe: PET. WEATHERED @ 8.5→9.5' BGS |
| OLFACTORY OBSERVATIONS: | ☒ YES | ☐ NO | Describe: PET. ODOR @ 8.5-9.5' BGS |
| NON-NATIVE FILL ENCOUNTERED: | ☒ YES | ☐ NO | |
| OTHER OBSERVATIONS: | ☐ YES | ☒ NO | Describe: |
| SAMPLES COLLECTED: | | | Sample I.D.: TP-3-9.5' |
| | | | Sample I.D.: |
| | | | Sample I.D.: |

PTM ENGINEERING PLLC

# FLUSHMOUNT PIEZOMETER COMPLETION DETAIL

Project Name: 1641 RIVER STREET DNAPL INVESTIGATION
Client: 1641 RIVER STREET LLC
Boring Location: 1641 RIVER STREET @ PREVIOUSLY LOCATED MW-1A

WELL NUMBER: P2-1
Date Installed: 11/13/25
Project Number:




**Driller Information**

| | |
|---|---|
| Company: | TREC ENVIRONMENTAL |
| Driller: | |
| Helper: | |
| Permit Number: | |
| Drill Rig Type: | GEOPROBE |

**Well Information**

| | | |
|---|---|---|
| Land Surface Elevation: | | fmsl (approximate) |
| Drilling Method: | DIRECT PUSH | |
| Soil Sample Collection Method: | N/A | |
| Drilling Fluid: | N/A | |
| Fluid Loss During Drilling: | N/A | gallons (approximate) |

**Material of Well Construction**

| | |
|---|---|
| Casing: | PVC |
| Screen: | PVC |
| Sump: | PVC |
| Sand Pack: | |
| Annular Seal: | |

**Well Development**

| | | |
|---|---|---|
| Well Purpose: | MONITORING | |
| Technique(s): | BAILER | |
| Date Completed: | 11/13/25 | |
| ~~Driller~~ Personnel: | PTM | |
| Total Volume Purge: | ~0.16 | gallons |
| Static Water Level (SWL): | 15.6' | fbTOR |
| Pump Depth: | N/A | |
| Purge Duration: | N/A | minutes |
| Yield: | | gpm |
| Specific Capacity: | | gpm/ft |

Comments:

PREAPRED BY: DATE:

# ATTACHMENT 2

# Photo Log

Attachment 2
1641 River Street Drum Investigation- Photo Log



TP-1: 0’-2’ BGS



TP-1: 0’-4’ BGS



TP-1: 0’-8’ BGS



TP-1: 0’-12’ BGS (at final depth)



TP-2: 0’-2’ BGS



TP-2: 0’-4’ BGS

Attachment 2
1641 River Street Drum Investigation- Photo Log


TP-2: 0'-6.5' BGS (at final depth)


TP-3: 0'-2' BGS (looking southwest)


TP-3: 0' -4' BGS


PZ-1 Geoprobe Installation (located between TP-1 and TP-3)


PZ-1 Geoprobe Installation


Geoprobe cores:
Upper 0'-4' recovery
Lower: 4'-8' Recovery

Attachment 2
1641 River Street Drum Investigation- Photo Log

| | |
|---|---|
|  <br>Geoprobe cores:<br>Left 8'-12' recovery<br>Right: 12'-16' Recovery | |

# ATTACHMENT 3

# Eurofins Laboratory Analytical Report

eurofins | Environment Testing



# ANALYTICAL REPORT

## PREPARED FOR

Attn: Mr. Rick Dubisz
Roux Environmental Engineering and Geology DPC
2558 Hamburg Turnpike
Suite 300
Lackawanna, New York 14218

Generated 11/20/2025 12:58:16 PM

## JOB DESCRIPTION

1641 River St.

## JOB NUMBER

480-234539-1

Eurofins Buffalo
10 Hazelwood Drive
Amherst NY 14228-2298

See page two for job notes and contact information.



myEOL

## Job Notes

This report may not be reproduced except in full, and with written approval from the laboratory. The results relate only to the samples tested. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

The test results in this report relate only to the samples as received by the laboratory and will meet all requirements of the methodology, with any exceptions noted. This report shall not be reproduced except in full, without the express written approval of the laboratory. All questions should be directed to the Eurofins Environment Testing Northeast, LLC Project Manager.

## Authorization



Generated
11/20/2025 12:58:16 PM

Authorized for release by
John Schove, Project Manager II
John.Schove@et.eurofinsus.com
(716)504-9838

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# Definitions/Glossary

Client: Roux Environmental Engineering and Geology DPC
Job ID: 480-234539-1
Project/Site: 1641 River St.

## Qualifiers

### GC/MS VOA

| Qualifier | Qualifier Description |
|---|---|
| B | Compound was found in the blank and sample. |
| J | Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value. |
| U | Indicates the analyte was analyzed for but not detected. |
| vs | Reported analyte concentrations are below 200 ug/kg and may be biased low due to the sample not being collected according to 5035A- L low-level specifications. |

## Glossary

| Abbreviation | These commonly used abbreviations may or may not be present in this report. |
|---|---|
| ☼ | Listed under the "D" column to designate that the result is reported on a dry weight basis |
| %R | Percent Recovery |
| CFL | Contains Free Liquid |
| CFU | Colony Forming Unit |
| CNF | Contains No Free Liquid |
| DER | Duplicate Error Ratio (normalized absolute difference) |
| Dil Fac | Dilution Factor |
| DL | Detection Limit (DoD/DOE) |
| DL, RA, RE, IN | Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample |
| DLC | Decision Level Concentration (Radiochemistry) |
| EDL | Estimated Detection Limit (Dioxin) |
| LOD | Limit of Detection (DoD/DOE) |
| LOQ | Limit of Quantitation (DoD/DOE) |
| MCL | EPA recommended "Maximum Contaminant Level" |
| MDA | Minimum Detectable Activity (Radiochemistry) |
| MDC | Minimum Detectable Concentration (Radiochemistry) |
| MDL | Method Detection Limit |
| ML | Minimum Level (Dioxin) |
| MPN | Most Probable Number |
| MQL | Method Quantitation Limit |
| NC | Not Calculated |
| ND | Not Detected at the reporting limit (or MDL or EDL if shown) |
| NEG | Negative / Absent |
| POS | Positive / Present |
| PQL | Practical Quantitation Limit |
| PRES | Presumptive |
| QC | Quality Control |
| RER | Relative Error Ratio (Radiochemistry) |
| RL | Reporting Limit or Requested Limit (Radiochemistry) |
| RPD | Relative Percent Difference, a measure of the relative difference between two points |
| TEF | Toxicity Equivalent Factor (Dioxin) |
| TEQ | Toxicity Equivalent Quotient (Dioxin) |
| TNTC | Too Numerous To Count |

## Job ID: 480-234539-1 Eurofins Buffalo

**Job Narrative**
**480-234539-1**

The analytical test results presented in this report meet all requirements of the associated regulatory program listed on the Accreditation/Certification Summary Page, unless otherwise noted. Data qualifiers and/or narrative comments are included to explain any exceptions, if applicable. Regulated compliance samples (e.g. SDWA, NPDES) must comply with associated agency requirements/permits.

- Matrix-specific batch QC (e.g., MS, MSD, SD) may not be reported when insufficient sample volume is available or when site-specific QC samples are not submitted. In such cases, a Laboratory Control Sample Duplicate (LCSD) may be analyzed to provide precision data for the batch.
- For samples analyzed using surrogate and/or isotope dilution analytes, any recoveries falling outside of established acceptance criteria are re-prepared and/or re-analyzed to confirm results, unless the deviation is due to sample dilution or otherwise explained in the case narrative.

**Receipt**
The samples were received on 11/14/2025 1:00 PM. Unless otherwise noted below, the samples arrived in good condition, and, where required, properly preserved and on ice. The temperature of the cooler at receipt time was 13.6°C.

**GC/MS VOA**
Method 8260C: The following sample was diluted due to the nature of the sample matrix: PZ-1 (480-234539-3). Elevated reporting limits (RLs) are provided.

Method 8260C: The continuing calibration verification (CCV) associated with batch 762949 recovered above the upper control limit for 2-Hexanone. The samples associated with this CCV were non-detects for the affected analytes; therefore, the data have been reported. The associated sample is:PZ-1 (480-234539-3).

Method 8260C: The continuing calibration verification (CCV) associated with batch 762899 recovered above the upper control limit for 2-Hexanone. The sample associated with this CCV was non-detects for the affected analytes; therefore, the data have been reported. The associated sample is:TP-1-12' (480-234539-1).

Method 8260C: The following sample was analyzed using medium level soil analysis and diluted due to the nature of the sample matrix: TP-1-12' (480-234539-1). Elevated reporting limits (RLs) are provided.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

**General Chemistry**
No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

# Detection Summary

Client: Roux Environmental Engineering and Geology DPC
Job ID: 480-234539-1
Project/Site: 1641 River St.

## Client Sample ID: TP-1-12'
## Lab Sample ID: 480-234539-1

No Detections.

## Client Sample ID: TP-3-9.5'
## Lab Sample ID: 480-234539-2

| Analyte | Result | Qualifier | RL | MDL | Unit | Dil Fac | D | Method | Prep Type |
|---|---|---|---|---|---|---|---|---|---|
| Chloroform | 0.84 | J B vs | 5.5 | 0.34 | ug/Kg | 1 | ☼ | EPA 8260C | Total/NA |
| Methylene Chloride | 5.3 | J vs | 5.5 | 2.5 | ug/Kg | 1 | ☼ | EPA 8260C | Total/NA |

## Client Sample ID: PZ-1
## Lab Sample ID: 480-234539-3

No Detections.

This Detection Summary does not include radiochemical test results.

Client: Roux Environmental Engineering and Geology DPC
Job ID: 480-234539-1
Project/Site: 1641 River St.

**Client Sample ID: TP-1-12'**
**Lab Sample ID: 480-234539-1**
**Date Collected: 11/13/25 11:00**
**Matrix: Solid**
**Date Received: 11/14/25 13:00**
**Percent Solids: 84.6**

**Method: SW846 EPA 8260C - Volatile Organic Compounds by GC/MS**

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| 1,1,1-Trichloroethane | 2500 | U | 2500 | 700 | ug/Kg | ☼ | 11/19/25 09:28 | 11/19/25 15:49 | 20 |
| 1,1,2,2-Tetrachloroethane | 2500 | U | 2500 | 410 | ug/Kg | ☼ | 11/19/25 09:28 | 11/19/25 15:49 | 20 |
| 1,1,2-Trichloro-1,2,2-trifluoroethane | 2500 | U | 2500 | 1300 | ug/Kg | ☼ | 11/19/25 09:28 | 11/19/25 15:49 | 20 |
| 1,1,2-Trichloroethane | 2500 | U | 2500 | 530 | ug/Kg | ☼ | 11/19/25 09:28 | 11/19/25 15:49 | 20 |
| 1,1-Dichloroethane | 2500 | U | 2500 | 780 | ug/Kg | ☼ | 11/19/25 09:28 | 11/19/25 15:49 | 20 |
| 1,1-Dichloroethene | 2500 | U | 2500 | 880 | ug/Kg | ☼ | 11/19/25 09:28 | 11/19/25 15:49 | 20 |
| 1,2,4-Trichlorobenzene | 2500 | U | 2500 | 960 | ug/Kg | ☼ | 11/19/25 09:28 | 11/19/25 15:49 | 20 |
| 1,2-Dibromo-3-Chloropropane | 2500 | U | 2500 | 1300 | ug/Kg | ☼ | 11/19/25 09:28 | 11/19/25 15:49 | 20 |
| 1,2-Dibromoethane | 2500 | U | 2500 | 440 | ug/Kg | ☼ | 11/19/25 09:28 | 11/19/25 15:49 | 20 |
| 1,2-Dichlorobenzene | 2500 | U | 2500 | 640 | ug/Kg | ☼ | 11/19/25 09:28 | 11/19/25 15:49 | 20 |
| 1,2-Dichloroethane | 2500 | U | 2500 | 1000 | ug/Kg | ☼ | 11/19/25 09:28 | 11/19/25 15:49 | 20 |
| 1,2-Dichloropropane | 2500 | U | 2500 | 410 | ug/Kg | ☼ | 11/19/25 09:28 | 11/19/25 15:49 | 20 |
| 1,3-Dichlorobenzene | 2500 | U | 2500 | 680 | ug/Kg | ☼ | 11/19/25 09:28 | 11/19/25 15:49 | 20 |
| 1,4-Dichlorobenzene | 2500 | U | 2500 | 350 | ug/Kg | ☼ | 11/19/25 09:28 | 11/19/25 15:49 | 20 |
| 2-Butanone (MEK) | 13000 | U | 13000 | 7500 | ug/Kg | ☼ | 11/19/25 09:28 | 11/19/25 15:49 | 20 |
| 2-Hexanone | 13000 | U | 13000 | 5200 | ug/Kg | ☼ | 11/19/25 09:28 | 11/19/25 15:49 | 20 |
| 4-Methyl-2-pentanone (MIBK) | 13000 | U | 13000 | 810 | ug/Kg | ☼ | 11/19/25 09:28 | 11/19/25 15:49 | 20 |
| Acetone | 13000 | U | 13000 | 10000 | ug/Kg | ☼ | 11/19/25 09:28 | 11/19/25 15:49 | 20 |
| Benzene | 2500 | U | 2500 | 480 | ug/Kg | ☼ | 11/19/25 09:28 | 11/19/25 15:49 | 20 |
| Bromodichloromethane | 2500 | U | 2500 | 510 | ug/Kg | ☼ | 11/19/25 09:28 | 11/19/25 15:49 | 20 |
| Bromoform | 2500 | U | 2500 | 1300 | ug/Kg | ☼ | 11/19/25 09:28 | 11/19/25 15:49 | 20 |
| Bromomethane | 2500 | U | 2500 | 560 | ug/Kg | ☼ | 11/19/25 09:28 | 11/19/25 15:49 | 20 |
| Carbon disulfide | 2500 | U | 2500 | 1200 | ug/Kg | ☼ | 11/19/25 09:28 | 11/19/25 15:49 | 20 |
| Carbon tetrachloride | 2500 | U | 2500 | 640 | ug/Kg | ☼ | 11/19/25 09:28 | 11/19/25 15:49 | 20 |
| Chlorobenzene | 2500 | U | 2500 | 330 | ug/Kg | ☼ | 11/19/25 09:28 | 11/19/25 15:49 | 20 |
| Chloroethane | 2500 | U | 2500 | 530 | ug/Kg | ☼ | 11/19/25 09:28 | 11/19/25 15:49 | 20 |
| Chloroform | 2500 | U | 2500 | 1700 | ug/Kg | ☼ | 11/19/25 09:28 | 11/19/25 15:49 | 20 |
| Chloromethane | 2500 | U | 2500 | 600 | ug/Kg | ☼ | 11/19/25 09:28 | 11/19/25 15:49 | 20 |
| cis-1,2-Dichloroethene | 2500 | U | 2500 | 700 | ug/Kg | ☼ | 11/19/25 09:28 | 11/19/25 15:49 | 20 |
| cis-1,3-Dichloropropene | 2500 | U | 2500 | 600 | ug/Kg | ☼ | 11/19/25 09:28 | 11/19/25 15:49 | 20 |
| Cyclohexane | 2500 | U | 2500 | 560 | ug/Kg | ☼ | 11/19/25 09:28 | 11/19/25 15:49 | 20 |
| Dibromochloromethane | 2500 | U | 2500 | 1200 | ug/Kg | ☼ | 11/19/25 09:28 | 11/19/25 15:49 | 20 |
| Dichlorodifluoromethane | 2500 | U | 2500 | 1100 | ug/Kg | ☼ | 11/19/25 09:28 | 11/19/25 15:49 | 20 |
| Ethylbenzene | 2500 | U | 2500 | 740 | ug/Kg | ☼ | 11/19/25 09:28 | 11/19/25 15:49 | 20 |
| Isopropylbenzene | 2500 | U | 2500 | 380 | ug/Kg | ☼ | 11/19/25 09:28 | 11/19/25 15:49 | 20 |
| Methyl acetate | 13000 | U | 13000 | 1200 | ug/Kg | ☼ | 11/19/25 09:28 | 11/19/25 15:49 | 20 |
| Methyl tert-butyl ether | 2500 | U | 2500 | 960 | ug/Kg | ☼ | 11/19/25 09:28 | 11/19/25 15:49 | 20 |
| Methylcyclohexane | 2500 | U | 2500 | 1200 | ug/Kg | ☼ | 11/19/25 09:28 | 11/19/25 15:49 | 20 |
| Methylene Chloride | 2500 | U | 2500 | 500 | ug/Kg | ☼ | 11/19/25 09:28 | 11/19/25 15:49 | 20 |
| Styrene | 2500 | U | 2500 | 610 | ug/Kg | ☼ | 11/19/25 09:28 | 11/19/25 15:49 | 20 |
| Tetrachloroethene | 2500 | U | 2500 | 340 | ug/Kg | ☼ | 11/19/25 09:28 | 11/19/25 15:49 | 20 |
| Toluene | 2500 | U | 2500 | 680 | ug/Kg | ☼ | 11/19/25 09:28 | 11/19/25 15:49 | 20 |
| trans-1,2-Dichloroethene | 2500 | U | 2500 | 600 | ug/Kg | ☼ | 11/19/25 09:28 | 11/19/25 15:49 | 20 |
| trans-1,3-Dichloropropene | 2500 | U | 2500 | 250 | ug/Kg | ☼ | 11/19/25 09:28 | 11/19/25 15:49 | 20 |
| Trichloroethene | 2500 | U | 2500 | 700 | ug/Kg | ☼ | 11/19/25 09:28 | 11/19/25 15:49 | 20 |
| Trichlorofluoromethane | 2500 | U | 2500 | 1200 | ug/Kg | ☼ | 11/19/25 09:28 | 11/19/25 15:49 | 20 |
| Vinyl chloride | 2500 | U | 2500 | 850 | ug/Kg | ☼ | 11/19/25 09:28 | 11/19/25 15:49 | 20 |
| Xylenes, Total | 5100 | U | 5100 | 1400 | ug/Kg | ☼ | 11/19/25 09:28 | 11/19/25 15:49 | 20 |

Client: Roux Environmental Engineering and Geology DPC
Job ID: 480-234539-1
Project/Site: 1641 River St.

**Client Sample ID: TP-1-12'**
**Lab Sample ID: 480-234539-1**
**Date Collected: 11/13/25 11:00**
**Matrix: Solid**
**Date Received: 11/14/25 13:00**
**Percent Solids: 84.6**

| Surrogate | %Recovery | Qualifier | Limits | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|
| 1,2-Dichloroethane-d4 (Surr) | 100 | | 53 - 146 | 11/19/25 09:28 | 11/19/25 15:49 | 20 |
| 4-Bromofluorobenzene (Surr) | 95 | | 49 - 148 | 11/19/25 09:28 | 11/19/25 15:49 | 20 |
| Dibromofluoromethane (Surr) | 93 | | 60 - 140 | 11/19/25 09:28 | 11/19/25 15:49 | 20 |
| Toluene-d8 (Surr) | 102 | | 50 - 149 | 11/19/25 09:28 | 11/19/25 15:49 | 20 |

Client: Roux Environmental Engineering and Geology DPC
Job ID: 480-234539-1
Project/Site: 1641 River St.

**Client Sample ID: TP-3-9.5'**
**Lab Sample ID: 480-234539-2**
**Date Collected: 11/13/25 12:40**
**Matrix: Solid**
**Date Received: 11/14/25 13:00**
**Percent Solids: 88.3**

**Method: SW846 EPA 8260C - Volatile Organic Compounds by GC/MS**

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| 1,1,1-Trichloroethane | 5.5 | U vs | 5.5 | 0.40 | ug/Kg | ☼ | 11/18/25 18:32 | 11/18/25 23:52 | 1 |
| 1,1,2,2-Tetrachloroethane | 5.5 | U vs | 5.5 | 0.89 | ug/Kg | ☼ | 11/18/25 18:32 | 11/18/25 23:52 | 1 |
| 1,1,2-Trichloro-1,2,2-trifluoroethane | 5.5 | U vs | 5.5 | 1.3 | ug/Kg | ☼ | 11/18/25 18:32 | 11/18/25 23:52 | 1 |
| 1,1,2-Trichloroethane | 5.5 | U vs | 5.5 | 0.72 | ug/Kg | ☼ | 11/18/25 18:32 | 11/18/25 23:52 | 1 |
| 1,1-Dichloroethane | 5.5 | U vs | 5.5 | 0.67 | ug/Kg | ☼ | 11/18/25 18:32 | 11/18/25 23:52 | 1 |
| 1,1-Dichloroethene | 5.5 | U vs | 5.5 | 0.68 | ug/Kg | ☼ | 11/18/25 18:32 | 11/18/25 23:52 | 1 |
| 1,2,4-Trichlorobenzene | 5.5 | U vs | 5.5 | 0.34 | ug/Kg | ☼ | 11/18/25 18:32 | 11/18/25 23:52 | 1 |
| 1,2-Dibromo-3-Chloropropane | 5.5 | U vs | 5.5 | 2.8 | ug/Kg | ☼ | 11/18/25 18:32 | 11/18/25 23:52 | 1 |
| 1,2-Dibromoethane | 5.5 | U vs | 5.5 | 0.71 | ug/Kg | ☼ | 11/18/25 18:32 | 11/18/25 23:52 | 1 |
| 1,2-Dichlorobenzene | 5.5 | U vs | 5.5 | 0.43 | ug/Kg | ☼ | 11/18/25 18:32 | 11/18/25 23:52 | 1 |
| 1,2-Dichloroethane | 5.5 | U vs | 5.5 | 0.28 | ug/Kg | ☼ | 11/18/25 18:32 | 11/18/25 23:52 | 1 |
| 1,2-Dichloropropane | 5.5 | U vs | 5.5 | 2.8 | ug/Kg | ☼ | 11/18/25 18:32 | 11/18/25 23:52 | 1 |
| 1,3-Dichlorobenzene | 5.5 | U vs | 5.5 | 0.28 | ug/Kg | ☼ | 11/18/25 18:32 | 11/18/25 23:52 | 1 |
| 1,4-Dichlorobenzene | 5.5 | U vs | 5.5 | 0.77 | ug/Kg | ☼ | 11/18/25 18:32 | 11/18/25 23:52 | 1 |
| 2-Butanone (MEK) | 28 | U vs | 28 | 2.0 | ug/Kg | ☼ | 11/18/25 18:32 | 11/18/25 23:52 | 1 |
| 2-Hexanone | 28 | U vs | 28 | 2.8 | ug/Kg | ☼ | 11/18/25 18:32 | 11/18/25 23:52 | 1 |
| 4-Methyl-2-pentanone (MIBK) | 28 | U vs | 28 | 1.8 | ug/Kg | ☼ | 11/18/25 18:32 | 11/18/25 23:52 | 1 |
| Acetone | 28 | U vs | 28 | 4.6 | ug/Kg | ☼ | 11/18/25 18:32 | 11/18/25 23:52 | 1 |
| Benzene | 5.5 | U vs | 5.5 | 0.27 | ug/Kg | ☼ | 11/18/25 18:32 | 11/18/25 23:52 | 1 |
| Bromodichloromethane | 5.5 | U vs | 5.5 | 0.74 | ug/Kg | ☼ | 11/18/25 18:32 | 11/18/25 23:52 | 1 |
| Bromoform | 5.5 | U vs | 5.5 | 2.8 | ug/Kg | ☼ | 11/18/25 18:32 | 11/18/25 23:52 | 1 |
| Bromomethane | 5.5 | U vs | 5.5 | 0.50 | ug/Kg | ☼ | 11/18/25 18:32 | 11/18/25 23:52 | 1 |
| Carbon disulfide | 5.5 | U vs | 5.5 | 2.8 | ug/Kg | ☼ | 11/18/25 18:32 | 11/18/25 23:52 | 1 |
| Carbon tetrachloride | 5.5 | U vs | 5.5 | 0.53 | ug/Kg | ☼ | 11/18/25 18:32 | 11/18/25 23:52 | 1 |
| Chlorobenzene | 5.5 | U vs | 5.5 | 0.73 | ug/Kg | ☼ | 11/18/25 18:32 | 11/18/25 23:52 | 1 |
| Chloroethane | 5.5 | U vs | 5.5 | 1.2 | ug/Kg | ☼ | 11/18/25 18:32 | 11/18/25 23:52 | 1 |
| **Chloroform** | **0.84** | **J B vs** | 5.5 | 0.34 | ug/Kg | ☼ | 11/18/25 18:32 | 11/18/25 23:52 | 1 |
| Chloromethane | 5.5 | U vs | 5.5 | 0.33 | ug/Kg | ☼ | 11/18/25 18:32 | 11/18/25 23:52 | 1 |
| cis-1,2-Dichloroethene | 5.5 | U vs | 5.5 | 0.71 | ug/Kg | ☼ | 11/18/25 18:32 | 11/18/25 23:52 | 1 |
| cis-1,3-Dichloropropene | 5.5 | U vs | 5.5 | 0.79 | ug/Kg | ☼ | 11/18/25 18:32 | 11/18/25 23:52 | 1 |
| Cyclohexane | 5.5 | U vs | 5.5 | 0.77 | ug/Kg | ☼ | 11/18/25 18:32 | 11/18/25 23:52 | 1 |
| Dibromochloromethane | 5.5 | U vs | 5.5 | 0.71 | ug/Kg | ☼ | 11/18/25 18:32 | 11/18/25 23:52 | 1 |
| Dichlorodifluoromethane | 5.5 | U vs | 5.5 | 0.46 | ug/Kg | ☼ | 11/18/25 18:32 | 11/18/25 23:52 | 1 |
| Ethylbenzene | 5.5 | U vs | 5.5 | 0.38 | ug/Kg | ☼ | 11/18/25 18:32 | 11/18/25 23:52 | 1 |
| Isopropylbenzene | 5.5 | U vs | 5.5 | 0.83 | ug/Kg | ☼ | 11/18/25 18:32 | 11/18/25 23:52 | 1 |
| Methyl acetate | 28 | U vs | 28 | 3.3 | ug/Kg | ☼ | 11/18/25 18:32 | 11/18/25 23:52 | 1 |
| Methyl tert-butyl ether | 5.5 | U vs | 5.5 | 0.54 | ug/Kg | ☼ | 11/18/25 18:32 | 11/18/25 23:52 | 1 |
| Methylcyclohexane | 5.5 | U vs | 5.5 | 0.84 | ug/Kg | ☼ | 11/18/25 18:32 | 11/18/25 23:52 | 1 |
| **Methylene Chloride** | **5.3** | **J vs** | 5.5 | 2.5 | ug/Kg | ☼ | 11/18/25 18:32 | 11/18/25 23:52 | 1 |
| Styrene | 5.5 | U vs | 5.5 | 0.28 | ug/Kg | ☼ | 11/18/25 18:32 | 11/18/25 23:52 | 1 |
| Tetrachloroethene | 5.5 | U vs | 5.5 | 0.74 | ug/Kg | ☼ | 11/18/25 18:32 | 11/18/25 23:52 | 1 |
| Toluene | 5.5 | U vs | 5.5 | 0.42 | ug/Kg | ☼ | 11/18/25 18:32 | 11/18/25 23:52 | 1 |
| trans-1,2-Dichloroethene | 5.5 | U vs | 5.5 | 0.57 | ug/Kg | ☼ | 11/18/25 18:32 | 11/18/25 23:52 | 1 |
| trans-1,3-Dichloropropene | 5.5 | U vs | 5.5 | 2.4 | ug/Kg | ☼ | 11/18/25 18:32 | 11/18/25 23:52 | 1 |
| Trichloroethene | 5.5 | U vs | 5.5 | 1.2 | ug/Kg | ☼ | 11/18/25 18:32 | 11/18/25 23:52 | 1 |
| Trichlorofluoromethane | 5.5 | U vs | 5.5 | 0.52 | ug/Kg | ☼ | 11/18/25 18:32 | 11/18/25 23:52 | 1 |
| Vinyl chloride | 5.5 | U vs | 5.5 | 0.67 | ug/Kg | ☼ | 11/18/25 18:32 | 11/18/25 23:52 | 1 |
| Xylenes, Total | 11 | U vs | 11 | 0.93 | ug/Kg | ☼ | 11/18/25 18:32 | 11/18/25 23:52 | 1 |

Client: Roux Environmental Engineering and Geology DPC
Job ID: 480-234539-1
Project/Site: 1641 River St.

**Client Sample ID: TP-3-9.5'**
**Lab Sample ID: 480-234539-2**
**Date Collected: 11/13/25 12:40**
**Matrix: Solid**
**Date Received: 11/14/25 13:00**
**Percent Solids: 88.3**

| Surrogate | %Recovery | Qualifier | Limits | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|
| 1,2-Dichloroethane-d4 (Surr) | 84 | | 64 - 126 | 11/18/25 18:32 | 11/18/25 23:52 | 1 |
| 4-Bromofluorobenzene (Surr) | 98 | | 72 - 126 | 11/18/25 18:32 | 11/18/25 23:52 | 1 |
| Dibromofluoromethane (Surr) | 88 | | 60 - 140 | 11/18/25 18:32 | 11/18/25 23:52 | 1 |
| Toluene-d8 (Surr) | 73 | | 71 - 125 | 11/18/25 18:32 | 11/18/25 23:52 | 1 |

Client: Roux Environmental Engineering and Geology DPC
Job ID: 480-234539-1
Project/Site: 1641 River St.

**Client Sample ID: PZ-1**
**Lab Sample ID: 480-234539-3**
**Date Collected: 11/13/25 14:45**
**Matrix: Water**
**Date Received: 11/14/25 13:00**

**Method: SW846 EPA 8260C - Volatile Organic Compounds by GC/MS**

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| 1,1,1-Trichloroethane | 100 | U | 100 | 82 | ug/L | | | 11/20/25 02:12 | 100 |
| 1,1,2,2-Tetrachloroethane | 100 | U | 100 | 21 | ug/L | | | 11/20/25 02:12 | 100 |
| 1,1,2-Trichloro-1,2,2-trifluoroethane | 100 | U | 100 | 31 | ug/L | | | 11/20/25 02:12 | 100 |
| 1,1,2-Trichloroethane | 100 | U | 100 | 23 | ug/L | | | 11/20/25 02:12 | 100 |
| 1,1-Dichloroethane | 100 | U | 100 | 38 | ug/L | | | 11/20/25 02:12 | 100 |
| 1,1-Dichloroethene | 100 | U | 100 | 29 | ug/L | | | 11/20/25 02:12 | 100 |
| 1,2,4-Trichlorobenzene | 100 | U | 100 | 41 | ug/L | | | 11/20/25 02:12 | 100 |
| 1,2-Dibromo-3-Chloropropane | 100 | U | 100 | 39 | ug/L | | | 11/20/25 02:12 | 100 |
| 1,2-Dibromoethane | 100 | U | 100 | 73 | ug/L | | | 11/20/25 02:12 | 100 |
| 1,2-Dichlorobenzene | 100 | U | 100 | 79 | ug/L | | | 11/20/25 02:12 | 100 |
| 1,2-Dichloroethane | 100 | U | 100 | 21 | ug/L | | | 11/20/25 02:12 | 100 |
| 1,2-Dichloropropane | 100 | U | 100 | 72 | ug/L | | | 11/20/25 02:12 | 100 |
| 1,3-Dichlorobenzene | 100 | U | 100 | 78 | ug/L | | | 11/20/25 02:12 | 100 |
| 1,4-Dichlorobenzene | 100 | U | 100 | 84 | ug/L | | | 11/20/25 02:12 | 100 |
| 2-Butanone (MEK) | 1000 | U | 1000 | 130 | ug/L | | | 11/20/25 02:12 | 100 |
| 2-Hexanone | 500 | U | 500 | 120 | ug/L | | | 11/20/25 02:12 | 100 |
| 4-Methyl-2-pentanone (MIBK) | 500 | U | 500 | 210 | ug/L | | | 11/20/25 02:12 | 100 |
| Acetone | 1000 | U | 1000 | 300 | ug/L | | | 11/20/25 02:12 | 100 |
| Benzene | 100 | U | 100 | 41 | ug/L | | | 11/20/25 02:12 | 100 |
| Bromodichloromethane | 100 | U | 100 | 39 | ug/L | | | 11/20/25 02:12 | 100 |
| Bromoform | 100 | U | 100 | 26 | ug/L | | | 11/20/25 02:12 | 100 |
| Bromomethane | 100 | U | 100 | 69 | ug/L | | | 11/20/25 02:12 | 100 |
| Carbon disulfide | 100 | U | 100 | 19 | ug/L | | | 11/20/25 02:12 | 100 |
| Carbon tetrachloride | 100 | U | 100 | 27 | ug/L | | | 11/20/25 02:12 | 100 |
| Chlorobenzene | 100 | U | 100 | 75 | ug/L | | | 11/20/25 02:12 | 100 |
| Chloroethane | 100 | U | 100 | 32 | ug/L | | | 11/20/25 02:12 | 100 |
| Chloroform | 100 | U | 100 | 34 | ug/L | | | 11/20/25 02:12 | 100 |
| Chloromethane | 100 | U | 100 | 35 | ug/L | | | 11/20/25 02:12 | 100 |
| cis-1,2-Dichloroethene | 100 | U | 100 | 81 | ug/L | | | 11/20/25 02:12 | 100 |
| cis-1,3-Dichloropropene | 100 | U | 100 | 36 | ug/L | | | 11/20/25 02:12 | 100 |
| Cyclohexane | 100 | U | 100 | 18 | ug/L | | | 11/20/25 02:12 | 100 |
| Dibromochloromethane | 100 | U | 100 | 32 | ug/L | | | 11/20/25 02:12 | 100 |
| Dichlorodifluoromethane | 100 | U | 100 | 68 | ug/L | | | 11/20/25 02:12 | 100 |
| Ethylbenzene | 100 | U | 100 | 74 | ug/L | | | 11/20/25 02:12 | 100 |
| Isopropylbenzene | 100 | U | 100 | 79 | ug/L | | | 11/20/25 02:12 | 100 |
| Methyl acetate | 250 | U | 250 | 130 | ug/L | | | 11/20/25 02:12 | 100 |
| Methyl tert-butyl ether | 100 | U | 100 | 16 | ug/L | | | 11/20/25 02:12 | 100 |
| Methylcyclohexane | 100 | U | 100 | 16 | ug/L | | | 11/20/25 02:12 | 100 |
| Methylene Chloride | 100 | U | 100 | 44 | ug/L | | | 11/20/25 02:12 | 100 |
| Styrene | 100 | U | 100 | 73 | ug/L | | | 11/20/25 02:12 | 100 |
| Tetrachloroethene | 100 | U | 100 | 36 | ug/L | | | 11/20/25 02:12 | 100 |
| Toluene | 100 | U | 100 | 51 | ug/L | | | 11/20/25 02:12 | 100 |
| trans-1,2-Dichloroethene | 100 | U | 100 | 90 | ug/L | | | 11/20/25 02:12 | 100 |
| trans-1,3-Dichloropropene | 100 | U | 100 | 37 | ug/L | | | 11/20/25 02:12 | 100 |
| Trichloroethene | 100 | U | 100 | 46 | ug/L | | | 11/20/25 02:12 | 100 |
| Trichlorofluoromethane | 100 | U | 100 | 88 | ug/L | | | 11/20/25 02:12 | 100 |
| Vinyl chloride | 100 | U | 100 | 90 | ug/L | | | 11/20/25 02:12 | 100 |
| Xylenes, Total | 200 | U | 200 | 66 | ug/L | | | 11/20/25 02:12 | 100 |

Client: Roux Environmental Engineering and Geology DPC
Job ID: 480-234539-1
Project/Site: 1641 River St.

**Client Sample ID: PZ-1**
**Lab Sample ID: 480-234539-3**
**Date Collected: 11/13/25 14:45**
**Matrix: Water**
**Date Received: 11/14/25 13:00**

| Surrogate | %Recovery | Qualifier | Limits | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|
| 1,2-Dichloroethane-d4 (Surr) | 98 | | 77 - 120 | | 11/20/25 02:12 | 100 |
| 4-Bromofluorobenzene (Surr) | 89 | | 73 - 120 | | 11/20/25 02:12 | 100 |
| Dibromofluoromethane (Surr) | 99 | | 75 - 123 | | 11/20/25 02:12 | 100 |
| Toluene-d8 (Surr) | 94 | | 80 - 120 | | 11/20/25 02:12 | 100 |

# Surrogate Summary

Client: Roux Environmental Engineering and Geology DPC
Job ID: 480-234539-1
Project/Site: 1641 River St.

## Method: EPA 8260C - Volatile Organic Compounds by GC/MS

**Matrix: Solid** — **Prep Type: Total/NA**

| | | Percent Surrogate Recovery (Acceptance Limits) | | | |
|---|---|---|---|---|---|
| | | DCA | BFB | DBFM | TOL |
| Lab Sample ID | Client Sample ID | (53-146) | (49-148) | (60-140) | (50-149) |
| 480-234539-1 | TP-1-12' | 100 | 95 | 93 | 102 |
| LCS 480-762885/2-A | Lab Control Sample | 98 | 97 | 98 | 102 |
| MB 480-762885/1-A | Method Blank | 97 | 89 | 92 | 100 |

**Surrogate Legend**

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
DBFM = Dibromofluoromethane (Surr)
TOL = Toluene-d8 (Surr)

## Method: EPA 8260C - Volatile Organic Compounds by GC/MS

**Matrix: Solid** — **Prep Type: Total/NA**

| | | Percent Surrogate Recovery (Acceptance Limits) | | | |
|---|---|---|---|---|---|
| | | DCA | BFB | DBFM | TOL |
| Lab Sample ID | Client Sample ID | (64-126) | (72-126) | (60-140) | (71-125) |
| 480-234539-2 | TP-3-9.5' | 84 | 98 | 88 | 73 |
| LCS 480-762831/1-A | Lab Control Sample | 81 | 99 | 89 | 77 |
| MB 480-762831/2-A | Method Blank | 83 | 100 | 90 | 76 |

**Surrogate Legend**

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
DBFM = Dibromofluoromethane (Surr)
TOL = Toluene-d8 (Surr)

## Method: EPA 8260C - Volatile Organic Compounds by GC/MS

**Matrix: Water** — **Prep Type: Total/NA**

| | | Percent Surrogate Recovery (Acceptance Limits) | | | |
|---|---|---|---|---|---|
| | | DCA | BFB | DBFM | TOL |
| Lab Sample ID | Client Sample ID | (77-120) | (73-120) | (75-123) | (80-120) |
| 480-234539-3 | PZ-1 | 98 | 89 | 99 | 94 |
| LCS 480-762949/6 | Lab Control Sample | 97 | 97 | 97 | 96 |
| MB 480-762949/8 | Method Blank | 99 | 95 | 99 | 100 |

**Surrogate Legend**

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
DBFM = Dibromofluoromethane (Surr)
TOL = Toluene-d8 (Surr)

## Method: EPA 8260C - Volatile Organic Compounds by GC/MS

**Lab Sample ID: MB 480-762831/2-A**
**Matrix: Solid**
**Analysis Batch: 762832**

**Client Sample ID: Method Blank**
**Prep Type: Total/NA**
**Prep Batch: 762831**

| Analyte | MB Result | MB Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| 1,1,1-Trichloroethane | 5.0 | U | 5.0 | 0.36 | ug/Kg | | 11/18/25 18:32 | 11/18/25 22:04 | 1 |
| 1,1,2,2-Tetrachloroethane | 5.0 | U | 5.0 | 0.81 | ug/Kg | | 11/18/25 18:32 | 11/18/25 22:04 | 1 |
| 1,1,2-Trichloro-1,2,2-trifluoroethane | 5.0 | U | 5.0 | 1.1 | ug/Kg | | 11/18/25 18:32 | 11/18/25 22:04 | 1 |
| 1,1,2-Trichloroethane | 5.0 | U | 5.0 | 0.65 | ug/Kg | | 11/18/25 18:32 | 11/18/25 22:04 | 1 |
| 1,1-Dichloroethane | 5.0 | U | 5.0 | 0.61 | ug/Kg | | 11/18/25 18:32 | 11/18/25 22:04 | 1 |
| 1,1-Dichloroethene | 5.0 | U | 5.0 | 0.61 | ug/Kg | | 11/18/25 18:32 | 11/18/25 22:04 | 1 |
| 1,2,4-Trichlorobenzene | 5.0 | U | 5.0 | 0.30 | ug/Kg | | 11/18/25 18:32 | 11/18/25 22:04 | 1 |
| 1,2-Dibromo-3-Chloropropane | 5.0 | U | 5.0 | 2.5 | ug/Kg | | 11/18/25 18:32 | 11/18/25 22:04 | 1 |
| 1,2-Dibromoethane | 5.0 | U | 5.0 | 0.64 | ug/Kg | | 11/18/25 18:32 | 11/18/25 22:04 | 1 |
| 1,2-Dichlorobenzene | 5.0 | U | 5.0 | 0.39 | ug/Kg | | 11/18/25 18:32 | 11/18/25 22:04 | 1 |
| 1,2-Dichloroethane | 5.0 | U | 5.0 | 0.25 | ug/Kg | | 11/18/25 18:32 | 11/18/25 22:04 | 1 |
| 1,2-Dichloropropane | 5.0 | U | 5.0 | 2.5 | ug/Kg | | 11/18/25 18:32 | 11/18/25 22:04 | 1 |
| 1,3-Dichlorobenzene | 5.0 | U | 5.0 | 0.26 | ug/Kg | | 11/18/25 18:32 | 11/18/25 22:04 | 1 |
| 1,4-Dichlorobenzene | 5.0 | U | 5.0 | 0.70 | ug/Kg | | 11/18/25 18:32 | 11/18/25 22:04 | 1 |
| 2-Butanone (MEK) | 25 | U | 25 | 1.8 | ug/Kg | | 11/18/25 18:32 | 11/18/25 22:04 | 1 |
| 2-Hexanone | 25 | U | 25 | 2.5 | ug/Kg | | 11/18/25 18:32 | 11/18/25 22:04 | 1 |
| 4-Methyl-2-pentanone (MIBK) | 25 | U | 25 | 1.6 | ug/Kg | | 11/18/25 18:32 | 11/18/25 22:04 | 1 |
| Acetone | 25 | U | 25 | 4.2 | ug/Kg | | 11/18/25 18:32 | 11/18/25 22:04 | 1 |
| Benzene | 5.0 | U | 5.0 | 0.25 | ug/Kg | | 11/18/25 18:32 | 11/18/25 22:04 | 1 |
| Bromodichloromethane | 5.0 | U | 5.0 | 0.67 | ug/Kg | | 11/18/25 18:32 | 11/18/25 22:04 | 1 |
| Bromoform | 5.0 | U | 5.0 | 2.5 | ug/Kg | | 11/18/25 18:32 | 11/18/25 22:04 | 1 |
| Bromomethane | 5.0 | U | 5.0 | 0.45 | ug/Kg | | 11/18/25 18:32 | 11/18/25 22:04 | 1 |
| Carbon disulfide | 5.0 | U | 5.0 | 2.5 | ug/Kg | | 11/18/25 18:32 | 11/18/25 22:04 | 1 |
| Carbon tetrachloride | 5.0 | U | 5.0 | 0.48 | ug/Kg | | 11/18/25 18:32 | 11/18/25 22:04 | 1 |
| Chlorobenzene | 5.0 | U | 5.0 | 0.66 | ug/Kg | | 11/18/25 18:32 | 11/18/25 22:04 | 1 |
| Chloroethane | 5.0 | U | 5.0 | 1.1 | ug/Kg | | 11/18/25 18:32 | 11/18/25 22:04 | 1 |
| Chloroform | 0.804 | J | 5.0 | 0.31 | ug/Kg | | 11/18/25 18:32 | 11/18/25 22:04 | 1 |
| Chloromethane | 5.0 | U | 5.0 | 0.30 | ug/Kg | | 11/18/25 18:32 | 11/18/25 22:04 | 1 |
| cis-1,2-Dichloroethene | 5.0 | U | 5.0 | 0.64 | ug/Kg | | 11/18/25 18:32 | 11/18/25 22:04 | 1 |
| cis-1,3-Dichloropropene | 5.0 | U | 5.0 | 0.72 | ug/Kg | | 11/18/25 18:32 | 11/18/25 22:04 | 1 |
| Cyclohexane | 5.0 | U | 5.0 | 0.70 | ug/Kg | | 11/18/25 18:32 | 11/18/25 22:04 | 1 |
| Dibromochloromethane | 5.0 | U | 5.0 | 0.64 | ug/Kg | | 11/18/25 18:32 | 11/18/25 22:04 | 1 |
| Dichlorodifluoromethane | 5.0 | U | 5.0 | 0.41 | ug/Kg | | 11/18/25 18:32 | 11/18/25 22:04 | 1 |
| Ethylbenzene | 5.0 | U | 5.0 | 0.35 | ug/Kg | | 11/18/25 18:32 | 11/18/25 22:04 | 1 |
| Isopropylbenzene | 5.0 | U | 5.0 | 0.75 | ug/Kg | | 11/18/25 18:32 | 11/18/25 22:04 | 1 |
| Methyl acetate | 25 | U | 25 | 3.0 | ug/Kg | | 11/18/25 18:32 | 11/18/25 22:04 | 1 |
| Methyl tert-butyl ether | 5.0 | U | 5.0 | 0.49 | ug/Kg | | 11/18/25 18:32 | 11/18/25 22:04 | 1 |
| Methylcyclohexane | 5.0 | U | 5.0 | 0.76 | ug/Kg | | 11/18/25 18:32 | 11/18/25 22:04 | 1 |
| Methylene Chloride | 5.0 | U | 5.0 | 2.3 | ug/Kg | | 11/18/25 18:32 | 11/18/25 22:04 | 1 |
| Styrene | 5.0 | U | 5.0 | 0.25 | ug/Kg | | 11/18/25 18:32 | 11/18/25 22:04 | 1 |
| Tetrachloroethene | 5.0 | U | 5.0 | 0.67 | ug/Kg | | 11/18/25 18:32 | 11/18/25 22:04 | 1 |
| Toluene | 5.0 | U | 5.0 | 0.38 | ug/Kg | | 11/18/25 18:32 | 11/18/25 22:04 | 1 |
| trans-1,2-Dichloroethene | 5.0 | U | 5.0 | 0.52 | ug/Kg | | 11/18/25 18:32 | 11/18/25 22:04 | 1 |
| trans-1,3-Dichloropropene | 5.0 | U | 5.0 | 2.2 | ug/Kg | | 11/18/25 18:32 | 11/18/25 22:04 | 1 |
| Trichloroethene | 5.0 | U | 5.0 | 1.1 | ug/Kg | | 11/18/25 18:32 | 11/18/25 22:04 | 1 |
| Trichlorofluoromethane | 5.0 | U | 5.0 | 0.47 | ug/Kg | | 11/18/25 18:32 | 11/18/25 22:04 | 1 |
| Vinyl chloride | 5.0 | U | 5.0 | 0.61 | ug/Kg | | 11/18/25 18:32 | 11/18/25 22:04 | 1 |
| Xylenes, Total | 10 | U | 10 | 0.84 | ug/Kg | | 11/18/25 18:32 | 11/18/25 22:04 | 1 |

## Method: EPA 8260C - Volatile Organic Compounds by GC/MS (Continued)

**Lab Sample ID: MB 480-762831/2-A**
**Matrix: Solid**
**Analysis Batch: 762832**

**Client Sample ID: Method Blank**
**Prep Type: Total/NA**
**Prep Batch: 762831**

| Surrogate | MB %Recovery | MB Qualifier | Limits | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|
| *1,2-Dichloroethane-d4 (Surr)* | *83* | | *64 - 126* | *11/18/25 18:32* | *11/18/25 22:04* | *1* |
| *4-Bromofluorobenzene (Surr)* | *100* | | *72 - 126* | *11/18/25 18:32* | *11/18/25 22:04* | *1* |
| *Dibromofluoromethane (Surr)* | *90* | | *60 - 140* | *11/18/25 18:32* | *11/18/25 22:04* | *1* |
| *Toluene-d8 (Surr)* | *76* | | *71 - 125* | *11/18/25 18:32* | *11/18/25 22:04* | *1* |

**Lab Sample ID: LCS 480-762831/1-A**
**Matrix: Solid**
**Analysis Batch: 762832**

**Client Sample ID: Lab Control Sample**
**Prep Type: Total/NA**
**Prep Batch: 762831**

| Analyte | Spike Added | LCS Result | LCS Qualifier | Unit | D | %Rec | %Rec Limits |
|---|---|---|---|---|---|---|---|
| 1,1,1-Trichloroethane | 50.0 | 48.7 | | ug/Kg | | 97 | 77 - 121 |
| 1,1,2,2-Tetrachloroethane | 50.0 | 45.8 | | ug/Kg | | 92 | 80 - 120 |
| 1,1,2-Trichloro-1,2,2-trifluoroetha ne | 50.0 | 52.6 | | ug/Kg | | 105 | 60 - 140 |
| 1,1,2-Trichloroethane | 50.0 | 46.1 | | ug/Kg | | 92 | 78 - 122 |
| 1,1-Dichloroethane | 50.0 | 49.3 | | ug/Kg | | 99 | 73 - 126 |
| 1,1-Dichloroethene | 50.0 | 52.9 | | ug/Kg | | 106 | 59 - 125 |
| 1,2,4-Trichlorobenzene | 50.0 | 50.2 | | ug/Kg | | 100 | 64 - 120 |
| 1,2-Dibromo-3-Chloropropane | 50.0 | 38.7 | | ug/Kg | | 77 | 63 - 124 |
| 1,2-Dibromoethane | 50.0 | 48.8 | | ug/Kg | | 98 | 78 - 120 |
| 1,2-Dichlorobenzene | 50.0 | 48.1 | | ug/Kg | | 96 | 75 - 120 |
| 1,2-Dichloroethane | 50.0 | 48.2 | | ug/Kg | | 96 | 77 - 122 |
| 1,2-Dichloropropane | 50.0 | 51.3 | | ug/Kg | | 103 | 75 - 124 |
| 1,3-Dichlorobenzene | 50.0 | 49.3 | | ug/Kg | | 99 | 74 - 120 |
| 1,4-Dichlorobenzene | 50.0 | 48.3 | | ug/Kg | | 97 | 73 - 120 |
| 2-Butanone (MEK) | 250 | 267 | | ug/Kg | | 107 | 70 - 134 |
| 2-Hexanone | 250 | 241 | | ug/Kg | | 96 | 59 - 130 |
| 4-Methyl-2-pentanone (MIBK) | 250 | 230 | | ug/Kg | | 92 | 65 - 133 |
| Acetone | 250 | 283 | | ug/Kg | | 113 | 61 - 137 |
| Benzene | 50.0 | 49.8 | | ug/Kg | | 100 | 79 - 127 |
| Bromodichloromethane | 50.0 | 46.5 | | ug/Kg | | 93 | 80 - 122 |
| Bromoform | 50.0 | 46.1 | | ug/Kg | | 92 | 68 - 126 |
| Bromomethane | 50.0 | 52.5 | | ug/Kg | | 105 | 37 - 149 |
| Carbon disulfide | 50.0 | 50.3 | | ug/Kg | | 101 | 64 - 131 |
| Carbon tetrachloride | 50.0 | 45.6 | | ug/Kg | | 91 | 75 - 135 |
| Chlorobenzene | 50.0 | 49.8 | | ug/Kg | | 100 | 76 - 124 |
| Chloroethane | 50.0 | 52.6 | | ug/Kg | | 105 | 69 - 135 |
| Chloroform | 50.0 | 47.1 | | ug/Kg | | 94 | 80 - 120 |
| Chloromethane | 50.0 | 49.6 | | ug/Kg | | 99 | 63 - 127 |
| cis-1,2-Dichloroethene | 50.0 | 50.5 | | ug/Kg | | 101 | 81 - 120 |
| cis-1,3-Dichloropropene | 50.0 | 50.1 | | ug/Kg | | 100 | 80 - 120 |
| Cyclohexane | 50.0 | 54.0 | | ug/Kg | | 108 | 65 - 120 |
| Dibromochloromethane | 50.0 | 45.9 | | ug/Kg | | 92 | 76 - 125 |
| Dichlorodifluoromethane | 50.0 | 53.4 | | ug/Kg | | 107 | 57 - 142 |
| Ethylbenzene | 50.0 | 49.5 | | ug/Kg | | 99 | 80 - 120 |
| Isopropylbenzene | 50.0 | 49.2 | | ug/Kg | | 98 | 72 - 120 |
| Methyl acetate | 100 | 95.6 | | ug/Kg | | 96 | 55 - 136 |
| Methyl tert-butyl ether | 50.0 | 47.0 | | ug/Kg | | 94 | 63 - 125 |
| Methylcyclohexane | 50.0 | 52.9 | | ug/Kg | | 106 | 60 - 140 |

## Method: EPA 8260C - Volatile Organic Compounds by GC/MS (Continued)

**Lab Sample ID: LCS 480-762831/1-A**
**Matrix: Solid**
**Analysis Batch: 762832**

**Client Sample ID: Lab Control Sample**
**Prep Type: Total/NA**
**Prep Batch: 762831**

| Analyte | Spike Added | LCS Result | LCS Qualifier | Unit | D | %Rec | %Rec Limits |
|---|---|---|---|---|---|---|---|
| Methylene Chloride | 50.0 | 52.6 | | ug/Kg | | 105 | 61 - 127 |
| Styrene | 50.0 | 49.5 | | ug/Kg | | 99 | 80 - 120 |
| Tetrachloroethene | 50.0 | 52.7 | | ug/Kg | | 105 | 74 - 122 |
| Toluene | 50.0 | 50.3 | | ug/Kg | | 101 | 74 - 128 |
| trans-1,2-Dichloroethene | 50.0 | 50.0 | | ug/Kg | | 100 | 78 - 126 |
| trans-1,3-Dichloropropene | 50.0 | 48.0 | | ug/Kg | | 96 | 73 - 123 |
| Trichloroethene | 50.0 | 52.1 | | ug/Kg | | 104 | 77 - 129 |
| Trichlorofluoromethane | 50.0 | 53.5 | | ug/Kg | | 107 | 65 - 146 |
| Vinyl chloride | 50.0 | 53.6 | | ug/Kg | | 107 | 61 - 133 |
| Xylenes, Total | 100 | 99.8 | | ug/Kg | | 100 | 70 - 130 |

| *Surrogate* | *LCS %Recovery* | *LCS Qualifier* | *Limits* |
|---|---|---|---|
| *1,2-Dichloroethane-d4 (Surr)* | *81* | | *64 - 126* |
| *4-Bromofluorobenzene (Surr)* | *99* | | *72 - 126* |
| *Dibromofluoromethane (Surr)* | *89* | | *60 - 140* |
| *Toluene-d8 (Surr)* | *77* | | *71 - 125* |

**Lab Sample ID: MB 480-762885/1-A**
**Matrix: Solid**
**Analysis Batch: 762899**

**Client Sample ID: Method Blank**
**Prep Type: Total/NA**
**Prep Batch: 762885**

| Analyte | MB Result | MB Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| 1,1,1-Trichloroethane | 100 | U | 100 | 28 | ug/Kg | | 11/19/25 09:28 | 11/19/25 14:05 | 1 |
| 1,1,2,2-Tetrachloroethane | 100 | U | 100 | 16 | ug/Kg | | 11/19/25 09:28 | 11/19/25 14:05 | 1 |
| 1,1,2-Trichloro-1,2,2-trifluoroethane | 100 | U | 100 | 50 | ug/Kg | | 11/19/25 09:28 | 11/19/25 14:05 | 1 |
| 1,1,2-Trichloroethane | 100 | U | 100 | 21 | ug/Kg | | 11/19/25 09:28 | 11/19/25 14:05 | 1 |
| 1,1-Dichloroethane | 100 | U | 100 | 31 | ug/Kg | | 11/19/25 09:28 | 11/19/25 14:05 | 1 |
| 1,1-Dichloroethene | 100 | U | 100 | 35 | ug/Kg | | 11/19/25 09:28 | 11/19/25 14:05 | 1 |
| 1,2,4-Trichlorobenzene | 100 | U | 100 | 38 | ug/Kg | | 11/19/25 09:28 | 11/19/25 14:05 | 1 |
| 1,2-Dibromo-3-Chloropropane | 100 | U | 100 | 50 | ug/Kg | | 11/19/25 09:28 | 11/19/25 14:05 | 1 |
| 1,2-Dibromoethane | 100 | U | 100 | 18 | ug/Kg | | 11/19/25 09:28 | 11/19/25 14:05 | 1 |
| 1,2-Dichlorobenzene | 100 | U | 100 | 26 | ug/Kg | | 11/19/25 09:28 | 11/19/25 14:05 | 1 |
| 1,2-Dichloroethane | 100 | U | 100 | 41 | ug/Kg | | 11/19/25 09:28 | 11/19/25 14:05 | 1 |
| 1,2-Dichloropropane | 100 | U | 100 | 16 | ug/Kg | | 11/19/25 09:28 | 11/19/25 14:05 | 1 |
| 1,3-Dichlorobenzene | 100 | U | 100 | 27 | ug/Kg | | 11/19/25 09:28 | 11/19/25 14:05 | 1 |
| 1,4-Dichlorobenzene | 100 | U | 100 | 14 | ug/Kg | | 11/19/25 09:28 | 11/19/25 14:05 | 1 |
| 2-Butanone (MEK) | 500 | U | 500 | 300 | ug/Kg | | 11/19/25 09:28 | 11/19/25 14:05 | 1 |
| 2-Hexanone | 500 | U | 500 | 210 | ug/Kg | | 11/19/25 09:28 | 11/19/25 14:05 | 1 |
| 4-Methyl-2-pentanone (MIBK) | 500 | U | 500 | 32 | ug/Kg | | 11/19/25 09:28 | 11/19/25 14:05 | 1 |
| Acetone | 500 | U | 500 | 410 | ug/Kg | | 11/19/25 09:28 | 11/19/25 14:05 | 1 |
| Benzene | 100 | U | 100 | 19 | ug/Kg | | 11/19/25 09:28 | 11/19/25 14:05 | 1 |
| Bromodichloromethane | 100 | U | 100 | 20 | ug/Kg | | 11/19/25 09:28 | 11/19/25 14:05 | 1 |
| Bromoform | 100 | U | 100 | 50 | ug/Kg | | 11/19/25 09:28 | 11/19/25 14:05 | 1 |
| Bromomethane | 100 | U | 100 | 22 | ug/Kg | | 11/19/25 09:28 | 11/19/25 14:05 | 1 |
| Carbon disulfide | 100 | U | 100 | 46 | ug/Kg | | 11/19/25 09:28 | 11/19/25 14:05 | 1 |
| Carbon tetrachloride | 100 | U | 100 | 26 | ug/Kg | | 11/19/25 09:28 | 11/19/25 14:05 | 1 |
| Chlorobenzene | 100 | U | 100 | 13 | ug/Kg | | 11/19/25 09:28 | 11/19/25 14:05 | 1 |
| Chloroethane | 100 | U | 100 | 21 | ug/Kg | | 11/19/25 09:28 | 11/19/25 14:05 | 1 |

## Method: EPA 8260C - Volatile Organic Compounds by GC/MS (Continued)

**Lab Sample ID: MB 480-762885/1-A**
**Matrix: Solid**
**Analysis Batch: 762899**

**Client Sample ID: Method Blank**
**Prep Type: Total/NA**
**Prep Batch: 762885**

| Analyte | MB Result | MB Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Chloroform | 100 | U | 100 | 69 | ug/Kg | | 11/19/25 09:28 | 11/19/25 14:05 | 1 |
| Chloromethane | 100 | U | 100 | 24 | ug/Kg | | 11/19/25 09:28 | 11/19/25 14:05 | 1 |
| cis-1,2-Dichloroethene | 100 | U | 100 | 28 | ug/Kg | | 11/19/25 09:28 | 11/19/25 14:05 | 1 |
| cis-1,3-Dichloropropene | 100 | U | 100 | 24 | ug/Kg | | 11/19/25 09:28 | 11/19/25 14:05 | 1 |
| Cyclohexane | 100 | U | 100 | 22 | ug/Kg | | 11/19/25 09:28 | 11/19/25 14:05 | 1 |
| Dibromochloromethane | 100 | U | 100 | 48 | ug/Kg | | 11/19/25 09:28 | 11/19/25 14:05 | 1 |
| Dichlorodifluoromethane | 100 | U | 100 | 44 | ug/Kg | | 11/19/25 09:28 | 11/19/25 14:05 | 1 |
| Ethylbenzene | 100 | U | 100 | 29 | ug/Kg | | 11/19/25 09:28 | 11/19/25 14:05 | 1 |
| Isopropylbenzene | 100 | U | 100 | 15 | ug/Kg | | 11/19/25 09:28 | 11/19/25 14:05 | 1 |
| Methyl acetate | 500 | U | 500 | 48 | ug/Kg | | 11/19/25 09:28 | 11/19/25 14:05 | 1 |
| Methyl tert-butyl ether | 100 | U | 100 | 38 | ug/Kg | | 11/19/25 09:28 | 11/19/25 14:05 | 1 |
| Methylcyclohexane | 100 | U | 100 | 47 | ug/Kg | | 11/19/25 09:28 | 11/19/25 14:05 | 1 |
| Methylene Chloride | 100 | U | 100 | 20 | ug/Kg | | 11/19/25 09:28 | 11/19/25 14:05 | 1 |
| Styrene | 100 | U | 100 | 24 | ug/Kg | | 11/19/25 09:28 | 11/19/25 14:05 | 1 |
| Tetrachloroethene | 100 | U | 100 | 13 | ug/Kg | | 11/19/25 09:28 | 11/19/25 14:05 | 1 |
| Toluene | 100 | U | 100 | 27 | ug/Kg | | 11/19/25 09:28 | 11/19/25 14:05 | 1 |
| trans-1,2-Dichloroethene | 100 | U | 100 | 24 | ug/Kg | | 11/19/25 09:28 | 11/19/25 14:05 | 1 |
| trans-1,3-Dichloropropene | 100 | U | 100 | 9.8 | ug/Kg | | 11/19/25 09:28 | 11/19/25 14:05 | 1 |
| Trichloroethene | 100 | U | 100 | 28 | ug/Kg | | 11/19/25 09:28 | 11/19/25 14:05 | 1 |
| Trichlorofluoromethane | 100 | U | 100 | 47 | ug/Kg | | 11/19/25 09:28 | 11/19/25 14:05 | 1 |
| Vinyl chloride | 100 | U | 100 | 34 | ug/Kg | | 11/19/25 09:28 | 11/19/25 14:05 | 1 |
| Xylenes, Total | 200 | U | 200 | 55 | ug/Kg | | 11/19/25 09:28 | 11/19/25 14:05 | 1 |

| *Surrogate* | *MB %Recovery* | *MB Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *1,2-Dichloroethane-d4 (Surr)* | *97* | | *53 - 146* | *11/19/25 09:28* | *11/19/25 14:05* | *1* |
| *4-Bromofluorobenzene (Surr)* | *89* | | *49 - 148* | *11/19/25 09:28* | *11/19/25 14:05* | *1* |
| *Dibromofluoromethane (Surr)* | *92* | | *60 - 140* | *11/19/25 09:28* | *11/19/25 14:05* | *1* |
| *Toluene-d8 (Surr)* | *100* | | *50 - 149* | *11/19/25 09:28* | *11/19/25 14:05* | *1* |

**Lab Sample ID: LCS 480-762885/2-A**
**Matrix: Solid**
**Analysis Batch: 762899**

**Client Sample ID: Lab Control Sample**
**Prep Type: Total/NA**
**Prep Batch: 762885**

| Analyte | Spike Added | LCS Result | LCS Qualifier | Unit | D | %Rec | %Rec Limits |
|---|---|---|---|---|---|---|---|
| 1,1,1-Trichloroethane | 2500 | 2720 | | ug/Kg | | 109 | 68 - 130 |
| 1,1,2,2-Tetrachloroethane | 2500 | 2700 | | ug/Kg | | 108 | 73 - 120 |
| 1,1,2-Trichloro-1,2,2-trifluoroethane | 2500 | 2750 | | ug/Kg | | 110 | 10 - 179 |
| 1,1,2-Trichloroethane | 2500 | 2860 | | ug/Kg | | 115 | 80 - 120 |
| 1,1-Dichloroethane | 2500 | 2700 | | ug/Kg | | 108 | 78 - 121 |
| 1,1-Dichloroethene | 2500 | 2900 | | ug/Kg | | 116 | 48 - 133 |
| 1,2,4-Trichlorobenzene | 2500 | 2890 | | ug/Kg | | 116 | 70 - 140 |
| 1,2-Dibromo-3-Chloropropane | 2500 | 2490 | | ug/Kg | | 100 | 56 - 122 |
| 1,2-Dibromoethane | 2500 | 2870 | | ug/Kg | | 115 | 80 - 120 |
| 1,2-Dichlorobenzene | 2500 | 2700 | | ug/Kg | | 108 | 78 - 125 |
| 1,2-Dichloroethane | 2500 | 2610 | | ug/Kg | | 104 | 74 - 127 |
| 1,2-Dichloropropane | 2500 | 2860 | | ug/Kg | | 114 | 80 - 120 |
| 1,3-Dichlorobenzene | 2500 | 2700 | | ug/Kg | | 108 | 80 - 120 |
| 1,4-Dichlorobenzene | 2500 | 2630 | | ug/Kg | | 105 | 80 - 120 |

## Method: EPA 8260C - Volatile Organic Compounds by GC/MS (Continued)

**Lab Sample ID: LCS 480-762885/2-A**
**Matrix: Solid**
**Analysis Batch: 762899**

**Client Sample ID: Lab Control Sample**
**Prep Type: Total/NA**
**Prep Batch: 762885**

| Analyte | Spike Added | LCS Result | LCS Qualifier | Unit | D | %Rec | %Rec Limits |
|---|---|---|---|---|---|---|---|
| 2-Butanone (MEK) | 12500 | 13400 | | ug/Kg | | 108 | 54 - 149 |
| 2-Hexanone | 12500 | 15200 | | ug/Kg | | 121 | 59 - 127 |
| 4-Methyl-2-pentanone (MIBK) | 12500 | 13600 | | ug/Kg | | 109 | 74 - 120 |
| Acetone | 12500 | 14300 | | ug/Kg | | 114 | 47 - 141 |
| Benzene | 2500 | 2690 | | ug/Kg | | 108 | 77 - 125 |
| Bromodichloromethane | 2500 | 2490 | | ug/Kg | | 100 | 71 - 121 |
| Bromoform | 2500 | 2250 | | ug/Kg | | 90 | 48 - 125 |
| Bromomethane | 2500 | 2120 | | ug/Kg | | 85 | 39 - 149 |
| Carbon disulfide | 2500 | 2710 | | ug/Kg | | 108 | 40 - 136 |
| Carbon tetrachloride | 2500 | 2840 | | ug/Kg | | 113 | 54 - 135 |
| Chlorobenzene | 2500 | 2660 | | ug/Kg | | 106 | 76 - 126 |
| Chloroethane | 2500 | 2340 | | ug/Kg | | 94 | 23 - 150 |
| Chloroform | 2500 | 2610 | | ug/Kg | | 105 | 78 - 120 |
| Chloromethane | 2500 | 1990 | | ug/Kg | | 79 | 61 - 124 |
| cis-1,2-Dichloroethene | 2500 | 2700 | | ug/Kg | | 108 | 79 - 124 |
| cis-1,3-Dichloropropene | 2500 | 2840 | | ug/Kg | | 114 | 75 - 121 |
| Cyclohexane | 2500 | 2740 | | ug/Kg | | 110 | 49 - 129 |
| Dibromochloromethane | 2500 | 2610 | | ug/Kg | | 104 | 64 - 120 |
| Dichlorodifluoromethane | 2500 | 1730 | | ug/Kg | | 69 | 10 - 150 |
| Ethylbenzene | 2500 | 2760 | | ug/Kg | | 111 | 78 - 124 |
| Isopropylbenzene | 2500 | 2790 | | ug/Kg | | 111 | 76 - 120 |
| Methyl acetate | 5000 | 5760 | | ug/Kg | | 115 | 71 - 123 |
| Methyl tert-butyl ether | 2500 | 2610 | | ug/Kg | | 104 | 67 - 137 |
| Methylcyclohexane | 2500 | 2850 | | ug/Kg | | 114 | 50 - 130 |
| Methylene Chloride | 2500 | 2680 | | ug/Kg | | 107 | 75 - 118 |
| Styrene | 2500 | 2670 | | ug/Kg | | 107 | 80 - 120 |
| Tetrachloroethene | 2500 | 2740 | | ug/Kg | | 109 | 73 - 133 |
| Toluene | 2500 | 2780 | | ug/Kg | | 111 | 75 - 124 |
| trans-1,2-Dichloroethene | 2500 | 2720 | | ug/Kg | | 109 | 74 - 129 |
| trans-1,3-Dichloropropene | 2500 | 2450 | | ug/Kg | | 98 | 73 - 120 |
| Trichloroethene | 2500 | 2760 | | ug/Kg | | 110 | 75 - 131 |
| Trichlorofluoromethane | 2500 | 2600 | | ug/Kg | | 104 | 29 - 158 |
| Vinyl chloride | 2500 | 2050 | | ug/Kg | | 82 | 59 - 124 |
| Xylenes, Total | 5000 | 5470 | | ug/Kg | | 109 | 78 - 125 |

| *Surrogate* | *LCS %Recovery* | *LCS Qualifier* | *Limits* |
|---|---|---|---|
| *1,2-Dichloroethane-d4 (Surr)* | *98* | | *53 - 146* |
| *4-Bromofluorobenzene (Surr)* | *97* | | *49 - 148* |
| *Dibromofluoromethane (Surr)* | *98* | | *60 - 140* |
| *Toluene-d8 (Surr)* | *102* | | *50 - 149* |

**Lab Sample ID: MB 480-762949/8**
**Matrix: Water**
**Analysis Batch: 762949**

**Client Sample ID: Method Blank**
**Prep Type: Total/NA**

| Analyte | MB Result | MB Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| 1,1,1-Trichloroethane | 1.0 | U | 1.0 | 0.82 | ug/L | | | 11/20/25 01:49 | 1 |
| 1,1,2,2-Tetrachloroethane | 1.0 | U | 1.0 | 0.21 | ug/L | | | 11/20/25 01:49 | 1 |

## Method: EPA 8260C - Volatile Organic Compounds by GC/MS (Continued)

**Lab Sample ID: MB 480-762949/8**
**Matrix: Water**
**Analysis Batch: 762949**

**Client Sample ID: Method Blank**
**Prep Type: Total/NA**

| Analyte | MB Result | MB Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| 1,1,2-Trichloro-1,2,2-trifluoroethane | 1.0 | U | 1.0 | 0.31 | ug/L | | | 11/20/25 01:49 | 1 |
| 1,1,2-Trichloroethane | 1.0 | U | 1.0 | 0.23 | ug/L | | | 11/20/25 01:49 | 1 |
| 1,1-Dichloroethane | 1.0 | U | 1.0 | 0.38 | ug/L | | | 11/20/25 01:49 | 1 |
| 1,1-Dichloroethene | 1.0 | U | 1.0 | 0.29 | ug/L | | | 11/20/25 01:49 | 1 |
| 1,2,4-Trichlorobenzene | 1.0 | U | 1.0 | 0.41 | ug/L | | | 11/20/25 01:49 | 1 |
| 1,2-Dibromo-3-Chloropropane | 1.0 | U | 1.0 | 0.39 | ug/L | | | 11/20/25 01:49 | 1 |
| 1,2-Dibromoethane | 1.0 | U | 1.0 | 0.73 | ug/L | | | 11/20/25 01:49 | 1 |
| 1,2-Dichlorobenzene | 1.0 | U | 1.0 | 0.79 | ug/L | | | 11/20/25 01:49 | 1 |
| 1,2-Dichloroethane | 1.0 | U | 1.0 | 0.21 | ug/L | | | 11/20/25 01:49 | 1 |
| 1,2-Dichloropropane | 1.0 | U | 1.0 | 0.72 | ug/L | | | 11/20/25 01:49 | 1 |
| 1,3-Dichlorobenzene | 1.0 | U | 1.0 | 0.78 | ug/L | | | 11/20/25 01:49 | 1 |
| 1,4-Dichlorobenzene | 1.0 | U | 1.0 | 0.84 | ug/L | | | 11/20/25 01:49 | 1 |
| 2-Butanone (MEK) | 10 | U | 10 | 1.3 | ug/L | | | 11/20/25 01:49 | 1 |
| 2-Hexanone | 5.0 | U | 5.0 | 1.2 | ug/L | | | 11/20/25 01:49 | 1 |
| 4-Methyl-2-pentanone (MIBK) | 5.0 | U | 5.0 | 2.1 | ug/L | | | 11/20/25 01:49 | 1 |
| Acetone | 10 | U | 10 | 3.0 | ug/L | | | 11/20/25 01:49 | 1 |
| Benzene | 1.0 | U | 1.0 | 0.41 | ug/L | | | 11/20/25 01:49 | 1 |
| Bromodichloromethane | 1.0 | U | 1.0 | 0.39 | ug/L | | | 11/20/25 01:49 | 1 |
| Bromoform | 1.0 | U | 1.0 | 0.26 | ug/L | | | 11/20/25 01:49 | 1 |
| Bromomethane | 1.0 | U | 1.0 | 0.69 | ug/L | | | 11/20/25 01:49 | 1 |
| Carbon disulfide | 1.0 | U | 1.0 | 0.19 | ug/L | | | 11/20/25 01:49 | 1 |
| Carbon tetrachloride | 1.0 | U | 1.0 | 0.27 | ug/L | | | 11/20/25 01:49 | 1 |
| Chlorobenzene | 1.0 | U | 1.0 | 0.75 | ug/L | | | 11/20/25 01:49 | 1 |
| Chloroethane | 1.0 | U | 1.0 | 0.32 | ug/L | | | 11/20/25 01:49 | 1 |
| Chloroform | 1.0 | U | 1.0 | 0.34 | ug/L | | | 11/20/25 01:49 | 1 |
| Chloromethane | 1.0 | U | 1.0 | 0.35 | ug/L | | | 11/20/25 01:49 | 1 |
| cis-1,2-Dichloroethene | 1.0 | U | 1.0 | 0.81 | ug/L | | | 11/20/25 01:49 | 1 |
| cis-1,3-Dichloropropene | 1.0 | U | 1.0 | 0.36 | ug/L | | | 11/20/25 01:49 | 1 |
| Cyclohexane | 1.0 | U | 1.0 | 0.18 | ug/L | | | 11/20/25 01:49 | 1 |
| Dibromochloromethane | 1.0 | U | 1.0 | 0.32 | ug/L | | | 11/20/25 01:49 | 1 |
| Dichlorodifluoromethane | 1.0 | U | 1.0 | 0.68 | ug/L | | | 11/20/25 01:49 | 1 |
| Ethylbenzene | 1.0 | U | 1.0 | 0.74 | ug/L | | | 11/20/25 01:49 | 1 |
| Isopropylbenzene | 1.0 | U | 1.0 | 0.79 | ug/L | | | 11/20/25 01:49 | 1 |
| Methyl acetate | 2.5 | U | 2.5 | 1.3 | ug/L | | | 11/20/25 01:49 | 1 |
| Methyl tert-butyl ether | 1.0 | U | 1.0 | 0.16 | ug/L | | | 11/20/25 01:49 | 1 |
| Methylcyclohexane | 1.0 | U | 1.0 | 0.16 | ug/L | | | 11/20/25 01:49 | 1 |
| Methylene Chloride | 1.0 | U | 1.0 | 0.44 | ug/L | | | 11/20/25 01:49 | 1 |
| Styrene | 1.0 | U | 1.0 | 0.73 | ug/L | | | 11/20/25 01:49 | 1 |
| Tetrachloroethene | 1.0 | U | 1.0 | 0.36 | ug/L | | | 11/20/25 01:49 | 1 |
| Toluene | 1.0 | U | 1.0 | 0.51 | ug/L | | | 11/20/25 01:49 | 1 |
| trans-1,2-Dichloroethene | 1.0 | U | 1.0 | 0.90 | ug/L | | | 11/20/25 01:49 | 1 |
| trans-1,3-Dichloropropene | 1.0 | U | 1.0 | 0.37 | ug/L | | | 11/20/25 01:49 | 1 |
| Trichloroethene | 1.0 | U | 1.0 | 0.46 | ug/L | | | 11/20/25 01:49 | 1 |
| Trichlorofluoromethane | 1.0 | U | 1.0 | 0.88 | ug/L | | | 11/20/25 01:49 | 1 |
| Vinyl chloride | 1.0 | U | 1.0 | 0.90 | ug/L | | | 11/20/25 01:49 | 1 |
| Xylenes, Total | 2.0 | U | 2.0 | 0.66 | ug/L | | | 11/20/25 01:49 | 1 |

## Method: EPA 8260C - Volatile Organic Compounds by GC/MS (Continued)

**Lab Sample ID: MB 480-762949/8**
**Matrix: Water**
**Analysis Batch: 762949**

**Client Sample ID: Method Blank**
**Prep Type: Total/NA**

| Surrogate | MB %Recovery | MB Qualifier | Limits | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|
| *1,2-Dichloroethane-d4 (Surr)* | *99* | | *77 - 120* | | *11/20/25 01:49* | *1* |
| *4-Bromofluorobenzene (Surr)* | *95* | | *73 - 120* | | *11/20/25 01:49* | *1* |
| *Dibromofluoromethane (Surr)* | *99* | | *75 - 123* | | *11/20/25 01:49* | *1* |
| *Toluene-d8 (Surr)* | *100* | | *80 - 120* | | *11/20/25 01:49* | *1* |

**Lab Sample ID: LCS 480-762949/6**
**Matrix: Water**
**Analysis Batch: 762949**

**Client Sample ID: Lab Control Sample**
**Prep Type: Total/NA**

| Analyte | Spike Added | LCS Result | LCS Qualifier | Unit | D | %Rec | %Rec Limits |
|---|---|---|---|---|---|---|---|
| 1,1,1-Trichloroethane | 25.0 | 25.9 | | ug/L | | 103 | 73 - 126 |
| 1,1,2,2-Tetrachloroethane | 25.0 | 27.3 | | ug/L | | 109 | 76 - 120 |
| 1,1,2-Trichloro-1,2,2-trifluoroethane | 25.0 | 25.4 | | ug/L | | 101 | 61 - 148 |
| 1,1,2-Trichloroethane | 25.0 | 25.6 | | ug/L | | 102 | 76 - 122 |
| 1,1-Dichloroethane | 25.0 | 24.4 | | ug/L | | 98 | 77 - 120 |
| 1,1-Dichloroethene | 25.0 | 25.3 | | ug/L | | 101 | 66 - 127 |
| 1,2,4-Trichlorobenzene | 25.0 | 27.1 | | ug/L | | 108 | 79 - 122 |
| 1,2-Dibromo-3-Chloropropane | 25.0 | 27.1 | | ug/L | | 108 | 56 - 134 |
| 1,2-Dibromoethane | 25.0 | 27.8 | | ug/L | | 111 | 77 - 120 |
| 1,2-Dichlorobenzene | 25.0 | 26.3 | | ug/L | | 105 | 80 - 124 |
| 1,2-Dichloroethane | 25.0 | 24.4 | | ug/L | | 97 | 75 - 120 |
| 1,2-Dichloropropane | 25.0 | 26.8 | | ug/L | | 107 | 76 - 120 |
| 1,3-Dichlorobenzene | 25.0 | 25.7 | | ug/L | | 103 | 77 - 120 |
| 1,4-Dichlorobenzene | 25.0 | 25.4 | | ug/L | | 102 | 80 - 120 |
| 2-Butanone (MEK) | 125 | 134 | | ug/L | | 107 | 57 - 140 |
| 2-Hexanone | 125 | 151 | | ug/L | | 121 | 65 - 127 |
| 4-Methyl-2-pentanone (MIBK) | 125 | 131 | | ug/L | | 105 | 71 - 125 |
| Acetone | 125 | 128 | | ug/L | | 102 | 56 - 142 |
| Benzene | 25.0 | 24.9 | | ug/L | | 99 | 71 - 124 |
| Bromodichloromethane | 25.0 | 24.8 | | ug/L | | 99 | 80 - 122 |
| Bromoform | 25.0 | 25.3 | | ug/L | | 101 | 61 - 132 |
| Bromomethane | 25.0 | 20.7 | | ug/L | | 83 | 55 - 144 |
| Carbon disulfide | 25.0 | 26.2 | | ug/L | | 105 | 59 - 134 |
| Carbon tetrachloride | 25.0 | 27.1 | | ug/L | | 108 | 72 - 134 |
| Chlorobenzene | 25.0 | 24.8 | | ug/L | | 99 | 80 - 120 |
| Chloroethane | 25.0 | 21.7 | | ug/L | | 87 | 69 - 136 |
| Chloroform | 25.0 | 25.0 | | ug/L | | 100 | 73 - 127 |
| Chloromethane | 25.0 | 21.3 | | ug/L | | 85 | 68 - 124 |
| cis-1,2-Dichloroethene | 25.0 | 25.3 | | ug/L | | 101 | 74 - 124 |
| cis-1,3-Dichloropropene | 25.0 | 26.2 | | ug/L | | 105 | 74 - 124 |
| Cyclohexane | 25.0 | 25.7 | | ug/L | | 103 | 59 - 135 |
| Dibromochloromethane | 25.0 | 26.5 | | ug/L | | 106 | 75 - 125 |
| Dichlorodifluoromethane | 25.0 | 18.9 | | ug/L | | 76 | 59 - 135 |
| Ethylbenzene | 25.0 | 25.5 | | ug/L | | 102 | 77 - 123 |
| Isopropylbenzene | 25.0 | 26.3 | | ug/L | | 105 | 77 - 122 |
| Methyl acetate | 50.0 | 51.1 | | ug/L | | 102 | 74 - 133 |
| Methyl tert-butyl ether | 25.0 | 26.1 | | ug/L | | 105 | 77 - 120 |
| Methylcyclohexane | 25.0 | 26.2 | | ug/L | | 105 | 68 - 134 |

## Method: EPA 8260C - Volatile Organic Compounds by GC/MS (Continued)

**Lab Sample ID: LCS 480-762949/6**
**Matrix: Water**
**Analysis Batch: 762949**

**Client Sample ID: Lab Control Sample**
**Prep Type: Total/NA**

| Analyte | Spike Added | LCS Result | LCS Qualifier | Unit | D | %Rec | %Rec Limits |
|---|---|---|---|---|---|---|---|
| Methylene Chloride | 25.0 | 24.9 | | ug/L | | 100 | 75 - 124 |
| Styrene | 25.0 | 25.0 | | ug/L | | 100 | 80 - 120 |
| Tetrachloroethene | 25.0 | 24.5 | | ug/L | | 98 | 74 - 122 |
| Toluene | 25.0 | 25.1 | | ug/L | | 100 | 80 - 122 |
| trans-1,2-Dichloroethene | 25.0 | 25.0 | | ug/L | | 100 | 73 - 127 |
| trans-1,3-Dichloropropene | 25.0 | 21.7 | | ug/L | | 87 | 80 - 120 |
| Trichloroethene | 25.0 | 24.6 | | ug/L | | 98 | 74 - 123 |
| Trichlorofluoromethane | 25.0 | 23.2 | | ug/L | | 93 | 62 - 150 |
| Vinyl chloride | 25.0 | 22.3 | | ug/L | | 89 | 65 - 133 |
| Xylenes, Total | 50.0 | 50.6 | | ug/L | | 101 | 76 - 122 |

| *Surrogate* | *LCS %Recovery* | *LCS Qualifier* | *Limits* |
|---|---|---|---|
| *1,2-Dichloroethane-d4 (Surr)* | *97* | | *77 - 120* |
| *4-Bromofluorobenzene (Surr)* | *97* | | *73 - 120* |
| *Dibromofluoromethane (Surr)* | *97* | | *75 - 123* |
| *Toluene-d8 (Surr)* | *96* | | *80 - 120* |

# QC Association Summary

Client: Roux Environmental Engineering and Geology DPC
Job ID: 480-234539-1
Project/Site: 1641 River St.

## GC/MS VOA

### Prep Batch: 762831

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| 480-234539-2 | TP-3-9.5' | Total/NA | Solid | 5035A_L | |
| MB 480-762831/2-A | Method Blank | Total/NA | Solid | 5035A_L | |
| LCS 480-762831/1-A | Lab Control Sample | Total/NA | Solid | 5035A_L | |

### Analysis Batch: 762832

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| 480-234539-2 | TP-3-9.5' | Total/NA | Solid | EPA 8260C | 762831 |
| MB 480-762831/2-A | Method Blank | Total/NA | Solid | EPA 8260C | 762831 |
| LCS 480-762831/1-A | Lab Control Sample | Total/NA | Solid | EPA 8260C | 762831 |

### Prep Batch: 762885

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| 480-234539-1 | TP-1-12' | Total/NA | Solid | 5035A_H | |
| MB 480-762885/1-A | Method Blank | Total/NA | Solid | 5035A_H | |
| LCS 480-762885/2-A | Lab Control Sample | Total/NA | Solid | 5035A_H | |

### Analysis Batch: 762899

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| 480-234539-1 | TP-1-12' | Total/NA | Solid | EPA 8260C | 762885 |
| MB 480-762885/1-A | Method Blank | Total/NA | Solid | EPA 8260C | 762885 |
| LCS 480-762885/2-A | Lab Control Sample | Total/NA | Solid | EPA 8260C | 762885 |

### Analysis Batch: 762949

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| 480-234539-3 | PZ-1 | Total/NA | Water | EPA 8260C | |
| MB 480-762949/8 | Method Blank | Total/NA | Water | EPA 8260C | |
| LCS 480-762949/6 | Lab Control Sample | Total/NA | Water | EPA 8260C | |

## General Chemistry

### Analysis Batch: 762722

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| 480-234539-1 | TP-1-12' | Total/NA | Solid | Moisture | |
| 480-234539-2 | TP-3-9.5' | Total/NA | Solid | Moisture | |

# Lab Chronicle

Client: Roux Environmental Engineering and Geology DPC
Project/Site: 1641 River St.

Job ID: 480-234539-1

## Client Sample ID: TP-1-12'

**Lab Sample ID: 480-234539-1**

**Date Collected: 11/13/25 11:00**
**Matrix: Solid**
**Date Received: 11/14/25 13:00**

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Analyst | Lab | Prepared or Analyzed |
|---|---|---|---|---|---|---|---|---|
| Total/NA | Analysis | Moisture | | 1 | 762722 | JLS | EET BUF | 11/17/25 14:28 |

## Client Sample ID: TP-1-12'

**Lab Sample ID: 480-234539-1**

**Date Collected: 11/13/25 11:00**
**Matrix: Solid**
**Date Received: 11/14/25 13:00**
**Percent Solids: 84.6**

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Analyst | Lab | Prepared or Analyzed |
|---|---|---|---|---|---|---|---|---|
| Total/NA | Prep | 5035A_H | | | 762885 | ATG | EET BUF | 11/19/25 09:28 |
| Total/NA | Analysis | EPA 8260C | | 20 | 762899 | ATG | EET BUF | 11/19/25 15:49 |

## Client Sample ID: TP-3-9.5'

**Lab Sample ID: 480-234539-2**

**Date Collected: 11/13/25 12:40**
**Matrix: Solid**
**Date Received: 11/14/25 13:00**

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Analyst | Lab | Prepared or Analyzed |
|---|---|---|---|---|---|---|---|---|
| Total/NA | Analysis | Moisture | | 1 | 762722 | JLS | EET BUF | 11/17/25 14:28 |

## Client Sample ID: TP-3-9.5'

**Lab Sample ID: 480-234539-2**

**Date Collected: 11/13/25 12:40**
**Matrix: Solid**
**Date Received: 11/14/25 13:00**
**Percent Solids: 88.3**

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Analyst | Lab | Prepared or Analyzed |
|---|---|---|---|---|---|---|---|---|
| Total/NA | Prep | 5035A_L | | | 762831 | CDC | EET BUF | 11/18/25 18:32 |
| Total/NA | Analysis | EPA 8260C | | 1 | 762832 | CDC | EET BUF | 11/18/25 23:52 |

## Client Sample ID: PZ-1

**Lab Sample ID: 480-234539-3**

**Date Collected: 11/13/25 14:45**
**Matrix: Water**
**Date Received: 11/14/25 13:00**

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Analyst | Lab | Prepared or Analyzed |
|---|---|---|---|---|---|---|---|---|
| Total/NA | Analysis | EPA 8260C | | 100 | 762949 | ATG | EET BUF | 11/20/25 02:12 |

**Laboratory References:**

EET BUF = Eurofins Buffalo, 10 Hazelwood Drive, Amherst, NY 14228-2298, TEL (716)691-2600

# Accreditation/Certification Summary

Client: Roux Environmental Engineering and Geology DPC
Job ID: 480-234539-1
Project/Site: 1641 River St.

## Laboratory: Eurofins Buffalo

Unless otherwise noted, all analytes for this laboratory were covered under each accreditation/certification below.

| Authority | Program | Identification Number | Expiration Date |
|---|---|---|---|
| New York | NELAP | 10026 | 03-31-26 |

The following analytes are included in this report, but the laboratory is not certified by the governing authority. This list may include analytes for which the agency does not offer certification.

| Analysis Method | Prep Method | Matrix | Analyte |
|---|---|---|---|
| EPA 8260C | | Water | 1,2-Dibromoethane |
| EPA 8260C | 5035A_H | Solid | 1,2-Dibromoethane |
| EPA 8260C | 5035A_L | Solid | 1,2-Dibromoethane |
| Moisture | | Solid | Percent Moisture |
| Moisture | | Solid | Percent Solids |

# Method Summary

Client: Roux Environmental Engineering and Geology DPC
Job ID: 480-234539-1
Project/Site: 1641 River St.

| Method | Method Description | Protocol | Laboratory |
|---|---|---|---|
| EPA 8260C | Volatile Organic Compounds by GC/MS | SW846 | EET BUF |
| Moisture | Percent Moisture | EPA | EET BUF |
| 5030C | Purge and Trap | SW846 | EET BUF |
| 5035A_H | Closed System Purge and Trap | SW846 | EET BUF |
| 5035A_L | Closed System Purge and Trap | SW846 | EET BUF |

**Protocol References:**

EPA = US Environmental Protection Agency

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

**Laboratory References:**

EET BUF = Eurofins Buffalo, 10 Hazelwood Drive, Amherst, NY 14228-2298, TEL (716)691-2600

# Sample Summary

Client: Roux Environmental Engineering and Geology DPC
Job ID: 480-234539-1
Project/Site: 1641 River St.

| Lab Sample ID | Client Sample ID | Matrix | Collected | Received | Sample Origin |
|---|---|---|---|---|---|
| 480-234539-1 | TP-1-12' | Solid | 11/13/25 11:00 | 11/14/25 13:00 | New York |
| 480-234539-2 | TP-3-9.5' | Solid | 11/13/25 12:40 | 11/14/25 13:00 | New York |
| 480-234539-3 | PZ-1 | Water | 11/13/25 14:45 | 11/14/25 13:00 | New York |

Address: _____

Chain of Custody Record

eurofins | Environment Testing America

Regulatory Program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other:

TAL-8210

| Client Contact | Project Manager: Dan Bowson | Site Contact: | Date: 11/13/25 | COC No: |
|---|---|---|---|---|
| Company Name: 1641 River St, LLC | Tel/Email: | Lab Contact: | Carrier: | 1 of 1 COCs |
| Address: | Analysis Turnaround Time | | | Sampler: |
| City/State/Zip: | ☐ CALENDAR DAYS ☐ WORKING DAYS | | | For Lab Use Only: |
| Phone: | TAT if different from Below _____ | | | Walk-in Client: |
| Fax: | ☐ 2 weeks | | | Lab Sampling: |
| Project Name: 1641 River St Dam Imp | ☐ 1 week | | | |
| Site: 1641 River St | ☐ 2 days | | | Job / SDG No.: |
| P O # | ☐ 1 day | | | |

| Sample Identification | Sample Date | Sample Time | Sample Type (C=Comp, G=Grab) | Matrix | # of Cont. | Filtered Sample (Y/N) | Perform MS / MSD (Y/N) | TCL VOCs 8260 | Sample Specific Notes: |
|---|---|---|---|---|---|---|---|---|---|
| TP-1 - 12' | 11/13/25 | 11:00 | GRAB | SOIL | 1 | | | X | |
| TP-3 - 9.5' | | 12:40 | GRAB | SOIL | 1 | | | X | |
| PZ-1 | | 14:45 | GRAB | GW | 3 | N | | X | |

480-234539 Chain of Custody

Preservation Used: 1= Ice, 2= HCl; 3= H2SO4; 4=HNO3; 5=NaOH; 6= Other _____

**Possible Hazard Identification:**
Are any samples from a listed EPA Hazardous Waste? Please List any EPA Waste Codes for the sample in the Comments Section if the lab is to dispose of the sample.

☒ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

**Sample Disposal ( A fee may be assessed if samples are retained longer than 1 month)**

☐ Return to Client ☒ Disposal by Lab ☐ Archive for _____ Months

**Special Instructions/QC Requirements & Comments:**

13.6 I2#SC1 NO ICE

Custody Seals Intact: ☐ Yes ☐ No | Custody Seal No.: | Cooler Temp. (°C): Obs'd: _____ Corr'd: _____ Therm ID No.: _____

| Relinquished by: | Company: | Date/Time: | Received by: | Company: | Date/Time: |
|---|---|---|---|---|---|
| PJM | PJM Engineering | 11/13/25 1516 | | ET | 11/14/25 1300 |
| Relinquished by: | Company: | Date/Time: | Received by: | Company: | Date/Time: |
| Relinquished by: | Company: | Date/Time: | Received in Laboratory by: | Company: | Date/Time: |

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11/20/2025

# Login Sample Receipt Checklist

Client: Roux Environmental Engineering and Geology DPC

Job Number: 480-234539-1

**Login Number: 234539**

**List Source: Eurofins Buffalo**

**List Number: 1**

**Creator: Stapleton, Kaitlyn**

| Question | Answer | Comment |
|---|---|---|
| Radioactivity either was not measured or, if measured, is at or below background | True | |
| The cooler's custody seal, if present, is intact. | True | |
| The cooler or samples do not appear to have been compromised or tampered with. | True | |
| Samples were received on ice. | False | |
| Cooler Temperature is acceptable. | True | |
| Cooler Temperature is recorded. | True | 16.3 IR#SC no ice |
| COC is present. | True | |
| COC is filled out in ink and legible. | True | |
| COC is filled out with all pertinent information. | True | |
| Is the Field Sampler's name present on COC? | True | |
| There are no discrepancies between the sample IDs on the containers and the COC. | True | |
| Samples are received within Holding Time (Excluding tests with immediate HTs).. | True | |
| Sample containers have legible labels. | True | |
| Containers are not broken or leaking. | True | |
| Sample collection date/times are provided. | True | |
| Appropriate sample containers are used. | True | |
| Sample bottles are completely filled. | True | |
| Sample Preservation Verified | True | |
| There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs | True | |
| VOA sample vials do not have headspace or bubble is <6mm (1/4") in diameter. | True | |
| If necessary, staff have been informed of any short hold time or quick TAT needs | True | |
| Multiphasic samples are not present. | True | |
| Samples do not require splitting or compositing. | True | |
| Sampling Company provided. | True | PTM Engineering |
| Samples received within 48 hours of sampling. | True | |
| Samples requiring field filtration have been filtered in the field. | True | |
| Chlorine Residual checked. | N/A | |

# Appendix B Key Personnel Résumés

**Richard H. Frappa, P.G.**
Senior Consultant/Hydrogeologist

resume

Mr. Frappa is a technical expert having addressed soil and groundwater contamination issues attributable to past solid, hazardous, and mixed waste disposal practices and chemical releases. His expertise focuses in the areas of: hydrogeologic studies, groundwater and geochemical modeling, geochemical forensic analysis, remedial alternative analysis, industrial facility environmental compliance, and solid waste permitting/closure studies. Mr. Frappa is a lead groundwater consultant to the largest waste management company in North America and has experience with the implementation of innovative site characterization methods and remedial technologies at sites with complex geology. He has provided technical support to numerous law firms, chemical manufacturers, steel companies, energy producers including historic coal-fired electric power generating sites and coal ash disposal facilities, and solid waste disposal firms. Some examples of Mr. Frappa's project experience working in New York State and familiarity with NYSDEC Department of Environmental Remediation (DER) requirements is summarized below.

EDUCATION
M.A., Geology, State University of New York at Buffalo, 1987
B.A., Geology, State University of New York at Buffalo, 1985

EXPERIENCE IN THE INDUSTRY
39 Years

REGISTRATIONS AND LICENSES
Professional Geologist:
- New Hampshire #00292
- Pennsylvania #00969
- New York #000639

National Groundwater Association #112481

Certified Professional Geologist, American Institute of Professional Geologists #8828 – (Inactive Status)

EXAMPLES of EXPERIENCE

**Utility Client, Lower Scajaquada Creek, Buffalo, NY –** For a Utility Client at the Lower Scajaquada Creek Site in Buffalo, NY, responsible for the scope of work and completion of a Site Characterization completed in accordance with DER-10 under a NYSDEC Consent Order. This involved characterizing soil, groundwater, and creek sediments impacted with PAHs, metals, PCBs, and DNAPL. The area, surrounded by numerous sites in the NYSDEC Brownfield Cleanup Program (BCP) whose impacts extended off-site and affected area infrastructure and creek sediments, were identified during the investigation. Actively involved in work scope negotiation that best supported the client's interests. This work served as a precursor to a Project Agreement for a Remedial Investigation/Feasibility Study (RI/FS) being negotiated with NYSDEC and US EPA under the Great Lakes Legacy Act (GLLA) for the Lower Scajaquada Creek area.

**O&M Support at Former Manufactured Gas Plant (MGP) Sites, Buffalo, New York.** Currently managing implementation of the Site Management Plans at two former MGP Sites in Buffalo, New York. O&M activities include groundwater and surface water monitoring, containment cap inspections and maintenance, and DNAPL recovery.

**Major Utility Electrical Substations, Service Centers, and Former Manufactured Gas Plant (MGP) Sites, Upstate New York.** Managed investigation and remediation projects for dozens of sites for this major Upstate New York utility. The investigations involve the characterization of site soil and groundwater to determine if environmental impacts from historic releases of oil-filled equipment had occurred. Work activities follow NYSDEC requirements completed under DER-10. This support also included the preparation and implementation of a Self-Implementing PCB Cleanup Plan for remediation of an active substation impacted with PCBs with concentrations above 500 ppm and technical consulting for PCB spill cleanups following 40 CFR §761.125 subject to TSCA decontamination policy. Mr. Frappa also provided technical assistance to the utility's legal counsel in support of property divestiture for Brownfield redevelopment projects**.**

**West Station Former Manufactured Gas Plant (MGP) Site, Rochester, New York.** Managed the Remedial Investigation, Alternatives Analysis, Remedial Action Work Plan, and Pre-Design Investigation for the West Station Former MGP Site on the Genessee River.. The large site included three manufactured gas processes with

historic tar storage in above and below ground tanks. The project involved limited soil removal and capping remediation on the Land-side and soil and near shore sediment removal on the side of site bordering the River. Passive tar collection is also planned. Data from forensic laboratory analysis assisted in the evaluation of the source of polycyclic aromatic hydrocarbons (petrogenic verses pyrogenic) identified in river sediments. The focus of the investigation assessed the nature and extent of MGP impact in fill material on-site, fractured bedrock beneath the site, and river sediments adjacent to the site.

**Brewer Street Coal Tar Site, Rochester, New York.** Managed the Supplemental Investigation of a Coal Tar Site in the Genesee River Gorge. The investigation included interpretation of data collected by others, additional bedrock monitoring well installations, test pit excavation, and reconnaissance mapping of DNAPL seeps along a rock ledge above a 30-foot waterfall. The primary goals of the site investigation were to characterize the extent of chemical impact in soil for excavation and off-site disposal and characterize the mechanism for DNAPL entry into fractured bedrock adjacent to the river for remedial action. In-situ rock grouting was used to mitigate DNAPL seepage, prepared SMP and completed O&M for 3 years following remedy implementation.

**Former Manufactured Gas Plant (MGP) Site, Pavilion, New York.** Managed the Preliminary Site Assessment and interim remedial measures at former manufactured gas plant site used as a service center. The work supported alternatives analysis for site closure.

**Soil Re-Use Management, Industrial Clients in New York State.** Mr. Frappa serves as a Qualified Environmental Professional (QEP) as defined in Part 360.2(b)(225) for clients required to meet recent revisions to construction soil management practices and soil re-use. He assists clients implement soil reuse programs consistent with 6NYCRR Part 360.13.

**Confidential Client, Legal Support, New York.** Provided technical support to a major utility's outside legal counsel regarding claims by an adjacent industrial property owner that PCBs migrated from an electric substation in New York. Mr. Frappa reviewed PCB aroclor and congener data obtained by consultants representing the adjacent industrial property owner, evaluated geologic and hydrogeologic conditions, and developed a work plan to investigate surface and subsurface soils, groundwater, storm water, and storm sewer debris at the substation. The objectives of the investigation were to determine if PCBs in soil/fill and groundwater existed at the substation and, if present, determine whether transport mechanisms existed which could have conveyed constituents off-site. Work plan implementation successfully demonstrated that the source(s) of PCB detections on the adjacent industrial facility were not related to the substation.

**Confidential Industrial Client, Legal Support, New York.** Provided expert services to legal counsel related to cost recovery matter associated with a large site remediation project completed in Niagara Falls, NY under the New York State Brownfield Cleanup Program (BCP). Services included a comprehensive evaluation of historical site operations, a comparison of remedial actions completed at similar sites that had similar industrial operations, and evaluated forensic data collected by third parties. These efforts were used to support an equitable allocation of remediation costs for a site primarily impacted with PCBs, metals, and petroleum compounds.

**Niagara Plant Innovative Technology Implementation Technical Support – DuPont Chemical, Niagara Falls, New York.** Technical lead to mitigate migration of groundwater impacted with chlorinated solvents in the Lockport Formation using groundwater recovery from blast-enhanced fractured bedrock trenches. Technology implementation involved drilling and detonating explosives in the subsurface to enhance fracturing of bedrock for groundwater recovery. The assessment included groundwater modeling and evaluation of potential blast vibration effects on Plant structures. A pilot study was successfully completed and full-scale implementation at the chemical plant consisted of the installation of three blast-fractured bedrock trenches under the direction of Mr. Frappa. The implemented technology saves DuPont over a million dollars in lifetime O&M costs.

**West Valley Nuclear Demonstration Project, West Valley, New York.** Mr. Frappa provided environmental consulting services at the DOE West Valley Nuclear Demonstration Project. His primary role was to investigate and assess remedial alternatives to mitigate the spread of Strontium-90 (Sr-90) impacted groundwater in the shallow water-bearing zone downgradient from a nuclear fuel re-processing facility. Work included remedial alternatives analysis, pilot testing of reactive barrier technology, and manager of a multi-disciplinary design team

that lead to the installation of an innovative (first in the world) 850-foot-long permeable treatment wall (PTW) containing zeolite to remove strontium from groundwater. Supported modeling efforts and groundwater use permitting for facility water usage.

**Confidential Industrial Client, Dresden, New York**: Mr. Frappa directed a RI/FS at a DNAPL-contaminated sheet metal manufacturing facility located in the New York State Finger Lakes Region. Complex hydrogeologic conditions at the fractured bedrock site warranted age-dating of groundwater using Helium-Tritium isotopes, analysis of matrix diffusion to assess DNAPL disappearance with Dr. Beth Parker in consideration of long-term loading of contaminant mass to groundwater, implementation of innovative DNAPL investigation techniques using solvent dye during drilling to cost-effectively characterize the site. An innovative method of hydraulic control of contaminated groundwater in the low permeability fractured bedrock using explosives to create an artificially produced zone of high permeability was implemented to intercept a plume of TCE-contaminated groundwater.

**Solvent Chemical, Niagara Falls, New York**: Mr. Frappa directed a complex Supplemental RI/FS at a former chemical manufacturing facility. The work was performed as a simultaneous multiple-phase study to fast-track a Record of Decision in less than a 2-year period. An extensive site investigation was performed to collect data pertinent to evaluate suitable remedial alternatives for a site impacted with various chlorinated aliphatic hydrocarbons and chlorinated benzene compounds. This work included, inspection and characterization of underground piping and utilities that created preferential migration pathways for non-aqueous phase transport, DNAPL, installation of deep bedrock wells; DNAPL delineation; a 72-hour pump test; treatability testing of bedrock groundwater; and a dual vapor extraction (DVE) with air sparging pilot test. The Feasibility Study analyzed innovative soil remedial technologies such as six-phase soil heating with DVE and hot air injection and stabilization and solidification with a mixing auger. The work was later used to support cost allocation among potentially responsible parties (PRPs).

**Peter Cooper Gowanda Landfill and Markhams NPL Sites RI/FS – PRP Group, Gowanda, New York.** The Peter Cooper National Priority List (NPL) Sites are comprised of two sites. Directed Remedial Investigations and Risk Assessments at both sites. As the RI manager, was responsible for developing the scopes of work, interfacing with the PRP group and the U.S. EPA Region 2, overseeing the correct implementation of the work plan, and coordinating the human health risk assessment. Over 100 groundwater samples and more than 200 soil samples were analyzed from the combined sites. Provided technical support during development and implementation of remedial actions.

## AWARDS

Team recipient of the National Ground Water Association (NGWA) 2011 Groundwater Remediation Project of Year Award for the Continuous Permeable Treatment Wall Installed to Remove Sr-90 from Groundwater at the West Valley Demonstration Project

Team recipient of the New York State Consulting Engineers Council. (NYCEC) 1996 Bronze Award for Remediation Project of the Year Award for the groundwater recovery and treatment from a blast-fractured bedrock trench manage contamination from a long-term DNAPL source in bedrock.

## PUBLICATIONS/PRESENTATIONS

Frappa, R.H., M. Cummings, and J. Trast, 2020. "Closure by Removal: Groundwater Quality Observations and Considerations During Design" presentation at the USWAG CCR Workshop 2020 Virtual – Session 6 September 2020.

Frappa, R.H., C. Prucha, and J. Marabella, 2017. "Statistical Groundwater Contamination or Alternative Source" presentation at the USWAG CCR Conference in Arlington, VA, February 22-23, 2017.

Frappa, Richard H, 2014. "Organics and High Permeability at Landfill Sites – Optimal Environs, Solid Waste & Recycling Conference, Federation of NY Solid Waste Associations, Sagamore, NY, May 18-21, 2014.

Bablitch, Doug. Malhotra, Rupeet, Frappa, Richard, Warner, Scott. "Design and Implementation of a Permeable Treatment Wall to Passively Remove Strontium-90 from Groundwater at a Former Commercial Nuclear Fuel Reprocessing Facility in New York." Proceedings of the ASME 2011 International Conference on Environmental Remediation and Radioactive Waste Management, Reims, France. September 25-29, 2011.

M.B. Bellis, J.D. Chamberlain, L.M. Michalczak, C. Dayton, R.H. Frappa, "Mitigation of the Contaminated Groundwater Plume at the West Valley Demonstration Project, New York, USA – 10409," Waste Management Symposium, Inc., Phoenix, AZ, March 7-11 2010

Frappa, Richard H., 2008. "Transport of Captured Carbon Dioxide: A Cost Challenge in the Advancement of Geological Sequestration" presentation at the Electric Utilities Environmental Conference. Tucson, Arizona, January 27- 30, 2008.

Kevin G. Mumford, John F. MacGregor, Sarah E. Dickson, Richard H. Frappa (2007) Multivariate Analysis of Ground Water and Soil Data from a Waste Disposal Site. Ground Water Monitoring & Remediation 27 (1), 92–102.

Frappa, Richard H., 2007. "Carbon Dioxide Sequestration: What are the Costs?" Abstract accepted for presentation at the Electric Utilities Environmental Conference. Tucson, Arizona, January 21- 24, 2007.

Frappa, Richard H., 2006. "Integrated Gasification Combined Cycle (IGCC) Technology." Presented at a special technical session at the 6th Annual Empire Energy and Environmental Expo, Syracuse, New York, September 26 - 27, 2006.

Frappa, Richard H., and Paul Mazierski, 2005. "Surgical Implementation of Blast Fractured Bedrock Trench Technology at an Active Chemical Plant", presented at the 21st Contaminated Soils and Groundwater Conference, Amherst, Massachusetts, October 17 – 20, 2005.

Warner, Chin Man Mok, Peter Bennett, Richard Frappa, Robert Steiner, Catherine Bohan, Alan Rabideau, and Alison Steiner, 2004. "Performance Assessment of a Zeolitic Permeable Treatment Wall Designed to Remove Strontium-90 from Groundwater", presented at Fourth International Conference on Remediation of Chlorinated and Recalcitrant Compounds, Monterey, California.

Frappa, Richard H., 2003. "State of the Practice: Recent Developments in Petroleum Site Investigation, Environmental Cost Recovery and Cleanup", presented at the 2003 New York State Bar Association CLE Petroleum Spill Litigation and Cleanup Symposium in Amherst, New York.

Forbes, Thomas H. and Frappa, Richard H., 2002. "Innovative Technologies Almost 10 Years Later at the Former Mercury Aircraft Dresden Site" 2002 NGWA Northeast FOCUS Ground Water Conference. October, 2002.

Luttinger, J.L, Frappa, R.H., Mullin, S.R., and Alexander, T., 2001. "Geophysical Techniques Applied to Mapping Relic MGP Site Structures ", in proceedings of the 14th International Symposium on Site Remediation and Environmental Management in the Utility Industry, Orlando Florida, December 2-6, 2001.

Frappa, R.H., Prucha, C., and Magnusson, R.S., 2000. "Development of Scientifically-Based Long-Term Groundwater Monitoring Programs", in proceedings of the Contaminated Soils and Groundwater Conference, Amherst, Massachusetts, October 16 – 19, 2000.

Frappa, R.H. and Parker, B.L., 1997. "DNAPL Site Characterization and the Effectiveness of a Groundwater Management Zone," in proceedings of the 11th Annual NGWA Outdoor Action Conference & Expo, Las Vegas, Nevada, April 1-3.

Frappa, R.H., McManus, A.C., and Parker, B.L. 1996. "The Use of Non-conventional Investigative Methods in the Development of a Conceptual Site Model," in proceedings of the 28th Mid-Atlantic Industrial and Hazardous Waste Conference, Buffalo, New York, July 14-17.

Forbes, T.H., Frappa, R.H., and McManus, A.C., 1996. "A Blast to Remediate," Industrial Wastewater, July/August, pp. 37-41.

Frappa, R. H. and Forbes, T.H., 1994, "Innovative Groundwater Remedial Solutions for the Mercury Aircraft Site", paper presented at the Rochester ASCE Technical Seminar on the Environment.

**Jeffrey S. Hall, PE, PMP**
Senior Environmental Engineer

resume

Jeff Hall is a senior environmental engineer in GEI's Buffalo, NY office. Jeff has 28 years of diverse environmental engineering experience. He is an expert in the technical execution of the most complex sites within the Formerly Utilized Sites Remedial Action Program (FUSRAP) and CERCLA. He has an exceptional record in organizational restructuring, having established and led a dedicated technical office for high-activity waste remediation.

PREVIOUS PROJECT EXPERIENCE

**Niagara Falls Storage Site (NFSS), U.S. Army Corps of Engineers (USACE), Lewiston, NY.** Managed and directed the technical execution of the NFSS Formerly Utilized Sites Remedial Action Program (FUSRAP) projects, which involves the remediation of high-activity uranium ore residues. Projects included the Interim Waste Containment Structure Operable Unit (OU) Remedial Design, Balance of Plant OU Remedial Action, Environmental Surveillance Program, O&M, and Site Security. Activities included organizational design and management of the NFSS Integrated Technical Office, contract acquisition and execution, quality control/quality assurance (QA/QC), and community outreach.

**FUSRAP, USACE, NY, PA, OH, and IN.** Managed and directed engineering technical leads responsible for remedial investigations, feasibility studies, decision documents, remedial design, and remedial action for nine (9) radiologically contaminated sites to protect human health and the environment under the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA). Activities included contract acquisition and execution, QA/QC, and community outreach. Led the Beryllium Safety Team as chairperson from execution of the initial team charter through the first major revision to the Chronic Beryllium Disease Prevention Program.

**Civil Works Projects, U.S. Army Corps of Engineers, KY, MI, NY, OH, PA and WI.** Subject matter expert for the completion of all appropriate inquiries and due diligence activities for multiple Civil Works (CW) projects relating to O&M, navigation, shoreline protection, flood risk management, and ecosystem restoration projects within the Great Lakes and Rivers Division. Lead author and signatory for multiple Phase I and II Environmental Site Assessments IAW ASTM guidance and USACE CW Hazardous toxic and/or Radiological Waste (HTRW) Policy Guidance.

**Charlevoix National Priorities List (NPL) Site, U.S. Environmental Protection Agency (USEPA) Region 5, Charlevoix, MI.** Lead engineer responsible for QA/QC, final report review/approval, planning, acquisition, and execution support for remedial investigations, feasibility studies, decision documentation, pilot studies, and remedial design (excavation, air sparging, and in-situ chemical oxidation) for a city wide chlorinated solvent impacted groundwater plume with vapor intrusion implications.

EDUCATION
M.Eng., Civil/Environmental Engineering, State University of New York at Buffalo
B.S., Civil Engineering, State University of New York at Buffalo

EXPERIENCE IN THE INDUSTRY
28 years

EXPERIENCE WITH GEI
Less than 1 year

REGISTRATIONS AND LICENSES
Professional Engineer, NY No. 113559
Professional Engineer, NC No. 028351

TRAINING AND CERTIFICATIONS
Project Management Professional No. 1207994
OSHA 40-hour HAZWOPER
American Red Cross CPR/First Aid

AWARDS
Commander's Awards for Civilian Service – District & Division

GEI Consultants

**McLouth NPL Site, USEPA Region 5, Gibraltar, MI**. Lead engineer responsible for quality control/assurance, technical, planning, acquisition, and execution support for phased remedial investigations for multiple landfill and leachate ponds associated with a former steel manufacturing facility. Led data quality objectives development that included a novel incremental sampling approach to satisfy stakeholder/regulatory concerns.

**Former Fire Training Center, U.S. Department of Transportation Maritime Administration, Toledo, OH.** Senior engineer responsible for facility decommissioning and demolition, removal of above and underground storge tanks, and remediation of petroleum impacted soils. Activities included preparation of scopes of work, specifications, completion reports, QA/QC, and coordination with regulatory agencies.

**Luckey FUSRAP Site, U.S. Army Corps of Engineers, Luckey, OH.** Engineering Technical Lead for remedial investigations and actions performed under CERCLA. Lead engineer/author for Explanation of Significant Differences and remedial action scope of work for the former beryllium refining facility. Member of source selection board. Remediation efforts included excavation, soil sorting, onsite stabilization, and offsite disposal of impact soil, sediment, and sludge.

**Upper Ohio River Navigation Feasibility Study-HTRW Assessment, U.S. Army Corps of Engineers, PA**: Project Manager for seven Phase II Environmental Site Assessments to support rehabilitation of three (3) lock and dam projects on the Upper Ohio River. Primary author for the sampling and analysis plan and final report.

**Former Lake Ontario Ordnance Works (LOOW) DERP FUDS Site, U.S. Army Corps of Engineers, Lewiston/Porter, NY.** Engineering Technical Lead for investigations, feasibility studies, and remedial action performed under CERCLA, NYS regulations and guidance; and DERP-FUDS. Authored scopes of work and IGEs, provided QA reviews, field oversight for investigations and remediation, including removal of all USTs on the former developed zone.

**Mitigation of Safety Hazards for the former LOOW Wastewater Treatment Plant, Office of Economic Adjustment, Lewiston/Porter, NY.** Project Manager for demolition and remedial actions for the Town of Lewiston utilizing special grant funding. Prepared and reviewed scopes of work and independent government estimates (IGEs) for remedial construction contract actions.

**Guterl Specialty Steel FUSRAP Site, U.S. Army Corps of Engineers Lockport, NY.** Engineering Technical Lead for remedial investigations and feasibility studies performed under CERCLA and FUSRAP. Lead author for scopes of work and IGEs and performed quality assurance and contractor oversight of field investigations and feasibility study.

**Linde FUSRAP Site, U.S. Army Corps of Engineers, Tonawanda, NY.** Engineering Technical Lead for remedial action (excavation, demolition, and soil sorting) performed under CERCLA and FUSRAP.

**Underground Storage Tank (UST) Spill Sites, United Refining, NY.** Project Manager responsible for eight (8) petroleum UST sites. Responsible for remedial action work plan development and implementation, planning, design, cost estimating, contracting, data evaluation, pilot testing, remedial system optimization, operation and maintenance, reporting, budget tracking, invoicing, environmental sampling, well installation, construction management, and proposal preparation. Remedial technologies utilized included excavation and disposal, air sparging, vapor extraction, oxygen injection, and bioaugmentation.

**Underground Storage Tank (UST) Spill Sites, Sunoco, NY.** Project Manager responsible for eight (8) petroleum UST sites. Responsible for remedial action work plan development and implementation, planning, design, cost estimating, contracting, data evaluation, pilot testing, remedial system optimization, operation and maintenance, reporting, budget tracking, invoicing, environmental sampling, well installation, construction management, and proposal preparation. Remedial technologies utilized included excavation and disposal, groundwater pump and treatment, air sparging, vapor extraction, dual phase extraction, surfactant injection and recovery, oxygen injection, and bioaugmentation.

**Underground Storage Tank (UST) Spill Sites, Kodak, Rochester, NY.** Project Manager responsible for two (2) petroleum UST sites, located within the industrial complex, regulated in accordance with under RCRA, due to the site being a large quantity hazardous waste generator. Responsible for remedial action work plan development and implementation, data evaluation, reporting, budget tracking, invoicing, environmental sampling, and construction management. Remedial technologies utilized included excavation and disposal, UST removal, oxygen injection, and chemical oxidation.

**Scott Aviation Site, Tyco International (USA), Inc., Lancaster, NY.** Project Engineer for RCRA investigation and remedial activities that included installation, maintenance, and optimization of a dual phase extraction system and groundwater collection trench for remediation of a chlorinated solvents groundwater plume. Prepared and implemented an interim remedial measures and supplemental site investigation work plans for other areas of concern at the site.

**Richardson Hill Road Landfill NPL Site, USEPA/USACE, Sidney Center, NY.** Resident Engineer responsible for reviewing the potentially liable parties' (PRP's) technical documents and provided full-time oversight of remedial and investigation actions performed under CERLCA. Activities included remediation of a PCB-contaminated landfill and associated PCB contaminated sediments of Herrick Hollow Creek. The remedial actions included excavation and disposition of an 800-cubic-yard waste oil pit; construction and operation of an ex-situ soil vapor extraction treatment cell; excavation and stabilization of sediments from 0.75 mile stretch of Herrick Hollow Creek and associated ponds; stream and wetland restoration, installation of a biopolymer slurry groundwater collection trench; excavation of satellite waste areas; installation of 6NYCRR Part 360 cap, and installation of a TSCA cell.

**Forest Glen Subdivision NPL Site, USEPA/USACE, Niagara Falls, NY.** Resident Engineer responsible for reviewing PRP's technical documents and provided full-time oversight of remedial and investigation actions performed under CERLCA. The remedial actions included installation of a 6NYCRR Part 360 cap and installation of a groundwater collection system on site. Incorporated into the cap design was the construction of a 38,400-squarefoot, one-story light industrial-commercial building.

**Mason Farm Low-Level Radioactive Waste Disposal Site, University of North Carolina at Chapel Hill, Chapel Hill, NC.** Project engineer responsible for development and implementation of remedial work plans to excavate 5,800 cubic yards of material from the Nuclear Regulatory Agency licensed burial area, located within a jurisdictional wetland. Assisted with the design and installation of a sealed sheet pile wall, to stabilize excavations and prevent surface water infiltration, and a groundwater pump and-treat system to address a 1,4-dioxane plume. Performed oversight during all phases of remedial construction.

**Athol Corporation Manufacturing Facility, Athol Corporation, Butner, NC.** Project engineer responsible for development and implementation of remedial work plans for vacuum enhanced recovery (VER), nutrient enhanced natural attenuation, and phytoremediation pilot studies at the vinyl manufacturing facility. Conducted groundwater sampling and reporting for the site and designed the piping network for a full-scale VER system installed within the source area.

**JFD Electronics/Channel Master NPL Site, UNIMAX Corporation/Avnet Inc., Oxford, NC.** As resident/project engineer, performed construction oversight during the excavation of 2,100 cubic yards of metals impacted soils and sludge generated by the former chrome plating facility. Managed the O&M and monitoring for an existing pump-and-treat system at the site.

**Former Fina Bulk Fuel Terminal, AtoFina Petrochemicals, Inc., Greensboro, NC.** Project Manager for remedial and investigation activities for a five (5) acre light non-aqueous phase liquid plume that extended from the former fuel terminal and onto a portion of the Greensboro Airport. Managed O&M and monitoring for an existing total phase extraction system at the site. Prepared work plans for radio frequency heating (RFH), air sparging, and nutrient enhanced natural attenuation pilot studies for the site. Implemented the RFH pilot study and provided construction oversight during the installation.

**Underground Storage Tank Pay-for-Performance Program, South Carolina Department of Environmental Services, SC.** Project engineer for nine (9) petroleum-impacted sites throughout the state. Designed air sparging, soil vapor extraction, and dual phase extraction remediation systems and prepared design-bid documents, corrective action plans, engineering reports, equipment specifications, and associated permits. Performed CAD design, environmental sampling, contractor supervision, and construction administration.

**Jessica Paskie**
*Staff Geologist*

resume

Jessica Paskie is a staff geologist in GEI's Buffalo, NY office. Her experience includes remedial investigations and environmental monitoring of former manufactured gas plant (MGP) sites. She has experience performing a variety of field activities to evaluate the environmental conditions within surface soil, subsurface soil, soil vapor, sediments, groundwater, and surface water.

*PROJECT EXPERIENCE*

**Remedial Investigation of Former MGP Site, Buffalo, NY** Assisted with investigation of creek sediments impacted with dense non-aqueous phase liquid (DNAPL). Surveyed sediment sample locations with a handheld GPS. Logged and sampled soil to delineate the extent of DNAPL contamination. Performed air monitoring during intrusive activities. Oversaw installation of monitoring wells in impacted soil. Performed monitoring well development and sampling, groundwater elevation gauging, hydraulic conductivity testing, and DNAPL gauging and recovery in monitoring wells. Analyzed hydraulic conductivity testing results using AQTESOLV. Compiled field data, stratigraphic data, and geotechnical testing results into summary tables.

**Soil Reuse Characterization, Multiple Locations, NY** Collected samples from stockpiled soils to determine if soils met New York State Department of Environmental Conservation Department of Environmental Remediation (NYSDEC DER) criteria for reuse. Wrote reports summarizing soil characterization results for submittal to client.

**Former MGP Site, Hornell, NY** Performed quarterly groundwater sampling at a remediated MGP site.

**Former MGP Site, West Seneca, NY** Sampled sub-slab soil vapor and indoor air in five buildings to assess soil vapor intrusion. Performed semi-annual groundwater sampling and water level gauging. Assisted in data analysis and development of groundwater contour maps.

**Gas Mixing Station Rebuild, West Seneca, NY** Collected and logged over 40 soil samples during pre-construction activities to determine if excavated soil met NYSDEC DER criteria for reuse on site. Sampled water generated during construction to comply with the requirements of a Buffalo Sewer Authority discharge permit.

**Former MGP Site, LeRoy, NY** Drafted a health and safety plan for a supplemental investigation involving subsurface investigation, creek sediment probing, utility line investigation, and repairs to monitoring wells.

*EDUCATION*

*M.S., Geology, State University of New York at Buffalo*
*B.S., Environmental Geosciences, State University of New York at Buffalo*

*EXPERIENCE IN THE INDUSTRY*

*1+ year*

*EXPERIENCE WITH GEI*

*1+ year*

*TRAINING AND CERTIFICATIONS*

*OSHA HAZWOPER 40-Hour*
*NYSCDEA NYS DEC Endorsed 4-Hour Erosion & Sediment Control Training*

*PROFESSIONAL AFFILIATIONS*

*Buffalo Association of Professional Geologists (BAPG)*

GEI Consultants

**20+Michael A. Cummings**
Project Professional

resume

Mr. Cummings is a Professional Geologist and Project Manager with over 20 years of experience as an environmental consultant with a specialization in the characterization of geologically and hydrogeologically complex regimes ranging from active industrial facilities and brownfields to environmentally sensitive, undeveloped greenfield areas.

EDUCATION
M.A., Geology, State University of New York at Buffalo
B.S., Geology, State University of New York at Fredonia

EXPERIENCE IN THE INDUSTRY
20 years

EXPERIENCE WITH GEI
9 years

TRAINING AND CERTIFICATIONS
Professional Geologist- NY
40-Hour HAZWOPER Certification

PROJECT EXPERIENCE

**Coal Combustion Residual (CCR) Landfill Groundwater Quality Monitoring, Multiple Sites in New York State.** Currently providing groundwater quality and solid waste reporting services for two electrical generating facilities that have associated CCR landfills, and waste water/process water impoundments. Long term geochemical trends and a variety of established geochemical evaluation methods are utilized to assess groundwater quality at the facilities and assist the client with conformance to the recent U.S. Environmental Protection Agency Final Rule regarding CCR landfills and impoundments.

**Phase II Soil Investigation, Western, NY.** Conducted a Phase II investigation for a proposed solar energy facility in Western New York. A portion of the proposed array footprint occupied a former junkyard and industrial waste area with unknown soil and bedrock conditions. The investigation focused on delineating and characterizing the soil, fill and waste materials to determine the potential need for excavation and/or imported fill quantities to support Site development.

**Hydrogeologic Investigation, Riga, NY**. Field team leader of a hydrogeologic investigation for a proposed soil borrow area at a landfill in Western New York. The investigation focused on the delineation of the extent of materials which could be used as daily cover for the landfill. The field activities included the completion of soil borings and monitoring wells, hydraulic conductivity evaluation as well as an electromagnetic survey of an approximately 200-acre area. The survey mapped the lateral extent of glacial units based on the electrical conductivity of each type of material. The extent of each unit was later confirmed with additional soil borings and test pits into selected target areas.

**Supplemental Remedial Investigation, Rochester, NY.** Field team leader of an investigation oriented at delineating the extent of chlorinated volatile organic compounds (Cl-VOCs) impacts to soil and bedrock groundwater at a former landfill Site. The investigation focused on discrete-interval groundwater sampling in bedrock coreholes and laboratory analysis of retrieved bedrock core to evaluate matrix diffusion of Cl-VOCs into the rock matrix. The results of the investigation aided in the design of a remedial strategy by narrowing the potential source area in the horizontal and vertical dimensions and quantifying contaminant mass diffused in the rock matrix.

GEI Consultants

**Downgradient Groundwater Investigation, Middleport, NY.** Field team leader of a supplemental groundwater investigation which focused on evaluating groundwater quality downgradient from a pesticide formulation facility. Field activities included the installation of bedrock monitoring wells to depths of 120 feet and low-flow, discrete-interval bedrock groundwater sampling with a double packer assembly. Groundwater samples were dated using radioactive (tritium) and chlorofluorocarbons analyses to successfully demonstrate that ammonia present in bedrock groundwater was naturally occurring and did not reflect impacts from facility operations. The hydraulic conductivity of each interval was evaluated through rising head tests.

**Remedial Investigation, Former Manufactured Gas Plant (MGP), Rochester, NY**. Field team leader of a multimedia remedial investigation focusing on the nature and extent of impacts to soil, bedrock, groundwater and river sediment at a former MGP Site located directly adjacent to the Genesee River in Rochester, New York. The characterization included the completion of soil borings, overburden and bedrock monitoring wells, river sediment sampling, as well as sampling of overburden/bedrock groundwater and sediment pore water focused on determining the nature and extent of MGP residuals. A hydrogeologically complex series of tail races which were backfilled during Site development were delineated and focused upon during the investigation to determine their potential to act as contamination sinks.

**Remedial Investigation, Erie, PA.** Field team leader of a remedial investigation at an active industrial manufacturing facility with documented historical chlorinated volatile organic compounds contamination. The investigation was performed to comprehensively document existing environmental conditions as part of a proposed property transaction. The comprehensive investigation documented the presence of dense nonaqueous phase liquids product (tetrachloroethylene) in shallow overburden groundwater, and a dissolved phase plume discharging to surface water and a nearby sanitary sewer. The delineation of impacts was challenging due to a limited source zone located near the center of the 300,000 square foot facility with limited access to traditional characterization tools. A membrane interface probe was utilized as a screening tool to qualitatively delineate the extent of dense nonaqueous phase liquids product and attempt to define the limits of residual phase contamination. A draft Remedial Investigation/ Risk Assessment was developed and is currently under review by the State agencies.

**Remedial Investigation/ Feasibility Study, Former Manufactured Gas Plant (MGP) Site, Penn Yan, NY.** Field team leader of a multimedia investigation at a former MGP Site, focusing on the determination of nature and extent of impacts to soil, groundwater and stream sediment. Field activities included the installation and low-flow sampling of groundwater monitoring wells, a soil vapor intrusion assessment at an adjacent residential structure, surface and subsurface soil sampling, and the collection of stream sediment samples upgradient and downgradient of the Site.

**Supplemental Remedial Investigation, Manufactured Gas Plant Site, Rochester, NY.** Performed a detailed supplemental multi-media site characterization at a former manufactured gas plant. The investigation focused on characterization and delineation of soil, fractured bedrock and groundwater impacted with light nonaqueous phase liquid and dense nonaqueous phase liquids, as well as the presence of spent gas purifier material. Field activities included drilling contractor oversight, subsurface soil sample collection, determination of native vs. non-native overburden materials, and detailed bedrock characterization through the inspection of recovered rock cores. The collected data were used to evaluate the potential effectiveness of proposed remedial methods at the Site.

**Supplemental Remedial Investigation, Rochester, NY.** Field team leader of a multi-media site characterization of a site impacted with light nonaqueous phase liquid and dense nonaqueous phase liquids. Field activities included river and marsh sediment sample collection, surface and subsurface soil sample collection, collection of ambient air samples during test pit excavation and collection of groundwater samples. Activities also include soil characterization, bedrock core description and groundwater monitoring well installations.

**Supplemental Remedial Investigation, Albion, NY.** Field team leader of a supplemental site characterization at a former manufactured gas plant (MGP) adjacent to the Erie Canal. The investigation focused primarily on the

identification and delineation of former MGP derived wastes, including light nonaqueous phase liquid and dense nonaqueous phase liquids. The investigation focused on determining the potential of off-Site impacts from previous Site operation and evaluating the potential hydraulic interaction between the Site and a previously unidentified groundwater sump associated with the canal lift-bridge, and large diameter sanitary sewer bordering the Site. The investigation included the installation of on-Site and off-Site monitoring wells, collection of surface and sub-surface soil samples, groundwater samples and detailed characterization of native and non-native overburden materials.

**Site Characterizations/ Site Investigations, Various Localities throughout New York State.** Performed site characterizations at over 30 active and inactive electrical substations ranging in size from small residential distribution facilities to large scale region-servicing switchyards. The investigations were performed in response to planned property divestiture, distribution system upgrades and/or petroleum releases to the environment. The assessments typically included the evaluation of Site soil and groundwater for conformance with state regulatory standards and frequently included sampling of concrete and wood structures for disposal characterization purposes.

**Groundwater Capture Zone Analysis, Henderson, NV.** Developed a groundwater flow and capture zone analysis for a groundwater treatment system consisting of multiple groundwater extraction wells and an impermeable slurry wall. The simulation was developed through a kriging analysis of measured heads and transient tracking of hypothetical particles to evaluate the capture efficiency of the groundwater extraction system using MK3D-H20 software. The capture efficiency of the system is reevaluated quarterly using updated groundwater elevations and groundwater extraction rates as mandated by the state regulating agency.

**Private Water Supply Well Evaluation, West Valley, NY.** Evaluated pumping/ drawdown test data in a series of proposed water supply wells at a Department of Energy-operated facility in support of a ModFLOW groundwater flow model. The proposed well(s) will provide drinking water to the facility where a Sr-90 plume exists in a shallow, unconsolidated glacial aquifer. Time-drawdown and distance-drawdown analyses were performed to derive hydraulic conductivity and storage estimates as well as potential boundary conditions for the bedrock aquifer. The data are being utilized in a groundwater flow model to evaluate the potential capture of Sr-90 during long-term pumping of the system.

**Water Resources Evaluation- Marshlands, PA.** Participated in the development of a water-resources investigation plan targeted at determining the suitability of a network of groundwater production wells to supply the water requirements of hydraulic fracturing operations in an oil/natural gas field in north-central Pennsylvania. The investigation included a desktop study involving fracture-trace-analysis to identify lineaments and potential high-yield production well Sites as well as a field investigation to evaluate environmentally sensitive areas at potential drilling locations.

**Public Water Supply Well Siting and Testing, Hamlet of West Valley, NY.** Assisted a municipal client with the siting, installation and testing of a new public water supply well to serve a community reliant on a network of naturally occurring springs and near century-old water distribution system. Potential well sites were identified and prioritized based on proximity to a water storage tower, likelihood of satisfactory aquifer conditions and property access.

**Groundwater Investigation/ Monitoring Network Upgrade, Granby, MA.** Field team leader of an investigation into the extent of part-per-billion concentrations of 1,4-Dioxane in bedrock groundwater adjacent to an active landfill facility. The investigation included the installation of bedrock monitoring wells on the landfill property as well as the sampling of multiple residential wells adjacent to the landfill. The residential water supply wells were sampled at discrete intervals using a double packer assembly in an attempt to evaluate the contaminant contribution from discrete fractures in each open-bedrock borehole.

**Sediment Characterization, Tonawanda, NY.** Evaluated the nature and extent of manufactured gas plant (MGP) Residuals (coal tar) in Tonawanda Creek/ The Erie Canal directly offshore of a former MGP Site in

Western New York. The goal of the investigation was to verify the horizontal and vertical limits of impacts to sediment, the depth to native till material and gather geotechnical data on the sediments in preparation of planned sediment dredging. The record of decision issued for the Site requires a driven sheet-pile containment structure to be installed around the impacted sediments prior to dredging. Critical data gathered from the investigation necessitated a redesign of the sheet pile wall to incorporate additionally impacted areas not identified in previous efforts.

**Supplemental Site Assessment, Ogdensburg, NY.** Performed a supplemental investigation at an active electrical substation to determine the presence and extent of non-native overburden material on-site. The subsurface investigation involved the chemical and physical characterization of material suspected to be derived from a nearby former manufactured gas facility. Field activities included the excavation of test pits both inside the substation property, and directly outside the security fence to characterize the subsurface. Data were used to guide the excavation of non-native overburden materials at the Site.

**Subsurface Characterization, West Valley, NY.** Field team member of a subsurface characterization at a Department of Energy-operated facility. The characterization involved the installation of over 100 soil borings to define the thickness and extent of several unique unconsolidated glacial units in the area surrounding a proposed permeable treatment wall which, was designed to passively treat strontium-90 contaminated groundwater. The optimum installation geometry of the wall depended heavily on the variable flow characteristics of the native soil.

**Drill Pad and Natural Gas Pipeline Inspections, Marshlands, PA.** Performed inspections of natural gas well drill pads and conveyance pipelines to verify compliance with state regulations. Inspections included evaluations of erosion/sedimentation control measures, assessment of primary and secondary containment structures and overall condition of active (producing) and inactive well pad Sites.

# Appendix C SOPs

# STANDARD OPERATING PROCEDURES

AR-001 General Guidance on Work Zone Monitoring Methods

## 1. Objective

Protect human health by measuring air quality at the perimeter of a work area.

## 2. Execution

Walk-around perimeter and work zone monitoring for Total Volatile Organic Compounds (TVOC), Respirable Particulate matter less than 10 microns ($RPM_{10}$), and odor will occur along the perimeter of the project site on a regular and as-needed basis. Specific site conditions that will trigger walk-around perimeter or work zone monitoring include:

- visible dust
- odor complaints
- detection of TVOCs and/or $RPM_{10}$ at levels approaching or exceeding action levels
- direction by the site oversight consultant or client

Perimeter air monitoring and work zone monitoring, in the absence of any specific triggering criteria, will be conducted on a regular basis during the normal work day. Particular attention will be given to the direction of any residences or other sensitive receptors.

At the time when a triggering condition is observed, the walk-around perimeter and work zone monitoring will occur continuously until the conditions that triggered the monitoring have subsided. Additional temporary monitoring points may be established due to changing site or meteorological conditions.

TVOC concentrations will be monitored and recorded using a Rae Systems MiniRAE 2000 Portable Ionization Detector (PID) or equivalent. $RPM_{10}$ will be measured and recorded using a MIE personal DataRAM 1200 (PDR-1200) portable real-time aerosol monitor equipped with a PM-10 monitor and Gilian personal air sampling pump. AR-002 Suspended Particulate Matter in Ambient Air using the MIE DataRAM Real-time Aerosol Monitor (Portable) provides guidance on the use of this meter. Odors will be noted based on the n-butanol scale, as adapted from ASTM E544-99.

At each monitoring point, the 15-minute average value of TVOC and $RPM_{10}$, sample time, and sample location will be collected and recorded. The odor intensity based on the n-butanol scale will be monitored over a 15-minute period and recorded. At each location, air temperature, wind direction, and wind speed may be monitored and recorded using a hand-held wind meter.

Odors as a function of naphthalene concentration will be monitored over a 15-minute period and recorded. To measure naphthalene concentrations, the zNose™ Model 4200 system will be used. The zNose™ is an ultra-fast gas chromatograph (GC) that is capable of analyzing airborne concentrations of VOCs and SVOCs in less than one minute. The zNose™ uses a surface acoustic wave (SAW) detector that changes in vibration frequency as compounds elute from the column and condense onto the surface of the detector.

The zNose™ is a portable instrument and will be positioned downwind of the remedial activities. Up to five samples will be analyzed for naphthalene concentrations over a 15-minute period. The concentrations will be averaged to produce a 15-minute result. The calibration will be checked at the start of the day, at mid-day, and at the end of the day. An air blank will be run every two hours. A blank will also be run if a reading exceeds the calibration range of the instrument.

The zNose™ also has the capability of generating fingerprint images of the chemical constituents in the vapor called VaporPrints™. A VaporPrint™ of an air sample can be collected through a headspace analysis. This VaporPrint™ can be compared to others generated at the perimeter and off-site to see if remedial operations are the source of the odors. VaporPrints™ can allow for identification of odors that may not be affiliated with remedial operations.

To monitor cyanide (as hydrogen cyanide gas), a real-time hand-held meter in conjunction with the Dräger Chip Measuring System (CMS) will be used. Types of continuously monitoring equipment include the V-RAE by Rae Systems and the Mini-Warn by Dräger Safety Systems and are available from rental equipment suppliers. Due to potential interference from sulfur compounds, hydrogen sulfide gas ($H_2S$) will also be monitored for comparison to the hydrogen cyanide gas levels detected. Hydrogen cyanide gas detections will also be confirmed with CMS Dräger tubes due to this interference. The Dräger CMS can quantify other gases that could potentially provide false positives for hydrogen cyanide gas (including sulfur dioxide, hydrogen sulfide, phosphine gas, chlorine, and nitrogen dioxide) detected by the real-time meter.

At each location, air temperature, wind direction, and wind speed will be monitored and recorded using a hand-held wind meter.

## 3. References

New York State Department of Environmental Conservation. 2010. DER-10 / Technical Guidance for Site Investigation and Remediation. Division of Environmental Remediation. May 3, 2010. Appendix 1A. pp. 204-206

ASTM E544 - 99(2004) Standard Practices for Referencing Suprathreshold Odor Intensity

## 4. Attachments

None

## 5. Contact

Brian Skelly

# STANDARD OPERATING PROCEDURE

AR-002 Air Sampling for Dust (Particulate Matter) using the MIE DataRAM™ Real-Time Aerosol Monitor

## 1. Objective

Describe standard procedures for the real-time monitoring of airborne particulate matter using a MIE DataRAM™ model DR-2000 real-time aerosol monitor.

The MIE DataRAM™ is a real-time, portable monitor that measures airborne particulate matter. It is capable of monitoring total suspended particulate matter, particulate matter less than 10 microns ($PM_{10}$), and particulate matter less than 2.5 microns ($PM_{2.5}$) by using an appropriate orifice to control the size of the particles being measured. The DataRAM can be programmed to collect continuous real-time data, or to record time averaged data.

## 2. Materials

- MIE DataRAM™ model DR-2000
- Shelter/Enclosure - a pre-constructed enclosure capable of protecting the instrumentation from severe weather conditions during sample collection
- Omnidirectional inlet
- Inlet heater
- $PM_{2.5}/PM_{10}$ impactor
- IBM compatible computer loaded with MIE DataRAM™ software
- Field notebook

## 3. Meter Calibration

- Assemble all necessary DataRAM™ attachments.
- Make sure the power selector switch on the rear panel is in the “on” position. Turn on the power by pressing the “on” button on the front display panel of the DataRAM™. “Main Menu I” will appear on the screen.
- Activate the zero mode by pressing the button indicating zero.
- When the screen indicates the zero mode is complete, activate the span check mode by pressing the button indicated, and follow the prompts that appear on the screen.
- Record the time of the zeroing and the calibration difference percent in the field notebook. If the zeroing procedure takes longer than 5 minutes press “exit” and then “off,” and then put the power switch on the rear panel of the instrument in the “off” position. Wait several minutes, turn on the power and zero the instrument again. If the calibration difference percent is more than ±5% then follow the “Calibr Diff” Resetting Procedure in the DataRAM™ Instruction Manual.
- Set the DataRAM™ to automatically log data. Refer to the Instruction Manual for details on how to set the data logging function.

- Record the instrument flow rate from the parameters menu in the field notebook.

## 4. Sample Collection

- Set the DataRAM™ at the predetermined sampling location in a rain or weatherproof containment, with only the inlet tubing exposed to ambient air.
- Start the run.
- When sampling is completed, terminate run and download data using the RS-232 cable connector and the MIE DR-COM software.
- Once the data file has been successfully downloaded and saved in an appropriate location, clear the data from the instrument memory.

## 5. Limitations

Each instrument must be calibrated using the internal reference standard and zeroed at the start of each sampling event and at a frequency of once per day throughout the duration of the sampling event.

The DataRAM™ can be programmed to collect continuous real-time data, or can collect "averaged" real-time data. These various options should be addressed prior to field operations and must be referenced in an approved work plan. This work plan must be available to all field personnel.

Project objectives will usually dictate the sampling location. In general, for air monitoring, meters are usually placed near breathing height and away from objects that can interfere with air motions. Since the DataRAM™ is measuring particulate matter, placement of the instrument directly on the ground should be avoided to prevent the sampling of dust concentrations that may not be representative of the air that is intended to be sampled (e.g. air at breathing height).

## 6. References

*Code of Federal Regulations, 40 CFR 50, Appendix J, Reference Method for the Determination of Particulate Matter as $PM_{10}$ in the Atmosphere.*

*Quality Assurance Handbook for Air Pollution Measurement Systems, Volume II: Ambient Air Quality Monitoring Program, US Environmental Protection Agency, Office of Air Quality Planning and Standards, Washington, D.C. EPA-454/B-08-003 December, 2008.*

## 7. Contacts

Brian Skelly
Mark Ensign

# STANDARD OPERATING PROCEDURE

AR-003 Air Sampling for $PM_{10}$ Particulate Matter using the High-Volume Sampler Method

## 1. Objective

Describe standard procedures for the collection of air samples for laboratory analysis of $PM_{10}$ particulate matter using the high volume sampler method.

## 2. Materials

- General Metal Works (GMW) Model IP 10-8000 or equivalent. The GMW sampler can be rented.
- Calibration kit, as specified for the selected sampler.
- $PM_{10}$ sampling filters, to be supplied by the contract laboratory. A Whatman QM-A quartz filter is currently the only commercially available $PM_{10}$ filter that satisfies all criteria specified in 40 CFR 50, Appendix J. .
- Ice chest for sample storage or shipping.

## 3. Sampling

This method measures the mass concentration of particulate matter with an aerodynamic diameter equal to or less than 10 micrometers (µm). A high volume (HV) sampler draws a known volume of ambient air at a constant flow rate through a size selective inlet and through one or more filters. Particulates of 10 µm or smaller are collected on the filter(s) during the prescribed time period. Each sample filter is weighed before and after sampling to determine the net weight gain of the collected $PM_{10}$ sample.

A HV sampler consists of two basic components: a specially designed inlet that transmits only particles equal to or less than 10 µm in diameter and a flow control system capable of maintaining a constant flow rate within the design specifications of the inlet.

### 3.1. Sampler Installation

- On receipt of the sampler, inspect all shipping cartons to ensure that all components have been received and verify that the unit is operational.
- On site, assemble the unit according to the manufacturer's instructions. Check all power cords and tubing for crimps, cracks, and breaks. The HV sampler should be placed on a sturdy platform or table, with the air inlet 4 to 6 feet above ground level.
- The sampler should be strategically placed according to the work plan or objectives of the study and located free of any obstructions to ambient air flow.
- The HV sampler requires 110 V AC power. The electrical outlet should be protected by a ground fault interrupter and water proof electrical connectors should be used.

- Operate the sampler for 30 minutes to ensure that the motor is operating at full performance.
- Calibrate the sampler in accordance with the instructions provided with the appropriate calibration kit. Proper calibration of the sampler is critical.
- Field personnel should be familiar with both the sampling unit and the calibration procedure before attempting to record data.

### 3.2. Sampling Procedure

- Operate sampler as per manufacturer's instructions.
- Filters are received from the laboratory numbered and pre-weighed in their individual envelope or folder within an envelope. Powder free latex gloves, or equivalent, should be worn during the handling of filters. Only touch the edges of the filter.
- Examine the filter support screen to confirm that it is clean. If it appears to be dirty, wipe it clean using lint free wipes such as laboratory wipes or equivalent. Check the gasket to be sure that it is in good condition. The filter is placed on the support screen with the numbered side facing down. Tighten thumb nuts on alternate corners to properly align and seat the gasket. The nuts should be only hand tightened to avoid damaging the gasket.
- Record the sampler serial number, filter ID number, sampler location, sampling date, and the operator's initials in the field notebook, any field data sheets being used, and on the back of a clean chart and install the chart in the flow recorder.
- Turn the sampler on and allow it to equilibrate to operating temperature, about 3 to 5 minutes. Verify that the recorder is operating and that the pen is inking. Allow the sampler to run for the required sampling interval.
- When sampling interval is completed, turn off the sampler and carefully remove the filter as soon as possible. Sample degredation can occur if the filter is left in the sampler for an extended period of time. The filter should be folded in half with the exposed side inward and the folded filter carefully placed in its respective folder and/or envelope. When removing and folding the filter touch only the outer edges. Powder free latex gloves, or equivalent, should be worn when handling filters.
- Record the following parameters in the field notebook and in any field data sheet being used:
    1. Elapsed time of sampling interval in minutes
    2. Average recorder response in arbitrary units
    3. Starting flow rate and ending flow rate
- The average flow rate for GMW Model IP 10-8000 sampler should be close to 1.13 $m^3$/min.
- Calculate the total flow rate for the sampling interval by time weighted averaging the flow rate readings. Air monitoring results where the flow rates

varied more than +/- 10%, from beginning to end, should be qualified accordingly and discussed with the project manager.

- The exposed filters, folded in half, are placed back into their shipping envelope and forwarded with completed chain of custody forms to the contracted laboratory for analyses. Follow the contracted laboratory's instructions for handling and returning the exposed filters.

## 4. General Guidance

The total volume of air sampled is determined from the measured volumetric flow rate and the sampling time. The mass concentration of $PM_{10}$ in the ambient air is calculated as the total mass of collected $PM_{10}$ particles divided by the total volume of air sampled. The $PM_{10}$ measurement is expressed as micrograms (µg) per standard cubic meter (µg/std $M^3$). The sampled volume must be corrected to EPA standard conditions, 25° C, 760 mm Hg or 101 kPa.

A field blank may be collected, which consists of an unexposed filter removed from its envelope, put in place in the HV sampler, immediately removed, folded, replaced in its envelope and sent to the laboratory. Field blanks, if collected, should be taken at a frequency of one per twenty samples. If fewer than twenty samples will be collected during one week, collect one field blank weekly during sampling.

## 5. References

*Code of Federal Regulations, 40 CFR 50, Appendix J, Reference Method for the Determination of Particulate Matter as $PM_{10}$ in the Atmosphere.*

*Quality Assurance Handbook for Air Pollution Measurement Systems, Volume II: Ambient Air Specific Methods (Interim Edition), Addendum to Section 2.11 Reference Method for the Determination of Particulate Matter as PM10 in the Atmosphere (High-Volume Sampler Method), US Environmental Protection Agency, Office of Research and Development, Washington, D.C. EPA/600/R-94/038b April 1994.*

*Quality Assurance Handbook for Air Pollution Measurement Systems, Volume II: Ambient Air Quality Monitoring Program, US Environmental Protection Agency, Office of Air Quality Planning and Standards, Washington, D.C. EPA-454/B-08-003 December, 2008.*

## 6. Contacts

Brian Skelly
Mark Ensign

# STANDARD OPERATING PROCEDURE

DM-002 Hollow-Stem Auger

## 1. Objective

Describe standard operating procedures for drilling of overburden soil borings using hollow-stem augers.

## 2. Execution

- Confirm that the appropriate measures have been taken for clearance of potential subsurface utilities. The responsibility for clearance may vary, depending on the client.
- Inspect the drilling rig to make sure it is clean and that the down-hole equipment has been steam-cleaned or pressure-washed. Record observations in the field notebook (See SOP FD-001).
- Observe that the augers are vertical when the first section is advanced into the ground.
- Use a 140-lb hammer to drive the sampler, unless conditions necessitate using a 300-lb hammer (see SOPs SM-001, *Split-Spoon Sampling* and SM-0003, *Soil Classification,* for details). Count and record the number of blows per 6-inch increments, confirming blow counts with driller if necessary).
- Decontaminate the split-spoon sampler after each use (see *Equipment Decontamination,* SOP QA-001) or use another decontaminated split-spoon sampler.
- Ensure that the drillers advance the augers only after they have inserted the auger plug (to prevent soil from entering the augers while advancing to the next sample interval).
- Request that the drillers remove the auger cutting bit/plug and insert the split-spoon sampler into the interior of the augers. Measure the stick-up of the rods attached to the sampler to ensure that the nose of the spoon is in virgin soil below the augers.
- Watch for signs of a soil strata change at depth during drilling (i.e., change in blow counts, change in soil color, soil wetness, soil contamination, bouncing of the drill rig, etc.). If important to the investigation, stop drilling and collect a soil sample.
- If subsurface soil samples are being collected with split-spoon samplers, ensure that the drillers use a 30-inch drop of the 140-pound hammer. The number of blow-counts for each 0.5 foot penetration provides important geotechnical data.
- Repeat until the borehole has been drilled to the desired depth.
- If a monitoring well is not installed in the soil boring, fill the boring with either cement/bentonite grout or properly-tamped and hydrated bentonite. Check with Project Manager and/or the appropriate regulatory personnel before using drill cuttings to backfill the boring.

- If a monitoring well will be installed, refer to SOP DM-007.
- Complete boring log and, if necessary, well installation logs (SOP SM-003, *Soil Classification*).
- Record boring locations on a site map and in a field notebook sketch. If the boring location will not be surveyed, measure each location from on-site reference points and record the information in the field notebook so that the location can be plotted on site figures.

## 3. Limitations

- In areas of significant soil contamination, hollow-stem augers may cross-contaminate upper soil layers as contaminated cuttings move up the auger flights. The potential also exists for contaminated augers to carry contamination to deeper soil strata
- If significant unanticipated contamination is encountered during drilling, stop drilling to confer with the project manager and evaluate health and safety conditions. If the borehole is to be advanced below the contaminated strata, use telescoping techniques (see SOP DM-008 *Monitoring Well Telescoping Techniques*) to avoid cross-contaminating underlying geologic strata.
- When drilling below the groundwater table in fine to medium sands, the potential exists for the phenomenon of “running sands” or “blow in” to occur. Frequent measurements inside the hollow-stem augers after the drill bit/plug is removed will indicate if running sands are present. If sands start to flow into the auger, pour clean water into the augers and keep the augers filled during sampling.
- If necessary, arrange for the storage of contaminated soil cuttings and water in drums or other appropriate containers in a secure place at the site. Containers should be labeled.
- Plan the drilling program to drill borings from the least- to most-contaminated areas. Be prepared in advance and know where alternative drilling locations are in the event that problems are encountered at each planned soil boring location. Alternative locations will need to have utility clearance.
- Down-hole drilling equipment should be steam cleaned or pressure-washed between holes unless otherwise directed by the project manager.
- Record when standard operating procedures are deviated from. The drilling inspector should also record any detected odor from the boring and depth encountered.

## 4. References

*Standard Practice for Design and Installation of Ground Water Monitoring Wells in Aquifers (October 1990), American Society for Testing and Materials [ASTM] D5092-90*

*Nielsen, D.M. (1993), “Correct Well Design Improves Monitoring,” Environmental Protection, July, pp. 38-49*

*Standard References for Monitoring Wells (April 1991), Commonwealth of Massachusetts Department of Environmental Protection, WSC-310-91*

## 5. Attachments

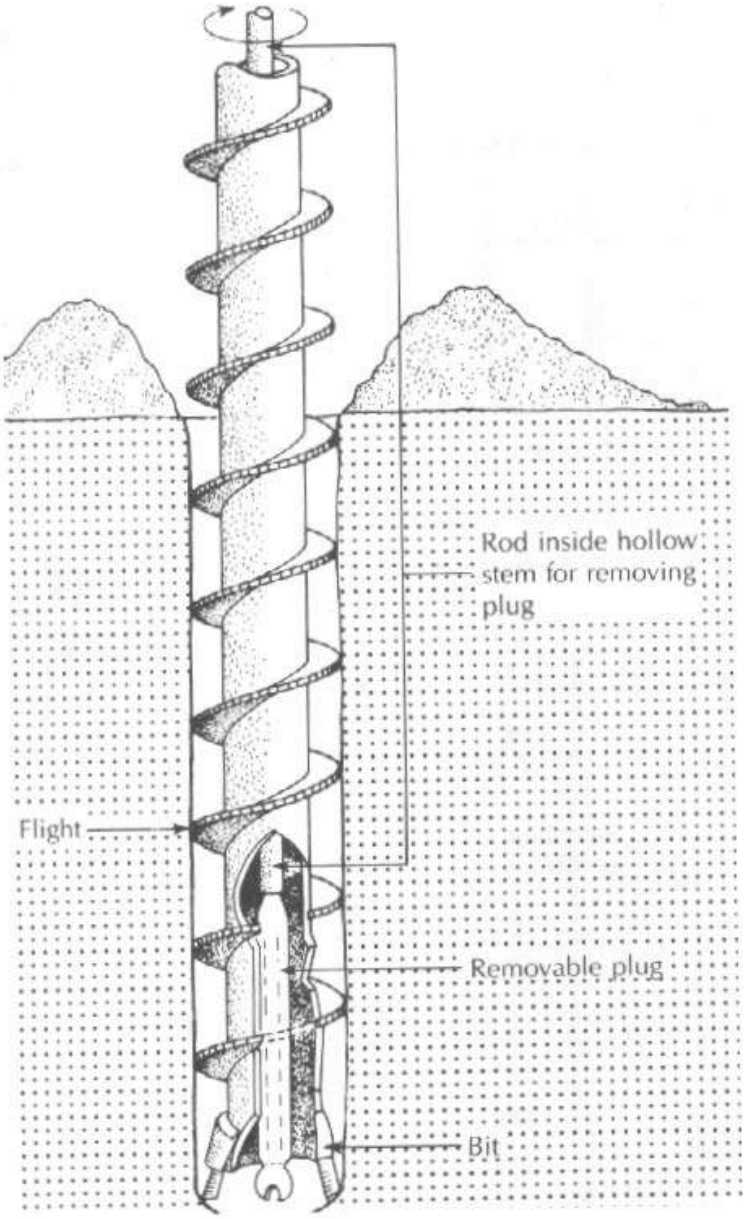
Attachment A – Hollow-Stem Auger

## 6. Contact

Gary Fuerstenberg
Cathy Johnson

# SOP DM-002

## Attachment A – Hollow Stem Auger




GEI Consultants

# STANDARD OPERATING PROCEDURE

DM-006 Geoprobe® Direct Push Boring

## 1. Objective

Describe standard operating procedures (SOP) for drilling of overburden soil borings using Geoprobe® and MacroCore® technologies.

## 2. Execution

- Confirm that appropriate measures have been taken for clearance of potential subsurface utilities. The responsibility for clearance may vary, depending on the client.
- Inspect the drilling rig to make sure it is clean and that the down-hole equipment has been decontaminated (QA-001). Record condition of all down-hole drilling equipment.
- Make sure the sampler is fitted with a piston rod assembly to block the sample tube until the desired subsurface sample interval is attained. Upon reaching the target sample depth, the piston tip will be released and the discrete sampler device is then advanced to collect the representative sample. This reduces the volume of slough that is collected.
- When the sampler is brought to the ground surface, it should be opened immediately, and the length of recovery should be measured and recorded.
- Log the soil sample using USCS procedures (SOP SM-003). Collect analytical samples if necessary (SOP SM-001).
- Decontaminate the cutting shoe if necessary (SOP QA-001 Equipment Decontamination) and have driller reassemble the parts with a new liner.
- Repeat the procedure described above until refusal or the boring is terminated.
- Periodically verify that depths cited by drillers are accurate.

## 3. Limitations

- If significant unanticipated contamination is encountered during drilling, stop drilling to confer with the project manager and re-evaluate health and safety conditions.
- Arrange for the storage of contaminated soil cuttings and water in drums or other appropriate containers in a secure place at the site (see SOP SC-003, *Investigation Derived Waste Management*).
- If possible, plan the drilling program to drill borings from the least to most contaminated areas. Be prepared in advance and know where alternative drilling locations are in the event that problems are encountered at soil boring locations. These locations must also have been cleared by the state or local utility service prior to drilling.

## 4. References

*ASTM D6001-05 Guide for Direct Push Water Sampling for Geoenvironmental Investigations, April 2005*

*Geoprobe Systems, "Geoprobe MacroCore MC-5 1.25-inch Light Weight Center Rod Soil Sample System SOP", Technical Bulletin No. MK 3139, November 2006*

## 5. Attachments

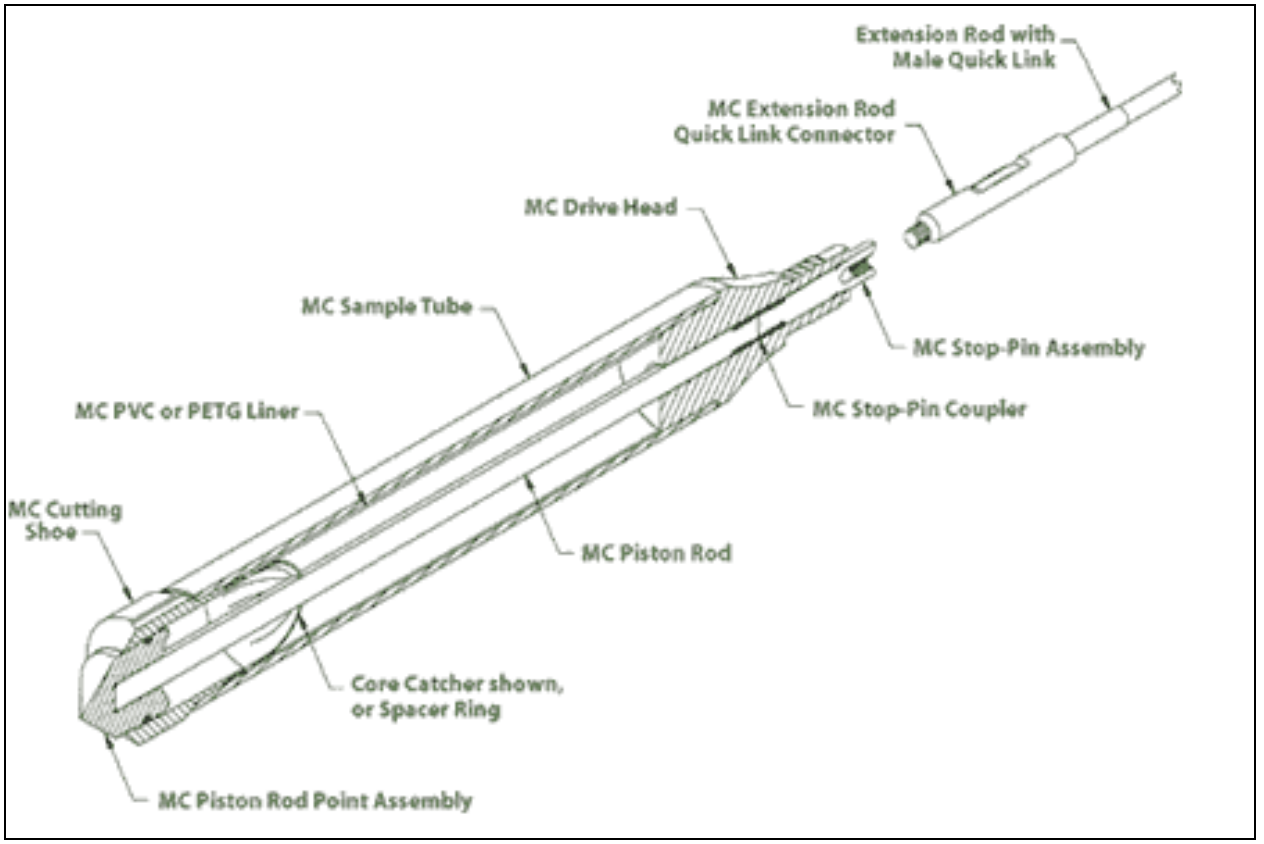
Attachment A – Geoprobe® with Macrocore® Sampler Assembly

## 6. Contact

Melissa Felter
Cathy Johnson

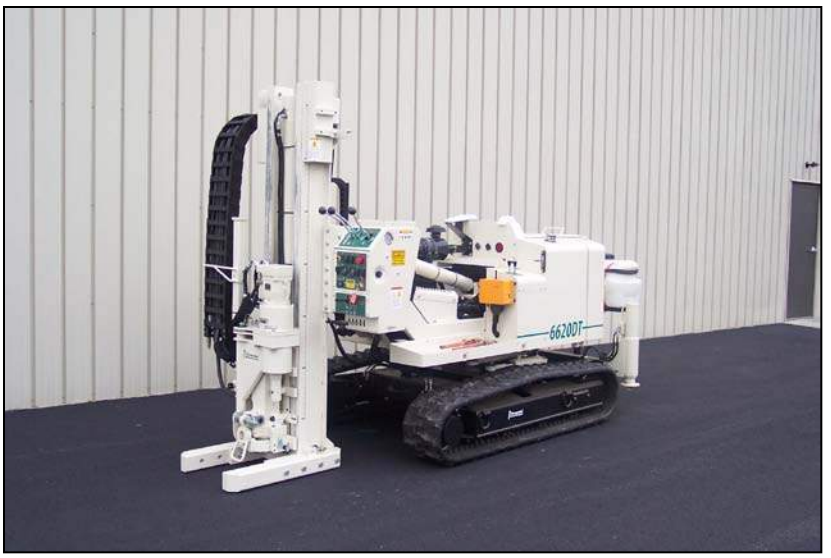
# SOP DM-006

## Attachment A – GeoProbe® with Macrocore® Sampler Assembly




Above: Diagram of a Macrocore® sampler

Right: A track-mounted GeoProbe ® Rig




GEI Consultants

# STANDARD OPERATING PROCEDURE

DM-007 Monitoring Well Construction and Installation

## 1. Objective

Describe installation procedures for overburden monitoring wells screened across or below the groundwater table.

Well dimensions (well diameter, screen length, and screen slot-diameters) will be specified in the Work Plan. This SOP assumes the monitoring wells will be constructed of flush-joint PVC pipe and the screened section will have factory-slotted openings.

## 2. Execution

Attachment A provides a diagram of typical shallow, intermediate, and deep groundwater monitoring well construction detail. A Groundwater Monitoring Well Installation Log is in Attachment B.

- Measure and record the depth of the completed soil boring before beginning the well installation.
- If possible, measure the depth to groundwater in the borehole over a 10 to 15 minute period to ensure that the groundwater elevation has approximately stabilized. Compare the saturated soil depth estimated from split-spoon samples to the measured water level in the borehole. If drilling water has been used during boring advancement, pump the water out of the borehole to the static water depth, based on examination of the soil samples, and monitor the recovery of groundwater until the level has stabilized.
- If it is not possible to accurately measure the depth to groundwater in the borehole due to low permeability in the formation, use the saturated soil depth observed in the collected samples or measured water depth in a nearby existing monitoring well to estimate the depth to water in the borehole.
- For shallow monitoring wells, select the monitoring well screen and riser lengths so that the slotted section of the screen intersects the groundwater table. Screen lengths of 15 feet or less are preferred and 10 foot screens are most common. If the water table is seasonally high or low or if the well is in a location where the water table is likely to be tidally influenced, appropriately place the screened section to allow for the screen to intersect likely future water tables.
- For intermediate or deep wells screened entirely below the water table, select the monitoring well screen and riser lengths as described in the Work Plan. Screen lengths of 10 feet or less are preferred.
- If the borehole is deeper than the desired well depth or the bottom of the well is close to a change in soil strata, then fill the base of the borehole with bentonite. Keep in mind that bentonite swells when hydrated, and that filter

sand should be placed at the bottom of the borehole above the bentonite before installing the well.

- Prevent well materials from contacting foreign substances during installation. Precautions may include requiring the driller to wear clean gloves while handling well materials and requiring that well materials not be placed onto the ground or pavement without a protective barrier such as polyethylene sheeting being present
- Confirm that the driller installs a minimum one-inch sump with a bottom cap to the bottom of the well screen. See the Work Plan for locations that may require larger sumps.
- Monitoring wells can be constructed of either 1, 1.5, 2 or 4 inch inner diameter (ID) Schedule 40 threaded flush-jointed PVC. Refer to the work plan for the site-specific requirements. Flush-threaded well materials should be used. Do not allow the driller to use glues, as they typically contain solvents that could affect on groundwater quality.
- Stainless steel well materials may be used if required in the Work Plan. Select slot size based on grain size of the formation and on requirements in the Work Plan.
- Confirm that the driller places at least 12 inches of clean uniformly graded medium quartz filter sand pack into the base of the borehole, if required in the Work Plan.
- The driller should remove the drilling casing/augers from the borehole slowly, at a maximum of 2-foot intervals, at the same time that filter sand is added. The drillers should take frequent measurements of the depth to sand.
- Confirm that the driller has added adequate sand to surround the area around the slotted section. The filter sand should extend at least 2 feet above the top of the slotted section.
- The driller should place a bentonite seal above the filter pack. If the seal is above the water table, use at least 5-gallons of potable water to hydrate the bentonite before grouting the remaining annular space, or otherwise backfilling the remaining annular space as discussed with the Project Manager. Tamp seal. It should extend 1 to 2 feet above the filter sand.
- If required by the Work Plan, the driller should use bentonite-cement and grout the annular space from the top of the bentonite seal to the ground surface. Bentonite cement grout should be placed using tremie methods. Grout should be mixed in approximately the following proportions: 7.5 gallons water to one 94-lb bag of cement to 2-4 lbs of pulverized bentonite. The grout must be mixed using a pump (such as one on the rig) to ensure proper mixing.
- The drillers should cut the monitoring well riser at an angle or make "V"-notch in the riser pipe as a benchmark for surveying and groundwater measurements. The driller should cut the well riser so that the top of the well will be approximately 3 inches below the top of protective casing. The top of

the riser should be close enough to the top of the surface casing to allow reading of depth markings on a water level indicator tape.

- The protective surface casing is either a flush-mounted roadbox or a steel "stick up" pipe. The base of either type of casing should extend at least 1 foot into the grout below the ground surface (below the frost line) whenever possible.
- The protective casing should be set by placing cement in the annular space between the protective casing and the borehole up to the ground surface. If possible, the driller should slope the cement radially away from the protective casing at the ground surface to promote surface water runoff.
- In areas of high traffic or areas of parking lots and/or roadways where plowing occurs, set the roadbox flush with the ground surface to avoid damage to the well.
- If the well is installed in a high-traffic area and is completed with a steel "stick up" pipe, additional protection such as steel pole bumpers around the steel "stick up" pipe may be necessary.
- If possible a locking cap should be placed on the steel "stick up" pipe. If the surface casing is flush mounted, a locking expansion plug should be placed, if possible, inside the top of the well riser pipe.
- All well locations should be photodocumented in accordance with SOP FD-004 Photodocumentation.
- Label the outside of the protective well casing with a paint pen. If the well is not going to be surveyed, measure the location to nearby landmarks so that the well may be located in the future and plotted on figures. Make sure to enter this information in the field notebook). If possible, place a brightly colored stake or other identifier adjacent to the well.
- Develop the well (see SOP DM-009, *Monitoring Well Development*).

## 3. Limitations

- Do not screen across different hydrostratigraphic units (for example, outwash sands, confining layers or till) unless specified in the Work Plan or approved by the Project Manager.

- If the formation is composed of a material that is uniformly coarser than the filter sand, the grain size of the filter sand should be increased. Consideration should also be given to changing the slot size on the well screen. Differences in average grain size should generally not be greater than a factor of two to four times.

- Do not use drill cuttings to backfill during monitoring well installation unless specified by the work plan or project manager.

## 4. References

*Standard Practice for Design and Installation of Ground Water Monitoring Wells in Aquifers (October 1990), American Society for Testing and Materials [ASTM] D5092-90*

*Nielsen, D.M. (1993), "Correct Well Design Improves Monitoring," Environmental Protection, July, pp. 38-49*

*Standard References for Monitoring Wells (April 1991), Commonwealth of Massachusetts Department of Environmental Protection, WSC-310-91.*

## 5. Attachments

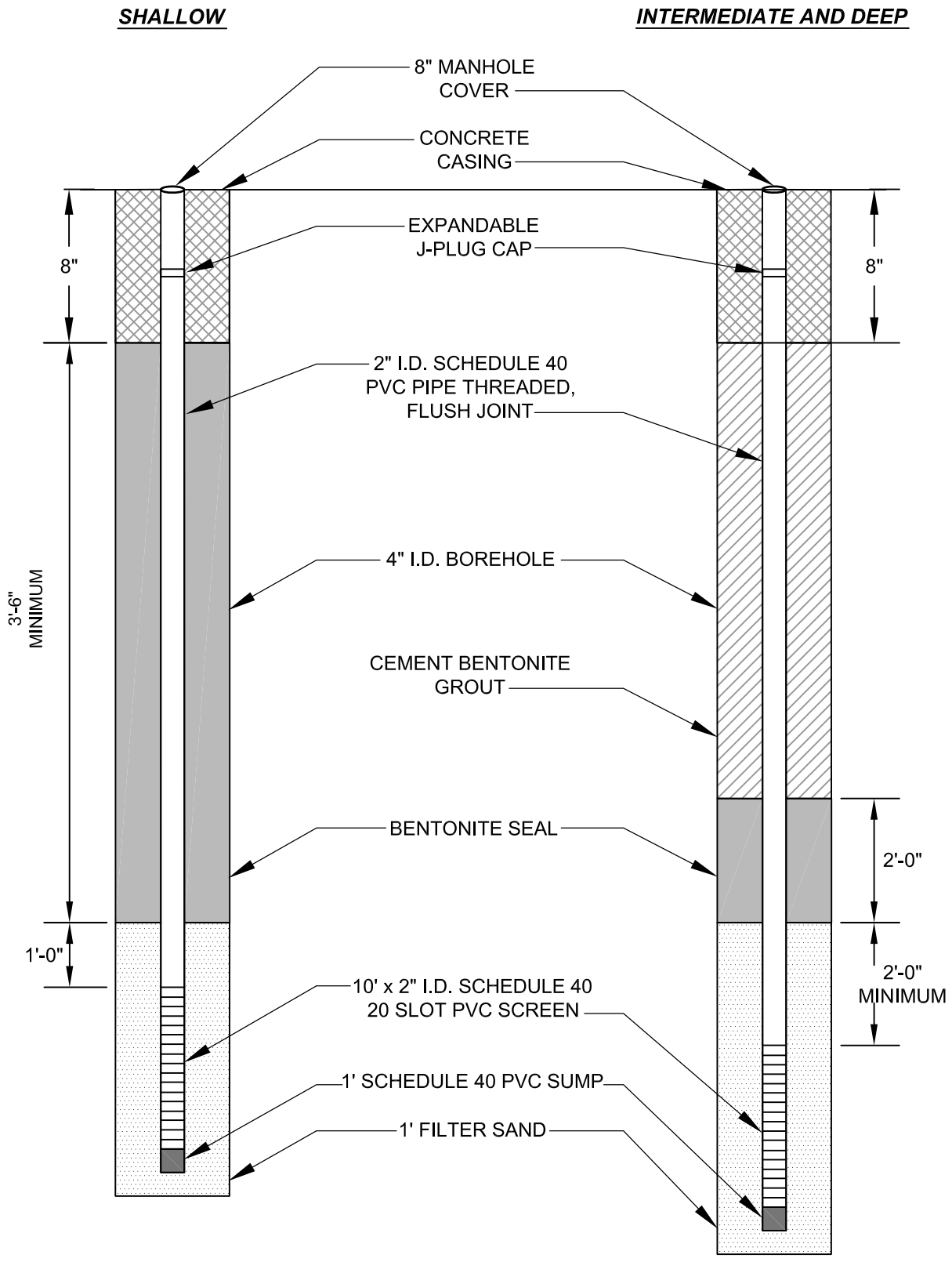
Attachment A – Typical Shallow, Intermediate, and Deep Groundwater Monitoring Well Construction Detail

Attachment B – Groundwater Monitoring Well Installation Log

## 6. Contact

David Terry
Anne Leifer

# Attachment A - Well Detail




NOT TO SCALE

GEI Consultants

**TYPICAL SHALLOW, INTERMEDIATE AND DEEP GROUNDWATER MONITORING WELL CONSTRUCTION DETAIL**

June 2008

I:\GEI\SOPs\ Well Detail.dwg \Jun 10, 2008

# Groundwater Well Installation Log

**Well ID**

**Project** _____ **GEI Proj. No.** _____

**City / Town** _____ **Location** _____

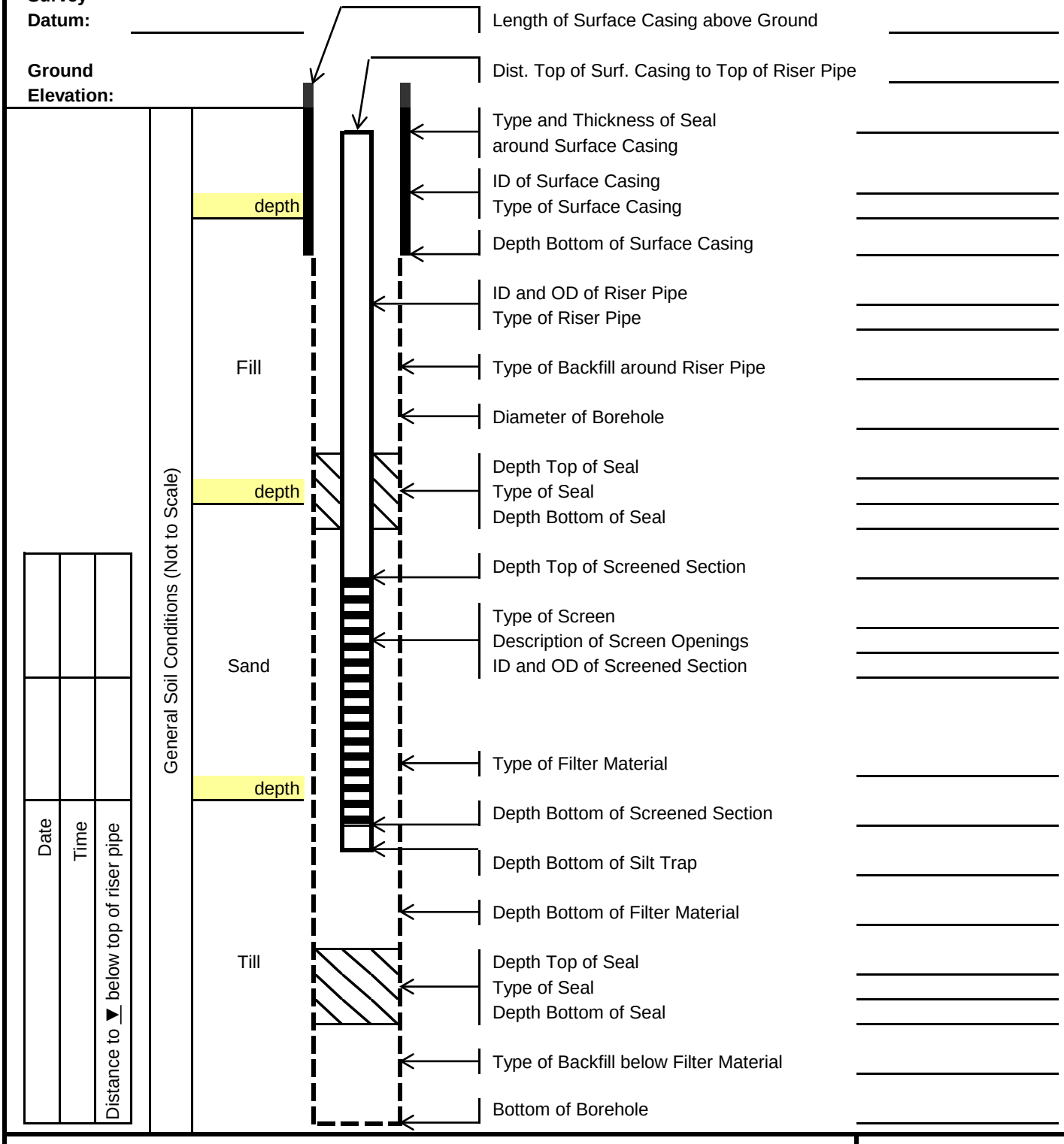
**Client** _____ N _____

**Contractor** _____ E _____

**Driller** _____ **GEI Rep.** _____ **Install Date** _____

**Survey Datum:** _____

**Ground Elevation:** _____




**Notes:**

GEI Consultants

# STANDARD OPERATING PROCEDURE

DM-009 Monitoring Well Development

## 1. Objective

Describe standard procedures to remove fluids from monitoring wells (introduced during drilling) and maximize the movement of groundwater into the well by removing fine particles in the well and sand pack around the screen.

## 2. Execution

To prevent cross contamination between monitoring wells, use dedicated equipment and/or appropriately decontaminated equipment to perform monitoring well development. See SOP QA-001 Equipment Decontamination and the Work Plan for more information.

For deep or large diameter monitoring wells, it may be necessary to use a re-usable pump system, such as a Grundfos pump, to develop monitoring wells.

- Calculate the volume of water in the monitoring well (one well volume) using the following table:

| Well diameter (inches) | Volume (gal/ft) |
|---|---|
| 1 | 0.04 |
| 1.5 | 0.09 |
| 2 | 0.16 |
| 3 | 0.36 |
| 4 | 0.65 |
| 6 | 1.50 |

  The equation used to establish these volumes is presented in Section 4.

- Calculate or estimate the amount of water introduced to the borehole during drilling. At a minimum, this is the amount of water that should be removed during development. Removing less water than was introduced and allowing additional time for the surrounding formation to clear of injected drilling fluids may be considered as an alternative if the volume of introduced water was large.

- Record the volume of water purged in the field notebook or on the Monitoring Well Sampling Form (Attachment A).

- Collect a sample of water from the monitoring well with the selected submersible pump (e.g. 12-volt whale pump or Grundfos pump), a bailer, or a

Waterra system. Record the physical properties (color, turbidity, odors, etc.) of the sample.

- The volume of water that should be removed will depend on the work plan, local regulatory guidance, and/or the volume of water that was introduced during drilling and well installation. Typical guidance for the removal volume includes:

    - Ten well volumes.
    - The volume of fluid added during drilling.
    - The volume required to remove enough suspended particles so that the turbidity of the water is less than 50 nephelometric turbidity units.

If needed, pump the ground water into a 5-gallon pail so that the volumetric flow rate and total water volume from the pump or bailer can be calculated.

Measure the groundwater level in the well during development to assess if the pumping rate is sufficient to create a drawdown in the well.

Observe the groundwater every few well volumes during the pumping and record the physical properties (color and turbidity).

If required by the Work Plan, conduct surging in the monitoring well. See the Work Plan for the method of well surging to be used. If surging is necessary, do so only after initial pumping at the well has occurred and fine sediments have been removed.

Slowly move the surge block up and down in the well. Periodically remove the surge block and purge the groundwater until it is relatively clear again. Start at a slow pace and progress to a faster surging action through time.

## 3. Limitations

Always remove groundwater with fine particles from the well before surging. The fine particles may be forced into the well screen by the surging action. They may also damage the pump.

If the ground water in the monitoring well is contaminated, the water removed during well development may need to be placed in a properly-labeled drum and disposed of in accordance with local, state, and federal regulations (see SC-003 Investigation Derived Waste).

If the soils around the well screen are composed of fine-grained silts and clays, over-pumping and mechanical surging is not recommended since these more vigorous

techniques can cause mixing of the fines into the filter pack. To develop these wells, use of a bailer is recommended.

There are occasions when the turbidity of groundwater cannot be meaningfully reduced. On these occasions, a minimum of ten volumes should be removed, and the Project manager should be consulted.

Sampling of groundwater should generally not occur within one week after development. In some regions or regulatory jurisdictions, a minimum of two weeks may be required before sampling. If no water was introduced to the formation during drilling, this waiting period may be shortened if required by the project. See the Work Plan for additional information.

## 4. References

*Standard Practice for Design and Installation of Ground Water Monitoring Wells in Aquifers (October 1990), American Society for Testing and Materials [ASTM] D5092-90.*

*Nielsen, D.M. (1993), "Correct Well Design Improves Monitoring," Environmental Protection, July, pp. 38-49.*

*"The Methods & Mechanics of Well Development, Part 2 of 5," National Drillers Buyers Guide, March 1993, p. 17.*

*Massachusetts Department of Environmental Protection, "WSC-310-91Standard References for Monitoring Wells, Section 4.5 Decommissioning of Monitoring Wells", January 1991*
*.*

*U. S. EPA Environmental Response Team Standard Operating Procedure SOP: 2044 ," Monitor Well Development" REV: 0.1, 10/23/01*

## 5. Attachments

Attachment A - Monitoring Well Sampling Form

## 6. Contact

Gary Fuerstenberg
Anne Leifer

# MONITORING WELL SAMPLING RECORD

PID Reading _____ Job Name _____

Job Number _____ By _____ Date _____

Location _____ Measurement Datum _____

Well Number _____

**Pre-Development Information** Time (start) _____

Water Level _____ Total Depth of Well _____

One Purge Vol _____ Three Well Volume _____

**Water Characteristics**

Color _____ _____ Clear _____ Cloudy

Odor _____ None _____ Weak _____ Moderate _____ Strong

Any films or immiscible material _____

| Volume (gal) | Time | pH | Temp (°C) | Spec. Conductance (µS/cm) | Turbidity (NTU) | DO Conc. (mg/L) | ORP (mV) | TDS |
|---|---|---|---|---|---|---|---|---|
| | | | | | | | | |
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| | | | | | | | | |

Total Volume Removed (gal) _____ pH _____

Temperature (°C) _____ Specific Conductance (µS/cm) _____

DO Concentration (mg/L) _____ ORP (mV) _____

TDS _____

**Post Development Information** Time (Finished) _____

Water Level _____ Total Depth of Well _____

Approximate Volume Removed (gal) _____

**Water Characteristics**

Color _____ _____ Clear _____ Cloudy

Odor _____ None _____ Weak _____ Moderate _____ Strong

Any films or immiscible material _____

Comments

# STANDARD OPERATING PROCEDURE

DM-010 General Guidance on Monitoring Well Abandonment

## 1. Objective

Describe methods to abandon a monitoring well.

The goal of monitoring well abandonment is to seal the borehole so it cannot act as a conduit for movement of contaminants or liquids from the ground surface to the water table or between aquifers.

General procedures for well abandonment are provided below but do not supersede state or local regulations. Make sure all well abandonment procedures adhere to appropriate regulations.

## 2. Execution

The following methods for abandoning unconsolidated (overburden) and consolidated (bedrock) monitoring wells should be performed by a licensed drilling contractor, if required by law or regulatory authorities. The following listed methods are general guidance for abandoning monitoring wells. The Work Plan and state and local requirements should be reviewed for additional requirements.

### 2.1 Unconsolidated (overburden) Monitoring Wells

Unconsolidated (overburden) monitoring wells should be abandoned in the following manner, see the Work Plan for additional requirements:

- Remove the protective casing and concrete pad.
- If possible, overdrill the monitoring well casing and sand pack using hollow-stem augers or casing to at least one foot below the depth of the boring/well as indicated in the soil boring log.
- If possible, remove the monitoring well riser, sand pack, bentonite seals and grout.
- Once the well materials have been removed, add cement/bentonite grout using tremie methods starting at from the bottom of the borehole as the augers or casing are removed.
- If the well materials cannot be removed by overdrilling, the riser should be cut off at a depth of between two and five feet below the ground surface and the remaining well materials may be filled with grout using tremie methods. The grout mixture will be as specified for the well installation (see SOP DM-001 General Guidance on Determination of Appropriate Drilling Methods)
- Add grout to the point where the riser was cut off or to a depth of approximately two feet below the ground surface. From that point up to ground surface, backfill with native soil material surrounding the boring/well.

### 2.2 Consolidated (bedrock) Monitoring Wells

Consolidated (bedrock) monitoring wells or open holes will be abandoned in the following manner. See the Work Plan for additional requirements:

- Remove the protective casing and concrete pad;
- Remove the monitoring well materials from the hole. If the materials cannot be removed, cut off the well riser between two feet to five feet below grade. If feasible, cutting off the riser at five feet is optimal.
- Add cement/bentonite grout via tremie methods from the bottom of the well up to the ground surface. The grout mixture should be as specified for the well installation SOP DM-001 General Guidance on Determination of Appropriate Drilling Methods
- Add grout to the point where the riser was cut off or to a depth of approximately 2 feet below ground surface. From that point up to ground surface, backfill with native soil material surrounding the boring/well.

## 3. References

*Environmental Protection Agency, Region 4, "Environmental Investigation Standard Operating Procedures and Quality Assurance Manual, Chapter 6 – Design and Installation of Monitoring Wells," November 2001.*

*Massachusetts Department of Environmental Protection, "313 CMR 3.00, Registration of Well Drillers and Filing of Well Completion Reports".*

*Massachusetts Department of Environmental Protection, "Standard References for Monitoring Wells, Section 4.6 Decommissioning of Monitoring Wells", January 1991*

## 4. Contact

Gary Fuerstenberg
Anne Leifer

# STANDARD OPERATING PROCEDURE

FD-001 Field Notebook

## 1. Objective

Describe methods for documentation of field activities.

Documentation of site activities is a crucial part of the field investigation process. The field notebook serves as the record of field activities performed or observed during the project. It provides a factual basis for preparing field observation reports, if required, and reports to clients and regulatory agencies. Example field notes are provided in Attachment A.

## 2. Execution

- Use a separate all-weather bound notebook for each site/location/project number. Spiral notebooks should not be used because pages can be easily removed.
- Write neatly using black or blue pen, preferably a waterproof pen. Use of pencil is also acceptable only with approval of the project manager, such as in but not limited to, certain field conditions [e.g., cold or wet weather].
- Write the project name, project number, book number (i.e., 1 of 3), and date on the front cover. On the inside cover, identify the project name, project number, and "Return Book To:" the office address of the project manager.
- Number all of the pages of the field book starting with the first entry.
- Record activities as they occur. Record only facts and observations, regardless of whether they appear to be relevant at that time.
- Identify conditions or events that could affect/impede your ability to observe conditions (e.g. snow-covered ground surface, inability to access areas of interest).
- Neatly cross out mistakes using a single line and initial them. Erasures are not permitted.
    - If an error is made on an entry in the field notebook, the individual who made the entry should make the corrections. The corrections must be initialed and dated by the person making the correction.
- Sign or initial and date the bottom of every page with an entry if the project requires such documentation.
- Place a diagonal line through unused portions of a page.
- Record the following information upon each arrival at the site:
    - Date/time/weather.
    - GEI personnel.
    - Purpose of visit/daily objectives.
    - People (client, contractor, landowners, etc.) present upon GEI arrival.

- Record the following information during the course of the day:
  - Conversations with contractors/subcontractors, clients, visitors, GEI staff, landowners (site or abutters). If possible, record complete names, titles, and affiliations.
  - Time of arrival and departure of individuals.
  - Activities as they occur.

- Additional examples of observations to record may include and are not limited to:
  - Type and quantity of monitoring well construction materials used.
  - Use of field data sheets or electronic logging equipment (e.g. boring logs, monitoring well sampling logs, etc.).
  - Ambient air monitoring data.
  - Field equipment calibration information.
  - Locations and descriptions of sampling points.
  - Contractor/Subcontractor progress.
  - Sample media (soil, sediment, groundwater, etc.).
  - Sample collection method.
  - Number and volume of sample(s) collected and sample bottle preservatives used.
  - Sample identification number (s) and date and time of sample collection.
  - Approximate volume of groundwater removed before sampling.
  - Any field observations made such as pH, temperature, turbidity, conductivity, water level, etc.
  - References for maps and photographs of the sampling site(s).
  - Information pertaining to sample documentation: bottle lot numbers/ dates, method of sample shipments, chain-of custody record numbers, and overnight shipping numbers.
  - Surveying data (including sketches with north arrows).
  - Changes in weather.
  - Rationale for critical field decisions.
  - Recommendations made to the client representative and GEI Project Manager.
  - Site sketch of conditions at the end of the day.
  - Summary of work completed/work remaining.
  - Allow time at the end of the day to complete entries in the notebook.

## 3. References

*New Jersey DEP Field Sampling Procedures Manual, August 2005.*

*ASFE Daily Field Report for Geotechnical Field Observation, 2nd Edition (2001), ASFE, Inc.*

## 4. Attachments

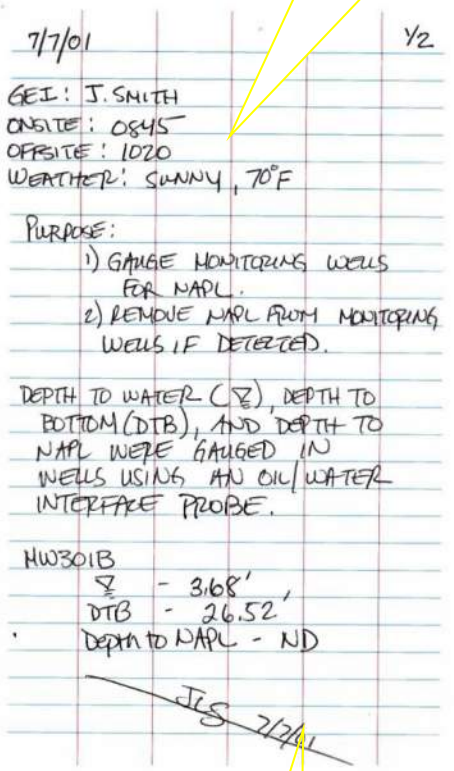
Attachment A - Example Field Notes

## 5. Contact

Melissa Felter
Leslie Lombardo

# SOP FD-001

## Attachment A – Example Field Notes



7/7/01 1/2

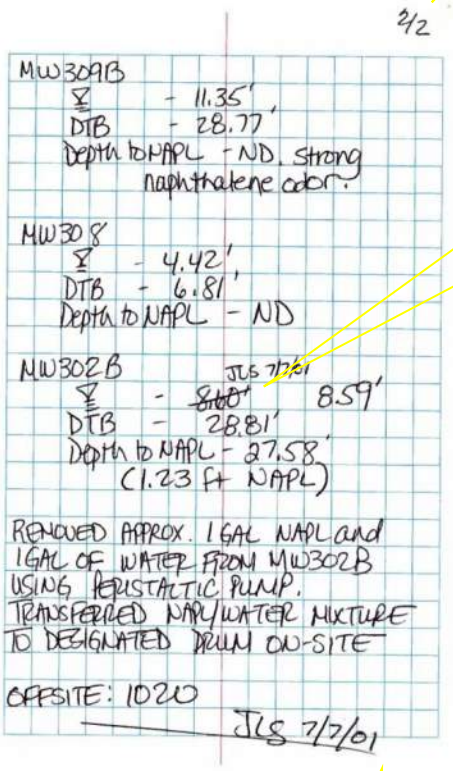
GEI: J. SMITH
ONSITE: 0845
OFFSITE: 1020
WEATHER: SUNNY, 70°F

PURPOSE:
1) GAUGE MONITORING WELLS FOR NAPL.
2) REMOVE NAPL FROM MONITORING WELLS IF DETECTED.

DEPTH TO WATER (▽), DEPTH TO BOTTOM (DTB), AND DEPTH TO NAPL WERE GAUGED IN WELLS USING AN OIL/WATER INTERFACE PROBE.

MW301B
▽ - 3.68'
DTB - 26.52'
Depth to NAPL - ND

JLS 7/7/01



2/2

MW309B
▽ - 11.35'
DTB - 28.77'
Depth to NAPL - ND. Strong naphthalene odor.

MW308
▽ - 4.42'
DTB - 6.81'
Depth to NAPL - ND

MW302B JLS 7/7/01
▽ - ~~8.60'~~ 8.59'
DTB - 28.81'
Depth to NAPL - 27.58'
(1.23 ft NAPL)

REMOVED APPROX. 1 GAL NAPL and 1 GAL OF WATER FROM MW302B USING PERISTALTIC PUMP. TRANSFERRED NAPL/WATER MIXTURE TO DESIGNATED DRUM ON-SITE

OFFSITE: 1020

JLS 7/7/01

**Start of each day includes:**
- **Date**
- **Project Number**
- **People on site**
- **Purpose of Work**
- **Weather Conditions**

**Each page is numbered**

**Errors are single line crossed out and initialed**

**Blank Space crossed out and initialed**

**Bottom of each page signed and dated**

GEI Consultants

# STANDARD OPERATING PROCEDURE

FD-002 Field Observation Report

## 1. Objective

Describe methods to generate a Field Observation Report.

The Field Observation Report is used to record a summary of activities, observations, and decisions made during the day's field work. The daily field observation report serves as a permanent record of the day's activity for the Project Manager (PM), In-House Consultant (IHC), and/or client.

## 2. Execution

- If required, at the close of the day's field work, a Field Observation Report should be prepared by the individual responsible for the field notebook. This report should be completed before leaving work for the day. Contents of the report should include, at a minimum, the following information:
    - A record of person(s) present at the site, time of arrival, departure times (e.g., GEI, contractor(s), client, etc.).
    - A record of the daily objective(s) and the activities performed (e.g., drilled five borings in the overburden).
    - A summary of deviation(s) from the field plan or objectives.
    - A summary of field decisions made, who made them, and the basis for such decisions.
    - A diagram, sketch, and/or map showing the location and extent of the work or other significant observation(s) made during the day.
    - Recommendations that may result from field observations and actions that may result from implementation of those recommendations.
    - A summary listing and field sketch showing location(s) of field activity.
- Submit a draft report to the PM/IHC for review. Complete any editorial changes, sign, date, and submit the report to PM/IHC for approval/signature. Field Observation Reports should be written neatly. They are not required to be typed unless specifically requested by the PM.

## 3. Limitations

- The Field Observation Report is not a substitute for the field notebook.
- Not all projects require daily Field Observation Reports.
- The Field Observation Report should be based primarily on factual information. Opinions, if necessary, should be identified as such. Any speculation should be clearly noted in the report as such.

- The Field Observation Report should never be released to anyone other than the PM/IHC prior to review and sign-off unless explicitly authorized by the PM/IHC.

## 4. References

*New Jersey DEP Field Sampling Procedures Manual, August 2005*

*ASFE Daily Field Report for Geotechnical Field Investigations, 2nd Edition (2001), ASFE, Inc.*

## 5. Attachments

Attachment A - Example Field Observation Report

## 6. Contact

Melissa Felter
Leslie Lombardo

## FIELD OBSERVATION REPORT

| | | | |
|---|---|---|---|
| **Project :** | Guard Booth Upgrades | **Date:** | November 8, 2006 |
| **Client :** | ACME Industries | **Report No.** | 1 |
| **Contractor:** | ABC Contracting | **Page:** | 1 of 2 |
| **Subcontractor:** | NA | **GEI Proj. No.** | 99999-0 |

# SOP FD-002 - Attachment A – Example Field Observation Report

**Time of Arrival: 0700** **Departure: 1440** **Weather: Overcast, Raining, 55$^0$F**

**Persons Contacted, Company**
Jane Doe, ABC Contracting

**GEI Representatives**
Bill Smith

**Purpose of Site Visit:** To observe excavation of soils for new guard booth and sidewalk.

**Observations:**

1. **Excavation**
   a. Areas for guard booth and sidewalk were laid out by ABC with stakes, string, and spray paint. Locations were between the pavement and wetland area; no excavation occurred in the wetland area.
   b. Staging area for soil stockpile was located to the west of the excavation, along the fenceline; polyethylene sheeting was placed beneath the pile.
   c. HDPE membrane delivered to site; stored in garage area through the inside fence.
   d. ABC crew began hand digging area for sidewalk and guard booth. Sidewalk area measured 22 feet long by 4 feet wide by 4 inches deep. Guard booth area measured 12 feet long by 10 feet wide by 9 inches deep. Utility pole and bollard locations started today.
   e. Rain continued to get worse in the afternoon; ABC covered the entire excavation and soil stockpile with poly sheeting and secured the sheeting with grade stakes.

2. **Subgrade Preparation**
   a. Subgrade preparation for the sidewalk and guard booth areas at the site is complete.

3. **Dewatering**
   a. No dewatering occurred today.

4. **Air Monitoring**
   a. During excavation, I monitored the breathing zone of the workers with an organic vapor meter (OVM). No headspace readings were measured in soil samples S-1 through S-8.

# FIELD OBSERVATION REPORT

| | | | |
|---|---|---|---|
| **Project :** | Guard Booth Upgrades | **Date:** | November 8, 2006 |
| **Client :** | ACME Industries | **Report No.** | 1 |
| **Contractor:** | ABC Contracting | **Page:** | 2 of 2 |
| **Subcontractor:** | NA | **GEI Proj. No.** | 99999-0 |



Picture 1: Sidewalk excavation and bollard layout

| | |
|---|---|
| **By: Bill Smith** | **Reviewed By:** |

# STANDARD OPERATING PROCEDURE

FD-003 Sample Management and Chain of Custody

## 1. Objective

Describe methods to label sample containers, manage the samples, and prepare Chain of Custody documentation for the samples. Sample transport is also addressed.

## 2. Project Setup

When setting up a sampling event, inform the recipients of the samples (laboratories) and recipients of laboratory results (data group and project managers). Discuss with the laboratory the sampling media, turnaround times, and reporting limits for appropriate regulatory criteria for the site. Include the data group on correspondence so that turnaround times, data validation, and project deliverable schedules can be tracked successfully.

- Laboratory - Number of samples, analyses needed: bottle orders and holding times, turnaround times needed, reporting limits needed for regulatory criteria.
- Data group - Number of samples, analyses requested, turnaround times and reporting limits requested, data validation needed, regulatory criteria to use for tabulating results, deliverables needed, and project name and number.
- Schedule - Inform the laboratory and Data Group of schedule delays, changes to analyses, and expediting.

## 3. Sampling Execution

- Review the work plan prior to sampling to determine the following:
  - Sample matrix and sampling method.
  - Required analysis and sample volumes.
  - Sample container type and preservative requirements.
  - Required analysis methods and/or report formats.
  - The turnaround time required by the project.
  - If the data will be sent directly from the laboratory to the data validator, Project Manager, or Data Group.
  - Holding time restrictions for sampling media and analytical methods.
  - Sample naming convention used for this project site.
- Sample labels should be filled out using a waterproof or permanent marker or pen. Required information includes:
  - Sample ID.
  - Date and time (military time) of sample collection.
  - Project number.
  - Sample preservatives.
  - Sampler's initials.
  - Laboratory analytical methods.

- Place the label on the jar or bottle, not on the cap. Sample custody begins at this time.
- Record the above information in the field notebook.
- Individually wrap sample jars with packing material, if needed. See SOP SC-002 for guidance on packaging samples for shipment to the laboratory by way of common carrier. Place samples in a cooler with bagged ice or freezer packs (blue ice) immediately after collection. Add sufficient ice or freezer packs to cool samples to approximately 4°C.
- Complete a chain of custody (COC) for the samples as described below. GEI or laboratory COCs may be used as long as they contain fields for all required sample information as described in Section 2.1.

### 3.1. Chain-of-Custody (COC) Completion

- Fill out COC neatly and in permanent ink. Alternatively, an Excel version of the GEI COC is available and can be filled out electronically.
- Certain analyses (i.e. air analysis by TO-15) require specialized, laboratory issued COCs. Make sure any specialized COCs are available before sample collection.
- Record the project name and number, the sampler's name(s) and the state where the samples were collected.
- For each sample, enter the sample identification number, date and time (military time) collected, the number of sample containers, and any additional information to fulfill project, client or regulatory requirements.
- Record the type of analysis (including laboratory method; e.g. EPA-SW846 Method XX) requested and the preservative (if appropriate) in the vertical boxes.
- Field duplicates should be anonymous to the laboratory, but must be recorded for use by the Data Group. To keep track of this information, link the field duplicate with the proper sample in the field notebook. If required by the Project Manager or Data Group, also document this information on or attach a note to the GEI copy of the COC.
- Trip blanks for large sites should be named similar to the samples they are collected with so that there are not two of the same sample name for the same site. For example, "OU1TB-122509" and "OU3TB-122509" would avoid any mistakes.
- Strike incorrect entries on the COC with a single line, followed by the initials of the person making the correction, the date, and the correct entry.
- When sample custody is ready to be relinquished, complete the bottom of the form with date and time (military time) and signatures of relinquisher and receiver of samples as indicated. The sample collector is always the first signature while the analytical laboratory is the final signature. Theoretically, all individuals handling the samples between collection and laboratory should sign the form; however, if a common carrier (i.e., Federal Express, UPS) is used for shipping, GEI must identify the carrier in the 'Received by' box on the

COC. If the sampler hand delivers the samples to the laboratory, the received box must be signed by the laboratory.

- If the samples are placed in a designated secure area (e.g. GEI sample fridge), note this location in the "Received by" box on the COC.
- GEI uses both single sheet and triplicate COCs. If using the triplicate COCs (white, yellow, and pink copies), the pink copy should be retained by the sampling personnel and provided to the Data Group for proper filing. The white and yellow copies should accompany the samples to the laboratory.
- If you are using the single sheet COC, make a copy of the COC after it has been signed by the lab courier and forward it to the Data Group.
- Prior to sample shipment by common carrier, the COC must be placed inside the cooler in a Ziplock bag or other watertight package.
- If a common carrier such as FedEx is used to transport the samples to the laboratory, include the carrier tracking number and identify the carrier in the "Received by" box on the COC.
- If a courier is used to transport samples to the laboratory (lab courier or GEI personnel), the courier signs the COC in the "Received by" box.
- Place a custody seal on the cooler if shipping via common carrier.
- Transport samples to the laboratory as soon as possible. It is preferable to transport the samples directly to the laboratory from the field. Samples brought back to the office for storage prior to submission to the laboratory must be kept cold (4° C).
- Unused sampling containers/media that are sent back to the lab should be included on a separate COC.
- After the samples are sent to the laboratory, the GEI copy of the COC must be forwarded to the Data Group: datagroup@geiconsultants.com.

## 4. Limitations

- Keep the number of people involved in handling samples to a minimum.
- Where practical, only allow people associated with the project to handle the samples.
- Always document the transfer of samples from one person to another on the COC.
- The COC should always accompany the samples.
- Give samples positive identification at all times that is legible and written with waterproof or permanent ink.
- When sending samples via a common carrier, use one COC per package.
- Where practical, avoid sending samples from more than one site with separate COCs in a single package.

## 5. References

*New Jersey Department of Environmental Protection, Field Sampling Procedures Manual, August 2005.*

*Connecticut Department of Environmental Protection, Guidance for Collecting and Preserving Soil and Sediment Samples for Laboratory*

## 6. Attachments

Attachment A - Example Chains of Custody
Attachment B - Shipping Info Pics

## 7. Contact

Brian Skelly
Leslie Lombardo

# Chain of Custody Record

Example COC

**STL Connecticut**
128 Long Hill Cross Road
Shelton, CT 06484
Tel: 203-929-8140

**Severn Trent Laboratories, Inc.**

STL-4124 (0901)

| | | | |
|---|---|---|---|
| Client: GEI | Project Manager: Dave Terry | Date: 12-31-07 | Chain of Custody Number: 00452 |
| Address: 455 Winding Brook Dr | Telephone Number (Area Code)/Fax Number: 860 368 5300 / 860 368 5307 | Lab Number: | Page 1 of 1 |
| City: Glastonbury / State: CT / Zip Code: 06033 | Site Contact: M. Felter | Lab Contact: Paul Hobart | |
| Project Name and Location (State): Carroll Gardens NY | Carrier/Waybill Number: FedEx 9383 7603 0879 | | |
| Contract/Purchase Order/Quote No. | | | |

Analysis (Attach list if more space is needed): VOC 8260B; SVOC 8270C; TO-15 + NAPHTHALENE

| Sample I.D. No. and Description (Containers for each sample may be combined on one line) | Date | Time | Matrix: Air | Aqueous | Sed. | Soil | Containers & Preservatives: Unpres. | H2SO4 | HNO3 | HCl | NaOH | ZnAc/NaOH | Special Instructions/ Conditions of Receipt |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| CGSB-01 (0-2) | 12-31-07 | 1130 | | | | X | X | | | | | | |
| CGSB-02 (3-4) | 12-31-07 | 1250 | | | | X | X | | | | | | |
| CGSB-02 (3-4) MS | 12-31-07 | 1250 | | | | X | X | | | | | | |
| CGSB-02 (3-4) MSD | 12-31-07 | 1250 | | | | X | X | | | | | | |
| CGSB-XX (5-6) | 12-31-07 | 0800 | | | | X | X | | | | | | |
| CGTB-123107 | 12-31-07 | 1400 | | | | TB | | | | X | | | |
| CGGW-01 | 12-31-07 | 1430 | | X | | | X | | | X | | | |
| CGSG-01 | 12-31-07 | 0700-1500 | X | | | | | | | | | | CANISTER # 2013 REGULATOR # 779 |

Per NYSDEC: "CLP data package deliverables"

Possible Hazard Identification
☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☒ Unknown

Sample Disposal
☐ Return To Client ☒ Disposal By Lab ☐ Archive For ____ Months (A fee may be assessed if samples are retained longer than 1 month)

Turn Around Time Required
☐ 24 Hours ☐ 48 Hours ☐ 7 Days ☐ 14 Days ☐ 21 Days ☒ Other See Contract

QC Requirements (Specify): NYS Cat B ASP deliverable send to Lorie Mackinnon

Send EDD to datagroup@geiconsultants.com

| | | | | | |
|---|---|---|---|---|---|
| 1. Relinquished By: Melissa J Felter | Date: 12-31-07 | Time: 1600 | 1. Received By: FedEx Waybill 923117-4432 | Date: 12-31-07 | Time: |
| 2. Relinquished By | Date | Time | 2. Received By | Date | Time |
| 3. Relinquished By | Date | Time | 3. Received By | Date | Time |

Comments: USED FLOW CONTROLLER FOR AIR SAMPLE INCLUDED

DISTRIBUTION: WHITE - Returned to Client with Report; CANARY - Stays with the Sample; PINK - Field Copy

# EXAMPLE COC

## Chain-of-Custody Record

**Laboratory:** Accutest

**Laboratory Job #** (Lab use only)


GEI Consultants
400 Unicorn Park Dr.
Woburn, MA 01801
PH: 781.721.4000
FX: 781.721.4073


**Project Information**

Project Name: MWRA - Low Service Storage Tank

Project Location: Stoneham, MA

Project Number: 093400

Project Manager: D. Aghjayan

Page _1_ of _1_

Send Report to: rseigener@geiconsultants.com

Send EDD to: labdata@geiconsultants.com

MCP PRESUMPTIVE CERTAINTY REQUIRED – YES NO

If Yes, Are MCP Analytical Methods Required? YES NO NA

If Yes, Are Drinking Water Samples Submitted? YES NO NA

If Yes, Have You Met Minimum Field QC Requirements? YES NO NA

| Lab Sample Number | GEI Sample ID | Collection Date | Collection Time | Matrix | No. of Bottles | Sampler(s) Initials | Preservative | PCBs | VPH Fractions Only | EPH Fractions Only | SVOCs | VOCs, % Solids** | Conductivity | RCRA 8 Metals* | TPH by GC/FID DRO | Sample Specific Remarks |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | None | MeOH | None | None | MeOH | None | None | None | |
| | 093400-LS6-S5(19'-21') | 12/29/2009 | 9:30 | SO | 3 | JMR | | | x | | | x | | | | |
| | 093400-LS6-COMP (FILL) | 12/29/2009 | 9:30 | SO | 1 | JMR | | x | | x | x | | x | x | x | |
| | 093400-LS6-COMP (NATIVE) | 12/29/2009 | 15:00 | SO | 1 | JMR | | x | | x | x | | x | x | x | |
| | 093400-LS8-COMP | 12/29/2009 | 14:00 | SO | 1 | JMR | | x | | x | x | | x | x | x | |
| | 093400-LS9-S4 (8'-8'-5") | 12/30/2009 | 14:30 | SO | 3 | JMR | | | x | | | x | | | | |
| | 093400-LS9-COMP | 12/30/2009 | 15:00 | SO | 1 | JMR | | x | | x | x | | x | x | x | |

**Sample Handling**

Samples Field Filtered
YES NO NA

Sampled Shipped With Ice
YES NO

MCP Level Needed: GEI requires the most stringent Method 1 MCP standard be met for all analytes whenever possible.

| Relinquished by: (signature) | Date: | Time: | Received by: (signature) |
|---|---|---|---|
| 1. Joseph M. Reyes | 12/30/09 | 16:30 | 1. GEI FRIDGE |
| 2. GEI FRIDGE | 1/4/10 | 1310 | 2. Naomi Stegman |
| 3. Naomi Stegman | 1/4/10 | 1310 | 3. [illegible] |
| 4. | | | 4. |

**Turnaround Time (Business days):**

Normal _X_ Other ____

10-Day ____ 7-Day ____

5-Day ____ 3-Day ____

Before submitting rush turnaround samples, you must notify the laboratory to confirm that the TAT can be achieved.

**Additional Requirements/Comments/Remarks:**

Please use MA Landfill List

* Please run TCLP analysis for RCRA 8 Metals results that exceed the 20 times rule.

** Please use % solids sample for VOC and VPH analysis of 093400-LS6-COMP (FILL), 093400-LS6-COMP (NATIVE), 093400-LS8-COMP, and 093400-LS9-COMP

# Chain-of-Custody Record

**Laboratory:**

**Laboratory Job #** (Lab use only)


GEI Consultants

455 Winding Brook Drive, Suite 201
Glastonbury, CT 06033
PH: 860.368.5300
FX: 860.368.5307


**Project Information**

**Project Name/Number:**

**Project Location:**

**Project Contact:**

**Phone Number:**

**Page __ of __**

Send Report to:

Send EDD to: datagroup@geiconsultants.com

**Preservative**

**Analysis**

**Sample Handling**

Samples Field Filtered

YES NO NA

Samples Shipped With Ice

YES NO

**Deliverables:**

If Yes, Have You Met Minimum Field QC Requirements? YES NO NA

| Lab Sample Number | GEI Sample ID | Collection | | Matrix | No. of Bottles | Sampler(s) Initials | Sample Specific Remarks |
|---|---|---|---|---|---|---|---|
| | | Date | Time | | | | |
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| | | | | | | | |

| Relinquished by sampler: (signature) | Date: | Time: | Received by: (signature) |
|---|---|---|---|
| 1. | | | 1. |
| Relinquished by: (signature) | Date: | Time: | Received by: (signature) |
| 2. | | | 2. |
| Relinquished by: (signature) | Date: | Time: | Received by: (signature) |
| 3. | | | 3. |
| Relinquished by: (signature) | Date: | Time: | Received by: (signature) |
| 4. | | | 4. |

**Turnaround Time (Business days):**

Normal ____ Other ____

10-Day ____ 7-Day ____

5-Day ____ 3-Day ____

Before submitting rush turnaround samples, you **must** notify the laboratory to confirm that the TAT can be achieved.

**Additional Requirements/Comments/Remarks:**

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

# PACKING SAMPLES FOR SHIPMENT BACK TO THE LABORATORY




**A. Line cooler with bubble wrap and large plastic bag. Use absorbent pad inside the bag if bottles contain preservatives.**



**B. Wipe outside of bottles and put glass in individual bubble bags & seal. Place bottles & the temperature blank into cooler. Leave room for ice in between bottles & on top.**



**C. Place double bagged or loose ice randomly around bottles throughout the cooler.**



**D. Place large bag of ice or loose ice on top of the bottles. In warm weather, the cooler should be packed with as much ice as possible.**



**E. Close outer bag, compress excess air out of bag, twist top and knot. If necessary, use more bubble wrap to fill the dead air spaces. Place chain of custody (COC) and other paperwork in plastic bag and seal. Place on top of cooler.**




**F. Close cooler, place signed and dated Custody Seals over opening. Tape over the Custody Seal and seal cooler securely. Fill out overnight shipping waybill and attach to the top or handle of the cooler. Attach Saturday delivery stickers if needed. Ship according to DOT regulations.**

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# STANDARD OPERATING PROCEDURE

FD-004 Photo Documentation

## 1. Objective

Describe methods to document and retain photographic records.

Keeping a record of photographs taken is crucial to their validity as a representation of existing conditions.

## 2. Execution

- Photographs of a site, individual samples, or other observations should be taken using a digital camera.
- Set the camera to record the time and date for each photograph.
- All photographic records, along with the following information, should be recorded in the field notebook (SOP FD-001).
    - If applicable, the compass direction describing the direction the photograph was taken (e.g. looking southeast). This may not apply to photographs of individual samples.
    - Brief description of what the photograph is intended to show.
- The field notebook should note who took the photographs.
- The photographs should be electronically backed up on a computer or other data storage device.
- If photographs will be used in a report, memo, or letter, they should be placed on a photograph record template and the relevant information describing the photograph should be inserted into the caption section for each photograph.

## 3. Limitations

- Some clients and regulatory agencies require photographs of every subsurface soil sample collected. These photographs typically include a “whiteboard” which indicates the site, the boring ID, and the depth of the sample, while logging details are recorded in the field notebook. Under these circumstances, it is not necessary to include compass directions or descriptions.

## 4. References

*New Jersey Department of Environmental Protection, Field Sampling Procedures Manual, August 2005.*

## 5. Attachments

Attachment A – Example of Photo Documentation Template

## 6. Contact

Melissa Felter
Leslie Lombardo

**Attachment A – Example of Photo Documentation Template**
**GEI Consultants, Inc.**

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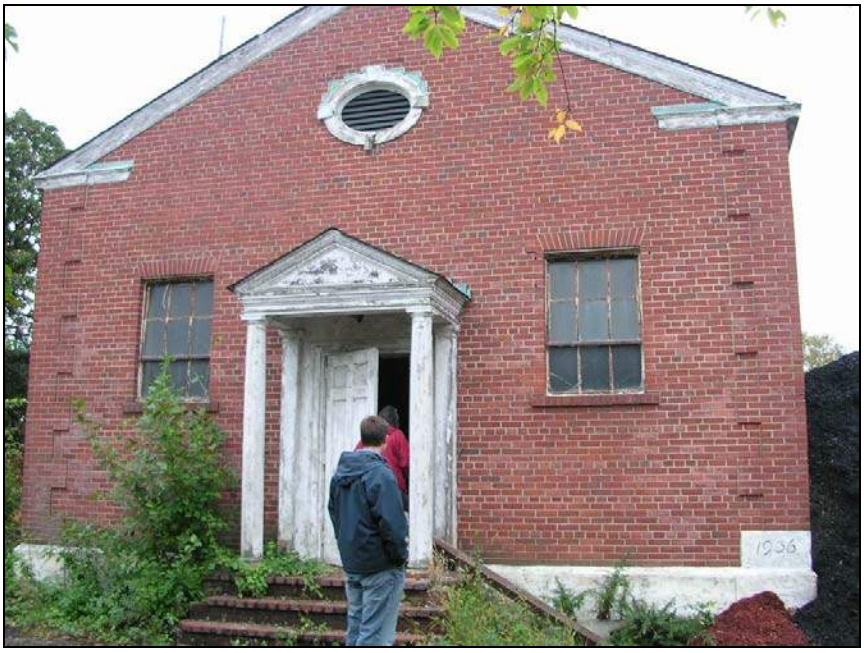
**Project: Project Name**

**Location: Project Location**



**Photographer:** K. Barber
**Date:** 10/25/07
**Photo No.:** 1
**Direction:** N

**Comments:**
Entrance of site with tree mulching operations.




**Photographer:** K.Barber
**Date:** 10/25/07
**Photo No.:** 2
**Direction:** W

**Comments:**
On-site building built in 1936.

# STANDARD OPERATING PROCEDURE

FD-006 Handheld Global Positioning Receiver Operation

## 1. Objective

Use handheld global positioning system (GPS) receivers to locate sample points and site features with "Mapping-Grade" accuracy.

Use handheld GPS receivers to "stake out" proposed sample point locations within the limits of "Mapping Grade" accuracy.

## 2. Execution

- Handheld GPS receivers provide a low-cost and user-friendly method for locating sample points and site features with a fair degree of horizontal accuracy.
- In simplistic terms, GPS works by measuring the distance from numerous orbiting satellites to a point on the earth surface. Individual satellites broadcast their real-time location in terms of x,y and z coordinates, and the distance from each satellite is measured as a function of the length of time that a time-stamped signal takes to reach the receiver. Built-in GPS software derives new points by intersecting the distances from known orbital locations – in much the same way that points are located by intersecting tape-measured distances from building corners or other pre-existing site features.
- Late-model handheld GPS receivers utilize a real-time differential correction technique called WAAS (Wide Area Augmentation System). This system was designed to provide greater confidence and reliability in using GPS data for commercial aircraft landing approaches, and the additional correction improves all GPS operations.
- Handheld GPS receivers display navigational information on a variety of standard pages. Although each manufacturer uses slightly different formats, all receivers toggle back and forth between the following visual presentations:
- A "satellite" page displays the relative orbital location of all GPS satellites that are currently being tracked by the receiver. The display may include information on the real-time geometrical strength of the solution: satellite intercepts that cross at right angles provide more accurate solutions than intercepts that cross at acute or obtuse angles.
- A "track" page that displays the travel path of the receiver while it is turned on, along with the relative location of recorded points. Many GPS models have a "track-back" function that will guide the user on the same path back to the starting point
- A "navigation" page that displays instantaneous location and the real-time direction and velocity of travel. Some units provide two pages to display this information in different formats. Most units will report the overall "course

made good" (straight-line bearing and distance from the starting point) at any point.

- A "waypoint" page that allows users to "Go To" a created point or previously recorded point by providing a straight-line bearing and distance to the point. The information is instantaneously updated as the user moves along; some units display a pointing arrow that directs the user to the direction of travel. Be careful of go-to lines that lead through swamps or over cliffs – if you will be travelling in difficult terrain have a paper copy of the USGS quadrangle and a compass on hand for navigation.
- Signal strength degrades significantly next to buildings and underneath tree canopy. Most GPS receivers have an "averaging" function to improve the accuracy of shielded locations. GPS users can also improve precision by locating points three times, at different times of the day. Two of the solutions will generally be closer to each other than to the third and can be averaged for a more reliable fix.
- Most GPS receivers default to latitude and longitude, but data is more accurate and easier to input and when expressed in UTM coordinates to the nearest meter. The handheld GPS setup will have a function somewhere to change to UTM. Most of Connecticut is in UTM Zone 18 but the easternmost parts are in Zone 19.
- Consult "Corpscon" the datum translator available from the National Geodetic Survey website. Corpscon translates instantly from latitude/longitude to UTM coordinates to state plane coordinates and provides tools to identify UTM Zones. Also consult the Trimble, Garmin and Magellan websites for technological improvements and discussion of advanced techniques.

## 3. Limitations

- Handheld GPS receivers operating in unobstructed locations are currently reckoned to provide 2-5 meter accuracy, meaning that the true location of measured points lie within an "error ellipse" with axes of 2-5 meters centered on the measured location. In other words, even under the best of conditions a real-time GPS solution may be as much as 20 feet off the true horizontal location of a point.
- Due to geodetic restrictions, vertical locations (elevations) have less than half the accuracy of horizontal locations, meaning that even under the best of conditions, a surface elevation displayed on a handheld GPS receiver may be off by more than 50 feet.
- Horizontal and vertical data derived from handheld GPS receivers should never be considered more than relatively accurate, and this level of uncertainty should be identified in any discussion of positional tolerance.

## 4. References

Trimble Website: .trimble.com
Garmin Website: .garmin.com

Magellan Website: .**magellan**gps.com
National Geodetic Survey: ://www.ngs.noaa.gov/

## 5. Contact

Doug Bonoff, PLS

# STANDARD OPERATING PROCEDURE

FD-007 Surveying and Mapping Specifications

## 1. Objective

Describe methods to establish horizontal and vertical surveying control for exploration programs and describe mapping attributes.

The level and degree of precision will vary from project to project. For simple site assessment projects, relative locations and elevations may be adequate and most appropriate, and are ordinarily performed by GEI personnel without the need for supervision by a registered professional land surveyor. For more complex site assessments/remedial investigations and remedial design projects the level of detail and precision are likely to increase, and are ordinarily performed for GEI under the supervision of a registered professional land surveyor. This SOP reflects requirements for the differing levels of detail and precision for simple and complex projects. Check with the GEI and client project managers if there is uncertainty about the requirements and what level of detail and precision is warranted.

Accurately surveyed locations of explorations are a key element in the evaluation of all field data, and are necessary for the preparation of geologic profiles and the interpretation of horizontal and vertical groundwater flow directions. The accuracy of measurements and established elevations is particularly important when groundwater gradients are low, as errors may easily lead to misinterpretation of the direction of groundwater flow.

The survey is usually performed after the explorations have been completed. Explorations and land features requiring accurate horizontal and vertical control may include:

- Soil borings.
- Test pits and trenches.
- Monitoring wells and piezometers.
- Other sample points
- Geophysical surveys.
- Surface water and drainage features.
- Buildings and structures.
- Underground utilities and storage tanks as marked on the surface.

# 2. Execution

## 2.1 Surveying Performed by GEI

- The following equipment is needed for surveying performed by GEI:
    - engineer's level or transit (the instrument)
    - surveyor's rod and rod level
    - 150-foot or 300-foot tape
    - field notebook
- All points to be surveyed should be examined to evaluate access and the most effective point(s) to set up the instrument and establish turning points.
- A benchmark (point of known elevation or a reference elevation) should be determined. The benchmark selected should be a permanent object with a small likelihood of being disturbed. Examples are a substantial metal or concrete post founded firmly in the ground, a spike driven in a telephone pole, a defined corner of the masonry of a bridge or building, or a water hydrant.
- The instrument should be set up in a location where the benchmark is visible to the instrument operator.
- The tripod supporting the instrument must be set in a stable position and the instrument leveled.
- Use the two leveling screws (which are farthest from the bubble level on the instrument) to adjust the instrument until it is level. Rotate the screws in opposite directions until the bubble of the bubble level is on a line perpendicular to a line running through the center of the two leveling screws being adjusted. Next, revolve the remaining leveling screw until the bubble is located in the center of the bubble level. If the bubble cannot be centered properly, repeat the operation from the beginning. If a transit is being used, also level the telescope. To confirm successful leveling, rotate the instrument 90° and recheck the bubble of the circular level. Repeat this until the instrument has been rotated 360°.
- The instrument operator should set up the notebook with the headings shown in Fig. 1 and enter information as indicated by SOP FD-001 *Field Notebook*. Include the elevation and a careful description of the benchmark (B.M.) for the survey in the field notebook.

- The rod is held on the initial benchmark, taking care to keep the rod plumb, and the instrument operator finds the backsight reading. This reading is recorded in the backsight column (BS).

- The rod is placed on a point properly located with respect to the instrument and the line of levels to establish a turning point (TP). Hold the rod on the turning point. The backsight reading is added to the elevation of the benchmark to determine the height of the instrument (HI).

- The instrument is now aimed at the rod which is held on the first turning point to determine the foresight reading. This is recorded in the foresight column (FS). This reading is subtracted from the HI to determine the elevation of the TP.

- The instrument can now move forward and set up at a new location to determine elevations of additional points. The instrument must be re-leveled as described above. The rod remains at the turning point until the instrument is ready. At that time, the rod is held plumb to be read using the relocated instrument. This BS reading is recorded in the BS column. It is added to the elevation of the turning point to determine the new HI.

- The rod can now be moved to establish another turning point. A new FS is determined, and the process is repeated until the elevations of all required points are determined.

- When the elevations of all desired points have been determined, a check should be performed by resurveying the elevation of the original benchmark or another point of known elevation. The degree of error should not be greater than 0.01 feet for typical environmental work at GEI, unless a project specific degree of error is agreed upon with the Project Manager.

- When measuring the elevations of monitoring wells, the elevation of the ground surface, the protective casing, and the highest point of the PVC riser should all be measured. A permanent mark should be made on the PVC riser at the measurement point to serve as a reference for performing water level measurements.

- To locate monitoring wells or borings on a plan, the distance between the point and a minimum of two (preferably three) established points shown on the plan should be measured and recorded using a 150-foot or 300-foot tape measure. This will allow for locating the desired point by "swinging arcs." Alternatively, distances may be measured using the instrument and rod. The distance from the center of the instrument to the rod is found by sighting through the instrument on to the rod and multiplying the stadia interval or reading (the interval between the apparent locations of the bottom and top stadia hairs of the instrument on the rod) by 100.

- Alternatively, locating of explorations and site features using a handheld global positioning system (GPS) receiver may be acceptable on some projects. Refer to GEI SOP FD-006 for guidance on handheld GPS receiver operation.

Fig. 1 Example record of survey

| **Sta** | **BS** | **HI** | **FS** | **Elev.** | Comment |
|---|---|---|---|---|---|
| B.M. | 9.42 | 922.64 | | 913.22 | spike in telephone pole #10 |
| B405 (T.P.) | 6.34 | 927.51 | 1.47 | 921.17 | Boring #405 |
| B406 (T.P.) | 10.15 | 934.75 | 2.91 | 924.60 | Boring #406 |
| B.M. | | | 21.53 | 913.22 | Spike in telephone pole #10 |
| | | | | | 913.22<br>-913.22<br>0.00 check |

**Precautions**

- The instrument must be level when measurements are made.
- The rod must be kept plumb. Under windy conditions, this can be facilitated through the use of a rod level.
- The backsight and foresight distances should be equalized in so far as field conditions permit. Sight distances should be limited to about 300 feet.
- Computations should be checked in the field for accuracy.
- Care must be taken that the proper crosshair is read at all times.
- When taping off locations, the tape must be held taut and level.
- If surveying conditions are extremely difficult or a large number of turning points are required, it may be prudent to subcontract surveying work to a registered professional land surveyor.

## 2.2 Surveying and Mapping Performed for GEI

Surveying and mapping performed for GEI shall be conducted to provide sufficient accuracy. As an example, in Connecticut, this should be in conformance with A-2 and T-2 standards, regardless of the intended end product of such work. Check with state requirements to confirm conformity with standards. The client and/or regulatory programs may have additional requirements. An example of possible file specifications for electronic deliverables from surveying subcontractors is included in Attachment A.

In addition to the preceding requirements, standard site plans, shall include the following elements:

- Location of all surface features, including, but not limited to: buildings, structures, fences, aboveground utilities, drainage equipment, underground features as marked on the surface, limits of pavement, landscaped or graded areas, and a general description of surface material and vegetation. Location of all wetlands and/or water bodies. Flow direction of rivers, streams, or surface drainage should be noted with arrows, where apparent.

- Location of boundaries by reference to other plans, when available, and to lines of occupation, where apparent. The surveyor shall also provide the owner's name and address and Assessor's map, block and lot numbers for the subject property and adjoining parcels.

- Unless the plan is intended to be a certified property or boundary survey, disclaimers of certification to boundary and title should be prominently displayed.

- Where practical and accessible, the location of pertinent surface features on abutting properties to a distance of 100 feet beyond the boundaries of the subject property. Names of abutting property owners, as listed by the Town Assessor, shall be included.

- Location map of sufficient scale and detail to locate the site from a statewide reference.

- Provide a written and graphical scale of distance. All maps shall include a north arrow with reference to direction (geodetic or magnetic). Unless a site-specific grid system is required, NAD83 should be identified as the horizontal datum.

- The surveyor shall provide a coordinate and elevation list for all located points.

- Topography, when requested, should be conducted to provide sufficient accuracy. As an example, in Connecticut, topography should conform to Class T-2 standards (90 percent of contours true to within 1/2 contour interval). Check with state requirements to confirm conformity with standards. The vertical datum should be identified on the plan. Monitoring well elevations shall be established at the ground surface and at the top of casing or riser.

- Requirements for location by state plane coordinates should include reference to the geodetic monuments or GPS base stations used.

Requests for boundary survey entail the following additional requirements.

- Examination of record descriptions of the property and adjoining parcels, of record surveys and plans, and of record easements appurtenant to the property. Record search will extend long enough to determine the original intended boundary locations. Certification as to ownership should be provided by the client's legal counsel.

- Location and description of all boundary evidence found.

- Physical location of record easements and/or visible evidence of access by other parties to the subject property.

- Location and description of apparent encroachments onto the subject property. Location and description of any conflict between deed description and actual occupation.

- Distance and bearing of property lines are to be shown to the nearest hundredth foot (0.01') and arc second (0°00'01"). Area should be shown in decimal acres and/or square feet.

- Plans should include standard certification regarding conformation to state standards for boundary and topographic survey. No other certifications should be provided, except as specifically negotiated with the client.

### 2.2.1 Survey Requirements for Exploration Programs

The project manager shall go over the survey program with the survey chief to be sure that all requirements are understood and that the survey crew is alerted to potential site hazards.

The client and/or regulatory programs may have additional surveying requirements. If there is uncertainty, the Project Manager should be consulted.

The following criteria should be met for all survey programs performed for GEI by subcontracted surveyors.

- The survey is to be performed by or under the direction of a registered professional land surveyor.
- The survey shall be performed with sufficient accuracy to demonstrate a precision of 0.01 foot for horizontal and vertical control points.
- Unless a site-specific datum is requested by the client, horizontal control is to be related to the state plane coordinate system. NAVD88 should be used as the vertical datum unless a site-specific datum is required.
- Elevation precision to be obtained at monitoring wells and piezometers shall be 0.01 foot. A permanent reference point should be marked on the top of riser.
- Establish a permanent site benchmark on a secure and stable feature and note its location on survey maps.
- Survey information needs to be reviewed carefully with respect to horizontal and vertical determinations. Survey errors may often be caught by noting apparent anomalies in water levels or flow directions.

### 2.2.2. Previous Use of a Datum Other Than Mean Sea Level

New surveys at all sites subject to regulatory review shall be referenced to NAVD 88 (i.e., mean sea level) unless required otherwise by the project or client. Older surveys, however, may be based on previously established vertical benchmarks to which local elevations have been referenced. Such surveys may not provide any specific information about the relationship of topographic contours and elevations to Mean Seal Level or other standard vertical datum. When used, a site-specific elevation grid should be identified as a local or arbitrary datum. When a municipal engineering datum is used, the vertical relationship to a standard datum should be provided.

Always check with the project manager to confirm that continued use of a datum other than NAVD 88 (mean sea level) is acceptable.

### 2.2.3. Weather Conditions

Inclement conditions increase the chance for errors in identification, measurement, and recordings. Surveyors need to take extra time to assure proper identification of all monitoring wells surveyed, to eliminate ice- and snow-free surface elevation shots, and to carefully record survey data despite adverse conditions. Obtaining stable tripod set-ups may be more difficult under these conditions. Sightings should use shorter distances than under more favorable conditions. Warm, sunny days generate heat waves that may present problems for optical instruments.

## 3. Work at Hazardous Waste Sites

Surveyors must be informed of hazardous site conditions and the potential for exposure. On most sites that require Level D protection, surveyors do not need special training because they do not do “intrusive” work. Check with the project manager, GEI risk management personnel, and/or the client to ensure that both GEI and the surveyors are appropriately informed and protected by insurance. A site that requires personal protection above Level D must also be surveyed by OSHA-trained and properly equipped surveyors.

## 4. References

GEI Standard Operating Procedure FD-006: Handheld Global Positioning Receiver Operation.

Rayner, William Horace and Schmidt, Milton O., Fundamentals of Surveying (1963), New York: American Book Company.

Topcon Instruction Manual, Auto Level AT-G3, Topcon Corporation, Tokyo, Japan

## 5. Attachments

Attachment A – File Specifications for Subcontractors

## 6. Contact

Catherine Malagrida, P.G.
Chad Conti, LEED AP, P.G.

# Attachment A - File Specifications for Subcontractors

## 1. General File Standards

- The method of naming files shall incorporate the name of the site and/or the GEI project number and the content. For example, SITE NAME-001110-Site Layout.
- All files provided to GEI will be electronically transmitted or recorded on CD, DVD, or other permanent recording medium. All referenced files and other supporting files such as special line types, color tables, images, etc. shall be included.
- All files are to be provided in .DWG or .DXF format and shall be compatible with AutoCAD Release 2007.
- It will be standard procedure to have purged all unused entities from a CAD file prior to delivery.
- Each file will be clearly labeled as follows:
  - Project No.:
  - Project Name:
  - Drawing Title:
  - File Size:
  - Date:
  - Revised Date:
- Files which contain non-standard ACAD fonts, line types or custom menus are not acceptable.

## 2. General Drafting Standards

All entity line types, colors, etc. are to be defined “BYLAYER.”

It shall be standard to use “object snap” for the creation or insertion of all entities (as compared to “eyeballing”).

All symbols will be originally drawn on layer “0.” This will allow the symbol to acquire the color and line type properties it is inserted on. All symbols used to define sample locations are to contain attributes describing the sample identifier and any elevation data required by contract.

All line entities are to be continuous polylines (PLINES).

All text shall be rotated such that it is readable from the bottom of the sheet and from the right of the sheet. It will be standard to use the AutoCAD style “STANDARD” and Arial font whenever possible. All text shall be of a size such that it is legible when plotted at the file's intended scale.

North up or to the right.

### 3. General Layering Standards

The following are some of the acceptable layer names. Others may be added as needed. Descriptions of new layers are to be provided to GEI.

- PROPERTY (property lines)
- TRAVERSE
- BASELINE
- BUILDING (buildings, other on-site/off-site structures)
- STREET
- ELEC (all electrical lines, manholes, power poles, transformers)
- WATER (all water lines, manholes, hand holes, gates, valves)
- SAN (all sanitary sewer lines, manholes, catch basins, if combined sanitary/storm sewer)
- STM (all storm sewer lines, manholes, roof drains, catch basins)
- CONTOUR (all contour lines & labels)
- TEL (telephone)
- GAS (all gas lines, valves, etc.)
- TEXT
- TANKRIVER
- STREAM
- SEDIMENT (sediment sample location)
- SURFACE SOIL (surface soil sample location)
- MW (monitoring well location)
- BORING (soil boring location)
- SURFACE WATER (surface water sample location)
- PAD, SLAB, STRUCTURE, FND (foundations or miscellaneous structures)
- EASEMENT
- SAMPLING LAYERS (begin with “E” existing or “P” proposed)

### 4. Additional Data Required

All files shall be accompanied by a “check plot” of each file. The “check plot” shall be checked for accuracy and corrected as necessary.

Whenever surveyed files are supplied to GEI, they shall be considered incomplete until GEI is provided with copies of all field notes and sketches, data printouts, and a point reference file (if applicable).

# STANDARD OPERATING PROCEDURE

GW-001 Water Level and NAPL Measurement

## 1. Objective

Describe procedures to measure the depth to water and non-aqueous phase liquid (NAPL) thickness in an open borehole, cased borehole, monitoring well or piezometer.

## 2. Equipment and Materials

Field forms and/or field notebook.

- Decontamination fluids
- Bailer
- Weighted cotton string
- Oil/Water interface probe
- Water level meter (if oil/water interface probe is not available)

Water level and NAPL measurements can be collected by a variety of methods. A water level meter is used to collect depth to water measurements however an oil/water interface probe or other methods must be used to gauge NAPL depths. An electronic oil/water interface meter, consists of a cable divided into incremental measurements of 0.01 feet, and probe that consists of an infra-red circuit that detects the presence of a liquid, and a conductivity circuit that differentiates between conductive liquid (water) and non-conductive liquid (LNAPL or dense non-aqueous phase liquid [DNAPL] product). Typically, a steady tone and light indicate a non-conductive liquid (e.g. product) and an intermittent tone and light indicate a conductive liquid (e.g. water). Refer to the manufacturer's instructions for details. Alternately, water level and NAPL measurements can be collected using a water level meter, clear bailer and weighted cotton string. Each method of data collection is described below.

## 3. General Information

- The water level in a monitoring well or piezometer should be allowed to stabilize for a minimum of 24 hours after development or construction before groundwater elevation and/or NAPL measurements are collected. The water level in a borehole can be measured during drilling; however, this should be noted in the field notebook.
- Water levels in multiple wells should be collected within the shortest timeframe practicable.
- Water and NAPL levels should be measured from the designated survey point as specified by the surveyor or highest point (or "V" notch) on the PVC. If the well is new, mark the datum point with an indelible marker and note reference location in

field book. Discuss with the project manager what reference point should be used to collect water measurements for specific sites.

- Water level and/or NAPL measurements should be made before any water is removed from wells because doing so may influence groundwater levels in the area of the investigation.
- Measurements should be made approximately three times to confirm the measurement. Each time a measurement is made it should be determined to the nearest one-hundredth of a foot (0.01).
- Water level and/or NAPL measurements should first be collected at the wells that are least contaminated and proceed towards the wells that are most contaminated. Decontaminate the water level meter or oil/water interface probe prior to initial use and after use at each location. If NAPL is encountered at a well where it was previously not observed, contact your project manager before continuing.
- Refer to the oil/water interface probe or water level meter instruction manual for guidance on indicator signals, as these may differ by manufacturer.

# 4. Execution

## 4.1 Water Level and NAPL Measurements Using Interface Probe

- Open wells to the atmosphere and allow them to equilibrate prior to collecting LNAPL depth measurements.
- LNAPL Depth (if present): Measure the LNAPL/air interface by slowly lowering the interface probe to the LNAPL surface. Be ready to stop as soon as the probe signals the LNAPL surface.
- Record the depth to LNAPL.
- Groundwater Depth: Continue slowly lowering the probe until it signals the presence of water.
- Record the depth to water.
- The LNAPL thickness is determined by subtracting the water depth from the LNAPL depth.

The depth and thickness of DNAPL can sometimes be determined by slowly lowering the interface probe past the LNAPL (if present) and water layers. Record the depth to the DNAPL layer. Finally, measure the depth to the well bottom.

The DNAPL thickness is determined by subtracting the DNAPL depth from the depth to well bottom.

- Decontaminate the interface probe and tape according to SOP QA-001.
- Dispose of any NAPL-impacted debris properly.
- Check with the Project Manager if you are uncertain of the appropriate disposal method.

## 4.2 LNAPL Measurements Using Clear Bailer

If LNAPL is suspected at a site, an oil/water interface probe should be used when gauging water level and NAPL measurements. However, a water level meter and a clear bailer may be used instead to estimate approximate LNAPL thickness if an oil/water interface probe is not available.

- Open wells to the atmosphere and allow them to equilibrate prior to collecting LNAPL depth measurements.
- Slowly lower the water level meter until contact with fluid is indicated by the meter.
- Record the depth to fluid measurement.
- Lower a clear bailer into the well and slowly into the LNAPL. Do not submerge the bailer.
- Slowly raise the bailer out of the well and measure LNAPL thickness in the bailer using a ruler or tape measure.

### Calculating Depth to Groundwater

The depth to water can be calculated as follows:

**DTW = DTF + PT**
DTW = Depth to Groundwater
DTF = Depth to Fluid
PT = Measured Product Thickness

### Calculating Corrected Depth to Groundwater

Once the LNAPL thickness is known and the depth to groundwater is known, the corrected depth to groundwater can be calculated.

**Corrected DTW = Static DTW – (PT x G)**
DTW = Depth to Ground Water
PT = Measured Product Thickness
G = Specific Gravity (density of free product / density of water)

## 4.3 DNAPL Measurements Using Weighted Cotton String

A weighted cotton string may be used to estimate approximate DNAPL thickness.

- Secure cotton string.
- Secure clean steel nuts and/or washers.

- Tie the string to the nuts/washers, so that there is adequate weight.
- Lower the weighted string into the well slowly, until a firm bottom is sensed.
- Remove the weighed string and measure the DNAPL coated portion of the string.
- Record the thickness.
- Dispose of any NAPL-impacted debris properly. Check with the Project Manager if you are uncertain of the appropriate disposal method.

## 5. Health and Safety Considerations

The health and safety considerations for the work associated with this SOP, including both potential physical and chemical hazards, will be addressed in the site specific Health and Safety Plan (HASP). The collection and accumulation of NAPL presents the potential for significant hazards that need to be managed. A detailed job safety analysis (JSA) should be completed prior to the start of work.

## 6. Considerations

- Weak batteries in water level and oil/water interface meters frequently produce weak or gradual auditory and/or visual responses, making it difficult to accurately determine when the probe of the unit has come in contact with ground water or NAPL. As such, it is recommended that electronic ground water-level indicators be tested before they are brought out into the field.
- Electronic oil/water interface meters do not respond to distilled water. Do not use de-ionized water to test these units.
- Wells that are not vertical may result in probe contact with the side of the well casing providing a false measurement. Once the probe has come in contact with ground water in the well, water may be trapped by capillary action between the probe and the well casing. If this happens, the unit may continue to signal even after the probe has been raised above the ground water surface. The deeper the well, the more likely this problem may occur. To correct this, the cable should be raised several feet above the water and shaken to remove water from the probe. A new ground water-level measurement should then be collected. If the signals from the unit are not abrupt or reproducible, the probe and tape may need to be retrieved and dried off before trying again.
- Accumulation of sediment, organic material, or floating debris in the probe may also result in gradual or non-reproducible readings. Wells that are constructed with metal inner casings may lead to difficulties in collecting reproducible ground water-level measurements because the inner sides of the well casing are conductive.

- In some cases, a rubber grommet or metal centralizer may need to be placed on the probe so that it cannot contact the inner casing.
- Well gauging equipment should be properly decontaminated between wells and piezometers to avoid cross contamination.
- Water levels in wells may be influenced by changes in river stages, pumping of nearby wells, precipitation, tides, etc.
- Using a bailer to estimate LNAPL thickness can result in inaccuracies because successful use of the bailer is dependent upon the expertise of the operator and assumes the check valve does not leak upon retrieval.
- The optical sensor on interface probes may become damaged if solvents are used to clean NAPL from the probes.
- The optical sensor may become smeared when used to measure NAPL, rendering pinpoint accuracy to an estimate at best.
- Close attention to decontamination procedures will improve accuracy, operational life, and reduce the risk of cross contamination with other wells.
- LNAPL thickness can be affected by fluctuations in the water table. In some cases, an LNAPL's thickness may decrease when the water table rises, while its thickness increases as the water table drops. In other cases, fluctuating water tables may cause sudden appearances and disappearances of LNAPL layers.
- Monitoring points with LNAPL can pose a problem when measuring the level of groundwater. Floating LNAPL can depress the groundwater level in a monitoring well or piezometer and distort the measurement. Therefore, the Corrected Depth (CD) formula shown above should be applied to groundwater level measurements in monitoring points where LNAPL are present:
- Some interface probes are factory-calibrated based on an assumed conductivity of NAPL and water, both of which may vary. An interface probe that is functioning properly may not be able to discern different NAPLs at all sites.
- An interface probe may not successfully provide both LNAPL and DNAPL measurements in the same well because the probe is coated by LNAPL and loses its ability to detect DNAPL.
- DNAPL, in particular, may be only slightly heavier than water, or may be neutrally buoyant. As a result, it can be easily disturbed. Once it is disturbed, meaningful measurements can be difficult or impossible to obtain. As such, all tapes or probes used for measurements should be used slowly.

## 7. References

*U.S. EPA Environmental Response Team Standard Operating Procedures SOP: 2043,"Water Level Measurement" REV: 0.0, 2/11/00*

*U.S. EPA Environmental Response Team Standard Operating Procedures SOP: 2044," Monitor Well Development" REV: 0.1, 10/23/01.*

## 8. Contacts

Brian Conte – (860) 368-5412 Glastonbury
Mark Ensign – (781) 721-4010 Boston
Ryan Hoffman – (781) 721-4091 Boston

# STANDARD OPERATING PROCEDURE

GW-002 Non-Aqueous Phase Liquid (NAPL) Recovery

## 1. Objective

Provide procedural guidance for routine recovery of non-aqueous phase liquids (NAPL).

## 2. Equipment and Materials

The following materials and equipment may be necessary for this procedure:

- SOP GW-001 Water Level and NAPL Measurement
- Oil/water interface probe
- Appropriate pump and required tubing/piping
- Double check valve bailers and string
- Drums or buckets for NAPL collection
- Proper personal protective equipment (PPE) including gloves and protective eyewear
- Drum labels
- Field data sheets or logbooks
- Decontamination supplies and plastic sheeting
- Additional equipment identified by site-specific work plan and health and safety plan (HASP)

## 3. General Information

Refer to SOP GW-001 and record the depth to NAPL and depth to water measurements If you are using an oil/water interface probe, first check to see if the unit is functioning correctly. Note: De-ionized water will not provide a correct reading. Check the interface probe battery and replace if necessary.

Interface probes usually distinguish between NAPL and water by sounding solid or intermittent tones. See the manufacturer's instructions for details.

## 4. Execution

### 4.1 General Measurement Procedures

Using an oil/water interface probe will provide a depth to water and a depth to NAPL in each monitoring well. Refer to probe manual to determine changes between liquid types (water, light non-aqueous phase liquid [LNAPL] and dense non-aqueous phase liquid [DNAPL]). To achieve accurate depth measurements, ensure the oil/water interface

probe is decontaminated (GEI SOP QA-001) prior to and between each measurement taken at each well.

To calculate the volume of NAPL in monitoring wells with well diameters specified below, use the following respective equations:

**Light non-aqueous Phase Liquid (LNAPL) Volume**

$$LNAPL\,V = (DTW - P_1) \times C$$

**Dense Non-Aqueous Phase Liquid (DNAPL) Volume**

$$DNAPL\,V = (TD - P_2) \times C$$

Where, V = Volume
DTW = Depth to Water
TD = Total Depth
$P_1$ = Depth to LNAPL
$P_2$ = Depth to DNAPL

Conversion factors (C) for wells based on well diameter size are noted in the table below.

| Well Diameter (inches) | Conversion Factor (liters) | Conversion Factor (gallons) |
|---|---|---|
| 2 | 0.6178 | 0.1632 |
| 4 | 2.4711 | 0.6528 |
| 6 | 5.561 | 1.469 |

**Note:** Well diameter sizes are noted for outer diameter. Conversion factors assume Schedule 40 PVC riser and screen, if well is constructed of different material appropriate conversion factors must be used to calculate accurate NAPL volume.

Once measurements have been taken and calculations have been made, collection of NAPL may commence.

## 4.2 NAPL Collection Procedures

Collection of NAPL shall be accomplished using common recovery techniques or technologies including:

- Peristaltic pump
- Bailer

Some projects require on-going NAPL recovery efforts. For these projects installation of dedicated recovery methods should be considered.

Special care shall be taken to prevent any recovered NAPL from spilling or coming into contact with the ground and sampling personnel. This includes the use of proper personal protective equipment (PPE), including gloves and protective eyewear (Tyvek® if necessary), along with plastic sheeting set beneath the pump, tubing, and collection

container (sealed top 55-gallon drum or 5-gallon bucket with lid), and the surrounding work area. A site-specific work plan, HASP and job specific job safety analysis need to be developed prior to the start of work. The specific operating procedures for common recovery methods are discussed in the following sections.

***4.2.1 Sampling and Recovery via Peristaltic Pump:***

**LNAPL**

- Take and record the required measurements prior to commencing pumping.
- Cut a length of poly tubing (T1) that is long enough to extend approximately 12-inches beyond the LNAPL layer. Cut an additional length of poly tubing (T2) that will be connected to the discharge side of the peristaltic pump silicone tubing that is long enough to extend from the pump to the NAPL collection container. Cut a length of silicone tubing (approximately 8-inches) for use in the peristaltic pump head.
- Insert the silicone tubing into the peristaltic pump head. Check the flow direction of the pump to ensure that the pump will be removing fluid and not pumping air into the well when removal begins.
- Insert T1 into the intake side of the silicone tubing. Lower the intake side into the well and secure in place just below the top of LNAPL.
- Insert T2 into the discharge side of silicone tubing and secure to the NAPL collection container with a clamp.
- Turn pump flow rate to lowest setting. Turn the pump on and slowly increase the pump rate to begin LNAPL removal from the well. Use the oil/water interface meter to measure the depth to LNAPL. Lower the intake tubing as necessary until all of the LNAPL has been recovered from the well.
- Once the LNAPL has been recovered from the well, collect and preserve a sample if required, in accordance with laboratory standards.
- Following completion of LNAPL recovery, disconnect the tubing from the pump, secure the well and road box, and clean/decontaminate the pump and oil/water interface probe, prior to moving to the next location.
- Impacted tubing will either be containerized for proper disposal or left in well for reuse.

**DNAPL**

- Take and record the required measurements prior to commencing pumping.
- Cut a length of poly tubing (T1) that is long enough to extend to the bottom of the well including additional length to attach to the pump intake. Cut an additional length of poly tubing (T2) that will be connected to the discharge side of the

peristaltic pump silicone tubing that is long enough to extend from the pump to the NAPL collection container. Cut a length of silicone tubing (approximately 8-inches) for use in the peristaltic pump head.

- Insert the silicone tubing into the peristaltic pump head. Check the flow direction of the pump to ensure that the pump will be removing fluid and not pumping air into the well when removal begins.
- Insert T1 into the intake side of the silicone tubing. Lower the intake side into the well and secure in place just above the bottom of the well.
- Insert T2 into the discharge side of silicone tubing and secure to the NAPL collection container with a clamp.
- Turn pump flow rate to lowest setting. Turn the pump on and slowly begin to remove DNAPL from the well. DNAPL removal will be complete when the pump begins to discharge water. Use the oil/water interface meter to check the DNAPL thickness during the removal process. Take care not to pump an excessive amount of water.
- Once the DNAPL has been purged from the well, collect and preserve a sample if required, in accordance with laboratory standards.
- Following completion of DNAPL recovery, disconnect the tubing from the pump, secure the well and road box, and clean/decontaminate the pump and oil/water interface probe, prior to moving to the next location.
- Impacted tubing will either be containerized for proper disposal or left in well for reuse.

#### *4.2.2 Sampling and Recovery via Double Check Valve Bailer:*

**LNAPL**

- Take and record the required measurements prior to commencing bailing.
- Ensure the work area is covered in plastic sheeting to avoid potential spills of water and/or NAPL.
- Tie the bailer to a piece of string that will allow the bailer to reach just below the LNAPL layer. Use the oil/water interface meter to determine the appropriate depth.
- Using slow and controlled motions while lowering (and raising) the bailer to the appropriate depth, commence bailing LNAPL out of the well and draining the bailer directly into collection container.
- Once the LNAPL has been purged from the well, collect and preserve a sample, if required, in accordance with laboratory standards.

**DNAPL**

- Take and record the required measurements prior to commencing bailing.
- Ensure the work area is covered in plastic sheeting to avoid potential spills of water and/or NAPL.
- Tie the bailer to a piece of string that will allow the bailer to reach the bottom of the well.
- Using slow and controlled motions while lowering (and raising) the bailer to the bottom, commence bailing DNAPL out of the well and draining the bailer directly into collection container.
- Once the DNAPL has been purged from the well, collect and preserve a sample, if required, in accordance with laboratory standards.

### 4.3 Waste Management and Disposal

Investigation derived waste should be managed in accordance with GEI SOP SC-003. DNAPL waste management and disposal should be evaluated on a site by site basis.

### 4.4 Troubleshooting Information

If there are any performance problems with the oil/water interface probe which result in inability to achieve the proper measurements presented in Section 5.1, or if there are any problems with the peristaltic pump, consult the appropriate section of the probe instruction manual for the checkout and self-test procedures. If the problem persists, consult the manufacturer's customer service department immediately for further instructions.

Lower temperatures can affect the ability to pump and/or bail NAPL. Weather should be taken into consideration when scheduling gauging and recovery sampling events.

### 4.5 Data and Records Management

All information pertaining to maintenance of the oil/water interface probe and the peristaltic pump shall be maintained in the project file. Field measurements (depth to water, NAPL, etc.) and all calculations (NAPL column length, volume of NAPL, etc.) shall be recorded on the appropriate field data sheets or in the logbook consistent with GEI SOP Section 5.

### 4.6 Limitations

- NAPL gauging and recovery can be challenging and requires adaptive thinking. A variety of measurement and collection techniques may be necessary to properly execute the work.
- Exposure to NAPL can accelerate the required maintenance/replacement intervals for tools and equipment.

## 5. Health and Safety Considerations

The health and safety considerations for the work associated with this standard operation procedure, including both potential physical and chemical hazards, will be addressed in the site specific Health and Safety Plan (HASP). The collection and accumulation of NAPL presents the potential for significant hazards that need to be managed. A detailed JSA should be completed prior to the start of work.

## 6. References

U.S. EPA. Ground Water Issue: Dense Non-aqueous Phase Liquids, EPA/540/4-91-002, March 1991.

## 7. Contact

Jerry Zak (860) 368-5404 Glastonbury

# STANDARD OPERATING PROCEDURE

GW-003 Low Flow (Low Stress) Groundwater Sampling

## 1. Objective

Describe methods to collect groundwater samples most likely to produce results that represent aquifer conditions.

Low-flow purging is limited to wells that, with sustained pumping, exhibit no continuous drawdown.

## 2. Execution

- Prior to groundwater sampling consult with the project manager to confirm that the type of pump is appropriate and consistent with the approved work plan.
- Record activities in the field notebook (see SOP FD-001 Field Notebook) and on a Monitoring Well Sampling Record such as the examples in Attachment A. Use a separate form for each sampling location and event. You may forego the forms and record all information in the field notebook if the Project Manager approves.
- Calibrate pH, temperature, Specific Conductance (SC), turbidity, Dissolved Oxygen (DO), and Oxidation-Reduction Potential (ORP) on the meter(s). Use calibration methods provided by the manufacturer of the equipment. Note that appropriate calibration for dissolved oxygen requires a water saturated air environment, along with measured temperature and barometric pressure.
- Begin with the monitoring well believed to have the least contaminated groundwater and proceed systematically to the well with the most contaminated groundwater. Check the well, the lock, and the locking cap for damage or evidence of tampering.
- Slowly and gently measure the depth to water with a water level probe and/or oil-water interface probe. Do not measure depth to well bottom at this time (wait until sampling has been completed). Measure water level in accordance with SOP GW-001 Water Level Measurement.
- Attach new polyethylene or Teflon lined tubing to the sampling pump and the flow-through cell that contains the meter probes.
- Slowly and gently insert new polyethylene or Teflon lined tubing to the pump intake (or use dedicated tubing that remains in the well) and to the middle of the saturated screened interval or to the pre-determined sampling depth.
- The tubing intake should be kept at least two (2) feet above the bottom of the well to prevent disturbance or suspension of any sediment or Non-Aqueous Phase Liquid (NAPL) present in the bottom of the well. Record the depth of the pump intake.

- If possible, position your sampling equipment and tubing so that it is in the shade. The goal is to minimize the effect of sunlight raising the temperature of water being collected.
- Start the pump on the lowest setting and increase slowly until flow begins. Adjust the pumping rate so that drawdown in the well is minimal (0.3 feet or less, is desirable but not mandatory). Use a pumping rate between 100 to 1,000 milliliters per minute (mL/min) (or approximately 0.1 to 1 quarts per minute). Measure flow rate on the pump or using a graduated container every 3 to 5 minutes and record. The minimum purge volume will be twice the combined volumes of the sampling string (i.e. pump, tubing, and flow-through cell).
- While purging, record water levels every 3 to 5 minutes and monitor and record the water quality indicator parameters: pH, temperature, specific conductance (SC), dissolved oxygen (DO), and turbidity. If specified in the field sampling plan also include ORP.
- Purging is complete when, after three consecutive measurements, the water quality parameters have stabilized as follows:

    - pH (+/- 0.1 standard units)
    - temperature (+/- 3%)
    - SC (+/- 3%)
    - turbidity (+/- 10% if >5 NTU; if 3 values are <5 NTU, consider the values as stabilized)
    - DO (+/-10% if >0.5 mg/L; if 3 values are <0.5 mg/L, consider the values as stabilized)
    - ORP (+/- 10 mV)

- Dispose of purge water according to the field plan.

Sample Collection:

- Following purge, remove the discharge tubing from the flow-through cell. Do not disturb pump and tubing between stabilization and sample collection.
- Fill sample containers directly from the sampling device in order of decreasing volatility (i.e., Volatile Organic Compounds (VOC) samples are collected first; see SOP SC-002 Sampling Handling). Fill all containers from the discharge end of the tubing. Collect samples at a flow rate equal to the steady state purge rate.
- If not using a dedicated pump, remove sampling device and decontaminate (see SOP QA-001 Equipment Decontamination). Discard used tubing.
- Store samples in a cooler on ice for transport to the laboratory.
- Measure depth to bottom of well.

- Secure the well cap.

## 3. Limitations

- Prior to departure for the field, obtain available information on well construction for use in field investigation (i.e., screen and riser material, well diameter and depth, screened interval, optimum sampling depth, etc.).
- If possible, when using dedicated equipment, install equipment into well at least 24 hours before sample collection to minimize disturbance of the water column and/or suspension of sediments or NAPL on bottom.
- If water quality indicator parameters do not stabilize after removing 3 to 5 well volumes or 2 hours, contact the Project Manager. Three options will be available: 1) continue purging until stabilization; 2) discontinue purging and do not sample; or 3) discontinue purging and sample.
- The key indicator parameter for VOCs is DO. The key indicator parameter for all other samples is turbidity.
- Fill all sample containers with minimal turbulence by allowing the groundwater to flow from the tubing gently down the inside of the container.
- Consult with the project manager before field filtering samples for metals if using low-flow sampling.
- Be aware of any preservatives in the sample bottles and handle with care, in accordance with the Health and Safety Plan.

## 4. References

*Standard Reference for Monitoring Wells (April 19, 1991), Massachusetts DEP, DEP Publication No. WSC-310-91.*

*Reproducible Well-Purging Procedures and VOC Stabilization Criteria for Ground Water Sampling (1994), M.J. Barcelona, H. A. Wehram, and M.D. Varljen, Ground Water, Vol. 32, No. 1, 12-22.*

*Low-Flow Purging and Sampling of Ground Water Monitoring Wells with Dedicated Systems (1995), R.W. Puls, and C.J. Paul, Groundwater Monitoring and Review, Summer 1995 116-123.*

*Low Stress (Low Flow) Purging and Sampling Procedure for the Collection of Groundwater Samples from Monitoring Wells (2010), EQASOP-GW 001 Low Stress (Low Flow) SOP, Revision 3, U.S. Environmental Protection Agency, Region I, January 19, 2010.*

*Ground Water Sampling Procedure Low Stress (Low Flow) Purging and Sampling, (1998), Ground-Water Sampling SOP, Final, U.S. Environmental Protection Agency, Region II, March 16, 1998.*

*RCRA Ground-Water Monitoring: Draft Technical Guidance, (1993), U.S. Environmental Protection Agency, EPA/530-R-93-001.*

*To Filter, or Not to Filter, That is the Question, (1997), Special Topics Subcommittee Letter Report EPA-SAF-EEC-LTR-97-011, April 29, 1997, Meeting, U.S. Environmental Protection Agency, Science Advisory Board Environmental Engineering Committee, September 5, 1997.*

*Should Filtered or Unfiltered Groundwater and Surface Water Samples be Collected for the Risk Assessment?, (1995), MCP Q&A: Subparts I and J, Special #4, Bureau of Waste Site Cleanup, Massachusetts Department of Environmental Protection (DEP), February, 1995.*

## 5. Attachments

Attachment A - Monitoring Well Sampling Record

## 6. Contacts

Brian Conte
Saskia Oosting

# MONITORING WELL SAMPLING RECORD

PID Reading _____ Job Name _____

Job Number _____ By _____ Date _____

Location _____ Measurement Datum _____

Well Number _____

**Pre-Development Information** Time (start) _____

Water Level _____ Total Depth of Well _____

One Purge Vol _____ Three Well Volume _____

**Water Characteristics**

Color _____ _____ Clear _____ Cloudy

Odor _____ None _____ Weak _____ Moderate _____ Strong

Any films or immiscible material _____

| ***Volume*** **(gal)** | **Time** | **pH** | **Temp (°C)** | **Spec. Conductance (µS/cm)** | **Turbidity (NTU)** | **DO Conc. (mg/L)** | **ORP (mV)** | **TDS** |
|---|---|---|---|---|---|---|---|---|
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Total Volume Removed (gal) _____ pH _____

Temperature (°C) _____ Specific Conductance (µS/cm) _____

DO Concentration (mg/L) _____ ORP (mV) _____

TDS _____

**Post Development Information**

Time (Finished) _____

Water Level _____ Total Depth of Well _____

Approximate Volume Removed (gal) _____

**Water Characteristics**

Color _____ ____ Clear ____ Cloudy

Odor ____ None ____ Weak ____ Moderate ____ Strong

Any films or immiscible material _____

Comments

## Low-Flow Groundwater Sampling Form

Project number and name ______________________ Sampling personnel ______________________ Sample date ____________ Well ID ____________

Well location description: ____________

______________________

**Well Construction**

Well diameter ____________

Well measurement point ____________

Roadbox condition ____________

Well screen interval ____________

Well depth ____________

**Sampling Information**

Initial depth to water ____________ Time: ____________

Sample intake depth ____________

Pump type and ID ____________

Stabilized flow rate ____________

Stabilized flow rate = flow rate with no further drawdown

**Samples Collected**

| | |
|---|---|
| VOCs 8260 | ☐ |
| SVOCs 8270 | ☐ |
| VPH | ☐ |
| EPH | ☐ |
| Metals | ☐ |
| PCBs | ☐ |
| Other | ☐ |

**Field values at time of sample collection:**

Time: ____________ Depth to water:

Sp.Cond. ____________ mS/cm ____________

DO ____________ mg/L

ORP ____________ mV

pH ____________ s.u.

Temp. ____________ $^oC$

Turb. ____________ NTU

| Cumulative Time (min.) | **Volume (gal)** | **Water depth (ft)** | **Temp. ($^o$C)** | **Sp.Cond. (mS/cm)** | **D.O. (mg/L)** | **pH (s.u.)** | **ORP (mV)** | **Turb. (NTU)** |
|---|---|---|---|---|---|---|---|---|
| Typical Groundwater Values | | | 5 to 15 | 0.05 to 5 | 0 to 4 | 5 to 7 | -100 to +500 | aim for <10 |
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Notes: ______________________

**Sample Information:**

Sample ID ____________

Sample Time: ____________

Color: ____________

Turbidity: ____________

Field Filtered YES / NO Analyses: ____________

Filter type: ____________

Odor/Sheen/NAPL ____________

Duplicate Collected YES / NO

If yes, duplicate ID: ____________

Purge water disposal? to ground drummed other:

Well Volume Conversion:

| Diam. (in) | Factor (gal/ft) |
|---|---|
| 1 | 0.04 |
| 1.5 | 0.09 |
| 2 | 0.16 |
| 4 | 0.65 |
| 6 | 1.50 |

well volume =
3.14 x (r)^2 x 7.48 gal/ft
where r = 1/2 diameter in ft

Stabilization Criteria:
Sp.Cond. +/- 3%
DO +/- 10%
ORP +/- 10 mV
pH +/- 0.1 Std Units
Temp. +/- 3%
Turb. +/- 10% if values >1 NTU

### Guidance:

1 Position tubing at midpoint of saturated screened interval

2 Minimize drop in water level and purge until parameters are stable

3 Disconnect flow thru cell during sampling

4 Call Project Manager if issues arise (e.g. stabilization takes more than 2 hrs, well goes dry, odd data).

5 For VPH and VOC samples, if stabilization flow rate is less than 200 ml/min, contact PM

# STANDARD OPERATING PROCEDURE

GW-004 pH and Temperature Measurement

## 1. Objective

Describe methods for measuring the pH and temperature of liquids using a combination pH/temperature meter.

## 2. Execution

### Calibration

- Calibrate the meter according to the equipment manufacturer's instructions at the beginning of each day of use. Calibration for pH shall be performed using at least two buffer solutions. Solutions chosen should be similar to the expected pH of the liquids tested (pH 7 and 4 buffer solutions are preferred in most cases for groundwater or surface water measurements).
- Check calibration at the end of the day by reading the two solutions used in calibration. Also perform additional field checks as needed based on observed readings (i.e., inconsistent readings). Record measurements and time of measurement in the field book or sample sheet. If the readings are outside +/– 0.2 pH units, recalibrate the meter.

Sample Measurement

- Immediately prior to testing a sample, decontaminate testing container and probe assembly with one rinse of distilled water. Do not use methanol to rinse the probe. Methanol rinses could damage the probe.
- Gently dry the probe with a paper towel and shake beaker to remove excess solution. Visually inspect the bottom of the probe to ensure that liquid or sediment is not trapped between outer casing and probe.
- Pour the sample into the testing container and insert both temperature and pH probe. Stir sample for 30 seconds using both probes. Let the probes equilibrate in the sample solution for another 30 seconds. Measure and record the temperature. Measure and record pH reading after stabilization or 60 seconds, whichever is sooner. A reading has stabilized if pH units have not changed +/– 0.1 pH units during a 30 second period.
- Record pH to the nearest 0.1 unit and temperature to the nearest whole number.

## 3. Limitations

- Coatings and particulates may affect the response of the probe; more thorough cleaning using a weak alconox solution and distilled water rinse

and gently wiping the probe surface with a paper towel may be required to clean the surface of the probe.

- Temperature affects both the response of the instrument to pH and the actual pH of the sample. The Automatic Temperature Compensation (ATC) function compensates for the variation in the response of the meter only. Therefore, the pH must always be reported with temperature.
- The probe is a fragile thin glass bulb surrounded on three sides by a plastic casing. Care must be taken in handling the probe to avoid breakage.
- Do not use buffer solutions past their expiration date.

## 4. References

*Standard Methods for the Examination of Water and Wastewater, 18th Edition, Method 4500-H. American Public Health Association (1992).*

## 5. Contacts

Brian Conte
Saskia Oosting

# STANDARD OPERATING PROCEDURE

GW-005 Turbidity Measurement

## 1. Objective

Describe calibration and use of a Hach nephelometer/turbidimeter.

The meter is used to measure turbidity of liquids by quantifying how much light passes through them. Turbidiity readings are required to be read using a portable (e.g Hach) instrument directly from the tubing before going through the flow-through cell.

This SOP is specific to a Hach turbidimeter. Follow manufacturer's recommendations for other meters.

## 2. Execution

i. Turn the meter "ON".
ii. Rinse the sample cell 3 times with distilled water.
iii. Fill the cell to the fill line with distilled water and then cap the cell.
iv. Wipe off excess water and streaks with a non-abrasive lint-free paper or cloth (preferably lens paper).
v. Open the cover and insert the cell (arrow to the front) into the unit and close the cover.
vi. Press "READ" and wait for the 'light bulb' icon to go off. Record the reading.
vii. Using the Gelex standards, repeat steps above. Record all measurements (note anomalies).
viii. Fill the cell with sample liquid to the fill line (about 15 mL) and replace the cap on the cell.
ix. Wipe off excess water and any streaks with a non-abrasive lint-free paper or cloth (lens paper).
x. Press "I/O" and the instrument will turn on. Place the meter on a flat, sturdy surface. Do not hold the instrument while making measurements.
xi. Insert the sample cell, arrow to the front, in the instrument. Close the lid.
xii. Select manual or automatic range selection by pressing the range key.
xiii. Use signal average mode if the sample causes a noisy signal (display changes constantly). Select signal averaging mode by pressing the "Signal Average" key.
xiv. Press Read. The display will show "---- NTU" and then the turbidity in NTU. Record the result after the lamp symbol turns off.
xv. Rinse the cell with distilled water.
xvi. Confirm the validity of the sample measurement by double-checking with one of the Gelex standards.

xvii. Periodically check the turbidity meter during the day by using the Gelex secondary standards provided.
xviii. Perform a post calibration at the end of the day and record all measurements.

## 3. Limitations

If the turbidity measurements are for National Pollutant Discharge Elimination System (NPDES) reporting purposes, all samples with values above 40 NTU must be diluted with turbidity free water (e.g. distilled water) and sample turbidity is calculated by multiplying the reading of the diluted sample by the dilution factor.

## 4. References

*Standard Methods for the Examination of Water and Wastewater, 18th Edition, Method 4500-H. American Public Health Association (1992).*

## 5. Contacts

Brian Conte
Saskia Oosting

# STANDARD OPERATING PROCEDURE

GW-006 Specific Conductance Measurement

## 1. Objective

Describe standard methods to measure conductivity of water using a field conductivity meter.

## 2. Execution

- Calibrate the meter according to equipment manufacturer's instructions at the beginning of each day of use. Calibration shall be performed using a standard KCl or other solution recommended by the manufacturer.
- Record the make, model, and serial or identification number of the instrument and calibration information in the field notebook.
- Check calibration at the end of the day by measuring the standard used in calibration and record in field book. Also perform additional field checks as needed based on observed readings (i.e., inconsistent readings). If the readings are outside +/- 0.02 mS/cm, the meter must be recalibrated. Initial calibration should be conducted under the same conditions (i.e., temperature, and location) of field testing.
- Immediately prior to testing a sample, decontaminate testing container and probe assembly with distilled water.
- Gently dry the probe with a paper towel and shake container to remove excess solution.
- Pour sample into the container and insert probe. Stir sample with the probe for approximately 10 seconds. Let the probe equilibrate in the sample solution for another 30 seconds. Measure conductivity and record in the field notebook.
- Record conductivity to the nearest whole number.

## 3. Limitations

- Oily coatings and particulates may affect the probe's response; more thorough cleaning using a weak alconox solution and distilled water rinse and gently wiping the probe surface may be required to clean the surface of the probe.
- If sample liquid is contaminated, (e.g. stained, conductance >0.75 mS/cm), rinse probe with distilled water immediately after measuring sample to minimize fouling of probe.
- Do not use calibration solutions past their expiration date.

## 4. References

*Standard Methods for the Examination of Water and Wastewater, 18th Edition, Method 4500-H. American Public Health Association (1992).*

## 5. Contact

Brian Conte
Saskia Oosting

# STANDARD OPERATING PROCEDURE

GW-007 Dissolved Oxygen Measurement

## 1. Objective

Describe calibration and field use of dissolved oxygen meter.

## 2. Execution

- Place instrument in the intended operating position (vertical, tilted, or horizontal) before it is prepared for use and calibrated.
- Recalibration may be necessary when the instrument operating position is changed.
- Attach the prepared probe to the Probe connector of the instrument and adjust the retaining ring finger tight. Check that membrane is intact and check for presence of air bubbles under membrane. If bubbles are present or membrane is damaged, prepare probe again according to manufacturer's instruction.
- Place approximately 1/8 inch of water into the bottom of the calibration cup. Place the probe into the cup and engage only one thread of the calibration cup onto the probe to ensure that the DO probe is readily vented to the atmosphere. Make sure the DO and temperature probes are not in contact with the water. Wait approximately 10 minutes for the air in the calibration cup to become water saturated and for the temperature to equilibrate.
- Calibrate meter according to the procedures outline in the instrument manual. Calibrate probe to a zero oxygen solution provided by manufacturer, and water saturated air.
- The calibration procedure may require correction factors or input of site-specific barometric pressure and temperature. Correction factors can be found at:

  http://water.usgs.gov/owq/FieldManual/Chapter6/6.2_v2.1.pdf

- Otherwise, use appropriate instruments at the site to determine temperature and pressure.
- Perform Dissolved Oxygen Measurement using the following procedure:
  i. Submerge probe in flow-through chamber or water body.
  ii. Gently raise and lower probe in sample.
  iii. Allow sufficient time for probe to stabilize to sample temperature and dissolved oxygen.
  iv. Read and record the temperature and the value of the dissolved oxygen in mg/L.
  v. Document field analysis data and general observations in the field log book or groundwater sampling sheet.

## 3. Limitations

- Collect DO measurements in the field during sampling. Storing samples in containers will alter the DO concentration of the sample.
- Detection Limit (DL) = 0.1 mg/L for 0-10 mg/L range; do not record values less than Detection Limit: a zero reading is recorded < 0.1 mg/L.

## 4. References

*Standard Methods for the Examination of Water and Wastewater, 18th Edition, Method 4500-H. American Public Health Association (1992).*

## 5. Contacts

Brian Conte
Saskia Oosting

# STANDARD OPERATING PROCEDURE

GW-014 Dense Non-Aqueous Phase Liquid (DNAPL) Measurement and Recovery

## 1. Objective

Provide procedural guidance for routine gauging and recovery of dense non-aqueous phase liquids (DNAPL) related to former manufactured gas plant (MGP) operations.

## 2. Execution

### 2.1 Equipment and materials

The following materials and equipment are necessary for this procedure:

- Oil/water interface probe
- Appropriate pump and required tubing/piping
- Double check valve bailers and string
- Drums or buckets for NAPL collection
- Proper PPE including gloves and protective eyewear
- Drum labels
- Field data sheets or logbooks
- Decontamination supplies and plastic sheeting
- Additional equipment identified by site-specific work plan and HASP
- Example specifications of DNAPL management equipment is included as Attachment A.

### 2.2 General Measurement Procedures

Using an oil/water interface probe will provide a depth to water and a depth to product in each monitoring well. Refer to probe manual to determine changes between liquid type. To achieve accurate depth measurements, ensure the oil/water interface probe is decontaminated (GEI SOP QA-001 prior to and between each measurement taken at each well.

To calculate the volume of product in monitoring wells with these specifications, take the following measurements:

- Total well length
- Depth to water
- Depth to product (s) – c1 and c2

Using the following equations, determine the length of the water column and the length of the product column:

[1] (a) – (b) = Water column length (d)
[2] (a) – (c1) = Product column length (e) dense non-aqueous phase liquid (DNAPL)

Calculate the volume of DNAPL product in the well using the following equation:

DNAPL for a 2" diameter well
[4] (e) x 0.1632 = Volume (gallons) of product in well
(e) x 0.6178 = Volume (liters) of product in well

DNAPL for a 4" diameter well
[4] (e) x 0.6528 = Volume (gallons) of product in well
(e) x 2.4711 = Volume (liters) of product in well

DNAPL for a 6" diameter well
[4] (e) x 1.469 = Volume (gallons) of product in well
(e) x 5.561 = Volume (liters) of product in well

Once measurements have been taken and calculations have been made, collection of dense non-aqueous phase liquid (DNAPL) may commence.

## 2.3 DNAPL Collection Procedures

Collection of DNAPL shall be accomplished using common recovery techniques or technologies as follows:

- Peristaltic pumps
- Bailers
- Positive displacement down hole pumps (e.g. Hammerhead, Blackhawk pumps, etc)

Special care shall be taken to prevent any purged DNAPL causing a spill and coming into contact with the ground and sampling personnel. This includes the use of proper personal protective equipment (PPE), including gloves and protective eyewear (Tyvek® if necessary), along with plastic sheeting set beneath the pump, tubing, and collection container (sealed top 55-gallon drum or 5-gallon bucket with lid), and the surrounding work area. A site-specific work plan, HASP and job specific job safety analysis need to be developed prior to the start of work. Examples of DNAPL specific management equipment and tools are included as Attachment A. The specific operating procedures for common recovery methods are discussed in the following sections.

### *2.3.1 Sampling and recovery via peristaltic pump with dedicated tubing:*

- Take and record the required measurements prior to commencing pumping.
- Connect the dedicated tubing to the peristaltic pump with the long end of the silicon tubing set to discharge water and product directly into either a 5-gallon bucket or a 55-gallon closed-top drum, ensuring that the entire set-up is underlain by plastic sheeting.
- Begin purging the well, occasionally checking the depth to water and depth to product.
- Once the DNAPL has been purged from the well, a sample will be collected and preserved if required, in accordance with laboratory standards.

- Following completion of NAPL recovery, disconnect the tubing from the pump, secure the well and road box, and clean/decontaminate the pump and oil/water interface probe, prior to moving to the next location.
- Impacted tubing will either be containerized for proper disposal or left in well for reuse.

#### *2.3.2 Sampling and recovery via double check valve bailer:*

- Take and record the required measurements prior to commencing bailing.
- Ensure the entire work area is covered in plastic sheeting to avoid potential spills of water and/or product.
- Tie the bailer to a piece of string that will allow the bailer to reach the bottom of the well.
- Using slow and controlled motions while lowering (and raising) the bailer to the bottom of the well, commence bailing product out of the well and draining the bailer directly into either a 5-gallon bucket or a 55-gallon closed-top drum.
- Once the NAPL has been purged from the well, collect and preserve the analytical sample, if required, in accordance with laboratory standards.

#### *2.3.3 Sampling via piston-style pumps (HammerHead, Blackhawk etc)*

For significant accumulations of DNAPL a variety of dedicated pumping technologies exist. Refer to manufacturer-specific operating procedures and site specific means and methods.

### 2.4 Waste Management and Disposal

Investigation derived waste should be managed in accordance with GEI SOP SC-003. Additional care should be taken with DNAPL while infrequent the potential for hazardous waste characteristics does exist. DNAPL waste management and disposal should be evaluated on a site by site basis as discussed in Section 3.

### 2.5 Troubleshooting Information

If there are any performance problems with the oil/water interface probe which result in inability to achieve the proper measurements presented in Section 5.1, or if there are any problems with the peristaltic pump, consult the appropriate section of the probe instruction manual for the checkout and self-test procedures. If the problem persists, consult the manufacturer's customer service department immediately for further instructions.

Lower temperatures can affect the ability to pump and/or bail NAPL. Weather should be taken into consideration when scheduling gauging and recovery sampling events.

### 2.6 Data and records management

All information pertaining to maintenance of the oil/water interface probe and the peristaltic pump shall be maintained in the project file. Field measurements (depth to

water, product, *etc.*) and all calculations (product column length, volume of product, *etc.*) shall be recorded on the appropriate field data sheets or in the logbook consistent with GEI SOP Section 5.

### 2.7 Health and safety considerations

The health and safety considerations for the work associated with this SOP, including both potential physical and chemical hazards, will be addressed in the site specific Health and Safety Plan (HASP). The collection and accumulation of NAPL presents the potential for significant hazards that need to be managed. A detailed job safety analysis (JSA) should be completed prior to the start of work.

## 3. Limitations

- DNAPL gauging and recovery can be problematic and requires adaptive thinking. A variety of measurement and collection techniques may be necessary to properly execute the work.
- Exposure to DNAPL can accelerate the required maintenance/replacement intervals for tools and equipment.
- A site specific work plan, HASP and JSA needs to be developed prior to commencing work. The documents should address: safety, recovery technologies, waste containment and waste management.

## 4. References

U.S. EPA. Ground Water Issue: Dense Non-aqueous Phase Liquids, EPA/540/4-91-002, March 1991.

## 5. Attachments

Attachment A – Example specifications of DNAPL recovery and management tools and equipment.

## 6. Contact

Jerry Zak

nationalgrid

**Tracey Bell**
**Manager**
**Environmental Asset Management**

April 13, 2009

Mr. Amen M. Omorogbe, P.E.
Project Manager
New York State Department of Environmental Conservation
MGP Remedial Section, Division of Environmental Remediation
Bureau of Western Remedial Action, 11th Floor
625 Broadway
Albany, New York 12233-7017

**Re: DNAPL Recovery Wells Pilot Test Work Plan**
**Carroll Gardens/Public Place**
**Former Citizens Gas Works Manufactured Gas Plant Site**
**Brooklyn, New York**
**Site No.: C224012**

Dear Mr. Omorogbe:

The DNAPL Recovery Wells Pilot Test Work Plan (Work Plan) program is intended to characterize and assess the mobility and potential for recovery of dense non-aqueous phase liquid (DNAPL) at the Former Citizens Gas Works Manufactured Gas Plant (MGP) site (Site) located in the Carroll Gardens/Public Place neighborhood of Brooklyn, New York (Figure 1). The pilot test program will generate data required to develop a final DNAPL recovery approach for the Site, which will be presented as part of the Remedial Design Work Plan (RDWP).

The Final Remedial Investigation Report (RI), dated October 2005, and the Remedial Design Work Plan, dated September 12, 2007, included the recommendation that an on-site DNAPL recovery system be evaluated as one mechanism to control potential DNAPL migration on Parcels I, II, and III. The DNAPL recovery test wells will be installed at boring locations where DNAPL (tar) saturated soils, considered to have the potential for DNAPL recovery, were observed during boring installations. The intended recovery test well locations were selected based on the following investigations:

- During the RI field effort, a number of locations were identified as meeting the criteria for potential DNAPL recovery wells and were noted for consideration in the RDWP. These locations were further evaluated by additional borings at each location during the RDWP pre-design field investigation.

- During the RDWP pre-design field activities, additional locations were identified and investigated as potential DNAPL recovery well locations.

The final proposed wells are listed in Table 1 with locations shown on Figure 2. A brief summary of RDWP findings, pertinent to the activities proposed in this Work Plan, is provided below. The complete RDWP findings will be presented and submitted to the New York State Department of Environmental Conservation (NYSDEC) in a Data Report to follow the pre-design investigation as outlined in the RDWP. The soil boring and test pit logs utilized to develop this Work Plan are attached.

The pertinent findings from the RI and RDWP pre-design investigation used to locate potential recovery well stratigraphic zones are as follows:

- **Parcel I**: DNAPL saturated soils were observed at a number of locations within the intermediate zone soils to approximately El.-51 ft (the zone is defined as being approximately El -20 ft to -90 ft NAVD 88). No DNAPL saturated soils, considered to have the potential for DNAPL recovery, were observed in the shallow zone soils (above approximately El. -20 ft) and the deep zone soils (below El. -90 ft).

- **Parcel II**: DNAPL saturated soils were observed beneath a clay layer bordering the Gowanus Canal in the shallow and intermediate zone soils from approximately El.-15 ft to El.-57 ft (CGSB-127). No DNAPL saturated soils, considered to have the potential for DNAPL recovery, were observed in the deep zone soils (below El. -90 ft).

- **Parcel III:** DNAPL saturated soils were observed in shallow zone soils in test pit CGTP-103B located adjacent to the bulkhead of the Gowanus Canal at approximately El. 1.5 ft. A clay layer was observed along the bulkhead of the Gowanus Canal between approximately El.-4 ft and El.-17 ft between borings CGSB-120 and CGSB-123. DNAPL saturated soils were observed above the clay layer in the shallow zone soils in the vicinity of CGSB-121, CGSB-122 and CGSB-125. DNAPL saturated soils were observed within the intermediate zone soils and slightly into the deep zone soils. Specifically, DNAPL saturated soils were observed between approximately El.-69 ft and El.-91 ft at CGSB-121, and at CGSB-122 between El.-74 ft and El.-81 ft. These observations are consistent with the findings for the adjacent RI monitoring well CGRW-08D (boring log indicated tar saturated soil and tar veins from El.-76 ft to El.-86 ft).

The activities proposed in this Work Plan will address each of the following primary objectives.

- **Assess DNAPL mobility and recovery rates.**
  DNAPL recovery evaluation activities will include monitoring the wells for DNAPL accumulation, performing periodic recovery pumping and disposal events, and assessing the DNAPL recharge rates.

- **Evaluate the location of productive DNAPL recovery zones.**
  The results of the investigations will be used to evaluate which recovery wells have the potential to effectively and efficiently collect DNAPL.

- **Evaluate DNAPL recovery methods and equipment.**
  A number of different recovery methods and equipment will be evaluated as well as options for stand alone or manifolded well collection systems.

The remainder of this Work Plan has been organized into the follow sections: Scope of Work, Pilot Test Report, and Proposed Schedule. The scope of work includes details on recovery well construction, DNAPL monitoring and pumping frequency, and data analysis.

# 1.0 Scope of Work

## *1.1 Recovery Well Construction*

As detailed above, potential DNAPL recovery zones exist in the intermediate zone soils in Parcel I, the shallow and intermediate zone soils in Parcel II, and the shallow, intermediate and deep zone soils in Parcel III. Well screens for the proposed DNAPL recovery pilot test wells will be placed within these zones and terminate above lower permeability soils (i.e. clay, till), if present. In general, the proposed screen interval was selected to intercept soil layers containing DNAPL saturated soils within a grain matrix conducive to potential DNAPL migration (i.e. sand, silty sand, gravel, etc.). The screen interval was also extended to include adjacent soil layers containing DNAPL saturated soil lenses. The supporting boring and test pit logs from the RDWP pre-design investigation used to site the recovery wells are attached. Table 1 summarizes the construction details of each proposed recovery well, and lists each well with the corresponding soil boring that was installed during RDWP pre-design investigation. The selected locations of the recovery wells are depicted on Figure 2. Parcel I and II recovery wells will be installed at their corresponding RDWP pre-design investigation soil boring locations. Since these were logged and soil samples were collected during the RDWP pre-design investigation, no additional samples or logs will be taken upon installation of these recovery wells.

For Parcel III, at proposed recovery pilot test well locations CGRW-05, CGRW-06 and CGRW-07, multiple recovery wells will be installed in a cluster formation within the vicinity of the corresponding RDWP pre-design investigation soil boring. Each cluster will contain a shallow, intermediate, and deep recovery well as described below. Each recovery well within a cluster will be installed within approximately 5 feet of the other wells in the cluster. For wells in the cluster that are not located at an existing boring location, drilling will advance to the proposed top of screen depth with continuous

sampling thereafter to confirm the screen and sump location. When installation requires extension beyond the previous terminal depth due to the boring not terminating in a clean zone, the well boring will be continuously sampled below the former termination depth until approximately 10 feet of soil with minimal DNAPL impact is observed.

Due to the DNAPL chemistry at the Site, the PVC monitoring wells installed during the RI degraded and were subsequently abandoned. Therefore, as detailed below, the pilot test wells will be constructed using 6-inch diameter stainless steel. Based on the volume of DNAPL that was delineated during RI activities and coupled with the observations made during the RDWP pre-design field program, a 5-foot sump is proposed below the screen interval to facilitate DNAPL accumulation and collection. This is an increase from the 2-foot sump recommendation made in the RDWP.

Table 1 summarizes the proposed screen depth intervals and sump locations. These depths are approximate, and may be adjusted accordingly in the field based on subsurface conditions identified at the time to maximize potential DNAPL recovery. The recovery wells will be installed using hollow stem auger drilling techniques (or other appropriate methods) to the targeted depth of the recovery well, and will create a bore hole of approximately 10 inches in diameter. The recovery wells will be constructed of 6-inch inside diameter (ID), flush-threaded stainless steel continuous-slot well screen and solid casing with a 5-foot sump. The screen slot size and filter pack gradation will be developed as a function of the related soil formation. A 5-foot bentonite seal will be placed surrounding the sump. The annular space between the well screen and the borehole will be backfilled with filter sand to approximately 2-feet above the top of the screen interval. A 2-foot bentonite seal will be placed at the top of the sand pack. The remaining annular space will be filled with a cement/bentonite grout to the ground surface by tremie method. Each well will be protected with a lockable traffic rated well vault (Parcel II) or steel surface casing (Parcels I and III) secured with cement. Figure 3 depicts typical recovery well construction.

Final proposed recovery well locations vary from those initially proposed in the RDWP as follows:

- **Parcel I:** CGRW-01 has been added south of former Holder 3 due to the presence of potentially recoverable DNAPL; CGRW-02 has been moved about 50-feet north of its original location (CGMW-02) due to the limited recoverable DNAPL observed at the original location; and CGMW-03 has been deleted as a location due to the poor recharge rate noted during RI testing (2.5% DNAPL recovery after 6 months of recharge).

- **Parcel II:** The CGMW-07 location was deleted due to limited recoverable DNAPL observed at the original location; and CGRW-03 and CGRW-04 have been added due to the presence of potentially recoverable DNAPL.

- **Parcel III:** Clustered recovery wells (shallow (S), intermediate (I), and deep (D)) are proposed for each location. Specifically, recovery wells CGRW-05 S/I/D, -06 S/I/D and -07 S/I/D are proposed. The recovery well 06-cluster is located adjacent to the former CGMW-08 location. The remaining proposed wells (05- and 07-clusters) are at new locations farther north due to the presence of potentially recoverable DNAPL.

- Original well location CGMW-06 is located off site across Huntington Street along the southeast boundary of Parcel III. Due to its off-site location and permitting difficulties, the potential recovery well location is proposed on site across the street from the original well, designated as CGRW-08. This location is presently within the warehouse on the parcel. However, the warehouse and slab are presently being demolished and the approved Parcel III Pre-Design Investigation Work Plan will be implemented following the demolition. Under the Parcel III pre-design program a boring (CGSB-77) will be installed at the potential well location. Following the pre-design plan, this boring will be continuously sampled to a minimum depth of 95-feet bgs (El.-85 ft) or until approximately 10 feet of soil with minimal DNAPL impact is observed. Appropriateness as a recovery well location will be based on this boring.

- Other recovery well locations will be evaluated based on the finding of the Parcel III Pre-Design Investigation.

## *1.2 DNAPL Monitoring, Recovery and Disposal*

Development of the recovery wells will be delayed for 3 to 5 days to distinguish between initial or stagnant DNAPL flow into the well versus DNAPL flow into the well that was influenced by well development procedures. Development procedures will follow the GEI standard operating procedures for well development included in the approved Field Sampling Plan of the Parcel III Pre-Design Investigation Work Plan. Recovery wells may be developed using a high flow pump and will be monitored for drawdown and recovery. Well development fluids will be pumped into 55-gallon drums, a large volume tank, or mobile tanker truck. All groundwater and DNAPL generated during development activities will be disposed off site at an appropriate facility. For the first month after a recovery well has been installed, the recovery well will be gauged and monitored weekly for depth to water, depth to DNAPL, and accumulated DNAPL thickness in the well sump.

If DNAPL is observed in a recovery well after 1 month, DNAPL recovery and monitoring activities will begin at the well and continue for 4 to 5 months in accordance with the following:

- After the DNAPL is recovered or pumped from the recovery well, the well will be gauged at a minimum of every 15 minutes for a period of up to 3 hours.

- If less than 10 percent recovery of the pre-pumping DNAPL level is measured during the initial 3-hour period, then the well will be gauged daily for 1 week and then weekly for up to 3 months or until 85 percent recovery is achieved. If 85 percent recovery is achieved within 1 month following the pumping event, then a second recovery event will proceed and be monitored according to the recharge rate observed after the initial pumping event.

- If greater than 10 percent recovery of the pre-pumping DNAPL level is measured during the initial 3-hour period, then hourly gauging would continue for a period of up to 8 hours or until the DNAPL level recovers to within 20 percent of its original level prior to pumping. After the 8 hours or 20 percent of the pre-pumping DNAPL level is recovered, gauging will proceed daily for 1 week and then weekly until 85 percent recovery is achieved. If 85 percent recovery is achieved within 1 month following the pumping event, then a second recovery event will proceed and be monitored according to the recharge rate observed after the initial pumping event.

- The general parameters may be modified based on observations made in the field.

Different methods of DNAPL recovery will be evaluated throughout the pilot test. These methods may include, as appropriate, pneumatic pumping, belt skimmer, periodic manual removal (bailers), peristaltic pumps, etc. If a bailer is used to recover the DNAPL, then time will be allotted (i.e. 1 to 2 hours) to allow for settlement of any DNAPL that may have been agitated by the bailer. Recovered DNAPL will be temporarily stored onsite in 55-gallon drums or other appropriate storage vessels pending off-site disposal.

Fieldwork will be performed under the approved Health and Safety Plan (HASP) of the RDWP.

## 2.0 Pilot Test Report

After the field recovery and monitoring program, a Pilot Test Report will be prepared and submitted to the NYSDEC. This report will summarize the recovery well installation and DNAPL recovery activities. The summary will include a calculation of DNAPL recovery rates, and an evaluation of the productivity of each recovery well and the recovery methods. Based on the estimated DNAPL recovery rates and evaluations

provided in this report, a determination will be made on the viability of each well for an active DNAPL recovery system, a passive DNAPL recovery program, or abandonment of the well due to limited recovery potential.

## 3.0 Proposed Schedule

Work is anticipated to begin following NYSDEC approval of this Work Plan. It is anticipated that the field work detailed in this Work Plan can be completed within 6 months of NYSDEC approval of the plan.

If you have any questions or require additional information, please feel free to contact me at (718) 963-5645 or via e-mail at tracey.bell@us.ngrid.com.

Sincerely,

Tracey Bell
Manager

Enclosure

ec: G. Cross (NYSDEC)
C. Doroski (NYSDOH)

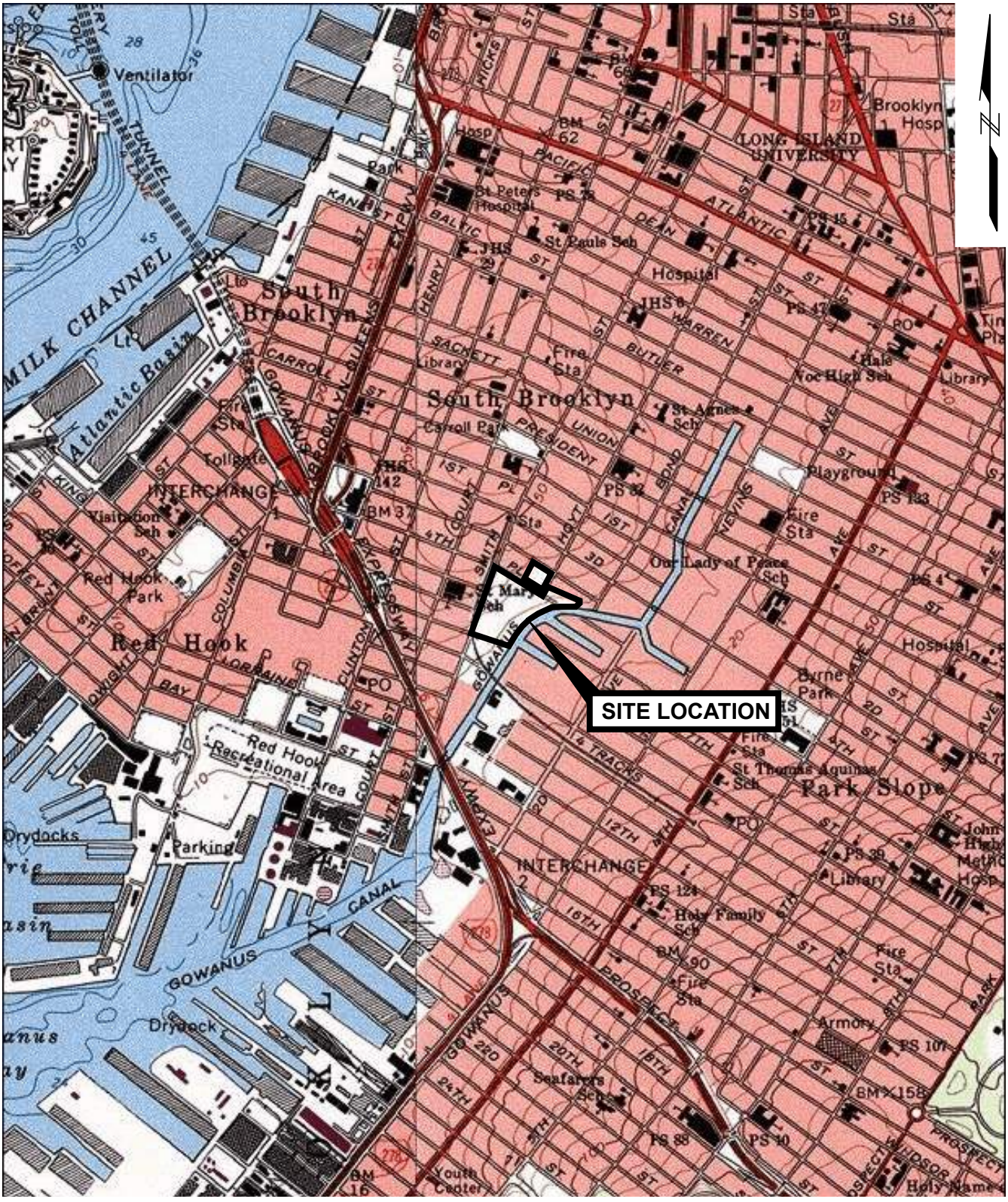
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**Table 1**
**Proposed Pilot Test Recovery Well Construction**
**Carroll Gardens/Public Place Former MGP Site**
**Brooklyn, New York**

| Pilot Test Recovery Well (at/near RDWP pre-design investigation boring location noted) | Total Depth[1] (ft bgs)[2] | Top of Screen (ft bgs) | Bottom of Screen (ft bgs) | Screen Interval Length (ft)/ Elevation (ft NAVD 88 ) | Adjacent RI/RDWP pre-design investigation Boring/Test Pit/Monitoring Well |
|---|---|---|---|---|---|
| **Parcel I** | | | | | |
| CGRW-01(at CGSB-117) | 70 | 30 | 65 | 35 (-3 to -38) | CGSB-04 |
| CGRW-02(at CGSB-119) | 50 | 30 | 45 | 15 (-16 to -31) | CGSB-10/CGMW-02 |
| **Parcel II** | | | | | |
| CGRW-03 (at CGSB-128) | 57 | 22 | 52 | 30 (-10 to -40) | CGSB-23 |
| CGRW-04 (at CGSB-127) | 72 | 27 | 67 | 40 (-15 to -55) | CGSB-8 & 23/CGMW-07 |
| **Parcel III** | | | | | |
| ***Shallow Recovery Wells*** | | | | | |
| CGRW-05S (near CGSB-121) | 25 | 10 | 20 | 10 (0 to -10) | CGSB-28/CGMW-08 |
| CGRW-06S (near CGSB-125) | 25 | 10 | 20 | 10 (0 to -10) | CGSB-28/CGMW-08 |
| CGRW-07S (near CGSB-122) | 30 | 15 | 25 | 10 (-5 to -16) | CGSB-27/CGTP-15 |
| CGRW-08S (at CGSB-77) | TBD | TBD | TBD | TBD | CGMW-06 |
| ***Intermediate Recovery Wells*** | | | | | |
| CGRW-05I (near CGSB-121) | 74 | 39 | 69 | 30 (-29 to -59) | CGSB-28/CGMW-08 |
| CGRW-06I (near CGSB-125) | 67 | 32 | 62 | 30 (-22 to -52) | CGSB-28/CGMW-08 |
| CGRW-07I (near CGSB-122) | 62 | 47 | 57 | 10 (-37 to -47) | CGSB-27/CGTP-15 |
| CGRW-08I (at CGSB-77) | TBD | TBD | TBD | TBD | CGMW-06 |
| ***Deep Recovery Wells*** | | | | | |
| CGRW-05D (at CGSB-121) | 106 | 81 | 101 | 20 (-71 to -91) | CGSB-28/CGMW-08 |
| CGRW-06D (at CGSB-125) | 101 | 86 | 96 | 10 (-76 to -86) | CGSB-28/CGMW-08 |
| CGRW-07D (at CGSB-122) | 96 | 81 | 91 | 10 (-71 to -81) | CGSB-27/CGTP-15 |
| CGRW-08D (at CGSB-77) | TBD | TBD | TBD | TBD | CGMW-06 |

1 - Includes a 5 foot sump at depth. Recovery wells in Parcel II will be completed with a flush-mounted lockable steel and/or concrete vault. All other well will be completed with a steel riser pipe with locking cap.

2 - Feet below current ground surface.




SOURCE: Map created with TOPO! ® ©2001 National Geographic (www.nationalgeographic.com/topo)

0 2000 4000

SCALE, FEET

DNAPL RECOVERY PILOT PROGRAM
CARROLL GARDENS/PUBLIC PLACE
BOROUGH OF BROOKLYN, NEW YORK

nationalgrid

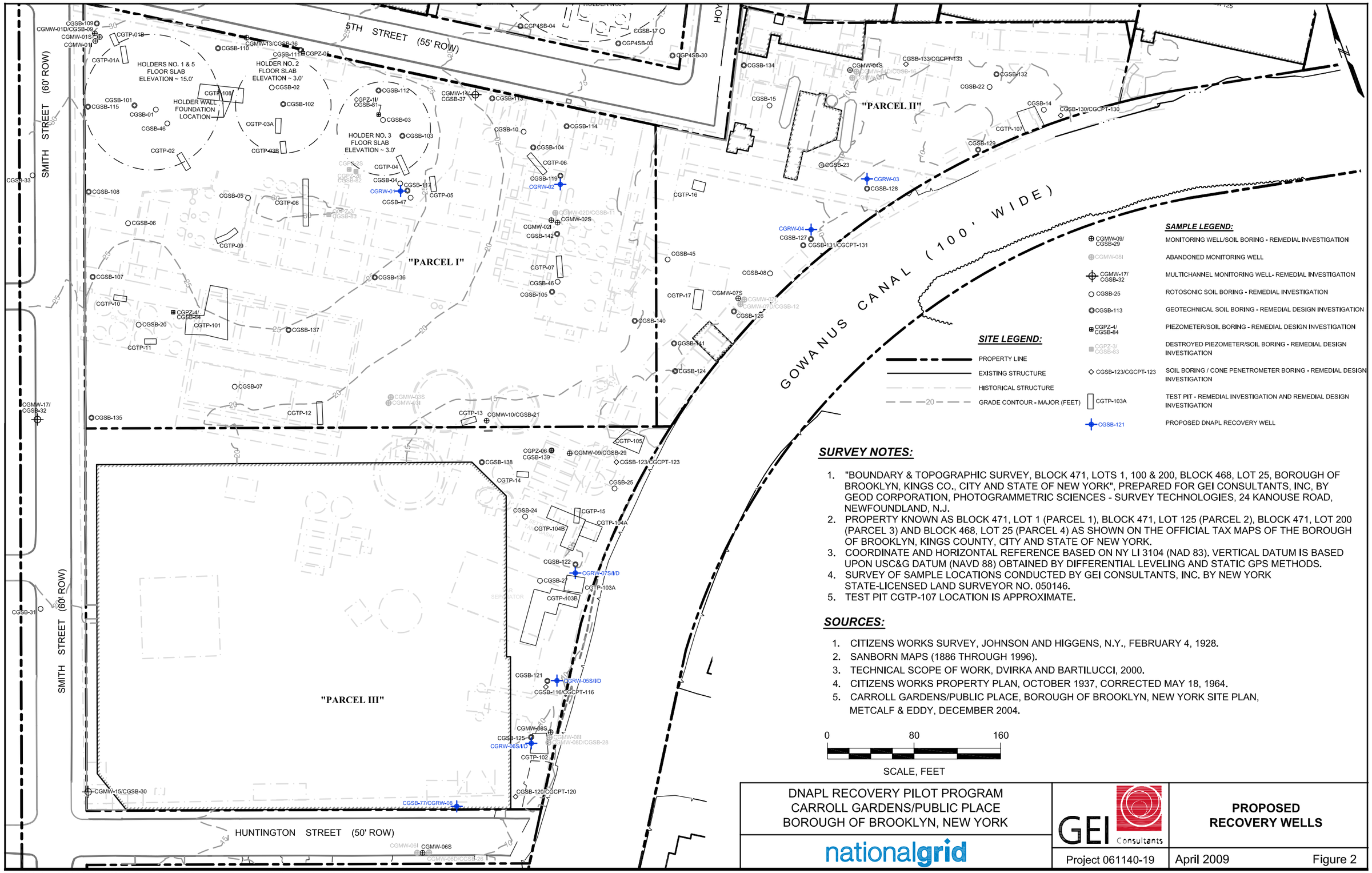
GEI Consultants

Project 061140-19-2807

**SITE LOCATION MAP**

April 2009 Figure 1

NATIONAL GRID\CITIZENS\19-2817\CITIZENS-LOCATION MAP.CDR




**SITE LEGEND:**

- PROPERTY LINE
- EXISTING STRUCTURE
- HISTORICAL STRUCTURE
- 20 GRADE CONTOUR - MAJOR (FEET)

**SAMPLE LEGEND:**

- CGMW-09/CGSB-29 — MONITORING WELL/SOIL BORING - REMEDIAL INVESTIGATION
- CGMW-08I — ABANDONED MONITORING WELL
- CGMW-17/CGSB-32 — MULTICHANNEL MONITORING WELL- REMEDIAL INVESTIGATION
- CGSB-25 — ROTOSONIC SOIL BORING - REMEDIAL INVESTIGATION
- CGSB-113 — GEOTECHNICAL SOIL BORING - REMEDIAL DESIGN INVESTIGATION
- CGPZ-4/CGSB-84 — PIEZOMETER/SOIL BORING - REMEDIAL DESIGN INVESTIGATION
- CGPZ-3/CGSB-83 — DESTROYED PIEZOMETER/SOIL BORING - REMEDIAL DESIGN INVESTIGATION
- CGSB-123/CGCPT-123 — SOIL BORING / CONE PENETROMETER BORING - REMEDIAL DESIGN INVESTIGATION
- CGTP-103A — TEST PIT - REMEDIAL INVESTIGATION AND REMEDIAL DESIGN INVESTIGATION
- CGSB-121 — PROPOSED DNAPL RECOVERY WELL

**SURVEY NOTES:**

1. "BOUNDARY & TOPOGRAPHIC SURVEY, BLOCK 471, LOTS 1, 100 & 200, BLOCK 468, LOT 25, BOROUGH OF BROOKLYN, KINGS CO., CITY AND STATE OF NEW YORK", PREPARED FOR GEI CONSULTANTS, INC, BY GEOD CORPORATION, PHOTOGRAMMETRIC SCIENCES - SURVEY TECHNOLOGIES, 24 KANOUSE ROAD, NEWFOUNDLAND, N.J.
2. PROPERTY KNOWN AS BLOCK 471, LOT 1 (PARCEL 1), BLOCK 471, LOT 125 (PARCEL 2), BLOCK 471, LOT 200 (PARCEL 3) AND BLOCK 468, LOT 25 (PARCEL 4) AS SHOWN ON THE OFFICIAL TAX MAPS OF THE BOROUGH OF BROOKLYN, KINGS COUNTY, CITY AND STATE OF NEW YORK.
3. COORDINATE AND HORIZONTAL REFERENCE BASED ON NY LI 3104 (NAD 83). VERTICAL DATUM IS BASED UPON USC&G DATUM (NAVD 88) OBTAINED BY DIFFERENTIAL LEVELING AND STATIC GPS METHODS.
4. SURVEY OF SAMPLE LOCATIONS CONDUCTED BY GEI CONSULTANTS, INC. BY NEW YORK STATE-LICENSED LAND SURVEYOR NO. 050146.
5. TEST PIT CGTP-107 LOCATION IS APPROXIMATE.

**SOURCES:**

1. CITIZENS WORKS SURVEY, JOHNSON AND HIGGENS, N.Y., FEBRUARY 4, 1928.
2. SANBORN MAPS (1886 THROUGH 1996).
3. TECHNICAL SCOPE OF WORK, DVIRKA AND BARTILUCCI, 2000.
4. CITIZENS WORKS PROPERTY PLAN, OCTOBER 1937, CORRECTED MAY 18, 1964.
5. CARROLL GARDENS/PUBLIC PLACE, BOROUGH OF BROOKLYN, NEW YORK SITE PLAN, METCALF & EDDY, DECEMBER 2004.

0 80 160

SCALE, FEET

DNAPL RECOVERY PILOT PROGRAM
CARROLL GARDENS/PUBLIC PLACE
BOROUGH OF BROOKLYN, NEW YORK

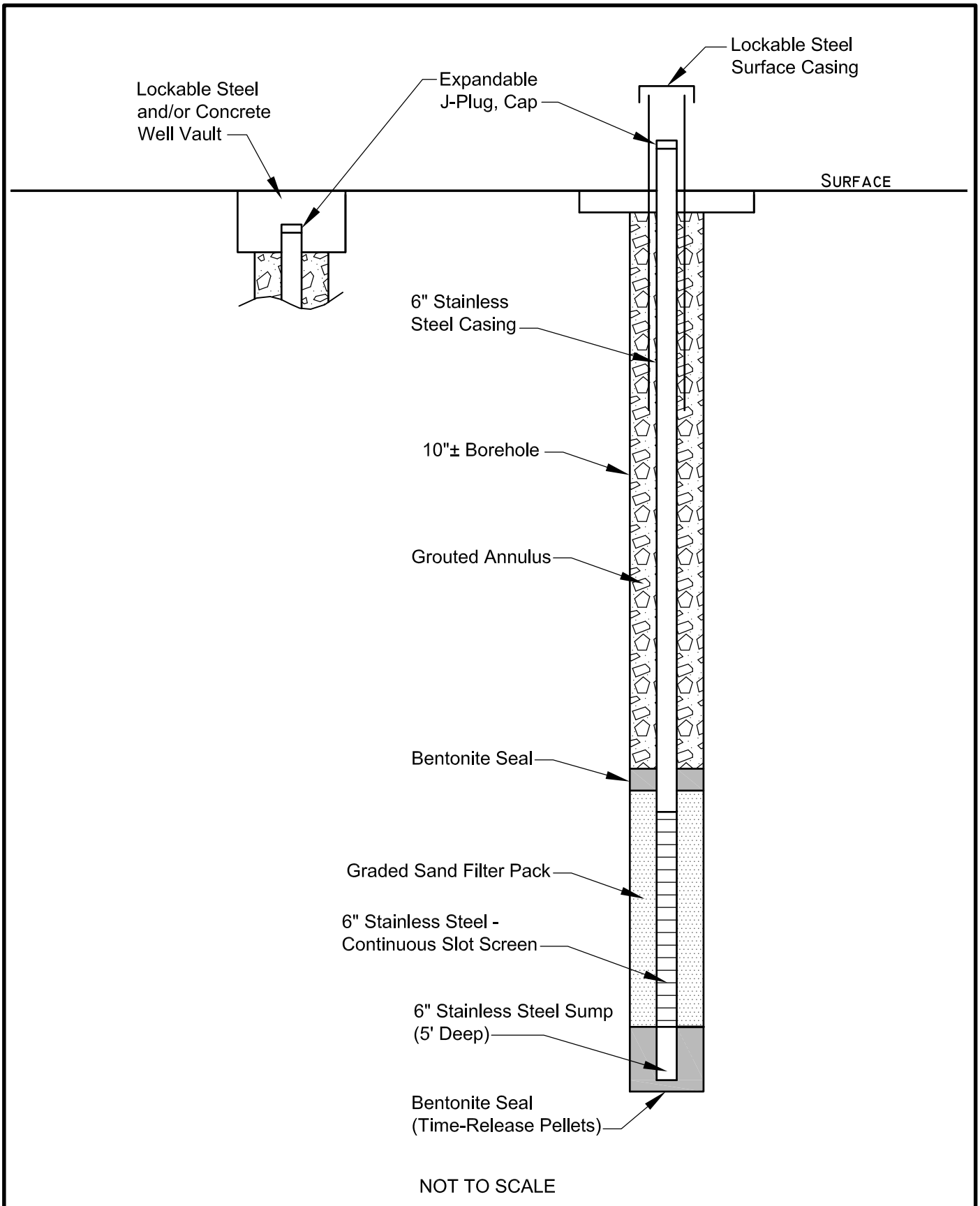
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**PROPOSED RECOVERY WELLS**

Project 061140-19 | April 2009 | Figure 2

I:\GEI\National Grid\CITIZENS\19-2817\ Figure 2 Proposed Recovery Wells.dwg \Apr 13, 2009




NOT TO SCALE

DNAPL RECOVERY PILOT PROGRAM
CARROLL GARDENS/PUBLIC PLACE
BOROUGH OF BROOKLYN, NEW YORK

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GEI Consultants

**TYPICAL RECOVERY WELL CONSTRUCTION DETAILS**

Project 061140-19-2817 | April 2009 | Figure 3

I:\GEI\National Grid\CITIZENS\19-2817\ Figure 3 Citizens-Well Detail.dwg \Apr 13, 2009

# STANDARD OPERATING PROCEDURE

PM-001 Utility Markout and Clearance

## 1. Objective

Describe typical utility markout/clearance procedures prior to and during excavation. All markout procedures should be performed in accordance with local and state regulations.

Many states, by law, require that utility companies are notified before excavation begins. Actual procedures and requirements differ by state. City/state government may have additional requirements for utility markout procedures. Check the requirements in the locality before beginning. Also check with the GEI project manager to determine whether it is most appropriate for GEI or the drilling/excavation subcontractor to handle mark out and clearance.

## 2. Execution

Public Utility Markouts

- The drilling/excavation locations should be marked with white paint, stakes, or flags.
- The contractor should call the appropriate one call communication network for the state the work is being conducted in. Refer to the Reference section in this SOP for contact information. Contractors shall provide all necessary information to the one call system. Sample location maps may be provided to clarify sampling locations. The contractor shall provide GEI with the utility clearance ticket number.
- If necessary, contact the municipalities or other utility owners to mark their water, sewer, or other lines if they do not belong to the one call system. The contractor should keep a record of these calls.
- Utility plans, if available, should be obtained from the property owner or municipal offices.
- Prior to excavation, a visual check should be made that all utilities companies and municipalities have marked their locations. This includes looking for signs that a utility exists, and verifying that the markings agree with a visual check. If they do not, contact the appropriate utility to remark their locations.
- Utilities will generally only markout and clear utilities in roadways or other public property up to the property boundary. Owners of fiber optic cables, natural gas pipelines, and other high hazard utilities will often markout on private property if requested. The contractor should request this. See section on private utility clearance below.
- Public agencies, utilities, contractors, other associations, manufacturers and all others involved in excavation should adopt the American Public Works Association (APWA) Uniform Color Code using ANSI standard Z535.1 Safety Colors for temporary marking and utility identification, as follow:

The APWA Uniform Color Code

1. **White** – Proposed Excavation
2. **Pink** – Temporary Survey Markings
3. **Red** – Electric Power Lines, Cables, Conduit and Lighting Cables
4. **Yellow** – Gas, Oil, Steam, Petroleum & Gaseous Material
5. **Orange** – Communications, Alarm or Signal Lines, Cables or Conduit
6. **Blue** – Potable Water
7. **Purple** – Reclaimed Water, Irrigation and Slurry Lines
8. **Green** – Sewers and Drain Lines

However, not all organization do use these colors. Make sure the color scheme is understood.

- The excavator/contractor and consultant begins work on the scheduled work date and time (if all the facility operators have responded) taking care to find and preserve any markings that have been made.
- If markings may be disturbed during work, establish offset marks to create reference points for the underground utilities. Take photographs of the markings before starting work.
- When digging near a buried utility, the excavator/contractor and consultant should be aware of their proximity to the utility and use caution.
- If there is uncertainty about the accuracy of the markings or there are too many utilities in a given location to excavate or drill safely, consideration should be given to hand-digging the first few feet, vacuum excavation, or use of a utility location company as detailed below in Private Utility Markouts.
- Some clients may require hand or vacuum clearance to a minimum depth. Check with the GEI project manager.
- If exposing a utility, the excavator/contractor should provide proper support and protection for the utility to prevent damage. Contact the utility operator for support, guidance, or assistance.
- When the excavation is complete, the excavator/contractor should provide proper backfill for any utilities that have been exposed.

Private Utility Markouts

- Utility markouts on private property should follow the steps outlined above in public utility markouts with the additions below.
- If work is conducted on private property where public utilities may not provide markouts and the property owner cannot provide accurate utility plans, it is

recommended to use a company to determine the utility locations using one or more of the following technologies:

i. Electro-Magnetic (EM) device: This technology uses an electro-magnetic field in the subsurface to accurately locate metallic lines or non-metallic lines incorporating a metallic trace wire along their surface. The field is created either by direct contact to the pipe or tracewire, or by an induced current via radio waves.
ii. Sewer Sonde: For non-metallic lines where internal access is possible (such as clean-out ports in a sewer), a beacon or 'sonde' that emits a signal to the surface receiver as it is snaked through the pipe provides the same accuracy as the EM detector. If the internal condition of the pipe is desired, a camera can be deployed instead of a simple sonde.
iii. Ground Penetrating Radar (GPR): This technology involves radar waves reflecting to a surface receiver which provides a visual real-time map of the subsurface by which anomalies (such as pipes or tanks) may be detected. It has limitations in clay or wet soils and requires a skilled operator for interpretation. GPR should be considered for high risk utilities (e.g. PVC natural gas lines without trace wire) where line-of-sight project from site entry point to a kiosk or other building is uncertain.

- Utility markout on private property should include clearance for other types of underground structures such as underground storage tanks, septic systems, utility or access tunnels, and in-ground irrigation systems.

## 3. Limitations

- Markout notification time usually does not include holidays. Make sure holidays are considered and markout time is scheduled accordingly. Do not conduct excavation or drilling prior to the required wait time. Do not mark excavation locations using spray paint if it is raining or snowing enough so that the paint markings will be washed away. Consider using long stakes instead of paint if snow is predicted. Excavations within the tolerance zone should be performed with non-powered hand tools until the marked utility is exposed. The tolerance zone may be determined by the utilities, law or codes.
- When excavating close to an underground utility, it is good practice for the contractor/excavator to have a spotter assist and guide the machine operator.
- Take care not to damage the conduit or protective coating of a utility. If the excavator/contractor damages this, leave the damaged utility exposed and immediately call the utility owner.
- If contact to a gas utility occurs, notify police, fire, and emergency personnel, and evacuate employees and general public. No attempt should be made to tamper with or correct the damaged utility.

## 4. References

**Connecticut**
Name: Call-Before-You-Dig (CBYD)
Telephone: 1-800-922-4455
Website: www.cbyd.com
Wait time after notification: 2 business days (excluding holidays)
Expiration of markout: 30 days

**Massachusetts, Maine, New Hampshire, Rhode Island and Vermont**
Name: Dig Safe
Telephone: 1-888-DIG-SAFE or 811
Website: www.digsafe.com
Wait time after notification:
MA, ME, NH, and RI: 3 business days (excluding holidays)
VT: 2 business days (excluding holidays)
Expiration of markout: 30 days

**New York State**
Name: Dig Safely New York
Telephone: 1-800-962-7962
Website: www.digsafelynewyork.com
Wait time after notification: 2 business days (excluding holidays)
Expiration of markout: 30 days

**New York City/Long Island**
Name: New York City One Call Center
Telephone: 1-800-272-4480
Website: www.nycli1calldsi.com
Wait time after notification: 2 to 10 days (excluding holidays)
Expiration of markout: 30 days

**New Jersey**
Name: New Jersey One Call
Telephone: 1-800-272-1000
Website: www.nj1-call.org
Wait time after notification: 2 business days
Expiration of markout: 45 days

## 5. Attachment

Attachment A – Standard Utility Color Codes

## 6. Contact

Brian Conte
Anne Leifer

**SOP PM-001**

**Attachment A – Standard Utility Color Codes**

| Color Code | Utility Description |
|---|---|
| Red | Electric |
| Yellow | Gas-Oil |
| Orange | Communications |
| Blue | Water |
| Green | Sewer |
| White | Proposed Excavation |

# STANDARD OPERATING PROCEDURE

QA-001 Equipment Decontamination

## 1. Objective

This SOP describes methods used to decontaminate reusable sampling equipment for projects that require collection of organic and inorganic analytical samples. The goal is to minimize cross-contamination between samples. This maximizes confidence that field samples will be representative of specific locations and conditions.

Refer to the work plan or project manager to determine if different decontamination methods are acceptable.

## 2. Execution

- All contractor-provided equipment (augers, rods, spoons, backhoe buckets) should be decontaminated by steam cleaning or pressure washing prior to coming on site. If there is doubt about cleanliness of drilling tools, they should be decontaminated before use at the site.
- Sampling equipment decontamination is a sequential procedure consisting of the following steps:

    - Alconox-solution wash (or equivalent non-phosphate detergent)
    - Potable water rinse
    - A ten percent reagent grade nitric acid wash should be used to strip potential inorganic contaminants from sampling devices.
    - Laboratory grade 100 percent methanol, should be used to strip potential organic contaminants from sampling devices.
    - Three distilled/deionized water rinses.

- Alconox solution is a mixture of approximately 1 cup of Alconox per 1 gallon of potable water. Alconox solution wash requires scrubbing the equipment with a brush soaked in Alconox solution to remove visible contamination or dirt from sampling devices.
- Split-spoon samplers must be decontaminated prior to collecting each sample. The procedure follows:

    - Overall wash and scrub in a bucket of Alconox solution
    - Potable water rinse.
    - 10% nitric rinse
    - 100% laboratory grade methanol rinse
    - Three distilled-water rinses.

    The same procedure is applied to all devices that may contact soil or groundwater slated for analytical samples - spoons and knifes used to inspect or sample soils; water level indicators; oil/water interface probes.

Equipment used for well development of multiple wells must be decontaminated between wells.

Pumps and tubing should be flushed using a minimum of one gallon of Alconox-solution followed by a gallon of potable water. Some projects may require methanol (in much lower quantities) and distilled water instead of or in addition to the Alconox-solution and potable water.

For pumps and tubing, a final rinse of the sampling equipment may be performed with the water being sampled.

Equipment blanks measure the effectiveness of the decontamination procedures. Blanks should be collected per guidance provided in QA-002, Field Quality Control Samples.

## 3. Limitations

- Do not store the deionized/distilled water in polyethylene bottles, use Nalgene, glass, or Teflon. Polyethylene may leach phthalates.
- Do not attempt to decontaminate string or rope - replace it.
- Due to eye and skin absorption hazards, safety glasses and gloves must be worn when handling decontamination solvents.
- Decontamination procedures may also require modification based on state or federal requirements.
- Steam cleaning or pressure washing with potable water is generally an acceptable decontamination method for drilling equipment (i.e., augers). Check with the work plan.
- Dedicated equipment need not be decontaminated beyond initial decontamination prior to field use.

## 4. References

*Environmental Response Team (ERT), US EPA. Sampling Equipment Decontamination, SOP No. 2006, Revision 0.0. August 11, 1994.*

*US EPA Region 9. Sampling Equipment Decontamination, SOP No. 1230, Revision 1.September 1999.*

## 5. Contacts

Brian Conte
Bill Simons

# STANDARD OPERATING PROCEDURE

QA-002 Field Quality Control Samples

## 1. Objective

Field Quality Control (QC) samples are used to monitor the reproducibility and representativeness of field sampling. The QC samples are handled, transported, and analyzed in the same manner as the associated field samples. QC samples may include trip blanks, equipment blanks, and field duplicates.

## 2. Execution

### 2.1. Trip blanks

- Used to monitor possible sources of contamination from transport, storage, inadequate bottle cleaning, or laboratory methodologies.
- Sample containers filled at the laboratory with analyte-free water are transported to and from the site, and are not opened until time of analysis.
- Trip blanks are stored with the sample containers prior to and after field activities and remain with the collected samples until analyzed.
- Generally, one trip blank per volatiles analysis (e.g. volatile organic compounds) shipment.
- Consider submitting a trip blank when sample shipment is by Fed Ex or other large carrier, or laboratory courier.
- Trip blanks should be recorded in the field notebook and on the chain-of-custody that same as all other samples.

### 2.2. Equipment blanks

- Equipment blanks (also known as equipment rinsate blanks) are used to monitor possible sources of contamination associated with sample collection. Monitors on-site sampling environment, sampling equipment decontamination, sample container cleaning, the suitability of sample preservatives and analyte-free water, and sample transport and storage conditions
- Equipment blanks are collected by pouring laboratory supplied or distilled or deionized water over sampling tools that have been decontaminated per the work plan, into sample containers.
- Equipment blanks are stored with the associated field samples until submitted for analysis.
- Generally collected when site conditions indicate site related contamination is a concern. Check project-specific work plan and/or quality assurance project plan for required frequency.
- Prepare equipment blanks immediately after the equipment is cleaned in the field and before leaving the sampling site.
- Prepare equipment blanks by rinsing the decontaminated sampling equipment set with the appropriate type of analyte-free water and collecting the rinse water in appropriate sample containers.

- If a potable water rinse is the typical final step, collect the equipment blank with analyte-free water after the potable water rinse.
- Equipment blanks should be recorded in the field notebook and on the chain-of-custody that same as all other samples.

## 2.3. Field Duplicates

- Used to evaluate the precision and representativeness of the sampling procedures.
- Field duplicates are two samples collected from the same location using the same procedures. Both samples are submitted to the laboratory as individual samples with different sample identification.
- Field duplicates from groundwater sampling for all analyses except volatiles analysis are collected by alternating filling sample containers from the same sampling device. Field duplicates for volatiles analysis are filled sequentially.
- Soil or sediment field duplicates are collected by homogenizing the sample for all analyses except volatiles. The homogenized sample is then divided into two equal portions and placed in separate sample containers. Field duplicates for volatile analysis are collected at two adjacent sampling locations.
- Each sample is assigned different sample identifications.
- Field duplicates are generally collected at frequency of 1/20 samples. Check project-specific work plan and/or quality assurance project plan for required frequency.
- All field QC samples should be labeled in the field and submitted “blind” to the laboratory – as if they are separate, primary samples.
- Field duplicates should be recorded in the field notebook and on the chain-of-custody that same as all other samples.
-

## 2.4. Matrix-Spike samples (MS/MSD)

- Matrix spike and matrix spike duplicate samples (MS/MSDs) are environmental samples that are spiked in the laboratory or in the field with a known concentration of a target analyte(s) to verify percent recoveries.
- Matrix spike and matrix spike duplicate samples are primarily used to check sample matrix interferences. They can also be used to monitor error due to laboratory bias and poor precision. However, a data set of at least three or more results is necessary to statistically distinguish between laboratory performance and matrix interference.
- Generally, the laboratory is required to extract and analyze MS or MS / MSDs at a minimum frequency of 5% of samples being analyzed for the target analyte(s). If the project or client criteria require an MS or MS/MSD, collect sufficient volume in the appropriate containers, and designate the sample to be used as the MS or MS/MSD on the chain of custody.
- Calculate the percent recovery for all spiked analytes for both the MS and MSD. For MS/MSDs also calculate the relative percent difference (RPD). The

RPD for each spiked analyte is calculated using the amount detected not percent recovery. If your data will be subjected to validation, the % recovery and the RPD will generally be determined by the validator.

### 2.5. Typical QA/QC Frequency

- QA/QC frequency is determined by project, client or regulatory criteria and should be verified prior to sample collection. Generally, QA/QC samples are collected according to the frequency described below:

| | |
|---|---|
| Duplicate Samples | One per sampling event, one per 10 samples collected, or one every two weeks, whichever comes first. |
| Equipment Blanks | For each equipment type that is not dedicated or disposable - one per sampling event, one per 20 samples collected, or one every two weeks, whichever comes first. |
| Trip Blanks | One per sample delivery group, or in each cooler containing VOC soil or aqueous samples, depending on project. |
| MS or MS / MSDs | One MS or MS/MSD per sampling event, one per 20 samples collected, or one every two weeks, whichever comes first. |

## 3. Limitations

- Trip blanks must never be opened in the field.
- Trip blanks are usually for VOCs only because less volatile compounds are not likely to cross-contaminate other samples by simply being in close proximity.
- Laboratory-grade water must be used during the collection of equipment blanks.
- Field duplicates must have different sample identifications.

## 4. References

*Test Methods for Evaluating Solid Waste, Physical/Chemical Methods (November 1986), U.S. Environmental Protection Agency Department of Solid Waste, Washington, D.C.*

*U.S. Environmental Protection Agency Office of Emergency and Remedial Response, 1990, Quality assurance/quality control guidance for removal activities: EPA/540/G-90/004, Sampling QA/QC Plan and Data Validation Procedures Interim Final, April, 1990.*

## 5. Contact

Brian Conte
Pat King

# STANDARD OPERATING PROCEDURE

RE-001 Site Reconnaissance

## 1. Objective

Describe methods for conducting site reconnaissance and identifying the information that should be collected.

Site reconnaissance is conducted to evaluate the likelihood of contamination at a site that may be attributed to past or present spills, releases, or waste handling/disposal practices. A site reconnaissance should be conducted after available background information is compiled and reviewed. Site reconnaissance is used to confirm, supplement, or modify the existing information about the site.

## 2. Execution

- Record observations in a bound field notebook (See SOP FD-001 Field Notebook) or on the Site Reconnaissance Checklist (Attachment A).
- Make arrangements with the property owner or occupant for access to the site and site buildings. Be clear that access will need to be provided to all site features.
- Obtain a preliminary base map of the site and, if necessary, a road map with a 500-foot, 1,000-foot, and/or 0.5 mile radius drawn from the boundaries of the site. At the time of the site reconnaissance, determine the street names and numbers at each chosen radius, if necessary. In rural areas where street numbers are not available, maintain a radius of approximately 1,000 feet.
- If available, review surficial and bedrock geology and United States Geological Survey (USGS) and other maps prior to the site reconnaissance.
- Interview personnel familiar with past and present site conditions during the site reconnaissance. The following information should be recorded: the interviewed person's name, address, telephone number, position in firm or agency, relation to the study site, and years of experience at the site.
- Document the site reconnaissance with photographs. Maintain a photograph log that includes the photograph number, date, location where the photograph was taken, orientation of view, and subject manner.
- Walk entire site property boundaries and make traverses across the site.
- Each of the items on the attached form should be addressed and is described below. If something does not apply to the site, indicate N/A. Do not leave blank.
    - Provide general information concerning site identification (street address, size).
    - Document site weather conditions, amount of snow, temperature, flooding, etc., in field notebook.

- Topography - Describe general site topography and estimate surface drainage direction.
- Vegetation - Describe general surface vegetation at site. Look for evidence of stressed, dead, or dying vegetation. Changes in the size or age of similar vegetation can indicate areas of clearing, past site disturbance, or former access roads.
- Hydrology and Hydrogeology - Locate surface water bodies and wetlands and, where possible, estimate surface flow directions. Identify the following.
    - Geology and surface features - Identify landforms, soil exposures, and rock outcrops. Describe the presence and character of artificial fill if visible.
    - Wells - Identify the location of monitoring wells, irrigation wells, and drinking water wells on base maps and measure distances of monitoring wells from buildings or other permanent structures. If possible, obtain information concerning the type of well and construction details from the client.
    - Trace or follow storm drain system, in general, to off-site discharge.
- Land Uses - Describe current and former land uses and a history of known previous spills or releases. Obtain dates whenever possible. Information may be obtained through interviews with current or former owners, occupants, or employees.
- USTs and ASTs - Describe condition of ASTs and USTs present on site. Look for indications of spills or staining around fill ports and vent pipes. Look for the presence of fill ports and vent pipes adjacent to buildings. Inquire about the presence or replacement of former UST and AST locations, sizes, and contents. Obtain copies of UST monitoring and test records, if available. Identify the number of vent pipes and compare to the number of identified or documented USTs/ASTs. Make note of pavement fracture patterns which may indicate pump islands or UST removal areas. Identify current and former heating sources.
- Waste Information - Describe current operations likely to involve the use, treatment, storage, disposal, or generation of oil and/or hazardous materials (OHMs). Describe the presence and condition of drums, barrels, other storage containers, and disposal areas. Check for bermed areas and floor drains. Record indicators of spills, staining, cracked or broken flooring, soil discoloration, leachate breakout, fill materials, or odors. Locate and describe the condition of wastewater systems, pits, lagoons, and disposal areas. If available, obtain copies of Material Safety and Data Sheets for later review. Identify present and past locations where waste is or has been handled or disposed.

- Site Utilities - Describe overhead and underground utilities. Identify whether site is on municipal water or if water is supplied through private wells on site. Identify whether site is on municipal sewer or on an on-site septic system, and include the location of the disposal area (leach field, pit, or trench). Inquire whether the site has had a former septic system or wastewater disposal area. Floors should be observed to identify existing or previously abandoned floor drains. Roof drains and grease traps, if any, should be identified. Discharge locations of floor drains, grease traps, roof drains, and catch basins should be identified. Check labels on transformers for polychlorinated biphenyls (PCBs). Note the absence of labels.
- Buildings - Obtain as much information as possible about past and present use activities within the building(s). Describe the condition of floors in the basement or first floor, including cracks and evidence of spills. Describe building construction, (for example, a slab on grade or basement, steel or wood frame), and note exterior wall construction. Check building for additions or historical add-ons.
- Site Access - Describe fences, roads, topography, vegetation, subsurface or overhead utilities, wet areas, and other factors that may affect site access for a subsurface exploration program.
- Site Abutters - Describe types of general land use activities on abutting properties, including abutters across streets from the site. If possible look for indicators of disturbed land areas and vegetation. Describe general topography and drainage. Look for evidence of USTs. Record names of businesses for regulatory review. Do not trespass on abutting properties.
- Site Vicinity - Identify street addresses at major cross streets up to 0.5-mile radius surrounding the site, if necessary. Identify sensitive receptors such as schools, nurseries, day care centers, parks, playgrounds, etc., within a 500-foot radius of the site.
- Site Escort - Identify the person who is conducting the site walk with you.
- Prepare a site sketch or mark the locations of observed conditions on a preliminary base map. Record locations of interior features on copies or sketches of floor plans.

## 3. Limitations

- If observations are recorded in a field notebook, use the Site Reconnaissance Form (provided below) as a checklist.
- Note any area of the site which could not be observed directly during the site reconnaissance because of restricted access, miscellaneous debris, snow cover, and other adverse conditions.

## 4. References

*ASTM E1527-05, Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process (2005)*

*ASTM E1528-06, Standard Practice for Limited Environmental Due Diligence: Transaction Screen Process (2006)*

*ASTM E2247-08, Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process for Forestland or Rural Property (2008)*

*Code of Federal Regulations All-Appropriate Inquiries Standards and Practices for All Appropriate Inquiries (40 CFR Part 312)*

*Guidance to Environmental Site Assessment (September 1992), National Ground Water Association*

*Site Characterization Guidance Document – Chapter 3 Phase I Environmental Site Assessments, (September 2007), The Connecticut Department of Environmental Protection*

## 5. Attachments

Attachment A - Site Reconnaissance Checklist

## 6. Contact

Gary Iadarola
Anne Leifer

# RE-001 Attachment A: Site Reconnaissance Checklist

GEI Job No.:

Date:

Site Reconnaissance performed by:

GEI Project Manager:

---

## Part 1: General Information

Client

Property Name

Address

Size of Site Easements

Paved parking lot areas (patched areas)

USGS Quadrangle GIS Maps

Available bedrock or surficial geology maps

Weather at time of visit (include snow cover, flooding, etc.)

**Part II: Topography (level-rolling-hilly-etc.)**

Describe

Degree of slopes, approx.

Drainage (estimated surface water flow direction)

---

**Part III: Surface Vegetation (wooded-brush-grass-landscaped)**

Describe

Stressed or stained vegetation

Describe

---

**Part IV: Hydrogeology (surface water bodies and wetlands)**

Describe

a. Geology (bedrock outcrops, fill areas, soil exposures, trenches, etc.)

Describe

b. Surface features (drumlins-valley floor-flood plain)

Describe

c. Monitoring wells (number, size, roadbox, stand-up pipe, location, distance from buildings)

Describe

## Part V: Land Use (current, former)

Describe

## Part VI: USTs and/or ASTs

Vent and fill pipes (number and locations)

| Tank ID | UST/ AST | Capacity (Gallons) | Date Installed | Date Removed | Date of Last Tightness Test |
|---|---|---|---|---|---|
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |

## Part VII: Waste Information (drums, barrels, storage containers, wastewater systems/discharges, pits, lagoons, odors)

Describe

Dumpsters/Trash Collection (past & present)

Waste Materials

Dumped Material or Miscellaneous Debris

Areas of Fill

## Part VIII: Utilities

Water Electric Gas Oil Cable/Phone
Sewer Septic Leachfield Catch Basins
Manholes Drywells Transformers

Describe

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## Part IX: Buildings (exterior)

Number of Buildings/Additions

Locations

Size of Buildings

Number of Stories

Age

Describe

## Part X: Buildings (interior) (Fill out this section for each building interior.)

Inside Building Descriptions and Uses (offices, commercial, industrial, manufacturing, and other)

Chemical Storage

Basement and/or 1st Floor (type of construction)

Floor Drains, Sumps (number and location)

Floor Condition (cracks, spills )

**Part XI: Site Access (fencing, gates, roads, etc.)**

Describe

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**Part XII: Site Abutters (addresses and land uses)**

North

East

South

West

---

**Part XIII: Site Vicinity**

Names of Cross Streets

Direction in which Street Addresses Increase or Decrease (within 1,000-foot radius of site)

Schools, nurseries/day care centers (within 500-foot radius of site)

**Part XIV: Site Escort**

Affiliation Employed at facility

## Part XIV: Additional Comments:

# STANDARD OPERATING PROCEDURE

SC-001 Environmental Sample Types and Sampling Strategies

## 1. Objective

Describe types of samples and strategic approaches to sample locations.

Refer to Attachment A for guidance on compatible sampling materials.

## 2. Sample Types

### Grab Samples

A grab (or discrete) sample is a single aliquot (part of the sampled media) collected from a single location at a specific time.

Surface soil samples are typically “grab” samples. Volatile organic samples are always grab samples because the least amount of sample disturbance is necessary.

### Composite Samples

Composite samples are non-discrete samples composed of more than one aliquot collected from different sampling locations and/or at different points in time. Analysis of composite samples produces an average value.

Composite samples are frequently collected to characterize waste soil that has been stockpiled for eventual disposal. Several grab samples are collected from the stockpile and are blended together into a single sample.

### Screening Samples

Screening samples may be grab or composite in nature. However, they offer potential advantages such as rapid results and low cost. The trade-off is that they may only provide results within a range and/or they may have elevated detection limits. Screening samples are most often used to evaluate presence/absence and/or indications of the potential magnitude of impacts.

## 3. Sampling Strategies

Generally, there are three sampling strategies: random, systematic, and judgmental sampling.

- Random sampling involves collection of samples in a non-systematic fashion from the entire site or a specific portion of a site.
- Systematic sampling involves collection of samples based on a grid or a pattern which has been previously established.
- Judgmental sampling is the collection of all other samples. This sampling might be from areas most likely to be contaminated, areas most likely to be clean, or areas where information is lacking.

Often, a combination of these strategies is the best approach depending on the type of the suspected/known contamination, the uniformity and size of the site, the level/type of information desired, etc.

## 4. Attachments

Attachment A - General Guidelines for selecting equipment

## 5. Contacts

Jerry Zak
Ryan Hoffman

**General Guidelines for selecting equipment on the basis of construction material and target analyte(s)**

[✔, generally appropriate for use shown; Si, silica; Cr, chromium; Ni, nickel; Fe, iron; Mn, manganese; Mo, molybdenum; CFC, chlorofluorocarbon; B, boron]

| Construction material for sampling equipment | | Target analyte(s) | |
|---|---|---|---|
| **Material** | **Description** | **Inorganic** | **Organic** |
| | | **Plastics**[1] | |
| Fluorocarbon ploymers[2] (other varies available for differing applications) | Chemically inert for most analytes | ✔ (potential source of fluoride) | ✔ (Sorption of some organics) |
| Polypropylene | Relatively inert for inorganic analytes | ✔ (not appropriate for Hg) | **Do not use** |
| Polypropylene (linear) | Relatively inert for inorganic analytes | ✔ (not appropriate for Hg) | **Do not use** |
| Polyvinyl chloride (PVC) | Relatively inert for inorganic analytes | ✔ (not appropriate for Hg) | **Do not use** |
| Silicone | Very porous. Relatively inert for most inorganic analytes | ✔ (potential source of Si) | **Do not use** |
| | | **Metals** | |
| Stainless steel 316 (SS 316) | SS-316-metal having the greatest corrosion resistance. Comes in various grades. Used for submersible pump casing. | ✔ (Potential source of Cr, Ni, Fe, and possible Mn and Mo) **Do not use** for surface water unless encasted in plastic. | ✔ Do not use if corroded[3] |
| Stainless steel 304 | Similar to SS-316, but less corrosion resistant | **Do not use** | ✔ Do not use if corroded[3] |
| Other metals: brass, iron, copper, aluminum, galvanized and carbon steels | Refrigeration-grade copper or aluminum tubing are used routinely for collection of CFC samples | **Do not use** | ✔ Routinely used for CFCs Do not use if corroded[3] |
| | | **Glass** | |
| Glass, borosilicate (laboratory grade) | Relatively inert. Potential sorption of analytes | ✔ **Do not use** for trace element analyses. Potential source of B and Si | ✔ |

[1]Plastic used in connection with inorganic trace-element sampling should be uncolored or white. Tubing used for trace metal sampling should be cleaned by soaking in 5-10 percent HCl solution for 8-24 hours, rinsing with reagent water (metals free) and allowed to air dry in mercury-free environment. After drying, the tubing is doubled-bagged in clear polyethylene bags, serialized with a unique number, and stored until used.

[2] Fluorocarbon polymers include materials such as Teflon™, Kynar™, and Tefzel™ that are relatively inert for sampling inorganic or organic analytes. Only fluoropolymer should be used for samples that will analyzed for mercury because mercury vapors can diffuse in or out of other materials, resulting in either contaminated or biased results.

[3] Corroded/weathered surfaces are active sorption sites for organic compounds.

# STANDARD OPERATING PROCEDURE

SC-002 Environmental Sample Handling

## 1. Objective

Describe appropriate environmental sample handling procedures.

The procedures include collection and transport of environmental samples to a laboratory for chemical analysis. Appropriate sample handling should ensure that samples are properly:

- labeled and documented;
- preserved;
- packaged; and
- transported

## 2. Execution

- Prior to mobilizing to the field, select a shipper or arrange for a courier for sample delivery to the laboratory. If using a shipper (i.e., FedEx or UPS) determine the time constraints for pickup requests, the location and hours of the nearest shipping office, and any size/weight restrictions.
- A waterproof or permanent ink pen should be used for all labels. The label should have an adhesive backing and be placed on the jar or bottle, not on the cap. In addition, clear packing tape can be placed over the sample label to secure it to the bottle as moisture from the samples can loosen the label adhesive.
- Record the following information on the label and in the field notebook (See SOPs FD-001 and FD-003):
    - Project number
    - Sample identification (i.e. MW-201 or SS-2)
    - Date and time (military time) of collection
    - Sampler's initials
    - Analysis methods
    - Preservative, if present
- Pre-preserved laboratory jars are preferable and should be used whenever practicable. If sample jars are not pre-preserved, add preservative as appropriate.
- At each sampling location, samples should be collected in order of volatility, most volatile first. Samples collected for volatile analysis should be placed in sample containers immediately upon retrieval of the sample.
- Aqueous samples for volatile analysis should be collected without air bubbles.
- The collection and preservation method of soil samples for volatile analysis may depend on project, client, or state regulatory requirements. Check with your Project Manager and/or SOPs SM-001 and SM-002 where appropriate.

- Care must be taken to avoid getting soils on the threads of sample jars, which can cause a faulty seal.
- If compositing samples in the field, specify the basis for composite (i.e. volume, weight, spoon recovery, etc.) and record in the field book the procedure for compositing the sample.
- Once samples have been collected and labeled, place samples in a cooler with sufficient bagged ice or freezer packs (blue ice) (if allowed) to chill samples to 4°C. If using ice, use double-bagged ice.
- Complete the chain-of-custody (COC) (SOP FD-003).
- If transporting the samples by way of a shipper:
    i. The sample cooler should have water drains securely sealed with duct tape, both on the inside and outside of the cooler.
    ii. Place a layer of packing material on the bottom of the cooler as a cushion.
    iii. Individually wrap each sample bottle with bubble packing or suitable packing material and place the wrapped bottles upright in the cooler with sufficient packing material between samples to avoid breakage.
    iv. Methanol preserved samples for volatiles analysis should be packed so they remain upright with the soil completely covered by the methanol during transport.
    v. Place a layer of packing material on top of the sample bottles.
    vi. Place bagged ice or freezer packs on top of the packing material. Fill the remaining space in the cooler with packing material to eliminate the possibility of vertical movement of samples.
    vii. Place the completed and signed chain-of-custody form in a sealable plastic bag and place on top of the packing material in the cooler, or tape it to the inside lid of the cooler.
    viii. Fill out the appropriate shipping or courier forms and attach to the top or handle of the cooler. If necessary, place the proper shipping labels on the cooler. Have the courier sign the COC form (or write pickup by FEDEX, UPS, etc. with date and time). Place a signed and dated custody seal on the cooler.
- All samples should be submitted to the laboratory as soon as possible. In many cases, same day shipping will be required by the client or the project manager. Be clear on this before beginning the field work.
- A copy of the waybills should be kept by the field supervisor to track shipments if necessary.

## 3. Limitations

- If samples are shipped on a Friday, call the laboratory ahead of time to confirm that personnel will be at the laboratory to receive and log-in the samples.
- During warm weather, make sure to use plenty of ice in the shipping container.

- Field personnel should be aware of analyses which have short hold times and schedule sampling events and shipping accordingly. Shipment of samples for analyses with short hold times must be arranged for in advance. Refer to the project work plan, quality assurance project plan, or state/federal regulations for holding time and preservative information. Contact the laboratory ahead of time when shipping samples with short hold time to ensure the lab is prepared for these analyses.
- For glassware containing preservatives (e.g., HCl, $HNO_3$), take care not to overfill the container, thus flushing the preservative out of the bottle.
- Never composite samples for VOCs in the field. Collect individual aliquots and direct the laboratory to perform compositing, if needed.
- Collection of aqueous samples should not be performed over the opening of a monitoring well. Preservatives from overfilling, a marker pen or other objects could fall into the well.
- If the recharge volume for a monitoring well is low, completely fill all volatile vials and then collect the minimum sample volume required for each remaining analysis.
- During subsurface soil sampling, if the recovery from the split-spoon sample is inadequate, if appropriate, resample the bottom of the borehole to obtain proper sample volume.
- Laboratories will homogenize and test the contents of the sample container, unless directed otherwise. Samples should not contain rocks, twigs, leaves, etc… unless these materials are of interest.

## 4. References

*New Jersey Department of Environmental Protection, Field Sampling Procedures Manual, August 2005.*

*Connecticut Department of Environmental Protection, Guidance for Collecting and Preserving Soil and Sediment Samples for Laboratory*

*Preservation Techniques for Volatile Organic Compound (VOC) Soil Sample Analyses, WSC#99-415. Massachusetts Department of Environmental Protection.*

## 5. Contacts

Jennifer Belonsoff
Leslie Lombardo

# STANDARD OPERATING PROCEDURE

SC-003 Investigation Derived Waste

## 1. Objective

Describe characterization and management of Investigation Derived Waste (IDW) resulting from site investigation activities.

IDW is solid and/or aqueous waste generated during environmental site investigations.

## 2. Execution

- Determine the suspected contamination type and impacted media based on previous investigations, available analytical data, and/or site history.
- Consider the following when selecting IDW management option(s):
    - Anticipated volume of IDW to be generated during on-site activities
    - Potential contaminants and their concentrations
    - Proximity to population centers and the potential for unauthorized site access
    - Potential exposures to workers
    - Potential for environmental impacts
    - Community concerns
    - Potential storage areas
    - Regulatory constraints
    - Potential on-site treatment options
    - Duration of storage
    - Client concerns or requirements
- Review IDW Management Options summarized in Attachment A for each media suspected of contamination.
- Select IDW Management Option(s) prior to the commencement of field activities that will generate waste materials.
- Include the selected IDW Management Option(s) in the Field Plan or other project documents.

Considerations and guidelines for IDW management for specific field tasks are provided below.

### 2.1. Test Pit Excavation

- Segregate contaminated soil from uncontaminated soil using visual and/or field screening methods.
- Use appropriate barrier (such as two layers of 6-ml plastic sheeting) for temporary stockpiling of contaminated soil adjacent to test pit.

- Backfill test pits with uncontaminated soil, unless otherwise directed by project manager.
- If directed by the Project Manager to return contaminated soil to the test pit, backfill soil in the same order as the soil was excavated from the test pit.

### 2.2. Boring/Monitoring Well Installation

- For auger borings, segregate contaminated soil (determined by visual and/or field screening methods) from uncontaminated soil during drilling. Segregate residual contaminated soil from split-spoon sampling.
- Auger cuttings or sediment generated by drive and wash may be spread around the ground surface at the boring location if it is acceptable to the client and the governing regulatory agency. If not, IDW may be placed in an appropriate area or container pending characterization and appropriate disposal. (A useful rule of thumb is to assume generation of one 55-gallon drum of cuttings for each 20 feet drilled with 7-¼-inch-I.D. augers).
- Segregate contaminated drilling fluid from uncontaminated fluid for rotary wash borings.
- Drilling fluid management options include pouring the drilling fluid on the ground near the boring location, if acceptable to the client and governing regulatory agency, or containerizing the fluid in drums or tanks.

### 2.3. Well Development/Sampling

Contaminated groundwater removed from wells by pumping or bailing for the purpose of well development and sampling may be poured on the ground near the well, if it is acceptable to the client and the governing regulatory agency. Otherwise, it should be containerized in drums or tanks.

### 2.4. Decontamination Fluids

Decontamination fluids may be poured on the ground in the vicinity of the well if approved by the project manager. Alternatively, the fluids may be containerized in drums or tanks.

### 2.5. Disposable Personal Protective Equipment

Disposable personal protective equipment (PPE) should be managed like any other IDW. However, with the clients' and project manager's approval, it may be removed from the site and disposed of as ordinary rubbish if it has not come into contact with contaminated materials.

## 3. Limitations

- The simplest IDW management option is to return the IDW to its source location.
- However, the selected IDW management options must meet state/federal regulations and have the client's approval. Consult with state/federal policies for IDW-related matters.

- The client is responsible for the disposal of IDW, should disposal be necessary.

## 4. References

*Guide to Management of Investigation - Derived Wastes (April 1992), United States Environmental Protection Agency, Publication 9345.3-03FS.*

*Standard References for Monitoring Wells, Massachusetts Department of Environmental Protection, Publication No. WSC-310-91.*

## 5. Attachments

Attachment A - Summary of Investigation Derived Waste Management Options
Attachment B - CTDEP Waste Guidance

## 6. Contacts

David Terry
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**Attachment A: - SUMMARY OF IDW MANAGEMENT OPTIONS**
**GEI Consultants, Inc. Standard Operating Procedures**
**Management of Investigation - Derived Waste**

| Type of IDW | Generation Processes | Management Options | Remarks |
|---|---|---|---|
| Soil | Boring/monitoring well installation<br>Test pit excavation<br>Soil sampling | Return to source location immediately after generation | Acceptable, if authorized by the client, the governing regulatory agency, and the project manager. |
| | | Spread around boring, test pit, or original source location | Acceptable, if authorized by the client, the governing regulatory agency, and the project manager. |
| | | Containerize and temporarily store on site | Can temporarily store in stockpiles or covered containers (i.e. drums, roll-off containers).<br>Stockpiles must be underlain by plastic sheeting and covered with plastic sheeting. Plastic sheeting must be secure.<br>Storage consistent with state/federal regulations. |
| | | Send to off-site, treatment or disposal facility within appropriate timeframes | Requires proper shipping documents (i.e. manifest, Bill of Lading, etc.), analytical characterization |
| | | Store for future treatment and/or disposal. | Storage consistent with state/federal regulations.<br>If a RCRA hazardous waste, must meet RCRA Container/Waste Pile/Tank requirements (see notes) |
| | | Store temporarily awaiting laboratory analysis. | Storage consistent with state/federal regulations.<br>Can temporarily store in stockpiles or covered containers (i.e. drums, roll-off containers).<br>Stockpiles must be underlain by plastic sheeting and covered with plastic sheeting. Plastic sheeting must be secure. |
| Sediment/Sludge | Sludge pit sampling<br>Sediment sampling | Return to source immediately after generation | Acceptable, if authorized by the client, the governing regulatory agency, and the project manager. |
| | | Store temporarily on site. | Storage consistent with state/federal regulations. |
| | | Send to off-site facility within 90 days | Requires manifests, analytical characterization |
| | | Store for future treatment and/or disposal. | Storage consistent with state/federal regulations.<br>If a RCRA hazardous waste, must meet RCRA Container/Waste Pile/Tank requirements (see notes) |

**Attachment A: - SUMMARY OF IDW MANAGEMENT OPTIONS**
**GEI Consultants, Inc. Standard Operating Procedures**
**Management of Investigation - Derived Waste**

| Type of IDW | Generation Processes | Management Options | Remarks |
|---|---|---|---|
| Aqueous liquids (groundwater, surface water, drilling fluids, other wastewater) | Well installation/development<br>Well purging during sampling<br>Ground water discharge - pump tests<br>Surface water sampling | Pour onto ground close to well | Non-hazardous liquids only.<br>Should not exhibit a sheen or separate phase product.<br>Do not discharge to the ground up-gradient of the source location.<br>Ensure that it is permissible by local, state, and Federal regulations<br>Is acceptable to the client, the governing regulatory agency, and the project manager. |
| | | Store temporarily on site | If a RCRA hazardous waste, must meet RCRA Container/Waste Pile/Tank requirements (see notes) |
| | | Send to off-site commercial treatment unit within appropriate timeframes | Refer to State regulations for appropriate timeframe.<br>Requires appropriate shipping documents (i.e., manifest, Bill of Lading), analytical characterization |
| | | Send to POTW | Obtain appropriate discharge permit(s) |
| | | Store for future treatment and/or disposal. | Storage consistent with state/federal regulations.<br>Consistent with final remedial action |
| | | Discharge to surface water | OK if it complies with state and federal regulations.<br>Obtain appropriate discharge permit(s). |
| Decontamination fluids | Decontamination of PPE and equipment | Store temporarily on site | If a RCRA hazardous waste, must meet RCRA Container/Waste Pile/Tank requirements (see notes) |
| | | Send to off-site facility within appropriate timeframes | Requires manifests, analytical characterization |
| | | Store for future treatment and/or disposal. Storage consistent with state/federal regulations. | Consistent with final remedial action |
| Disposable PPE | Sampling, drilling, and test pit excavation observation, other on-site activities | Store temporarily on site | Dispose of appropriately after characterization |
| | | Place in on-site industrial dumpster | Project-specific determination required – must be acceptable to client and project manager |
| | | Send to off-site facility within 90 days | Project-specific determination required |
| | | Store for future treatment and disposal. | Storage consistent with state/federal regulations.<br>Project-specific determination required |

**Notes:**

1) PPE - personal protective equipment
2) POTW - publicly owned treatment works
3) Generation processes listed here are provided as examples.
   IDW may also be generated as a result of other site activities.
4) RCRA Container/Waste Pile/Tank requirements:
   Containers; 40 CFR 264 Subpart I and 265 Subpart I
   Waste Piles; 40 CFR 264 Subpart L and 265 Subpart L
   Tanks; 40 CFR 264 Subpart J and 265 Subpart J

# Connecticut Department of Environmental Protection

## Connecticut's RCRA "Contained-In" Policy

## Characterization of Contaminated Soil and Groundwater

**Policy**
RCRA hazardous waste determinations for contaminated soil and groundwater may compare contaminant concentrations with the characterization criteria below. If the concentrations are below these criteria then the soil and groundwater do not need to be managed in Connecticut as RCRA hazardous waste. If the concentrations are above these levels then the soil/water must be treated, stored, transported, and disposed in the same manner as hazardous waste.

**Purpose**
To simplify the management of non-hazardous contaminated soil and groundwater and to encourage remediation of contaminated sites.

**Applicability**
This policy applies to contaminated soil and groundwater managed in Connecticut. It does not establish cleanup criteria. When contaminant concentrations are below the levels described in this policy, but are greater than applicable Connecticut Remediation Standard Regulations ("RSR") criteria, then the soil and groundwater must be handled as non-hazardous contaminated soil and groundwater subject to applicable RSR polluted soil reuse requirements and to Connecticut solid waste requirements.

| Contaminant | Soil Characterization Criteria | Groundwater Characterization Criteria |
|---|---|---|
| Characteristically hazardous waste "**D codes**" | Non-hazardous if below levels in Toxicity Characteristic Table in 40 CFR 261.24 ("TC Table")[1] | Non-hazardous if below levels in Toxicity Characteristic Table in 40 CFR 261.24 ("TC Table") |
| Listed hazardous waste "**F,K,P,U codes**"<br><br>See 40 CFR 261.33 for "**P**" & "**U**"<br><br>See 40 CFR 261 Appendix VII to identify constituents for which "**F**" & "**K**" wastes are listed. | Non-hazardous if below the lower of A and B:<br>**(A)** Industrial/Commercial Direct Exposure Criteria in RSR[2] **and**<br>---------- ---------- ----------<br>[choose one method from B]:<br><br>**(B) either** TC Table[1]<br>**or**<br>100 x GA Pollutant Mobility Criteria in RSR[3]<br>**or**<br>100 x Groundwater Protection Criteria in RSR[4] | Non-hazardous if below 100 x GA Groundwater Protection Criteria in RSR |

1. via Toxicity Characteristic Leachate Procedure ("TCLP")
2. via mass analysis
3. via mass analysis or leachate analysis
4. via leachate procedure (eg: TCLP or Synthetic Precipitation Leachate Procedure

# STANDARD OPERATING PROCEDURE

SC-004 Headspace VOC Screening

## 1. Objective

Describe methods to obtain site-specific measurement of the total volatile organic compound (VOC) concentrations present in the headspace of a jar containing soil.

This information can be used for several purposes:

- Segregate soil based on degree of contamination.
- Identify samples for quantitative analysis of VOCs.
- Evaluate the presence or absence of VOCs in soil.

## 2. Execution

- A photoionization detector (PID) or flame ionization detector (FID) instrument is used to measure VOCs in jar headspace (JHS) screening.
- Select the appropriate instrument, lamp, and calibration gas for the site-specific contaminants. Calibrate the instrument in accordance with the manufacturer's instructions before JHS screening begins. Record the type of calibration gas, detector, lamp, and results of calibration in the field notebook.
- Note the highest VOC concentration that the instrument measures in air in the work area before performing JHS screening. Record this as the initial background concentration.
- Half-fill a clean, glass jar with the soil. Quickly cover the open top with one or two sheets of clean, aluminum foil and screw on the cap to tightly seal the jar. Label the jar with the sample location and sample depth.
- Allow headspace development for at least 10 minutes at an ambient temperature of 50°F or greater. Vigorously shake the jar for 15 seconds at the beginning and end of the headspace development period. When ambient temperatures are below 50°F, place the jar in a heated vehicle or building during the headspace development period.
- After headspace development, remove the screw cap to expose the foil seal. Quickly puncture the foil seal with the instrument's sampling probe and insert it to a point at about one-half of the headspace depth.
- Record the highest VOC concentration that the instrument displays as the JHS concentration. The highest concentration should occur between 2 and 5 seconds after probe insertion.

## 3. Limitations

- The instruments may work poorly in the rain and in freezing temperatures. Under such conditions, operate the instrument in a heated vehicle or building if possible.

- Prevent water and soil particles from entering the tip of the instrument probe. Use a filter on the instrument's probe.
- Measure background VOC conditions and perform JHS screening away from non-site-related VOC sources, such as vehicle and heavy equipment exhaust.
- The VOC concentration on the instrument's display may vary when the air contains high VOC concentrations or high moisture.
- JHS screening is a guide that helps the screener to segregate soils into broadly defined categories. JHS screening results may differ by orders of magnitude from laboratory testing results.
- Note that states may have specific procedures for field monitoring. In Massachusetts, the Massachusetts Department of Environmental Protection (DEP) requires that screening of gasoline-contaminated soil be performed in accordance with Attachment II of the DEP's policy #WSC-94-400 Interim Remediation Waste Management Policy for Petroleum Contaminated Soils. Consult this procedure or any relevant guidance documents for assistance.

## 4. References

*Interim Remediation Waste Management Policy for Petroleum Contaminated Soils. (April 1994), Massachusetts Department of Environmental Protection, Policy #WSC-94-400.*

## 5. Contacts

Lynn Willey
Leslie Lombardo

# STANDARD OPERATING PROCEDURE

SG-002 Soil Vapor Sample Collection

## 1. Objective

This procedure outlines the general steps to collect soil vapor samples. The site-specific Sampling and Analysis Work Plan should be consulted for proposed sample locations, sample depths, and sampling duration.

## 2. Execution

Permanent and temporary soil vapor probes should be installed using the procedures outlined below. All soil vapor probes should be installed using a direct-push drill rig (e.g., Geoprobe® or similar), hand auger, or manually using a slide hammer.

### 2.1. Document Field Conditions

Document pertinent field conditions prior to installation of any probe points.

- Record weather information (precipitation, temperature, barometric pressure, relative humidity, wind speed, and wind direction) at the beginning of the sampling event. Record substantial changes to these conditions that may occur during the course of sampling. The information may be measured with on-site equipment or obtained from a reliable source of local measurements (e.g., a local airport). Data should be obtained for the past 24 to 48 hours.
- If sampling near a commercial or industrial building, uses of volatile chemicals during normal operations of the facility should be identified.
- Outdoor plot sketches should be drawn that include the site, area streets, neighboring commercial or industrial facilities (with estimated distance to the site), outdoor air sampling locations (if applicable), and compass orientation (North);
- Any pertinent observations should be recorded, such as odors and readings from field instrumentation.

### 2.2. Soil Vapor Point Installation Specifications

Each soil vapor point should be constructed as follows:

- Six-inch stainless steel Geoprobe® AT86 series Permanent Implants (soil vapor screens) or equivalent and threaded to an (expendable) stainless steel anchor point.
- The implants should be fitted with inert Teflon or stainless steel tubing of laboratory or food grade quality.
- The annular space surrounding the vapor screen interval and a minimum of 6-inches above the top of the screen should be filled with a porous backfill

material (e.g., glass beads or coarse silica sand) to create a sampling zone 1 foot in length.

For temporary points, a hydrated bentonite surface seal should be created at the surface to minimize infiltration. For permanent points, the additional measures described below should be included.

- The soil vapor points should be sealed above the sampling zone with a bentonite slurry for a minimum distance of 3 feet (or to grade, whichever is smaller) to prevent ambient air infiltration.
- If needed, the remainder of the borehole should be backfilled with clean material.
- A protective casing should be set around the top of the point tubing and grouted in place to the top of the bentonite to minimize infiltration of water or ambient air, as well as to prevent accidental damage to the soil vapor point.
- The tubing top should be fitted with a Swagelok® and cap to prevent moisture and foreign material from infiltrating the tubing.

### 2.3. Soil Vapor Sample Collection

Soil vapor samples should be collected as indicated in the work plan and in accordance with applicable state or federal guidance documents. Specifically, samples from the points should be collected as follows:

- Permanent soil vapor points should not be sampled or purged for a minimum of 24 hours after installation. Temporary points may be purged and sampled immediately following installation.
- Document pertinent field conditions prior to sampling as described above.
- A suction pump should be used to remove a minimum of three implant volumes from the soil vapor points prior to sampling. Include the volume of any additional tubing added to affix sampling equipment and the annular space between the probe and the native material if sand or glass beads were used.
- The purge rate shall not exceed 0.2 liters per minute.
- Samples should be collected for volatile organic compounds (VOCs) in an individually laboratory certified clean 1-liter SUMMA® canister (or equivalent) using a certified flow controller calibrated for the anticipated sample duration (4 minutes). The regulator flow rate should not exceed 0.2 liters per minute.
- A helium tracer gas should be used to identify any potential migration or short circuiting of ambient air during sampling as described below.
- Remove the protective brass plug from the canister. Connect the pre-calibrated flow controller to the canister.
- Record the identification numbers for the canister and flow controller.
- Record the initial canister pressure on the vacuum gauge (check equipment-specific instructions for taking this measurement). A canister with a significantly different pressure than originally recorded by the testing

laboratory should not be used for sampling. Record these numbers and values on the chain-of-custody form for each sample.

- Connect the tubing from the soil vapor probe to the flow controller.
- Open the valve on the canister. Record the time that the valve was opened (beginning of sampling) and the canister pressure on the vacuum gauge.
- Photograph the canister and the area surrounding the canister.
- Monitor the vacuum pressure in the canister routinely during sampling.
- Stop sample collection when the canister still has a minimum amount of vacuum remaining. Check with the laboratory supplying the canister and flow controller for the ideal final vacuum pressure. Typically, the minimum vacuum is between 2 and 5 inches of mercury, but not zero. If there is no vacuum remaining, the sample should be rejected and collected again in a new canister.
- Record the final vacuum pressure and close the canister valve. Record the date and time that sample collection was stopped.
- Remove the flow controller from the canister and replace the protective brass plug.
- Attach labels/tags (sample name, time/date of sampling, etc.) to the canister as directed by the laboratory.
- Place the canister and other laboratory-supplied equipment in the packaging provided by the laboratory.
- Enter the information required for each sample on the chain-of-custody form, making sure to include the identification numbers for the canister and flow controller, and the initial and final canister pressures on the vacuum gauge.
- Samples should be analyzed for VOCs and naphthalene via modified USEPA modified Method TO-15 and helium via ASTM D-1945.
- Include the required copies of the chain-of-custody form in the shipping packaging, as directed by the laboratory. Maintain a copy of the chain-of-custody for the project file.
- Deliver or ship the samples to the laboratory as soon as practical.
- All laboratory analytical data should be validated by a data validation professional in accordance with the USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review, January 2005 and the USEPA Region II Standard Operating Procedure (SOP) for the Validation of Organic Data modified to accommodate the USEPA Method TO-15 and natural gas analysis by ASTM D-1945.

## 2.4. Tracer Gas Evaluation

The tracer gas evaluation provides a means to evaluate the integrity of the soil vapor probe seal and assess the potential for introduction of ambient air into the soil vapor sample.

A tracer gas evaluation should be conducted on the each temporary soil vapor probe to be sampled in a sampling event. A tracer gas evaluation should be conducted on

the each permanent soil vapor probe during the initial sampling event and a minimum of 10% of the soil vapor probes during subsequent sampling events.

The following tracer gas evaluation procedure uses helium as a tracer gases which can be measured through laboratory analysis or by a portable detector.

Retain the tracer gas around the sample probe by filling an air-tight chamber (such as a plastic bucket) positioned over the sample location.

- Make sure the chamber is suitably sealed to the ground surface.
- Introduce the tracer gas into the chamber. The chamber should have tubing at the top of the chamber to introduce the tracer gas into the chamber and a valved fitting at the bottom to let the ambient air out while introducing tracer gas. Close the valve after the chamber has been enriched with tracer gas at concentrations >10%.
- The chamber should have a gas-tight fitting or sealable penetration to allow the soil vapor sample probe tubing to pass through and exit the chamber.
- After the chamber has been filled with tracer gas, attach the sample probe tubing to a pump that should be pre-calibrated to extract soil vapor at a rate of no more than 0.2 liters per minute. Purge the tubing using the pump. Calculate the volume of air in the tubing and probe and purge one to three tubing/probe volumes prior collecting an analytical sample or using a portable device to measuring the tracer gas concentration.
- Samples collected from vapor points during a tracer gas evaluation should be analyzed for VOCs and naphthalene via modified USEPA modified Method TO-15 and helium via ASTM D-1945.
- Alternately, a tracer gas detector may be used to verify the presence of the tracer gas in the chamber by affixing it to the valve fitting at the bottom of the chamber. The tracer gas detector may also be used to measure the tracer gas concentration in the pump exhaust during purging. If used, then record the tracer gas concentrations in the chamber and in the soil vapor sample.
- Based on the concentrations of the tracer gas detected during analysis or direct measurement, determine whether additional gas tracer evaluations are necessary.

If the evaluation on a probe indicates a high concentration of tracer gas in the sample (>10% of the concentration of the tracer gas in the chamber), then the surface seal is not sufficient and requires improvement via repair or replacement prior to commencement subsequent sample collection.

A non-detectable level of tracer gas is preferred, however, if the evaluation on a probe indicates a low potential for introduction of ambient air into the sample (<10% of the concentration of the tracer gas in the chamber), then proceed with the soil

vapor sampling. While lower concentrations of tracer gas are acceptable, the impact of the detectable leak on sample results should be evaluated in the sampling report.

## 3. References

*USEPA modified Method TO-15 and helium via ASTM D-1945*

*Section 2.7.1 of the New York State Department of Health (NYSDOH)* Final Guidance for Evaluating Soil Vapor Intrusion in the State of New York*, dated October 2006.*

## 4. Contact

Chris Berotti

# STANDARD OPERATING PROCEDURE

SG-004 Ambient Air Sample Collection

## 1. Objective

Describe procedures to collect ambient air samples. The site-specific Work Plan should be consulted for proposed sample locations and sampling duration.

## 2. Execution

### 2.1. Document Field Conditions

Document pertinent field conditions prior to sample collection:

- Record weather information, if available (such as precipitation, temperature, barometric pressure, relative humidity, wind speed, and wind direction) at the beginning of the sampling event. Record substantial changes to these conditions that may occur during the course of sampling. The information may be measured with on-site equipment or obtained from a reliable source of local measurements (e.g., a local airport). Data should be obtained for at least the past 12 hours.
- If sampling near a commercial or industrial building, uses of volatile chemicals during normal operations of the facility should be identified.
- Outdoor plot sketches should be drawn that include the site, area streets, neighboring commercial or industrial facilities (with estimated distance to the site), outdoor air sampling locations (if applicable), and compass orientation (North).
- Any pertinent observations should be recorded, such as odors and readings from field instrumentation.

### 2.2. Sample Collection

- Samples should be collected in laboratory-certified clean SUMMA® canister (or equivalent) using a flow controller calibrated for the anticipated sample duration (1-hour, 8-hour, etc.). The regulator flow rate should not exceed 0.2 liters per minute.
- Place the canister at the sampling location. If the sample is collected from breathing height (e.g., 3 to 5 feet above ground), then mount the canister on a stable platform such that the sample inlet should be at the proper height.
- Remove the protective brass plug from canister. Connect the pre-calibrated flow controller to the canister.
- Record the identification numbers for the canister and flow controller.
- Record the initial canister pressure on the vacuum gauge (check equipment-specific instructions for taking this measurement). A canister with a significantly different pressure than originally recorded by the testing laboratory should not be used for sampling. Record these numbers and values on the chain-of custody form for each sample.

- Connect the tubing to the flow controller.
- Open the valve on the canister. Record the time that the valve was opened (beginning of sampling) and the canister pressure on the vacuum gauge.
- Photograph the canister and the area surrounding the canister.
- If possible, monitor the vacuum pressure in the canister routinely during sampling. During monitoring, note the vacuum pressure on the gauge.
- Stop sample collection after the scheduled duration of sample collection but make sure that the canister still has a minimum amount of vacuum remaining. Check with the laboratory supplying the canister and flow controller for the ideal final vacuum pressure. Typically, the minimum vacuum is between 2 and 5 inches of mercury, but not zero. If there is no vacuum remaining, call the laboratory and discuss the sample viability with them. Determine whether another sample will be taken after sharing the laboratory's opinion with your project manager.
- Record the final vacuum pressure and close the canister valves. Record the date and time that sample collection was stopped.
- Remove the flow controller from the canister and replace the protective brass plug.
- Attach labels/tags (sample name, time/date of sampling, etc.) to the canister as directed by the laboratory.
- Place the canister and other laboratory-supplied equipment in the packaging provided by the laboratory.
- Enter the information required for each sample on the chain-of-custody form, making sure to include the identification numbers for the canister and flow controller, and the initial and final canister pressures on the vacuum gauge.
- Include the required copies of the chain-of-custody form in the shipping packaging, as directed by the laboratory. Maintain a copy of the chain-of-custody for the project file.
- Deliver or ship the samples to the laboratory as soon as practical.

## 3. References

*USEPA modified Method TO-15 and helium via ASTM D-1945*

*Section 2.7.1 of the New York State Department of Health (NYSDOH)* Final Guidance for Evaluating Soil Vapor Intrusion in the State of New York*, dated October 2006.*

## 4. Contacts

Chris Berotti
Bill Simons

# STANDARD OPERATING PROCEDURE

SM-001 Soil Sampling Techniques Including Split-Spoon

## 1. Objective

Describe standard procedures for the collection of surface and subsurface soil samples.

The definition of "surface" soil varies considerably between regulatory organizations. Surface soils may be classified as soils between the ground surface and 2 inches below ground surface, ground surface and 6 inches below ground surface, and even as much as ground surface and 24 inches below ground surface.

The definition of subsurface soil will vary in relation to the definition of surface soil. In general, subsurface soil is everything deeper than surface soil.

Refer to state-specific regulations for the definitions of surface and subsurface soils.

## 2. Execution

### 2.1. Surface Soil Sampling

Collection of surface soil samples can be accomplished with tools such as spades, shovels, trowels, scoops, etc. A flat, pointed mason trowel to cut a block of the desired soil is helpful when undisturbed profiles are required.

- Carefully remove the top layer of soil or debris to the desired sample depth with a pre-cleaned spade.
- Using a decontaminated stainless steel scoop, plastic spoon, or trowel, remove and discard a thin layer of soil from the area which came in contact with the spade.
- If volatile organic compound (VOC) analysis is to be performed, transfer the sample directly into an appropriate labeled sample container with a stainless steel lab spoon, small diameter core device, or equivalent and secure the cap tightly.
- Place the remainder of the sample into a decontaminated stainless steel, plastic, or other appropriate container, and mix thoroughly to obtain a homogenous sample representative of the entire sampling interval.
- Either place the sample into appropriate labeled containers and secure the caps tightly; or, if composite samples are to be collected, place a sample from another sampling interval or location into the container and mix thoroughly.
- When compositing is complete, place the sample into appropriate labeled containers and secure the caps tightly.

## 2.2. Sampling with Hand Augers and Thin Wall Tube Samplers

Several types of augers are available; these include: bucket type, continuous flight (screw), and post-hole augers. Bucket type augers are generally better for direct sample recovery because they provide a large volume of sample in a short time. When continuous flight augers are used, the sample can be collected directly from the flights. The continuous flight augers are satisfactory when a composite of the complete soil column is desired. Post-hole augers have limited utility for sample collection as they are designed to cut through fibrous, rooted, swampy soil and generally cannot be used below a depth of approximately three feet.

### *2.2.1 Auger Sampling*

- Clear the area to be sampled of any surface debris (e.g., twigs, rocks, litter). It may be advisable to remove the first three to six inches of surface soil for an area approximately six inches in radius around the drilling location.
- Attach the decontaminated auger bit to a drill rod extension, and attach the "T" handle to the drill rod.
- Begin augering, periodically removing and depositing accumulated soils onto a plastic sheet spread near the hole. This prevents accidental brushing of loose material back down the borehole when removing the auger or adding drill rods. It also facilitates refilling the hole, and avoids possible contamination of the surrounding area.
- After reaching the desired depth, carefully remove the auger from the hole. When sampling directly from the auger, collect the sample after the auger is removed from the hole.

### *2.2.2 Thin-Walled Core Sampling*

- Remove auger tip from the extension rods and replace with a pre-cleaned thin wall tube sampler. Install the proper cutting tip.
- Carefully lower the tube sampler down the borehole. Gradually force the tube sampler into the soil. Do not scrape the borehole sides. Avoid hammering the rods as the vibrations may cause the boring walls to collapse.
- Remove the tube sampler, and unscrew the drill rods.
- Remove the cutting tip and the core from the device.
- Discard the top of the core (approximately 1 inch), as this may represent material knocked down from the sides of the boring and not the layer of interest. Place the remaining core into the appropriate labeled sample container.

One type of thin-wall sampler is depicted in Attachment A (this is typically used with a mechanical drill rig).

For either method, If VOC analysis is to be performed, transfer the sample into an appropriate, labeled sample container with a stainless steel lab spoon, small diameter core sampler, or equivalent and secure the cap tightly. VOC samples should be collected first to minimize the potential for losing volatiles prior to sample collection.

Place the remainder of the sample into a stainless steel, plastic, or other appropriate container and mix thoroughly to obtain a homogenous sample representative of the entire sampling interval. Then, either place the sample into appropriate, labeled containers and secure the caps tightly; or, if composite samples are to be collected, place a sample from another sampling interval into the container and mix thoroughly.

When compositing is complete, place the sample into appropriate, labeled containers and secure the caps tightly.

If another sample is to be collected in the same hole, but at a greater depth, reattach the auger bit to the drill and assembly, and follow previous steps, making sure to decontaminate the auger and tube sampler between samples.

Abandon the hole according to applicable state regulations. Generally, shallow holes can simply be backfilled with the removed soil material.

### 2.3. Sampling at Depth with a Split-Spoon (Barrel) Sampler

Split-spoon sampling is generally used with a mechanical drill rig to collect undisturbed soil cores of 18 or 24 inches in length. A series of consecutive cores may be extracted with a split-spoon sampler to give a complete soil column profile, or an auger may be used to drill down to the desired depth for sampling. The split-spoon is then driven to its sampling depth through the bottom of the augured hole and the core extracted. A diagram of the split-spoon sampler assembly is provided as Attachment A.

When split-spoon soil sampling is performed to gain geologic information, work should be performed in accordance with ASTM D1586-08a, "Standard Test Method for Standard Penetration Test (SPT) and Split-Barrel Sampling of Soils". The following procedures are used for collecting soil samples with a split-spoon:

- Select the size (length and diameter) of split-spoon sampler based on the amount of soil that is needed for characterization. The ASTM standard for N-values is 1 3/8 - inch I.D (2-inch O.D.). Specify spoon size and basket type to driller prior to mobilization to the site. Split spoon samplers are typically available in 1 3/8 – and 3 – inch I.D. sizes. A larger barrel may be necessary to obtain the required sample volume. Note on the boring log where larger split spoon barrels are used because the ASTM standard penetration test does not apply when driving split spoons larger than 1 3/8 I.D. (2-inch O.D.).

- Select a soft or stiff basket for the spoon (a softer basket generally works better for loose or soft material).
- Prior to hammering the split spoon to collect the sample, verify that the split-spoon is seated at the beginning of the desired sample interval. If it is seated above the interval, have driller clean out the hole prior to sampling. Record all depth measurements relative to ground surface.
- Assemble the sampler by aligning both sides of barrel and then screwing the drive shoe on the bottom and the head piece on top. See diagram in Attachment A.
- Place the sampler in a perpendicular position on the sample material.
- For all soil samples, use a 140-lb hammer falling 30 inches to drive the sampler, unless conditions necessitate using a 300-lb hammer.
- Record in the site fieldbook or on field data sheets the length of the tube used to penetrate the material being sampled, the split-spoon inside and outside diameters, and the hammer weight,
- Count and record the number of blow counts per 6-inch increments (confirming blow counts with driller if necessary).
- Withdraw the sampler, and open by unscrewing the bit and head and splitting the barrel. The length of recovery and soil type should be recorded on the boring log. If a soil sample is desired, a decontaminated stainless steel knife or spatula should be used to divide the tube contents in half, longitudinally. If possible, avoid collecting soil that has come in contact with the walls of the spoon, and soil at the top of the spoon.
- Without disturbing the core, transfer it to appropriate labeled sample container(s) and seal tightly.
- Note any material in the nose (shoe) of the spoon.
- Immediately collect a sample for VOCs (if required by the site-specific field sampling plan) by collecting soil from the entire length of the split spoon, unless otherwise specified by the project manager. When the most impacted interval is sampled for laboratory analysis, screen the spoon with the field instrument first, then collect the soil sample for VOC analysis from the appropriate interval.

## 3. Limitations

- Weather conditions (e.g., frozen ground) may prevent the collection of samples and should be considered prior to sample collection.
- Tools plated with chrome or other materials should not be used.
- Be aware of local laws regarding subsurface utility clearance prior to conducting subsurface investigations. Contact DigSafe or local utility companies as required.
- Be aware of the length of the drill string, the sample depth, and the required stickup of the drill string to ensure accurate sample interval measurement.
- If drilling with hollow-stem augers, the removal of the drill string from the hole, prior to attaching the split-spoon sampler, may cause soils to be sucked up

into the augers (blow-in running sands). Upon recovery, determine if there is blow-in in the split spoon sampler. In general, blow-in is more unconsolidated than the rest of the sample and lacks stratification (do not include blow-in for recovery of sample collection).

- If soils consist of loose sands or soft clay, the drill string and sampler may advance slightly under its own weight, giving a false depth for soil collection.
- Never sample more than two spoons consecutively without advancing the augers unless material is tight. Do not let the split spoon penetrate more than it can hold.
- In many instances, groundwater will fill the auger and the split-spoon.

## 4. References

*ASTM D1586-08a, "Standard Test Method for Standard Penetration Test (SPT) and Split-Barrel Sampling of Soils". 2008.*

*United States Environmental Protection Agency, SOP 2012 "Soil Sampling", Revision 0.0, February 18, 2000.*

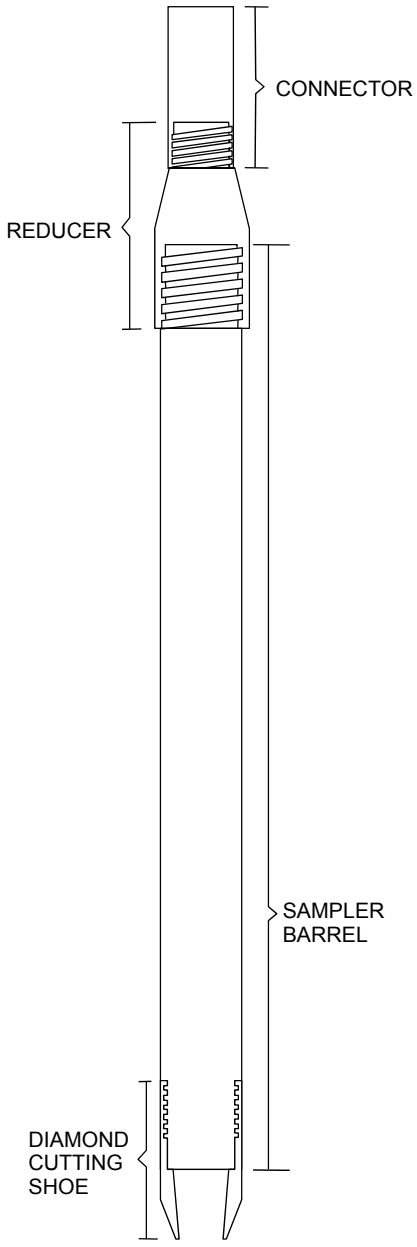
## 5. Attachments

Attachment A - Sampler Design Assembly

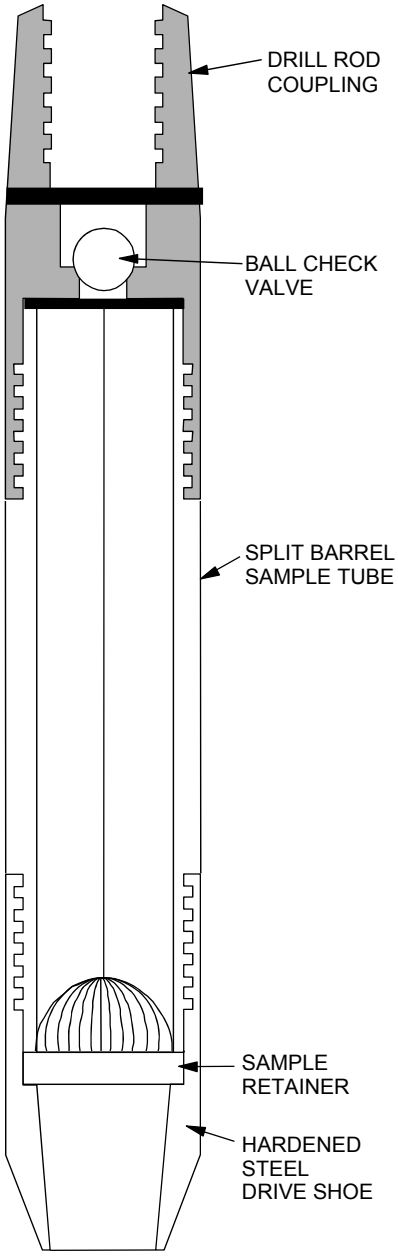
## 6. Contacts

Gary Fuerstenberg
Mark Ensign

## THIN WALL HQ CORE SAMPLER
## (2" width x 60" length)




## SPLIT-SPOON SAMPLER
## (2" width x 24" length)




| | | |
|---|---|---|
| STANDARD OPERATING PROCEDURES<br>SM-001 | GEI Consultants | **THIN WALL AND SPLIT-SPOON SAMPLERS** |
| NEW ENGLAND AND ATLANTIC REGIONS | June 2011 | Attachment A |

I:\STANDARD\DETAILS\SUBSURFACE\SAMPLERS\SPLIT-SPOON.ppt

# STANDARD OPERATING PROCEDURE

SM-002 VOC Soil Sample Collection and Preservation Method

## 1. Objective

Describe methods to collect and preserve soil samples for analysis of Volatile Organic Compounds (VOCs) in accordance with the U.S. Environmental Protection Agency (EPA) Method 5035.

Some states have adopted soil sampling and preservation methods that vary from the procedures presented herein. Confirm that this method is appropriate for your project.

## 2. Execution

VOCs evaporate readily at normal temperatures and pressures. Care should be taken during sampling and preservation to limit the potential for VOCs to off-gas from the soil sample prior to being analyzed by the laboratory.

Soil samples should be obtained utilizing a small diameter core sampler such as a 10 milliliter (ml) plastic disposable syringe, an EnCore® sampler, an EasyDraw Syringe®. The EnCore® sampler is the only EPA-approved small diameter core sampler that can be used to collect the sample, store the sample, and transport the sample to the lab.

A separate soil sample must be collected and submitted to the laboratory for percent solids testing. At least approximately 20 grams of soil must be collected in a separate glass or plastic sampling container.

### 2.1. Collection and Preservation of Soil Samples

Three types of soil samples may be collected for VOCs analysis:

- High (typically >200 µg/kg) VOC concentration soil sample (Section 2.2 below)
- Low (typically 0.05-200 µg/kg) VOC concentration soil sample (Section 2.3 below)
- Synthetic Precipitation Leaching Procedure/Toxicity Characteristic Leaching Procedure (SPLP/TCLP) soil sample (Section 2.4 below)

## 2.2. Collection and Preservation of a Soil Sample with "High" Concentrations of VOCs (typically >200 µg/kg)

### *2.2.1. Option 1 – Methanol Preservation Method*

Supplies include: an electronic field balance (in some cases), two VOC vials (per sample) with 10 ml methanol (the number of vials and amount of methanol might vary among labs), and a small diameter core sampler to collect an approximately 10 gram soil sample. Some labs, and EPA method 5035, specify a 5 gram soil sample. Check with the lab or project manager for the amount to collect.

Sampling Procedure:

- Weigh the VOC vials containing the methanol and record the weight. Some laboratories provide pre-weighed VOC vials.
- If you are weighing your samples, take a test sample with the sampler and weigh it to evaluate how close you are to the appropriate sample weight. If the laboratory VOC vial is pre-marked with a line, then you do not need to weigh the soil, just fill the VOC vial with soil until the methanol and soil mixture reaches the line.
- Collect the sample using the sampling device and extrude the sample into the preserved VOC vial. Be sure that the VOC vial and cap threads are free of soil, and then screw the cap tightly onto the VOC vial. Gently swirl the methanol in the VOC vial to coat the soil sample. Do not vigorously shake the vial.
- If necessary, weigh the VOC vial and record the weight. Some laboratories will weigh the vials at the lab, and it is not required in the field.
- Collect separate soil samples from the same area for percent solids and head space sampling.
- Samples must be frozen or analyzed within 14 days.

### *2.2.2. Option 2 – EnCore® Sampling Method*

Supplies needed: One 5 or 10 ml EnCore® sampler.

Sampling Procedure:

- Label the EnCore® sampling container.
- Collect the soil sample quickly, wipe the sampler free of soil, and seal the sampler.
- Place sampler in a clean ziplock bag and place on ice in a cooler.
- Collect separate samples in separate containers for percent solids and head space sampling.
- Samples must be frozen, or preserved, or analyzed within 48 hours (requires coordination with the laboratory).

## 2.3. Collection and Preservation of a Soil Sample with "Low" Concentrations of VOCs (typically 0.5 to 200 µg/kg)

### *2.3.1. Option 1 – Water Preservation Method*

Supplies required: an electronic field balance, two 40 ml VOC vials pre-weighed and containing 5 ml of water, a magnetic stirrer, and a sampling device.

Sampling Procedure:

- Use a small diameter core sampler to collect two soil samples (5 grams each) into pre-weighed 40 ml VOC vials with 5 ml of water and a magnetic stirrer. Wipe threads and cap and seal the VOC vial. Repeat for the second VOC vial.
- Weigh the VOC vials and record the weights.
- Collect separate samples in separate containers for percent solids and head space sampling.
- Samples must be frozen or analyzed within 14 days.

### *2.3.2. Option 2 – Collection into Unpreserved VOC Vials*

Supplies required: electronic field balance, two 40 ml VOC vials pre-weighed, and a sampling device.

Sampling Procedure:

- Collect the sample using the sampling device and extrude the sample into the VOC vial. Be sure that the threads are free of soil, and cap and seal the VOC vial. Repeat for the second vial.
- Weigh the VOC vials and record the weights.
- Collect separate samples in separate containers for percent solids and head space sampling.
- Samples must be frozen or analyzed within 48 hours (requires coordination with the laboratory).

### *2.3.3. Option 3 – Collection in VOC Vials Preserved with Sodium Bisulfate*

Supplies required: electronic field balance, two VOC vials pre-weighed with 5 ml of sodium bisulfate, a magnetic stir bar, and a sampling device.

Sampling Procedure:

- Collect the sample using the sampling device and extrude a 5 gram sample into the VOC vial containing the sodium bisulfate. Wipe threads and cap and seal the VOC vial. Repeat for the second VOC vial.
- Weigh the VOC vials and record the weights.

- Collect separate samples in separate containers for percent solids and head space sampling.
- Samples must be frozen or analyzed within 14 days.

#### *2.3.4. Option 4 –EnCore® Sampling Method*

Supplies required: two 5 gram EnCore® samplers.

Sampling Procedure:

- Label the EnCore® sampling container.
- Collect the soil sample quickly, wipe the sampler free of soil, and seal the sampler.
- Place sampler in a clean ziplock bag and place on ice in a cooler.
- Collect separate samples in separate containers for percent solids and head space sampling.
- Repeat previous steps with the second EnCore® device.
  Samples must be frozen, or preserved, or analyzed within 48 hours (requires coordination with the laboratory).

### 2.4. Collection of samples being analyzed for VOCs by the TCLP or SPLP method

Sampling methods for TCLP or SPLP are similar to the methods presented above. The appropriate method is determined by local regulations. If using an EnCore® sampler, a 25 gram sampler should be used.

## 3. General Guidance

- Each state and federal regulatory agency has unique soil preservation requirements. Always verify collection and preservation methods with governing bodies.
- Verify preservation techniques with laboratory prior to sample collection.

## 4. Contacts

Lynn Willey
Mark Ensign

# STANDARD OPERATING PROCEDURE

SM-003 Classification of Soil Samples in the Field

## 1. Objective

Describe methods to classify soil samples collected in the field in a consistent manner.

## 2. Execution

- Describe soil samples according to *ASTM D2488-09a, Standard Practice for Description and Identification of Soils (Visual-Manual Procedure) and* Attachments A and B*.* This standard is the basis for the Unified oil Classification System.
- Identify and record the soil in terms of the major and minor constituents (i.e., sand gravel, silt, clay), Unified Soil Classification Symbol, sample structure, plasticity and dilatancy for fine-grained soils, color, local or geologic name if known (e.g., Boston Blue Clay or glacial till), odor, presence of iron or other staining, and presence of organic matter, shells, debris, or other unusual characteristics of the same.
- If a soil split-spoon sample contains more than one soil type (for example, the upper portion is silty sand and the lower portion is clay) describe each type separately.
- Record sampler type, blow counts, soil description, etc. on the boring log (see Attachment C).
- GEI consistently applies one modification to the ASTM standard: Use "widely graded" and "narrowly graded" instead of "well-graded" and "poorly graded," respectively.

## 3. Limitations

Certain projects or clients will require the use of other classification systems. Other classification systems should not be used unless specifically required by the client. If the client requires that we use the Burmister method, obtain the details from the client. An example breakdown is shown below, but some clients (MassDOT, for example) have their own breakdown.

- “and” = 35-50%
- “some” = 20-35%
- “little” = 10-20%
- “trace” = 1-10%

- Describing soil samples is often difficult during cold or wet weather. Make sure your field notes describe these conditions. When possible, collect archive samples and verify sample descriptions in the office.

- The ASTM Standard Practice for Classification of Soils for Engineering Purposes (D2487) may be used in conjunction with the Visual-Manual Method to confirm the soil classification. D2487 includes laboratory testing.

## 4. References

ASTM D2487-06e1, Standard Practice for Classification of Soils for Engineering Purposes (Unified Soil Classification System), ASTM, 2006.

ASTM D2488-09a, Standard Practice for Description and Identification of Soils (Visual-Manual Procedure), ASTM, 2009.

Field Guide for Soil and Stratigraphic Analysis, Midwest Geosciences Group Press, 2001-2005.

Coarse-Grained Soils Visual-Manual Descriptions, GEI Consultants, Soil Description Chart.

Fine-Grained Soils Visual-Manual Descriptions, GEI Consultants, Soil Description Chart.

## 5. Attachments

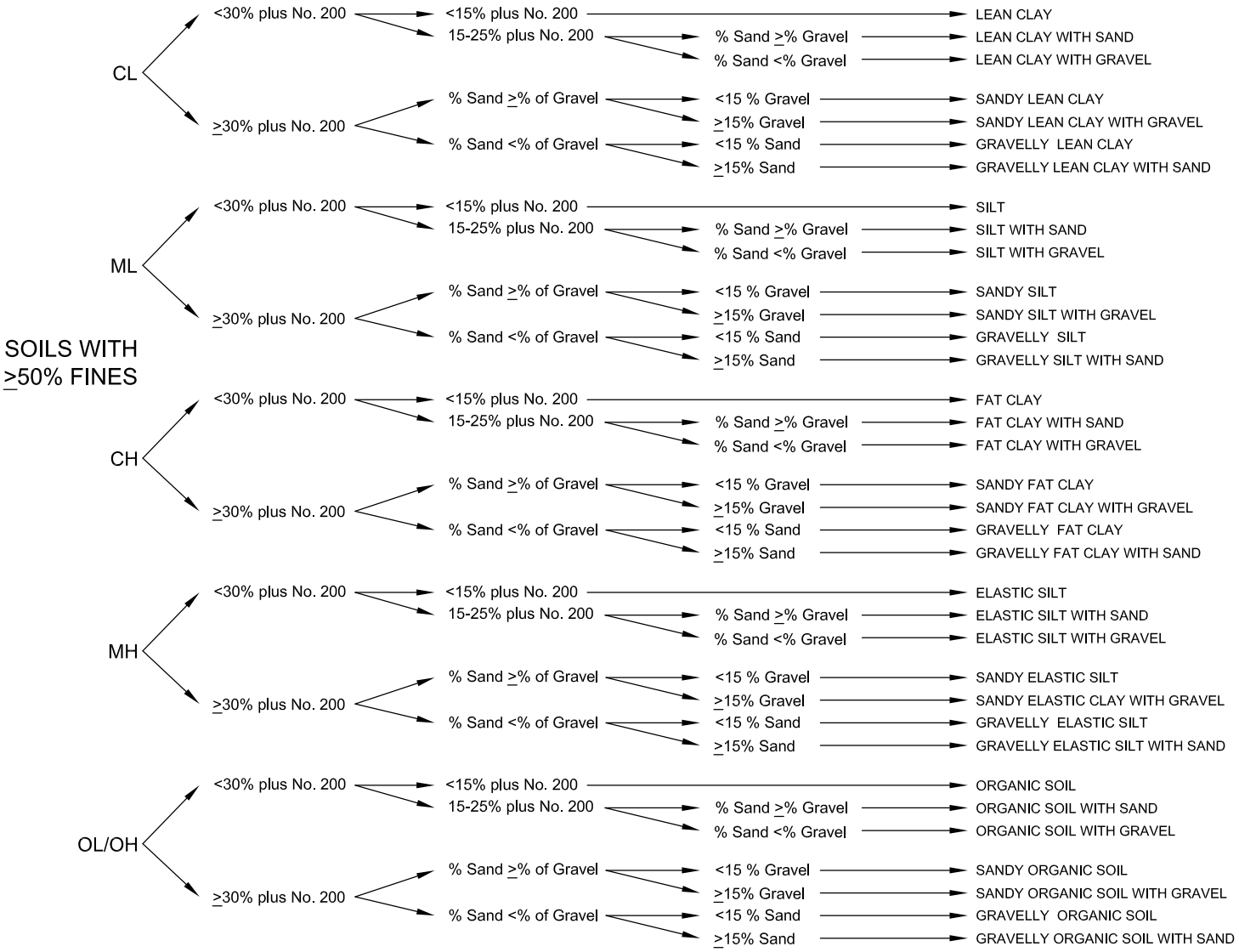
Attachment A – GEI Soil Description Charts (2007)
Attachment B – Visual Manual Descriptions with example boring log
Attachment C – Describing the Plasticity of Soil Samples

## 6. Contacts

Lynn Willey
Cathy Johnson

GEI Consultants

# FINE-GRAINED SOILS
## VISUAL-MANUAL DESCRIPTIONS




### ID OF INORGANIC FINE SOILS FROM MANUAL TESTS

| Symbol | Name | Dry Strength | Dilatancy | Toughness* |
|---|---|---|---|---|
| ML | Silt | None to low | Slow to rapid | Low or thread cannot be formed |
| CL | Lean Clay | Medium to high | None to slow | Medium |
| MH | Elastic Silt | Low to medium | None to slow | Low to medium |
| CH | Fat Clay | High to very high | None | High |

1. GROUP NAME and (SYMBOL)
2. Describe fines, sand, and gravel components, in order of predominance. Include plasticity of fines. Include percentages of sand and gravel.
3. Color
4. Sheen, odor, roots, ash, brick, cementation, torvane and penetrometer results, etc.
5. "Fill," local name or geologic name, if known

### PEAT

Peat refers to a sample composed primarily of vegetable matter in varying stages of decomposition. The description should begin: PEAT (PT) and need not include percentages of sand, gravel or fines.

### CRITERIA FOR DESCRIBING PLASTICITY

| Description | Criteria |
|---|---|
| Nonplastic ML | A 1/8-in. (3 -mm) thread cannot be rolled at any water content |
| Low Plasticity ML, MH | The thread can barely be rolled and the lump cannot be formed when drier than the plastic limit * |
| Medium Plasticity MH, CL | The thread is easy to roll and not much time is required to reach the plastic limit. The thread cannot be rerolled after reaching the plastic limit. The lump crumbles when drier than the plastic limit |
| High Plasticity CH | It takes considerable time rolling and kneading to reach the plastic limit. The thread can be rerolled several times after reaching the plastic limit. The lump can be formed without crumbling when drier than the plastic limit |

* Toughness refers to the strength of the thread near plastic limit. The lump refers to a lump of soil drier than the plastic, similar to dry strength.

# COARSE-GRAINED SOILS

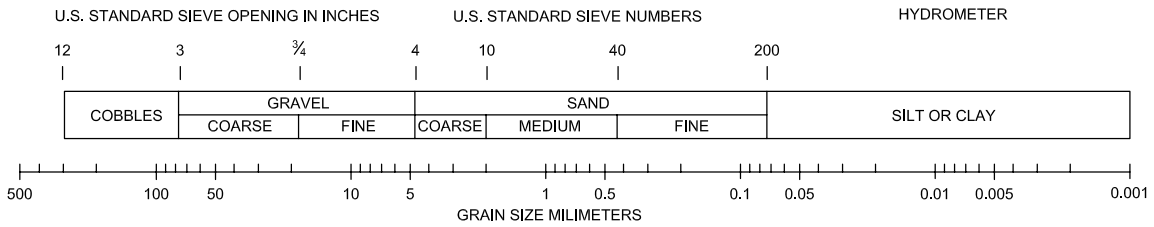
VISUAL-MANUAL DESCRIPTIONS

GEI Consultants

TYPICAL SOIL COLORS

- YELLOW
- OLIVE
- LIGHT BROWN
- BROWN
- REDDISH BROWN
- RED
- GRAY
- BLACK

| | | | | GROUP SYMBOL | GROUP NAME |
|---|---|---|---|---|---|
| GRAVEL (% Gravel > % Sand) | ≤5% Fines | WIDELY GRADED | | GW | <15% Sand → WIDELY GRADED GRAVEL |
| | | | | | ≥15% Sand → WIDELY GRADED GRAVEL WITH SAND |
| | | NARROWLY GRADED | | GP | <15% Sand → NARROWLY GRADED GRAVEL |
| | | | | | ≥15% Sand → NARROWLY GRADED GRAVEL WITH SAND |
| | ~10% Fines | WIDELY GRADED | Fines = ML or MH | GW-GM | <15% Sand → WIDELY GRADED GRAVEL WITH SILT |
| | | | | | ≥15% Sand → WIDELY GRADED GRAVEL WITH SILT AND SAND |
| | | | Fines = CL or CH | GW-GC | <15% Sand → WIDELY GRADED GRAVEL WITH CLAY |
| | | | | | ≥15% Sand → WIDELY GRADED GRAVEL WITH CLAY AND SAND |
| | | NARROWLY GRADED | Fines = ML or MH | GP-GM | <15% Sand → NARROWLY GRADED GRAVEL WITH SILT |
| | | | | | ≥15% Sand → NARROWLY GRADED GRAVEL WITH SILT AND SAND |
| | | | Fines = CL or CH | GP-GC | <15% Sand → NARROWLY GRADED GRAVEL WITH CLAY |
| | | | | | ≥15% Sand → NARROWLY GRADED GRAVEL WITH CLAY AND SAND |
| | ≥15% Fines | | Fines = ML or MH | GM | <15% Sand → SILTY GRAVEL |
| | | | | | ≥15% Sand → SILTY GRAVEL WITH SAND |
| | | | Fines = CL or CH | GC | <15% Sand → CLAYEY GRAVEL |
| | | | | | ≥15% Sand → CLAYEY GRAVEL WITH SAND |
| SOILS WITH <50% FINES | | | | | |
| SAND (% Sand ≥ % Gravel) | ≤5% Fines | WIDELY GRADED | | SW | <15% Gravel → WIDELY GRADED SAND |
| | | | | | ≥15% Gravel → WIDELY GRADED SAND WITH GRAVEL |
| | | NARROWLY GRADED | | SP | <15% Gravel → NARROWLY GRADED SAND |
| | | | | | ≥15% Gravel → NARROWLY GRADED SAND WITH GRAVEL |
| | ~10% Fines | WIDELY GRADED | Fines = ML or MH | SW-SM | <15% Gravel → WIDELY GRADED SAND WITH SILT |
| | | | | | ≥15% Gravel → WIDELY GRADED SAND WITH SILT AND GRAVEL |
| | | | Fines = CL or CH | SW-SC | <15% Gravel → WIDELY GRADED SAND WITH CLAY |
| | | | | | ≥15% Gravel → WIDELY GRADED SAND WITH CLAY AND GRAVEL |
| | | NARROWLY GRADED | Fines = ML or MH | SP-SM | <15% Gravel → NARROWLY GRADED SAND WITH SILT |
| | | | | | ≥15% Gravel → NARROWLY GRADED SAND WITH SILT AND GRAVEL |
| | | | Fines = CL or CH | SP-SC | <15% Gravel → NARROWLY GRADED SAND WITH CLAY |
| | | | | | ≥15% Gravel → NARROWLY GRADED SAND WITH CLAY AND GRAVEL |
| | ≥15% Fines | | Fines = ML or MH | SM | <15% Gravel → SILTY SAND |
| | | | | | ≥15% Gravel → SILTY SAND WITH GRAVEL |
| | | | Fines = CL or CH | SC | <15% Gravel → CLAYEY SAND |
| | | | | | ≥15% Gravel → CLAYEY SAND WITH GRAVEL |







1. GROUP NAME and (SYMBOL)
2. Structure , if any. (stratified layer thicknesses, lenses, varves, gradational changes)
3. Describe sand, gravel and fines components, with percentages, in order of predominance. Include max gravel size. For test pits give percent cobbles and boulders, by volume, and include max size.
4. Color
5. Sheen, odor, roots, ash, brick, cementation, reaction with HCL, etc.
6. "Fill," local name or geologic name, if known

**Describing the Plasticity of Soil Samples**

M. Paster – November 2008

**References** ASTM D 2487 – Soil descriptions – lab
ASTM D 2488 – Soil descriptions – field
ASTM D 4318 – Atterberg limits testing

**GEI Practice for Boring and Test Pit Logs**

Describe the fines as:

Non-plastic
Low plasticity (The GEI laminated sheets incorrectly use "slightly plastic" for "low plasticity.")
Medium plasticity
High plasticity

Example: ~25% low plasticity fines

Toughness and dry strength:

You should use these tests to help decide how plastic the fines are. Record the results in the remarks column of the field log, but not in the soil description and not necessarily in the typed log.

On final logs, if Atterberg limits tests have been performed:

Do not use the descriptive terms non-plastic, low plasticity, etc. for samples on which Atterberg limits tests have been run. Instead, just give the percentage of fines and then report the actual Atterberg limits at the end of the description.

For example, the end of a silty sand description might be:
. . . ~25% fines, ~10% gravel max size ½ inch, gray. PL=23, LL=35.

(Atterberg limits tests are performed on the fraction of the sample finer than the No. 40 sieve, not just the fines. So the Atterberg limits data applies to the sample, not just to the fines.)

Hints:

High plasticity soils are rare in New England. If you think it's high plasticity, it's probably medium. Some Boston blue clay and some Connecticut River varved clays are high plasticity, but if you think you've found some, check with the project manager.

In New England, if ~10% fines or more, generally stick with GM, SM, ML, and CL. Occasionally GC, SC, CH. Don't use MH unless you have Atterberg limits data.

**Estimating plasticity in the field, GEI guidance based on ASTM D 2488:**

| Plasticity | 1/8-inch thread | Dry strength | Toughness |
|---|---|---|---|
| non | Cannot be rolled at any water content. | Dry specimen crumbles when handled. | Only slight pressure needed to roll thread near plastic limit. |
| low | Thread can barely be rolled. | Dry specimen crumbles with some finger pressure. | Slight to medium pressure needed to roll thread near plastic limit. |
| medium | Thread is easy to roll. Not much time needed to reach plastic limit. | Dry specimen crumbles with considerable finger pressure. | Medium pressure needed to roll thread near plastic limit. |
| high | Takes considerable time rolling and kneading to reach plastic limit. | Dry specimen cannot be broken with finger pressure. | Considerable pressure needed to roll thread near plastic limit. |

**Non-plastic vs. low plasticity:**

ASTM D 2488 (soil descriptions - field) defines non-plastic and low plasticity based on the 1/8-inch thread as shown in the table above.

ASTM D 4318 (Atterberg limits testing) indicates that a sample should be called non-plastic for either of the following cases:

- The liquid limit test (dropping the cup) or the plastic limit test (rolling out the thread) cannot be performed because the plasticity is too low.
- The plastic limit is greater than or equal to the liquid limit.

Unfortunately, there are some soils that are low plasticity based on D 2488 (a thread can be rolled), but are non-plastic based on D 4318 (the liquid limit cannot be measured or PL≥LL).

GEI considers these soils to have low plasticity, because that is how they "look" and "feel." We want to document this information so that other people will have a better feel for what the soil looks like and how it behaves. So, if the soil was low plasticity based on D 2488, but non-plastic based on D 4318, that should be explained in the letter or report, and possibly in a note on the log.

BORING LOCATION Maple Ave Sidewalk
GROUND ELEVATION (NGVD) _____
GROUNDWATER EL. _____ DATE _____
DATE START/FINISH 2/14/07 - 2/15/07
DRILLED BY Geologic: M. Costigan
LOGGED BY T. Kahl/M. Yako TOTAL DEPTH (FT) 25

**B101**

PG. 1 OF 1

| EL. FT. | DEPTH FT. | SAMPLE TYPE and NO. | SAMPLE BLOWS PER 6 IN. | SAMPLE PEN IN. | SAMPLE REC IN. | PID JAR HS / REMARKS | GRAPHIC LOG | SOIL AND ROCK DESCRIPTIONS |
|---|---|---|---|---|---|---|---|---|
| | 0 | | | | | | FILL | 4" pavement |
| | 2.5 | S1 | 13-9<br>17-14 | 24 | 0 | 0.5 ppm | | S1: Redrove 0.5 to 3.5 ft. Recovery 11": WIDELY GRADED SAND (SW) ~85% sand, ~10% gravel to 1", <5% nonplastic fines, brown. Contains brick fragments and ash. Fill. |
| | 5 | | | | | hard drilling 3 to 4 ft, possible boulder | | S2: NARROWLY GRADED SAND WITH SILT AND GRAVEL (SP-SM) ~65% mostly fine sand, ~25% gravel to 3/4 inch ~10% non-plastic fines, brown. Fill. |
| | | S2 | 7-7<br>11-13 | 24 | 8 | 2.0 ppm | | |
| | 7.5 | S3 | 9-10<br>2-1 | 24 | 16 | 0.0 ppm | ORGANICS | S3 (0-10"): Similar to S2. |
| | 10 | | | | | | | S3 (10"-16"): ORGANIC SILT (OL) ~100% slightly plastic fines, dark gray, organic odor, contains white shell fragments. |
| | 12.5 | S4 | WOH<br>1-2<br>1 | 24 | 15 | 0.0 ppm | | S4: Similar to S3, bot 6". |
| | 15 | | | | | hard drilling at 15.5 ft | | |
| | 17.5 | S5 | 20-35<br>50/3" | 15 | 8 | Top of rock ~19 ft. Roller bit to 20 ft. | TILL | S5: SILTY SAND WITH GRAVEL (SM) ~60% mostly fine sand, ~25% slightly plastic fines, ~15% gravel to 1/2 inch, olive. Glacial Till. |
| | 20 | | | | | | ROCK | C1: SCHIST, hard, slight weathering at joint surfaces, joints at ~30 degrees from horizontal and generally parallel to foliation, gray. Marlborough Formation. |
| | 22.5 | C1 | RQD<br>70% | 60 | 54 | lost ~10 gallons drill fluid from 23 to 25 ft | | |
| | 25 | | | | | | | Bottom of Boring 25 ft |
| | 27.5 | | | | | | | Truck-mounted drill rig. 4-inch casing to 19 ft. Safety-hammer with rope and cathead for SPT. Backfilled with drill cuttings. |
| | 30 | | | | | | | |

BLOWS PER 6 IN.–140 LB. HAMMER FALLING 30 IN. TO DRIVE A 2.0 IN. OD SPLIT SPOON SAMPLER
PEN–PENETRATION LENGTH OF SAMPLER OR CORE BARREL
REC–RECOVERY LENGTH OF SAMPLE
RQD–LENGTH OF SOUND CORES > 4 IN./ LENGTH CORED, %
S–SPLIT SPOON SAMPLE
U–UNDISTURBED SAMPLES, UF–FIXED PISTON UO–OSTERBERG
▽ GROUNDWATER

NOTES:
1: Groundwater at 10 ft depth at start of day 2/15/07.

PROJECT 07999-0
DATE

GEI Consultants

## EXAMPLE SOIL DESCRIPTIONS

SANDY SILT (ML) ~60% slightly plastic fines, ~40% mostly fine sand, 1" thick layer of fine to medium sand with <20% fines, gray.

LEAN CLAY (CL) ~90% moderately plastic fines, ~10% fine sand, olive. Boston Blue Clay. Sv = 0.5, 0.5, 0.8 tsf, Qp = 1.0, 1.5, 1.6 tsf

Stratified CLAYEY SAND (SC) and WIDELY GRADED SAND (SW) SC layers 1 to 2 inches thick consist of fine sand with ~30% moderately plastic fines, gray. SW layers 1 to 4 inches thick consist of fine to coarse sand, ~10% gravel to 1/2 inch, <5% fines, brown. Hydraulic Fill.

## EXAMPLE ROCK DESCRIPTIONS

(0-9"): GRANITE, hard, one piece, joint surface slightly weathered, pink.
(6-60"): PHYLLITE, joints ~ 45° generally parallel to foliation, 9" to 44" moderate to severe jointing and joint weathering. 44" to 60" single piece, green-gray.

ARGILLITE, medium hard, moderately weathered joints, gray. Cambridge Argillite.

## GEOPROBE AND ROTOSONIC

When SPTs are not performed, note sample density (sands) or stiffness (clays) in description.

## CRITERIA FOR DESCRIBING DILATANCY OF FINE-GRAINED SOILS

| Description | Criteria |
|---|---|
| None | No visible change in the specimen |
| Slow | Water appears slowly on the surface of the specimen during shaking and does not disappear or disappears slowly upon squeezing. |
| Rapid | Water appears quickly on the surface of the specimen during shaking and disappears quickly upon squeezing. |

## SPT: Standard Penetration Test

30-inch drop with 140-lb hammer
1 3/4 to 2 1/4 turns around cathead
2-inch O.D. split spoon sampler

## ENV'L TERMINOLOGY FOR SOIL DESCRIPTIONS

- **Ash -** Typically silt-size to medium sand-size.
- Do not use the term "cinders." This is not a technical term. Instead, use "ash," "burnt wood," "burnt material," or a similar term.
- **Coal-like material -** If it looks like coal but you aren't sure.
- **Clinker -** Vitrified (glass-like) or heat-fused material. Often burned impurities in coal. Often looks like pumice, but heavier.
- **Slag -** Similar to clinker, but normally refers to residue from metal ore processing.

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- **Sheen -** Iridescent petroleum-like sheen. Not to be used for a "bacterial sheen," which can be distinguished by its tendency to break up on the water surface at angles. Petroleum sheen will be continuous and will not break up.
- **Stained -** Use with a color ("brown-stained") to indicate that the soil is stained a color other than its natural (unimpacted) color.
- **Coated -** Soil grains are coated with NAPL (oil, tar, etc.). There is not enough NAPL to saturate the pore spaces. ("Split spoon sampler coated with brown oil." "Soil grains coated with gray substance with slight gasoline-like odor.")
- **Saturated -** The entire sample pore space is saturated with NAPL. If you use this term, be sure it is not water saturating the pore spaces. Depending on viscosity, the NAPL may drain from a soil sample. ("Sample saturated with green, sticky substance.")
- **Blebs -** Discrete sphericals of NAPL in a soil matrix that was not visibly coated or saturated. ("Occasional blebs of reddish-brown tar.")
- **Oil -** Exhibits a petroleum odor, different from MGP odors.
- **Tar -** Exhibits an MGP odor (e.g. naphthalene-like odor).

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- **Odors -** Use terms such as "naphthalene-like odor" or "petroleum-like odor." Use modifiers (strong, moderate, slight) to indicate odor intensity.

# STANDARD OPERATING PROCEDURE

SM-004 Test Pit Excavation

## 1. Objective

Describe methods for excavating test pits and documenting findings.

The test pit is used to characterize geologic strata, subsurface conditions and provide access for collection of representative soil samples from these strata.

## 2. Execution

- Before digging begins, proper permits and notifications must be obtained, in accordance with applicable rules or regulations.
- Make sure that utility clearance has been conducted. Contact the property owner to determine the location of underground utilities. Verify, with the contractor that local/regional utility clearance service has been contacted. Ask subcontractor to provide local/regional utility clearance service authorization number and record this in the field notebook. Show the contractor the approximate excavation area, and have the contractor confirm that the area is suitable for excavation. Clearance may require marking of subsurface explorations prior to contacting utility clearance service.
- Have contractors pressure wash or steam clean equipment before beginning field activities, if necessary.
- Observe the contractor excavating the designated area.
- If contamination is suspected, have the contractor place excavated material on plastic sheeting.
- During excavation, monitor ambient air for contaminants of concern identified in the site-specific Health and Safety Plan. Record readings in field notebook (see SOP FD-001 Field Notebook).
- Record in a field book or test pit log:
    - Test pit dimensions,
    - Soil classifications (see SOP SM-003 Soil Classification)
    - Visual and olfactory indications of contamination
    - Subsurface structures
    - Obstructions to excavation
    - Any other observations relevant to the project objectives
    - Take photographs of excavation and completed test pit walls, etc. (SOP FD-004 Photodocumentation).
- Record technical information on a PDA, test pit log form, or a field book.
- Label sample bottles (see SOP SC-002 Sample Handling).
- Screen soil samples for contaminants of concern and record results in the field notebook or test pit log.
- Collect soil samples from the test pit as designated in the work plan including sidewalls and bottom at designated depths, at strata changes, or based upon

field screening using remote sampling equipment (backhoe bucket, stainless steel remote sampler, etc.). Do not enter a test pit unless side slopes satisfy Occupational Safety and Health Administration (OSHA) regulations and other health and safety concerns have been addressed.

- Transfer soil samples to the appropriate glassware according to soil sampling SOPs (SOP SM-002 VOC Soil Collection and Preservation Method, etc.).
- Store samples on ice in a cooler (see SOP SC-002 Sample Handling and SOP FD-003 Chain-of-Custody).
- Backfill excavation as soon as possible with material as described in the field plan. Place the excavated material back in the excavation in approximately the same strata it came from.
- Segregate contaminated soil as necessary (see SOP SC-003 IDW). Properly identify segregated material and secure as described in the work plan.
- Measure dimensions of excavation and record in the field notebook or test pit log. If sampling locations are to be surveyed, mark the corners and provide surveyor with location ID.
- Sketch dimension and location of the test pit relative to a site reference point and record in the field notebook. Note the sample locations by number on a cross-section sketch and plan view sketch.

## 3. Limitations

- Never enter the excavation unless it is shored or the sidewalls are sloped in accordance with OSHA regulations and all proper personal protective safety precautions have been considered and implemented.
- Terminate excavation if the flow of groundwater into the excavation adversely affects the stability of the excavation (i.e., slumping). Make sure to note in the field notebook or test pit log the depth to ground water.
- Terminate excavation if drums, tanks, or other potential sources of contamination are observed. Record visible drum markings, labels, and any other pertinent information on the test pit log and in the field notebook. Photograph drums and materials. Consult with the project manager before filling the excavation.
- Do not leave an open test pit unattended.

## 4. References

*Earth Manual (1968), United States Department of the Interior, Bureau of Reclamation, United States Government Printing Office, Washington, D.C., pp. 134-139.*

*OSHA Standards for Excavations, Department of Labor, Federal Register, 29 CFR Part 1926, Aug. 9, 1994.*

## 5. Contacts

Douglas Bonoff
Mark Ensign

# Appendix D Field Forms

**DAILY FIELD LOG**

**Project :** x
**Client :** x
**Contractor:** x

**Date:** Mon. Nov 5, 2015
**Report No.** x
**Page:** Page 1 of 2
**GEI Proj. No.** x

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**Time of Arrival:** x a.m. **Departure:** x p.m. **Weather:** 40's F, cloudy

**Persons Contacted,Company** **GEI Representatives**

**Purpose of Site Visit:** x

**Observations**

1. x
2. x

x

3. x

4. x
5. x
6. x

GEI Consultants

# FIELD OBSERVATION REPORT

**Project :** x
**Client :** x
**Contractor:** x

**Date:** Mon. Nov 5, 2015
**Report No.** x
**Page:** Page 2 of 2
**GEI Proj. No.** x

| **By:** | **Reviewed By:** |
|---|---|

T:\FIELD FORMS\Field Obs Report\field obs report.doc

GEI Consultants

# GROUNDWATER ELEVATION MEASUREMENT FIELD FORM

**Project Name:**_____________________________ **Personnel:**_________________________________________

**Location:**________________________________ **Weather Conditions:**_________________________________

**Date:**____________________________________ **Equipment:** ________________________________________

| Well ID | Time | DTW Below Measuring Point (ft.) | Comments |
|---|---|---|---|
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## Boring Location

**NORTHING:** _____ **EASTING:** _____ **STATION:** _____ **OFFSET:** NA

**HORIZONTAL DATUM:** _____ **STATION CENTERLINE:** _____

**VERTICAL DATUM:** _____ **ESTIMATED GROUND SURFACE ELEV. (FT):** _____

**LOCATION:** _____

**BORING** _____

**PAGE of**

## Drilling Information

**DATE START / END:** _____ **TOTAL DEPTH (FT):** _____

**CONTRACTOR:** _____ **DRILLER:** _____ **LOGGED BY (Person):** _____

**EQUIPMENT:** _____ **EXPLORATION TYPE/METHOD:** _____

**AUGER ID/OD:** _____ **CASING ID/OD:** _____ **CORE INFO:** _____

**HAMMER TYPE:** _____ **HAMMER WEIGHT (lbs):** _____ **HAMMER DROP (inch):** _____

**WATER LEVEL DEPTHS (ft):** _____

**GENERAL NOTES:** _____

**ABBREVIATIONS:**

ID = Inside Diameter
OD = Outside Diameter
Pen. = Penetration Length
Rec. = Recovery Length

bpf = Blows per Foot
mpf = Minute per Foot
S = Split Spoon
DP = Direct Push Sample

U = Undistrubed Tube Sample
C = Rock Core
V = Field Vane Shear
SC = Sonic Core

WOR = Weight of Rods
WOH = Weight of Hammer
RQD = Rock Quality Designation
PID = Photoionization Detector

$Q_v$ = Pocket Penetrometer Strength
$S_v$ = Pocket Torvane Shear Strength
$F_v$ = Field Vane Shear Strength
NA, NM = Not Applicable, Not Measured

| Elev. (ft) | Depth (ft) | Casing Pen. (bpf) or Core Rate (mpf) | SAMPLE INFORMATION | | | | | | GRAPHIC LOG | Sample Description & Classification | $H_20$ Depth | WELL CONSTRUCTION DETAILS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Sample No. | Type | Depth (ft) | Pen./ Rec. (in) | Blows Count or RQD | Test Data | | | | |
| | | | | | | | | | | | | |

Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

**LOGGED BY (Consultant):** GEI Consultants

**PROJECT NAME:** _____

**CITY/STATE:** _____

**GEI PROJECT NUMBER:** _____

GEI Consultants

**GEI Consultants, Inc.**
100 Sylvan Parkway, Suite 400
Amherst, New York
14228

## Boring Location

**NORTHING:** _____ **EASTING:** _____ **STATION:** _____ **OFFSET:** NA

**HORIZONTAL DATUM:** _____ **STATION CENTERLINE:** _____

**VERTICAL DATUM:** _____ **ESTIMATED GROUND SURFACE ELEV. (FT):** _____

**LOCATION:** _____

**MONITORING WELL**

_____

**PAGE of**

## Drilling Information

**DATE START / END:** _____ **TOTAL DEPTH (FT):** _____

**CONTRACTOR:** _____ **DRILLER:** _____ **LOGGED BY (Person):** _____

**EQUIPMENT:** _____ **EXPLORATION TYPE/METHOD:** _____

**AUGER ID/OD:** _____ **CASING ID/OD:** _____ **CORE INFO:** _____

**HAMMER TYPE:** _____ **HAMMER WEIGHT (lbs):** _____ **HAMMER DROP (inch):** _____

**WATER LEVEL DEPTHS (ft):** _____

**GENERAL NOTES:** _____

**ABBREVIATIONS:**

| | | | | |
|---|---|---|---|---|
| ID = Inside Diameter | bpf = Blows per Foot | U = Undistrubed Tube Sample | WOR = Weight of Rods | $Q_v$ = Pocket Penetrometer Strength |
| OD = Outside Diameter | mpf = Minute per Foot | C = Rock Core | WOH = Weight of Hammer | $S_v$ = Pocket Torvane Shear Strength |
| Pen. = Penetration Length | S = Split Spoon | V = Field Vane Shear | RQD = Rock Quality Designation | $F_v$ = Field Vane Shear Strength |
| Rec. = Recovery Length | DP = Direct Push Sample | SC = Sonic Core | PID = Photoionization Detector | NA, NM = Not Applicable, Not Measured |

| Elev. (ft) | Depth (ft) | Casing Pen. (bpf) or Core Rate (mpf) | SAMPLE INFORMATION | | | | | | GRAPHIC LOG | Sample Description & Classification | $H_20$ Depth | WELL CONSTRUCTION DETAILS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Sample No. | Type | Depth (ft) | Pen./ Rec. (in) | Blows Count or RQD | Test Data | | | | |
| | | | | | | | | | | | | |

Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

**LOGGED BY (Consultant):** GEI Consultants

**PROJECT NAME:** _____

**CITY/STATE:** _____

**GEI PROJECT NUMBER:** _____

GEI Consultants

**GEI Consultants, Inc.**
100 Sylvan Parkway, Suite 400
Amherst, New York
14228

## Monitoring Well Development / Sampling Log

GEI Consultants

| Site Name: | Well ID: |
|---|---|

Date_____

Field Personnel_____

Method of Purging/ Sampling_____

Well Depth (ft btoc)_____

Depth to Water (ft btoc)_____

Casing type/dia._____

Well Volume (g)_____

| Time | Total Volume (g) | Temp (°F) | pH | Cond (us/cm) | ORP (mV) | D.O. (mg/L) | Turbidity (NTU) | Comments |
|---|---|---|---|---|---|---|---|---|
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# SAMPLE CONTROL LOG

**Project Name:** _____ **Laboratory:** _____

**Project and Task No.:** _____ Page ____ of ____

| Sampling Date | Sampling Time | Sample Number (ID) | C.O.C. Number | Analyses Requested | Turnaround Time, Sample Location, Handling, Notes, Chain-of-Custody Remarks, etc. (Duplicate, Blank info, etc.) | Date Sent to Lab | Date Results Due |
|---|---|---|---|---|---|---|---|
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# WELL DECOMMISSIONING RECORD

| | |
|---|---|
| Site Name: | Well I.D.: |
| Site Location: | Driller: |
| Drilling Co.: | Inspector: |
| | Date: |

## DECOMMISSIONING DATA

(Fill in all that apply)

**OVERDRILLING**

| | |
|---|---|
| Interval Drilled | |
| Drilling Method(s) | |
| Borehole Dia. (in.) | |
| Temporary Casing Installed? (y/n) | |
| Depth temporary casing installed | |
| Casing type/dia. (in.) | |
| Method of installing | |

**CASING PULLING**

| | |
|---|---|
| Method employed | |
| Casing retrieved (feet) | |
| Casing type/dia. (in.) | |

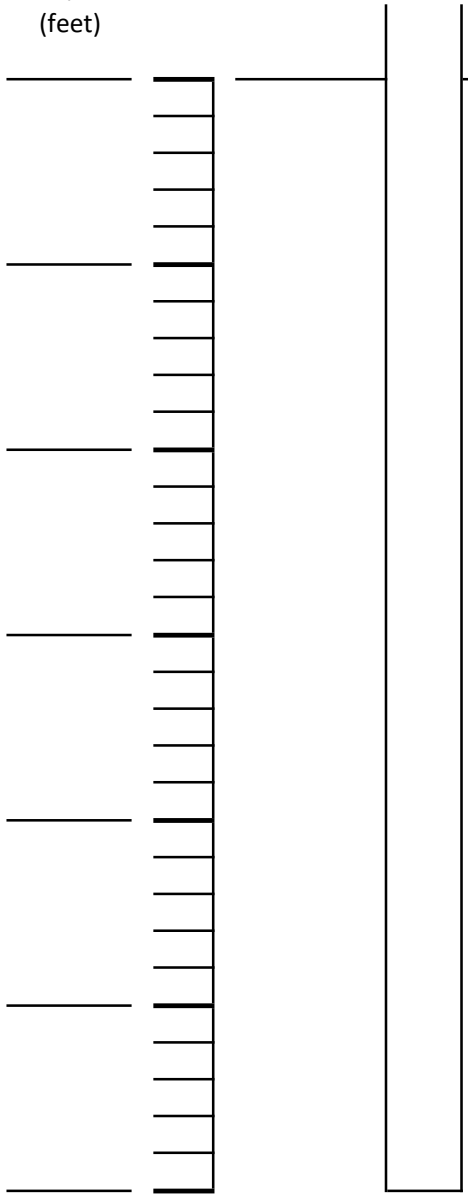
**CASING PERFORATING**

| | |
|---|---|
| Equipment used | |
| Number of perforations/foot | |
| Size of perforations | |
| Interval perforated | |

**GROUTING**

| | |
|---|---|
| Interval grouted (FBLS) | |
| # of batches prepared | |
| For each batch record: | |
| Quantity of water used (gal.) | |
| Quantity of cement used (lbs.) | |
| Cement type | |
| Quantity of bentonite used (lbs.) | |
| Quantity of calcium chloride used (lbs.) | |
| Volume of grout prepared (gal.) | |
| Volume of grout used (gal.) | |

## WELL SCHEMATIC*




| COMMENTS: |
|---|
| |
| |
| |

*Sketch in all relevant decommissioning data, including: interval overdrilled, interval grouted, casing left in hole, well stickup, etc.

Drilling Contractor

Department Representative

# Appendix E HASP



GEI Safety
EVERYONE LIVE SAFE EVERYDAY

GEI Consultants

Consulting
Engineers and
Scientists

# Health and Safety Plan

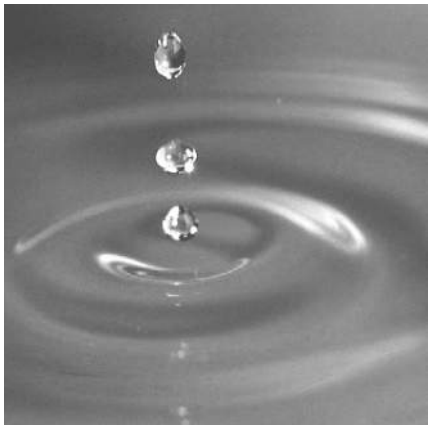
1641 River Street Redevelopment Site
1641 River Street
Olean, New York

1641 River Street, LLC
140 Pearl Street
Buffalo, NY 14202

**Prepared by:**
GEI Consultants, Inc.
100 Sylvan Parkway, Suite 400
Amherst, NY 14228
(716) 204-7154

March 2026

Project No. 2600988



Jeffrey S. Hall, P.E., PMP
Senior Environmental Engineer

Jessie Papageorge
Regional Safety Manager

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# 1. Emergency Contact Information

## Table 1. Emergency Contact Information

| | |
|---|---|
| **Site Information** | |
| Project Name: | 1641 River Street Redevelopment Site |
| Project Address: | 1641 River Street, Olean, NY |
| Project Number: | 2600988 |
| **Important Phone Numbers** | |
| Emergency (Police/Fire/Medical): | 911 |
| Local Police: | (716) 376-5677 |
| Fire Department: | (716) 376-5609 |
| **Hospital and Occupational Clinic Information**<br>*(See Attached Map and Directions in Appendix A)* | |
| **Local Hospital:**<br>**Olean General Hospital**<br>515 Main St, Olean, NY 14760<br><br>**Urgent Care/Occupational Health Clinic: Contact Medcor Triage** | (716) 375-6275<br><br><br><br>Call Medcor Triage<br>1-800-775-5866 |
| **Contacts** | |
| Project Manager:<br>Jeffrey Hall | (716) 204-7168 office<br>(716) 954-3484 cell |
| Safety Director:<br>Steve Hawkins | (860) 368-5348 office<br>(860) 916-4167 cell |
| Regional Safety Manager:<br>Jessie Papageorge | (973) 873-7117 office<br>(862) 432-2283 cell |
| Site Safety Manager:<br>TBD | (XXX) XXX-XXXX office<br>(XXX) XXX-XXXX cell |
| Medcor Triage | 1-800-775-5866 |
| Client Contact:<br>Michael J. Hecker | (518) 727-6385 office |
| **Other Information** | |
| Contractor Requesting/Performing Utility Clearance: Atlantic Testing Labs | Utility Clearance Ticket Number:<br>Pending |

# 2. GEI Safety Practices to Live By

Safety is what we do and how we do it every day. These Everyday Practices to Live Safe are simple yet concise reminders to our employees, clients, contractors, and visitors of the steps that must be taken to avoid injury, illness, and incident so everyone can live safe every day. To maintain a safe work environment, GEI has established an organizational structure and a Corporate Health and Safety Program along with these safety practices.

1. Stop work if it is unsafe to continue, after any incident, injury, or near miss.
2. Prepare before starting work. Complete safety training and project-related safety requirements, such as preparation and review Health and Safety Plans (HASPs) as required by project or job-related duties.
3. Assess and control safety hazards/risks before starting any tasks and when previously unidentified safety hazards are observed.
4. Be attentive and aware of your environment. Constant focus and awareness will avoid complacency.
5. Properly use and maintain GEI-approved and required PPE in all appropriate circumstances.
6. Do not work or drive impaired, including under the influence of alcohol/drugs or while fatigued.
7. Follow all safety practices when operating a vehicle. Always wear your seatbelt while in any vehicle. Do not drive distracted, including using hand-held cell phones, when operating any vehicle.
8. Use tools, equipment, and safety devices in accordance with manufacturers' recommendations and GEI expectations. Never modify or override safety devices.
9. When activities involve chemicals or hazardous substances, follow GEI's hazard communication requirements, including labeling, reviewing Safety Data Sheets (SDS), and keeping proper protections in place.
10. Be aware of and keep clear of equipment moving in all work areas, at all times.
11. Follow GEI's incident reporting procedure in the event of safety incidents, including injuries, illness, near misses, or observation of unsafe behaviors.

# 3. Site Background

This HASP establishes policies and procedures to protect GEI Consultants, Inc. (GEI) personnel from the potential hazards posed by the activities at the 1641 River Street, LLC 1641 River Street Redevelopment Site property (site) in Olean, New York (Figure 1). Reading, understanding, and compliance with the contents of the HASP is required for on-site GEI personnel and will be reviewed by GEI subcontractors. Subcontractors will prepare their own site-specific HASP but may use this HASP as a guide. This HASP identifies measures to minimize accidents and injuries which may result from site conditions or activities. A copy of this HASP will be maintained on site for the duration of the work.

## 3.1 Site Description

The Site is comprised of an approximate 24.7-acre parcel of land (Tax ID # 94.032-1-5) located in a former heavy industrial area in the City of Olean. The Site is located within the footprint of a former petroleum refining and storage facility located in northern Olean that operated from approximately 1876 to 1954. A historic aerial photograph (City of Olean, 1950s) and topographic map (USGS, 1898) show approximately 20 large above ground petroleum storage tanks that were located on and/or adjacent to the Site. A map within an historic 2005 abstract of title shows a former pump station on the northern portion of the property in the vicinity where Oregon Road and River Street converge.

The Site is currently developed with one commercial structure, previously used for storage by Park Centre Development, Inc. (a company related to Blue Bird Industrial Park, Inc.). An access road and parking lot are located adjacent to the structure. The remaining area is vegetated vacant land, with some evidence of former berms. The Site is bordered by Oregon Road and River Street to the north/northeast, the Southern Tier Rail Authority (STRA) railroad to the west/northwest and residential properties to the south. New York State Route I-86 bisects the parcel.

Prior environmental investigations have identified the following contaminants of concern: petroleum (including non-aqueous phase liquid [NAPL]), arsenic, volatile organic compounds (VOC), tentatively identified compounds (TICs), and semi-volatile organic compounds (SVOC) TICs.

## 3.2 Scope of Field Work

The scope of work consists of GEI employees overseeing test pitting, soil boring, monitoring well installation and development, which includes collecting soil and groundwater samples for laboratory analysis and waste characterization. The drilling will be conducted by a sub-contractor (Atlantic Testing Laboratories) and the test pit excavation will be conducted

by the client. Test pits will extend approximately 15 feet below ground surface; however, GEI personnel will remain over 10 feet from the edge of the excavations, and will not be entering. Test pit samples will be collected from the excavator bucket.

**Table 2. GEI Employee Site Tasks and Descriptions**

| Task Number | Task Titles | Task Descriptions |
|---|---|---|
| 1. | Driving/Site Mobilization | Employees will drive to the project site and park in designated areas. |
| 2. | Soil Sampling – Test pits | Oversee test pits investigation activities to identify potential subsurface features and facilitate soil sample collection. |
| 3. | Soil Sampling – Drill rig | Oversee soil sampling investigation activities via drill rig. |
| 4. | Contractor Oversight | Throughout the project GEI will oversee various contractors for this project performing pre-clearing vegetation, subsurface clearance, and drilling. |
| 5. | Drilling Oversight | GEI employees will provide oversight for drilling related to potential monitoring and/or recovery well installation. |
| 6. | Groundwater Well Installation and Development | Oversee the advancement and installation of monitoring wells and perform sitewide groundwater monitoring. |
| 7. | Groundwater Gauging | GEI employees will gauge monitoring wells. |
| 8. | Groundwater Sampling (Low Flow) | Low-flow groundwater sampling using peristaltic or bladder pumps for monitoring wells. |
| 9. | Groundwater Sampling (Bailer) | Grab groundwater samples collection via bailer for recovery wells. |
| 10. | NAPL Gauging and Recovery | As applicable, GEI employees will gauge NAPL levels and potentially recover product for analysis. |
| 11. | Perimeter Air Monitoring | Conduct CAMP activities during field activities. |

**Notes:**
**Task Titles** correlate to a prepared site-specific JHAs.
**Task Descriptions** are a brief summary of the task being performed by GEI.

# 4. Potential Hazards

The potential hazards associated with site conditions and activity hazards related to GEI on-site activities have been identified in this section. Detailed information for these hazards and their control methods are discussed further in the Table 3 and the job hazard analysis (JHAs) included in Appendix B.

## 4.1 General Site Hazards

General hazards and control measures that are applicable to all site activities have been identified in Table 3.

**Table 3. General Site Hazards**

| General Hazards | Control Measure |
|---|---|
| **Cell Phone Use**<br>On Project Site | • Look and listen for potential hazards while using a cell phone for work related activities.<br>• Limit your cell phone use for personal calls or other activities to non-working hours in areas free of hazards.<br>• Do not use your cell phone when safety hazards are present.<br>• Do not use headphones or ear buds while performing work related activities. Headphone or ear bud use can prevent you from hearing hazards around you.<br>• Noise canceling headphones or earbuds are not to be used in place of hearing protection.<br>• Never use a cell phone while operating any equipment or vehicle.<br>• Consider using the "do not disturb" or "silent" functions to allow you to focus on your task. |
| **Cold Stress**<br>Hypothermia, Frostbite | • Take breaks in heated shelters when working in extremely cold temperatures.<br>• Drink warm liquids to reduce the susceptibility to cold stress.<br>• Wear protective clothing (recommended three layers: an outside layer to break the wind, a middle layer to provide insulation, and an inner layer of cotton of synthetic weave to allow ventilation).<br>• Wear a hat and insulated boots.<br>• Keep a change of dry clothing available in case clothes become wet.<br>• Do heavy work during the warmer parts of the day and take breaks from the cold.<br>• If possible, shield work areas from drafts of wind and use insulating material on equipment handles when temperatures are below 30°F<br>• Watch for symptoms of cold stress and initiate first aid procedures (Section 4.3.2). |
| **Dusty Conditions**<br>Eye and respiratory irritation | • Avoid travel during times when dust causes hazardous driving conditions.<br>• Wear protective gear – dust masks, safety glasses.<br>• Use engineering methods to suppress dust if possible. |

| General Hazards | Control Measure |
|---|---|
| **Flash Flooding** | • Check weather reports, observe current weather and be prepared to evacuate the area immediately to higher ground if there are signs of a flash flood.<br>• Use discretion in narrow gorges and other areas prone to flash flooding.<br>• See SOP HS-010 |
| **Heat stress**<br>Fainting, Fatigue, Heat Stroke | • Increase water intake while working.<br>• Increase number of rest breaks and/or rotate workers in shorter work shifts. Rest in cool, dry areas.<br>• Watch for signs and symptoms of heat exhaustion and fatigue.<br>• Plan work for early morning or evening during hot months.<br>• Use ice vests when necessary.<br>• Watch for symptoms of heat stress and initiate first aid procedures (Section 4.3.1). |
| **Heavy Equipment Working Near**<br>Struck-by, caught-in-between equipment, crushing, pinch points | • Identify yourself and your work location to heavy equipment operators, so they may incorporate you into their operations.<br>• Coordinate hand signals with operators.<br>• Stay Alert! Pay attention to equipment backup alarms and swing radii.<br>• Wear a high-visibility, reflective vest when working near equipment or motor vehicle traffic.<br>• Position yourself in a safe location when filling out logs or talking with the contractor.<br>• Notify the contractor immediately if any problems arise.<br>• Do not stand or sit under suspended loads or near any pressurized equipment lines.<br>• Do not operate cellular telephones in the vicinity of heavy equipment operation.<br>• See SOP HS-018 |
| **Inclement Weather** | • Listen to local forecasts for warnings about specific weather hazards such as tornados, thunderstorms, and flash floods.<br>• If storms produce thunder and/or lightning, leave the work area immediately and move to a safe area.<br>• Discuss an action plan prior to the severe weather.<br>• Wear appropriate PPE for the type of weather that could be encountered.<br>• Stop work until conditions are suitable. Take cover in vehicles or shelter as appropriate.<br>• See SOP HS-010 |
| **Insects**<br>Bites, Stings, Allergic Reactions | • Apply insect repellent prior to performing field work and as often as needed throughout the work shift.<br>• Wear proper protective clothing (work boots, socks, and light-colored clothing)<br>• Wear shoes, long pants with bottoms tucked into boots or socks, and a long-sleeved shirt when outdoors for extended periods of time, or when many insects are most active (between dawn and dusk).<br>• When walking in wooded areas, avoid contact with bushes, tall grass, or brush as much as possible<br>• Field personnel who may have insect allergies will have allergy medication on site and will provide this information to the SSM prior to commencing work.<br>• Field personnel will perform a self-check at the end of the day for ticks.<br>• See SOP HS-001 |

| General Hazards | Control Measure |
|---|---|
| **Physical Injury**<br>Slips, Trips and Falls | • Wear PPE that properly fits, is in good condition, and is appropriate for the activities and hazards.<br>• Maintain good visibility of the work area.<br>• Avoid walking on uneven, steeply sloped, or debris ridden ground surfaces.<br>• Plan tasks prior to preforming them including an activity hazard analysis.<br>• Keep trafficked areas free from slip/trip/fall hazards.<br>• Maintain weed growth in sampling areas, especially on slopes.<br>• Wear shoes with traction.<br>• Avoid traversing steep areas in slippery conditions.<br>• Do not carry heavy objects to work areas, on steeply sloped areas, or where steep areas must be traversed. |
| **Harmful Vegetation**<br>Poison Ivy, Poison Oak, Poison Sumac, Giant Hogweed (photo-sensitivity), thorns/spines | • Avoid areas infested with poisonous plants.<br>• Use a barrier cream to provide some protection against poisonous plants.<br>• If you have been in contact with poisonous plants, wash exposed clothing separately in hot water with detergent.<br>• After use in areas with poisonous plants, clean tools, and soles of boots with rubbing alcohol or soap and lots of water.<br>• Immediately wash with soap and water any areas that come into contact with poisonous plants.<br>• If exposed to a poisonous plant, wash with soap and water or a product such as Technu. First aid kits are available in the company vehicles.<br>• Use a tool or grab stick to move branches instead of touching them directly. If you need to move a plant with thorns, use burlap, cardboard, or other heavy material to contain it.<br>• Wear puncture resistant gloves to protect against thorns, spines, and other sharp vegetation. Long sleeve pants and shirts can also reduce contact between thorns and skin.<br>• Provide first aid to minor thorn punctures/cuts. Keep the area clean to avoid infection.<br>• Wear appropriate work boots.<br>• Be able to identify hazardous plants that you may encounter at the site. Understand the risks they pose and plan accordingly.<br>• Contact with some types of plants can cause photo-sensitivity, which creates a reaction/rash on the skin when exposed to the sunlight. Be able to identify and avoid these plants.<br>• See SOP HS-001 |
| **Repetitive Motion Injury**<br>Standing, Squatting, and Bending Over | • Take regular breaks and do not work in unusual positions for extended periods of time.<br>• Walk and stretch between tasks.<br>• See SOP HS-025 |
| **Sun Exposure** | • Liberally apply sunscreen, with a minimum broad-spectrum sun protection factor (SPF) of 30<br>• Wear safety glasses that offer protection from ultraviolet A and B (UVA/UVB) rays.<br>• Bring shade to the site to reduce exposure.<br>• When possible, wear long-sleeved shirts and long pants.<br>• Clothes made from tightly woven fabric and darker colors offer the best protection. Some clothing is certified as offering UV protection.<br>• Wear a hat that has a brim all the way around that shades your face, ears, and the back of your neck. A tightly woven fabric, such as canvas, works best to |

| General Hazards | Control Measure |
|---|---|
| | protect your skin from UV rays.<br>• Sunscreen wears off. Put it on again if you stay out in the sun for more than 2 hours.<br>• Check the sunscreen's expiration date. Sunscreen without an expiration date has a shelf life of no more than 3 years. |
| **Unsecured or High Crime Areas** | • Be aware of your surroundings.<br>• Use the buddy system. Do not remain on site alone. Accompany or be accompanied by others to vehicles.<br>• Request police detail or security on site, when appropriate.<br>• Let the SSM know when you begin work in these areas and when you leave.<br>• Call in regularly. PMs should check on staff and their comfort level working in the area.<br>• If you arrive in an area and it does not look safe to get out of your vehicle, lock the doors and drive off quickly but safely.<br>• Do not linger outside of the work area. Avoid sitting in your vehicle for any period of time outside the site—Get in and go.<br>• Keep belongings out of view in your vehicle/ on your person to minimize your value as a target.<br>• Carry a personal alarm.<br>• Set up cameras in the work area.<br>• Park within the site when possible. |
| **Vehicular Traffic**<br>Struck by injury, crushing | • Do not turn your back on traffic.<br>• Use situational awareness to identify concerns like erratic motorist movements, sudden stops, squealing tires, or other indicators that motorists are having difficulty in maneuvering through the work zone. If observed notify the workers and suspend work until safe restart work.<br>• Have a bail-out plan in case of an errant vehicle. Warn other workers of errant vehicles. Increase visibility of the work area to others by using cones, flags, barricades, proper lighting, and caution tape to define work area.<br>• Use a "spotter" to locate oncoming vehicles.<br>• Use vehicle to block work area.<br>• Engage police detail for all work conducted in appropriate areas.<br>• Wear high-visibility, reflective vest at all times.<br>• Maintain minimum DOT defined distances to other traffic lanes.<br>• See SOP HS-016. |
| **Wildlife**<br>Bites, Allergic Reaction, Disease | • Several potentially harmful wildlife are indigenous to the area. Wear boots, avoid as much as possible and approach with caution, as necessary.<br>• Avoid contact with wild animals. Put on hip or chest waders (if available) prior to walking through vegetation.<br>• See SOP HS-001 |

### 4.1.1 Hazard Controls

On-site safety equipment to control the hazards listed above will include:

| **Site-Specific Safety Equipment** *(check all that apply)* | | |
|---|---|---|
| ☒ Drinking water/electrolyte fluids | ☒ Hand cleaner/sanitizer | ☒ Tick removal kit |
| ☒ Eye wash bottles | ☒ Insect repellent | ☐ Other: |
| ☒ Fire extinguisher | ☒ Phone charger | ☐ Other: |
| ☒ First aid kit | ☒ Poison ivy/oak cleanser | ☐ Other: |
| ☒ Flashlight/head lamp | ☒ Sunscreen | |

Personal protective equipment (PPE) is discussed in further detail in Section 5.

### 4.1.2 Personal Safety

Field activities have the potential to take employees into areas which may pose a risk to personal safety. The following websites have been researched to identify potential crime activity in the area of the project:

- https://communitycrimemap.com/
- www.cityrating.com/crimestatistics.asp
- www.crimemapping.com

Olean crime statistics report an overall downward trend in crime based on data from 20 years with violent crime increasing and property crime decreasing. Based on this trend, the crime rate in Olean for 2026 is expected to be lower than in 2019.

The city violent crime rate for Olean in 2019 was lower than the national violent crime rate average by 12.14% and the city property crime rate in Olean was higher than the national property crime rate average by 8.84%.

In 2019 the city violent crime rate in Olean was lower than the violent crime rate in New York by 7.04% and the city property crime rate in Olean was higher than the property crime rate in New York by 67.22%.

Employees must not knowingly enter into a situation where there is the potential for physical and violent behaviors to occur. If employees encounter hostile individuals or a confrontation develops in the work area, suspend work activities, immediately leave the area of concern, and contact local 911 for assistance. Notify the Site Safety Manager (SSM) and Safety Team (Safety Director and Regional Safety Managers – Safety_Team@geiconsultants.com)of any incidents once you are out of potential danger.

In the event of an emergency, prompt communications with local emergency responders are essential. At least one charged and functioning cell phone to enable emergency communications will be on site. Confirmation of cellular phone operation will be confirmed at the start of each working day.

### *4.1.3 Vehicle Safety*

Mobilization to and from the field will likely require the use of a personal, GEI fleet, or rental vehicle. When operating a vehicle while conducting business on behalf of GEI, employees must follow safe driving practices as outlined in the GEI Safe Driving SOP.

In conjunction with the hazard controls listed in the Site Mobilization JHA, GEI employees should follow these guidelines to operate a vehicle safely:

- Do not drive distracted, including using hand-held cell phones, when operating any vehicle.
- Complete a 360° inspection of the vehicle and surrounding area to identify vehicle safety issues and hazards that could be within the travel path.
- Confirm cell phones, tablets, or other potentially distracting equipment are safely secured and put away prior to operating the vehicle.
- Park in designated areas or a safe area away from heavy equipment.
- When parking a vehicle at a job site, the employee should make an effort to position the vehicle in a manner which reduces or eliminates the need to operate the vehicle in reverse.
- Use a spotter whenever possible.

GEI personnel will follow the GEI Incident Reporting (and client specific reporting) procedures if a vehicle accident occurs involving another vehicle, results in injury, or the damage to property.

### *4.1.4 Communicable Diseases*

Communicable diseases are illnesses caused by viruses or bacteria that people spread to one another through contact with contaminated surfaces, bodily fluids, blood products, insect bites, or through the air. Examples of communicable diseases include influenza, coronavirus 2019, hepatitis B, salmonella, measles, and blood-borne illnesses. Most common forms of spread include food, insect bites, droplets, or skin contact. Infections may range in severity from asymptomatic (without symptoms) to severe and fatal. Transmission of these biologic agents can occur in a variety of ways including airborne (inhalation), direct physical contact with an infectious person, consuming contaminated foods or beverages, contact with contaminated body fluids, contact with contaminated inanimate objects, or being bitten by an

infected insect or tick. Below are ways to prevent the infection or spread of communicable diseases:

1. **Distancing:** Maintain distance from others when possible. Minimize the number of employees in one location to the extent possible.
2. **Wash Hands Often:** Frequent hand washing with soap and warm water for 20 seconds. If soap and water are not readily available, use hand sanitizer (containing 60% alcohol) until soap and water can be used.
3. **Clean and Disinfect Commonly Used Surfaces:** Wipe down surfaces with disinfectant on a routine basis. This includes field equipment and other items that may have previously been used by others. This is especially important while working in construction trailers. When using company and personal vehicles, wipe surfaces including the steering wheel, gear shifter, controls, and door handles before and after use.
4. **Use Good Hygiene Practices:** These include washing hands frequently, avoid touching your eyes, nose, and mouth, and cover coughs and sneezes.
5. **Get Vaccinated:** Vaccines can prevent many infectious diseases. There are also vaccines that are recommended or required for travel to certain parts of the world.
6. **Avoid Touching Wild Animals:** Be cautious around wild animals as they can spread infectious diseases.
7. Stay home when you are sick.

## 4.2 Job Hazard Analysis

The site-specific tasks, potential hazards, and control measures established to reduce the risk of injury or illness are identified in step-by-step JHAs included in Appendix B. Prior to the start of work, project team members will determine what tasks are covered in the scope of work (Table 2) and then develop a JHA for each of these tasks and have them reviewed by the Project Manager (PM) or their designee and approved by a member of the Safety Team. Indicated in each JHA are the specific PPE, training, equipment, health and safety SOPs and programs that apply to each task. Additional information on hazard controls can be found in GEI's SOPs and programs that apply to this project which are indicated in Appendix E.

## 4.3 Heat and Cold Stress

### *4.3.1 Heat Stress*

Employees may be exposed to the hazards associated with heat stress when ambient temperatures exceed 80ºF. To prevent heat-related illness, PMs should plan for proper hydration (drinking plenty of water), acclimatization (getting used to weather conditions), and schedules that alternate work with rest. Employees should also be trained to recognize the symptoms of heat related illnesses and know how to administer first aid for heat-related illnesses and activate emergency medical services quickly when needed. Water and shade will be available to all project employees and located as close as practicable to the work areas when temperatures exceed 80°F.

**CDC Heat Planning Tool**
For the most recent details and tools for heat stress, use your smart phone to access the Centers for Disease Control for the latest information. Additional details can be found in GEI's Heat Stress Program located on the Safety Resources page of GEI Connections.

Prior to each workday, the forecasted temperature and humidity for the worksite will be reviewed and will be compared against the National Weather Service Heat Index to evaluate the risk level for heat illness. When the temperature equals or exceeds 95°F, or during a heat wave, high heat procedures will be used which include additional preventive measures including pre-shift meetings to encourage employees to drink plenty of water, working in the buddy system or regular communication so observations can be made for heat related illness, and to remind employees of their right to take a cool-down rest when necessary.

### *4.3.2 Cold Stress*

Employees may be exposed to the hazards associated with cold stress when working in cold, wet, and/or windy conditions. Potential hazards in cold environments include frostbite, trench foot or immersion foot, hypothermia, as well as slippery surfaces, brittle equipment, and poor judgment.

**CDC Cold Stress Info**
For the most recent details and tools for cold stress, use your smart phone to access the Centers for Disease Control for the latest information. Additional details can be found in GEI's Cold Stress Program located on the Safety Resources page of GEI Connections.

## 4.4 Constituents of Concern

The characteristics of constituents of concern (COC) at the site are discussed below for safety information purposes. A COC is any substance classified or defined as hazardous, extremely hazardous, toxic, or dangerous. The COC included in this HASP will be the primary constituents that have been detected, are anticipated to be detected, or are being evaluated for the presence of, on the project site. These COC will be used to determine the action levels and PPE necessary for site personnel. Adherence to the safety and health

guidelines in this HASP should reduce the potential for exposure to the COC discussed below.

### *4.4.1 Site-Specific COC*

#### Gasoline

Gasoline is a pale brown or pink liquid made from processed crude oil. It evaporates easily, is very flammable and can form explosive mixtures in air. A typical gasoline mixture contains about 150 different hydrocarbons, including butane, pentane, isopentane and the BTEX compounds (benzene, ethylbenzene, toluene, and xylenes). The most common exposure to gasoline occurs by breathing vapors when filling fuel tanks. Gasoline also can be absorbed through skin during contact, such as when pumping gas or cleaning up a gasoline spill. Many harmful effects of gasoline are due to individual chemicals in gasoline, mainly BTEX, that are present in small amounts. Breathing small amounts of gasoline vapors can lead to nose and throat irritation, headaches, dizziness, nausea, vomiting, confusion and breathing difficulties. Symptoms from swallowing small amounts of gasoline include mouth, throat and stomach irritation, nausea, vomiting, dizziness and headaches. Some effects of skin contact with gasoline include rashes, redness and swelling. Being exposed to large amounts of gasoline can lead to coma or death.

The primary routes of exposure to gasoline are through inhalation and direct contact, therefore air monitoring, gloves, and respiratory protection are primary controls against exposure to gasoline.

#### Heavy Metals

Exposure to high concentrations of arsenic can cause dermatitis, gastrointestinal disturbances, peripheral neuropathy, respiratory irritation, and hyper pigmentation of skin. Chronic exposure to arsenic has resulted in lung cancer in humans.

Heavy metals are not expected to be present at concentrations that exposure symptoms would occur. The primary route of exposure is through inhalation of dust particles when soil is disturbed and becomes airborne, therefore, particulate monitoring, respiratory protection, and gloves are primary controls against exposure to heavy metals.

#### Petroleum Hydrocarbons

Total Petroleum Hydrocarbons, or TPH is a term used to describe a mixture of chemicals mainly made from hydrogen and carbon (called hydrocarbons). Due to the vast number of chemicals in petroleum products, it is common to measure the total amount at each site rather than identifying them separately. TPH can be divided into groups that act similarly in soil or water, which are called petroleum hydrocarbon fractions.

TPH can enter the environment through accidents, industrial releases, or as byproducts from commercial or private uses. Some petroleum hydrocarbons float on water and form surface films, others may sink. Some TPH fractions will move to soil where they may stay for an extended period of time. Some TPH compounds can affect your central nervous system (CNS), while others cause headaches, and dizziness from inhalation exposure. Some other symptoms of exposure include numbness in the feet or legs, and can cause effects to the blood, immune system, lungs, skin, and eyes.

The primary routes of exposure to TPH are through inhalation and direct contact, therefore air monitoring, gloves, and respiratory protection are primary controls against exposure to TPH.

### Volatile Organic Compounds

Volatile organic chemicals (VOCs), such as benzene, toluene, ethyl benzene, and xylene (BTEX) are commonly present as soil and groundwater contaminants, and in some cases chemical components in non-aqueous phase liquids (NAPL) such as oil or tar within soils and abandoned pipelines. These compounds are not expected to be at concentrations that exposure symptoms would occur. These compounds generally have a depressant effect on the CNS, may cause chronic liver and kidney damage, and some are suspected human carcinogens. Benzene is a known human carcinogen. Acute exposure may include headache, dizziness, nausea, and skin and eye irritation. The primary routes of exposure to VOCs are through inhalation and direct contact, therefore air monitoring, gloves, and respiratory protection are the primary controls against exposure to VOCs.

### Table 4. Primary Constituents of Concern Data

| Constituent | Exposure Limit(s) | Route of Exposure | Primary Hazard/ Symptoms of Exposure |
|---|---|---|---|
| (Link to COC Data Table)<br>If a COC for your site is not included in this table, use The CDC NIOSH Guide | | | |
| Arsenic | 0.01 mg/m$^3$ A.L. 0.005mg/m$^3$ | Inhalation, skin absorption, ingestion, skin contact | Ulceration of nasal septum, dermatitis, GI disturbances, peripheral neuropathy, respiratory irritation, hyperpigmentation of skin, potential carcinogen |
| Benzene | 1 ppm TWA 5 ppm STEL | Ingestion | Irritation of eyes, skin, nose, respiratory system, giddiness, headache, nausea; staggering gait, fatigue, anorexia, weakness, dermatitis, bone marrow depression, potential carcinogen |
| Gasoline | 300 ppm TWA 500 ppm STEL | inhalation, skin absorption, ingestion, skin and/or eye contact | Irritation eyes, skin, mucous membrane; dermatitis; headache, lassitude (weakness, exhaustion), blurred vision, dizziness, slurred speech, confusion, convulsions; chemical pneumonitis (aspiration liquid); possible liver, kidney damage; [potential occupational carcinogen] |

| Constituent | Exposure Limit(s) | Route of Exposure | Primary Hazard/ Symptoms of Exposure |
|---|---|---|---|
| (Link to COC Data Table)<br>If a COC for your site is not included in this table, use The CDC NIOSH Guide | | | |
| Petroleum Hydrocarbons (TPH/EPH) | Dependent on Specific Compounds If Known (i.e. BTEX, PAHs) | Inhalation, Ingestion, Skin/eye Contact | Potential symptoms depend on the specific compounds but can include: headaches, dizziness, numbness in feet and legs, and effects on blood, immune system, lungs, skin, and eyes. |
| Ethylbenzene | 100 ppm | Inhalation | Eye, skin, mucous membrane irritation; headache; dermatitis, narcosis; coma |
| Toluene | 200 ppm | Skin Contact | Eye, nose irritation; fatigue, weakness, confusion, euphoria, dizziness, headache; dilated pupils, tearing of eyes; nervousness, muscle fatigue, insomnia, tingling in limbs; dermatitis |
| Xylene | 100 ppm | Inhalation | Eye, skin, nose, throat irritation; dizziness, excitement, drowsiness; incoordination, staggering gait; corneal damage; appetite loss, nausea, vomiting, abdominal pain; dermatitis |

**Notes:**
A.L. - Action Level
C - ceiling limit, not to be exceeded
Ca – carcinogen
f/cc - fibers per cubic centimeter
mg/m$^3$ - micrograms per cubic meter
mppcf - millions of particulates per cubic foot of air
ppm - parts per million
STEL - Short-term exposure limit (15 minutes)
TWA - Time-weighted average (8 hours)

### *4.4.2 Chemicals Brought on Site*

Potential hazards associated with chemicals brought on site (e.g., decontamination chemicals, sample preservatives, fuels, calibration fluids) for the work will be mitigated through training, administrative controls (e.g., proper labeling and storage), and proper use of PPE. SDSs for all chemicals brought on site shall be maintained by the SSM and are included in Appendix C.

# 5. Personal Protective Equipment

The PPE required to be worn on the project site is listed in the table below. Additional PPE required for the tasks to be performed is listed on the JHAs in Appendix B.

| **Site Required PPE** *(check all that apply)* | | |
|---|---|---|
| ☒ Hard Hat | ☐ Respirator | ☐ Tyvek clothing/boots |
| ☒ Safety Glasses | ☐ Flame Resistant Clothing | ☒ Hearing Protection |
| ☒ Safety Boots | ☐ Personal Flotation Device | ☒ Long Sleeve Shirt |
| ☒ Gloves (task specific) | ☐ Snake Chaps | ☒ Other: Face Shield (as needed) |
| ☒ High Visibility Safety Vest | ☐ EH-Rated Boots | ☐ Other: |

If site conditions suggest the existence of a situation more hazardous than anticipated, the site personnel will evacuate the area to a safe distance. The hazard, the level of precautions, and the PPE will then be reevaluated with the assistance and approval of the Safety Director and the PM. If conditions indicating the need for Level A or Level B PPE are encountered, personnel will leave the site and notify the PM or a member of the Safety Team. GEI's PPE Program can be found on the Safety Resources page of GEI Connections.

## 5.1 Respiratory PPE

GEI personnel who have the potential to don a respirator must have a valid fit test certification and medical clearance. Both the respirator and cartridges specified for use in Level C protection must be fit-tested prior to use in accordance with OSHA regulations (29 CFR 1910.134). Air purifying respirators cannot be worn under the following conditions:

- Oxygen deficiency (less than 20.7%).
- Imminent Danger to Life and Health (IDLH) concentrations.
- If contaminant levels exceed designated use concentrations.

Upgrades to respiratory protection may be required based on the designated Action Levels found in Section 9.

# 6. Responsibilities and Lines of Authority

## 6.1 GEI Personnel Responsibilities

The implementation of health and safety at this project location will be the shared responsibility of the Safety Director, Regional Safety Manager (RSM), PM, the SSM, and each GEI personnel implementing the proposed scope of work.

### *6.1.1 GEI Safety Director*

The Safety Director is responsible for the overall management of GEI's safety programs, policies, and procedures. Modifications to this HASP which may result in the reduction in the identification, evaluation, and control of safety and health hazards cannot be undertaken by the project team without the approval of the Safety Director.

### *6.1.2 GEI Project Manager*

The PM is responsible for confirming that the requirements of this HASP are implemented. The PM's specific responsibilities include:

- Conducting and documenting the Project Safety Briefing.
- Verifying that the GEI staff and subcontractors selected to work on this program are sufficiently trained for site activities and have reviewed this HASP.
- Maintaining regular communications with the SSM and, if necessary, the Safety Director.

### *6.1.3 GEI Regional Safety Manager*

The RSM is responsible for supporting the safety needs and requirements specified in this HASP. The RSM's specific responsibilities include:

- Reviewing and approving the HASP and applicable JHAs.
- Working with the PM and SSM to meet client safety requirements.
- Providing approval for fall protection plans and confined space entries (permit numbers), as applicable.
- Providing safety support regarding safety programs and procedures as applicable to the project.

### *6.1.4 GEI Site Safety Manager*

The SSM is responsible for implementing and enforcing the safety requirements specified in this HASP and will be on-site during activities covered in the HASP. The SSM's specific responsibilities include:

- Enforcing the requirements of this HASP and notify the PM of noncompliance.
- Conduct daily Safety Tailgate meetings for site-related work.
- Maintaining a high level of health and safety consciousness among employees implementing the proposed activities.
- Procuring the air monitoring instrumentation, PPE, and safety equipment needed for GEI project employees and verifying that each is in good working order.
- Verifying that GEI subcontractors are utilizing the correct PPE and safety equipment.

### *6.1.5 All GEI Field Personnel*

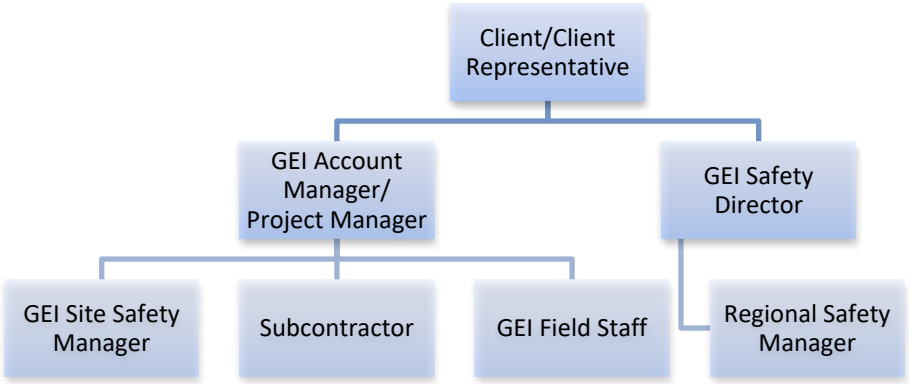
All GEI field personnel (including the PM and SSM) covered by this HASP are responsible for following the health and safety procedures in this HASP and for performing their work in a safe and responsible manner. The specific responsibilities that apply to all field personnel include:

- Reading and signing the HASP prior to the start of on-site work.
- Bringing forth any questions or concerns regarding the content of the HASP to the PM or the SSM.
- Attending and actively participating in the required Project Safety Briefing prior to beginning on-site work and any subsequent safety meetings.
- Complying with the requirements of this HASP and the requests of the SSM.
- Stopping work in the event that an immediate danger situation is perceived.
- Reporting accidents, injuries, and illnesses, regardless of their severity by following GEI's incident reporting procedures.

## 6.2 Lines of Authority

GEI will have responsibility for safety of its employees during the work performed at the site. GEI's SSM will have a cell phone available to contact the appropriate local authorities, in the event of an emergency. GEI's SSM will be available for communication with the GEI PM and with the Client's representative.

**Project Lines of Authority**




### *6.2.1 Stop Work Authority*

**GEI employees have the authority to stop work activities if an unanticipated hazard is encountered or a potential unsafe condition is observed. The GEI employee should contact the Safety Director and the Project Manager to discuss the stop work conditions and potential control methods that can be implemented.**

## 6.3 Subcontractors

GEI has subcontracted the following firms to assist in performing work on this project:

| **Subcontractor Information** | |
|---|---|
| Company Name/Address: Atlantic Testing Laboratories (ATL)<br>6431 US Highway 11, Canton, NY | |
| Contact Name: Greg Genco | Cell: (716) 649-8110 |
| Scope of Work: Drilling soil borings and monitoring wells | |

GEI requires its subcontractors to work in a responsible and safe manner. Subcontractors hired by GEI are required to submit documentation of their safety practices as part of GEI's Subcontractor Safety Prequalification for evaluation and approval before the start of work. Subcontractors for this project will be required to develop their own HASP for protection of their employees, but, at a minimum, must adhere to applicable requirements set forth in this HASP. The PM will obtain applicable safety certifications and training records from the subcontractor's site supervisor prior to the initiation of work.

# 7. Training Requirements

Prior to commencement of field activities, the PM or their designee will verify GEI field personnel assigned to the project will have completed training that will specifically address the activities, procedures, monitoring, and equipment used in the site operations. This training will be documented on the applicable JHAs (Appendix B). Personnel that have not received project-specific training will not be allowed on site.

| **Applicable Site-Specific Training Requirements** *(check all that apply)* | | |
|---|---|---|
| ✔ HAZWOPER (8Hr Refresher) | ☐ Railroad Specific Training | ☐ Other: |
| ☐ HAZWOPER (Site Supervisor) | ☐ Transportation Worker Identification Credential (TWIC) | ☐ Other: |
| ✔ First Aid/CPR | ☐ MSHA (Mine Safety and Health Administration) | ☐ Other: |

## 7.1 On-Site Safety Briefings

GEI personnel will be given health and safety briefings daily (or as frequently as needed) by the SSM or their designee to plan for conducting work activities safely. The briefing will include GEI subcontractors and others as appropriate. The briefings can include information on:

- Applicable JHAs
- Changes in work practices
- Changes in environmental conditions
- Anticipated weather
- Evacuation/emergency procedures
- Air monitoring results
- Safety inspection results

Documentation of these briefings will be recorded in the GEI field book or the Tailgate Safety Briefing Form (Appendix D). For long-term projects, the Tailgate Safety Briefing Form is preferred.

# 8. Medical Surveillance Program

GEI maintains a medical surveillance program under the supervision of the Safety Director that includes a plan designed specifically for field personnel engaged in work at sites where hazardous materials may be present. Field personnel undergo an initial physical examination, including a detailed medical and occupational history before they are able to engage in work at hazardous waste sites. Upon successful completion of the examination, personnel are provided a medical clearance from an occupational health physician stating their fitness to perform the specified work activities. Employees who are part of this program will schedule and attend annual exams 12 months from the date of their previous exam.

If a GEI employee or other project worker shows symptoms of exposure to a hazardous substance and wishes to be seen by a doctor, GEI will consult with their third-party medical administrator and provide access to the nearest area hospital or medical facility.

GEI subcontractor personnel that will enter any hazardous waste sites must certify that they are participating in a medical surveillance program that complies with OSHA regulations for hazardous waste operations (i.e., 29 CFR 1910.120 and 29 CFR 1926.65). A copy of their medical clearance will be submitted to the GEI PM or SSM prior to the start of field activities.

# 9. Personal/Work Zone Air Monitoring

| **Personal/Work Zone Air Monitoring Required?** | |
|---|---|
| ☒ Yes | ☐ No |

Air monitoring, in the form of personal or work zone monitoring, will be performed to identify and quantify airborne levels of hazardous substances and atmospheric hazards to determine the appropriate level of worker protection needed on-site.

Work on this project requiring air monitoring includes:

| **Personal/Work Zone Air Monitoring Tasks** *(check all that apply)* | | |
|---|---|---|
| ☒ Excavation | ☐ Confined Space Entry | ☐ Other: |
| ☒ Soil Sampling | ☐ Indoor Drilling | ☐ Other: |
| ☒ GW Monitoring Well Headspace | ☐ Product Sampling | ☐ Other: |

The following air monitoring equipment will be on site:

| **Personal/Work Zone Air Monitoring Equipment** *(check all that apply)* | |
|---|---|
| ☒ PID with 10.6 eV lamp or equivalent | ☒ Particulate Meter (PM-10 capable) |
| ☐ Drager Chip Measurement System (CMS) with appropriate gas detection chips | ☐ Multi-gas meter: lower explosive limit (LEL) / oxygen ($O_2$) / hydrogen sulfide ($H_2S$) / hydrogen cyanide (HCN) or carbon monoxide (CO) meter |
| ☐ Sensidyne Gas Detection Pump with appropriate gas detector tubes (or equivalent colorimetric tube) | ☐ Other: |

GEI will conduct and document on-site work zone monitoring and will inform GEI employees of the results. ***If Action Levels are exceeded, immediately implement site action(s) according to Action Table below and notify the PM***.

## 9.1 Calibration

Air monitoring equipment will be calibrated and maintained in accordance with manufacturer's requirements. Calibrations will be recorded in the project notes daily or on a daily calibration form.

## 9.2 Action Levels

The tables below provide a summary of real time air monitoring Action Levels and contingency plans for work zone activities. The below Action Levels are determined by halving the Permissible Exposure Limits (PELs) or Threshold Limit Values (TLVs) as set

forth by OSHA and the American Conference of Government Industrial Hygienists (ACGIH).

### *9.2.1 VOC Monitoring and Control*

Air monitoring reduces the risk of overexposure by indicating when action levels have been exceeded and when PPE must be upgraded or changed. Based on the volatile organic compounds (VOCs) listed in Table 4, determine which constituent has the lowest permissible exposure limit (PEL). This data is used to determine the action levels needed including respiratory protection at the project site. GEI's action level is half of the PEL listed in Table 4 (exception is made for benzene).

Exposure to organic COC can be evaluated and/or controlled by:

- Monitoring worker breathing zone atmospheric concentrations for organic COC in the breathing zone with a photoionization detector (PID).
- When possible, engineering control measures will be utilized to suppress the volatile organic vapors. Engineering methods can include utilizing a fan to promote air circulation, utilizing volatile suppressant foam, providing artificial ground cover, or covering up the impacted material with a tarp to mitigate volatile odors.
- When volatile suppression engineering controls are not effective and organic vapor meters indicate concentrations above the action levels, then appropriate respiratory protection (i.e., air purifying respirator with organic vapor cartridge) will be employed.

| Air Monitoring Instrument | Action Level (above background) | Site Action |
|---|---|---|
| Action Levels for the following parameters are 15-minute time weighted averages (TWA), not a single exceedance. | | |
| PID (Monitoring for VOCs) | 0.0 – 50 ppm | No respiratory protection is required if VOCs are not present. (If benzene or naphthalene are constituents of interest at this site, follow the action levels below for benzene and/or naphthalene.) |
| | > 50 ppm | Stop work, withdrawal from work area, institute engineering controls, if levels persist, upgrade to Level C. Notify PM and Safety Team. |
| PID (Monitoring for benzene) | 0.0 - 1.0 ppm | No respiratory protection is required if benzene is not present. Use a detector tube for benzene to verify if concentration of 1.0 ppm or greater is benzene. |
| | 1.0 – 50 ppm | If benzene is present (confirmation via detector tube), stop work and contact your PM. If work continues and benzene is present, or no detector tubes are used to determine presence, upgrade to Level C. No respiratory protection is required if benzene is not present. |
| | > 50 ppm | Stop work, withdraw from work area, notify PM and Safety Team. |

### *9.2.2 Dust Monitoring and Control*

Some COC hazards may become hazardous when they are associated with dust/particles and become airborne. For worker safety, dust levels must be managed to eliminate this hazard. Dust generated during activities can cause irritation to the respiratory system and eyes. Contaminants can also be carried in airborne dust causing potential exposure to workers through skin contact and inhalation. Constituent concentrations on site are expected to be low therefore the exposure hazard through inhalation should be minimal; however, contaminant contact through skin and clothing can introduce additional exposures.

For dust generated during site activities which exceed site-specific limits, engineering controls such as water application will be used to control dust concentrations. However, if excessive dust concentrations cannot to be handled through engineering controls, then respirators will be required to be worn.

| Air Monitoring Instrument | Action Level (above background) | Site Action |
|---|---|---|
| Action Levels for the following parameters are 15-minute time weighted averages (TWA), not a single exceedance. | | |
| Particulate Meter | 150 µg/m$^3$ | Implement work practices to reduce/minimize airborne dust generation, e.g., spray/misting of soil with water. Don respirator with particulate filters if action levels remain in exceedance. |

# 10. Site Control

## 10.1 Site Zones

Site zones are intended to control the potential spread of contamination and to assure that only authorized individuals are permitted into potentially hazardous areas. This project is being conducted under the requirements of 29 CFR 1910.120, and any personnel working in an area where the potential for exposure to site contaminants exists, will only be allowed access after proper training and medical documentation.

## 10.2 Buddy System

GEI personnel should be in line-of-site or communication contact with another on-site person. The other on-site person should be aware of his or her role as a "buddy" and be able to help in the event of an emergency. Some projects may not support the need for the buddy system to be implemented. If this is the case, the PM is required to conduct regular check-ins with the employee on site.

## 10.3 Sanitation for Temporary Work Sites

Sanitation requirements identified in the OSHA Standard 29 CFR 1926.51 "Sanitation" specifies that employees working at temporary project sites have at least one sanitary facility available to them. Downtown Olean is approximately 1.3 miles away from the Site and has many commercial businesses where employees can use facilities.

## 10.4 Illumination

Illumination requirements identified by OSHA are directed to work efforts inside buildings and/or during non-daylight hours. Activities planned for the site are anticipated to occur outside during daylight hours. However, if work areas do not meet illumination requirements, they will be equipped with appropriate illumination that meets or exceeds requirements specified in OSHA Standard 29 CFR 1926.56. Employees will not work on sites that are not properly lighted.

## 10.5 Smoking

Smoking is prohibited at or in the vicinity of hazardous operations or materials. Where smoking is permitted, safe receptacles will be provided for smoking materials.

## 10.6 Alcohol and Drug Abuse Prevention

Alcohol and drugs will not be allowed on the site. Project personnel under the influence of alcohol or drugs will not be allowed to enter the site. All GEI employees must comply with GEI's Controlled Substance Use & Alcohol Misuse Policy found on the Safety Resources page of GEI Connections. Employees may be subject to random drug and/or alcohol testing if required by a client at a project site.

# 11. Incident Reporting

GEI will report incidents involving GEI personnel or subcontractor personnel, such as: lost time injuries, injuries requiring medical attention, near miss incidents, fires, fatalities, accidents involving the public, chemical spills, vehicle accidents, and property damage. The following steps must be followed when an incident occurs:

1. For incidents involving life-threatening situations or serious injury that require emergency response personnel (Police, Fire, EMS), call 9-1-1 from a safe area.
2. **Stop work** activity to address any injury, illness, property damage, spill, or other emergency.
3. Call Medcor Triage at 1-800-775-5866 to speak with a medical professional following any injury or illness.
4. Notify your Supervisor/PM of the incident or injury.
5. Complete an incident report using the GEI Incident Report Form located on the GEI Safety Smartphone App, GEI Connections intranet page, or in the project HASP.
6. Resume work activity if all steps above have been completed and it is safe to do so.

For vehicle accidents involving another vehicle or damage to property, the employee will take pictures of each vehicle or property involved in the incident and obtain a police report. In some municipalities police will not be dispatched to a non-injury accident, but every effort needs to be made to try and obtain the report.

The Incident Report Form and the Near Miss Reporting Form can be found in Appendix D, on the GEI Health and Safety smartphone app, or on the Safety Resources page of GEI Connections. To report subcontractor injuries or incidents, follow the same verbal reporting procedures and submit an email describing the event to the PM and the Safety Team.

## 11.1 Injury Triage Service

If a GEI employee experiences a work-related injury that is not life-threatening, the employee will initiate a call to Medcor Triage at 1-800-775-5866. The injured employee will detail any medical symptoms or complaints which will be evaluated by a Registered Nurse (RN) specially trained to perform telephonic triage. The RN will recommend first aid self-treatment or refer the injured employee for an off-site medical evaluation by a health professional at a clinic within GEI's workers compensation provider network. GEI employees are still required to follow our Accident Reporting procedures as listed above.

# 12. Decontamination Procedures

Site decontamination procedures are designed to achieve an orderly, controlled removal or neutralization of contaminants that may come in contact with personnel or equipment. These procedures minimize contact with contaminants and protect against the transfer of contaminants to clean areas. They also extend the useful life of PPE by reducing the amount of time that contaminants contact and can permeate PPE surfaces. This project is being conducted under the requirements of 29 CFR 1910.120(k), and any personnel or equipment that are exposed to site contaminants will follow applicable decontamination procedures.

## 12.1 Personnel and PPE Decontamination

Contaminated PPE (gloves, suits, etc.) will be decontaminated and stored for reuse or placed in plastic bags (or other appropriate containers) and disposed of in an approved facility. Decontamination wastewater and used cleaning fluids will be collected and disposed of in accordance with applicable state and federal regulations.

## 12.2 Equipment Decontamination

All tools, equipment, and machinery that have come into contact with contaminated media, will be decontaminated on site prior to departure. Equipment decontamination procedures are designed to minimize the potential for hazardous skin or inhalation exposure and to avoid cross-contamination and chemical incompatibilities. If your project has equipment decontamination specification refer to where those can be found (work plan, specs, etc.)

# 13. Emergency Response

## 13.1 Evacuation

Prior to the start of work, emergency procedures must be identified and communicated to workers on site. This includes evacuation routes, safe areas, and/or muster points (Figure 1). Also communicate how employees will be notified that an emergency or evacuation of the site is occurring (audio alarms, visible (light) alarms, radios, sirens, etc.) Upon discovering an emergency situation, personnel will notify the SSM, who will initiate an appropriate response. Once the scene is safe, use the incident report procedures to report the evacuation to the PM and Safety Team.

## 13.2 Fire

In the event of a fire personnel will evacuate the area to the muster points located on Figure 1. GEI's SSM will contact the local fire department and report the fire. The SSM will account for GEI personnel and subcontractor personnel and report their status to the PM. Incident reporting procedures will be followed once the scene is safe.

## 13.3 Spills or Material Release

If a hazardous waste spill or material release occurs, if safe, the SSM or their representative will immediately assess the magnitude and potential seriousness of the spill or release based on the following:

- SDS for the material spilled or released.
- Source of the release or spillage of hazardous material.
- An estimate of the quantity released and the rate at which it is being released.
- The direction in which the spill or air release is moving.
- Personnel who may be or may have been in contact with the material, or air release, and possible injury or sickness as a result.
- Potential for fire and/or explosion resulting from the situation; and
- Estimates of area under influence of release.

If the spill or release is determined to be within the on-site emergency response capabilities, the SSM will verify implementation of the necessary remedial action. If the release is beyond the capabilities of the site personnel, personnel will be evacuated from the immediate area and the fire department will be contacted. The SSM will notify the PM and follow the incident reporting procedures.

## 13.4 Medical Support

In case of minor injuries, on-site care will be administered with the site first aid kit. A GEI employee certified by the American Red Cross or other American Health & Safety Institute (ASHI) will be on-site at all times. For serious injuries, call 911 and request emergency medical assistance. Seriously injured persons should not be moved unless they are in immediate danger. Notify the PM of the emergency and follow incident reporting procedures.

In the event of an emergency, prompt communications with local emergency responders are essential. At least one charged and functioning cell phone to enable emergency communications will be on site. Confirmation of cellular phone operation will be confirmed at the start of each working day.

Table 1 of this HASP contains detailed emergency information, including directions to the nearest hospital, and a list of emergency services and their telephone numbers. In addition, Appendix A includes a map to the local hospital/emergency room and Figure 1 indicates the evacuation route (including muster point).

## 13.5 Severe Weather

The contingency plan for severe weather includes reviewing the expected weather to determine if severe weather is in the forecast. Severe weather includes high winds over 40 miles per hour (mph), heavy rains or snow squalls, thunderstorms, tornados, and lightning storms. If severe weather is approaching, the decision to evacuate GEI personnel and subcontractor personnel from the site will be the responsibility of GEI's SSM. Notification of evacuation will be made to the PM. The SSM will account for GEI personnel and subcontractor personnel and report their status to the PM. If safe, work can resume 30 minutes after the last clap of thunder or flash of lightning.

## 13.6 Hazard Communication Plan

GEI personnel have received hazard communication (HAZCOM) training as part of their annual safety training and new employee safety orientation training. Hazardous materials brought on site will be properly labeled, stored, and handled. SDSs for each chemical will be included in this HASP in Appendix C. GEI's HAZCOM program can be found on the Safety Resources page of GEI Connections (Appendix E).

# 14. Health and Safety Plan Sign-Off

GEI personnel conducting site activities will be familiar with the information in this HASP. After reviewing this plan, please sign the copy in the project files, and bring a copy of the plan with you to the site. By signing this site-specific HASP, you are agreeing that you have read, understand, and will adhere to the provisions described in this plan while working on the site below.

**Site Name:** 1641 River Street Redevelopment Site

**GEI Project No:** 2600988

| Print Name | Signature |
|---|---|
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| Project Manager:<br>Jeffrey Hall | |

# Figure

**Figure 1. Site Location and Muster Point**

# INVESTIGATION LOCATIONS

***LEGEND:***

- Test Pit (December 2019)
- Water Main (City of Olean)
- Petroleum Pipeline (Abandoned)
- Property Parcel
- Proposed RI Boring/Monitoring Well
- Proposed RI Test Pit

(1) Test Pit located to assess potential migration pathway from former infrastructure

**NOTES:**
Location of public utilities based on 2014 drawings from the City of Olean

Muster point for work on north portion of Site

Muster point for work on south portion of Site

(1)
TP-1
TP-2
TP-3
TP-4
TP-5
TP-6
TP-7
TP-8
TP-9

1641 River St
(27.4 Acres)

N
W E
S

GEI Consultants

0 100 200 400
Feet




1641 River St

Olean, New York

Project 2406810 November 2025 Figure 1

USGS The National Map: National Boundaries Dataset, 3DEP Elevation Program, Geographic Names Information System, National Hydrography Dataset, National Land Cover Database, National Structures Dataset, and National Transportation Dataset; USGS Global Ecosystems; U.S. Census Bureau TIGER/Line data; USFS Road data; Natural Earth Data; U.S. Department of State HIU; NOAA National Centers for Environmental

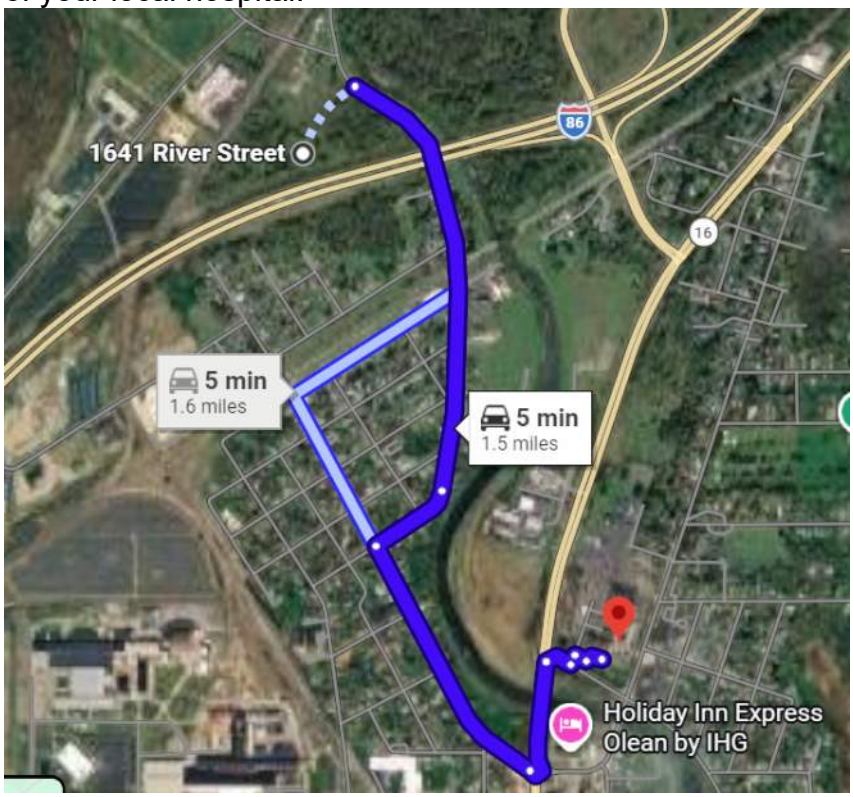
Path: C:\Users\JCarley\3930\GEI Consultants, Inc\Buffalo GIS - Documents\General\Projects\Proposals\Olean\Olean.aprx

# Appendix A

## Hospital Directions

| Hospital Information | |
|---|---|
| **Local Hospital: Olean General**<br>515 Main St, Olean, NY 14760 | (716) 375-6275 |

Scan this QR code or click the link for access to Google Maps to type in the address of your local hospital.



# Appendix B

## Job Hazard Analyses

## Job Hazard Analysis

| Task | Driving – Site Mobilization | | |
|---|---|---|---|
| **Project Name/Number** | 1641 River Street Redevelopment Site / 2600988 | **Client Name** | 1641 River Road, LLC |
| **GEI Project Manager** | Jeffrey Hall | **PM Review Date** | 03/30/2026 |
| **Tools/Equipment Used** | GEI fleet vehicle, rental vehicle, or personal vehicle | | |
| **Task Specific Training** | GEI Annual Safety Training (Field or HAZWOPER), First Aid/CPR | | |
| **Personal Protective Equipment (PPE)** | ☐ Hard Hat ☐Safety Glasses ☐Safety-Toed Boots ☐ Reflective Vest ☐Hearing Protection ☐ Personal Flotation Device (PFD) ☐ Face Shield ☐ Chaps ☐ Tyvek clothing/boots ☐ Flame Resistant Clothing ☐ Gloves ☐Respirator ☐Other | | |

| JHA Prepared By: Emily Dallas | Date: 3/18/2026 | Approved by: Jessie Papageorge | Date: 3/30/26 |
|---|---|---|---|

| Task Steps | Potential Hazards | GEI SOP or Program | Hazard Controls[1] |
|---|---|---|---|
| 1. Inspect Vehicle | Slips/trips/falls | Hazard Identification HS-026<br>Driver Safety HS-004 | • Walk around vehicle to inspect for any vehicle safety issues or hazards that could be within the travel path.<br>• Adjust mirrors and seats prior to driving.<br>• Becoming familiar with dashboard, center console, and steering controls.<br>• Locate the turn signals, windshield wipers, lights, emergency flashers, and the heating, air conditioning, and defrost controls.<br>• Use a spotter if needed when backing up. |
| 2. Driving | Struck by/crushing hazards | Driver Safety SOP HS-004 | • Employees must wear their safety belt while in a moving vehicle.<br>• Employees will follow safe driving behaviors, which include limiting distractions such as manipulating radios or other equipment that may cause a distraction. Employees will not exceed the posted speed limit and will maintain a safe distance between other vehicles.<br>• Use defensive driving techniques.<br>• Avoid driving during hazardous weather conditions.<br>• Driving distance and time after a 12-hour shift will not exceed 30 miles or 30 minutes (whichever is greater).<br>• Vehicle accidents will be reported in accordance with GEI's accident reporting procedures. |

[1] Use the hierarchy of controls to determine applicable hazard controls for the task in order of most effective to least effective: Elimination (physically remove the hazard), Substitution (replace the hazard), Engineering Controls (Isolate the team from the hazard), Administrative Controls (change how we work), PPE (personal protective equipment).

| Task Steps | Potential Hazards | GEI SOP or Program | Hazard Controls[1] |
|---|---|---|---|
| 3. Parking Vehicle | Struck by, crushing hazards, security | Driver Safety SOP HS-004 | • Be aware of surrounding conditions. Park in designated areas or a safe area away from heavy equipment.<br>• Position the vehicle in a manner which reduces or eliminates the need to operate the vehicle in reverse. Choose an easy-exit parking space, like pull-through or where no one else is parked.<br>• Don't crowd neighboring vehicles; be sure to park your vehicle in the middle of your space.<br>• Secure equipment and supplies in the trunk or where they cannot be seen. Or take items with you if they cannot be hidden.<br>• If at night, park in well-lit areas. |
| 4. Site Entry | Slips/trips/falls, struck by, crushing | Working Around Heavy Equipment HS-018<br><br>Hazard Identification HS-026 | • Don appropriate PPE prior to walking on site.<br>• Identify yourself and your work location to heavy equipment operators, so they may incorporate you into their operations.<br>• Stay Alert! Pay attention to equipment backup alarms and swing radii.<br>• Avoid distractions like using cell phones while traversing the site. |
| 5. Backing Up Vehicle | Struck by, crushing | Driver Safety HS-004 | • Before entering your vehicle do a walk-around. Check for fences, poles, drop-offs, buildings, etc.<br>• Know your clearances. While performing your walk-around also check for obstructions, low hanging eaves and tree limbs, wires, and any other potential clearance-related obstacles.<br>• Use a spotter. Do not allow the spotter to be positioned directly behind your vehicle or walk backwards behind you while giving instructions. They should be off to the driver's side where you can see them in your side mirror. |

## Job Hazard Analysis

| | | | |
|---|---|---|---|
| **Task** | **Soil Sampling – Test Pits** | | |
| **Project Name/Number** | 1641 River Street Redevelopment Site / 2600988 | **Client Name** | 1641 River Street, LLC |
| **GEI Project Manager** | Jeffrey Hall | **PM Review Date** | 03/30/2026 |
| **Tools/Equipment Used** | Excavator (operated by subcontractor), trowel, sample jars, decon equipment | | |
| **Task Specific Training** | GEI Annual Safety Training (Field or HAZWOPER), First Aid/CPR | | |
| **Personal Protective Equipment (PPE)** | ☒ Hard Hat ☒Safety Glasses ☒Safety-Toed Boots ☒ Reflective Vest ☐Hearing Protection ☐ Personal Flotation Device (PFD) ☐ Face Shield ☐ Chaps ☐ Tyvek clothing/boots ☐ Flame Resistant Clothing ☒ Gloves Nitrile ☐Respirator ☐Other | | |
| **JHA Prepared By: Emily Dallas** | **Date: 3/18/2026** | **Approved by: Jessie Papageorge** | **Date: 3/30/26** |

| Task Steps | Potential Hazards | GEI SOP or Program | Hazard Controls[1] |
|---|---|---|---|
| 1. Mobilize on site | Heavy lifting, strains/sprains, slip/trips/falls, pinch points, struck by, crushing hazards | Working Around Heavy Equipment HS-018<br>Manual Lifting HS-025<br>Hazard Identification HS-026<br>GEI Ergonomic Program<br>GEI Personal Protective Equipment Program | • Don appropriate PPE that properly fits, is in good condition, and is suitable for the activities and hazards.<br>• Check in with appropriate heavy equipment operator personnel as applicable.<br>• Maintain good visibility of the work area.<br>• Avoid walking on uneven, steeply sloped, or debris ridden ground surfaces.<br>• Plan tasks prior to preforming them including an activity hazard analysis.<br>• Keep trafficked areas free from slip/trip/fall hazards.<br>• Avoid traversing steep areas in slippery conditions.<br>• Do not carry heavy objects to work areas, on steeply sloped areas, or where steep areas must be traversed to reach work areas.<br>• Use the buddy system when necessary. |

[1] Use the hierarchy of controls to determine applicable hazard controls for the task in order of most effective to least effective: Elimination (physically remove the hazard), Substitution (replace the hazard), Engineering Controls (Isolate the team from the hazard), Administrative Controls (change the way people work), PPE (personal protective equipment).

| Task Steps | Potential Hazards | GEI SOP or Program | Hazard Controls[1] |
|---|---|---|---|
| 2. Utility survey | Shock, Explosion, Fire | Utility Mark Out HS-014 | • Confirm that all utilities have been properly marked prior to beginning work.<br>• If a utility strike occurs, call the appropriate authorities immediately. Clear the area and do not delay. |
| 3. Conduct project activities around/near heavy equipment operations | Slip/trips/falls, pinch points, struck by, crushing hazards, unstable or non-secured load, noise exposure | Noise Exposure HS-012<br>Traffic Hazards HS-016<br>Working Around Heavy Equipment HS-018<br>Hazard Identification HS-026<br>GEI Ergonomic Program<br>GEI Personal Protective Equipment Program | • Identify yourself and your work location to heavy equipment operators so they may incorporate you into their operations.<br>• Coordinate hand signals with operators and field staff.<br>• Approach heavy equipment from the front so operator can see you.<br>• Stay alert! Pay attention to equipment backup alarms and swing radii.<br>• Wear high visibility safety reflective vest when working near equipment and/or motor vehicle traffic.<br>• Position yourself in a safe location when filling out logs or talking with contractor or other field staff.<br>• Notify the contractor immediately if any problems arise.<br>• Do not stand or sit under suspended loads or near any pressurized equipment lines.<br>• Do not sit and stand near heavy equipment that is when materials are being unloaded, loaded, etc.<br>• If a task requires inspection of materials, this should be done after they are securely stored.<br>• Do not operate cellular telephones in the vicinity of heavy equipment operation. |
| 4. Soil Sampling – Trowel (or similar) | Contaminant Exposure, Cuts/Scrapes, Repetition, Slips/Trips/Falls | Hazard Identification HS-026/Container Management HS-003 | • GEI Employees will not enter test pits deeper than 4 feet<br>• GEI may enter test pits less than 5 feet deep which has been inspected and deemed safe by a competent person.<br>• Samples will be collected via excavator bucket and brought to the surface<br>• Atmosphere in the trench shall be tested before employees enter excavations greater than 4 feet in depth.<br>• Heavy equipment and spoils should be kept at least 2 feet away from trench edges.<br>• GEI employees will remain at least 5 feet from the edge of test pits<br>• Inspect equipment or tools prior to use. Tag and remove from service if tool is damaged.<br>• Dispose of gloves after use and wash hands. |

| Task Steps | Potential Hazards | GEI SOP or Program | Hazard Controls[1] |
|---|---|---|---|
| | | | • Wear work gloves over nitrile gloves.<br>• Take regular breaks and do not work in unusual positions for long periods of time.<br>• Keep trafficked areas free from slip/trip/fall hazards. |
| 5. Pack Soil Samples | Heavy lifting, cuts, or abrasions | Manual Lifting HS–025<br>Ergonomic Program | • Confirm that the lids on all bottles are tight (will not leak).<br>• Place cushioning/absorbent material in the bottom of the cooler and then place the containers in the cooler with sufficient space to allow for the addition of cushioning between the containers.<br>• Use proper dollies or other lifting tools.<br>• Use proper lifting techniques.<br>• Take regular breaks and do not work in unusual positions for long periods of time.<br>• If glassware breaks, dispose of in puncture-resistant containers. Use cut resistant gloves to handle any broken glass. |
| 6. Equipment Decontamination | Contaminant Contact, Cuts or Abrasions, Slips/Trips/Falls | Hazard Identification HS–026<br>Ergonomic Program | • Wear nitrile gloves and glasses to provide eye protection from splashing.<br>• Wash hands immediately after use.<br>• Take regular breaks and do not work in unusual positions for long periods of time.<br>• Keep trafficked areas free from slip/trip/fall hazards. |
| 7. Demobilize from site | Personal/material security, slips/trips/falls | Hazard Identification HS-026 | • Confirm all materials are secured/labeled, including drums and any equipment left on site.<br>• Confirm that any open trenches/pits are properly marked or barricaded.<br>• Clean all equipment/tools prior to leaving.<br>• Secure any gates/locks.<br>• Notify project manager (or designee) you are leaving the site. |

## Job Hazard Analysis

| | | | |
|---|---|---|---|
| **Task** | **Soil Sampling – Drill Rig** | | |
| **Project Name/Number** | 1641 River Street Redevelopment Site / 2600988 | **Client Name** | 1641 River Street, LLC |
| **GEI Project Manager** | Jeffrey Hall | **PM Review Date** | 03/30/2026 |
| **Tools/Equipment Used** | Geoprobe Drill Rig (operated by subcontractor), PID, measuring tape, metal spoon/spatula | | |
| **Task Specific Training** | GEI Annual Safety Training (Field or HAZWOPER), First Aid/CPR | | |
| **Personal Protective Equipment (PPE)** | ☒ Hard Hat ☒Safety Glasses ☒Safety-Toed Boots ☒ Reflective Vest ☒Hearing Protection ☐ Personal Flotation Device (PFD) ☐ Face Shield ☐ Chaps ☐ Tyvek clothing/boots ☐ Flame Resistant Clothing ☒ Gloves Nitrile, Cut resistant ☒Respirator if action levels are exceeded ☐Other | | |

| | | | |
|---|---|---|---|
| **JHA Prepared By: Emily Dallas** | **Date: 3/18/2026** | **Approved by: Jessie Papageorge** | **Date: 3/30/26** |

| Task Steps | Potential Hazards | GEI SOP or Program | Hazard Controls[1] |
|---|---|---|---|
| 1. Mobilize On Site/Equipment Setup | Slips/trips/falls, stuck by, crushing hazards | Hazard Identification HS-026 | • Wear PPE that properly fits, is in good condition, and is appropriate for the activities and hazards.<br>• Maintain good visibility of the work area.<br>• Avoid walking on uneven, steeply sloped, or debris ridden ground surfaces.<br>• Plan tasks prior to preforming them including an activity hazard analysis.<br>• Keep trafficked areas free from slip/trip/fall hazards.<br>• Wear shoes with traction.<br>• Avoid traversing steep areas in slippery conditions.<br>• Do not carry heavy objects to work areas, on steeply sloped areas, or where steep areas must be traversed to reach work areas. |

[1] Use the hierarchy of controls to determine applicable hazard controls for the task in order of most effective to least effective: Elimination (physically remove the hazard), Substitution (replace the hazard), Engineering Controls (Isolate the team from the hazard), Administrative Controls (change the way people work), PPE (personal protective equipment).

| Task Steps | Potential Hazards | GEI SOP or Program | Hazard Controls[1] |
|---|---|---|---|
| 2. Utility survey | Shock, Explosion, Fire | Utility Mark Out HS-014 | • Confirm that all utilities have been properly marked prior to beginning work.<br>• If a utility strike occurs, call the appropriate authorities. immediately. Clear the area and do not delay. |
| 3. Observe contractor activities | Struck by/crushing hazards | Working Around Heavy Equipment HS-018 | • Identify yourself and your work location to heavy equipment operators, so they may incorporate you into their operations.<br>• Coordinate hand signals with operators.<br>• Confirm equipment inspection has been completed.<br>• Stay Alert! Pay attention to equipment backup alarms and swing radii.<br>• Position yourself in a safe location.<br>• Confirm adequate clearance from overhead utilities.<br>• Notify the contractor immediately if any problems arise.<br>• Do not stand or sit under suspended loads or near any pressurized equipment lines.<br>• Do not operate cellular telephones in the vicinity of heavy equipment operation. |
| 4. Cutting Soil Core Liners | Cuts/lacerations, contaminant exposure | Non-Powered Hand Tools HS-008a<br>Ergonomic Program | • Eliminate the hazard by having the drillers open the cores/liners for you.<br>o Keep a safe distance from the core while they are cutting the liner (hands, face, and body).<br>o Do not stand on either side of the core in the direction they are cutting.<br>o Make sure your safety glasses are on, in case of material splatter.<br>• If you are cutting the liner, use a liner cutting tool, safety shears, or at a minimum hooked blades on a self-retracting knife.<br>• When using cutting tools, follow these safety precautions:<br>o Wear cut resistant gloves.<br>o Keep free hand out of the way.<br>o Secure the liner if cutting through thick material.<br>o Use only sharp blades; dull blades require more force that results in less control.<br>o Do not put the sharp cutting tool in your pocket.<br>• Use care when evaluating cores, as the plastic that has been cut can be sharp. |
| 5. Sample Soil | Contaminant Exposure, Cuts/Scrapes, Repetition, | Hazard Identification HS-026/Container Management HS-003 | • Dispose of gloves after use and wash hands.<br>• Wear work gloves over nitrile gloves.<br>• Excavation entry will be allowed only with proper sloping or |

| Task Steps | Potential Hazards | GEI SOP or Program | Hazard Controls[1] |
|---|---|---|---|
| | Slips/Trips/Falls | | shoring.<br>• Take regular breaks and do not work in unusual positions for long periods of time.<br>• Keep trafficked areas free from slip/trip/fall hazards. |
| 6. Drum Soil Cuttings | Contaminant Contact, Cuts or Abrasions Heavy Lifting , Slips/Trips/Falls | Container Management HS–003<br>Manual Lifting HS–025<br>Ergonomic Program | • Wear proper PPE during sampling including nitrile gloves and safety glasses and face shield as appropriate.<br>• Use proper dollies or drum moving tools.<br>• Use applicable tools to open/close drum lids.<br>• Do not handle drums with bulging sides.<br>• Dispose of gloves after use and wash hands.<br>• Wear work gloves over nitrile gloves.<br>• Use proper lifting techniques.<br>• Ask fellow worker for help.<br>• Keep trafficked areas free from slip/trip/fall hazards. |
| 7. Pack Soil Samples | Heavy lifting, cuts, or abrasions | Manual Lifting HS–025<br>Ergonomic Program | • Confirm that the lids on all bottles are tight (will not leak).<br>• Place cushioning/absorbent material in the bottom of the cooler and then place the containers in the cooler with sufficient space to allow for the addition of cushioning between the containers.<br>• Use proper dollies or other lifting tools.<br>• Use proper lifting techniques.<br>• Take regular breaks and do not work in unusual positions for long periods of time.<br>• If glassware breaks, dispose of in puncture-resistant containers. Use cut resistant gloves to handle any broken glass. |
| 8. Equipment Decontamination | Contaminant Contact, Cuts or Abrasions, Slips/Trips/Falls | Hazard Identification HS–026<br>Ergonomic Program | • Wear nitrile gloves and glasses to provide eye protection from splashing.<br>• Wash hands immediately after use.<br>• Take regular breaks and do not work in unusual positions for long periods of time.<br>• Keep trafficked areas free from slip/trip/fall hazards. |
| 9. Demobilize from site | Personal/material security, slips/trips/falls | Hazard Identification HS-026 | • Confirm all materials are secured/labeled, including drums and any equipment left on site.<br>• Confirm that any open trenches/pits are properly marked or barricaded.<br>• Clean all equipment/tools prior to leaving.<br>• Secure any gates/locks.<br>• Notify project manager (or designee) you are leaving the site. |

## Job Hazard Analysis

| Task | Contractor Oversight | | |
|---|---|---|---|
| **Project Name/Number** | 1641 River Street Redevelopment Site / 2600988 | **Client Name** | 1641 River Street, LLC |
| **GEI Project Manager** | Jeffrey Hall | **PM Review Date** | 03/30/2026 |
| **Tools/Equipment Used** | Field book, camera | | |
| **Task Specific Training** | GEI Annual Safety Training (HAZWOPER), First Aid/CPR | | |
| **Personal Protective Equipment (PPE)** | ☒ Hard Hat ☒Safety Glasses ☒Safety-Toed Boots ☒ Reflective Vest ☐Hearing Protection ☐ Personal Flotation Device (PFD) ☐ Face Shield ☐ Chaps ☐ Tyvek clothing/boots ☐ Flame Resistant Clothing ☒ Gloves Nitrile ☐Respirator ☐Other | | |

| JHA Prepared By: Emily Dallas | Date: 3/18/2026 | Approved by: Jessie Papageorge | Date: 3/30/26 |
|---|---|---|---|

| Task Steps | Potential Hazards | GEI SOP or Program | Hazard Controls[1] |
|---|---|---|---|
| 1. Mobilize on site | Slips/trips/falls, stuck by, crushing hazards | Hazard Identification HS-026 | • Wear PPE that properly fits, is in good condition, and is appropriate for the activities and hazards.<br>• Maintain good visibility of the work area.<br>• Avoid walking on uneven, steeply sloped, or debris ridden ground surfaces.<br>• Plan tasks prior to preforming them including an activity hazard analysis.<br>• Keep trafficked areas free from slip/trip/fall hazards.<br>• Wear shoes with traction.<br>• Avoid traversing steep areas in slippery conditions.<br>• Do not carry heavy objects to work areas, on steeply sloped areas, or where steep areas must be traversed to reach work areas. |
| 2. Utility survey | Shock, Explosion, Fire | Utility Markout HS-014 | • Ensure that all utilities have been properly marked prior to beginning work.<br>• If a utility strike occurs, call the appropriate authorities immediately. Clear the area and do not delay. |
| 3. Observe contractor activities | Struck by/crushing hazards | Working Around Heavy Equipment HS-018 | • Identify yourself and your work location to heavy equipment operators, so they may incorporate you into their operations.<br>• Coordinate hand signals with operators. |

[1] Use the hierarchy of controls to determine applicable hazard controls for the task in order of most effective to least effective: Elimination (physically remove the hazard), Substitution (replace the hazard), Engineering Controls (Isolate the team from the hazard), Administrative Controls (change the way people work), PPE (personal protective equipment).

| Task Steps | Potential Hazards | GEI SOP or Program | Hazard Controls[1] |
|---|---|---|---|
| | | | • Confirm equipment inspection has been completed.<br>• Stay Alert! Pay attention to equipment backup alarms and swing radii.<br>• Position yourself in a safe location.<br>• Confirm adequate clearance from overhead utilities.<br>• Notify the contractor immediately if any problems arise.<br>• Do not stand or sit under suspended loads or near any pressurized equipment lines.<br>• Do not operate cellular telephones in the vicinity of heavy equipment operation. |
| 4. Demobilize from site | Personal/material security, slips/trips/falls | Hazard Identification HS-026 | • Confirm all materials are secured/labeled, including drums and any equipment left on site.<br>• Confirm that any open trenches/pits are properly marked or barricaded.<br>• Clean all equipment/tools prior to leaving.<br>• Secure any gates/locks.<br>• Notify project manager (or designee) you are leaving the site. |

## Job Hazard Analysis

| | | | |
|---|---|---|---|
| **Task** | **Drilling Oversight** | | |
| **Project Name/Number** | 1641 River Street Redevelopment Site / 2600988 | **Client Name** | 1641 River Street, LLC |
| **GEI Project Manager** | Jeffrey Hall | **PM Review Date** | 03/30/2026 |
| **Tools/Equipment Used** | Field book, camera, boring logs | | |
| **Task Specific Training** | GEI Annual Safety Training (Field or HAZWOPER), First Aid/CPR | | |
| **Personal Protective Equipment (PPE)** | ☒ Hard Hat ☒Safety Glasses ☒Safety-Toed Boots ☒ Reflective Vest ☒Hearing Protection ☐ Personal Flotation Device (PFD) ☐ Face Shield ☐ Chaps ☐ Tyvek clothing/boots ☐ Flame Resistant Clothing ☒ Gloves Nitrile ☐Respirator ☐Other | | |

| | | | |
|---|---|---|---|
| **JHA Prepared By: Emily Dallas** | **Date: 03/18/2026** | **Approved by: Jessie Papageorge** | **Date: 3/30/26** |

| Task Steps | Potential Hazards | GEI SOP or Program | Hazard Controls[1] |
|---|---|---|---|
| 1. Mobilize on site | Slips/trips/falls, stuck by, crushing hazards | Hazard Identification HS-026 | • Wear PPE that properly fits, is in good condition, and is appropriate for the activities and hazards.<br>• Maintain good visibility of the work area.<br>• Avoid walking on uneven, steeply sloped, or debris ridden ground surfaces.<br>• Plan tasks prior to preforming them including an activity hazard analysis.<br>• Keep trafficked areas free from slip/trip/fall hazards.<br>• Wear shoes with traction.<br>• Avoid traversing steep areas in slippery conditions.<br>• Do not carry heavy objects to work areas, on steeply sloped areas, or where steep areas must be traversed to reach work areas. |

[1] Use the hierarchy of controls to determine applicable hazard controls for the task in order of most effective to least effective: Elimination (physically remove the hazard), Substitution (replace the hazard), Engineering Controls (Isolate the team from the hazard), Administrative Controls (change the way people work), PPE (personal protective equipment).

| Task Steps | Potential Hazards | GEI SOP or Program | Hazard Controls[1] |
|---|---|---|---|
| 2. Utility survey/clearance | Shock, Explosion, Fire | Utility Mark-Out HS-014 | • Confirm that all utilities have been properly marked prior to beginning work.<br>• If a utility strike occurs, call the appropriate authorities immediately. Clear the area and do not delay.<br>• Confirm adequate clearance from overhead utilities.<br>• Do not stand or sit under suspended loads or near any pressurized equipment lines. |
| 3. Observe contractor activities | Struck by/crushing hazards | Working Around Heavy Equipment HS-018 | • Identify yourself and your work location to heavy equipment operators, so they may incorporate you into their operations.<br>• Coordinate hand signals with operators.<br>• Confirm equipment inspection has been completed.<br>• Stay Alert! Pay attention to equipment backup alarms and swing radii.<br>• Position yourself in a safe location.<br>• Notify the contractor immediately if any problems arise.<br>• Do not operate cellular telephones in the vicinity of heavy equipment operation. |
| 4. Demobilize from site | Personal/material security, slips/trips/falls | Hazard Identification HS-026 | • Confirm all materials are secured/labeled, including drums and any equipment left on site.<br>• Confirm that any open trenches/pits are properly marked or barricaded.<br>• Clean all equipment/tools prior to leaving.<br>• Secure any gates/locks.<br>• Notify project manager (or designee) you are leaving the site. |

## Job Hazard Analysis

| Task | Monitoring Well Installation and Development | | |
|---|---|---|---|
| **Project Name/Number** | 1641 River Street Redevelopment Site / 2600988 | **Client Name** | 1641 River Street, LLC |
| **GEI Project Manager** | Jeffrey Hall | **PM Review Date** | 03/30/2026 |
| **Tools/Equipment Used** | Pump, tubing, bucket, hand tools | | |
| **Task Specific Training** | GEI Annual Safety Training (Field or HAZWOPER), First Aid/CPR | | |
| **Minimum PPE Required** | ☒ Hard Hat ☒Safety Glasses ☒Safety-Toed Boots ☒ Reflective Vest ☒Hearing Protection ☐ Personal Flotation Device (PFD) ☐ Face Shield ☐ Chaps ☐ Tyvek clothing/boots ☐ Flame Resistant Clothing ☒ Gloves Nitrile/Cut resistant ☐Respirator ☐Other | | |

| JHA Prepared By: Emily Dallas | Date: 03/18/2026 | Approved by: Jessie Papageorge | Date: 3/30/26 |
|---|---|---|---|

| Task Steps | Potential Hazards | GEI SOP or Program | Hazard Controls[1] |
|---|---|---|---|
| 1. Mobilize on-site/Carry Equipment and Set-up | Heavy lifting, Cuts/Scrapes, Slips/Trips/Falls, Pinch points | Non-Powered Hand Tools HS-008a<br>Manual Lifting HS-025<br>Ergonomic Program | • Wear PPE that properly fits, is in good condition, and is appropriate for the activities and hazards.<br>• Maintain good visibility of the work area.<br>• Avoid walking on uneven, steeply sloped, or debris ridden ground surfaces.<br>• Plan tasks prior to preforming them including an activity hazard analysis.<br>• User proper lifting techniques.<br>• Keep trafficked areas free from slip/trip/fall hazards.<br>• Wear the proper type of glove to protect hands against sharp edges and skin/soft tissue injuries.<br>• Wear appropriate footwear.<br>• Be aware of hard to grip and hold items that may force your hand or wrist into awkward, stressful positions.<br>• Take breaks when carrying items frequently and/or for long distances.<br>• Do not overreach when picking up or placing items.<br>• Use the buddy system when necessary.<br>• Do not carry heavy objects to work areas, on steeply sloped areas, or where steep areas must be traversed to reach work areas. |

[1] Use the hierarchy of controls to determine applicable hazard controls for the task in order of most effective to least effective: Elimination (physically remove the hazard), Substitution (replace the hazard), Engineering Controls (Isolate the team from the hazard), Administrative Controls (change the way people work), PPE (personal protective equipment).

| Task Steps | Potential Hazards | GEI SOP or Program | Hazard Controls[1] |
|---|---|---|---|
| 2. Utility survey | Shock, Explosion, Fire | Utility Mark Out HS-014 | • Confirm that all utilities have been properly marked prior to beginning work.<br>• If a utility strike occurs, call the appropriate authorities immediately. Clear the area and do not delay. |
| 3. Observe contractor activities | Struck by/crushing hazards | Working Around Heavy Equipment HS-018 | • Identify yourself and your work location to heavy equipment operators, so they may incorporate you into their operations.<br>• Coordinate hand signals with operators.<br>• Confirm equipment inspection has been completed.<br>• Stay Alert! Pay attention to equipment backup alarms and swing radii.<br>• Position yourself in a safe location.<br>• Confirm adequate clearance from overhead utilities.<br>• Notify the contractor immediately if any problems arise.<br>• Do not stand or sit under suspended loads or near any pressurized equipment lines.<br>• Do not operate cellular telephones in the vicinity of heavy equipment operation. |
| 4. Open Monitoring Well | Cuts/Scrapes, Insect Bites | Non-Powered Hand Tools HS-008a<br>Manual Lifting HS-025<br>Ergonomic Program | • Keep trafficked areas free from slip/trip/fall hazards.<br>• Wear the proper type of glove to protect hands against sharp edges and skin/soft tissue injuries.<br>• Use proper tools to open monitoring wells.<br>• Open casings slowly in case insects inhabit the area.<br>• If insect nest is inside casing, open protective casing and see if insects will leave the nest. Once free of insects, proceed with work. If not, contact project manager if problem persists.<br>• If severely allergic to insects, have appropriate epinephrine on hand.<br>• Remain calm and still if a single stinging insect is flying around. (Swatting at an insect may cause it to sting.)<br>• If you are attacked by several stinging insects at once, run to get away from them. (Bees release a chemical when they sting, which may attract other bees.)<br>• Follow incident reporting procedures if first aid is needed. |
| 5. Cut Tubing | Cuts/Scrapes, pinch points | Non-Powered Hand Tools HS-008a | • Wear cut resistant gloves.<br>• Using safe cutting tools such as safety scissors or snips are best practices.<br>• Keep free hand out of the way.<br>• Secure the item being cut.<br>• Use only sharp blades; dull blades require more force that results in |

| Task Steps | Potential Hazards | GEI SOP or Program | Hazard Controls[1] |
|---|---|---|---|
| | | | less control.<br>• Do not put the sharp cutting tool in your pocket. |
| 6. Purge Well | Contaminant exposure | Hazard Identification HS-026<br>Ergonomic Program | • Wear Nitrile/neoprene gloves and dispose of gloves after use and wash hands.<br>• Take regular breaks and do not work in unusual positions for long periods of time.<br>• Keep trafficked areas free from slip/trip/fall hazards. |
| 7. Drum Purge Water and Soil Cuttings | Contaminant Contact, Cuts or Abrasions<br>Heavy Lifting ,<br>Slips/Trips/Falls | Container Management HS–003<br>Manual Lifting HS–025<br>Ergonomic Program | • Wear proper PPE during sampling including nitrile gloves and safety glasses and face shield as appropriate.<br>• Use proper dollies or drum moving tools.<br>• Use applicable tools to open/close drum lids.<br>• Do not handle drums with bulging sides.<br>• Dispose of gloves after use and wash hands.<br>• Wear work gloves over nitrile gloves.<br>• Use proper lifting techniques.<br>• Ask fellow worker for help.<br>• Keep trafficked areas free from slip/trip/fall hazards. |
| 8. Equipment Decontamination | Contaminant Contact, Cuts or Abrasions,<br>Slips/Trips/Falls | Hazard Identification HS-026<br>Ergonomic Program | • Wear nitrile gloves and glasses to provide eye protection from splashing.<br>• Wash hands immediately after use.<br>• Take regular breaks and do not work in unusual positions for long periods of time.<br>• Keep trafficked areas free from slip/trip/fall hazards. |
| 9. Equipment Demobilization | Heavy lifting, Cuts/Scrapes, Slips/Trips/Falls, Pinch points | Non-Powered Hand Tools HS-008a<br>Manual Lifting HS-025<br>Ergonomic Program | • User proper lifting techniques.<br>• Keep trafficked areas free from slip/trip/fall hazards.<br>• Wear the proper type of glove to protect hands against sharp edges and skin/soft tissue injuries.<br>• Wear appropriate footwear.<br>• Be aware of hard to grip and hold items that may force your hand or wrist into awkward, stressful positions.<br>• Take breaks when carrying items frequently and/or for long distances.<br>• Do not overreach when picking up or placing items.<br>• Use the buddy system when necessary. |

## Job Hazard Analysis

| | | | |
|---|---|---|---|
| **Task** | **Groundwater Monitoring Well Gauging** | | |
| **Project Name/Number** | 1641 River Street Redevelopment Site / 2600988 | **Client Name** | 1641 River Street, LLC |
| **GEI Project Manager** | Jeffrey Hall | **PM Review Date** | 03/30/2026 |
| **Tools/Equipment Used** | Water Level Meter or Interface meter | | |
| **Task Specific Training** | GEI Annual Safety Training (Field or HAZWOPER), First Aid/CPR | | |
| **Personal Protective Equipment (PPE)** | ☐ Hard Hat ☒Safety Glasses ☒Safety-Toed Boots ☒ Reflective Vest ☐Hearing Protection ☐ Personal Flotation Device (PFD) ☐ Face Shield ☐ Chaps ☐ Tyvek clothing/boots ☐ Flame Resistant Clothing ☒ Gloves Nitrile/Cut resistant ☐Respirator ☐Other | | |
| **JHA Prepared By: Emily Dallas** | **Date: 3/18/2026** | **Approved by: Jessie Papageorge** | **Date: 3/30/26** |

| Task Steps | Potential Hazards | GEI SOP or Program | Hazard Controls[1] |
|---|---|---|---|
| 1. Carry Equipment and Set-up | Heavy lifting, Cuts/Scrapes, Slips/Trips/Falls, Pinch points | Non-Powered Hand Tools HS-008a<br>Manual Lifting HS-025<br>Ergonomic Program | • User proper lifting techniques.<br>• Keep trafficked areas free from slip/trip/fall hazards.<br>• Wear the proper type of glove to protect hands against sharp edges and skin/soft tissue injuries.<br>• Wear appropriate footwear.<br>• Be aware of hard to grip and hold items that may force your hand or wrist into awkward, stressful positions.<br>• Take breaks when carrying items frequently and/or for long distances.<br>• Do not overreach when picking up or placing items.<br>• Use the buddy system when necessary. |
| 2. Open Monitoring Well | Cuts/Scrapes, Insect Bites | Non-Powered Hand Tools HS-008a<br>Manual Lifting HS-025<br>Ergonomic Program | • Keep trafficked areas free from slip/trip/fall hazards.<br>• Wear the proper type of glove to protect hands against sharp edges and skin/soft tissue injuries.<br>• Use proper tools to open monitoring wells.<br>• Open casings slowly in case insects inhabit the area.<br>• If insect nest is inside casing, open protective casing and see if insects will leave the nest. Once free of insects, proceed with work. If not, contact project manager for additional PPE (e.g. protective |

[1] Use the hierarchy of controls to determine applicable hazard controls for the task in order of most effective to least effective: Elimination (physically remove the hazard), Substitution (replace the hazard), Engineering Controls (Isolate the team from the hazard), Administrative Controls (change the way people work), PPE (personal protective equipment).

| Task Steps | Potential Hazards | GEI SOP or Program | Hazard Controls[1] |
|---|---|---|---|
| | | | • If severely allergic to insects, have appropriate epinephrine on hand.<br>• Remain calm and still if a single stinging insect is flying around. (Swatting at an insect may cause it to sting.)<br>• If you are attacked by several stinging insects at once, run to get away from them. (Bees release a chemical when they sting, which may attract other bees.)<br>• Follow incident reporting procedures if first aid is needed. |
| 3. Deploy Interface Meter | Awkward position, contaminant exposure | Hazard Identification HS–026<br>Ergonomic Program | • Wear Nitrile/neoprene gloves and dispose of gloves after use and wash hands.<br>• Take regular breaks and do not work in unusual positions for long periods of time.<br>• Keep control of the reel when deploying the probe. Avoid letting the probe drop quickly into the well.<br>• Reel the probe up slowly to avoid splashes from contaminated groundwater or sediment.<br>• Keep trafficked areas free from slip/trip/fall hazards. |
| 4. Equipment Decontamination | Contaminant Contact, Cuts or Abrasions, Slips/Trips/Falls | Hazard Identification HS–026<br>Ergonomic Program | • Wear nitrile gloves and glasses to provide eye protection from splashing.<br>• Wash hands immediately after use.<br>• Take regular breaks and do not work in unusual positions for long periods of time.<br>• Keep trafficked areas free from slip/trip/fall hazards. |
| 5. Equipment De-Mob | Heavy lifting, Cuts/Scrapes, Slips/Trips/Falls, Pinch points | Non-Powered Hand Tools HS-008a<br>Manual Lifting HS-025<br>Ergonomic Program | • User proper lifting techniques.<br>• Keep trafficked areas free from slip/trip/fall hazards.<br>• Wear the proper type of glove to protect hands against sharp edges and skin/soft tissue injuries<br>• Wear appropriate footwear<br>• Be aware of hard to grip and hold items that may force your hand or wrist into awkward, stressful positions<br>• Take breaks when carrying items frequently and/or for long distances<br>• Do not overreach when picking up or placing items.<br>• Use the buddy system when necessary |

## Job Hazard Analysis

| | | | |
|---|---|---|---|
| **Task** | **Groundwater Sampling – (Low Flow)** | | |
| **Project Name/Number** | 1641 River Street Redevelopment Site / 2600988 | **Client Name** | 1641 River Street, LLC |
| **GEI Project Manager** | Jeffrey Hall | **PM Review Date** | 03/30/2026 |
| **Tools/Equipment Used** | Hand tools, pump, water level meter, battery | | |
| **Task Specific Training** | GEI Annual Safety Training (Field or HAZWOPER), First Aid/CPR | | |
| **Personal Protective Equipment (PPE)** | ☐ Hard Hat ☒Safety Glasses ☒Safety-Toed Boots ☒ Reflective Vest ☐Hearing Protection ☐ Personal Flotation Device (PFD) ☐ Face Shield ☐ Chaps ☐ Tyvek clothing/boots ☐ Flame Resistant Clothing ☒ Gloves Nitrile/Cut resistant ☐Respirator ☐Other | | |

| | | | |
|---|---|---|---|
| **JHA Prepared By: Emily Dallas** | **Date: 3/18/2026** | **Approved by: Jessie Papageorge** | **Date: 3/30/26** |

| Task Steps | Potential Hazards | GEI SOP or Program | Hazard Controls[1] |
|---|---|---|---|
| 1. Carry Equipment and Set-up | Heavy lifting, Cuts/Scrapes, Slips/Trips/Falls, Pinch points | Non-Powered Hand Tools HS-008a<br>Manual Lifting HS-025<br>Ergonomic Program | • User proper lifting techniques.<br>• Keep trafficked areas free from slip/trip/fall hazards.<br>• Wear the proper type of glove to protect hands against sharp edges and skin/soft tissue injuries.<br>• Wear appropriate footwear.<br>• Be aware of hard to grip and hold items that may force your hand or wrist into awkward, stressful positions.<br>• Take breaks when carrying items frequently and/or for long distances.<br>• Do not overreach when picking up or placing items.<br>• Use the buddy system when necessary. |
| 2. Open Monitoring Well | Cuts/Scrapes, Insect Bites | Non-Powered Hand Tools HS-008a<br>Manual Lifting HS-025<br>Ergonomic Program | • Keep trafficked areas free from slip/trip/fall hazards.<br>• Wear the proper type of glove to protect hands against sharp edges and skin/soft tissue injuries.<br>• Use proper tools to open monitoring wells.<br>• Open casings slowly in case insects inhabit the area.<br>• If insect nest is inside casing, open protective casing and see if insects will leave the nest. Once free of insects, proceed with work. If not, contact supervisor for PPE (e.g., protective clothing).<br>• If severely allergic to insects, have appropriate epinephrine on |

[1] Use the hierarchy of controls to determine applicable hazard controls for the task in order of most effective to least effective: Elimination (physically remove the hazard), Substitution (replace the hazard), Engineering Controls (Isolate the team from the hazard), Administrative Controls (change the way people work), PPE (protective equipment).

| Task Steps | Potential Hazards | GEI SOP or Program | Hazard Controls[1] |
|---|---|---|---|
| | | | hand.<br>• Remain calm and still if a single stinging insect is flying around. (Swatting at an insect may cause it to sting.)<br>• If you are attacked by several stinging insects at once, run to get away from them. (Bees release a chemical when they sting, which may attract other bees.)<br>• Follow incident reporting procedures if first aid is needed. |
| 3. Cut Tubing/String | Cuts/Scrapes, pinch points | Non-Powered Hand Tools HS-008a | • Wear cut resistant gloves.<br>• Using safe cutting tools such as safety scissors or snips are best practices.<br>• Keep free hand out of the way.<br>• Secure the item being cut.<br>• Use only sharp blades; dull blades require more force that results in less control.<br>• Do not put the sharp cutting tool in your pocket. |
| 4. Deploy Water Level Meter | Awkward position, contaminant exposure | Hazard Identification HS–026<br>Ergonomic Program | • Wear Nitrile/neoprene gloves and dispose of gloves after use and wash hands.<br>• Take regular breaks and do not work in unusual positions for long periods of time.<br>• Keep control of the reel when deploying the probe. Avoid letting the probe drop quickly into the well.<br>• Reel the probe up slowly to avoid splashes from contaminated groundwater or sediment.<br>• Keep trafficked areas free from slip/trip/fall hazards. |
| 5. Collect GW Reading/Samples | Awkward position, contaminant exposure | Hazard Identification HS–026<br>Ergonomic Program | • Wear Nitrile/neoprene gloves and dispose of gloves after use and wash hands.<br>• Take regular breaks and do not work in unusual positions for long periods of time.<br>• Keep trafficked areas free from slip/trip/fall hazards. |
| 6. Pack Groundwater Samples | Heavy lifting, cuts, or abrasions | Manual Lifting HS–025<br>Ergonomic Program | • Confirm that the lids on all bottles are tight (will not leak).<br>• Place cushioning/absorbent material in the bottom of the cooler and then place the containers in the cooler with sufficient space to allow for the addition of cushioning between the containers.<br>• Use proper dollies or other lifting tools.<br>• Use proper lifting techniques.<br>• Take regular breaks and do not work in unusual positions for long periods of time.<br>• If glassware breaks, dispose of in puncture-resistant containers. |

| Task Steps | Potential Hazards | GEI SOP or Program | Hazard Controls[1] |
|---|---|---|---|
| | | | Use cut resistant gloves to handle any broken glass. |
| 7. Drum Purge Water | Contaminant Contact, Cuts or Abrasions Heavy Lifting , Slips/Trips/Falls | Container Management HS–003<br>Manual Lifting HS–025<br>Ergonomic Program | • Wear proper PPE during sampling including nitrile gloves and safety glasses and face shield as appropriate.<br>• Use proper dollies or drum moving tools.<br>• Use applicable tools to open/close drum lids.<br>• Do not handle drums with bulging sides.<br>• Dispose of gloves after use and wash hands.<br>• Wear work gloves over nitrile gloves.<br>• Use proper lifting techniques.<br>• Ask fellow worker for help.<br>• Keep trafficked areas free from slip/trip/fall hazards. |
| 8. Equipment Decontamination | Contaminant Contact, Cuts or Abrasions, Slips/Trips/Falls | Hazard Identification HS–026<br>Ergonomic Program | • Wear nitrile gloves and glasses to provide eye protection from splashing.<br>• Wash hands immediately after use.<br>• Take regular breaks and do not work in unusual positions for long periods of time.<br>• Keep trafficked areas free from slip/trip/fall hazards. |
| 9. Equipment Demobilization | Heavy lifting, Cuts/Scrapes, Slips/Trips/Falls, Pinch points | Non-Powered Hand Tools HS-008a<br>Manual Lifting HS-025<br>Ergonomic Program | • User proper lifting techniques.<br>• Keep trafficked areas free from slip/trip/fall hazards.<br>• Wear the proper type of glove to protect hands against sharp edges and skin/soft tissue injuries.<br>• Wear appropriate footwear.<br>• Be aware of hard to grip and hold items that may force your hand or wrist into awkward, stressful positions.<br>• Take breaks when carrying items frequently and/or for long distances.<br>• Do not overreach when picking up or placing items.<br>• Use the buddy system when necessary. |

## Job Hazard Analysis

| Task | Groundwater Sampling – Bailer | | |
|---|---|---|---|
| **Project Name/Number** | 1641 River Street Redevelopment Site / 2600988 | **Client Name** | 1641 River Street, LLC |
| **GEI Project Manager** | Jeffrey Hall | **PM Review Date** | 03/30/2026 |
| **Tools/Equipment Used** | Bailer, string, scissors, sample containers, cooler, ice | | |
| **Task Specific Training** | GEI Annual Safety Training (Field or HAZWOPER), First Aid/CPR | | |
| **Personal Protective Equipment (PPE)** | ☐ Hard Hat ☒Safety Glasses ☒Safety-Toed Boots ☒ Reflective Vest ☐Hearing Protection ☐ Personal Flotation Device (PFD)<br>☐ Face Shield ☐ Chaps ☐ Tyvek clothing/boots ☐ Flame Resistant Clothing<br>☒ Gloves Nitrile/Cut resistant ☐Respirator<br>☐Other | | |

| JHA Prepared By: Emily Dallas | Date: 3/18/2026 | Approved by: Jessie Papageorge | Date: 3/30/26 |
|---|---|---|---|

| Task Steps | Potential Hazards | GEI SOP or Program | Hazard Controls[1] |
|---|---|---|---|
| 1. Carry Equipment and Set-up | Heavy lifting, Cuts/Scrapes, Slips/Trips/Falls, Pinch points | Non-Powered Hand Tools HS-008a<br>Manual Lifting HS-025<br>Ergonomic Program | • User proper lifting techniques.<br>• Keep trafficked areas free from slip/trip/fall hazards.<br>• Wear the proper type of glove to protect hands against sharp edges and skin/soft tissue injuries.<br>• Wear appropriate footwear.<br>• Be aware of hard to grip and hold items that may force your hand or wrist into awkward, stressful positions.<br>• Take breaks when carrying items frequently and/or for long distances.<br>• Do not overreach when picking up or placing items.<br>• Use the buddy system when necessary. |
| 2. Cut Tubing/String | Cuts/Scrapes, pinch points | Non-Powered Hand Tools HS-008a | • Wear cut resistant gloves.<br>• Use safe cutting tools such as safety scissors is a best practice.<br>• Keep free hand out of the way.<br>• Secure the item being cut.<br>• Use only sharp blades; dull blades require more force that results in less control.<br>• Do not put the sharp cutting tool in your pocket. |

[1] Use the hierarchy of controls to determine applicable hazard controls for the task in order of most effective to least effective: Elimination (physically remove the hazard), Substitution (replace the hazard), Engineering Controls (Isolate the team from the hazard), Administrative Controls (change the way people work), PPE (personal protective equipment).

| Task Steps | Potential Hazards | GEI SOP or Program | Hazard Controls[1] |
|---|---|---|---|
| 3. Secure string to bailer and lower bailer down well to collect water | Contaminant Contact, Awkward position, Slips/Trips/Falls, Heavy lifting | Ergonomic Program | • Wear proper PPE during sampling including nitrile gloves and safety glasses and face shield as appropriate.<br>• Keep trafficked areas free from slip/trip/fall hazards.<br>• Be aware of hard to grip and hold items that may force your hand or wrist into awkward, stressful positions.<br>• Take breaks when carrying items frequently and/or for long distances.<br>• Do not overreach when picking up or placing items.<br>• Use the buddy system when necessary. |
| 4. Collect GW Reading/Samples | Awkward position, contaminant exposure | Hazard Identification HS–026<br>Benzene Awareness Program<br>Ergonomic Program | • Wear Nitrile/neoprene gloves and dispose of gloves after use and wash hands.<br>• Take regular breaks and do not work in unusual positions for long periods of time.<br>• Keep trafficked areas free from slip/trip/fall hazards. |
| 5. Drum Purge Water | Contaminant Contact, Cuts or Abrasions<br>Heavy Lifting , Slips/Trips/Falls | Container Management HS–003<br>Manual Lifting HS–025<br>Ergonomic Program | • Wear proper PPE during sampling including nitrile gloves and safety glasses and face shield as appropriate.<br>• Use proper dollies or drum moving tools.<br>• Use applicable tools to open/close drum lids.<br>• Do not handle drums with bulging sides.<br>• Dispose of gloves after use and wash hands.<br>• Wear work gloves over nitrile gloves.<br>• Use proper lifting techniques.<br>• Ask fellow worker for help.<br>• Keep trafficked areas free from slip/trip/fall hazards. |
| 6. Pack Samples | Heavy lifting, cuts, or abrasions | Manual Lifting HS–025<br>Ergonomic Program | • Confirm that the lids on all bottles are tight (will not leak).<br>• Place cushioning/absorbent material in the bottom of the cooler and then place the containers in the cooler with sufficient space to allow for the addition of cushioning between the containers.<br>• Use proper dollies or other lifting tools.<br>• Use proper lifting techniques.<br>• Take regular breaks and do not work in unusual positions for long periods of time.<br>• If glassware breaks, dispose of in puncture-resistant containers. Use cut resistant gloves to handle any broken glass. |

| Task Steps | Potential Hazards | GEI SOP or Program | Hazard Controls[1] |
|---|---|---|---|
| 7. Equipment Decontamination | Contaminant Contact, Cuts or Abrasions, Slips/Trips/Falls | Hazard Identification HS–026<br>Ergonomic Program | • Wear nitrile gloves and glasses to provide eye protection from splashing.<br>• Wash hands immediately after use.<br>• Take regular breaks and do not work in unusual positions for long periods of time.<br>• Keep trafficked areas free from slip/trip/fall hazards. |
| 8. Equipment Demobilization | Heavy lifting, Cuts/Scrapes, Slips/Trips/Falls, Pinch points | Non-Powered Hand Tools HS-008a<br>Manual Lifting HS-025<br>Ergonomic Program | • User proper lifting techniques.<br>• Keep trafficked areas free from slip/trip/fall hazards.<br>• Wear the proper type of glove to protect hands against sharp edges and skin/soft tissue injuries.<br>• Wear appropriate footwear.<br>• Be aware of hard to grip and hold items that may force your hand or wrist into awkward, stressful positions.<br>• Take breaks when carrying items frequently and/or for long distances.<br>• Do not overreach when picking up or placing items.<br>• Use the buddy system when necessary. |

## Job Hazard Analysis

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|---|---|---|---|
| **Task** | **NAPL Gauging and Recovery** | | |
| **Project Name/Number** | 1641 River Street Redevelopment Site / 2600988 | **Client Name** | 1641 River Street, LLC |
| **GEI Project Manager** | Jeffrey Hall | **PM Review Date** | 03/30/2026 |
| **Tools/Equipment Used** | Pump, generator, compressor, interface probe, tubing cutter, bailer, string, scissors | | |
| **Task Specific Training** | GEI Annual Safety Training (HAZWOPER), First Aid/CPR | | |
| **Personal Protective Equipment (PPE)** | ☐ Hard Hat ☒Safety Glasses ☒Safety-Toed Boots ☒ Reflective Vest ☐Hearing Protection ☐ Personal Flotation Device (PFD) ☐ Face Shield ☐ Chaps ☒ Tyvek clothing/boots ☐ Flame Resistant Clothing ☒ Gloves Nitrile/Cut resistant ☐Respirator ☒Other face shield | | |
| **JHA Prepared By: Emily Dallas** | **Date: 3/18/2026** | **Approved by: Jessie Papageorge** | **Date: 3/30/26** |

| Task Steps | Potential Hazards | GEI SOP or Program | Hazard Controls[1] |
|---|---|---|---|
| 1. Carry Equipment and Set-up | Heavy lifting, Cuts/Scrapes, Slips/Trips/Falls, Pinch points | Non-Powered Hand Tools HS-008a<br>Manual Lifting HS-025<br>Ergonomic Program | • User proper lifting techniques.<br>• Keep trafficked areas free from slip/trip/fall hazards.<br>• Wear the proper type of glove to protect hands against sharp edges and skin/soft tissue injuries.<br>• Wear appropriate footwear.<br>• Be aware of hard to grip and hold items that may force your hand or wrist into awkward, stressful positions.<br>• Take breaks when carrying items frequently and/or for long distances.<br>• Do not overreach when picking up or placing items.<br>• Use the buddy system when necessary. |
| 2. Cut Tubing/String | Cuts/Scrapes, pinch points | Non-Powered Hand Tools HS-008a | • Wear cut resistant gloves.<br>• Using safe cutting tools such as safety scissors are snips are best practices.<br>• Keep free hand out of the way.<br>• Secure the item being cut.<br>• Use only sharp blades; dull blades require more force that results in less control.<br>• Do not put the sharp cutting tool in your pocket. |

[1] Use the hierarchy of controls to determine applicable hazard controls for the task in order of most effective to least effective: Elimination (physically remove the hazard), Substitution (replace the hazard), Engineering Controls (Isolate the team from the hazard), Administrative Controls (change the way people work), PPE (personal protective equipment).

| Task Steps | Potential Hazards | GEI SOP or Program | Hazard Controls[1] |
|---|---|---|---|
| 3. Set up pump, generator and compressor, if needed. | Heavy Lifting, Slips/Trips/Falls | Manual Lifting HS–025<br>Ergonomic Program | • Check air compressor hoses before use.<br>• Position the generator downwind of the work area.<br>• Keep trafficked areas free from slip/trip/fall hazards. |
| 4. Fuel generator | Heavy Lifting, Slips/Trips/Falls | Manual Lifting HS–025<br>Ergonomic Program | • Turn off the generator and allow to cool at least 15-minutes before refueling.<br>• Gasoline used to refill the generator will be stored in an OSHA-approved portable fuel container (safety can). |
| 5. Secure string to bailer and lower bailer down well to collect NAPL | Contaminant Contact, Awkward position, Slips/Trips/Falls, Heavy lifting | Benzene Awareness Program<br>Ergonomic Program | • Wear proper PPE during sampling including nitrile gloves, Tyvek or Tyvek apron with sleeves, and safety glasses and face shield as appropriate.<br>• Keep trafficked areas free from slip/trip/fall hazards.<br>• Be aware of hard to grip and hold items that may force your hand or wrist into awkward, stressful positions.<br>• Take breaks when carrying items frequently and/or for long distances.<br>• Do not overreach when picking up or placing items.<br>• Use the buddy system when necessary. |
| 6. Drum Purged NAPL | Contaminant Contact, Cuts or Abrasions<br>Heavy Lifting , Slips/Trips/Falls | Container Management HS–003<br>Manual Lifting HS–025<br>Ergonomic Program<br>Benzene Awareness Program | • Wear proper PPE during sampling including nitrile gloves, Tyvek or Tyvek apron with sleeves , and safety glasses and face shield as appropriate.<br>• Use proper dollies or drum moving tools.<br>• Use applicable tools to open/close drum lids.<br>• Do not handle drums with bulging sides.<br>• Dispose of gloves after use and wash hands.<br>• Wear work gloves over nitrile gloves.<br>• Use proper lifting techniques.<br>• Ask fellow worker for help.<br>• Keep trafficked areas free from slip/trip/fall hazards. |
| 7. Equipment Decontamination | Contaminant Contact, Cuts or Abrasions, Slips/Trips/Falls | Hazard Identification HS–026<br>Benzene Awareness Program<br>Ergonomic Program | • Wear nitrile gloves and glasses to provide eye protection from splashing.<br>• Wash hands immediately after use.<br>• Take regular breaks and do not work in unusual positions for long periods of time.<br>• Keep trafficked areas free from slip/trip/fall hazards. |

| Task Steps | Potential Hazards | GEI SOP or Program | Hazard Controls[1] |
|---|---|---|---|
| 8. Equipment Demobilization | Heavy lifting, Cuts/Scrapes, Slips/Trips/Falls, Pinch points | Non-Powered Hand Tools HS-008a<br>Manual Lifting HS-025<br>Ergonomic Program | • User proper lifting techniques.<br>• Keep trafficked areas free from slip/trip/fall hazards.<br>• Wear the proper type of glove to protect hands against sharp edges and skin/soft tissue injuries.<br>• Wear appropriate footwear.<br>• Be aware of hard to grip and hold items that may force your hand or wrist into awkward, stressful positions.<br>• Take breaks when carrying items frequently and/or for long distances.<br>• Do not overreach when picking up or placing items.<br>• Use the buddy system when necessary. |

## Job Hazard Analysis

| Task | Perimeter Air Monitoring | | |
|---|---|---|---|
| **Project Name/Number** | 1641 River Street Redevelopment Site / 2600988 | **Client Name** | 1641 River Street, LLC |
| **GEI Project Manager** | Jeffrey Hall | **PM Review Date** | 03/30/2026 |
| **Tools/Equipment Used** | Hand tools, clipboard, air sampling pumps, zip ties | | |
| **Task Specific Training** | Annual Safety Training (Hazwoper), First Aid/CPR | | |
| **Personal Protective Equipment (PPE)** | ☐ Hard Hat ☒Safety Glasses ☒Safety-Toed Boots ☒ Reflective Vest ☐Hearing Protection ☐ Personal Flotation Device (PFD) ☐ Face Shield ☐ Chaps ☐ Tyvek clothing/boots ☐ Flame Resistant Clothing ☐ Gloves ☐Respirator ☐Other | | |

| JHA Prepared By: Jessie Papageorge | Date: 3/30/26 | Approved by: Jessie Papageorge | Date: 3/30/26 |
|---|---|---|---|

| Task Steps | Potential Hazards | GEI SOP or Program | Hazard Controls[1] |
|---|---|---|---|
| 1. Carrying Equipment/Site Setup | Heavy lifting, strains/sprains, slip/trips/falls, pinch points | Non-Powered Hand Tools HS-008a<br>Manual Lifting HS-025<br>GEI Ergonomic Program | • Use proper lifting techniques.<br>• Check route for clearance of trip hazards.<br>• Wear appropriate footwear and gloves to protect hands against sharp edges and soft tissue injuries.<br>• Be aware of hard to grip and hold items that may force your hand or wrist into awkward, stressful positions.<br>• Take breaks when carrying items frequently and/or for long distances.<br>• Do not overreach when picking up or placing items.<br>• Use the buddy system when necessary. |
| 2. Calibrate Air Monitoring Equipment/Handling Compressed Gas Cylinders | Cuts/Scrapes, pinch points | GEI Ergonomic Program<br>Hazard Identification HS-026 | • Wear appropriate gloves to protect hands against sharp edges and soft tissue injuries.<br>• Be aware of hard to grip and hold items that may force your hand or wrist into awkward, stressful positions.<br>• Do not stage/store incompatible materials in the same area (e.g.: oxidizers and flammables).<br>• Make sure valves are properly closed when not in use.<br>• Only approved and properly labeled containers should be used.<br>• SDSs should be with the cylinders at all times.<br>• Place cylinders on even surfaces. |

[1] Use the hierarchy of controls to determine applicable hazard controls for the task in order of most effective to least effective: Elimination (physically remove the hazard), Substitution (replace the hazard), Engineering Controls (Isolate the team from the hazard), Administrative Controls (change the way people work), PPE (personal protective equipment).

| Task Steps | Potential Hazards | GEI SOP or Program | Hazard Controls[1] |
|---|---|---|---|
| | | | • Keep cylinders away from high heat and spark/flame sources.<br>• When transporting, the safety dome cap needs to be securely in place and cylinder should be secured in place. |
| 3. Install Perimeter Monitoring Equipment | Slip/trips/falls, cuts/lacerations, heat stress, cold stress, biological hazards | Non-Powered Hand Tools HS-008a<br>Biological Hazards HS-001<br>Inclement Weather HS-010<br>Manual Lifting HS-025<br>Hazard Identification HS-026<br>GEI Ergonomic Program | • Maintain good housekeeping in the work area to prevent slips, trips, and falls.<br>• Maintain situational awareness and a high level of communication with others on site.<br>• Wear the proper type of glove to protect hands against sharp edges and skin/soft tissue injuries. |
| 4. Site Walk/Collect Readings/samples | Slip/trips/falls, repetition, heat stress, cold stress, biological hazards | Biological Hazards HS-001<br>Inclement Weather HS-010<br>Manual Lifting HS-025<br>Hazard Identification HS-026<br>GEI Ergonomic Program | • Wear steel-toed boots and high visibility reflective vest when traversing work areas.<br>• Avoid walking on uneven, steeply sloped or debris ridden ground surfaces.<br>• Discuss action plan prior to severe weather.<br>• Apply insect repellent and poisonous plant barrier cream prior to the start of any field work and as needed throughout the workday.<br>• Use the buddy system and have a check in plan with project team and/or project manager.<br>• Bring adequate hydration for the workday (water, fluids with electrolytes).<br>• Apply sunscreen regularly or wear a hat and long sleeve to reduce sun exposure.<br>• Plan an area to take breaks with natural shade or provided by pop up structure.<br>• Bring backpack to carry your fluids, snacks, first aid kits, etc. for larger project sites. |
| 5. Remove Air Monitoring Equipment | Slip/trips/falls, cuts/lacerations, heat stress, cold stress, biological hazards | Biological Hazards HS-001<br>Inclement Weather HS-010<br>Manual Lifting HS-025<br>Hazard Identification HS-026 | • Maintain good housekeeping in the work area to prevent slips, trips, and falls.<br>• Maintain situational awareness and a high level of communication with others on site.<br>• Wear the proper type of glove to protect hands against sharp edges and skin/soft tissue injuries. |
| 6. Demobilize from Site | Personal/material security, slips/trips/falls | Hazard Identification HS-026 | • Confirm all materials are secured/labeled, including drums and any equipment left on site.<br>• Confirm that any open trenches/pits are properly marked or barricaded. |

| Task Steps | Potential Hazards | GEI SOP or Program | Hazard Controls[1] |
|---|---|---|---|
| | | | • Clean all equipment/tools prior to leaving.<br>• Secure any gates/locks.<br>• Notify project manager (or designee) you are leaving the site. |

# Appendix C

## Safety Data Sheets

# Safety Data Sheet

according to 1907/2006/EC (REACH), 1272/2008/EC (CLP), 29CFR1910/1200 and GHS Rev. 3

**Effective date**: 10.18.2017 **Revision**: 10.18.2017

**Trade Name: Alconox**

## 1 Identification of the substance/mixture and of the supplier

### 1.1 Product identifier

**Trade Name:** Alconox
**Synonyms:**
**Product number:** 1104-1, 1104, 1125, 1150, 1101, 1103, 1112-1, 1112

### 1.2 Application of the substance / the mixture : Cleaning material/Detergent

### 1.3 Details of the supplier of the Safety Data Sheet

**Manufacturer**
Alconox, Inc.
30 Glenn Street
White Plains, NY 10603
1-914-948-4040

**Supplier**

**Emergency telephone number:**
**ChemTel Inc**
North America: 1-800-255-3924
International: 01-813-248-0585

## 2 Hazards identification

### 2.1 Classification of the substance or mixture:

In compliance with EC regulation No. 1272/2008, 29CFR1910/1200 and GHS Rev. 3 and amendments.

**Hazard-determining components of labeling:**
Tetrasodium Pyrophosphate
Sodium tripolyphosphate
Sodium Alkylbenzene Sulfonate

### 2.2 Label elements:

Skin irritation, category 2.
Eye irritation, category 2A.

**Hazard pictograms:**



**Signal word**: Warning

**Hazard statements:**
H315 Causes skin irritation.
H319 Causes serious eye irritation.

**Precautionary statements:**
P264 Wash skin thoroughly after handling.
P280 Wear protective gloves/protective clothing/eye protection/face protection.
P302+P352 If on skin: Wash with soap and water.
P305+P351+P338 If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses if present and easy to do. Continue rinsing.
P321 Specific treatment (see supplemental first aid instructions on this label).
P332+P313 If skin irritation occurs: Get medical advice/attention.
P362 Take off contaminated clothing and wash before reuse.
P501 Dispose of contents and container as instructed in Section 13.

**Safety Data Sheet**

according to 1907/2006/EC (REACH), 1272/2008/EC (CLP), 29CFR1910/1200 and GHS Rev. 3

**Effective date**: 10.18.2017 **Revision**: 10.18.2017

**Trade Name: Alconox**

**Additional information:** None.

**Hazard description**

**Hazards Not Otherwise Classified (HNOC):** None

**Information concerning particular hazards for humans and environment:**

The product has to be labelled due to the calculation procedure of the "General Classification guideline for preparations of the EU" in the latest valid version.

**Classification system:**

The classification is according to EC regulation No. 1272/2008, 29CFR1910/1200 and GHS Rev. 3 and amendments, and extended by company and literature data. The classification is in accordance with the latest editions of international substances lists, and is supplemented by information from technical literature and by information provided by the company.

## 3 Composition/information on ingredients

**3.1 Chemical characterization** : None

**3.2 Description** : None

**3.3 Hazardous components (percentages by weight)**

| Identification | Chemical Name | Classification | Wt. % |
|---|---|---|---|
| **CAS number:** 7758-29-4 | Sodium tripolyphosphate | Skin Irrit. 2 ; H315<br>Eye Irrit. 2; H319 | 12-28 |
| **CAS number:** 68081-81-2 | Sodium Alkylbenzene Sulfonate | Acute Tox. 4; H303<br>Skin Irrit. 2 ; H315<br>Eye Irrit. 2; H319 | 8-22 |
| **CAS number:** 7722-88-5 | Tetrasodium Pyrophosphate | Skin Irrit. 2 ; H315<br>Eye Irrit. 2; H319 | 2-16 |

**3.4 Additional Information** : None.

## 4 First aid measures

**4.1 Description of first aid measures**

**General information:** None.

**After inhalation:**

Maintain an unobstructed airway.

Loosen clothing as necessary and position individual in a comfortable position.

**After skin contact:**

Wash affected area with soap and water.

Seek medical attention if symptoms develop or persist.

**After eye contact:**

Rinse/flush exposed eye(s) gently using water for 15-20 minutes.

Remove contact lens(es) if able to do so during rinsing.

Seek medical attention if irritation persists or if concerned.

**After swallowing:**

Rinse mouth thoroughly.

Seek medical attention if irritation, discomfort, or vomiting persists.

**4.2 Most important symptoms and effects, both acute and delayed**

None

**4.3 Indication of any immediate medical attention and special treatment needed:**

No additional information.

## 5 Firefighting measures

**5.1 Extinguishing media**

**Suitable extinguishing agents:**

Use appropriate fire suppression agents for adjacent combustible materials or sources of ignition.

**For safety reasons unsuitable extinguishing agents** : None

**5.2 Special hazards arising from the substance or mixture** :

Thermal decomposition can lead to release of irritating gases and vapors.

**5.3 Advice for firefighters**

**Protective equipment:**

Wear protective eye wear, gloves and clothing.
Refer to Section 8.

**5.4 Additional information** :

Avoid inhaling gases, fumes, dust, mist, vapor and aerosols.
Avoid contact with skin, eyes and clothing.

## 6 Accidental release measures

**6.1 Personal precautions, protective equipment and emergency procedures** :

Ensure adequate ventilation.
Ensure air handling systems are operational.

**6.2 Environmental precautions** :

Should not be released into the environment.
Prevent from reaching drains, sewer or waterway.

**6.3 Methods and material for containment and cleaning up** :

Wear protective eye wear, gloves and clothing.

**6.4 Reference to other sections** : None

## 7 Handling and storage

**7.1 Precautions for safe handling** :

Avoid breathing mist or vapor.
Do not eat, drink, smoke or use personal products when handling chemical substances.

**7.2 Conditions for safe storage, including any incompatibilities** :

Store in a cool, well-ventilated area.

**7.3 Specific end use(s):**

No additional information.

**Safety Data Sheet**

according to 1907/2006/EC (REACH), 1272/2008/EC (CLP), 29CFR1910/1200 and GHS Rev. 3

**Effective date**: 10.18.2017 **Revision**: 10.18.2017

**Trade Name: Alconox**

## 8 Exposure controls/personal protection





**8.1 Control parameters** :

a) 7722-88-5, Tetrasodium Pyrophosphate, OSHA TWA 5 mg/m3

b) Dusts, non-specific OEL, Irish Code of Practice

(i) Total inhalable 10 mg/m3 (8hr)

(ii) Respirible 4mg/m3 (8hr)

(iii) Tetrasodium Pyrophosphate, OSHA TWA 5 mg/m3, (8hr)

**8.2 Exposure controls**

**Appropriate engineering controls:**

Emergency eye wash fountains and safety showers should be available in the immediate vicinity of use or handling.

**Respiratory protection:**

Not needed under normal use conditions.

**Protection of skin:**

Select glove material impermeable and resistant to the substance or preparation. Protective gloves recommended to comply with EN 374. Take note of break through times, permeability, and special workplace conditions, such as mechanical strain, duration of contact, etc. Protective gloves should be replaced at the first sign of wear.

**Eye protection:**

Safety goggles or glasses, or appropriate eye protection. Recommended to comply with ANSI Z87.1 and/or EN 166.

**General hygienic measures:**

Wash hands before breaks and at the end of work.

Avoid contact with skin, eyes and clothing.

## 9 Physical and chemical properties

| | | | |
|---|---|---|---|
| **Appearance (physical state, color):** | White and cream colored flakes - powder | **Explosion limit lower:**<br>**Explosion limit upper:** | Not determined or not available.<br>Not determined or not available. |
| **Odor:** | Not determined or not available. | **Vapor pressure at 20°C:** | Not determined or not available. |
| **Odor threshold:** | Not determined or not available. | **Vapor density:** | Not determined or not available. |
| **pH-value:** | 9.5 (aqueous solution) | **Relative density:** | Not determined or not available. |
| **Melting/Freezing point:** | Not determined or not available. | **Solubilities:** | Not determined or not available. |
| **Boiling point/Boiling range:** | Not determined or not available. | **Partition coefficient (n-octanol/water):** | Not determined or not available. |
| **Flash point (closed cup):** | Not determined or not available. | **Auto/Self-ignition temperature:** | Not determined or not available. |
| **Evaporation rate:** | Not determined or not available. | **Decompositio n** | Not determined or not available. |

**Safety Data Sheet**

according to 1907/2006/EC (REACH), 1272/2008/EC (CLP), 29CFR1910/1200 and GHS Rev. 3

**Effective date**: 10.18.2017 **Revision**: 10.18.2017

**Trade Name: Alconox**

| | | | |
|---|---|---|---|
| **Flammability (solid, gaseous)**: | Not determined or not available. | **Viscosity**: | a. Kinematic: Not determined or not available.<br>b. Dynamic: Not determined or not available. |
| **Density at 20°C**: | Not determined or not available. | | |

## 10 Stability and reactivity

**10.1 Reactivity** : None

**10.2 Chemical stability** : None

**10.3 Possibility hazardous reactions** : None

**10.4 Conditions to avoid** : None

**10.5 Incompatible materials** : None

**10.6 Hazardous decomposition products** : None

## 11 Toxicological information

**11.1 Information on toxicological effects** :

**Acute Toxicity:**

**Oral**:

: LD50 > 5000 mg/kg oral rat - Product .

**Chronic Toxicity:** No additional information.

**Skin corrosion/irritation:**

Sodium Alkylbenzene Sulfonate: Causes skin irritation. .

**Serious eye damage/irritation:**

Sodium Alkylbenzene Sulfonate: Causes serious eye irritation .

Tetrasodium Pyrophosphate: Rabbit - Risk of serious damage to eyes .

**Respiratory or skin sensitization:** No additional information.

**Carcinogenicity:** No additional information.

**IARC (International Agency for Research on Cancer):** None of the ingredients are listed.

**NTP (National Toxicology Program):** None of the ingredients are listed.

**Germ cell mutagenicity:** No additional information.

**Reproductive toxicity:** No additional information.

**STOT-single and repeated exposure:** No additional information.

**Additional toxicological information:** No additional information.

## 12 Ecological information

**Safety Data Sheet**

according to 1907/2006/EC (REACH), 1272/2008/EC (CLP), 29CFR1910/1200 and GHS Rev. 3

**Effective date**: 10.18.2017 **Revision**: 10.18.2017

**Trade Name: Alconox**

**12.1 Toxicity:**

Sodium Alkylbenzene Sulfonate: Fish, LC50 1.67 mg/l, 96 hours.
Sodium Alkylbenzene Sulfonate: Aquatic invertebrates, EC50 Daphnia 2.4 mg/l, 48 hours. Sodium Alkylbenzene Sulfonate: Aquatic Plants, EC50 Algae 29 mg/l, 96 hours.
Tetrasodium Pyrophosphate: Fish, LC50 - other fish - 1,380 mg/l - 96 h.
Tetrasodium Pyrophosphate: Aquatic invertebrates, EC50 - Daphnia magna (Water flea) - 391 mg/l - 48 h.

**12.2 Persistence and degradability:** No additional information.

**12.3 Bioaccumulative potential:** No additional information.

**12.4 Mobility in soil:** No additional information.

**General notes:** No additional information.

**12.5 Results of PBT and vPvB assessment:**

**PBT:** No additional information.

**vPvB:** No additional information.

**12.6 Other adverse effects:** No additional information.

## 13 Disposal considerations

**13.1 Waste treatment methods (consult local, regional and national authorities for proper disposal)**

**Relevant Information:**

It is the responsibility of the waste generator to properly characterize all waste materials according to applicable regulatory entities. (US 40CFR262.11).

## 14 Transport information

| | |
|---|---|
| **14.1 UN Number:**<br>ADR, ADN, DOT, IMDG, IATA | None |
| **14.2 UN Proper shipping name:**<br>ADR, ADN, DOT, IMDG, IATA | None |
| **14.3 Transport hazard classes:**<br>ADR, ADN, DOT, IMDG, IATA | **Class:** None<br>**Label:** None<br>**LTD.QTY:** None |

**US DOT**

**Limited Quantity Exception:** None

**Bulk:**
**RQ (if applicable):** None
**Proper shipping Name:** None
**Hazard Class:** None
**Packing Group:** None
**Marine Pollutant (if applicable):** No additional information.

**Non Bulk:**
**RQ (if applicable):** None
**Proper shipping Name:** None
**Hazard Class:** None
**Packing Group:** None
**Marine Pollutant (if applicable):** No additional information.

**Safety Data Sheet**

according to 1907/2006/EC (REACH), 1272/2008/EC (CLP), 29CFR1910/1200 and GHS Rev. 3

**Effective date**: 10.18.2017 **Revision**: 10.18.2017

**Trade Name: Alconox**

| | |
|---|---|
| **Comments:** None | **Comments:** None |
| **14.4 Packing group:** ADR, ADN, DOT, IMDG, IATA | None |
| **14.5 Environmental hazards :** | None |
| **14.6 Special precautions for user:** | None |
| **Danger code (Kemler):** | None |
| **EMS number:** | None |
| **Segregation groups:** | None |
| **14.7 Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code:** Not applicable. | |
| **14.8 Transport/Additional information:** | |
| **Transport category:** | None |
| **Tunnel restriction code:** | None |
| **UN "Model Regulation":** | None |

## 15 Regulatory information

**15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture.**

### North American

**SARA**

**Section 313 (specific toxic chemical listings)**: None of the ingredients are listed.
**Section 302 (extremely hazardous substances)**: None of the ingredients are listed.

**CERCLA (Comprehensive Environmental Response, Clean up and Liability Act) Reportable**

**Spill Quantity**: None of the ingredients are listed.

**TSCA (Toxic Substances Control Act):**

**Inventory**: All ingredients are listed.
**Rules and Orders**: Not applicable.

**Proposition 65 (California):**

**Chemicals known to cause cancer**: None of the ingredients are listed.

**Chemicals known to cause reproductive toxicity for females**: None of the ingredients are listed.

**Chemicals known to cause reproductive toxicity for males**: None of the ingredients are listed.

**Chemicals known to cause developmental toxicity**: None of the ingredients are listed.

**Canadian**

**Canadian Domestic Substances List (DSL)**:
All ingredients are listed.

### EU

**REACH Article 57 (SVHC)**: None of the ingredients are listed.

**Safety Data Sheet**

according to 1907/2006/EC (REACH), 1272/2008/EC (CLP), 29CFR1910/1200 and GHS Rev. 3

**Effective date**: 10.18.2017 **Revision**: 10.18.2017

**Trade Name: Alconox**

**Germany MAK**: Not classified.
**EC 648/2004** – This is an industrial detergent. Contains >30% phosphate, 15-30% anionic surfactant, <5% EDTA salts
**EC 551/2009** – This is not a laundry or dishwasher detergent
**EC 907/2006** – Contains no enzymes, optical brighteners, perfumes, allergenic fragrances, or preservative agents

### Asia Pacific

**Australia**

**Australian Inventory of Chemical Substances (AICS)**: All ingredients are listed.

**China**

**Inventory of Existing Chemical Substances in China (IECSC)**: All ingredients are listed.

**Japan**

**Inventory of Existing and New Chemical Substances (ENCS)**: All ingredients are listed.

**Korea**

**Existing Chemicals List (ECL)**: All ingredients are listed.

**New Zealand**

**New Zealand Inventory of Chemicals (NZOIC)**: All ingredients are listed.

**Philippines**

**Philippine Inventory of Chemicals and Chemical Substances (PICCS)**: All ingredients are listed.

**Taiwan**

**Taiwan Chemical Substance Inventory (TSCI)**: All ingredients are listed.

## 16 Other information

**Abbreviations and Acronyms:** None

**Summary of Phrases**

**Hazard statements:**
H315 Causes skin irritation.
H319 Causes serious eye irritation.

**NFPA:** 1-0-0
**HMIS:** 1-0-0

**Precautionary statements:**
P264 Wash skin thoroughly after handling.
P280 Wear protective gloves/protective clothing/eye protection/face protection.
P302+P352 If on skin: Wash with soap and water.
P305+P351+P338 If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses if present and easy to do. Continue rinsing.
P321 Specific treatment (see supplemental first aid instructions on this label).
P332+P313 If skin irritation occurs: Get medical advice/attention.
P362 Take off contaminated clothing and wash before reuse.
P501 Dispose of contents and container as instructed in Section 13.

**Manufacturer Statement:**

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.

# Methanol

Safety Data Sheet

according to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations

Date of issue: 07/03/2013 Revision date: 12/12/2017 Supersedes: 12/12/2017 Version: 1.3

## SECTION 1: Identification of the substance/mixture and of the company/undertaking

### 1.1. Product identifier

| | | |
|---|---|---|
| Product form | : | Substance |
| Substance name | : | Methanol |
| CAS-No. | : | 67-56-1 |
| Product code | : | VT430 |
| Formula | : | CH4O |
| Synonyms | : | acetone alcohol / alcohol C1 / alcohol, methyl / carbinol / colonial spirits / columbian spirits / green wood spirits / manhattan spirits / methyl alcohol / methyl hydrate / methyl hydroxide / methylen / methylol / monohydroxymethane / pyroligneous spirit / pyroxylic spirit / wood alcohol / wood naphtha |

### 1.2. Relevant identified uses of the substance or mixture and uses advised against

| | | |
|---|---|---|
| Use of the substance/mixture | : | Solvent |

### 1.3. Details of the supplier of the safety data sheet

Val Tech Diagnostics, A Division of LabChem Inc
Jackson's Pointe Commerce Park Building 1000
1010 Jackson's Pointe Court
Zelienople, PA 16063
T 412-826-5230
F 724-473-0647

### 1.4. Emergency telephone number

| | | |
|---|---|---|
| Emergency number | : | CHEMTREC: 1-800-424-9300 or +1-703-741-5970 |

## SECTION 2: Hazards identification

### 2.1. Classification of the substance or mixture

**GHS-US classification**

| | |
|---|---|
| Flam. Liq. 2 | H225 |
| Acute Tox. 3 (Oral) | H301 |
| Acute Tox. 3 (Dermal) | H311 |
| Acute Tox. 3 (Inhalation) | H331 |
| STOT SE 1 | H370 |

Full text of H statements : see section 16

### 2.2. Label elements

**GHS US labeling**

Hazard pictograms (GHS US) :



GHS02 GHS06 GHS08

Signal word (GHS US) : Danger

Hazard statements (GHS US) :
H225 - Highly flammable liquid and vapour
H301+H311+H331 - Toxic if swallowed, in contact with skin or if inhaled
H370 - Causes damage to organs (liver, kidneys, central nervous system, optic nerve) (Dermal, oral)

Precautionary statements (GHS US) :
P210 - Keep away from heat, sparks, open flames, hot surfaces. - No smoking.
P233 - Keep container tightly closed.
P240 - Ground/bond container and receiving equipment.
P241 - Use explosion-proof electrical, ventilating, lighting equipment
P242 - Use only non-sparking tools.
P243 - Take precautionary measures against static discharge.
P260 - Do not breathe mist, vapors, spray.
P264 - Wash exposed skin thoroughly after handling.
P270 - Do not eat, drink or smoke when using this product.
P271 - Use only outdoors or in a well-ventilated area.

P280 - Wear protective gloves, protective clothing, eye protection, face protection.
P301+P310 - IF SWALLOWED: Immediately call a POISON CENTER or doctor/physician.
P303+P361+P353 - IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower.
P304+P340 - IF INHALED: Remove person to fresh air and keep comfortable for breathing.
P330 - If swallowed, rinse mouth
P361+P364 - Take off immediately all contaminated clothing and wash it before reuse.
P370+P378 - In case of fire: Use carbon dioxide ($CO_2$), powder, alcohol-resistant foam to extinguish
P403+P235 - Store in a well-ventilated place. Keep cool.
P405 - Store locked up.
P501 - Dispose of contents/container to comply with local, state and federal regulations

### 2.3. Other hazards

Other hazards not contributing to the classification : None.

### 2.4. Unknown acute toxicity (GHS US)

No data available

## SECTION 3: Composition/Information on ingredients

### 3.1. Substances

Substance type : Mono-constituent

| Name | Product identifier | % | GHS-US classification |
|---|---|---|---|
| Methanol<br>(Main constituent) | (CAS-No.) 67-56-1 | 100 | Flam. Liq. 2, H225<br>Acute Tox. 3 (Oral), H301<br>Acute Tox. 3 (Dermal), H311<br>Acute Tox. 3 (Inhalation), H331<br>STOT SE 1, H370 |

Full text of H-phrases: see section 16

### 3.2. Mixtures

Not applicable

## SECTION 4: First aid measures

### 4.1. Description of first aid measures

First-aid measures general : Check the vital functions. Unconscious: maintain adequate airway and respiration. Respiratory arrest: artificial respiration or oxygen. Cardiac arrest: perform resuscitation. Victim conscious with labored breathing: half-seated. Victim in shock: on his back with legs slightly raised. Vomiting: prevent asphyxia/aspiration pneumonia. Prevent cooling by covering the victim (no warming up). Keep watching the victim. Give psychological aid. Keep the victim calm, avoid physical strain.

First-aid measures after inhalation : Remove the victim into fresh air. Immediately consult a doctor/medical service.

First-aid measures after skin contact : Wash immediately with lots of water. Soap may be used. Do not apply (chemical) neutralizing agents. Remove clothing before washing. Consult a doctor/medical service.

First-aid measures after eye contact : Rinse with water. Remove contact lenses, if present and easy to do. Continue rinsing. Take victim to an ophthalmologist if irritation persists.

First-aid measures after ingestion : Rinse mouth with water. Immediately after ingestion, give alcohol to drink. Give nothing to drink. Do not induce vomiting. Immediately consult a doctor/medical service. Take the container/vomit to the doctor/hospital. Call Poison Information Centre (www.big.be/antigif.htm).

### 4.2. Most important symptoms and effects, both acute and delayed

Symptoms/effects after inhalation : EXPOSURE TO HIGH CONCENTRATIONS: Coughing. Symptoms similar to those listed under ingestion.

Symptoms/effects after skin contact : Symptoms similar to those listed under ingestion.

Symptoms/effects after eye contact : Redness of the eye tissue. Lacrimation.

Symptoms/effects after ingestion : Nausea. Vomiting. AFTER ABSORPTION OF LARGE QUANTITIES: FOLLOWING SYMPTOMS MAY APPEAR LATER: Change in the blood composition. Headache. Feeling of weakness. Abdominal pain. Muscular pain. Central nervous system depression. Dizziness. Mental confusion. Drunkenness. Coordination disorders. Disturbed motor response. Disturbances of consciousness. Visual disturbances. Blindness. Respiratory difficulties. Cramps/uncontrolled muscular contractions.

Chronic symptoms : Red skin. Dry skin. Skin rash/inflammation. Headache. Disturbed tactile sensibility. Visual disturbances. Sleeplessness. Gastrointestinal complaints. Cardiac and blood circulation effects.

### 4.3. Indication of any immediate medical attention and special treatment needed

Immediately after ingestion, give a glass of strong drink, beer or wine to drink. Hospitalize at once for treatment with the right antidotes.

## SECTION 5: Firefighting measures

### 5.1. Extinguishing media

Suitable extinguishing media : Quick-acting ABC powder extinguisher. Quick-acting BC powder extinguisher. Quick-acting class B foam extinguisher. Quick-acting CO2 extinguisher. Class B foam (alcohol-resistant). Water spray if puddle cannot expand.

Unsuitable extinguishing media : Water (quick-acting extinguisher, reel); risk of puddle expansion. Water; risk of puddle expansion.

### 5.2. Special hazards arising from the substance or mixture

Fire hazard : DIRECT FIRE HAZARD. Highly flammable liquid and vapour. Gas/vapor flammable with air within explosion limits. INDIRECT FIRE HAZARD. May be ignited by sparks.

Explosion hazard : DIRECT EXPLOSION HAZARD. Gas/vapour explosive with air within explosion limits. INDIRECT EXPLOSION HAZARD. may be ignited by sparks. Reactions with explosion hazards: see "Reactivity Hazard".

Reactivity : Violent to explosive reaction with (some) metal powders and with (strong) oxidizers. Violent exothermic reaction with (some) acids and with (some) halogens compounds.

### 5.3. Advice for firefighters

Firefighting instructions : Cool tanks/drums with water spray/remove them into safety. Do not move the load if exposed to heat. Take account of toxic fire-fighting water. Use water moderately and if possible collect or contain it.

Protection during firefighting : Do not enter fire area without proper protective equipment, including respiratory protection.

## SECTION 6: Accidental release measures

### 6.1. Personal precautions, protective equipment and emergency procedures

General measures : No flames, no sparks. Eliminate all sources of ignition. No naked lights. No smoking. Dike and contain spill.

#### 6.1.1. For non-emergency personnel

Protective equipment : Gas-tight suit.

Emergency procedures : Keep upwind. Mark the danger area. Consider evacuation. Close doors and windows of adjacent premises. Stop engines and no smoking. No naked flames or sparks. Spark- and explosion-proof appliances and lighting equipment. Keep containers closed. Wash contaminated clothes.

#### 6.1.2. For emergency responders

Protective equipment : Equip cleanup crew with proper protection.

Emergency procedures : Stop leak if safe to do so. Ventilate area.

### 6.2. Environmental precautions

Prevent soil and water pollution. Prevent spreading in sewers.

### 6.3. Methods and material for containment and cleaning up

For containment : Contain released substance, pump into suitable containers. Plug the leak, cut off the supply. Dam up the liquid spill. Try to reduce evaporation. Measure the concentration of the explosive gas-air mixture. Dilute combustible/toxic gases/vapours with water spray. Take account of toxic/corrosive precipitation water. Provide equipment/receptacles with earthing. Do not use compressed air for pumping over spills.

Methods for cleaning up : Take up liquid spill into a non combustible material e.g.: sand, earth, vermiculite slaked lime or soda ash. Scoop absorbed substance into closing containers. Carefully collect the spill/leftovers. Damaged/cooled tanks must be emptied. Do not use compressed air for pumping over spills. Clean contaminated surfaces with an excess of water. Take collected spill to manufacturer/competent authority. Wash clothing and equipment after handling.

### 6.4. Reference to other sections

No additional information available

## SECTION 7: Handling and storage

### 7.1. Precautions for safe handling

Precautions for safe handling : Use spark-/explosionproof appliances and lighting system. Take precautions against electrostatic charges. Keep away from naked flames/heat. Keep away from ignition sources/sparks. Measure the concentration in the air regularly. Work under local exhaust/ventilation. Comply with the legal requirements. Remove contaminated clothing immediately. Clean contaminated clothing. Handle uncleaned empty containers as full ones. Thoroughly clean/dry the installation before use. Do not discharge the waste into the drain. Do not use compressed air for pumping over. Keep container tightly closed.

Hygiene measures : Do not eat, drink or smoke when using this product. Wash hands and other exposed areas with mild soap and water before eating, drinking or smoking and when leaving work. Wash contaminated clothing before reuse.

### 7.2. Conditions for safe storage, including any incompatibilities

Incompatible products : Strong oxidizers. Strong bases. Strong acids. Acid anhydrides. Acid chlorides.

Incompatible materials : Direct sunlight. Heat sources. Sources of ignition.

Heat-ignition : KEEP SUBSTANCE AWAY FROM: heat sources. ignition sources.

Prohibitions on mixed storage : KEEP SUBSTANCE AWAY FROM: combustible materials. oxidizing agents. strong acids. (strong) bases. halogens. amines. water/moisture.

Storage area : Store in a cool area. Store in a dry area. Keep container in a well-ventilated place. Fireproof storeroom. Keep locked up. Provide for a tub to collect spills. Provide the tank with earthing. Unauthorized persons are not admitted. Aboveground. Meet the legal requirements.

Special rules on packaging : SPECIAL REQUIREMENTS: closing. dry. clean. correctly labelled. meet the legal requirements. Secure fragile packagings in solid containers.

Packaging materials : SUITABLE MATERIAL: steel. stainless steel. iron. glass. MATERIAL TO AVOID: lead. aluminium. zinc. polyethylene. PVC.

### 7.3. Specific end use(s)

No additional information available

## SECTION 8: Exposure controls/personal protection

### 8.1. Control parameters

| Methanol (67-56-1) | | |
|---|---|---|
| USA ACGIH | ACGIH TWA (ppm) | 200 ppm |
| USA ACGIH | ACGIH STEL (ppm) | 250 ppm |

### 8.2. Exposure controls

Appropriate engineering controls : Emergency eye wash fountains should be available in the immediate vicinity of any potential exposure. Keep concentrations well below lower explosion limits.

Personal protective equipment : Safety glasses. Protective clothing. Gloves. Full protective flameproof clothing. Face shield.



Materials for protective clothing : GIVE GOOD RESISTANCE: polyethylene/ethylenevinylalcohol. styrene-butadiene rubber. viton. GIVE LESS RESISTANCE: chloroprene rubber. chlorinated polyethylene. natural rubber. nitrile rubber/PVC. GIVE POOR RESISTANCE: leather. neoprene. nitrile rubber. polyethylene. PVA. PVC. polyurethane.

Hand protection : Protective gloves against chemicals (EN374).

Eye protection : Safety glasses.

Skin and body protection : Head/neck protection. Protective clothing.

Respiratory protection : Full face mask with filter type AX at conc. in air > exposure limit. High vapour/gas concentration: self-contained respirator.

## SECTION 9: Physical and chemical properties

### 9.1. Information on basic physical and chemical properties

Physical state : Liquid

Appearance : Liquid.

Molecular mass : 32.04 g/mol

Color : Colourless.

| | | |
|---|---|---|
| Odor | : | Characteristic odour. Mild odour. Pleasant odour. Alcohol odour. Commercial/unpurified substance: irritating/pungent odour. |
| Odor threshold | : | No data available |
| pH | : | No data available |
| Relative evaporation rate (butyl acetate=1) | : | 4.1 |
| Relative evaporation rate (ether=1) | : | 6.3 |
| Melting point | : | -97.8 °C |
| Freezing point | : | No data available |
| Boiling point | : | 64.7 °C (1013 hPa) |
| Flash point | : | 9.7 °C (Closed cup, 1013 hPa, EU Method A.9: Flash-Point) |
| Critical temperature | : | 240 °C |
| Auto-ignition temperature | : | 455 °C (1013 hPa, DIN 51794: Self-ignition temperature) |
| Decomposition temperature | : | No data available |
| Flammability (solid, gas) | : | No data available |
| Vapor pressure | : | 128 hPa (20 °C) |
| Vapor pressure at 50 °C | : | 552 hPa |
| Critical pressure | : | 79547 hPa |
| Relative vapor density at 20 °C | : | 1.1 |
| Relative density | : | 0.79 - 0.80 (20 °C) |
| Relative density of saturated gas/air mixture | : | 1 |
| Specific gravity / density | : | 790 - 800 kg/m³ (20 °C) |
| Solubility | : | Soluble in water. Soluble in ethanol. Soluble in ether. Soluble in acetone. Soluble in chloroform.<br>Water: 100 g/100ml (20 °C)<br>Ethanol: complete<br>Ether: complete<br>Acetone: complete |
| Log Pow | : | -0.77 (Experimental value) |
| Log Kow | : | No data available |
| Viscosity, kinematic | : | No data available |
| Viscosity, dynamic | : | 0.544 - 0.59 mPa·s (25 °C) |
| Explosive properties | : | No data available |
| Oxidizing properties | : | No data available |
| Explosion limits | : | 5.5 - 36.5 vol % |

### 9.2. Other information

| | | |
|---|---|---|
| Minimum ignition energy | : | 0.14 mJ |
| Saturation concentration | : | 166 g/m³ |
| VOC content | : | 100 % |
| Other properties | : | Clear. Hygroscopic. Volatile. Neutral reaction. |

## SECTION 10: Stability and reactivity

### 10.1. Reactivity

Violent to explosive reaction with (some) metal powders and with (strong) oxidizers. Violent exothermic reaction with (some) acids and with (some) halogens compounds.

### 10.2. Chemical stability

Hygroscopic.

### 10.3. Possibility of hazardous reactions

No additional information available

### 10.4. Conditions to avoid

Direct sunlight. High temperature. Incompatible materials. Open flame. Sparks. Overheating.

### 10.5. Incompatible materials

Strong oxidizers. Strong bases. Strong acids. Peroxides. Acid anhydrides. Acid chlorides.

### 10.6. Hazardous decomposition products

Carbon dioxide. Carbon monoxide.

## SECTION 11: Toxicological information

### 11.1. Information on toxicological effects

Acute toxicity : Not classified

| Methanol ( \f )67-56-1 | |
|---|---|
| LD50 oral rat | 1187 - 2769 mg/kg body weight (BASF test, Rat, Male / female, Weight of evidence, Aqueous solution, Oral, 7 day(s)) |
| LD50 dermal rabbit | 17100 mg/kg (Rabbit, Inconclusive, insufficient data, Dermal) |
| LC50 inhalation rat (mg/l) | 128.2 mg/l air (BASF test, 4 h, Rat, Male / female, Experimental value, Inhalation (vapours)) |
| ATE CLP (oral) | 100 mg/kg body weight |
| ATE CLP (dermal) | 300 mg/kg body weight |
| ATE CLP (gases) | 700 ppmV/4h |
| ATE CLP (vapors) | 3 mg/l/4h |
| ATE CLP (dust, mist) | 0.5 mg/l/4h |

Skin corrosion/irritation : Not classified

Serious eye damage/irritation : Not classified

Respiratory or skin sensitization : Not classified

Germ cell mutagenicity : Not classified

Carcinogenicity : Not classified

Reproductive toxicity : Not classified

Specific target organ toxicity – single exposure : Causes damage to organs (liver, kidneys, central nervous system, optic nerve) (Dermal, oral).

Specific target organ toxicity – repeated exposure : Not classified

Aspiration hazard : Not classified

Potential Adverse human health effects and symptoms : Toxic in contact with skin. Toxic if swallowed. Toxic if inhaled.

Symptoms/effects after inhalation : EXPOSURE TO HIGH CONCENTRATIONS: Coughing. Symptoms similar to those listed under ingestion.

Symptoms/effects after skin contact : Symptoms similar to those listed under ingestion.

Symptoms/effects after eye contact : Redness of the eye tissue. Lacrimation.

Symptoms/effects after ingestion : Nausea. Vomiting. AFTER ABSORPTION OF LARGE QUANTITIES: FOLLOWING SYMPTOMS MAY APPEAR LATER: Change in the blood composition. Headache. Feeling of weakness. Abdominal pain. Muscular pain. Central nervous system depression. Dizziness. Mental confusion. Drunkenness. Coordination disorders. Disturbed motor response. Disturbances of consciousness. Visual disturbances. Blindness. Respiratory difficulties. Cramps/uncontrolled muscular contractions.

Chronic symptoms : Red skin. Dry skin. Skin rash/inflammation. Headache. Disturbed tactile sensibility. Visual disturbances. Sleeplessness. Gastrointestinal complaints. Cardiac and blood circulation effects.

## SECTION 12: Ecological information

### 12.1. Toxicity

Ecology - general : Not classified as dangerous for the environment according to the criteria of Regulation (EC) No 1272/2008.

Ecology - air : Not included in the list of substances which may contribute to the greenhouse effect (IPCC). Not included in the list of fluorinated greenhouse gases (Regulation (EU) No 517/2014). Not classified as dangerous for the ozone layer (Regulation (EC) No 1005/2009).

Ecology - water : Not harmful to crustacea. Not harmful to fishes. Groundwater pollutant. Inhibition of activated sludge. Nitrification of activated sludge is inhibited. Not harmful to algae. Not harmful to bacteria.

| Methanol (67-56-1) | |
|---|---|
| LC50 fish 1 | 15400 mg/l (EPA 660/3 - 75/009, 96 h, Lepomis macrochirus, Flow-through system, Fresh water, Experimental value, Lethal) |
| EC50 Daphnia 1 | 18260 mg/l (OECD 202: Daphnia sp. Acute Immobilisation Test, 96 h, Daphnia magna, Semi-static system, Fresh water, Experimental value, Locomotor effect) |
| ErC50 (algae) | 22000 mg/l (OECD 201: Alga, Growth Inhibition Test, 96 h, Pseudokirchneriella subcapitata, Static system, Fresh water, Experimental value) |

### 12.2. Persistence and degradability

| Methanol (67-56-1) | |
|---|---|
| Persistence and degradability | Readily biodegradable in the soil. Readily biodegradable in water. |
| Biochemical oxygen demand (BOD) | 0.6 - 1.12 g O □/g substance |
| Chemical oxygen demand (COD) | 1.42 g O □/g substance |
| ThOD | 1.5 g O □/g substance |

### 12.3. Bioaccumulative potential

| Methanol (67-56-1) | |
|---|---|
| BCF fish 1 | 1 - 4.5 (72 h, Cyprinus carpio, Static system, Fresh water, Experimental value) |
| Log Pow | -0.77 (Experimental value) |
| Bioaccumulative potential | Low potential for bioaccumulation (BCF < 500). |

### 12.4. Mobility in soil

| Methanol (67-56-1) | |
|---|---|
| Surface tension | 0.023 N/m (20 °C) |
| Log Koc | 0.088 (log Koc, SRC PCKOCWIN v2.0, Calculated value) |
| Ecology - soil | Highly mobile in soil. |

### 12.5. Other adverse effects

No additional information available

## SECTION 13: Disposal considerations

### 13.1. Waste treatment methods

Waste disposal recommendations : Do not discharge into drains or the environment. Remove waste in accordance with local and/or national regulations. Hazardous waste shall not be mixed together with other waste. Different types of hazardous waste shall not be mixed together if this may entail a risk of pollution or create problems for the further management of the waste. Hazardous waste shall be managed responsibly. All entities that store, transport or handle hazardous waste shall take the necessary measures to prevent risks of pollution or damage to people or animals. Recycle by distillation. Incinerate under surveillance with energy recovery. Obtain the consent of pollution control authorities before discharging to wastewater treatment plants.

Additional information : Hazardous waste according to Directive 2008/98/EC, as amended by Regulation (EU) No 1357/2014 and Regulation (EU) No 2017/997.

## SECTION 14: Transport information

In accordance with DOT

Transport document description : UN1230 Methanol, 3, II

UN-No.(DOT) : 1230

DOT NA no. : UN1230

Proper Shipping Name (DOT) : Methanol

Transport hazard class(es) (DOT) : 3 - Class 3 - Flammable and combustible liquid 49 CFR 173.120

Hazard labels (DOT) : 3 - Flammable liquid




DOT Symbols : D - Proper shipping name for domestic use only, or to and from Canada

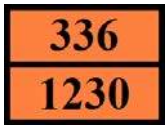
Packing group (DOT) : II - Medium Danger

| | | |
|---|---|---|
| DOT Special Provisions (49 CFR 172.102) | : | IB2 - Authorized IBCs: Metal (31A, 31B and 31N); Rigid plastics (31H1 and 31H2); Composite (31HZ1). Additional Requirement: Only liquids with a vapor pressure less than or equal to 110 kPa at 50 C (1.1 bar at 122 F), or 130 kPa at 55 C (1.3 bar at 131 F) are authorized.<br>T7 - 4 178.274(d)(2) Normal..... 178.275(d)(3)<br>TP2 - a. The maximum degree of filling must not exceed the degree of filling determined by the following: (image) Where: tr is the maximum mean bulk temperature during transport, tf is the temperature in degrees celsius of the liquid during filling, and a is the mean coefficient of cubical expansion of the liquid between the mean temperature of the liquid during filling (tf) and the maximum mean bulk temperature during transportation (tr) both in degrees celsius. b. For liquids transported under ambient conditions may be calculated using the formula: (image) Where: d15 and d50 are the densities (in units of mass per unit volume) of the liquid at 15 C (59 F) and 50 C (122 F), respectively. |
| DOT Packaging Exceptions (49 CFR 173.xxx) | : | 150 |
| DOT Packaging Non Bulk (49 CFR 173.xxx) | : | 202 |
| DOT Packaging Bulk (49 CFR 173.xxx) | : | 242 |
| DOT Quantity Limitations Passenger aircraft/rail (49 CFR 173.27) | : | 1 L |
| DOT Quantity Limitations Cargo aircraft only (49 CFR 175.75) | : | 60 L |
| DOT Vessel Stowage Location | : | B - (i) The material may be stowed ‘‘on deck’’ or ‘‘under deck’’ on a cargo vessel and on a passenger vessel carrying a number of passengers limited to not more than the larger of 25 passengers, or one passenger per each 3 m of overall vessel length; and (ii) ‘‘On deck only’’ on passenger vessels in which the number of passengers specified in paragraph (k)(2)(i) of this section is exceeded. |
| DOT Vessel Stowage Other | : | 40 - Stow ‘‘clear of living quarters’’ |
| Marine pollutant | : | - |

**Additional information**

Other information : No supplementary information available.

**ADR**

| | | |
|---|---|---|
| Transport document description | : | |
| Hazard identification number (Kemler No.) | : | 336 |
| Orange plates | : |  |
| Tunnel restriction code | : | D/E |

**Transport by sea**

| | | |
|---|---|---|
| UN-No. (IMDG) | : | 1230 |
| Proper Shipping Name (IMDG) | : | methanol |
| Class (IMDG) | : | 3 - Flammable liquids |
| Packing group (IMDG) | : | II - substances presenting medium danger |
| EmS-No. (1) | : | F-E |
| MFAG-No | : | 19 |
| EmS-No. (2) | : | S-D |

**Air transport**

| | | |
|---|---|---|
| UN-No. (IATA) | : | 1230 |
| Proper Shipping Name (IATA) | : | Methanol |
| Class (IATA) | : | 3 - Flammable Liquids |
| Packing group (IATA) | : | II - Medium Danger |

## SECTION 15: Regulatory information

### 15.1. US Federal regulations

**Methanol (67-56-1)**

Listed on the United States TSCA (Toxic Substances Control Act) inventory
Subject to reporting requirements of United States SARA Section 313

| Methanol (67-56-1) | |
|---|---|
| RQ (Reportable quantity, section 304 of EPA's List of Lists) | 5000 lb |
| SARA Section 311/312 Hazard Classes | Physical hazard - Flammable (gases, aerosols, liquids, or solids)<br>Health hazard - Acute toxicity (any route of exposure)<br>Health hazard - Specific target organ toxicity (single or repeated exposure) |

### 15.2. International regulations

**CANADA**

| Methanol (67-56-1) | |
|---|---|
| Listed on the Canadian DSL (Domestic Substances List) | |
| WHMIS Classification | Class B Division 2 - Flammable Liquid<br>Class D Division 2 Subdivision A - Very toxic material causing other toxic effects<br>Class D Division 2 Subdivision B - Toxic material causing other toxic effects |

**EU-Regulations**

No additional information available

**Classification according to Regulation (EC) No. 1272/2008 [CLP]**

| | |
|---|---|
| Flam. Liq. 2 | H225 |
| Acute Tox. 3 (Inhalation) | H331 |
| Acute Tox. 3 (Dermal) | H311 |
| Acute Tox. 3 (Oral) | H301 |
| STOT SE 1 | H370 |

Full text of H statements : see section 16

**Classification according to Directive 67/548/EEC [DSD] or 1999/45/EC [DPD]**

Not classified

#### 15.2.2. National regulations

No additional information available

### 15.3. US State regulations

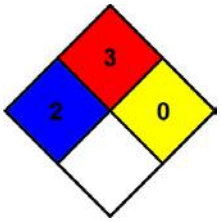
| Methanol(67-56-1) | |
|---|---|
| U.S. - California - Proposition 65 - Carcinogens List | No |
| U.S. - California - Proposition 65 - Developmental Toxicity | Yes |
| U.S. - California - Proposition 65 - Reproductive Toxicity - Female | No |
| U.S. - California - Proposition 65 - Reproductive Toxicity - Male | No |

## SECTION 16: Other information

Full text of H-phrases: see section 16:

| | |
|---|---|
| H225 | Highly flammable liquid and vapour |
| H301 | Toxic if swallowed |
| H311 | Toxic in contact with skin |
| H331 | Toxic if inhaled |
| H370 | Causes damage to organs |

| | | |
|---|---|---|
| NFPA health hazard | : | 2 - Materials that, under emergency conditions, can cause temporary incapacitation or residual injury. |
| NFPA fire hazard | : | 3 - Liquids and solids (including finely divided suspended solids) that can be ignited under almost all ambient temperature conditions. |
| NFPA reactivity | : | 0 - Material that in themselves are normally stable, even under fire conditions. |




**Hazard Rating**

| | | |
|---|---|---|
| Health | : | 2 Moderate Hazard - Temporary or minor injury may occur |
| Flammability | : | 3 Serious Hazard |
| Physical | : | 0 Minimal Hazard |
| Personal protection | : | H |

SDS US ValTech

*Information in this SDS is from available published sources and is believed to be accurate. No warranty, express or implied, is made and LabChem Inc assumes no liability resulting from the use of this SDS. The user must determine suitability of this information for his application.*

# SAFETY DATA SHEET

**Creation Date** 12-Mar-2009 **Revision Date** 25-Apr-2019 **Revision Number** 10

## 1. Identification

**Product Name** **Nitric acid (65 - 70%)**

**Cat No. :** **A198C-212, A200-212, A200-212LC, A200-500, A200-500LC, A200-612GAL, A200C-212, A200S-212, A200S-212LC, A200S-500, A200SI-212, A467-1, A467-2, A467-250, A467-500, A483-212; S719721**

**CAS-No** 7697-37-2
**Synonyms** Azotic acid; Engraver's acid; Aqua fortis

**Recommended Use** Laboratory chemicals.
**Uses advised against** Food, drug, pesticide or biocidal product use

**Details of the supplier of the safety data sheet**

**Company**
Fisher Scientific
One Reagent Lane
Fair Lawn, NJ 07410
Tel: (201) 796-7100

**Emergency Telephone Number**
CHEMTREC®, Inside the USA: 800-424-9300
CHEMTREC®, Outside the USA: 001-703-527-3887

## 2. Hazard(s) identification

**Classification**
This chemical is considered hazardous by the 2012 OSHA Hazard Communication Standard (29 CFR 1910.1200)

| | |
|---|---|
| Oxidizing liquids | Category 3 |
| Corrosive to metals | Category 1 |
| Acute Inhalation Toxicity - Dusts and Mists | Category 3 |
| Skin Corrosion/irritation | Category 1 A |
| Serious Eye Damage/Eye Irritation | Category 1 |

**Label Elements**

**Signal Word**
Danger

**Hazard Statements**
May intensify fire; oxidizer
May be corrosive to metals
Causes severe skin burns and eye damage

Toxic if inhaled



**Precautionary Statements**
**Prevention**
Do not breathe dust/fume/gas/mist/vapors/spray
Wash face, hands and any exposed skin thoroughly after handling
Wear protective gloves/protective clothing/eye protection/face protection
Use only outdoors or in a well-ventilated area
Keep away from heat/sparks/open flames/hot surfaces. - No smoking
Keep/Store away from clothing/ other combustible materials
Take any precaution to avoid mixing with combustibles
Keep only in original container
Wear respiratory protection
**Response**
Immediately call a POISON CENTER or doctor/physician
**Inhalation**
IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing
Immediately call a POISON CENTER or doctor/physician
**Skin**
IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower
Wash contaminated clothing before reuse
**Eyes**
IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing
**Ingestion**
IF SWALLOWED: Rinse mouth. DO NOT induce vomiting
**Fire**
In case of fire: Use CO2, dry chemical, or foam for extinction
**Spills**
Absorb spillage to prevent material damage
**Storage**
Store locked up
Store in a well-ventilated place. Keep container tightly closed
Store in corrosive resistant polypropylene container with a resistant inliner
Store in a dry place
**Disposal**
Dispose of contents/container to an approved waste disposal plant
**Hazards not otherwise classified (HNOC)**
Corrosive to the respiratory tract

## 3. Composition/Information on Ingredients

| Component | CAS-No | Weight % |
|---|---|---|
| Nitric acid | 7697-37-2 | 65 - 70 |
| Water | 7732-18-5 | 30 - 35 |

## 4. First-aid measures

**General Advice** Immediate medical attention is required. Show this safety data sheet to the doctor in

attendance.

**Eye Contact** Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. Immediate medical attention is required.

**Skin Contact** Wash off immediately with plenty of water for at least 15 minutes. Remove and wash contaminated clothing before re-use. Call a physician immediately.

**Inhalation** If breathing is difficult, give oxygen. Do not use mouth-to-mouth method if victim ingested or inhaled the substance; give artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device. Remove from exposure, lie down. Call a physician immediately.

**Ingestion** Do not induce vomiting. Never give anything by mouth to an unconscious person. Clean mouth with water. Call a physician immediately.

**Most important symptoms and effects** Causes burns by all exposure routes. Ingestion causes severe swelling, severe damage to the delicate tissue and danger of perforation: Product is a corrosive material. Use of gastric lavage or emesis is contraindicated. Possible perforation of stomach or esophagus should be investigated

**Notes to Physician** Treat symptomatically

## 5. Fire-fighting measures

**Suitable Extinguishing Media** $CO_2$, dry chemical, dry sand, alcohol-resistant foam.

**Unsuitable Extinguishing Media** No information available

**Flash Point** Not applicable
**Method -** No information available

**Autoignition Temperature** No information available

**Explosion Limits**
**Upper** No data available
**Lower** No data available

**Oxidizing Properties** Oxidizer

**Sensitivity to Mechanical Impact** No information available
**Sensitivity to Static Discharge** No information available

**Specific Hazards Arising from the Chemical**
Thermal decomposition can lead to release of irritating gases and vapors. The product causes burns of eyes, skin and mucous membranes. Oxidizer: Contact with combustible/organic material may cause fire. May ignite combustibles (wood paper, oil, clothing, etc.).

**Hazardous Combustion Products**
Nitrogen oxides (NOx) Thermal decomposition can lead to release of irritating gases and vapors
**Protective Equipment and Precautions for Firefighters**
As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear. Thermal decomposition can lead to release of irritating gases and vapors.

**NFPA**

| Health | Flammability | Instability | Physical hazards |
|---|---|---|---|
| 4 | 0 | 0 | OX |

## 6. Accidental release measures

**Personal Precautions** Evacuate personnel to safe areas. Keep people away from and upwind of spill/leak. Ensure adequate ventilation. Use personal protective equipment.

**Environmental Precautions** Should not be released into the environment. Do not flush into surface water or sanitary sewer system. See Section 12 for additional ecological information.

**Methods for Containment and Clean Up** Soak up with inert absorbent material. Keep in suitable, closed containers for disposal. Sweep up and shovel into suitable containers for disposal. Wear self-contained breathing apparatus and protective suit.

## 7. Handling and storage

**Handling** Use only under a chemical fume hood. Wear personal protective equipment. Do not get in eyes, on skin, or on clothing. Do not ingest. Do not breathe vapors or spray mist. Keep away from clothing and other combustible materials.

**Storage** Keep containers tightly closed in a cool, well-ventilated place. Do not store near combustible materials.

## 8. Exposure controls / personal protection

**Exposure Guidelines**

| Component | ACGIH TLV | OSHA PEL | NIOSH IDLH | Mexico OEL (TWA) |
|---|---|---|---|---|
| Nitric acid | TWA: 2 ppm<br>STEL: 4 ppm | (Vacated) TWA: 2 ppm<br>(Vacated) TWA: 5 mg/m³<br>(Vacated) STEL: 4 ppm<br>(Vacated) STEL: 10 mg/m³<br>TWA: 2 ppm<br>TWA: 5 mg/m³ | IDLH: 25 ppm<br>TWA: 2 ppm<br>TWA: 5 mg/m³<br>STEL: 4 ppm<br>STEL: 10 mg/m³ | TWA: 2 ppm<br>STEL: 4 ppm |

*Legend*

*ACGIH - American Conference of Governmental Industrial Hygienists*
*OSHA - Occupational Safety and Health Administration*
*NIOSH IDLH: The National Institute for Occupational Safety and Health Immediately Dangerous to Life or Health*

**Engineering Measures** Use only under a chemical fume hood. Ensure that eyewash stations and safety showers are close to the workstation location. Ensure adequate ventilation, especially in confined areas.

**Personal Protective Equipment**

**Eye/face Protection** Wear appropriate protective eyeglasses or chemical safety goggles as described by OSHA's eye and face protection regulations in 29 CFR 1910.133 or European Standard EN166. Tightly fitting safety goggles. Face-shield.

**Skin and body protection** Long sleeved clothing.

**Respiratory Protection** Follow the OSHA respirator regulations found in 29 CFR 1910.134 or European Standard EN 149. Use a NIOSH/MSHA or European Standard EN 149 approved respirator if exposure limits are exceeded or if irritation or other symptoms are experienced.

**Hygiene Measures** Keep away from food, drink and animal feeding stuffs. When using, do not eat, drink or smoke. Contaminated work clothing should not be allowed out of the workplace. Provide regular cleaning of equipment, work area and clothing. Avoid contact with skin, eyes and clothing. For environmental protection remove and wash all contaminated protective equipment before re-use. Wear suitable gloves and eye/face protection.

## 9. Physical and chemical properties

| | |
|---|---|
| **Physical State** | Liquid |
| **Appearance** | Clear Colorless, Light yellow |
| **Odor** | Strong Acrid |
| **Odor Threshold** | No information available |
| **pH** | < 1.0 (0.1M) |
| **Melting Point/Range** | -41 °C / -41.8 °F |

| | |
|---|---|
| **Boiling Point/Range** | Not applicable |
| **Flash Point** | Not applicable |
| **Evaporation Rate** | No information available |
| **Flammability (solid,gas)** | Not applicable |
| **Flammability or explosive limits** | |
| **Upper** | No data available |
| **Lower** | No data available |
| **Vapor Pressure** | 0.94 kPa (20°C) |
| **Vapor Density** | No information available |
| **Specific Gravity** | 1.40 |
| **Solubility** | miscible |
| **Partition coefficient; n-octanol/water** | No data available |
| **Autoignition Temperature** | No information available |
| **Decomposition Temperature** | No information available |
| **Viscosity** | No information available |
| **Molecular Formula** | HNO3 |
| **Molecular Weight** | 63.01 |

## 10. Stability and reactivity

**Reactive Hazard** Yes

**Stability** Oxidizer: Contact with combustible/organic material may cause fire.

**Conditions to Avoid** Incompatible products. Combustible material. Excess heat. Exposure to air or moisture over prolonged periods.

**Incompatible Materials** Combustible material, Strong bases, Reducing agents, Metals, Powdered metals, Organic materials, Aldehydes, Alcohols, Cyanides, Ammonia, Strong reducing agents

**Hazardous Decomposition Products** Nitrogen oxides (NOx), Thermal decomposition can lead to release of irritating gases and vapors

**Hazardous Polymerization** Hazardous polymerization does not occur.

**Hazardous Reactions** None under normal processing.

## 11. Toxicological information

**Acute Toxicity**

**Product Information**

| | |
|---|---|
| **Oral LD50** | Based on ATE data, the classification criteria are not met. ATE > 2000 mg/kg. |
| **Dermal LD50** | Based on ATE data, the classification criteria are not met. ATE > 2000 mg/kg. |
| **Mist LC50** | Category 3. ATE = 1 - 5 mg/l. Category 4. |
| **Vapor LC50** | Based on ATE data, the classification criteria are not met. ATE > 20 mg/l. |

**Component Information**

| Component | LD50 Oral | LD50 Dermal | LC50 Inhalation |
|---|---|---|---|
| Nitric acid | Not listed | Not listed | LC50 = 2500 ppm. (Rat) 1h |
| Water | - | Not listed | Not listed |

**Toxicologically Synergistic Products** No information available

**Delayed and immediate effects as well as chronic effects from short and long-term exposure**

**Irritation** Causes severe burns by all exposure routes

**Sensitization** No information available

**Carcinogenicity** The table below indicates whether each agency has listed any ingredient as a carcinogen.

| Component | CAS-No | IARC | NTP | ACGIH | OSHA | Mexico |
|---|---|---|---|---|---|---|

| | | | | | | |
|---|---|---|---|---|---|---|
| Nitric acid | 7697-37-2 | Not listed | Not listed | Not listed | Not listed | Not listed |
| Water | 7732-18-5 | Not listed | Not listed | Not listed | Not listed | Not listed |

**Mutagenic Effects** No information available

**Reproductive Effects** No information available.

**Developmental Effects** No information available.

**Teratogenicity** No information available.

**STOT - single exposure** None known
**STOT - repeated exposure** None known

**Aspiration hazard** No information available

**Symptoms / effects,both acute and delayed** Ingestion causes severe swelling, severe damage to the delicate tissue and danger of perforation: Product is a corrosive material. Use of gastric lavage or emesis is contraindicated. Possible perforation of stomach or esophagus should be investigated

**Endocrine Disruptor Information** No information available

**Other Adverse Effects** The toxicological properties have not been fully investigated.

## 12. Ecological information

**Ecotoxicity**

Do not empty into drains. Large amounts will affect pH and harm aquatic organisms.

| Component | Freshwater Algae | Freshwater Fish | Microtox | Water Flea |
|---|---|---|---|---|
| Nitric acid | Not listed | LC50: = 72 mg/L, 96h (Gambusia affinis) | Not listed | Not listed |

**Persistence and Degradability** Miscible with water Persistence is unlikely based on information available.

**Bioaccumulation/ Accumulation** No information available.

**Mobility** Will likely be mobile in the environment due to its water solubility.

| Component | log Pow |
|---|---|
| Nitric acid | -2.3 |

## 13. Disposal considerations

**Waste Disposal Methods** Chemical waste generators must determine whether a discarded chemical is classified as a hazardous waste. Chemical waste generators must also consult local, regional, and national hazardous waste regulations to ensure complete and accurate classification.

## 14. Transport information

**DOT**

**UN-No** UN2031
**Proper Shipping Name** NITRIC ACID
**Hazard Class** 8
**Subsidiary Hazard Class** 5.1
**Packing Group** II

**TDG**

**UN-No** UN2031
**Proper Shipping Name** NITRIC ACID
**Hazard Class** 8
**Subsidiary Hazard Class** 5.1
**Packing Group** II

**IATA**

| | |
|---|---|
| **UN-No** | UN2031 |
| **Proper Shipping Name** | NITRIC ACID |
| **Hazard Class** | 8 |
| **Subsidiary Hazard Class** | 5.1 |
| **Packing Group** | II |

**IMDG/IMO**

| | |
|---|---|
| **UN-No** | UN2031 |
| **Proper Shipping Name** | NITRIC ACID |
| **Hazard Class** | 8 |
| **Subsidiary Hazard Class** | 5.1 |
| **Packing Group** | II |

## 15. Regulatory information

**United States of America Inventory**

| Component | CAS-No | TSCA | TSCA Inventory notification - Active/Inactive | TSCA - EPA Regulatory Flags |
|---|---|---|---|---|
| Nitric acid | 7697-37-2 | X | ACTIVE | - |
| Water | 7732-18-5 | X | ACTIVE | - |

**Legend:**
**TSCA** - Toxic Substances Control Act, (40 CFR Part 710)
X - Listed
'-' - Not Listed

**TSCA 12(b)** - Notices of Export Not applicable

**International Inventories**
Canada (DSL/NDSL), Europe (EINECS/ELINCS/NLP), Philippines (PICCS), Japan (ENCS), Australia (AICS), China (IECSC), Korea (ECL).

| Component | CAS-No | DSL | NDSL | EINECS | PICCS | ENCS | AICS | IECSC | KECL |
|---|---|---|---|---|---|---|---|---|---|
| Nitric acid | 7697-37-2 | X | - | 231-714-2 | X | X | X | X | KE-25911 |
| Water | 7732-18-5 | X | - | 231-791-2 | X | - | X | X | KE-35400 |

**U.S. Federal Regulations**

**SARA 313**

| Component | CAS-No | Weight % | SARA 313 - Threshold Values % |
|---|---|---|---|
| Nitric acid | 7697-37-2 | 65 - 70 | 1.0 |

**SARA 311/312 Hazard Categories** See section 2 for more information

**CWA (Clean Water Act)**

| Component | CWA - Hazardous Substances | CWA - Reportable Quantities | CWA - Toxic Pollutants | CWA - Priority Pollutants |
|---|---|---|---|---|
| Nitric acid | X | 1000 lb | - | - |

**Clean Air Act** Not applicable

**OSHA** - Occupational Safety and Health Administration

| Component | Specifically Regulated Chemicals | Highly Hazardous Chemicals |
|---|---|---|
| Nitric acid | - | TQ: 500 lb |

**CERCLA** This material, as supplied, contains one or more substances regulated as a hazardous substance under the Comprehensive Environmental Response Compensation and Liability Act (CERCLA) (40 CFR 302)

| Component | Hazardous Substances RQs | CERCLA EHS RQs |
|---|---|---|
| Nitric acid | 1000 lb | 1000 lb |

**California Proposition 65** This product does not contain any Proposition 65 chemicals

**U.S. State Right-to-Know Regulations**

| Component | Massachusetts | New Jersey | Pennsylvania | Illinois | Rhode Island |
|---|---|---|---|---|---|
| Nitric acid | X | X | X | X | X |
| Water | - | - | X | - | - |

**U.S. Department of Transportation**

Reportable Quantity (RQ): Y
DOT Marine Pollutant N
DOT Severe Marine Pollutant N

**U.S. Department of Homeland Security** This product contains the following DHS chemicals:
**Legend** - STQs = Screening Threshold Quantities, APA = A placarded amount

| Component | DHS Chemical Facility Anti-Terrorism Standard |
|---|---|
| Nitric acid | Release STQs - 15000lb<br>Theft STQs - 400lb |

**Other International Regulations**

**Mexico - Grade** No information available

## 16. Other information

**Prepared By**
Regulatory Affairs
Thermo Fisher Scientific
Email: EMSDS.RA@thermofisher.com

**Creation Date** 12-Mar-2009
**Revision Date** 25-Apr-2019
**Print Date** 25-Apr-2019
**Revision Summary** SDS sections updated. 2. 11.

**Disclaimer**

**The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text**

**End of SDS**

# Appendix D

## Forms

GEI Consultants

# Accident/Incident Report Form

Please complete this form and send it to your Branch Manager, HR and CHSO ***within 24 hours*** of the incident.

## SECTION A — ACCIDENT/INCIDENT DETAILS

### EMPLOYEE INFORMATION:

**Name:** _____

**Home Address:** _____
Street Address City State Zip Code

**Contact Information:** ( ) _____ ( ) _____
Primary Secondary

**Date of Birth:** _____

**Date of Hire:** _____

**Branch:** _____

**Supervisor:** _____

### OTHER INJURED (IF APPLICABLE):

**Name:** _____

**Home Address:** _____
Street Address City State Zip Code

**Contact Information:** ( ) _____ ( ) _____
Primary Secondary

**Date of Birth:** _____

**Date of Hire:** _____

**Branch:** _____

**Supervisor:** _____

| Date and Time Accident/Incident | Date and Time Reported |
|---|---|
| ____ /____ /____ Month Day Year | ____ /____ /____ Month Day Year |
| ____ A.M. ____ P.M. | ____ A.M. ____ P.M. |

### LOCATION OF INCIDENT/ACCIDENT

**Project Name:** _____

**Client and Location:** _____

**or** _____

**Office Location:** _____

### INCIDENT TYPE: (Check All That Applies)

- ☐ **Personal Injury/Illness**
- ☐ **Vehicle Accident**
- ☐ **Property Damage**
- ☐ **Environmental Spill**
- ☐ **Other**

### WITNESS INFORMATION

**Name:** _____

**Contact Number:** _____

**Company:** _____

**WHAT HAPPENED TO THE INJURED PARTY:** ☐ First Aid Administered ☐ Refused Treatment/Transport ☐ Transported to Hospital ☐ Returned to Work ☐ Went Home ☐ Went to Physician ☐ Unknown

Clinic/Hospital or Treating Physician: _____ Phone: _____
Name Street Address City State Zip Code

## SECTION B — PERSONAL INJURY

Cause of Injury: _____

Part of Body Injured: _____ Multiple Injuries: ☐ Y ☐ N

Was PPE worn when injured? : ☐ Y ☐ N What PPE was worn? _____

**WAS INJURY A RESULT OF THE USE A MOTOR VEHICLE:** ☐ **YES** ☐ **NO** **(If yes, complete Section C)**

GEI Consultants

# Accident/Incident Report Form

Please complete this form and send it to your Branch Manager, HR and CHSO ***within 24 hours*** of the incident.

## SECTION C — AUTO ACCIDENT ONLY

### DRIVER/VEHICLE INFORMATION

Name of Insured: _____

Department: _____

Driver's License Number: _____

DOB: ____/____/____ State: _____

Description of Vehicle: License Plate Number: _____

Make: _____ Model: _____ Year:_____ Color:_____

Owner: _____

Name of Other Driver: _____

Driver's License Number: _____

State: _____

Description of Vehicle: License Plate Number: _____

Make: _____ Model:_____ Year:_____ Color:_____

Insurance Carrier: _____

Policy Number: _____Ph. Number:_____

## SECTION D — PROPERTY DAMAGE OR CHEMICAL RELEASE ONLY

Type of Damage(s): _____

Cause of Damage(s): _____

Type of Chemical Released (if known): _____

Quantity of Chemical Released: _____

Spill Measures Employed: _____

## SECTION E — NATURE OF ACCIDENT/INCIDENT AND EXTENT OF INJURIES/DAMAGES

***(Please give a detailed description of what happened. Attach a sketch or picture if applicable)***

_____

_____

_____

_____

_____

_____

_____

_____

_____

**I hereby certify that the above information is true and correct to my understanding of this accident/incident.**

_____ _____

**Employee/Preparer's Name** **Date and Time**

GEI Consultants

# Near Miss Report Form

Please complete this form and send it to your Branch Manager, HR and the Safety Team ***within 24 hours*** of the near miss.

## NEAR MISS DETAILS

**Employee Name:** _____

**Phone Number:** _____

**Branch:** _____

**Supervisor:** _____

| Date and Time Accident/Incident | Date and Time Reported | LOCATION OF NEAR MISS |
|---|---|---|
| ____/____/____<br>Month Day Year<br>____A.M. ____P.M. | ____/____/____<br>Month Day Year<br>____A.M. ____P.M. | **Project Name:** _____<br>**Client and Location:** _____<br>**or** _____<br>**Office Location:** _____ |

## WHAT HAPPENED?

(Please give a detailed description of what happened. Attach photos or a sketch, if applicable.)

_____

_____

_____

_____

_____

☐ **Photos were Taken**

## WHAT WAS DONE?

(Please give a detailed description of what was done to prevent and incident from occurring.)

_____

_____

_____

_____

_____

_____

☐ **I have verbally contacted a member of the Safety Team and my Supervisor.**

_____ _____

**Employee/Preparer's Name** **Date and Time**

# Project Safety Briefing Form

| | |
|---|---|
| **Project Number:** | **Project Name:** |
| **Date:** | **Time:** |
| **Briefing Conducted by:** | **Signature:** |

This sign-in log documents that a project specific-briefing was conducted in accordance with the site-specific HASP and GEI's H&S policy. GEI personnel who perform work on site are required to attend this project briefing. Applicable health and safety SOPs and any additional hazards are also required to be reviewed during this briefing. Prior to the start of the project or upon the start of a new on-site project team member, this form must be completed. Please email this completed form to:

SafetyTeam@geiconsultants.com

**TOPICS COVERED (check all those covered):**

| | | | |
|---|---|---|---|
| SOP HS-001 Biological Hazards | | SOP HS-025 Manual Lifting | |
| SOP HS-002 Bloodborne Pathogens | | SOP HS -26 Hazard Identification | |
| SOP HS-003 Container Management | | SOP HS-27 Confined Space Entry for Sanitary Sewers | |
| SOP HS-004 Driver Safety | | SOP HS-28 Safe Trailer Use | |
| SOP HS-005a Electrical Safety | | SOP HS-29 Overtime and Fatigue Management | |
| SOP HS-005b Lockout/Tagout | | Accident Reporting Procedures | |
| SOP HS-006 Excavation/Trenching | | Changes to the HASP | |
| SOP HS-008a Hand Tools (Non-Powered) | | Cold Stress | |
| SOP HS-008b Powered Hand Tools | | Confined Space | |
| SOP HS-009 Hazardous Substances Management | | Decon Procedures | |
| SOP HS-010 Inclement Weather | | Exposure Guidelines | |
| SOP HS-011 Ladders | | General PPE Usage | |
| SOP HS-012 Noise Exposure | | Heat Stress | |
| SOP HS-013 Nuclear Density Gauge | | Hearing Conservation | |
| SOP HS-014 Utility Markout | | Lockout/Tagout | |
| SOP HS-015 Respirator Fit Test | | Personal Hygiene | |
| SOP HS-016 Traffic Hazards | | Respiratory Protection | |
| SOP HS-017 Water Safety | | Review of Hazard Evaluation | |
| SOP HS-018 Working Around Heavy Equipment | | Site Control | |
| SOP HS-019 Rail Safety | | Site Emergency Procedures | |
| SOP HS-020 Aerial Lift | | Slips, Trips, Falls | |
| SOP HS-021 Mobile Equipment | | Other (Specify): | |
| SOP HS-022 Aquatic Ecological Survey/Electrofishing | | Other (Specify): | |
| SOP HS-023 Scaffolding | | Other (Specify): | |
| SOP HS-024 Wilderness Safety | | Other (Specify): | |

**Personnel Sign-in List**

| **Printed Name** | **Signature** |
|---|---|
| | |
| | |
| | |
| | |
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GEI Consultants

# Daily Safety Briefing and Site Visitor Sign-In

| | |
|---|---|
| **Project Number:** | **Project Name:** |
| **[1]Date:** | **Time:** |
| **Briefing Conducted by:** | **Signature:** |

This sign-in log documents the tailgate briefing conducted in accordance with the site specific HASP. Personnel who perform work operations on site are required to attend each briefing and to acknowledge receipt of each briefing, daily.

**TOPICS COVERED (check all those covered):**

| | | | |
|---|---|---|---|
| ☐ Accident Reporting Procedures | ☐ General PPE Usage | ☐ Site Control | ☐ Other: |
| ☐ Cellular Phone Charged w/Service | ☐ Heat Stress | ☐ Site Emergency Procedures | ☐ Other: |
| ☐ Changes to the HASP | ☐ Hearing Conservation | ☐ Slips, Trips, Falls | ☐ Other: |
| ☐ Cold Stress | ☐ Lockout/Tagout | ☐ Traffic Safety | ☐ Other: |
| ☐ Confined Space | ☐ Personal Hygiene | ☐ Other: | ☐ Other: |
| ☐ Decon Procedures | ☐ Respiratory Protection | ☐ Other: | ☐ Other: |
| ☐ Exposure Guidelines | ☐ Review of Hazards | ☐ Other: | ☐ Other: |

**Daily Safety Topic Description:**

## Personnel Sign-in List

| Printed Name | Signature | Company Name | Time-In | Time-Out |
|---|---|---|---|---|
| | | | | |
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[1] This form is applicable for *only* 1 day of site activity.

# Appendix E

## GEI's Health and Safety SOPs and Programs

| **Applicable GEI H&S SOPs** *(check all that apply)* | | |
|---|---|---|
| ☒ Biological Hazards – 001 | ☒ Inclement Weather – 010 | ☐ Aerial Lift – 020 |
| ✔ Bloodborne Pathogens – 002 | ☐ Ladders -011 | ☐ Mobile Equipment – 021 |
| ☒ Container Management – 003 | ☒ Noise Exposure -012 | ☐ Aquatic Ecological Survey & Electrofishing -022 |
| ☒ Driver Safety - 004 | ☐ Nuclear Density Gauge Operation -013 | ☐ Scaffolding - 023 |
| ☐ Electrical Safety - 005a | ☒ Utility Markout-014 | ☐ Wilderness Safety - 024 |
| ☐ Lockout Tagout - 005b | ☐ Respirator Fit Test Procedure-015 | ☒ Manual Lifting – 025 |
| ☒ Excavation Trenching - 006 | ☒ Traffic Hazards -016 | ✔ Hazard Identification - 026 |
| ☒ Non-Powered Hand Tools - 008a | ☐ Water Safety – 017 | ☐ Confined Space Entry for Sanitary Sewers – 027 |
| ☐ Powered Hand Tools – 008b | ☒ Working Around Heavy Equipment – 018 | ☐ Safe Trailer Use – 028 |
| ☒ Hazardous Substances Management -009 | ☐ Rail Safety -019 | |

**Scan this QR code with your smartphone to access all GEI H&S SOPs**

| **Applicable GEI H&S Programs** *(check all that apply)* | | |
|---|---|---|
| ☐ Asbestos Program | ☐ DOT Driver Safety | ☐ Hydrogen Sulfide |
| ☒ Arsenic Safety | ✔ Ergonomic | ☐ Injury and Illness Prevention (California Only) |
| ☒ Benzene Awareness | ☐ Fall Protection | ☐ Respiratory Protection Program |
| ☐ Cadmium Safety | ✔ Hazard Communication | ☐ Lead Awareness |
| ☒ Cold Stress | ☒ Hearing Conservation | ✔ Fire Prevention |
| ☐ Confined Space Entry | ☒ Heat Illness Prevention | |
| ☐ Crystalline Silica | ☐ Hexavalent Chromium | |

**Scan this QR code with your smartphone to access all GEI Programs**

# Appendix F CAMP



GEI Consultants

Consulting
Engineers and
Scientists

# Remedial Investigation Work Plan

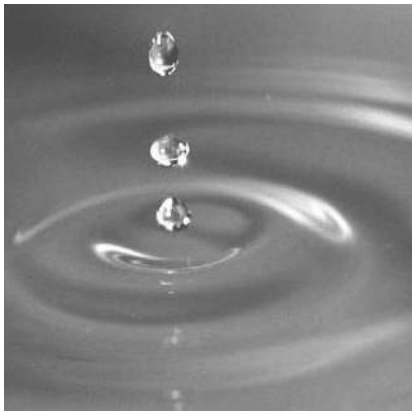
# Community Air Monitoring Plan
# 1641 River Street Redevelopment Site
# Olean, New York

Site #C905049
Submitted to:

1641 River Street LLC
c/o Michael J. Hecker, Esq.
Hodgson Russ LLP
140 Pearl Street
Buffalo, New York 14202

**Submitted by:**
GEI Consultants, Inc., P.C.
100 Sylvan Parkway, Suite 400
Amherst, NY 14228

September 2026
GEI Project 2600988



Jeffrey S. Hall, P.E., PMP
Senior Environmental Engineer

Richard H. Frappa, P.G.
Branch Manager/Senior Consultant

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## Abbreviations and Acronyms

| | |
|---|---|
| CAMP | Community Air Monitoring Plan |
| COC | Compounds of Concern |
| GEI | GEI Consultants, Inc., P.C. |
| HASP | Health and Safety Plan |
| MGP | Manufactured Gas Plant |
| NYSDEC | New York State Department of Environmental Conservation |
| NYSDOH | New York State Department of Health |
| PAH | Polycyclic Aromatic Hydrocarbon |
| PID | Photo-ionization Detector |
| ppm | Parts per Million |
| SCWP | Site Characterization Work Plan |
| SVOC | Semi-Volatile Organic Compound |
| VOC | Volatile Organic Compound |
| $\mu g/m^3$ | Micrograms per cubic meter |

# 1. Introduction

This document presents the Community Air Monitoring Plan (CAMP) that will be implemented during the Remedial Investigation (RI) at the 1641 River Street Redevelopment Site in Olean, New York. A CAMP is required by the New York State Department of Environmental Conservation (NYSDEC) and the New York State Department of Health (NYSDOH) at sites where ground-intrusive activities may result in airborne release of compounds of concern (COCs). This CAMP has been developed to monitor for total volatile organic compound (VOC) vapors, and for particulates (dust) which are the principal COCs resulting from intrusive activities performed during implementation of the Remedial Investigation for the Site.

The Remedial Investigation will consist of the following elements:

- Installation of soil borings and monitoring wells,
- Excavation of test pits, and
- Sampling of monitoring wells.

The objectives of this CAMP are to:

- Ensure that the airborne concentrations of COCs are minimized to protect the community.
- Provide an early warning system so that potential emissions can be controlled on site at the source.
- Measure and document the concentrations of airborne COCs to confirm compliance with the specified limits.

This CAMP is a companion document to GEI's site-specific Health and Safety Plan (HASP) which is directed primarily toward protection of on-site workers within the designated work zones. Implementation of this CAMP will be required during any intrusive activities performed at the Site, including the installation of soil borings, test pits, and monitoring wells. Monitoring will be required in the work zone and upwind and downwind areas.

# 2. Air Monitoring Equipment, Methods, and Action Levels

This section provides instructions for conducting the CAMP. Discussed are the COCs to be monitored, the equipment to be used, and the action limits. Community air monitoring will be performed for total VOCs and particulates (dust) during the excavation and backfilling activities performed at the Site.

In addition to the community air monitoring, work/exclusion zone monitoring will be performed during work activities where impacted soil may be encountered. The exclusion zone air monitoring requirements, equipment, and action levels are described in the site-specific HASP for this project. Note, however, that the work zone air monitoring and the community air monitoring are conducted as part of the overall site control program. When work zone VOC or particulate readings are found to exceed the downwind CAMP limits, the field staff will check the upwind and downwind air monitoring instruments to assess whether control measures will be required.

## 2.1 Monitoring Locations

Air monitoring locations will be established at the start of each workday. A minimum of one station located upwind of the work area, and one located downwind of the work area/exclusion zone will be placed at the Site perimeter as determined by the prevailing wind direction at the start of the day. The purpose of the upwind station will be to determine the background concentration of VOCs and particulates at the worksite. The downwind monitoring station will be used to assess compliance with the NYSDEC/NYSDOH specified action limits for VOCs and particulates. The upwind VOC and dust measurements will be subtracted from the downwind measurements in order to compare the downwind instrument readings to the CAMP action levels.

The location of each monitoring station will be noted in the Daily Field Report along with the start and ending time for monitoring at each location. The locations of the instruments may be changed during the day to adapt to changing wind directions. Field personnel will be prepared to move the equipment to multiple locations in the event that there is little wind, if the wind direction changes frequently, or if there is a change to the location of the most sensitive downwind receptor location.

It is not anticipated that any work area will be within 20’ of any occupied structure during implementation of the RI Work Plan. However, if any work area is less than 20 feet from the nearest occupied building, a downwind air monitoring station will be positioned at the air intake for the building or at the most sensitive exposure point for the downwind receptors. Background measurements inside the building will be made prior to the start of work. If

exceedances of the action levels are measured at the outside wall of the building, additional measurements will be made inside the building using portable meters.

If necessary, precautions to minimize the release of VOCs and particulates will be taken at the work zone, and engineering or work controls used to protect the downwind receptor. These controls for minimizing releases from the work zone are discussed in Section 3.

## 2.2 Air Monitoring Equipment

The monitoring instruments will be calibrated at the start of each workday, and again during the day if the performance of an instrument is in question. The time and method of calibration will be noted on the Daily Field Report. Both the photo-ionization detectors (PIDs) and particulate meters will be mounted on a tripod in a vented protective case, and programmed to record 15-minute averages. A monitoring technician will check the instrumentation at each of these locations regularly during the workday to ensure that they are operating properly.

### *2.2.1 VOC Monitoring Equipment*

VOC monitoring will be performed using PIDs (RAE Systems MiniRAE™ or equivalent) equipped with a 10.2 or 10.6 eV bulb. The instruments will be set to record 15-minute running average concentrations. The PIDs will be equipped with an audible alarm to indicate an exceedance of the action level of 5 ppm total VOCs.

### *2.2.2 Particulate (Dust) Monitoring Equipment*

Particulate monitoring will be performed using meters set to measure 10 micron and finer particulates (PM-10). Particulates will be monitored using an MIE DataRAM DR-2000l, TSI DustTrak™, or equivalent, which is capable of measuring PM-10. The equipment used will be set to record 15-minute running average concentrations, for comparison to the action levels.

In addition to the instrument readings, fugitive dust migration will be visually assessed during all work activities, and the observations recorded. Per NYSDEC requirements, visible dust migration will not be allowed. If visible dust is observed to be migrating from the work zone, the work will be stopped and dust control measures implemented.

## 2.3 Monitoring Action Levels and Responses

The action levels and responses for VOCs and particulates are presented in Table 1.

## Table 1. Air Monitoring Response Levels and Actions

| ***VOCs*** | |
|---|---|
| **Response Level** | **Actions** |
| >1 ppm at the wall of an occupied structure or at an air intake | ▪ Check the indoor air concentration and compare with background measurements taken previously |
| >5 ppm above background for 15-minute average | ▪ Temporarily halt work activities<br>▪ Continue monitoring, especially inside of occupied structures<br>▪ Perform work during cold weather<br>▪ If VOC levels decrease (per instantaneous readings) below 5 ppm over background, work activities can resume |
| Persistent levels >5 ppm over background but <25 ppm | ▪ Halt work activities<br>▪ Identify source of vapors<br>▪ Corrective action to abate emissions<br>▪ Continue monitoring<br>▪ Resume work activities if VOC levels 200 feet downwind of the property boundary or half the distance to the nearest potential receptor is <5 ppm for a 15-minute average |
| >25 ppm at the perimeter of the work area | ▪ Shut down work |

| ***Particulates*** | |
|---|---|
| **Response Level** | **Actions** |
| >100 µg/m$^3$ above background for 15-minute average or visual dust observed leaving the site | ▪ Apply dust suppression<br>▪ Continue monitoring<br>▪ Continue work if downwind PM-10 particulate levels are <150 µg/m$^3$ above upwind levels and no visual dust leaving site |
| >150 µg/m$^3$ above background for 15-minute average | ▪ Stop work<br>▪ Re-evaluate activities<br>▪ Continue monitoring<br>▪ Continue work if downwind PM-10 particulate levels are <150 µg/m$^3$ above upwind levels and no visual dust leaving site |

**Sources:**

- NYSDOH Generic Community Air Monitoring Plan, December 2009, as published in NYSDEC DER-10, Appendix 1A, 2010.
- Fugitive Dust and Particulate Monitoring, NYSDEC DER-10, Appendix 1B, 2010.
- Special Requirements for Work Within 20 Feet of Potentially Exposed Individuals or Structures, NYSDOH.

All data will be downloaded to a computer on a daily basis and saved for review. The data will be provided to the NYSDEC and/or the NYSDOH upon request at any stage of the project.

If VOC or particulate action levels are observed to be exceeded during the workday, the event, the source, and corrective actions taken will be recorded on the Daily Field Report and reported to the on-site NYSDEC representative, if present. If an on-site representative is not

present, exceedances will be noted in the daily report to the NYSDEC project manager within one business day.

**Table 2. Emergency Contacts and Telephone Numbers**

| | | |
|---|---|---|
| **Fire, Police, Ambulance** | | 911 |
| **NYSDEC Contact** | Jason Kryszak, G.I.T.– Project Manager | 716-851-7220 |
| **1641 River Street LLC Contact** | Michael Hecker, Esq. | 518-727-6385 |
| **GEI Project Manager** | Jeffrey S. Hall, PE, PMP | 716-204-7168 |
| **NYSDOH Project Manager** | Ivana Zivkovic | 518-485-7174 |

## 2.4 Odor Monitoring

The field personnel will record observations of odors generated during the implementation of the RI Work Plan. Odors will be recorded as weak, moderate, or strong, based on olfactory responses. When odors attributable to the exposing of impacted media are generated in the work area during excavation, observations will also be made at the downwind limit of the Site. The observations will be made to assess the potential for significant odors reaching on-site receptors or being transmitted off site. The downwind odor monitoring will be performed in conjunction with the PID and dust monitoring program described in this CAMP.

Upon detection of strong odors at the site perimeter, site controls, starting in the work area, will be implemented and will include encapsulation of the impacted media in 55-gallon drums or temporarily wrapping in polyethylene sheeting until more permanent mitigation can be accomplished. Note that the goal of the Odor Management Plan is to minimize and to prevent, where practicable, the off-site migration of odors. Due to the short distances between some work areas at the site and the property lines of on-site receptors, site controls may be implemented proactively when odors are detected in the breathing zone in some work areas.

There are no action levels specified for odors. In the event that odors persist at the downwind receptors or property line after control measures are carried-out, the odor conditions will be discussed with the client and NYSDEC project managers.

# 3. Control Procedures

A dust, odor, and organic vapor control and monitoring plan (DOOVC Plan) will be developed for on-site remedial construction work activity that will meet CAMP requirements and OSHA standards for construction (29 CFR 1926) after selection of the final remedy. The DOOVC Plan will specifically address work practices to minimize dust, odors and vapors during all remediation construction activities.

# 4. Documentation and Reporting

A Daily Data Sheet will be filled-out each day to record all of the details of the CAMP work. The form will be used to record the following information:

- Date and weather, with significant changes noted which may affect the positioning of the meters or recording of the data.
- Calibration results for the instruments.
- Locations of the upwind and downwind monitoring stations, and any changes made to the locations during the day to adjust for changing work locations or wind directions.
- Any significant readings made during the day, such as exceedances which occur and their causes.

Additional information will be noted in the project fieldbook(s), as necessary.

The electronic measurements from the PIDs and dust meters will be downloaded each day, reviewed, and archived. Exceedances of the action levels, if any, and the actions to be taken to mitigate the situations, will be discussed immediately with the on-site representatives, or reported within one business day to the NYSDEC project manager (if on-site NYSDEC oversight is not provided). The results of the daily CAMP monitoring will also be discussed in the daily written report to the NYSDEC project manager. Summaries of all air monitoring data will be provided to the NYSDEC or the NYSDOH upon request.

CAMP odor monitoring results will be recorded in the field log book and/or the Daily Data Sheet, and will also be available for review by the state agencies.