

Rochester Gas & Electric

Site Characterization Work Plan

112 Riverside Drive Former MGP site
Geneseo, New York

December 2015
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Riverside Drive Former MGP Site

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1.	Introduction	1
1.1	General	1
1.2	Site Description	1
1.3	Site History	2
1.4	Geology	3
1.5	Hydrogeology	3
1.6	Summary of Previous Investigations	4
1.7	Surrounding Area Environmental Setting	4
1.8	Nature and Extent of Impacts	5
2.	Site Characterization Scope of Work	6
2.1	Objectives	6
2.2	Site Surveys	6
2.3	Soil Boring and Monitoring Well Installation	7
2.3.1	Soil Borings	7
2.3.2	Monitoring Well Installation	9
2.4	Equipment Decontamination	11
2.5	Soil Sampling and Analyses	11
2.6	Groundwater Gauging and Sample Collection	12
2.7	Groundwater Analyses	13
2.8	Soil Gas Sampling	13
2.8.1	Sample Collection	14
2.8.2	Laboratory Analysis	15
2.8.3	Quality Control/Quality Assurance	16
2.9	Investigation Support Activities	16
2.9.1	Permitting/Access Agreements	16
2.9.2	Utility Clearance	16
2.9.3	Post Field Work Surveying	17

2.9.4	Investigation-Derived Waste Management	17
2.10	Community Air Monitoring	17
3.	Reporting	19
3.1	Data Review/Data Usability Summary Report (DUSR) Preparation	19
3.2	Site Characterization Report	19
4.	Schedule	20
5.	References	21
Tables		
	Table 1 – Soil Boring Location Rationale	8
	Table 2 – Monitoring Well Location Rationale	9
	Table 3 - Sampling and Analysis Report	
	Table 4 – Soil Vapor Sampling Location Rationale	14
Figures		
Figure 1	Site Location Map	
Figure 2	Site Map	
Figure 3	Soil Boring and Monitoring Well Location Map	
Figure 4	Conceptual Project Schedule	
Appendices		
A	Health and Safety Plan	
B	Field Sampling Plan	
C	Quality Assurance Project Plan	
D	Community Air Monitoring Plan	
E	Citizen Participation Plan	
F	Environmental Data Resources Report (on Compact Disc)	
G	Fishers Associates Survey (on Compact Disc)	
H	Underground Services Survey Results	
I	Utilities and Structures Checklist	



Acronyms and Abbreviations

bgs	below ground surface
CAMP	Community Air Monitoring Plan
DER	Department of Environmental Remediation
DNAPL	dense non-aqueous phase liquid
DUSR	Data Usability Summary Report
EDR	Environmental Data Resources, Inc.
ELAP	Environmental Laboratory Accreditation Program
FSP	Field Sampling Plan
GPR	ground-penetrating radar
HSA	hollow-stem auger
IRM	interim remedial measure
MGP	manufactured gas plant
NAPL	non-aqueous phase liquid
NYSDEC	New York State Department of Environmental Conservation
PID	photoionization detector
PVC	polyvinyl chloride
QAPP	Quality Assurance Project Plan
QA/QC	quality assurance/quality control
RD	radio detection



RGE	Rochester Gas & Electric
SCR	Site Characterization Report
SCWP	Site Characterization Work Plan
SVOC	Semivolatile organic compounds
TAGM	Technical and Administrative Guidance Memorandum
TAL	Target Analyte List
TCL	Target Compound List
USEPA	United States Environmental Protection Agency
VOC	volatile organic compound

1. Introduction

1.1 General

This document comprises the *Site Characterization Work Plan* (SCWP) for evaluating the presence of environmental impacts associated with Rochester Gas & Electric's (RGE's) Riverside Drive former manufactured gas plant (MGP) site located in the Village of Geneseo, New York. The site is being investigated under the New York State Department of Environmental Conservation (NYSDEC) Voluntary Cleanup Agreement No. V00730. This SCWP has been prepared consistent with the requirements of NYSDEC Department of Environmental Remediation's (DER's) *DER-10 Technical Guidance for Site Investigation and Remediation* dated May 2010 (DER-10). The site is identified by the NYSDEC environmental database as the Geneseo Court Street MGP site.

This SCWP describes the overall investigation strategy, provides details of the investigation techniques and sampling requirements, and incorporates the site characterization objectives identified in DER-10. This SCWP includes a site- and task-specific *Health and Safety Plan* (**Appendix A**) that is consistent with Occupational Safety and Health Administration 1910.120 requirements and presents health and safety protocols to be followed by personnel during investigation activities. Methodologies and protocols to be followed during the completion of the field activities are presented in the *Field Sampling Plan* (FSP) (**Appendix B**); analytical procedures and requirements to be followed for the laboratory analysis of samples collected during investigation activities are presented in the *Quality Assurance Project Plan* (QAPP) (**Appendix C**). The *Community Air Monitoring Plan* that will be implemented during field activities is included as **Appendix D**. A *Citizen Participation Plan* consistent with Section 5 of DER-23, *Citizen Participation Handbook for Remedial Programs, Voluntary Cleanup Programs* is included as **Appendix E**.

1.2 Site Description

The Riverside Drive former MGP site is located at 112 Riverside Drive at the northwest side of the Village of Geneseo, Livingston County, New York (**Figure 1**). The parcel (Tax Parcel Block 1, Lot 4) and two adjoining properties (Tax Parcel Block 1, Lot 3 and Lot 9) that comprise the site cover approximately 1 acre near the base of the hill on which the village is situated (**Figure 2**). The site is bound on the north by a former commercial property now containing an apartment building, on the east by a parking lot and residential properties, on the south by a residential property, and on the west by Riverside Drive, commercial buildings, and a parking lot.

The properties comprising the site are currently owned and used by a commercial firm known as FTT Manufacturing, a small commercial manufacturing and machining company. Prior to FTT Manufacturing, Champion Products, Inc. owned the property until 1994. Most of the study area is covered by a single structure, which incorporates the two-story former MGP gas production building. The original MGP

production building is part of the west side of the building, with a newer commercial building attached to the east side, presumably cut into the hillside. Paved parking areas surround the building on the west, south, and east sides. Based on historical Sanborn maps and the current building configuration, the new portion of the building appears to cover most of the footprint of the former gas holder.

1.3 Site History

Details provided in a title search prepared by Stewart Title Insurance Company indicated that Geneseo Gas Light Company purchased the 112 Riverside Drive property in 1904. The Riverside Drive MGP was subsequently built sometime between 1904 and 1906 (it is first shown on the 1906 Sanborn map). The Riverside Drive MGP appears to have started production in 1906 (the year that the Park Street MGP was shut down), and operated until around 1923 when the property was sold to Belden & Company, Inc. (Belden). Belden owned the former MGP property from 1923 until 1945. The 1906 Sanborn shows the plant as consisting of a single gas plant building and a single gas holder located east-southeast of the building. From north to south the building contained a coal house, retorts, boiler/ furnace, condenser, purifying house, and meter room. Based on the mapped divisions within the building and the existence of a single gas holder, it is likely that the plant used the coal carbonization method of gas production. A railroad spur ran along the west side of the building and connected to a north-south railroad line that was located where Riverside Drive exists today. Standard Oil of New York (Standard Oil) owned and operated a petroleum bulk storage and distribution facility on the property to the north of the former MGP from circa 1913 until at least 1938 (i.e., was operated for fuel storage/distribution at least 15 years after the former MGP operations were ceased). Several un-named structures existed immediately north of the MGP plant on the Standard Oil property. No significant changes to the MGP facility or immediate surroundings are shown on the 1913 Sanborn; however, three oil storage tanks existed on the property owned by Standard Oil. The gas holder from the former MGP is not shown on the 1930 Sanborn map and the building is labeled as "miscellaneous storage". The 1930 Sanborn map also shows a petroleum tank farm, including four steel bulk storage tanks and a filling station on the property owned by Standard Oil where the un-named structures previously existed. No changes to the former MGP structure or immediate surroundings are shown on the 1938 Sanborn map. The 1949 Sanborn map identifies the former gas building as "fertilizer storage". According to the title search, R.M. Sanderson Company, Inc. owned the former MGP property from 1949 through 1950. Use of the former gas building for the storage of fertilizer was not documented until approximately 26 years after the Geneseo Gas Light Company sold the property. The 1949 Sanborn map also indicates that the petroleum storage facility was replaced by a small building owned by Arbet, Inc. identified as a manufacturer of small transformers. The railroad spur and north-south line are also absent in the 1948 map, and a building formerly used as a passenger depot is labeled as "storage and office". The railroad bed appears to have become Riverside Drive. It is suspected that the former MGP building was expanded circa 1960 by Champion Products.

1.4 Geology

The Village of Geneseo is built on a topographic bench on the hillside that defines the east side of the Genesee River Valley. The property is located on the northwest side of the village, near the base of the hill on which the village is situated. The property is located on a sloping parcel of land at an elevation of approximately 600 feet above mean Sea Level (MSL), just above the valley floor. The Genesee River meanders to the east side of the valley in the vicinity of the property at an elevation of approximately 525 feet above MSL, and is located approximately 500 feet to the northwest of the property along the eastern edge of a glacially-carved bedrock valley. Regional surficial geological maps indicate that native overburden material in the Geneseo area is glacial till (Cadwell, 1988). Bedrock beneath the site is mapped as middle to upper Devonian aged shale and limestone (Fisher et al., 1970).

Based on the topography, groundwater flow is likely to move from east to northwest in the vicinity of the site following the local terrain.

No information is available regarding the subsurface soil conditions at the property. The hillside is likely covered by a thin soil layer over bedrock, and it is likely that the original gas plant building and the gas holder were founded on rock. However, based on review of USGS topographic mapping for the area of the property and proximity to the river, the property is located on the slope of the valley wall near the base of the hill and; therefore, may have accumulated depths of glacial drift and alluvial deposits. The valley is filled with glacial drift and alluvial deposits which are relatively coarse-grained and considered to be highly transmissive relative to the nearby bedrock that comprises the valley walls.

1.5 Hydrogeology

The Genesee River meanders within the Genesee River Valley; as mentioned above, its closest point to the site is approximately 500 feet northwest. Based on the topography and location of the river, groundwater flow beneath the site is likely to the northwest, following the local topography. It is reasonable to assume that the water table is located within the valley-fill deposits near the river, but within the bedrock beneath the site. The depth to the water table beneath the property is largely dependent on the transmissivity of the bedrock. If the bedrock is highly transmissive, the water table elevation is likely closer to the elevation of the river (i.e., approximately 540 to 560 feet AMSL). If the bedrock has a low transmissivity, the water table elevation is likely much higher than the river elevation (i.e., 560 to 580 feet AMSL). Since the transmissivity of the bedrock beneath the property is unknown, it is difficult to estimate the depth to the water table; however, it is reasonable to assume for the purposes of this SCWP that the water table lies approximately 20 to 60 feet below grade.

1.6 Summary of Previous Investigations

No previous formal environmental studies, interim remedial measures (IRMs), or investigations have been identified at the property; therefore, no information on the potential presence of MGP-related impacts exists. Based on the topography of the property, MGP-related releases to soil, groundwater, or bedrock would migrate to the northwest, towards the base of the hillside and the Genesee River.

As the potential exists for only a thin layer of overburden soil to be present below the site, an historic release of MGP residuals could likely have impacted bedrock beneath the property and off-site to the west. Soil vapor impacts in the vicinity of the building could also be possible if residuals are found in soil or bedrock directly beneath the building.

1.7 Surrounding Area Environmental Setting

Review of available Sanborn maps from 1900 to 1949 show several historical businesses in the area of the site, including a machine shop and an auto wrecking facility to the east (i.e., at a higher topographic elevation), a lumber and coal yard to the west, and a Standard Oil Company petroleum bulk storage (aboveground and underground tanks) and filling station abutting the former MGP property to the north. The property to the north was also occupied by Buell Oil Company, and more recently (1949 Sanborn) by Albet, Inc., a manufacturer of small transformers.

Arcadis contracted Environmental Data Resources, Inc. (EDR) to perform a search of available state and federal environmental records for the surrounding area. Relevant findings are as follows:

- The State Leaking Storage Tank List (NY LTANKS) dated July 21, 2015 indicates that there are three NY LTANKS sites located hydraulically upgradient within approximately 0.25 to 0.5 miles of the site.
- The NY Spills list dated July 21, 2015 indicates that there were five spill sites located within approximately 0.125 miles from the site (three are located upgradient or cross gradient to the site).
- One water supply well is located approximately 0.5 to 1.0 miles east and hydraulically upgradient from the site.
- One State oil/gas well is located approximately 1.0 mile southwest (cross gradient) from the site.

A copy of the EDR report is included on compact disc as **Appendix F**. The information provided in the EDR report has been incorporated into the SCWP investigation strategy.



Site Characterization Work Plan

Riverside Drive Former MGP
Site

1.8 Nature and Extent of Impacts

As indicated above, no known subsurface investigations have been conducted at the site.

2. Site Characterization Scope of Work

The scope of work presented in this section is based on the available documentation and information noted in Section 1.

2.1 Objectives

Given the inherent difficulties with conducting an environmental investigation on a parcel occupied by an active commercial manufacturing and machining company, the field aspects of the site characterization work will progress in a dynamic fashion, whereby field data will be evaluated in real-time. For efficiency a phased approach to data collection will be used. Initial sampling locations will be located to evaluate the presence/absence of impacts in soil/bedrock and groundwater proximal to the former MGP operations/structures, followed by “step-out” locations to define the extent of impacts, as necessary and practical. Planned investigation locations may be modified as needed, and new locations potentially added, as necessary and practicable, to complete the initial characterization in one mobilization. As such, while this SCWP identifies the quantity and locations of sampling locations, the final quantity and locations may vary as determined by real-time decisions based on conditions encountered and on discussions with RGE, the current property owner, and the NYSDEC.

Surface soil samples are not proposed as part of the SCWP because the site is almost exclusively covered by impervious surfaces (e.g., asphalt, buildings). In addition, any existing grassed areas have been significantly re-worked subsequent to closure of MGP operations between 1913 and 1930.

The SCWP has been constructed to be used as a reference document during the field investigation.

2.2 Site Surveys

As part of the development of this SCWP, a site survey was performed during the week of October 19th, 2015 to locate physical features and utilities within the anticipated investigation area and to gather information required to create a site base map. The survey was performed by Fisher Associates, a New York State-licensed surveyor. The survey area encompassed an area of approximately 9.5 acres, generally bounded by:

- Orchard Street to the east
- Court Street to the south
- the extension of Meadow Drive to the north
- the western boundary of Geneseo Lumber to the west

Prior to completing the base mapping survey, Dig Safely New York (811) was contacted to identify and mark public utilities in the work area. During an initial site meeting held on October 7, 2015, a knowledgeable employee of the property owner indicated that no known private subsurface utilities exist in the anticipated work areas.

A geophysical survey, consisting of ground-penetrating radar (GPR) and radio detection (RD), was also conducted at the site from October 17 to 18, 2015 by Underground Services, Inc. (Underground Services). The purpose of the geophysical survey was to locate subgrade utilities and potential structures/obstructions (e.g., former MGP structures). No below grade structures believed to be associated with the former MGP were identified.

The information discussed above has been compiled and incorporated into the site map presented as **Figure 2**. The survey prepared by Fishers Associates is included as **Appendix G**; the figure prepared by Underground Services is included in **Appendix H**.

2.3 Soil Boring and Monitoring Well Installation

Six (6) soil borings will be drilled through the overburden to the top of bedrock and completed as monitoring wells. The purpose of the soil borings and monitoring wells will be to collect data to assess the presence of MGP-related impacts and hydraulic gradient, to the extent practicable during the site characterization. Proposed locations and installation methodologies are described below.

2.3.1 Soil Borings

As stated in Section 1, no information is available regarding the subsurface soil conditions at the site. While the potential exists for only a thin layer of overburden to be present (particularly on the eastern side of the site), based on the site location near the base of the hillside there is also the potential that accumulated depths of glacial drift and alluvial deposits exist above the bedrock (particularly on the western side of the site). Similarly, since the transmissivity of the bedrock beneath the site is unknown, it is difficult to estimate the depth to the water table; however, it is reasonable to assume for the purposes of this SCWP that the water table will be located approximately 20 to 60 feet below grade.

Each of the six soil borings (SB-1 through SB-6) will be completed as a monitoring well. Therefore, each soil boring will be advanced through the overburden to the top of competent bedrock. The locations of the borings are shown on **Figure 3**. The purpose of the borings will be to collect soil data for assessing the presence of MGP-related impacts in overburden at various areas of the site. The rationale for the location of each of the soil borings is provided in **Table 1**, below.

Table 1 – Soil Boring Location Rationale

Location	Rationale
SB-1, SB-2	Located in the paved parking area on the east side of the existing facility. The objective of these borings is to evaluate the environmental condition of the soil and bedrock at the topographically higher elevation (hydraulically upgradient) side of the site.
SB-3	SB-3 will be located near the presumed downgradient side of the former gas holder to evaluate the environmental conditions of the soil and bedrock.
SB-4, SB-5	The objective of these borings is to evaluate the environmental conditions of the soil and bedrock hydraulically downgradient from the former gas plant, with a focus on citing the borings adjacent to the Condenser/Purifying and Gas Production rooms.
SB-6	The objective of this boring is to evaluate the environmental condition of the soil and bedrock on the north side of the former MGP operations adjacent to the parcel that previously was used for bulk petroleum storage and filling station and manufacturer of small transformers.

As stated in Section 2.2, geophysical methods along with Dig Safely New York mark outs were used to support identification of the subsurface utilities at the site. The locations of these utilities have been included on **Figure 3**, and will be confirmed when selecting final soil boring and monitoring well locations in the field.

The soil borings will be drilled using a conventional drilling rig and standard hollow-stem auger (HSA) and split-spoon sampling techniques in accordance with the procedures described in the FSP. Soil samples will be collected continuously at each boring from grade to their final depth (i.e., bedrock) using 2-inch-diameter by 2-foot-long split-spoon samplers or 2-inch-diameter by 4-foot-long macrocore tooling. A 3-inch-diameter sampler may be used if recovery with either 2-inch sampler is poor. Soil recovered from each 2-foot interval will be visually characterized for color, texture, and moisture content as described in the FSP. Soil samples will be headspace-screened with a photoionization detector (PID). The presence of staining, non-aqueous phase liquid (NAPL), and obvious odors encountered in the soil will be noted/recorded.

Soil borings will be advanced to competent rock that will be determined based on auger refusal. Drilling will not be performed through any subsurface structures or confining layers where significant quantities of impacts/NAPL are encountered to prevent potential downward migration.

Groundwater is anticipated to be in bedrock, however after augers are advanced to refusal, they will be left in the ground for a period of time to determine if water accumulates within the borehole. The drilling subcontractor will have sufficient augers to continue drilling at another location. This procedure will be followed for the first two borings drilled (one location upgradient and one location downgradient from the site). Observations at these two locations will be used to pre-determine the drilling depths at the other locations. If groundwater is not observed in overburden material and is instead observed in bedrock, borings will be advanced approximately 10 feet past the elevation where groundwater is encountered by continuously coring the bedrock using HQ coring tools and bedrock drilling methods described in FSP.

Retrieved bedrock core samples will be logged and characterized in accordance with procedures in the FSP (lithology, color, mechanical breaks, fractures, structure, and rock quality designation). The presence of visible staining, NAPL, and obvious odors encountered in the soil and bedrock will be noted. Bedrock cores will be placed in core boxes for retention and storage by RGE.

2.3.2 Monitoring Well Installation

Each of the six soil borings will be completed as a monitoring well. As stated above, it is assumed that the water table lies below the bedrock surface. As such, groundwater monitoring wells installed during the site characterization will be constructed to monitor groundwater within bedrock; however, if the water table is encountered at least 2 feet above the top of bedrock during drilling, RGE and NYSDEC will be contacted to discuss the potential need to install an overburden monitoring well at that particular location.

The locations of the six bedrock monitoring wells (MW-1 through MW-6) are also shown on **Figure 3**. The rationale for each of the wells is provided in the table below.

Table 2 – Monitoring Well Location Rationale

Location	Rationale
MW-1, MW-2	Information collected at these locations will be used to evaluate groundwater flow direction and groundwater quality upgradient from the former MGP operations (i.e., groundwater coming on to the site).
MW-3	Information collected at this location will be used to evaluate groundwater flow direction and groundwater quality adjacent/downgradient to the former gas holder.
MW-4, MW-5	Information collected at these locations will be used to evaluate groundwater flow direction and groundwater quality immediately downgradient from the former MGP plant operations, with a focus on conditions adjacent to the Condenser/Purifying and Gas Production rooms.
MW-6	Information collected at this location will be used to evaluate groundwater flow direction and groundwater quality adjacent to the parcel that was used for petroleum storage and distribution and manufacture of transformers.

The bedrock monitoring wells will be constructed using the following procedures:

- At each well location, a boring will be advanced to the top of competent bedrock (auger refusal) using HSA drilling techniques with continuous split-spoon sampling, as described in the FSP. Recovered soil cores will be logged and characterized as discussed in the FSP. Logging and characterization of soil cores will include screening for NAPL. Based on field observations during the installation of the overburden soil borings, soil samples may be retained and sent for laboratory analysis.
- The upper approximately 2 feet of competent bedrock will be continuously cored using the bedrock drilling methods described in the FSP. Retrieved bedrock core samples will be logged and characterized

in accordance with procedures in the FSP (lithology, color, mechanical breaks, fractures, structure, and rock quality designation). The presence of visible staining, NAPL, and obvious odors encountered in the soil and bedrock will be noted.

- A nominal 6-inch outside diameter roller bit will be used to ream a 2-foot deep corehole, creating a bedrock socket.
- A permanent, 4-inch-diameter black steel casing will be installed into the 2-foot-deep bedrock socket and the annulus around the casing will be grouted using neat cement grout via the tremie method from the bottom of the casing to ground surface. The grout will be allowed to set for a minimum of 12 hours, or as otherwise specified by the manufacturer.
- After allowing the grout to cure, the borehole will be advanced to approximately 10 to 15 feet below groundwater, based on the geologist's confidence as to the location of groundwater, by continuously coring the bedrock using HQ coring tools and the bedrock drilling methods described in FSP. If possible, each of the wells will be completed using an open-hole construction. If, based on competency of the bedrock and discussions with the driller it is decided that the open hole could collapse or be obstructed by loose bedrock ledges, the well will be constructed using Schedule 40 polyvinyl chloride (PVC) well material. A PVC well would be constructed as follows:
 - After the bedrock borehole is drilled to final depth, a 2-inch-diameter, 20 foot-long Schedule 40 PVC, 0.020-inch slotted well screen, attached to an appropriate length Schedule 40 PVC riser pipe, will be inserted into the open corehole to the bottom of the hole.
 - Grade #1 silica sand will be placed in the annulus between the PVC material and borehole wall to approximately 2 feet above the top of the screen.
 - A 2-foot bentonite seal will be emplaced above the filter sand by pouring bentonite pellets into the annular space and hydrating the pellets.
 - Once the pellets have been hydrated, the remainder of the annular space will be filled with a cement/bentonite grout to approximately 1-foot below grade using the tremie-grout method.
- If dense non-aqueous phase liquid (DNAPL) is encountered during drilling at any of the six proposed bedrock monitoring well locations, or is suspected to be near a proposed monitoring well location, the bedrock monitoring well will be constructed using PVC material as described above. In addition, a 5-foot-long Schedule 40 PVC sump will be installed on the bottom of the 20-foot-long well screen. Sumps will be installed by carefully pumping a volume of cement/bentonite grout to the bottom of the corehole that is slightly greater than the volume of the annular space between the sump and corehole wall. A 4-inch-diameter shale trap or K-packer will be positioned where the sump meets the screen. The

sump/shale trap/screen/riser assembly will be installed by pushing the sump through the grout to the bottom of the borehole. Water and any excess grout that enter the sump will then be promptly bailed or pumped from the sump. The filter sand and seals would then be installed above the sump/shale trap as described above.

- Surface completions will be constructed using a heavy duty 8-inch-diameter flush-mounted curb box and locking well caps will be fitted to the well heads.
- The new wells will be developed in accordance with well development procedures identified in the FSP.

As discussed above, the bedrock wells will be constructed using an open-hole construction. Although not currently proposed in the SCWP, open-hole construction will provide flexibility for additional investigations at the particular monitoring well, if warranted. Such additional investigation could include down-hole geophysical logging, packer testing, and/or drilling the well deeper.

2.4 Equipment Decontamination

The drilling and sampling equipment will be cleaned prior to initiating the boring, coring, and sampling activities; between each location; and at the completion of the investigation activities. Cleaning water and residuals will be appropriately containerized in designated areas for subsequent disposal. Procedures for equipment decontamination are provided in the QAPP (**Appendix C**).

2.5 Soil Sampling and Analyses

As stated above, no information is available regarding overburden soil conditions at the site; the potential exists for only a thin layer of overburden to be present (particularly on the eastern side of the site) grading to accumulated depths of glacial drift and alluvial deposits (particularly on the western side of the site). However, when encountered, overburden soil samples will be selected for laboratory analysis from the following intervals in each soil boring (SB-1 through SB-6), as applicable:

- At the interval where, based on PID readings and visual and olfactory observation, the strongest evidence of impacts are identified.
- At the soil/water interface (if encountered in the overburden).
- From the interval of apparent non-impacted material located below impacted soil (in borings where impacts are apparent) based upon field observations to provide data for vertical delineation.
- From the interval of soil on the bedrock surface.

A minimum of two soil samples from each overburden boring will be submitted for laboratory analysis, based on conditions encountered (one sample from the soil/bedrock interface and one additional sample to document extent of impacts, if any). Up to four samples may be sent for analyses from soil boring with obvious impacts (again, depending on the depth of overburden encountered).

Samples will be submitted to an Environmental Laboratory Accreditation Program- (ELAP-) certified laboratory under proper chain-of-custody. Laboratory analyses will be performed in accordance with United States Environmental Protection Agency (USEPA) SW-846 methodologies.

Analytical test methods, detection and reporting limits are described in the QAPP (**Appendix C**).

Quality assurance/quality control (QA/QC) samples will be collected as required by the QAPP. Soil samples will be submitted to the contract laboratory for analysis of:

- Target Compound List (TCL) Volatile Organic Compounds (VOCs) by USEPA SW-846 Method 8260B
- TCL Semivolatile Organic Compounds (SVOCs) by USEPA SW-846 Method 8270C
- Target Analyte List (TAL) Metals by USEPA SW-846 Method 6010
- Total Cyanide by USEPA Method 9012A

Analytical methods, sample handling procedures, and laboratory protocols are described in the FSP and QAPP.

2.6 Groundwater Gauging and Sample Collection

Two gauging events will be conducted to measure static groundwater levels, confirm groundwater flow direction beneath the site, and determine the presence/absence of NAPL. The first gauging event will be conducted a minimum of 24-hours after installation/development of the wells; the second event will be completed approximately one month after installation/development of the wells. Gauging measurements and field observations (e.g., well integrity) will be recorded in the field notebook.

One groundwater sampling event will be conducted approximately one month after installation/development of the wells. Prior to sampling, wells will be purged, and field measurements of turbidity, conductivity, dissolved oxygen, oxidation-reduction potential, pH, and temperature will be recorded.

Wells that do not contain NAPL will be sampled using low-flow purge sampling techniques. All monitoring well sampling activities will be recorded in a field book, and low-flow parameters documented on the groundwater sampling log (or similar) included in the FSP (**Appendix B**). Purging will continue until field

parameters stabilize. A Standard Operating Procedure describing Low-Flow Groundwater Sampling methodology, along with gauging and purging requirements, is also included as the FSP.

At monitoring wells where NAPL is present and recoverable, if any, the NAPL will be removed by bailing or pumping, as appropriate. If sufficient quantity of NAPL exists, samples of the NAPL will be submitted for analysis of:

- Dynamic Viscosity
- Density
- Surface and Interfacial Tension

The fluid properties analyses (viscosity, density, surface and interfacial tension) will be run at a temperature that approximates the ambient groundwater temperature as measured during the groundwater sampling events.

QA/QC samples will be collected as required by the QAPP.

2.7 Groundwater Analyses

Collected groundwater samples will be submitted under chain-of-custody to a New York State Department of Health ELAP-certified laboratory for analysis of:

- TCL VOCs by USEPA SW-846 Method 8260B
- TCL SVOCs by USEPA SW-846 Method 8270C
- TAL Metals USEPA SW-846 Method 6000/7000
- Total Cyanide by USEPA Method 9013A

A summary of the groundwater (and soil) sampling requirements is included in the Sampling and Analysis Summary table (**Table 3**).

2.8 Soil Gas Sampling

Soil vapor samples will be collected from six points along the southern, eastern, and western property lines to evaluate if soil vapors attributed to MGP residuals (if present) exist. Soil vapor sampling locations are also shown on **Figure 3**. These sampling points are located between the potential source areas (former gas

holder and former MGP operations) and potential receptors (occupants of the existing on-site building and residences at adjacent parcels). The rationale for each of the soil vapor sampling locations is provided in **Table 4** below.

Table 4 – Soil Vapor Sampling Location Rationale

Location	Rationale
SV-1 SV-2	Located in the paved area east of the existing building between the potential source area (former gas holder and MGP operations) and potential receptors (occupants of residences located on the adjacent parcels to the east.
SV-3 SV-4	Located in the paved area adjacent to the existing building at the anticipated east and west sides of the former gas holder
SV-5 SV-6	Located in the paved parking areas on the west side of the former MGP facility, adjacent to the former MGP operations.

2.8.1 Sample Collection

Temporary soil vapor sampling points will be installed in the unsaturated zone from approximately 3 to 4 feet bgs and will consist of 1½ -inch-diameter, 12-inch-long, expendable stainless steel points (AMS, or similar) installed using a hammer and rod. A hydrated bentonite mix will be used to seal the borehole and prevent short-circuiting to surface ambient air. If sufficient unsaturated overburden does not exist, RGE and the NYSDEC will be contacted to discuss the relevance of collecting a soil vapor sample from that location. Laboratory grade polyethylene tubing of the appropriate diameter will connect the sampling point to a 6-liter SUMMA® canister, in which the soil vapor samples will be collected. After installation of the points, and prior to collecting a soil vapor sample, the sampling point and tubing will be purged (one to three volumes of the sample probe and associated tubing) and screened for VOC vapors using a PID. PID readings will be recorded in the field notebook.

An analytical laboratory (to be determined) will provide batch-certified clean SUMMA® canisters with an initial vacuum of approximately 26 inches of mercury for sample collection. Each SUMMA® canister will be equipped with a flow regulator pre-set by the laboratory to provide uniform sample collection over a 6-hour sampling period. The valve on the SUMMA® canister will be closed when a minimum of 4 inches of mercury vacuum remains in the canister, leaving a vacuum in the canister as a means for the laboratory to verify the canister did not leak while in transit. Detailed descriptions of the soil vapor point installation and soil vapor sampling procedures are provided in FSP (**Appendix B**).

Field personnel will document the following information (at a minimum) in the project field notebook:

- weather conditions (precipitation, temperature and wind direction) 24 hours prior to, and during, the sampling activities

- date and time (start and end time) each sample was collected
- sample identification
- identification numbers of laboratory samplers/regulators/devices
- purge volumes
- volume of soil vapor extracted
- vacuum pressure of canister (before and after sample is collected)
- chain of custody identification

2.8.2 Laboratory Analysis

SUMMA® canisters will be shipped in one batch to the laboratory within 3 days of sample collection. Samples will be submitted for laboratory analysis in accordance with the USEPA Compendium Method TO-15, entitled *Determination of VOCs In Air Collected In Specially-Prepared Canisters And Analyzed By Gas Chromatography/Mass Spectrometry (GC/MS)*. In addition to the TO-15 Target Analyte List, the samples will be analyzed for:

- n-alkanes (n-butane, n-pentane, n-hexane, n-heptane, n-octane, n-nonane, n-decane, n-undecane and n-dodecane)
- isopropyl benzene
- naphthalene
- branched alkanes (isopentane, 2,3-dimethylpentane, 2,2,4-trimethylpentane, butylcyclohexane, isooctane, and 2,3-dimethylheptane) (to be reported by the laboratory as tentatively identified compounds [TICs])
- other indicator compounds (indene, indane, 1,2,3-trimethylbenzene, and thiopene) (to be reported by the laboratory as TICs)
- helium (tracer gas)

Laboratory analysis will be performed on a standard turnaround for reporting of analytical results (i.e., 15 business days for preliminary results; 20 business days for delivery of full data packages). The laboratory will provide Category B-equivalent data packages.

2.8.3 Quality Control/Quality Assurance

A helium tracer gas will be used as a quality assurance/quality control tool to document the integrity of the soil vapor probe seal and to confirm that infiltration of ambient air is not occurring. An inverted plastic bucket will be used as an enclosure to keep the tracer gas in contact with the probe during integrity testing, as described in the NYSDOH's guidance document entitled "*Final Guidance for Evaluating Soil Vapor Intrusion in the State of New York*" (NYSDOH, 2006). A detailed procedure for administering tracer gas to verify the integrity of the soil vapor probe seal is provided in the FSP (**Appendix B**).

One blind field duplicate sample will be collected and submitted for analysis. Field duplicates are typically collected at a rate of one blind duplicate per 20 samples, or at a minimum of one per site.

On the day that the air samples are collected, the sampling personnel will avoid conducting any activities that may interfere with the results of the sampling event. These activities include wearing cologne, after-shave, operating a gasoline pump (i.e., filling a car or truck with gasoline) and using cosmetics (including hairspray, nail polish, and nail polish removers).

A summary of the soil vapor sampling requirements is included in the Sampling and Analysis Summary table (**Table 3**).

2.9 Investigation Support Activities

2.9.1 Permitting/Access Agreements

RGE is responsible for securing access to the site. Subsequent to NYSDEC approval of the SCWP, no additional permits or approvals are required.

2.9.2 Utility Clearance

Prior to conducting any intrusive work, appropriate utility clearance actions will be completed as required by Arcadis' and RGE's utility clearance protocols for intrusive activities. Utility clearance will be completed using a minimum of three reliable lines of evidence. The presence of existing utilities will be investigated and cleared by locating and marking, and where appropriate, visually verifying. At a minimum, the following clearance activities will be completed:

- Arcadis or Arcadis' subcontractor will call Dig Safely New York (811) a minimum of 3 days prior to the start of intrusive work so that any utility lines can be identified, marked out, and (if possible) verified based on surface features. Renewal calls will be made in accordance with the timeframes allowed in the regulations.
- The Site Map showing previously identified on-site locations of aboveground and underground utilities near the field work will be reviewed.
- Mechanical clearing (e.g., using a vacuum truck or air knife) of the top 5 feet of soil will also be conducted at each soil boring/monitoring well location.

In addition, Arcadis will perform a site inspection. An Arcadis Utility Inspection Checklist will be completed prior to beginning intrusive field work (**Appendix I**).

2.9.3 Post Field Work Surveying

Following completion of field work, locations of the monitoring wells and soil vapor sampling points will be surveyed by a New York State licensed surveyor. The survey will include the location, ground-surface elevation, and top of casing/measuring point elevations for monitoring wells. The survey will be tied to the New York State Plane Coordinate System and to Mean Sea Level.

2.9.4 Investigation-Derived Waste Management

All investigation-derived waste generated during the investigation will be containerized in Department of Transportation-approved 55-gallon drums, labeled as investigation-derived waste, sampled for waste disposal characteristics, and temporarily staged in a secure Conex-type container while awaiting laboratory results. Upon receipt of laboratory results, Arcadis, serving as an authorized agent for RGE, will arrange for disposal of the wastes.

2.10 Community Air Monitoring

Due to the potential presence of MGP related residuals in the subsurface, a community air monitoring plan (CAMP) will be implemented during all subsurface intrusive work performed on site. The New York State Department of Health's Generic CAMP is provided in **Appendix D**. The CAMP requires real-time monitoring for VOCs and particulates (i.e., dust) at the downwind site boundary, along with specific monitoring procedures, action thresholds and mitigation responses. If the work exclusion zone overlaps the property boundary (e.g., potentially SB/MW-4 and SB/MW-5), monitoring will be conducted within the right-of-way at the extent of the exclusion zone. Due to the limited soil disturbances associated with installation of soil borings and monitoring wells, it is anticipated that only downwind CAMP monitoring will be required unless

an exceedance of VOCs or dust is measured, then upwind monitoring will be required to determine upwind concentrations.

3. Reporting

3.1 Data Review/Data Usability Summary Report (DUSR) Preparation

The analytical data packages and associated QA/QC information for the soil, groundwater, and soil gas samples will be reviewed to determine if they meet the project-specific criteria for data quality and data use as identified in the QAPP (**Appendix C**). A complete record of each of these samples' history will be available for documenting its progress from the time of sample collection, to arrival at the laboratory, processing and analysis at the laboratory, and sample receipt and reporting.

The data usability summary review will include the use of dated entries, signed by analysts and supervisors on worksheets and logbooks used for all samples; the use of sample tracking and numbering systems to logically follow the progress of samples through the laboratory and the use of quality control criteria to reject, accept, or qualify specific data.

Upon completion of the data usability summary review, a DUSR will be prepared and included as an appendix to the Site Characterization Report (SCR).

3.2 Site Characterization Report

The SCR will be prepared in accordance with Section 3.13 of DER-10. Per DER-10:

- If the data collected support the conclusion that a remedial investigation is NOT required, the SCR will present and fully discuss all of the information collected during the site characterization, including results from the site surveys, EDR search, lithology, soil and groundwater data, along with supporting notes and stratigraphic logs/cross-sections, sample location maps, etc.
- If the data collected warrant transitioning the site characterization into a remedial investigation, the SCR will include summary discussions of the data collected (i.e., sample summary tables of sample results, soil boring logs and monitoring well construction details, stratigraphic logs/cross-sections, sample location maps) as required by Sections 3.13(e) and 3.13(f), along with a remedial investigation work plan.

Environmental data will be submitted to the NYSDEC website in the applicable EQUIS database format. A draft SCR will be prepared for RGE review prior to submission to the NYSDEC. RGE comments/edits will be incorporated into the SCR and one paper copy and three compact disks containing the entire SCR will be submitted to the NYSDEC for review and approval.

4. Schedule

A Conceptual Project Schedule (Gantt chart) is included as **Figure 4**. It is RGE's objective to complete the field aspects of the site characterization by March 2016. The intrusive portions of the field activities (i.e., installation of the soil borings and monitoring wells, along with well development) are anticipated to require approximately 2 to 3 weeks to complete. As shown on the Project Schedule, expedited review, incorporation of revisions, field preparation, and mobilization timeframes are required to meet this objective.

5. References

Cadwell, D.H. 1988. Surficial Geologic Map of New York; Niagara Sheet, 1988. New York State Museum Map and Chart Series No. 40, scale 1:250,000

D.W. Fisher, Y.W. Isachsen, and L.V. Rickard. 1970. Geologic Map of New York State: Niagara Sheet, New York State Museum and Science Service, Map and Chart Series No. 15, scale 1:250,000.

New York State Department of Environmental Conservation. 2010. Division of Environmental Remediation. DER-10 Technical Guidance for Site Investigation and Remediation. May 2010.



Tables

Table 3
Sampling and Analysis Summary

Site Characterization	Media	Laboratory Analysis	Quantity of Samples*	Field QA/QC Samples			Laboratory QA/QC Samples		Total
				Trip Blanks ¹	Field Blind Dups ³	Equip Rinse Blanks ²	MS/MSD	MSB/LCS	
SB-1 through SB-6	Soil	TCL VOCs	24	3	1	0	1 / 1	0	30
		TCL SVOCs	24	0	1	0	1 / 1	0	27
		TAL Metals	24	0	1	0	1 / 1	0	27
		Total Cyanide	24	0	1	0	1 / 1	0	27
MW-1 through MW-6	Water	TCL VOCs	6	1	1	0	1 / 1	0	10
		TCL SVOCs	6	0	1	0	1 / 1	0	9
		TAL Metals	6	0	1	0	1 / 1	0	9
		Total Cyanide	6	0	1	0	1 / 1	0	9
SV-1 through SV-6	Soil Gas	TO-15 ⁴	6	0	1	0	0 / 0	0	7

Notes:

1. One trip blank will be collected per cooler per day of samples for TCL VOC analysis (assume 3 days).
 2. Equipment rinse blanks will be collected at a frequency of one per 20 if re-use equipment; not required if using disposable equipment (table assumes disposable equipment will be used)
 3. Blind duplicate will be collected at a frequency of one per 20 and sent to the laboratory for analysis
 4. TO-15 Target Analyte List plus project-specific analyte list
- * Assumes 4 samples of overburden soil will be collected/sent for laboratory from each borehole

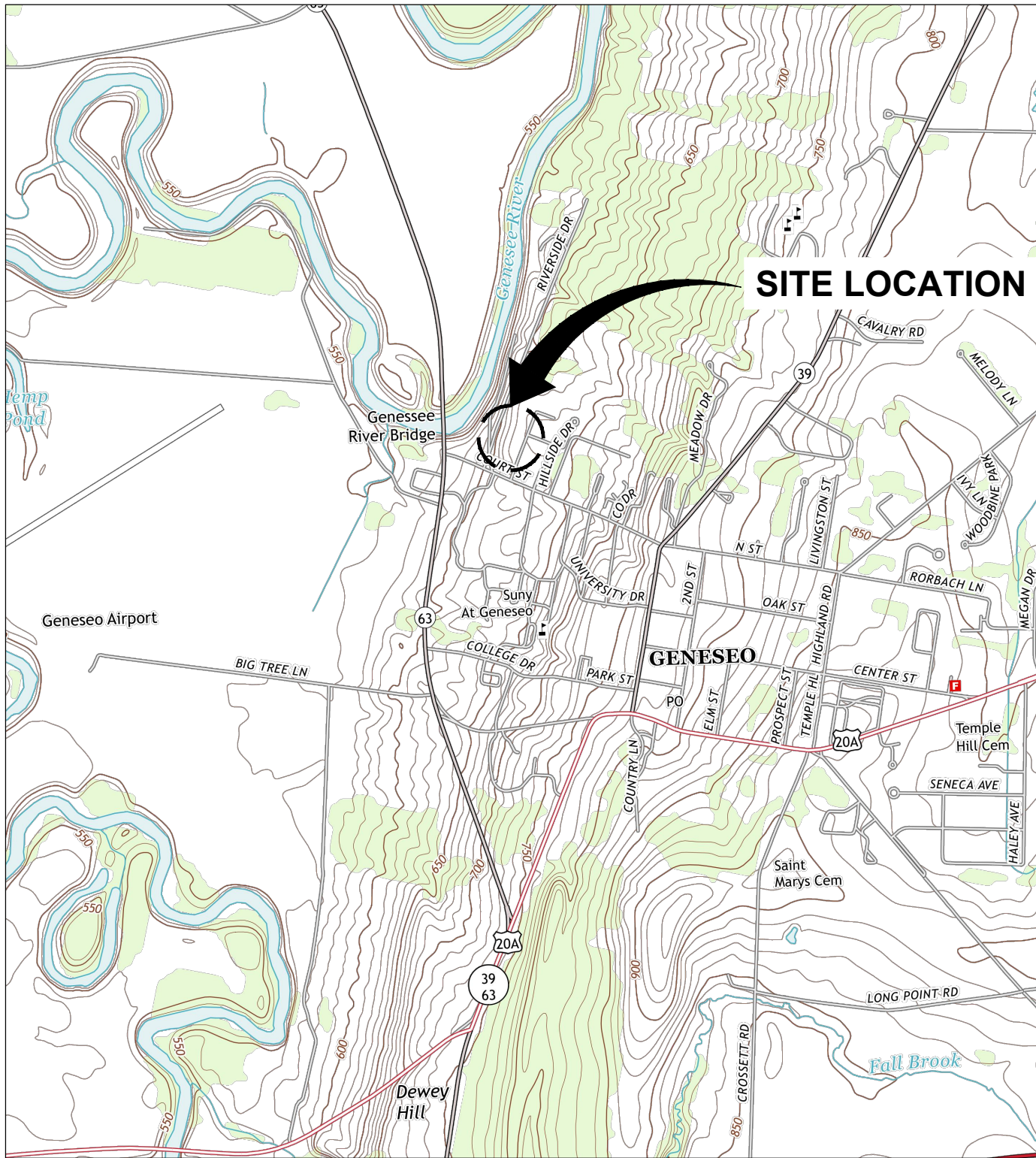
TCL VOC analysis by USEPA SW-846 Method 8260B

TCL SVOC analysis by USEPA SW-846 Method 8270C

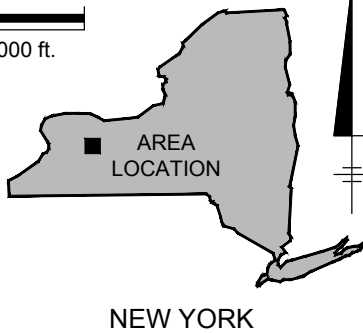
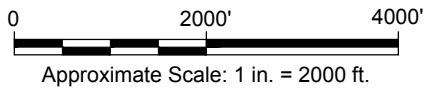
TAL Metals by USEPA Method 6000/7000

Total Cyanide by USEPA Method 9013A

Figures

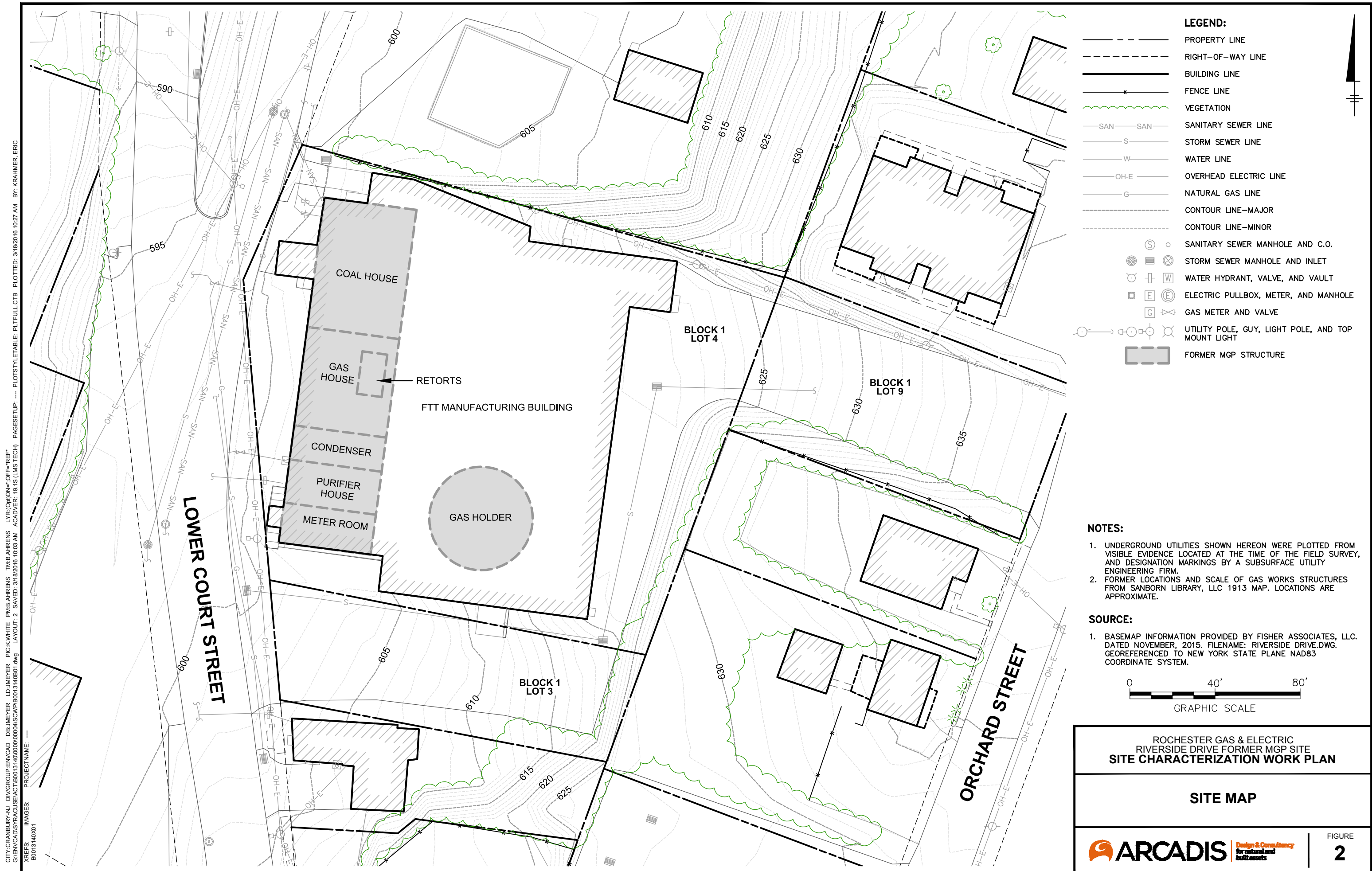


REFERENCE: BASE MAP USGS 7.5. MIN. TOPO. QUAD., GENESEO, NY, 2013



ROCHESTER GAS & ELECTRIC
RIVERSIDE DRIVE FORMER MGP SITE
SITE CHARACTERIZATION WORK PLAN

SITE LOCATION MAP



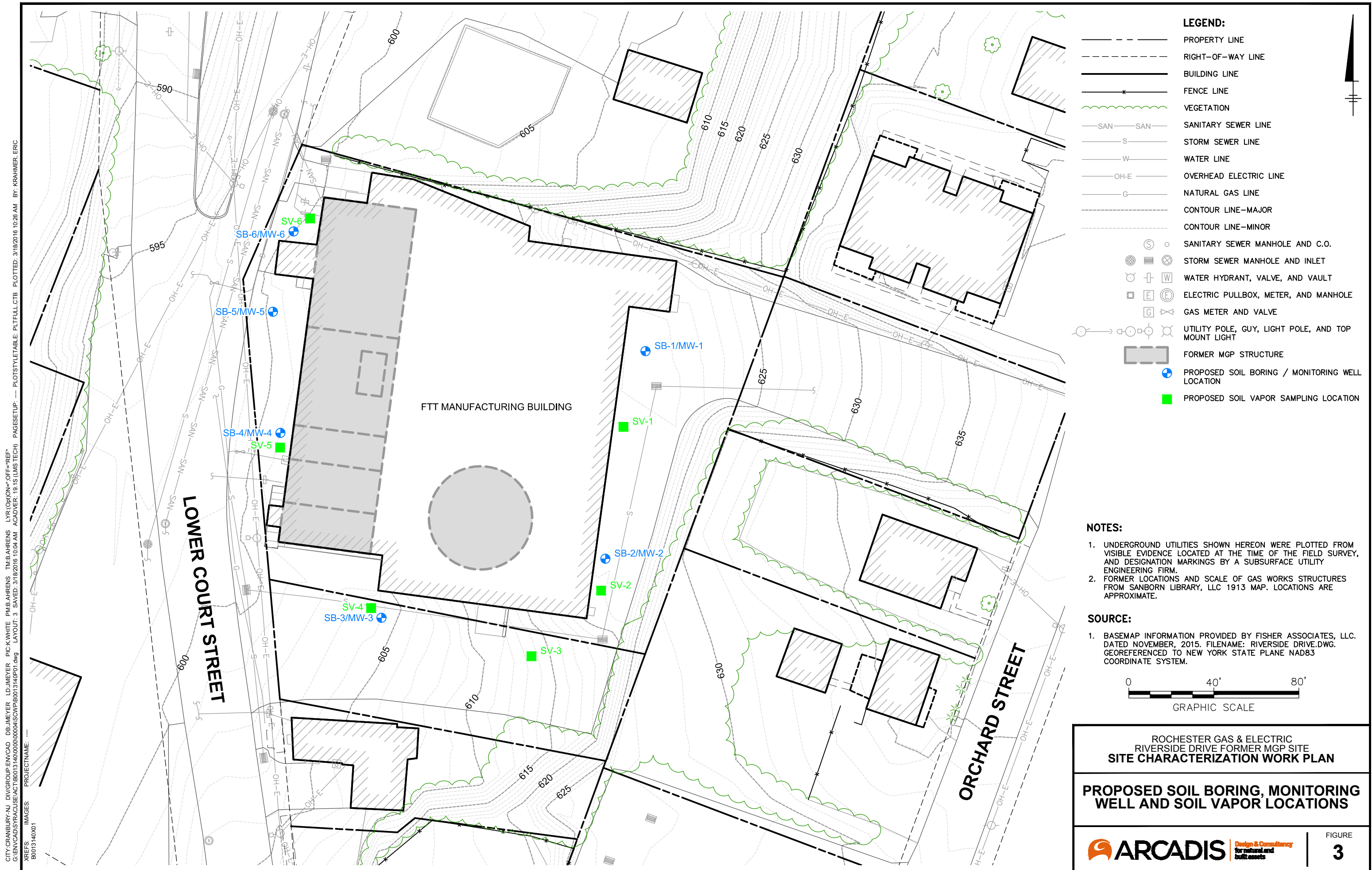
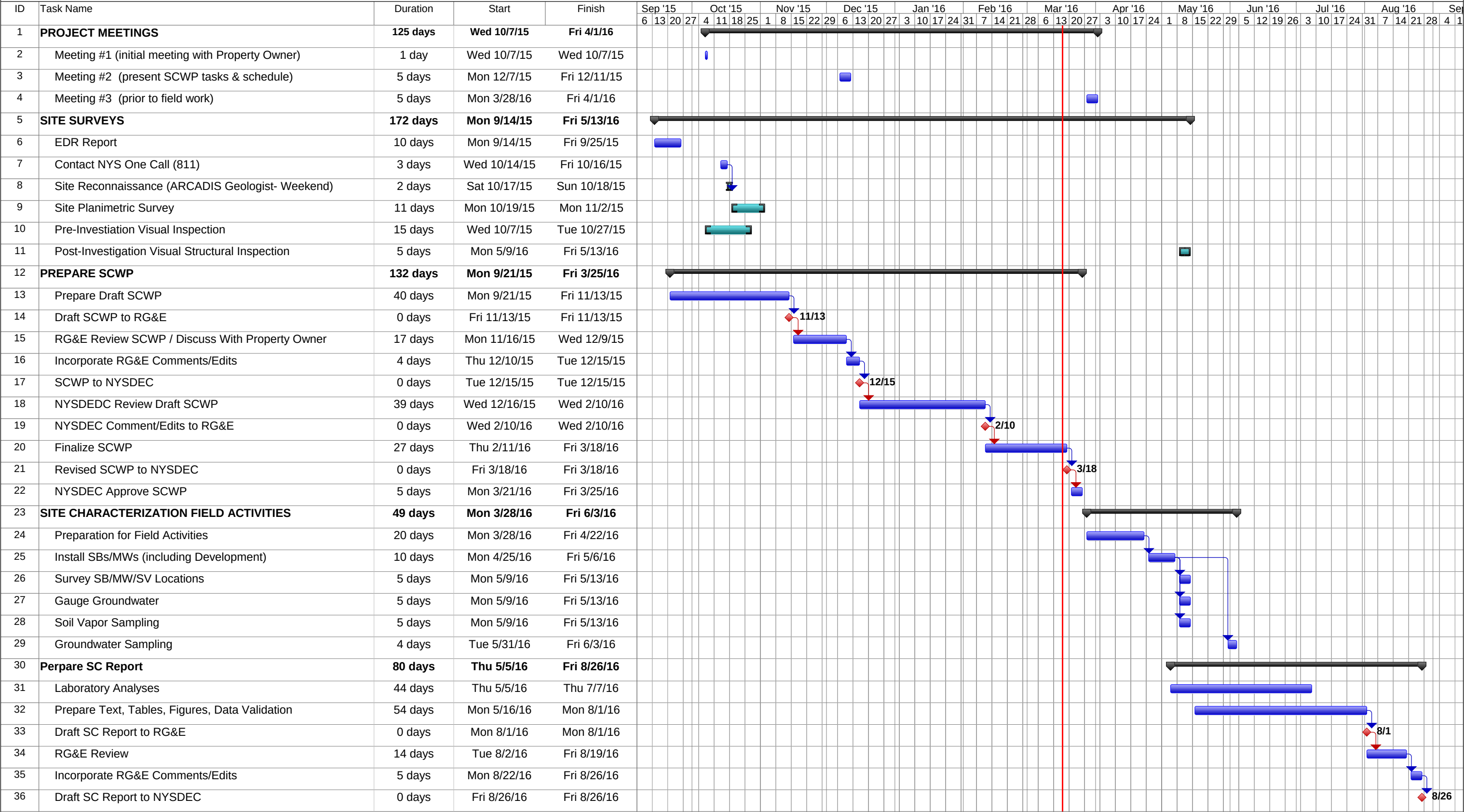


Figure 4
RG&E / 112 Riverside Drive Former MGP Site
Conceptual Project Schedule

March 17, 2016





Appendix A

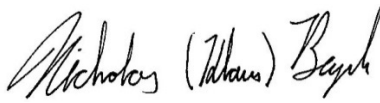
Health and Safety Plan

Site Specific Health and Safety Plan

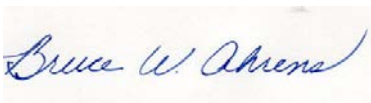
Project Name: Riverside Drive Former MGP Site

Project Number: B0013140
Client Name: RGE
Date: 10/13/2015
Revision: 0

Approvals:

HASP Developer:  10/13/2015
Nicholas Beyrle

HASP Reviewer:  10/15/2015
Bob Gang

Project Manager:  10/15/2015
Bruce Ahrens

Emergency Information

Site Address: 112 Riverside Drive
Geneseo, NY 14454

Emergency Phone Numbers:

Emergency (fire, police, ambulance)	911
Emergency (facility specific, if applicable):	
Fire/Ambulance - Geneseo Fire and	585-243-1200
Police - Village of Geneseo	585-243-2420
Emergency Other (specify): Sheriff - Livingston County	585-243-7100
Client Contact Christopher Keipper	585-771-4560
WorkCare (non-life-threatening injury/illness)	1-800-455-6155
Project H&S Nicholas Beyrle	585-662-4044
Task Manager Bruce Ahrens	585-662-4034
Project Manager Bruce Ahrens	585-662-4034
Corporate H&S Specialist Julie Santaniello	978-551-0033
Corporate H&S Director Denis Balcer	614-985-9114

Hospital Name and Address: Noyes Memorial Hoisptal
111 Clara Barton St
Dansville, NY 14437

Hospital Phone Number: 585-335-6001

Incident Notification Process

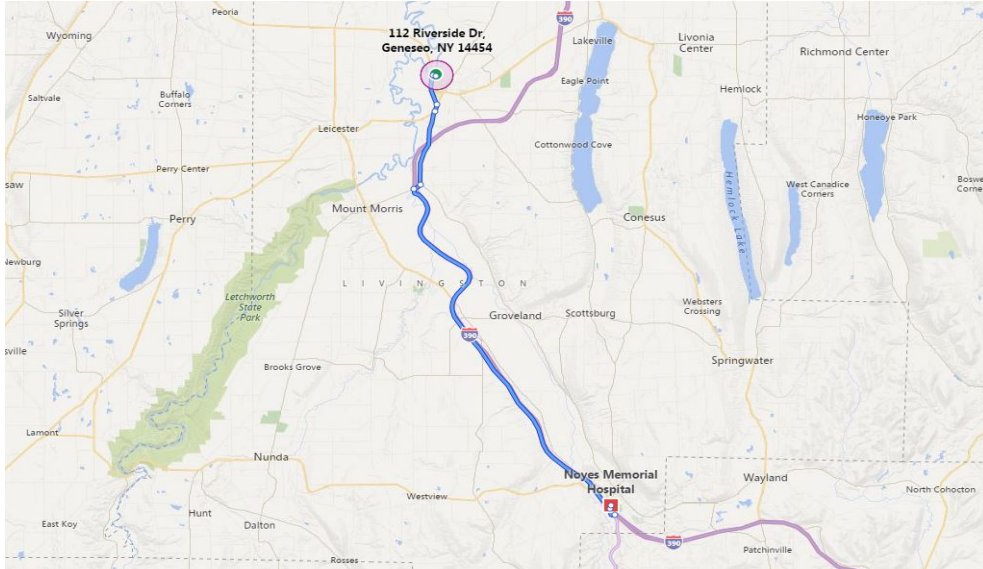
1 Dial 911/Facility Emergency Number/WorkCare as applicable	
2 Contact PM/Supervisor	Bruce Ahrens
3 Contact Corporate H&S	Julie Santaniello
4 Contact Client	Christopher Keipper

Complete below, as applicable, or clear cell contents:

Location of Assembly Area(s): 96 Court Street (east of site across street)

Nearest Storm Shelter: FTT Manufacturing

Route to the Hospital



To: Noyes Memorial Hospital, 111 Clara Barton Street, Dansville, NY 14437
From: 112 Riverside Drive, Geneseo, New York 14454

Driving Directions

Total Distance: 22.4 miles

- Head SOUTHWEST on Riverside Dr toward Lower Ct St.
- Slight LEFT to stay on Riverside Drive.
- Turn RIGHT onto Court St 0.1 mile.
- Turn LEFT onto NY-63 S 4.6 mile.
- Continue onto NY-408 S 0.3 mile.
- Turn LEFT onto I-390 South to Corning 16.3 mile.
- Take exit 4 for NY-36 toward Dansville/Hornell 0.4 mile.
- Turn LEFT onto NY-36 North/Clara Barton St 0.5 mile.
- Arrive at Noyes Memorial Hospital.

General Information

Site Type (select all applicable where work will be conducted):

☒ Active	☐ Railroad
☐ Bridge	☐ Remote Area
☒ Buildings	☐ Residential
☒ Commercial	☐ Retail
☐ Construction	☐ Roadway (public, including right-of-way)
☐ Government	☐ Secure
☐ Inactive	☐ Unknown
☒ Industrial	☐ Unsecured
☐ Landfill	☐ Utility
☐ Marine	☐ Other (specify): _____
☐ Mining	
☒ Parking Lot/Private Roadway	

Surrounding Area and Topography (select one):

- ☐ Surrounding area and topography are presented in the project work plan
- ☒ Surrounding area and topography (*briefly describe*):
Site topography is sloped to the west with a total elevation change of approximately 40 ft. Surrounding area is mixed residential/industrial use.

Site Background (select one):

- ☒ Site background is presented in the project work plan
- ☐ Site background (*briefly describe*):

Project Tasks

The following tasks are identified for this project:

Examples: "Drilling/soil sampling", "Surveying", "General Inspections", "Construction Management/Inspections"

- 1 General Site Work
- 2 Drilling/Soil Sampling
- 3 Groundwater Sampling
- 4 Soil Vapor/Air Sampling
- 5 _____

- ☐ Subcontractor H&S information is attached ☒ ARCADIS Standards apply to augment JSA
☒ Utility clearance required. *[list standard(s) below]*
☒ ARCADIS Field H&S Handbook sections apply *(list below)*

Comments:

Section III-A Daily Safety meetings/Tailgates

Section III-B DOT – Hazardous Materials Transportation/Dangerous goods

Section III-F. General Housekeeping, Personal Hygiene and Field Sanitation

Section III-G. Site Security, Work Zone and Decontamination for HAZWOPER Sites

Section III-H. Personal Safety and Other Unique Site Conditions

Section III-L Noise

Section III-N Biological Hazards

Section III-II. Drums and other Material Handling

Section III-MM Utility Location

Section III-NN. Backing Safety

Section IV-E Heavy Equipment

HSCS006 Heavy Equipment Operation

ARCADIS Standard HSFS019 Utility Location

Roles and Responsibilities

<i>Name</i>	<i>Role</i>	<i>Additional Responsibilities (Describe)</i>
1 Bruce Ahrens	PM	• Obtain client-specific health and safety information and communicate with the client on health and safety issues. • Report all injuries, illnesses and near-misses to the client representative, lead incident investigations, and ensure that any recommendations made are implemented.
2 Bruce Ahrens	TM	• Review all applicable H&S Standards, and ensure that project activities conform to all requirements. • Communicate with the Site Safety Officer (SSO) on health and safety issues.
3 Nicholas (Klaus) Beyrle or Current	Field Lead/ SSO	• Ensure site visitors have been informed of the hazards related to ARCADIS work. • Coordinate activities during emergency situations. • Communicate with the Project Manager on health and safety issues. • Ensure that necessary site-specific training is performed (both initial and "tailgate" safety briefings). • Ensure that work is performed in a safe manner and that necessary safety equipment is maintained and used at the Site.

4 Various

Field Staff

- Abide by HASP/JSAs/AUS Procedures
- Support SSO

Training

All ARCADIS employees are required to have the following training:

- ☒ 40 hr HAZWOPER w current refresh.
- ☐ 24 hr HAZWOPER
- ☐ 10 hr Construction
- ☐ HazMat #1 (Ground/Air/MOT)
- ☐ HazMat #4 (MOT)
- ☐ HazCom/Emergency Action Plan
- ☒ H&S Orientation (classroom); or
- ☐ H&S Orientation (on-line)
- ☒ PPE
- ☐ Respiratory protection
- ☐ MSHA
- ☒ Smith System (on-line)
- ☐ OTS/eRailsafe
- ☐ Client specific:
- ☐ Other:

Selected ARCADIS employees are required to have the following additional training:

- ☐ Not applicable
- ☒ First aid/CPR/BBP
- ☐ 30 hr Construction
- ☐ 10 hr Construction
- ☒ HazMat #1 (Gr./Air/MOT)
- ☐ HazMat #4 (MOT)
- ☐ Confined space entrant
- ☐ Confined space rescue
- ☐ Excavation CP
- ☐ Electrical (NFPA 70E)
- ☐ Lockout/Tagout
- ☐ H&S Orientation (class)
- ☒ Hazwoper 8-HR Sprvsr
- ☐ Smith Sys. (hands on)
- ☐ Boating safety
- ☐ Other:

Names or Numbers from above

All onsite field staff

Staff collecting samples

All onsite field staff

Hazard Analysis

Risk Assessment Matrix		Likelihood Ratings** (likelihood that incident would occur)			
Consequences Ratings*		A	B	C	D
People	Property	0 Almost impossible	1 Possible but unlikely	2 Likely to happen	3 Almost certain to happen
1 - Slight or no health	Slight or no damage	0 - Low	1 - Low	2 - Low	3 - Low
2 - Minor health effect	Minor damage	0 - Low	2 - Low	4 - Medium	6 - Medium
3 - Major health effect	Local damage	0 - Low	3 - Low	6 - Medium	9 - High
4 - Fatalities	Major damage	0 - Low.	4 - Medium.	8 - High	12 - High

Division

Environment

Business Unit

REM

Task 1: General Site Work									
Hazardous Activity #1									
Field-Ambient environment - exposure heat, cold, sun, weather, etc									
Hazard Types (unmitigated ranking H-High, M-Medium, L-Low):									
Biological <table border="1" style="display: inline-table; vertical-align: middle;"><tr><td>M</td></tr></table> Chemical <table border="1" style="display: inline-table; vertical-align: middle;"><tr><td>M</td></tr></table> Driving <table border="1" style="display: inline-table; vertical-align: middle;"><tr><td>L</td></tr></table> Electrical <table border="1" style="display: inline-table; vertical-align: middle;"><tr><td>L</td></tr></table>	M	M	L	L	Environmental <table border="1" style="display: inline-table; vertical-align: middle;"><tr><td>L</td></tr></table> Gravity <table border="1" style="display: inline-table; vertical-align: middle;"><tr><td>L</td></tr></table> Mechanical <table border="1" style="display: inline-table; vertical-align: middle;"><tr><td>L</td></tr></table> Motion <table border="1" style="display: inline-table; vertical-align: middle;"><tr><td>L</td></tr></table>	L	L	L	L
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Overall Unmitigated Risk: Medium	Mitigated Risk: Medium if utilizing:								
Primary Controls: TRACK PPE (see HASP "PPE" section) Field H&S Handbook									
Secondary Controls: H&S Standards Engineering Controls Admin. Controls Specialized Equipment									
Hazardous Activity #2									
Field-Mobilization/Demobilization - from a site									
Hazard Types (unmitigated ranking H-High, M-Medium, L-Low):									
Biological <table border="1" style="display: inline-table; vertical-align: middle;"><tr><td>-</td></tr></table> Chemical <table border="1" style="display: inline-table; vertical-align: middle;"><tr><td>L</td></tr></table> Driving <table border="1" style="display: inline-table; vertical-align: middle;"><tr><td>M</td></tr></table> Electrical <table border="1" style="display: inline-table; vertical-align: middle;"><tr><td>-</td></tr></table>	-	L	M	-	Environmental <table border="1" style="display: inline-table; vertical-align: middle;"><tr><td>-</td></tr></table> Gravity <table border="1" style="display: inline-table; vertical-align: middle;"><tr><td>M</td></tr></table> Mechanical <table border="1" style="display: inline-table; vertical-align: middle;"><tr><td>-</td></tr></table> Motion <table border="1" style="display: inline-table; vertical-align: middle;"><tr><td>L</td></tr></table>	-	M	-	L
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Overall Unmitigated Risk: Medium	Mitigated Risk: Low if utilizing:								
Primary Controls: TRACK Field H&S Handbook Engineering Controls									
Secondary Controls: JSAs Job Briefing/Site Awareness PPE (see HASP "PPE" section) Admin. Controls									
Hazardous Activity #3									
Field-Biological - insects, spiders, snakes, etc									
Hazard Types (unmitigated ranking H-High, M-Medium, L-Low):									
Biological <table border="1" style="display: inline-table; vertical-align: middle;"><tr><td>M</td></tr></table> Chemical <table border="1" style="display: inline-table; vertical-align: middle;"><tr><td>-</td></tr></table> Driving <table border="1" style="display: inline-table; vertical-align: middle;"><tr><td>-</td></tr></table> Electrical <table border="1" style="display: inline-table; vertical-align: middle;"><tr><td>-</td></tr></table>	M	-	-	-	Environmental <table border="1" style="display: inline-table; vertical-align: middle;"><tr><td>-</td></tr></table> Gravity <table border="1" style="display: inline-table; vertical-align: middle;"><tr><td>-</td></tr></table> Mechanical <table border="1" style="display: inline-table; vertical-align: middle;"><tr><td>-</td></tr></table> Motion <table border="1" style="display: inline-table; vertical-align: middle;"><tr><td>-</td></tr></table>	-	-	-	-
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Overall Unmitigated Risk: Medium	Mitigated Risk: Low if utilizing:								
Primary Controls: TRACK Engineering Controls PPE (see HASP "PPE" section)									
Secondary Controls: JSAs HASP Job Briefing/Site Awareness PPE (see HASP "PPE" section) Housekeeping									
Hazardous Activity #4									
Field-Sampling - sample cooler preparation									
Hazard Types (unmitigated ranking H-High, M-Medium, L-Low):									
Biological <table border="1" style="display: inline-table; vertical-align: middle;"><tr><td>-</td></tr></table> Chemical <table border="1" style="display: inline-table; vertical-align: middle;"><tr><td>M</td></tr></table> Driving <table border="1" style="display: inline-table; vertical-align: middle;"><tr><td>-</td></tr></table> Electrical <table border="1" style="display: inline-table; vertical-align: middle;"><tr><td>-</td></tr></table>	-	M	-	-	Environmental <table border="1" style="display: inline-table; vertical-align: middle;"><tr><td>-</td></tr></table> Gravity <table border="1" style="display: inline-table; vertical-align: middle;"><tr><td>M</td></tr></table> Mechanical <table border="1" style="display: inline-table; vertical-align: middle;"><tr><td>L</td></tr></table> Motion <table border="1" style="display: inline-table; vertical-align: middle;"><tr><td>L</td></tr></table>	-	M	L	L
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Overall Unmitigated Risk: Medium	Mitigated Risk: Low if utilizing:								
Primary Controls: TRACK JSAs Engineering Controls PPE (see HASP "PPE" section) See HASP "Monitoring" section									
Secondary Controls: Job Briefing/Site Awareness Admin. Controls Work Plan									

Risk Assessment Matrix		Likelihood Ratings** (likelihood that incident would occur)			
Consequences Ratings*		A	B	C	D
People	Property	0 Almost impossible	1 Possible but unlikely	2 Likely to happen	3 Almost certain to happen
1 - Slight or no health	Slight or no damage	0 - Low	1 - Low	2 - Low	3 - Low
2 - Minor health effect	Minor damage	0 - Low	2 - Low	4 - Medium	6 - Medium
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4 - Fatalities	Major damage	0 - Low	4 - Medium	8 - High	12 - High

Task 2:																									
Hazardous Activity #1																									
Field-Drilling - Mechanical method (drill rig, DPT, etc)																									
Hazard Types (unmitigated ranking H-High, M-Medium, L-Low): <table style="width: 100%; margin-top: 5px;"> <tr> <td style="width: 25%;">Biological</td><td style="width: 10%; text-align: center;">-</td> <td style="width: 25%;">Chemical</td><td style="width: 10%; text-align: center;">L</td> <td style="width: 25%;">Driving</td><td style="width: 10%; text-align: center;">-</td> <td style="width: 25%;">Electrical</td><td style="width: 10%; text-align: center;">M</td> </tr> <tr> <td>Environmental</td><td style="text-align: center;">-</td> <td>Gravity</td><td style="text-align: center;">H</td> <td>Mechanical</td><td style="text-align: center;">H</td> <td>Motion</td><td style="text-align: center;">H</td> </tr> <tr> <td>Personal Safety</td><td style="text-align: center;">-</td> <td>Pressure</td><td style="text-align: center;">M</td> <td>Radiation</td><td style="text-align: center;">-</td> <td>Sound</td><td style="text-align: center;">H</td> </tr> </table>		Biological	-	Chemical	L	Driving	-	Electrical	M	Environmental	-	Gravity	H	Mechanical	H	Motion	H	Personal Safety	-	Pressure	M	Radiation	-	Sound	H
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Environmental	-	Gravity	H	Mechanical	H	Motion	H																		
Personal Safety	-	Pressure	M	Radiation	-	Sound	H																		
Overall Unmitigated Risk: High Mitigated Risk: Medium if utilizing:																									
Primary Controls: TRACK Engineering Controls Admin. Controls PPE (see HASP "PPE" section) JSAs Inspections																									
Secondary Controls: Job Briefing/Site Awareness H&S Standards Cont/Emerg. Planning																									
Hazardous Activity #2																									
Chemical-Corrosives - working with or exposure to corrosives in laboratory work, sample bottle preservatives, decon chemicals, etc																									
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Secondary Controls: H&S Standards Job Briefing/Site Awareness Hazcom Training MSDS (see also HASP Hazcom section) Admin. Controls Specialized Equipment Housekeeping																									
Hazardous Activity #3																									
Field-Utilities- pre-Clearing utilities with mechanical means (air knife, vacuum excavation, hydro knife, etc)																									
Hazard Types (unmitigated ranking H-High, M-Medium, L-Low): <table style="width: 100%; margin-top: 5px;"> <tr> <td style="width: 25%;">Biological</td><td style="width: 10%; text-align: center;">-</td> <td style="width: 25%;">Chemical</td><td style="width: 10%; text-align: center;">L</td> <td style="width: 25%;">Driving</td><td style="width: 10%; text-align: center;">-</td> <td style="width: 25%;">Electrical</td><td style="width: 10%; text-align: center;">L</td> </tr> <tr> <td>Environmental</td><td style="text-align: center;">-</td> <td>Gravity</td><td style="text-align: center;">M</td> <td>Mechanical</td><td style="text-align: center;">M</td> <td>Motion</td><td style="text-align: center;">M</td> </tr> <tr> <td>Personal Safety</td><td style="text-align: center;">-</td> <td>Pressure</td><td style="text-align: center;">M</td> <td>Radiation</td><td style="text-align: center;">-</td> <td>Sound</td><td style="text-align: center;">M</td> </tr> </table>		Biological	-	Chemical	L	Driving	-	Electrical	L	Environmental	-	Gravity	M	Mechanical	M	Motion	M	Personal Safety	-	Pressure	M	Radiation	-	Sound	M
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Primary Controls: TRACK H&S Standards Job Briefing/Site Awareness PPE (see HASP "PPE" section) JSAs																									
Secondary Controls: Specialized Equipment Engineering Controls Admin. Controls																									
Hazardous Activity #4																									
Field-Mobilization/Demobilization - from a site																									
Hazard Types (unmitigated ranking H-High, M-Medium, L-Low): <table style="width: 100%; margin-top: 5px;"> <tr> <td style="width: 25%;">Biological</td><td style="width: 10%; text-align: center;">-</td> <td style="width: 25%;">Chemical</td><td style="width: 10%; text-align: center;">L</td> <td style="width: 25%;">Driving</td><td style="width: 10%; text-align: center;">M</td> <td style="width: 25%;">Electrical</td><td style="width: 10%; text-align: center;">-</td> </tr> <tr> <td>Environmental</td><td style="text-align: center;">-</td> <td>Gravity</td><td style="text-align: center;">M</td> <td>Mechanical</td><td style="text-align: center;">-</td> <td>Motion</td><td style="text-align: center;">L</td> </tr> <tr> <td>Personal Safety</td><td style="text-align: center;">-</td> <td>Pressure</td><td style="text-align: center;">-</td> <td>Radiation</td><td style="text-align: center;">-</td> <td>Sound</td><td style="text-align: center;">-</td> </tr> </table>		Biological	-	Chemical	L	Driving	M	Electrical	-	Environmental	-	Gravity	M	Mechanical	-	Motion	L	Personal Safety	-	Pressure	-	Radiation	-	Sound	-
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Overall Unmitigated Risk: Medium Mitigated Risk: Low if utilizing:																									
Primary Controls: TRACK Field H&S Handbook Engineering Controls																									
Secondary Controls: JSAs Job Briefing/Site Awareness PPE (see HASP "PPE" section) Admin. Controls																									

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3 - Major health effect	Local damage	0 - Low	3 - Low	6 - Medium	9 - High
4 - Fatalities	Major damage	0 - Low.	4 - Medium.	8 - High	12 - High

Task 3: Groundwater Sampling															
Hazardous Activity #1															
Chemical-Corrosives - working with or exposure to corrosives in laboratory work, sample bottle preservatives, decon chemicals, etc															
Hazard Types (unmitigated ranking H-High, M-Medium, L-Low):															
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Overall Unmitigated Risk: Medium															
Mitigated Risk: Low if utilizing:															
Primary Controls: TRACK JSAs Engineering Controls PPE (see HASP "PPE" section)															
Secondary Controls: H&S Standards Job Briefing/Site Awareness Hazcom Training MSDS (see also HASP Hazcom section) Admin. Controls Specialized Equipment Housekeeping															
Hazardous Activity #2															
Field-Measurement - water levels and well sounding															
Hazard Types (unmitigated ranking H-High, M-Medium, L-Low):															
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Overall Unmitigated Risk: Low															
Mitigated Risk: Low if utilizing:															
Primary Controls: TRACK JSAs PPE (see HASP "PPE" section)															
Secondary Controls: Job Briefing/Site Awareness															
Hazardous Activity #3															
Field-Sampling - monitoring well sampling with electric, pneumatic or other non-manual pump															
Hazard Types (unmitigated ranking H-High, M-Medium, L-Low):															
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Overall Unmitigated Risk: Low															
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Primary Controls: TRACK JSAs Engineering Controls PPE (see HASP "PPE" section) Inspections															
Secondary Controls: Job Briefing/Site Awareness															
Hazardous Activity #4															
General-Shipping - HazMat samples to laboratories for analysis															
Hazard Types (unmitigated ranking H-High, M-Medium, L-Low):															
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Overall Unmitigated Risk: Medium															
Mitigated Risk: Medium if utilizing:															
Primary Controls: TRACK HazMat #1 Training Shipping Determination Admin. Controls Inspections															
Secondary Controls: PPE (see HASP "PPE" section) Housekeeping															

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Task 4: <u>Soil Vapor/Air Sampling</u>													
<i>Hazardous Activity #1</i>													
Field-Sampling - indoor and ambient air sampling													
Hazard Types (unmitigated ranking H-High, M-Medium, L-Low): <table style="width: 100%; margin-top: 10px;"> <tr> <td style="width: 25%;">Biological <table border="1" style="display: inline-table; width: 40px; text-align: center;">-</table></td> <td style="width: 25%;">Chemical <table border="1" style="display: inline-table; width: 40px; text-align: center;">L</table></td> <td style="width: 25%;">Driving <table border="1" style="display: inline-table; width: 40px; text-align: center;">-</table></td> <td style="width: 25%;">Electrical <table border="1" style="display: inline-table; width: 40px; text-align: center;">-</table></td> </tr> <tr> <td>Environmental <table border="1" style="display: inline-table; width: 40px; text-align: center;">-</table></td> <td>Gravity <table border="1" style="display: inline-table; width: 40px; text-align: center;">L</table></td> <td>Mechanical <table border="1" style="display: inline-table; width: 40px; text-align: center;">-</table></td> <td>Motion <table border="1" style="display: inline-table; width: 40px; text-align: center;">L</table></td> </tr> <tr> <td>Personal Safety <table border="1" style="display: inline-table; width: 40px; text-align: center;">-</table></td> <td>Pressure <table border="1" style="display: inline-table; width: 40px; text-align: center;">-</table></td> <td>Radiation <table border="1" style="display: inline-table; width: 40px; text-align: center;">-</table></td> <td>Sound <table border="1" style="display: inline-table; width: 40px; text-align: center;">-</table></td> </tr> </table>		Biological <table border="1" style="display: inline-table; width: 40px; text-align: center;">-</table>	Chemical <table border="1" style="display: inline-table; width: 40px; text-align: center;">L</table>	Driving <table border="1" style="display: inline-table; width: 40px; text-align: center;">-</table>	Electrical <table border="1" style="display: inline-table; width: 40px; text-align: center;">-</table>	Environmental <table border="1" style="display: inline-table; width: 40px; text-align: center;">-</table>	Gravity <table border="1" style="display: inline-table; width: 40px; text-align: center;">L</table>	Mechanical <table border="1" style="display: inline-table; width: 40px; text-align: center;">-</table>	Motion <table border="1" style="display: inline-table; width: 40px; text-align: center;">L</table>	Personal Safety <table border="1" style="display: inline-table; width: 40px; text-align: center;">-</table>	Pressure <table border="1" style="display: inline-table; width: 40px; text-align: center;">-</table>	Radiation <table border="1" style="display: inline-table; width: 40px; text-align: center;">-</table>	Sound <table border="1" style="display: inline-table; width: 40px; text-align: center;">-</table>
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Overall Unmitigated Risk: Low Mitigated Risk: Low if utilizing:													
Primary Controls: TRACK JSAs Work Plan													
Secondary Controls: TKI SOP (as applicable) Job Briefing/Site Awareness Engineering Controls Admin. Controls PPE (see HASP "PPE" section)													
<i>Hazardous Activity #2</i>													
Field-Sampling - subslab vapor screening/sampling													
Hazard Types (unmitigated ranking H-High, M-Medium, L-Low): <table style="width: 100%; margin-top: 10px;"> <tr> <td style="width: 25%;">Biological <table border="1" style="display: inline-table; width: 40px; text-align: center;">-</table></td> <td style="width: 25%;">Chemical <table border="1" style="display: inline-table; width: 40px; text-align: center;">M</table></td> <td style="width: 25%;">Driving <table border="1" style="display: inline-table; width: 40px; text-align: center;">-</table></td> <td style="width: 25%;">Electrical <table border="1" style="display: inline-table; width: 40px; text-align: center;">M</table></td> </tr> <tr> <td>Environmental <table border="1" style="display: inline-table; width: 40px; text-align: center;">-</table></td> <td>Gravity <table border="1" style="display: inline-table; width: 40px; text-align: center;">L</table></td> <td>Mechanical <table border="1" style="display: inline-table; width: 40px; text-align: center;">M</table></td> <td>Motion <table border="1" style="display: inline-table; width: 40px; text-align: center;">L</table></td> </tr> <tr> <td>Personal Safety <table border="1" style="display: inline-table; width: 40px; text-align: center;">-</table></td> <td>Pressure <table border="1" style="display: inline-table; width: 40px; text-align: center;">L</table></td> <td>Radiation <table border="1" style="display: inline-table; width: 40px; text-align: center;">-</table></td> <td>Sound <table border="1" style="display: inline-table; width: 40px; text-align: center;">M</table></td> </tr> </table>		Biological <table border="1" style="display: inline-table; width: 40px; text-align: center;">-</table>	Chemical <table border="1" style="display: inline-table; width: 40px; text-align: center;">M</table>	Driving <table border="1" style="display: inline-table; width: 40px; text-align: center;">-</table>	Electrical <table border="1" style="display: inline-table; width: 40px; text-align: center;">M</table>	Environmental <table border="1" style="display: inline-table; width: 40px; text-align: center;">-</table>	Gravity <table border="1" style="display: inline-table; width: 40px; text-align: center;">L</table>	Mechanical <table border="1" style="display: inline-table; width: 40px; text-align: center;">M</table>	Motion <table border="1" style="display: inline-table; width: 40px; text-align: center;">L</table>	Personal Safety <table border="1" style="display: inline-table; width: 40px; text-align: center;">-</table>	Pressure <table border="1" style="display: inline-table; width: 40px; text-align: center;">L</table>	Radiation <table border="1" style="display: inline-table; width: 40px; text-align: center;">-</table>	Sound <table border="1" style="display: inline-table; width: 40px; text-align: center;">M</table>
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Overall Unmitigated Risk: Medium Mitigated Risk: Low if utilizing:													
Primary Controls: TRACK JSAs Engineering Controls PPE (see HASP "PPE" section) See HASP "Monitoring" section													
Secondary Controls: Job Briefing/Site Awareness Admin. Controls Work Plan													
<i>Hazardous Activity #3</i>													
Field-Contaminated media (contact with impacted soil, water, air, sediment, etc)													
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Overall Unmitigated Risk: High Mitigated Risk: Low if utilizing:													
Primary Controls: TRACK JSAs Engineering Controls PPE (see HASP "PPE" section)													
Secondary Controls: H&S Standards HASP Admin. Controls HAZWOPER Training													
<i>Hazardous Activity #4</i>													
General-Lifting and movement of equipment of varying weights at varying frequencies by manual methods													
Hazard Types (unmitigated ranking H-High, M-Medium, L-Low): <table style="width: 100%; margin-top: 10px;"> <tr> <td style="width: 25%;">Biological <table border="1" style="display: inline-table; width: 40px; text-align: center;">-</table></td> <td style="width: 25%;">Chemical <table border="1" style="display: inline-table; width: 40px; text-align: center;">-</table></td> <td style="width: 25%;">Driving <table border="1" style="display: inline-table; width: 40px; text-align: center;">-</table></td> <td style="width: 25%;">Electrical <table border="1" style="display: inline-table; width: 40px; text-align: center;">-</table></td> </tr> <tr> <td>Environmental <table border="1" style="display: inline-table; width: 40px; text-align: center;">-</table></td> <td>Gravity <table border="1" style="display: inline-table; width: 40px; text-align: center;">-</table></td> <td>Mechanical <table border="1" style="display: inline-table; width: 40px; text-align: center;">-</table></td> <td>Motion <table border="1" style="display: inline-table; width: 40px; text-align: center;">-</table></td> </tr> <tr> <td>Personal Safety <table border="1" style="display: inline-table; width: 40px; text-align: center;">M</table></td> <td>Pressure <table border="1" style="display: inline-table; width: 40px; text-align: center;">-</table></td> <td>Radiation <table border="1" style="display: inline-table; width: 40px; text-align: center;">-</table></td> <td>Sound <table border="1" style="display: inline-table; width: 40px; text-align: center;">-</table></td> </tr> </table>		Biological <table border="1" style="display: inline-table; width: 40px; text-align: center;">-</table>	Chemical <table border="1" style="display: inline-table; width: 40px; text-align: center;">-</table>	Driving <table border="1" style="display: inline-table; width: 40px; text-align: center;">-</table>	Electrical <table border="1" style="display: inline-table; width: 40px; text-align: center;">-</table>	Environmental <table border="1" style="display: inline-table; width: 40px; text-align: center;">-</table>	Gravity <table border="1" style="display: inline-table; width: 40px; text-align: center;">-</table>	Mechanical <table border="1" style="display: inline-table; width: 40px; text-align: center;">-</table>	Motion <table border="1" style="display: inline-table; width: 40px; text-align: center;">-</table>	Personal Safety <table border="1" style="display: inline-table; width: 40px; text-align: center;">M</table>	Pressure <table border="1" style="display: inline-table; width: 40px; text-align: center;">-</table>	Radiation <table border="1" style="display: inline-table; width: 40px; text-align: center;">-</table>	Sound <table border="1" style="display: inline-table; width: 40px; text-align: center;">-</table>
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Primary Controls: TRACK Engineering Controls Job Rotation													
Secondary Controls: JSAs Job Briefing/Site Awareness Specialized Equipment Admin. Controls Engineering Controls													

Hazard Communication (HazCom)/Global Harmonization System (GHS)

☐ HAZCOM/GHS for this project is managed by the client or general contractor

List the chemicals anticipated to be used by **ARCADIS** on this project per HazCom/GHS requirements.

(Modify quantities as needed)

<table border="0"> <tr> <th>Acids/Bases</th> <th>Qty</th> </tr> <tr><td>☐ Not applicable</td><td></td></tr> <tr><td>☒ Hydrochloric acid</td><td><500 ml</td></tr> <tr><td>☐ Nitric acid</td><td><500 ml</td></tr> <tr><td>☐ Sulfuric acid</td><td><500 ml</td></tr> <tr><td>☒ Sodium hydroxide</td><td><500 ml</td></tr> <tr><td>☐ Zinc acetate</td><td><500 ml</td></tr> <tr><td>☐ Ascorbic acid</td><td><500 ml</td></tr> <tr><td>☐ Acetic acid</td><td><500 ml</td></tr> <tr><td>☐ Other:</td><td></td></tr> <tr><td>_____</td><td></td></tr> <tr><td>_____</td><td></td></tr> <tr><td>_____</td><td></td></tr> </table>	Acids/Bases	Qty	☐ Not applicable		☒ Hydrochloric acid	<500 ml	☐ Nitric acid	<500 ml	☐ Sulfuric acid	<500 ml	☒ Sodium hydroxide	<500 ml	☐ Zinc acetate	<500 ml	☐ Ascorbic acid	<500 ml	☐ Acetic acid	<500 ml	☐ Other:		_____		_____		_____		<table border="0"> <tr> <th>Decontamination</th> <th>Qty</th> </tr> <tr><td>☐ Not applicable</td><td></td></tr> <tr><td>☒ Alconox</td><td>≤ 5 lbs</td></tr> <tr><td>☐ Liquinox</td><td>≤ 1 gal</td></tr> <tr><td>☐ Acetone</td><td>≤ 1 gal</td></tr> <tr><td>☒ Methanol</td><td>≤ 1 gal</td></tr> <tr><td>☐ Hexane</td><td>≤ 1 gal</td></tr> <tr><td>☒ Isopropyl alcohol</td><td>≤ 4 gal</td></tr> <tr><td>☒ Nitric acid</td><td>≤ 1 L</td></tr> <tr><td>☐ Other:</td><td></td></tr> <tr><td>_____</td><td></td></tr> <tr><td>_____</td><td></td></tr> <tr><td>_____</td><td></td></tr> </table>	Decontamination	Qty	☐ Not applicable		☒ Alconox	≤ 5 lbs	☐ Liquinox	≤ 1 gal	☐ Acetone	≤ 1 gal	☒ Methanol	≤ 1 gal	☐ Hexane	≤ 1 gal	☒ Isopropyl alcohol	≤ 4 gal	☒ Nitric acid	≤ 1 L	☐ Other:		_____		_____		_____		<table border="0"> <tr> <th>Calibration</th> <th>Qty.</th> </tr> <tr><td>☐ Not applicable</td><td></td></tr> <tr><td>☒ Isobutylene/air</td><td>1 cyl</td></tr> <tr><td>☐ Methane/air</td><td>1 cyl</td></tr> <tr><td>☐ Pentane/air</td><td>1 cyl</td></tr> <tr><td>☐ Hydrogen/air</td><td>1 cyl</td></tr> <tr><td>☐ Propane/air</td><td>1 cyl</td></tr> <tr><td>☐ Hydrogen sulfide/air</td><td>1 cyl</td></tr> <tr><td>☐ Carbon monoxide/air</td><td>1 cyl</td></tr> <tr><td>☒ pH standards (4,7,10)</td><td>≤ 1 gal</td></tr> <tr><td>☒ Conductivity standards</td><td>≤ 1 gal</td></tr> <tr><td>☐ Other:</td><td></td></tr> <tr><td>_____</td><td></td></tr> </table>	Calibration	Qty.	☐ Not applicable		☒ Isobutylene/air	1 cyl	☐ Methane/air	1 cyl	☐ Pentane/air	1 cyl	☐ Hydrogen/air	1 cyl	☐ Propane/air	1 cyl	☐ Hydrogen sulfide/air	1 cyl	☐ Carbon monoxide/air	1 cyl	☒ pH standards (4,7,10)	≤ 1 gal	☒ Conductivity standards	≤ 1 gal	☐ Other:		_____	
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Material safety data sheets (MSDSs)/Safety Data Sheets (SDSs) must be available to field staff.

Indicate below how MSDS information will be provided:

☐ Not applicable	☐ Contractor MSDSs/SDSs are not applicable
☐ Printed copy in company vehicle	☐ Contractor MSDSs/SDSs are attached
☐ Printed copy in the project trailer/office	☒ Contractor MSDSs/SDSs will be on site and located:
☒ Printed copy attached	<u>With the HASP as an Attachment</u>
☐ Electronic copy on field computer	
☐ Bulk quantities of the following materials will be stored:	_____

Contact the project H&S contact for information in determining code and regulatory requirements associated with bulk storage of materials.

Monitoring

☐ Chemical air monitoring is not required for this project.

For projects requiring air monitoring, list the relevant constituents representing a hazard to site workers.

Constituent	Max. Conc.	Units	TWA	Units	STEL	Units	IDLH	Units	LEL/UEL	(%)	VD	VP	IP
Benzene	5	ppm	0.5	p	2.5	p	500	p,N	1.2/7.8		2.8	75	9.24
Toluene	1	ppm	20	p	150	p,N	500	p,N	1.1/7.1		3.1	21	8.82
Ethylbenzene	1	ppm	20	p	125	p	800	p,N	0.8/6.7		3.7	874	8.86
Xylenes	1	ppm	100	p	150	p	900	p,N	1.1/7.0		3.7	9	8.44
None	1		9999	-	0	-	0	-	0		0	0	0
None			9999	-	0	-	0	-	0		0	0	0
Notes: TWAs are ACGIH 8 hr-TLVs unless noted.			p-ppm s- skin r- respirable	m-mg/m3 c-ceiling i-inhalable	c2- ceiling (2 hr) "9999" - NA N-NIOSH 10 hr REL	se-sensitizer O-OSHA PEL	"#N/A" -Constituent is not in database, manually enter information						

Monitoring Equipment and General Protocols

Air monitoring is required for any task or activity where employees have potential exposure to vapors or particulates above the TWA. Action levels below are appropriate for most situations. Contact the project H&S contact for all stop work situations. Select monitoring frequency and instruments to be used.

Monitoring Frequency:

15 min intervals when conducting sub-surface activities or products containing VOCs

Indicator Tube/Chip Frequency:

Indicator tube/chip monitoring not required

Instrument	Action Levels	Actions
☒ Photoionization Detector	< 0.768	Continue work
	0.768 - 1.536	Sustained >5 min. continuous monitor, review eng. controls and PPE, proceed with caution
Lamp (eV): 10.6	> 1.536	Sustained >5 min. stop work, contact SSO
☐ Flame Ionization Detector (FID)	< 0.0	Continue work
	0.0 - 0.0	Sustained >5 min. continuous monitor, review eng. controls and PPE, use caution
	> 0.0	Sustained >5 min. stop work, contact SSO
☐ LEL/O2 Meter	0-5% LEL	Continue work
	>5-10% LEL	Continuous monitor, review eng. controls, proceed with caution
	>10% LEL	Stop work, evacuate, contact SSO
	19.5%-23.5% O2	Normal, continue work
	<19.5% O2	O2 deficient, stop work, evacuate, cont. SSO
	>23.5% O2	O2 enriched, stop work, evacuate, contact SSO
☐ Indicator: ☐ tube ☐ chip	≤PEL/TLV	Continue work
Compound(s):	>PEL/TLV	Stop work, review eng. controls and PPE, contact SSO
☒ Particulate Monitor (mists, aerosols, dusts in mg/m ³)	< 2.5	Continue work
	2.5 - 5.00	Use engineering controls, monitor continuously
	> 5.00	Stop work, review controls, contact SSO
☐ Other:	Specify:	Specify:

Personal Protective Equipment (PPE)

See JSA for the task being performed for PPE requirements . If the work is not conducted under a JSA, refer to the governing document for PPE requirements. At a minimum, the following checked PPE is required for all tasks during field work not covered by a JSA on this project:

Level D or Level D Modified:

☒ Hard hat	☐ Snake chaps/guards	☐ Coveralls:	Specify Type: _____
☒ Safety glasses	☐ Briar chaps	☐ Apron:	_____
☐ Safety goggles	☐ Chainsaw chaps	☐ Chem. resistant gloves:	_____
☐ Face shield	☐ Sturdy boot	☐ Gloves other:	_____
☒ Hearing protection	☒ Steel toe boot	☐ Chemical boot:	_____
☐ Rain suit	☐ Metatarsal boot	☐ Boot other:	_____
☐		☒ Traffic vest:	Required for all exterior building _____
Other: _____	_____	☐ Life vest:	_____

Task specific PPE: The PPE specified in a JSA is automatically the PPE requirement for all work governed by the JSA.

Comments:

~ If at anytime there is a new project task, Stop Work must be implemented until a revised Hazards Analysis can be conducted, JSA developed and tailgate meeting completed to eliminate potential hazards.

~ Field H&S Handbook references can be found in the JSAs provided as an Attachment.

~ A three point utility clearance will be performed prior to initiating any intrusive work at the Site(ONE-Call does not count as a line of evidence unless work is conducted in a right-of-way or roadway). A utility clearance checklist is provided as an Attachment

Medical Surveillance (check all that apply)

- ☐ Medical Surveillance is not required for this project.
- ☒ HAZWOPER medical surveillance applies to all ARCADIS site workers on the project.
- ☒ HAZWOPER medical surveillance applies to all subcontractors on the project.
- ☐ HAZWOPER medical surveillance applies to all site workers on the project except:

- ☐ Other medical surveillance required (describe type and who is required to participate):
- ☐ Client drug and/or alcohol testing required.

Hazardous Materials Shipping and Transportation (check all that apply)

- ☐ Not applicable, no materials requiring a Shipping Determination will be transported or shipped
- ☒ A Shipping Determination has been reviewed and provided to field staff
- ☐ A Shipping Determination is attached
- ☐ All HazMat will be transported under Materials of Trade by ARCADIS
- ☐ Other (specify):

Roadway Work Zone Safety (check all that apply)

- ☐ Not applicable for this project
- ☐ All or portions of the work conducted under a TCP
- ☒ All or portions of the work conducted under a STAR Plan
- ☐ TCP or STAR Plan provided to field staff
- ☐ TCP or STAR Plan attached
- ☐ Other (specify):

ARCADIS Commercial Motor Vehicles (CMVs)

This section is applicable to ARCADIS operated vehicles only

- ☒ This project will **not** utilize CMV drivers
- ☐ This project will utilize CMV drivers

Site Control (check all that apply)

- ☐ Not applicable for this project.
- ☐ Site control protocols are addressed in JSA or other supporting document (attach)
- ☒ Maintain an exclusion zone of 25 ft. around the active work area
- ☐ Site control is integrated into the STAR Plan or TCP for the project
- ☐ Level C site control - refer to Level C Supplement attached
- ☐ Other (specify):

Decontamination (check all that apply)

- ☐ Not applicable for this project.
- ☒ Decontamination protocols are addressed in JSA or other governing document (attach)
- ☒ Level D work- wash hands and face prior to consuming food, drink or tobacco.
- ☐ Level D Modified work- remove coveralls and contain, wash hands and face prior to consuming food, drink or tobacco. Ensure footwear is clean of site contaminants
- ☐ Level C work - refer to the Level C supplement attached.
- ☐ Other (specify):

Sanitation (check all that apply)

- ☒ Mobile operation with access to off-site restrooms and potable water
- ☐ Restroom facilities on site provided by client or other contractor
- ☐ Project to provide portable toilets (1 per 20 workers)
- ☐ Potable water available on site
- ☐ Project to provide potable water (assume 1 gal./person/day)
- ☐ Project requires running water (hot and cold, or tepid) with soap and paper towels

Safety Briefings (check all that apply)

- ☒ Safety briefing required daily
- ☐ Safety briefing required twice a day
- ☐ Safety briefings required at the following frequency: _____
- ☐ Subcontractors to participate in ARCADIS safety briefings
- ☐ ARCADIS to participate in client/contractor safety briefings
- ☐ Other (specify):

Safety Equipment and Supplies

Safety equipment/supply requirements are addressed in the JSA for the task being performed. If work is not performed under a JSA, the following safety equipment is required to be present on site in good condition (Check all that apply):

☒ First aid kit	☐ Insect repellent
☐ Bloodborne pathogens kit	☐ Sunscreen
☒ Fire extinguisher	☐ Air horn
☐ Eyewash (ANSI compliant)	☐ Traffic cones
☒ Eyewash (bottle)	☐ 2-way radios
☒ Drinking water	☐ Heat stress monitor
☐ Other:	

H&S Program (check all that apply)

- ☐ H&S metrics are provided on the account level, refer to account guidance
- ☒ TIP required at the following frequency on this project:
Select One: _____ mhrs 1 time(s) per Define: Field Mobilization
- ☐ H&S Field Assessment required at the following frequency on this project:
Select One: _____ mhrs _____ time(s) _____ Define: _____
- ☐ Other (specify): _____

List tasks anticipated for TIP activity:

Groundwater Sampling
Drilling/Soil Sampling
Air Sampling

Signatures

I have read, understand and agree to abide by the requirements presented in this health and safety plan.
I understand that I have the absolute right to stop work if I recognize an unsafe condition affecting my work until corrected.

Printed Name	Signature	Date
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____

- Add additional sheets if necessary
- ☐ Subcontractor Acknowledgement Form attached
- You have an absolute right to STOP WORK if unsafe conditions exist!**

Attachment A - MSDS

Issue Date: 2006-06

Section 1 - Chemical Product and Company Identification

61

Material Name: Isopropyl Alcohol

CAS Number: 67-63-0

Chemical Formula: C₃H₈O

Structural Chemical Formula: (CH₃)₂CHOH

EINECS Number: 200-661-7

ACX Number: X1001458-1

Synonyms: ALCOJEL; ALCOOL ISOPROPILICO; ALCOOL ISOPROPYLIQUE; ALCOSOLVE; ALCOSOLVE 2; AVANTIN; AVANTINE; CHROMAR; COMBI-SCHUTZ; (COMPONENT OF) HIBISTAT; DIMETHYL CARBINOL; DIMETHYLCARBINOL; EPA PESTICIDE CHEMICAL CODE 047501; HARTOSOL; 2-HYDROXYPROPANE; IMSOL A; IPA; ISOHOL; ISOPROPANOL; ISOPROPYL ALCOHOL; ISO-PROPYLALCOHOL; LUTOSOL; 1-METHYLETHANOL; 1-METHYLETHYL ALCOHOL; PETROHOL; PRO; 2-PROPANOL; I-PROPANOL; N-PROPAN-2-OL; PROPAN-2-OL; PROPOL; 2-PROPYL ALCOHOL; I-PROPYL ALCOHOL; SEC-PROPYL ALCOHOL; I-PROPYLALCOHOL; SECONDARY PROPYL ALCOHOL; SPECTRAR; STERISOL HAND DISINFECTANT; TAKINEOCOL; VISCO 1152

Derivation: Treating propylene with sulfuric acid and then hydrolyzing or direct hydration of propylene using superheated steam. Most commonly available as rubbing alcohol (70% IPA).

General Use: As a solvent for gums, shellac, and essential oils, chemical intermediate, dehydrating agent, vehicle for germicidal compounds, de-icing agent for liquid fuels; for denaturing ethyl alcohol, preserving pathological specimens; in extraction of alkaloids, quick-drying inks and oils, and an ingredient of skin lotions, cosmetics, window cleaner, liquid soaps, and pharmaceuticals.

Section 2 - Composition / Information on Ingredients

Name	CAS	%
Isopropyl alcohol	67-63-0	100% vol.
Most commonly sold as 70% isopropyl alcohol (rubbing alcohol).		

OSHA PEL

TWA: 400 ppm; 980 mg/m³.

NIOSH REL

TWA: 400 ppm (980 mg/m³);
 STEL: 500 ppm (1225 mg/m³).

DFG (Germany) MAK

TWA: 200 ppm; PEAK: 400 ppm.

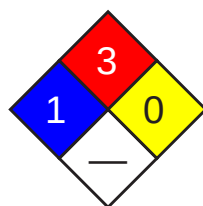
ACGIH TLV

TWA: 200 ppm; STEL: 400 ppm.

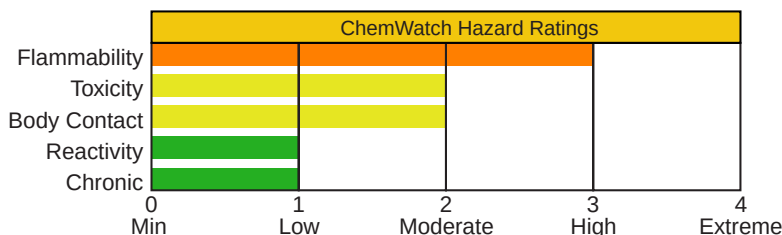
IDLH Level

2000 ppm (10% LEL).

Section 3 - Hazards Identification



Fire Diamond



ANSI Signal Word

Warning!

HMIS	
①	Health
③	Flammability
①	Reactivity



Flammable

☆☆☆☆☆ Emergency Overview ☆☆☆☆☆

Volatile liquid. Irritating to eyes/respiratory tract. Other Acute Effects: CNS depression, possible dermatitis, systemic toxicity. Flammable

Potential Health Effects

Target Organs: Eyes, skin, respiratory system.

Primary Entry Routes: Inhalation, ingestion, skin contact/absorption.

Acute Effects

Inhalation: Vapor inhalation is irritating to the respiratory tract and can cause central nervous system depression at high concentrations. Volunteers exposed to 400 ppm for 3 to 5 min experienced mild eye and respiratory irritation. At 800 ppm, irritation was not severe, but most people found the air uncomfortable to breathe.

Eye: Exposure to the vapor or direct contact with the liquid causes irritation and possible corneal burns.

Skin: Some irritation may occur after prolonged exposure.

Ingestion: Accidental ingestions have provided the most information on isopropyl alcohol toxicity. Symptoms include nausea and vomiting, headache, facial flushing, dizziness, lowered blood pressure, mental depression, hallucinations and distorted perceptions, difficulty breathing, respiratory depression, stupor, unconsciousness, and coma. Kidney insufficiency including oliguria (reduced urine excretion), anuria (absent urine excretion), nitrogen retention, and edema (fluid build-up in tissues) may occur. One post-mortem examination in a case of heavy ingestion showed extensive hemorrhagic tracheobronchitis, broncho pneumonia, and hemorrhagic pulmonary edema. Death can occur in 24 to 36 h post-ingestion due to respiratory paralysis.

Carcinogenicity: NTP - Not listed; IARC - Group 3, Not classifiable as to carcinogenicity to humans; OSHA - Not listed; NIOSH - Not listed; ACGIH - Not listed; EPA - Not listed; MAK - Not listed.

Medical Conditions Aggravated by Long-Term Exposure: Dermatitis or respiratory or kidney disorders.

Chronic Effects: Repeated skin contact can cause drying of skin and delayed hypersensitivity reactions in some individuals.

Section 4 - First Aid Measures

Inhalation: Remove exposed person to fresh air and support breathing as needed.

Eye Contact: *Do not* allow victim to rub or keep eyes tightly shut. Gently lift eyelids and flush immediately and continuously with flooding amounts of water until transported to an emergency medical facility. Consult a physician immediately.

Skin Contact: *Quickly* remove contaminated clothing. Rinse with flooding amounts of water for at least 15 min. Wash exposed area with soap and water. For reddened or blistered skin, consult a physician.

Ingestion: Never give anything by mouth to an unconscious or convulsing person. Contact a poison control center. Unless the poison control center advises otherwise, have the *conscious and alert* person drink 1 to 2 glasses of water to dilute. Vomiting may be contraindicated because of the rapid onset of central nervous system depression. Gastric lavage is preferred.

After first aid, get appropriate in-plant, paramedic, or community medical support.

Note to Physicians: Diagnostic test: acetone in urine. Isopropyl alcohol is oxidized in the body to acetone where it is excreted by the lungs or kidneys. Some acetone may be further metabolized to acetate, formate, and finally carbon dioxide. Probable oral lethal dose is 240 mL.

See
DOT
ERG

Section 5 - Fire-Fighting Measures

Flash Point: 53 °F (12 °C), Closed Cup

Burning Rate: 2.3 mm/min.

Autoignition Temperature: 750°F (399°C)

LEL: 2 % v/v

UEL: 12.7 % v/v at 200 °F

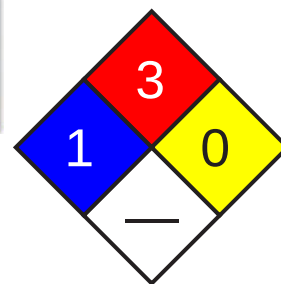
Flammability Classification: Class 1B Flammable Liquid

Extinguishing Media: Carbon dioxide, dry chemical, water *spray* (solid streams can spread fire), alcohol-resistant foam, or fog.

General Fire Hazards/Hazardous Combustion Products: Carbon oxides and acrid smoke. Container may explode in heat of fire. Vapors may travel to an ignition source and flash back. Isopropyl alcohol poses an explosion hazard indoors, outdoors, and in sewers.

Fire-Fighting Instructions: If possible without risk, move container from fire area. Apply cooling water to container side until well after fire is out. Stay away from ends of tanks. For massive fire in cargo area, use monitor nozzles or unmanned hose holders; if impossible, withdraw and let fire burn. Withdraw immediately if you hear a rising sound from venting safety device or notice any tank discoloration due to fire. *Do not* release runoff from fire control methods to sewers or waterways. Because fire may produce toxic thermal decomposition products, wear a self-contained breathing apparatus (SCBA) with a full facepiece operated in pressure-demand or positive-pressure mode. Structural firefighters' protective clothing provides only limited protection.

See
DOT
ERG



Fire Diamond

Section 6 - Accidental Release Measures

Spill/Leak Procedures: Notify safety personnel, isolate and ventilate area, deny entry, and stay upwind. Shut off ignition sources. Cleanup personnel should protect against vapor inhalation and skin/eye contact. Water spray may reduce vapor, but may not prevent ignition in closed spaces.

Small Spills: Take up with earth, sand, vermiculite, or other absorbent, noncombustible material and place in suitable containers.

See
DOT
ERG

Large Spills: For large spills, dike far ahead of liquid spill for later disposal. Do not release into sewers or waterways.

Regulatory Requirements: Follow applicable OSHA regulations (29 CFR 1910.120).

Section 7 - Handling and Storage

Handling Precautions: Use non-sparking tools to open containers.

Never eat, drink, or smoke in work areas. Practice good personal hygiene after using isopropyl alcohol, especially before eating, drinking, smoking, using the toilet, or applying cosmetics.

Recommended Storage Methods: Store in a cool, dry, well-ventilated area away from heat, ignition sources, and incompatibles (Sec 10). Install electrical equipment of Class 1, Group D.

Regulatory Requirements: Follow applicable OSHA regulations.

Section 8 - Exposure Controls / Personal Protection

Engineering Controls: To prevent static sparks, electrically ground and bond all equipment used with and around IPA. Provide general or local exhaust ventilation systems to maintain airborne levels below OSHA PELs (Sec. 2). Local exhaust ventilation is preferred since it prevents contaminant dispersion into the work area by controlling it at its source.

Administrative Controls: Consider preplacement and periodic medical exams of exposed workers with emphasis on the skin, kidneys, and respiratory system. Be extra cautious when using IPA concurrently with carbon tetrachloride because animal studies have shown it enhances carbon tetrachloride's toxicity.

Personal Protective Clothing/Equipment: Wear chemically protective gloves, boots, aprons, and gauntlets to prevent prolonged or repeated skin contact. Nitrile rubber (breakthrough time > 8 hr), Neoprene and Teflon (breakthrough time > 4 hr) are suitable materials for PPE. Do not use PVA, PVC or natural rubber (breakthrough time < 1 hr). Wear protective eyeglasses or chemical safety goggles, per OSHA eye- and face-protection regulations (29 CFR 1910.133). Because contact lens use in industry is controversial, establish your own policy.

Respiratory Protection: Seek professional advice prior to respirator selection and use. Follow OSHA respirator regulations (29 CFR 1910.134) and, if necessary, wear a MSHA/NIOSH-approved respirator. For < 1000 ppm, use any powered, air purifying respirator with organic vapor cartridges or any chemical cartridge respirator with a full facepiece and organic vapor cartridge(s). For < 10,000 ppm, use any supplied-air respirator (SAR) operated in continuous-flow mode. For < 12,000 ppm, use any air-purifying, full facepiece respirator (gas mask) with a chin-style, front-or back-mounted organic vapor canister or any SCBA or SAR with a full facepiece. For emergency or entrance into unknown concentrations, use any SCBA or SAR (with auxiliary SCBA) with a full facepiece and operated in pressure-demand or other positive-pressure mode. For emergency or nonroutine operations (cleaning spills, reactor vessels, or storage tanks), wear an SCBA. *Warning! Air-purifying respirators do not protect workers in oxygen-deficient atmospheres.* If respirators are used, OSHA requires a written respiratory protection program that includes at least: medical certification, training, fit-testing, periodic environmental monitoring, maintenance, inspection, cleaning, and convenient, sanitary storage areas.

Other: Separate contaminated work clothes from street clothes. Launder before reuse. Remove isopropyl alcohol from your shoes and clean personal protective equipment. Make emergency eyewash stations, safety/quick-drench showers, and washing facilities available in work area.

Section 9 - Physical and Chemical Properties

Appearance/General Info: Colorless with a slight odor and bitter taste.

Physical State: Liquid

Odor Threshold: 7.84 to 490 mg/m³

Vapor Pressure (kPa): 44 mm Hg at 25 °F (77 °C)

Formula Weight: 60.09

Density: 0.78505 at 68°F (20 °C)

Refractive Index: 1.375 at 68 °F (20 °C)

Boiling Point: 180.5 °F (82.5 °C)

Freezing/Melting Point: -129.1 °F (-89.5 °C)

Viscosity: 2.1 cP at 77 °F (25 °C)

Surface Tension: 20.8 dyne/cm at 77 °F (25 °C)

Ionization Potential (eV): 10.10 eV

Critical Temperature: 455 °F (235 °C)

Critical Pressure: 47 atm

Water Solubility: > 10 %

Other Solubilities: Soluble in alcohol, ether, chloroform, and benzene. Insoluble in salt solutions.

Section 10 - Stability and Reactivity

Stability/Polymerization/Conditions to Avoid: Isopropyl alcohol is stable at room temperature in closed containers under normal storage and handling conditions. Hazardous polymerization does not occur. Exposure to heat, ignition sources, and incompatibles.

Storage Incompatibilities: Include acetaldehyde, chlorine, ethylene oxide, acids and isocyanates, hydrogen + palladium, nitroform, oleum, phosgene, potassium *t*-butoxide, oxygen (forms unstable peroxides), trinitromethane, barium perchlorate, tetrafluoroborate, chromium trioxide, sodium dichromate + sulfuric acid, aluminum, aluminum triisopropoxide, and oxidizers. Will attack some forms of plastic, rubber, and coatings.

Hazardous Decomposition Products: Thermal oxidative decomposition of isopropyl alcohol can produce carbon oxides and acrid smoke.

Section 11 - Toxicological Information

Acute Oral Effects:

Rat, oral, LD₅₀: 5045 mg/kg caused a change in righting reflex, and somnolence (general depressed activity).

Human, oral, TD_{Lo}: 223 mg/kg caused hallucinations, distorted perceptions, lowered blood pressure, and a change in pulse rate.

Human, oral, LD_{Lo}: 3570 mg/kg caused coma, respiratory depression, nausea, and vomiting.

Irritation Effects:

Rabbit, eye: 100 mg caused severe irritation.

Rabbit, skin: 500 mg caused mild irritation.

Other Effects:

Rat, inhalation: 3500 ppm/7 hr given from 1 to 19 days of pregnancy caused fetotoxicity.

See RTECS NT8050000, for additional data.

Section 12 - Ecological Information

Environmental Fate: On soil, IPA will volatilize or leach into groundwater. Biodegradation is possible but rates are not found in available literature. It will volatilize (est. half-life = 5.4 days) or biodegrade in water. It is not expected to bioconcentrate in fish. In the air, it reacts with photochemically produced hydroxyl radicals with a half-life of one to several days. Because it is soluble, removal by rain, snow or other precipitation is possible.

Ecotoxicity: Guppies (*Poecilia reticulata*) LC₅₀ = 7,060 ppm/7 days; fathead minnow (*Pimephales promelas*) LC₅₀ = 11,830 mg/L/1 hr. BOD = 133 %/5 days.

Octanol/Water Partition Coefficient: log K_{ow} = 0.05

Section 13 - Disposal Considerations

Disposal: Microbial degradation is possible by oxidizing isopropyl alcohol to acetone by members of the genus *Desulfovibrio*. Spray waste into incinerator (permit-approved facilities only) equipped with an afterburner and scrubber. Isopropyl alcohol can be settled out of water spills by salting with sodium chloride. Note: Salt may harm aquatic life, so weigh the benefits against possible harm before application. Contact your supplier or a licensed contractor for detailed recommendations. Follow applicable Federal, state, and local regulations. Triple rinse containers.

Section 14 - Transport Information

DOT Hazardous Materials Table Data (49 CFR 172.101):

Shipping Name and Description: Isopropanol or Isopropyl alcohol

ID: UN1219

Hazard Class: 3 - Flammable and combustible liquid

Packing Group: II - Medium Danger

Symbols:

Label Codes: 3 - Flammable Liquid

Special Provisions: IB2, T4, TP1

Packaging: Exceptions: 150 **Non-bulk:** 202 **Bulk:** 242

Quantity Limitations: **Passenger aircraft/rail:** 5 L **Cargo aircraft only:** 60 L

Vessel Stowage: **Location:** B **Other:**



Section 15 - Regulatory Information

EPA Regulations:

RCRA 40 CFR: Not listed

CERCLA 40 CFR 302.4: Not listed

SARA 40 CFR 372.65: Listed

SARA EHS 40 CFR 355: Not listed

TSCA: Listed

Section 16 - Other Information

Disclaimer: Judgments as to the suitability of information herein for the purchaser's purposes are necessarily the purchaser's responsibility. Although reasonable care has been taken in the preparation of such information, Genium Group, Inc. extends no warranties, makes no representations, and assumes no responsibility as to the accuracy or suitability of such information for application to the purchaser's intended purpose or for consequences of its use.

Section 1 - Chemical Product and Company Identification

61

Material Name: Isobutene

CAS Number: 115-11-7

Chemical Formula: C₄H₈

Structural Chemical Formula: (CH₃)₂C=CH₂

EINECS Number: 204-066-3

ACX Number: X1003822-9

Synonyms: Isobutene; ISOBUTYLENE; ASYM-DIMETHYLETHYLENE; GAMMA-BUTYLENE; 1,1-DIMETHYLETHYLENE; ISO-BUTENE; ISOBUTENE; ISOPROPYLIDENEMETHYLENE; LIQUEFIED PETROLEUM GAS; 2-METHYL-1-PROPENE; 2-METHYLPROPENE; 2-METHYLPROPYLENE; 1-PROPENE,2-METHYL-; PROPENE,2-METHYL-; UNSYM. DIMETHYLETHYLENE

General Use: Production of butene polymers used as adhesives, tackifiers, oil additives.

Butyl rubbers, copolymer resins with butadiene, acrylates and methacrylates.

Also to produce anti-oxidants for foods, food supplements, plastics and in production of isooctane and high-octane aviation gasoline.

Used in closed pressurized systems, fitted with safety relief valve.

Vented gas is flammable, denser than air and will spread. Vent path must not contain ignition sources, pilot lights, bare flames.

Section 2 - Composition / Information on Ingredients

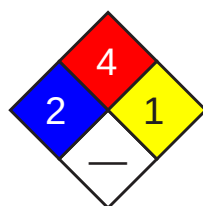
Name	CAS	%
isobutene	115-11-7	>99

OSHA PEL

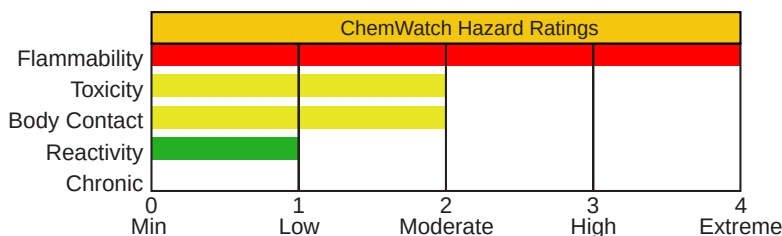
NIOSH REL

ACGIH TLV

Section 3 - Hazards Identification



Fire Diamond



HMIS	
1	Health
4	Flammability
0	Reactivity

ANSI Signal Word

Danger!



Flammable

☆☆☆☆☆ Emergency Overview ☆☆☆☆☆

Colorless gas. Acute Effects: Simple asphyxiant which can displace available oxygen; initial symptoms: rapid respiration, air hunger, diminished mental alertness, impaired muscular coordination. Can form explosive mixtures in air. Flammable.

Potential Health Effects

Target Organs: None reported

Primary Entry Routes: inhalation

Acute Effects

Inhalation: The gas is a simple asphyxiant (precludes access to oxygen) and is harmful if exposure is prolonged and inhalation may cause loss of consciousness.

Acute effects from inhalation of high concentrations of gas / vapor are pulmonary irritation, including coughing, with nausea; central nervous system depression - characterized by headache and dizziness, increased reaction time, fatigue and loss of coordination.

If exposure to highly concentrated atmosphere of gas is prolonged this may lead to narcosis, unconsciousness, even coma, and unless resuscitated, death.

Iso-butene is a simple asphyxiant and may have a narcotic action.

Material is highly volatile and may quickly form concentrated atmosphere in confined or unventilated area. Vapor is heavier than air and may displace and replace air in breathing zone, acting as a simple asphyxiant. This may happen with little warning of overexposure.

Hydrocarbons may sensitize the heart to adrenalin and other circulatory catecholamines; as a result cardiac arrhythmias and ventricular fibrillation may occur. Abrupt collapse may produce traumatic injury.

Central nervous system (CNS) depression may be evident early. Symptoms of moderate poisoning may include giddiness, headache, dizziness and nausea.

Serious poisonings may result in respiratory depression and may be fatal.

The paraffin gases C1-4 are practically non-toxic below their lower flammability limits (18000-50000 ppm). Above this level, incidental effects include CNS depression and irritation but these are reversible upon cessation of the exposure. The C3 and iso-C5 hydrocarbons show increasing narcotic properties; branching of the chain also enhances the effect.

The C4 hydrocarbons appear to be more highly neurotoxic than the C3 and C5 members. Several fatalities due to voluntary inhalation of butane have been reported, possibly due to central, respiratory and circulatory effects resulting from anesthesia, laryngeal edema, chemical pneumonia or the combined effects of cardiac toxicity and increased sympathomimetic effects.

Inhalation of petroleum gases may produce narcosis, due in part to olefinic impurities. Displacement of oxygen in the air may cyanosis.

If present in sufficient quantity these gases may reduce the oxygen level to below 18% producing asphyxiation.

Symptoms include rapid respiration, mental dullness, lack of coordination, poor judgement, nausea and vomiting.

The onset of cyanosis may lead to unconsciousness and death.

Eye: The liquid is highly discomforting and may cause severe cold burns and is capable of causing pain and severe conjunctivitis.

Corneal injury may develop, with possible permanent impairment of vision, if not promptly and adequately treated.

The gas is regarded as non-irritating to the eyes.

Skin: Vaporizing liquid causes rapid cooling and contact may cause cold burns, frostbite. The liquid is discomforting to the skin and may rapidly cause severe cold burns.

Bare unprotected skin should not be exposed to this material.

There is no evidence of skin absorption but contact may cause frostbite,

Ingestion: Overexposure is unlikely in this form.

Considered an unlikely route of entry in commercial/industrial environments.

The liquid is highly discomforting if swallowed and may cause severe cold burns.

Carcinogenicity: NTP - Not listed; IARC - Not listed; OSHA - Not listed; NIOSH - Not listed; ACGIH - Not listed; EPA - Not listed; MAK - Not listed.

Chronic Effects: Chronic overexposure may produce dermatitis.

Section 4 - First Aid Measures

Inhalation: Avoid becoming a casualty and remove to fresh air.

Lay patient down. If breathing is shallow or has stopped, ensure clear airway and apply resuscitation.

If available, medical oxygen should be administered by trained personnel.

Transport to hospital or doctor, without delay.

Eye Contact: Immediately hold the eyes open and flush continuously for at least 15 minutes with fresh running water. Ensure irrigation under eyelids by occasionally lifting the upper and lower lids.

Transport to hospital or doctor without delay. Removal of contact lenses after an eye injury should only be undertaken by skilled personnel.

Skin Contact: In case of cold burns (frost-bite): Bathe the affected area immediately in cold water for 10 to 15 minutes, immersing if possible and without rubbing.

Do not apply hot water or radiant heat. Apply a clean, dry dressing.

Transport to hospital or doctor.

Ingestion: Contact a Poison Control Center. DO NOT induce vomiting. Observe the patient carefully. Never give liquid to a person showing signs of being sleepy or with reduced awareness; i.e. becoming unconscious. Give water (or milk) to rinse out mouth. Then provide liquid slowly and as much as casualty can comfortably drink. Transport to hospital or doctor without delay.

After first aid, get appropriate in-plant, paramedic, or community medical support.

Note to Physicians: For acute or short-term repeated exposures to petroleum distillates or related hydrocarbons:

1.Primary threat to life from pure petroleum distillate ingestion and/or inhalation is respiratory failure.

See
DOT
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2. Patients should be quickly evaluated for signs of respiratory distress (e.g. cyanosis, tachypnea, intercostal retraction, obtundation) and given oxygen. Patients with inadequate tidal volumes or poor arterial blood gases ($pO_2 < 50$ mm Hg or $pCO_2 > 50$ mm Hg) should be intubated.
 3. Arrhythmias complicate some hydrocarbon ingestion and/or inhalation and electrocardiographic evidence of myocardial injury has been reported; intravenous lines and cardiac monitors should be established in obviously symptomatic patients. The lungs excrete inhaled solvents, so that hyperventilation improves clearance.
 4. A chest x-ray should be taken immediately after stabilization of breathing and circulation to document aspiration and detect the presence of pneumothorax.
 5. Epinephrine (adrenalin) is not recommended for treatment of bronchospasm because of potential myocardial sensitization to catecholamines.
- Inhaled cardioselective bronchodilators (e.g. Alupent, Salbutamol) are the preferred agents, with aminophylline a second choice.
6. Lavage is indicated in patients who require decontamination; ensure use of cuffed endotracheal tube in adult patients.

Section 5 - Fire-Fighting Measures

Flash Point: -76.111 °C

Autoignition Temperature: 465 °C

LEL: 1.8% v/v

UEL: 9.6% v/v

Extinguishing Media: Water spray or fog; dry chemical powder.

Carbon dioxide.

Foam.

General Fire Hazards/Hazardous Combustion Products: Flammable gas. Liquid and vapor are highly flammable.

Dangerous hazard when exposed to heat, flame and oxidizers.

Gas may form explosive mixtures with air over a wide area.

Decomposes on heating and produces toxic fumes of carbon monoxide (CO) and carbon dioxide (CO₂).

Fire Incompatibility: Avoid contamination with oxidizing agents i.e. nitrates, oxidizing acids, chlorine bleaches, pool chlorine etc. as ignition may result.

Fire-Fighting Instructions: Contact fire department and tell them location and nature of hazard.

May be violently or explosively reactive. Wear full body protective clothing with breathing apparatus. Prevent, by any means available, spillage from entering drains or waterways. Consider evacuation.

Do not extinguish burning gas. If safe to do so, stop flow of gas.

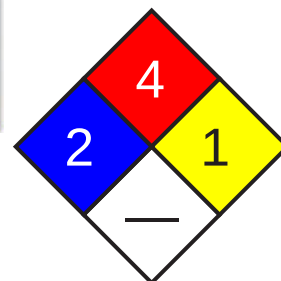
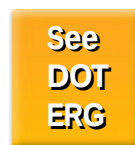
If flow of gas cannot be stopped, leave gas to burn.

Cool fire-exposed containers with water spray from a protected location.

Do not approach cylinders suspected to be hot.

If safe to do so, remove containers from path of fire.

Fight fire from a safe distance, with adequate cover.



Fire Diamond

Section 6 - Accidental Release Measures

Small Spills: Avoid breathing vapor and any contact with liquid or gas. Protective equipment including respirator should be used. Do NOT enter confined spaces where gas may have accumulated. Shut off all sources of possible ignition and increase ventilation. Clear area of personnel. Stop leak only if safe to do so. Remove leaking cylinders to safe place. Release pressure under safe controlled conditions by opening valve. Keep area clear of personnel until gas has dispersed.

Large Spills: DO NOT touch the spill material. Shut off all possible sources of ignition and increase ventilation. Restrict access to area. Clear area of personnel and move upwind.

May be violently or explosively reactive. Wear full body protective clothing with breathing apparatus. Prevent, by any means available, spillage from entering drains or waterways. Consider evacuation.

Avoid spraying water onto liquid pools.

Use extreme caution to avoid a violent reaction.

Stop leak if safe to do so.

DO NOT enter confined places where gas may have collected. Remove leaking cylinders to a safe place. Fit vent pipes. Release pressure under safe, controlled conditions by opening valve. Burn issuing gas at vent pipes.

Do not exert excessive pressure on valve; do not attempt to operate damaged valve.

Keep area clear of personnel until gas has dispersed

Regulatory Requirements: Follow applicable OSHA regulations (29 CFR 1910.120).



Section 7 - Handling and Storage

Handling Precautions: Use good occupational work practices. Use in a well-ventilated area.

Obtain a work permit before attempting any repairs.
 Do not attempt repair work on lines, vessels under pressure.
 Atmospheres must be tested and O.K. before work resumes after leakage.
 Wear protective clothing and gloves when handling containers.
 No smoking, bare lights, heat or ignition sources.
 Use spark-free tools when handling. Ground all lines and equipment.
 Prevent concentration in hollows and sumps. DO NOT enter confined spaces until atmosphere has been checked.
 Gas may travel a considerable distance to source of ignition.
 Vapor may ignite on pumping or pouring due to static electricity.
 Avoid physical damage to containers.
 DO NOT transfer gas from one cylinder to another.
 Natural gases contain a contaminant, radon-222, a naturally occurring radioactive gas. During subsequent processing, radon tends to concentrate in liquified petroleum streams and in product streams having similar boiling points. Industry experience indicates that the commercial product may contain small amounts of radon-222 and its radioactive decay products (radon daughters). The actual concentration of radon-222 and radioactive daughters in process equipment (IE lines, filters, pumps and reactor units) may reach significant levels and produce potentially damaging levels of gamma radiation. A potential external radiation hazard exists at or near any pipe, valve or vessel containing a radon enriched stream or containing internal deposits of radioactive material. Field studies, however, have not shown that conditions exist that expose the worker to cumulative exposures in excess of general population limits. Equipment containing gamma-emitting decay products should be presumed to be internally contaminated with alpha- emitting decay products which may be hazardous if inhaled or ingested.
 During maintenance operations that require the opening of contaminated process equipment, the flow of gas should be stopped and a four hour delay enforced to allow gamma-radiation to drop to background levels. Protective equipment (including high efficiency particulate respirators (P3) suitable for radionucleotides or supplied air) should be worn by personnel entering a vessel or working on contaminated process equipment to prevent skin contamination or inhalation of any residue containing alpha-radiation.
 Airborne contamination may be minimized by handling scale and/or contaminated materials in a wet state.
Recommended Storage Methods: Packaging as recommended by manufacturer.
 Check that containers are clearly labeled.
 Cylinder fitted with valve protector cap.
 Ensure the use of equipment rated for cylinder pressure.
 Ensure the use of compatible materials of construction.
 Cylinder valve must be closed when not in use or when empty.
 Cylinder must be properly secured either in use or in storage.
 WARNING: Suckback into cylinder may result in rupture.
 Use back-flow preventive device in piping.
Regulatory Requirements: Follow applicable OSHA regulations.

Section 8 - Exposure Controls / Personal Protection

Engineering Controls: Use in a well-ventilated area If gas concentrations are high: or If risk of overexposure exists, wear NIOSH-approved respirator.
 Correct fit is essential to obtain adequate protection.
 Used in closed pressurized systems; fitted with temperature and pressure safety relief valves which are vented to allow safe dispersal.
 Provide adequate ventilation in warehouse or closed storage areas.
Personal Protective Clothing/Equipment:
Eyes: Safety glasses with side shields; or as required, chemical goggles.
 Contact lenses pose a special hazard; soft lenses may absorb irritants and all lenses concentrate them.
Hands/Feet: Protective gloves eg. leather gloves or gloves with leather facing. Neoprene rubber gloves.
 Safety footwear.
Other: Operators should be trained in correct use & maintenance of respirators Ensure that there is ready access to breathing apparatus.
 Protective overalls, closely fitted at neck and wrist. Eye-wash unit.
IN CONFINED SPACES:
 1. Non-sparking protective boots.
 2. Static-free clothing.
 3. Ensure availability of lifeline.
 Staff should be trained in all aspects of rescue work.
 Ensure there is ready access to an emergency shower.

Section 9 - Physical and Chemical Properties

Appearance/General Info: Easily liquified flammable gas or colorless highly volatile liquid. Packed as liquid under pressure and remains liquid only under pressure. Sudden release of pressure or leakage may result in rapid vaporization with generation of large volume of highly flammable / explosive gas. Strong gasoline odor. Floats and boils on water giving a flammable / explosive, visible cloud. Soluble in alcohol, ether, benzene and sulphuric acid.

Physical State: Liquefied gas

pH: Not applicable

Odor Threshold: 1.3 to 3.0 mg/m³

pH (1% Solution): Not applicable.

Vapor Pressure (kPa): 182 kPa at 10 °C

Boiling Point: -6.9 °C (20 °F)

Vapor Density (Air=1): 2.01

Freezing/Melting Point: -140.35 °C (-220.63 °F)

Formula Weight: 56.11

Volatile Component (% Vol): 100

Specific Gravity (H₂O=1, at 4 °C): 0.59

Water Solubility: Practically insoluble in water

Evaporation Rate: Very rapid

Section 10 - Stability and Reactivity

Stability/Polymerization/Conditions to Avoid: Product is considered stable. Hazardous polymerization will not occur.

Storage Incompatibilities: Avoid contact with oxidizing agents.

The interaction of alkenes and alkynes with nitrogen oxides and oxygen may produce explosive addition products; these may form at very low temperatures and explode on heating to higher temperatures (the addition products from 1,3-butadiene and cyclopentadiene form rapidly at -150 °C and ignite or explode on warming to -35 to -15 °C). These derivatives ("pseudo- nitrosites") were formerly used to characterize terpene hydrocarbons.

Exposure to air must be kept to a minimum so as to limit the build-up of peroxides which will concentrate in bottoms if the product is distilled.

The product must not be distilled to dryness if the peroxide concentration is substantially above 10 ppm (as active oxygen) since explosive decomposition may occur. Distillate must be immediately inhibited to prevent peroxide formation. The effectiveness of the antioxidant is limited once the peroxide levels exceed 10 ppm as active oxygen. Addition of more inhibitor at this point is generally ineffective.

Prior to distillation it is recommended that the product should be washed with aqueous ferrous ammonium sulfate to destroy peroxides; the washed product should be immediately re-inhibited.

A range of exothermic decomposition energies for double bonds is given as 40-90 kJ/mol. The relationship between energy of decomposition and processing hazards has been the subject of discussion; it is suggested that values of energy released per unit of mass, rather than on a molar basis (J/g) be used in the assessment. For example, in "open vessel processes" (with man-hole size openings, in an industrial setting), substances with exothermic decomposition energies below 500 J/g are unlikely to present a danger, whilst those in "closed vessel processes" (opening is a safety valve or bursting disk) present some danger where the decomposition energy exceeds 150 J/g.

Avoid reactions with oxidizing agents, organic acids, inorganic acids halogenated compounds, polymerizable esters, oxygen, cyanohydrins and molten sulphur.

Section 11 - Toxicological Information

Toxicity

Inhalation (rat) LC₅₀: 620000 mg/m³/4h

Irritation

Nil reported

See RTECS UD 0890000, for additional data.

Section 12 - Ecological Information

Environmental Fate: No data found.

Ecotoxicity: No data found.

BCF: no food chain concentration potential

Biochemical Oxygen Demand (BOD): none

Section 13 - Disposal Considerations

Disposal: Consult manufacturer for recycling options.

Discharge to burning flare. Return empty cylinders to supplier.

Section 14 - Transport Information

DOT Hazardous Materials Table Data (49 CFR 172.101):

Note: This material has multiple possible HMT entries. Choose the appropriate one based on state and condition of specific material when shipped.

Shipping Name and Description: Isobutylene *see also* Petroleum gases, liquefied

ID: UN1055

Hazard Class: 2.1 - Flammable gas

Packing Group:

Symbols:

Label Codes: 2.1 - Flammable Gas

Special Provisions: 19, T50

Packaging: Exceptions: 306 **Non-bulk:** 304 **Bulk:** 314, 315

Quantity Limitations: Passenger aircraft/rail: Forbidden

Cargo aircraft only: 150 kg

Vessel Stowage: Location: E Other: 40



Shipping Name and Description: Petroleum gases, liquefied *or* Liquefied petroleum gas

ID: UN1075

Hazard Class: 2.1 - Flammable gas

Packing Group:

Symbols:

Label Codes: 2.1 - Flammable Gas

Special Provisions: T50

Packaging: Exceptions: 306 **Non-bulk:** 304 **Bulk:** 314, 315

Quantity Limitations: Passenger aircraft/rail: Forbidden

Cargo aircraft only: 150 kg

Vessel Stowage: Location: E Other:



Section 15 - Regulatory Information

EPA Regulations:

RCRA 40 CFR: Not listed

CERCLA 40 CFR 302.4: Not listed

SARA 40 CFR 372.65: Not listed

SARA EHS 40 CFR 355: Not listed

TSCA: Listed

Section 16 - Other Information

Disclaimer: Judgments as to the suitability of information herein for the purchaser's purposes are necessarily the purchaser's responsibility. Although reasonable care has been taken in the preparation of such information, Genium Group, Inc. extends no warranties, makes no representations, and assumes no responsibility as to the accuracy or suitability of such information for application to the purchaser's intended purpose or for consequences of its use.

Material Safety Data Sheet

Section 1 – Chemical Product and Company Identification

Catalog Numbers: CS7000-A, CS7000-B, CS7000-C, CS7000-D, CS7000-P, CS7000-Q, CS7000-G, CS7000-T

Product Identity: Conductivity Std., 7000 umho/cm

Chemical Family: Not Applicable

Synonyms: Not Applicable

Recommended Use: Laboratory chemicals

Manufacturer's Name: AquaPhoenix Scientific, Inc., 9 Barnhart Dr., Hanover, PA 17331, (866) 632-1291
Emergency Contact Number (24hr): Chemtel (800) 255-3924

Issue Date: 01/08/07

Revision Date: 06/05/08, 05/12/10, 02/19/12

Section 2 – Hazard Identification

Emergency Overview: Non-flammable, non-corrosive, non-toxic. Does not present significant health hazards. Wash areas of contact with water.

Appearance: Clear, colorless liquid

Odor: Odorless

Target Organs: Eyes, skin

Potential Health Effects/ Routes of Exposure:

Eyes: May cause slight irritation.

Skin: May cause slight irritation.

Ingestion: Large doses may cause upset stomach.

Inhalation: Not likely to be a hazard.

Chronic Effect / Carcinogenicity: None (IARC, NTP, OSHA)

Aggravated Medical Conditions No information available

These chemicals are not considered hazardous by OSHA.

See section 11 for toxicological information. See section 12 for potential environmental effects.

Section 3 – Composition, Information on Ingredients

Potassium Chloride, CAS# 7447-40-7, < 0.5% w/v

Water, purified, CAS# 7732-18-5, >99% w/v

Section 4 – First Aid

Eyes: Immediately flush eyes with water for at least 15 minutes. Immediately get medical assistance.

Skin: Flush with water for 15 minutes. Get medical assistance if irritation develops.

Ingestion: DO NOT induce vomiting. Dilute with water or milk. Get medical assistance.

Inhalation: Remove to fresh air. Give artificial respiration if necessary. If breathing is difficult, give oxygen.

Notes to Physician Treat symptomatically.

Section 5 – Fire Fighting Measures

Flash Point: Not Applicable **Autoignition Temperature** No information available.

Explosion Limits Upper No data available **Lower** No data available

Extinguishing Media: Use means suitable to extinguishing surrounding fire.

Unsuitable Extinguishing Media: No information available

Fire & Explosion Hazards: Not considered to be a fire or explosion hazard.

Fire Fighting Instructions / Equipment: Use normal procedures. Use protective clothing. Use NIOSH-approved breathing equipment.

Hazardous Combustion Products: No information Available
Sensitivity to mechanical impact No information available.
Sensitivity to static discharge No information available.
Specific Hazards Arising from the Chemical: No information available
NFPA Rating: (estimated) Health: 1; Flammable: 0; Reactivity: 0

Section 6 – Accidental Release Measures

Personal Precautions Use personal protective equipment. Ensure adequate ventilation. Avoid contact with skin, eyes and clothing.
Environmental Precautions Not relevant considering the small amounts used.
Methods for Containment and Clean Up Absorb with suitable material. Always obey local regulations. Always obey local regulations.

Section 7 – Handling and Storage

Handling: Wash hands after handling. Avoid contact with skin and eyes.
Storage: Protect from freezing and physical damage.

Section 8 – Exposure Controls, Personal Protection

Potassium Chloride, CAS# 7447-40-7, ACGIH TLV: NA, OSHA PEL: NA
Water, purified, CAS# 7732-18-5, ACGIH TLV: NA, OSHA PEL: NA

Engineering Measures/ General Hygiene: Normal ventilation is adequate. Ensure eyewash and safety showers are available.
Personal Protection Equipment: Skin Protection: Chemical resistant gloves.
Eye/Face Protection: Safety Glasses or goggles. **Respiratory Protection:** Normal ventilation is adequate

Section 9 – Physical and Chemical Properties

Appearance/Physical State: Clear, colorless liquid	
Odor: Odorless	% Volatility: No Information Available
Boiling Point: Approx 100.1C	Specific Gravity: 1-1.01
Melting Point: Approx (-6)-0 C	Vapor Pressure: No Information Available
Vapor Density: No Information Available	Flash Point: Not Applicable
Evaporation Rate: No Information Available	Coefficient of water/oil distribution: Not Available
pH: Not Available	Odor Threshold: Not Available
Flammability: No Information Available	Decomposition Temperature: No Information Available
Solubility: Infinite	Partition Coefficient n-octanol/water: No data
available	
Relative Density: No Information Available	Molecular Weight: Not available

Section 10 – Stability and Reactivity

Chemical Stability: Stable under normal conditions of use and storage.
Incompatible Materials Strong Oxidizing agents, Lithium, Bromine, Trifluoride.
Conditions to Avoid: No Information Available.
Hazardous Decomposition Products: Oxides of Sodium and fumes of Chloride.
Hazardous Polymerization: Does not occur
Hazardous Reactions: None under normal processing.

Section 11 – Toxicological Information

Routes of Exposure/Symptoms/Corrosiveness – See Section 2
LD50 orl-rat: 3020 mg/kg LC50 inhalation-rat: Not Available
Irritation: No Information Available
Toxicologically Synergistic: No Information Available
Chronic Exposure

Carcinogenicity No Information Available
Sensitization No information available.
Mutagenic Effects No information available.
Reproductive Effects No information available.
Developmental Effects (Immediate/Delayed) No information available.
Teratogenicity No information available.
Other Adverse Effects No Information Available.
Endocrine Disruptor Information No information available

Section 12 – Ecological Information

Ecotoxicity: Not Available.
Persistence and Degradability: No Information Available **Mobility:** No Information Available
Bioaccumulation/ Accumulation: No Information Available

Section 13 – Disposal Considerations

Waste Disposal/Waste Disposal of Packaging: Dilute with water.
All chemical waster generators must determine whether a discarded chemical is classified as hazardous waste. Comply with all local, state, and federal regulations.

Section 14 – Transport Information

DOT - Not Regulated

Section 15 – Regulatory Information (not meant to be all inclusive)

OSHA Status: These chemicals are not considered hazardous by OSHA.
Canada DSL: These chemicals are listed on the Canada DSL list.
TSCA: The components of this solution are listed on the TSCA Inventory
SARA Title III Section 313: Not Applicable
RCRA Status: Not Applicable
CERCLA Reportable Quantity: Not Applicable
WHMIS: Not Applicable.
This product has been classified in accordance with the hazard criteria of the CPR and the MSDS contains all the information required by the CPR

Section 16 – Additional Information

Disclaimer: The information on this MSDS applies to this specific material as supplied. It may not be valid for this material if it is used in combination with any other materials. It is the user's responsibility to determine the suitability and completeness of this information for his own particular use. No warranty is implied regarding the accuracy of the data or the results to be obtained from the products use.

Material Safety Data Sheet

Section 1 – Chemical Product and Company Identification

Catalog Numbers: BU5004-A, BU5004-B, BU5004-C, BU5004-D, BU5004-P, BU5004-Q, BU5004-G, BU5004-T

Product Identity: Buffer Solution, pH 4.00

Chemical Family: Not Applicable

Synonyms: Not Applicable

Recommended Use: Laboratory chemicals

Manufacturer's Name: AquaPhoenix Scientific, Inc., 9 Barnhart Dr., Hanover, PA 17331, (866) 632-1291
Emergency Contact Number (24hr): Chemtel (800) 255-3924

Issue Date: 12/28/06

Revision Date: 6/5/08, 02/25/10, 09/14/10, 02/19/12

Section 2 – Hazard Identification

Emergency Overview: Non-flammable, non-corrosive, non-toxic. Does not present significant health hazards. Wash areas of contact with water.

Appearance: Clear, reddish liquid

Odor: Odorless

Target Organs: Eyes, skin

Potential Health Effects/ Routes of Exposure:

Eyes: May cause slight irritation.

Skin: May cause slight irritation.

Ingestion: May cause diarrhea, nausea, vomiting, and cramps.

Inhalation: Not likely to be a hazard.

Chronic Effect / Carcinogenicity: None (IARC, NTP, OSHA)

Aggravated Medical Conditions No information available

These chemicals are not considered hazardous by OSHA.

See section 11 for toxicological information. See section 12 for potential environmental effects.

Section 3 – Composition, Information on Ingredients

Potassium Acid Phthalate, CAS# 877-24-7, <1% w/v

Water, purified, CAS# 7732-18-5, >98% w/v

Section 4 – First Aid

Eyes: Immediately flush eyes with water for at least 15 minutes. Immediately get medical assistance.

Skin: Flush with water for 15 minutes. Get medical assistance if irritation develops.

Ingestion: DO NOT induce vomiting. Dilute with water or milk. Get medical assistance.

Inhalation: Remove to fresh air. Give artificial respiration if necessary. If breathing is difficult, give oxygen.

Notes to Physician Treat symptomatically.

Section 5 – Fire Fighting Measures

Flash Point: Not Applicable **Autoignition Temperature** No information available.

Explosion Limits Upper No data available **Lower** No data available

Extinguishing Media: Use means suitable to extinguishing surrounding fire.

Unsuitable Extinguishing Media: No information available

Fire & Explosion Hazards: Not considered to be a fire or explosion hazard.

Fire Fighting Instructions / Equipment: Use normal procedures. Use protective clothing. Use NIOSH-approved breathing equipment.

Hazardous Combustion Products: No information Available

Sensitivity to mechanical impact No information available.

Sensitivity to static discharge No information available.

Specific Hazards Arising from the Chemical: No information available

NFPA Rating: (estimated) Health: 1; Flammable: 0; Reactivity: 0

Section 6 – Accidental Release Measures

Personal Precautions Use personal protective equipment. Ensure adequate ventilation. Avoid contact with skin, eyes and clothing.

Environmental Precautions No information available.

Methods for Containment and Clean Up Absorb with suitable material. Always obey local regulations.

Section 7 – Handling and Storage

Handling: Wash hands after handling. Avoid contact with skin and eyes.

Storage: Protect from freezing and physical damage.

Section 8 – Exposure Controls, Personal Protection

Potassium Acid Phthalate, CAS# 877-24-7, ACGIH TLV: NA, OSHA PEL: NA

Water, purified, CAS# 7732-18-5, ACGIH TLV: NA, OSHA PEL: NA

Engineering Measures/ General Hygiene: Normal ventilation is adequate. Ensure eyewash and safety showers are available.

Personal Protection Equipment: Skin Protection: Chemical resistant gloves.

Eye/Face Protection: Safety Glasses or goggles. **Respiratory Protection:** Normal ventilation is adequate

Section 9 – Physical and Chemical Properties

Appearance/Physical State: Clear, reddish liquid

Odor: Odorless

Boiling Point: Approx 100C

Melting Point: Approx 0 C

Vapor Density: No Information Available

Evaporation Rate: No Information Available

pH: 4.0

Flammability: No Information Available

Solubility: Infinite

available

Relative Density: No Information Available

% Volatility: No Information Available

Specific Gravity: Approx 1

Vapor Pressure: No Information Available

Flash Point: Not Applicable

Coefficient of water/oil distribution: Not Available

Odor Threshold: Not Available

Decomposition Temperature: No Information Available

Partition Coefficient n-octanol/water: No data

Molecular Weight: Not available

Section 10 – Stability and Reactivity

Chemical Stability: Stable under normal conditions of use and storage.

Incompatible Materials Nitric Acid.

Conditions to Avoid: No Information Available.

Hazardous Decomposition Products: Oxides of potassium and carbon.

Hazardous Polymerization: Does not occur

Hazardous Reactions: None under normal processing.

Section 11 – Toxicological Information

Routes of Exposure/Symptoms/Corrosiveness – See Section 2

LD50 orl-rat: 3200 mg/kg (Potassium Acid Phthalate)

LC50 inhalation-rat: NA

Irritation: No Information Available

Toxicologically Synergistic: No Information Available

Chronic Exposure

Carcinogenicity No Information Available

Sensitization No information available.

Mutagenic Effects No information available.

Reproductive Effects No information available.

Developmental Effects (Immediate/Delayed) No information available.

Teratogenicity No information available.

Other Adverse Effects No Information Available.

Endocrine Disruptor Information No information available

Section 12 – Ecological Information

Ecotoxicity: Not Available.

Persistence and Degradability: No Information Available

Mobility: No Information Available

Bioaccumulation/ Accumulation: No Information Available

Section 13 – Disposal Considerations

Waste Disposal/Waste Disposal of Packaging: Dilute with water.

All chemical waster generators must determine whether a discarded chemical is classified as hazardous waste. Comply with all local, state, and federal regulations.

Section 14 – Transport Information

DOT - Not Regulated

Section 15 – Regulatory Information (not meant to be all inclusive)

OSHA Status: These chemicals are not considered hazardous by OSHA.

Canada DSL: These chemicals are listed on Canada's DSL list.

TSCA: The components of this solution are listed on the TSCA Inventory

SARA Title III Section 313: Not Applicable

RCRA Status: Not Applicable

CERCLA Reportable Quantity: Not Applicable

WHMIS: Not Applicable.

This product has been classified in accordance with the hazard criteria of the CPR and the MSDS contains all the information required by the CPR

Section 16 – Additional Information

Disclaimer: The information on this MSDS applies to this specific material as supplied. It may not be valid for this material if it is used in combination with any other materials. It is the user's responsibility to determine the suitability and completeness of this information for his own particular use. No warranty is implied regarding the accuracy of the data or the results to be obtained from the products use.

Material Safety Data Sheet

Section 1 – Chemical Product and Company Identification

Catalog Numbers: BU5010-A, BU5010-B, BU5010-C, BU5010-D, BU5010-P, BU5010-Q, BU5010-G, BU5010-T

Product Identity: Buffer Solution, pH 10.00

Chemical Family: Not Applicable

Synonyms: Not Applicable

Recommended Use: Laboratory chemicals

Manufacturer's Name: AquaPhoenix Scientific, Inc., 9 Barnhart Dr., Hanover, PA 17331, (866) 632-1291
Emergency Contact Number (24hr): Chemtel (800) 255-3924

Issue Date: 12/28/06

Revision Date: 6/5/08, 06/03/10, 02/19/12

Section 2 – Hazard Identification

Emergency Overview: Non-flammable, non-corrosive, non-toxic. Does not present significant health hazards. Wash areas of contact with water.

Appearance: Clear, blue liquid **Odor:** Odorless

Target Organs: Eyes, skin

Potential Health Effects/ Routes of Exposure:

Eyes: May cause slight irritation.

Skin: May cause slight irritation.

Ingestion: May cause diarrhea, nausea, vomiting, and cramps.

Inhalation: Not likely to be a hazard.

Chronic Effect / Carcinogenicity: None (IARC, NTP, OSHA)

Aggravated Medical Conditions No information available

These chemicals are not considered hazardous by OSHA.

See section 11 for toxicological information. See section 12 for potential environmental effects.

Section 3 – Composition, Information on Ingredients

Sodium Bicarbonate, CAS# 144-55-8, <0.5% w/v

Sodium Carbonate, CAS# 497-19-8, <0.5% w/v

Water, purified, CAS# 7732-18-5, >99% w/v

Section 4 – First Aid

Eyes: Immediately flush eyes with water for at least 15 minutes. Immediately get medical assistance.

Skin: Flush with water for 15 minutes. Get medical assistance if irritation develops.

Ingestion: DO NOT induce vomiting. Dilute with water or milk. Get medical assistance.

Inhalation: Remove to fresh air. Give artificial respiration if necessary. If breathing is difficult, give oxygen.

Notes to Physician Treat symptomatically.

Section 5 – Fire Fighting Measures

Flash Point: Not Applicable **Autoignition Temperature** No information available.

Explosion Limits Upper No data available **Lower** No data available

Extinguishing Media: Use means suitable to extinguishing surrounding fire.

Unsuitable Extinguishing Media: No information available

Fire & Explosion Hazards: Not considered to be a fire or explosion hazard.

Fire Fighting Instructions / Equipment: Use normal procedures. Use protective clothing. Use NIOSH-approved breathing equipment.

Hazardous Combustion Products: No information Available

Sensitivity to mechanical impact No information available.

Sensitivity to static discharge No information available.

Specific Hazards Arising from the Chemical: No information available

NFPA Rating: (estimated) Health: 1; Flammable: 0; Reactivity: 0

Section 6 – Accidental Release Measures

Personal Precautions Use personal protective equipment. Ensure adequate ventilation. Avoid contact with skin, eyes and clothing.

Environmental Precautions No information available.

Methods for Containment and Clean Up Absorb with suitable material. Always obey local regulations.

Section 7 – Handling and Storage

Handling: Wash hands after handling. Avoid contact with skin and eyes.

Storage: Protect from freezing and physical damage.

Section 8 – Exposure Controls, Personal Protection

Sodium Bicarbonate, CAS# 144-55-8, ACGIH TLV: NA, OSHA PEL: NA

Sodium Carbonate, CAS# 497-19-8, ACGIH TLV: NA, OSHA PEL: NA

Water, purified, CAS# 7732-18-5, ACGIH TLV: NA, OSHA PEL: NA

Engineering Measures/ General Hygiene: Normal ventilation is adequate. Ensure eyewash and safety showers are available.

Personal Protection Equipment: Skin Protection: Chemical resistant gloves.

Eye/Face Protection: Safety Glasses or goggles. **Respiratory Protection:** Normal ventilation is adequate

Section 9 – Physical and Chemical Properties

Appearance/Physical State: Clear, blue liquid

Odor: Odorless

Boiling Point: Approx 100C

Melting Point: Approx 0 C

Vapor Density: No Information Available

Evaporation Rate: No Information Available

pH: 10.0

Flammability: No Information Available

Solubility: Infinite
available

Relative Density: No Information Available

% Volatility: No Information Available

Specific Gravity: Approx 1

Vapor Pressure: No Information Available

Flash Point: Not Applicable

Coefficient of water/oil distribution: Not Available

Odor Threshold: Not Available

Decomposition Temperature: No Information Available

Partition Coefficient n-octanol/water: No data

Molecular Weight: Not available

Section 10 – Stability and Reactivity

Chemical Stability: Stable under normal conditions of use and storage.

Incompatible Materials None identified.

Conditions to Avoid: No Information Available.

Hazardous Decomposition Products: Oxides of sodium.

Hazardous Polymerization: Does not occur

Hazardous Reactions: None under normal processing.

Section 11 – Toxicological Information

Routes of Exposure/Symptoms/Corrosiveness – See Section 2

LD50 orl-rat: 4090 mg/kg (Sodium Carbonate), 4220 mg/kg (Sodium Bicarbonate) LC50 inhalation-rat: NA

Irritation: No Information Available

Toxicologically Synergistic: No Information Available

Chronic Exposure

Carcinogenicity No Information Available

Sensitization No information available.

Mutagenic Effects No information available.

Reproductive Effects No information available.

Developmental Effects (Immediate/Delayed) No information available.

Teratogenicity No information available.

Other Adverse Effects No Information Available.

Endocrine Disruptor Information No information available

Section 12 – Ecological Information

Ecotoxicity: Not Available.

Persistence and Degradability: No Information Available

Mobility: No Information Available

Bioaccumulation/ Accumulation: No Information Available

Section 13 – Disposal Considerations

Waste Disposal/Waste Disposal of Packaging: Dilute with water.

All chemical waster generators must determine whether a discarded chemical is classified as hazardous waste. Comply with all local, state, and federal regulations.

Section 14 – Transport Information

DOT - Not Regulated

Section 15 – Regulatory Information (not meant to be all inclusive)

OSHA Status: These chemicals are not considered hazardous by OSHA.

Canada DSL: These chemicals are listed on Canada's DSL list.

TSCA: The components of this solution are listed on the TSCA Inventory

SARA Title III Section 313: Not Applicable

RCRA Status: Not Applicable

CERCLA Reportable Quantity: None Reported

WHMIS: Not Applicable.

This product has been classified in accordance with the hazard criteria of the CPR and the MSDS contains all the information required by the CPR

Section 16 – Additional Information

Disclaimer: The information on this MSDS applies to this specific material as supplied. It may not be valid for this material if it is used in combination with any other materials. It is the user's responsibility to determine the suitability and completeness of this information for his own particular use. No warranty is implied regarding the accuracy of the data or the results to be obtained from the products use.

Material Safety Data Sheet

Section 1 – Chemical Product and Company Identification

Catalog Numbers: BU5007-A, BU5007-B, BU5007-C, BU5007-D, BU5007-P, BU5007-Q, BU5007-G, BU5007-T

Product Identity: Buffer Solution, pH 7.00

Chemical Family: Not Applicable

Synonyms: Not Applicable

Recommended Use: Laboratory chemicals

Manufacturer's Name: AquaPhoenix Scientific, Inc., 9 Barnhart Dr., Hanover, PA 17331, (866) 632-1291
Emergency Contact Number (24hr): Chemtel (800) 255-3924

Issue Date: 12/28/06

Revision Date: 06/24/09, 08/26/10, 02/19/12, 08/02/12

Section 2 – Hazard Identification

Emergency Overview: Non-flammable, non-corrosive, non-toxic. Does not present significant health hazards. Wash areas of contact with water.

Appearance: Clear, yellowish liquid

Odor: Odorless

Target Organs: Eyes, skin

Potential Health Effects/ Routes of Exposure:

Eyes: May cause slight irritation.

Skin: May cause slight irritation.

Ingestion: May cause diarrhea, nausea, vomiting, and cramps.

Inhalation: Not likely to be a hazard.

Chronic Effect / Carcinogenicity: None (IARC, NTP, OSHA)

Aggravated Medical Conditions No information available

These chemicals are not considered hazardous by OSHA.

See section 11 for toxicological information. See section 12 for potential environmental effects.

Section 3 – Composition, Information on Ingredients

Sodium Hydroxide, CAS# 1310-73-2, <1% v/v

Potassium Phosphate, Monobasic, CAS# 7778-77-0, <1% w/v

Sorbic Acid, CAS# 110-44-1, <1% w/v

Water, purified, CAS# 7732-18-5, >99% w/v

Section 4 – First Aid

Eyes: Immediately flush eyes with water for at least 15 minutes. Get medical assistance immediately.

Skin: Flush with water for 15 minutes. Get medical assistance if irritation develops.

Ingestion: DO NOT induce vomiting. Dilute with water or milk. Get medical assistance.

Inhalation: Remove to fresh air. Give artificial respiration if necessary. If breathing is difficult, give oxygen.

Notes to Physician Treat symptomatically.

Section 5 – Fire Fighting Measures

Flash Point: Not Applicable **Autoignition Temperature:** No information available.

Explosion Limits Upper No data available **Lower** No data available

Extinguishing Media: Use means suitable to extinguishing surrounding fire.

Unsuitable Extinguishing Media: No information available

Fire & Explosion Hazards: Not considered to be a fire or explosion hazard.

Fire Fighting Instructions / Equipment: Use normal procedures. Use protective clothing. Use NIOSH-approved breathing equipment.

Hazardous Combustion Products: No information Available

Sensitivity to mechanical impact No information available.

Sensitivity to static discharge No information available.

Specific Hazards Arising from the Chemical: No information available

NFPA Rating: (estimated) Health: 1; Flammable: 0; Reactivity: 0

Section 6 – Accidental Release Measures

Personal Precautions Use personal protective equipment. Ensure adequate ventilation. Avoid contact with skin, eyes and clothing.

Environmental Precautions No information available.

Methods for Containment and Clean Up Absorb with suitable material. Always obey local regulations.

Section 7 – Handling and Storage

Handling: Wash hands after handling. Avoid contact with skin and eyes.

Storage: Protect from freezing and physical damage.

Section 8 – Exposure Controls, Personal Protection

Sodium Hydroxide, CAS# 1310-73-2, ACGIH TLV: 2 mg/m³, OSHA PEL: 2mg/m³

Potassium Phosphate, Monobasic, CAS# 7778-77-0, ACGIH TLV: NA, OSHA PEL: NA

Sorbic Acid, CAS# 110-44-1, ACGIH TLV: NA, OSHA PEL: NA

Water, purified, CAS# 7732-18-5, ACGIH TLV: NA, OSHA PEL: NA

Engineering Measures/ General Hygiene: Normal ventilation is adequate. Ensure eyewash and safety showers are available.

Personal Protection Equipment: Skin Protection: Chemical resistant gloves.

Eye/Face Protection: Safety Glasses or goggles. **Respiratory Protection:** Normal ventilation is adequate

Section 9 – Physical and Chemical Properties

Appearance/Physical State: Clear, yellow liquid

Odor: Odorless

Boiling Point: Approx 100C

Melting Point: Approx 0 C

Vapor Density: No Information Available

Evaporation Rate: No Information Available

pH: 7.0

Flammability: No Information Available

Solubility: Infinite

Relative Density: No Information Available

% Volatility: No Information Available

Specific Gravity: Approx 1

Vapor Pressure: No Information Available

Flash Point: Not Applicable

Coefficient of water/oil distribution: Not Available

Odor Threshold: Not Available

Decomposition Temperature: No Information Available

Partition Coefficient n-octanol/water: Not Available

Molecular Weight: Not available

Section 10 – Stability and Reactivity

Chemical Stability: Stable under normal conditions of use and storage.

Incompatible Materials None identified.

Conditions to Avoid: No Information Available.

Hazardous Decomposition Products: Oxides of phosphorus.

Hazardous Polymerization: Does not occur.

Hazardous Reactions: None under normal processing.

Section 11 – Toxicological Information

Routes of Exposure/Symptoms/Corrosiveness – See Section 2

LD50 orl-rat: 1350mg/kg (Sodium Hydroxide) 1700mg/kg (Potassium Phosphate, Monobasic)

LC50 inhalation-rat: NA

Irritation: No Information Available.

Toxicologically Synergistic: No information available.

Chronic Exposure

Carcinogenicity No information available

Sensitization No information available.

Mutagenic Effects No information available.

Reproductive Effects No information available.

Developmental Effects (Immediate/Delayed) No information available.

Teratogenicity No information available.

Other Adverse Effects No information available.

Endocrine Disruptor Information No information available

Section 12 – Ecological Information

Ecotoxicity: Not Available.

Persistence and Degradability: No Information Available

Mobility: No Information Available

Bioaccumulation/ Accumulation: No Information Available

Section 13 – Disposal Considerations

Waste Disposal/Waste Disposal of Packaging: Dilute with water.

All chemical waste generators must determine whether a discarded chemical is classified as hazardous waste. Comply with all local, state, and federal regulations.

Section 14 – Transport Information

DOT - Not Regulated

Section 15 – Regulatory Information (not meant to be all inclusive)

OSHA Status: These chemicals are not considered hazardous by OSHA.

Canada DSL: These chemicals are listed on Canada's DSL list.

TSCA: These chemicals are listed on the TSCA Inventory.

SARA Title III Section 313: Not Applicable

RCRA Status: Not Applicable

CERCLA Reportable Quantity: Sodium Hydroxide – 1000lb

WHMIS: Not Applicable.

This product has been classified in accordance with the hazard criteria of the CPR and the MSDS contains all the information required by the CPR

Section 16 – Additional Information

Disclaimer: The information on this MSDS applies to this specific material as supplied. It may not be valid for this material if it is used in combination with any other materials. It is the user's responsibility to determine the suitability and completeness of this information for his own particular use. No warranty is implied regarding the accuracy of the data or the results to be obtained from the products use.

RUST-OLEUM CORP -- LABOR SAVER MARKING PAINTS, 2533 -- 8010-00N021794

===== Product Identification =====

Product ID:LABOR SAVER MARKING PAINTS, 2533

MSDS Date:09/29/1987

FSC:8010

NIIN:00N021794

MSDS Number: BLRYV

=== Responsible Party ===

Company Name:RUST-OLEUM CORP

Address:11 HAWTHORN PARKWAY

City:VERNON HILLS

State:IL

ZIP:60061

Country:US

Info Phone Num:312-367-7700

Emergency Phone Num:312-864-8200

Preparer's Name:MJS

CAGE:08882

=== Contractor Identification ===

Company Name:RUST-OLEUM CORP

Address:11 HAWTHORN PARKWAY

Box:City:VERNON HILLS

State:IL

ZIP:60061-1583

Country:US

Phone:847-367-7700

CAGE:08882

===== Composition/Information on Ingredients =====

Ingred Name:PROPANE

CAS:74-98-6

RTECS #:TX2275000

Fraction by Wt: 16-18%

OSHA PEL:1000 PPM

ACGIH TLV:ASPHYXIAN; 9192

Ingred Name:PROPANE, 2-METHYL-; (ISOBUTANE). VP: 40 PSIA. LEL: 1.9%

CAS:75-28-5

RTECS #:TZ4300000

Fraction by Wt: 10-12%

Ingred Name:TITANIUM DIOXIDE

CAS:13463-67-7

RTECS #:XR2275000

Fraction by Wt: 0-8%

OSHA PEL:15 MG/M3 TDUST

ACGIH TLV:10 MG/M3 TDUST; 9293

Ingred Name:SUPP DATA:CAUSE BLINDNESS IF INGESTED.

RTECS #:9999999ZZ

Ingred Name:METHYL ALCOHOL (METHANOL) (SARA III)

CAS:67-56-1

RTECS #:PC1400000

Fraction by Wt: 0-4%

OSHA PEL:S,200PPM/250STEL

ACGIH TLV:S,200PPM/250STEL; 93

EPA Rpt Qty:5000 LBS

DOT Rpt Qty:5000 LBS

Ingred Name:TOLUENE (SARA III)

CAS:108-88-3

RTECS #:XS5250000

Fraction by Wt: 0-18%

OSHA PEL:200 PPM/150 STEL

ACGIH TLV:50 PPM; 9293

EPA Rpt Qty:1000 LBS

DOT Rpt Qty:1000 LBS

Ingred Name:HEXANE (N-HEXANE)

CAS:110-54-3

RTECS #:MN9275000

Fraction by Wt: 6-10%

OSHA PEL:500 PPM

ACGIH TLV:50 PPM; 9293
EPA Rpt Qty:1 LB
DOT Rpt Qty:1 LB

Ingred Name:XYLENES (O-,M-,P- ISOMERS) (SARA III)
CAS:1330-20-7
RTECS #:ZE2100000
Fraction by Wt: 5-20%
OSHA PEL:100 PPM/150 STEL
ACGIH TLV:100 PPM/150 STEL;9192
EPA Rpt Qty:1000 LBS
DOT Rpt Qty:1000 LBS

Ingred Name:ETHYLENE GLYCOL (SARA III)
CAS:107-21-1
RTECS #:KW2975000
Fraction by Wt: 0-4%
OSHA PEL:C 50 PPM
ACGIH TLV:C 50 PPM,VAPOR; 9192
EPA Rpt Qty:1 LB
DOT Rpt Qty:1 LB

Ingred Name:VM&P NAPHTHA. VP: 2 @ 20C. LEL: 0.9%
CAS:64742-89-8
Fraction by Wt: 1-3%
OSHA PEL:300 PPM;400 PPM STEL
ACGIH TLV:300 PPM

===== Hazards Identification =====

LD50 LC50 Mixture:NONE SPECIFIED BY MANUFACTURER.
Routes of Entry: Inhalation:YES Skin:NO Ingestion:YES
Reports of Carcinogenicity:NTP:NO IARC:NO OSHA:NO
Health Hazards Acute and Chronic:(ACUTE) INHAL: ANESTHETIC, IRRIT OF
RESP TRACT/ACUTE NERV SYS DEPRESS CHARACTER BY HDCH, DIZZ, STAG,
CONFUSN, UNCON/ COMA. SKIN/EYE: PRIMARY IRRITANT WHICH DEFATS SKIN
& CAN LEAD TO DERMAT W/ RPTD OVERE XP. INGEST: GI IRRIT, NAUS,
VOMIT & DIARR. (CHRONIC) RPTS HAVE SHOWN RPTD & PRLNGD OCCUP
OVEREXP TO (SEE EFTS OF OVEREXP
Explanation of Carcinogenicity:NOT RELEVANT
Effects of Overexposure:HLTH HAZ: SOLV W/PERM BRAIN & NERV SYS DMG.
OVEREXP TO XYLOL & TOLUENE IN LAB ANIMALS HAS SHOWN LIVER, KIDNEY,
SPLEEN & EYE DMG AS WELL AS ANEMIA. IN HUMANS, OVEREXP HAS BEEN
FOUND TO CAUSE LIVER & CA RDIAC ABNORMALITIES. OVEREXP TO HEXANE IN
HIGH VAP CONC (1000-1500 PPM) OVER A PERIOD OF SEV MONTHS HAS BEEN
(SUPP DATA)
Medical Cond Aggravated by Exposure:NONE SPECIFIED BY MANUFACTURER.

===== First Aid Measures =====

First Aid:INHAL: REMOVE FROM EXPOS, RESTORE BRTHG & NOTIFY MD. EYE:
FLUSH IMMED W/LRG AMTS OF WATER FOR AT LEAST 15 MIN. NOTIFY MD.
SKIN: WASH AFFECTED AREA W/SOAP & WATER, REMOVE CONTAM CLTHG & WASH
BEFORE REU SE. WASH HANDS BEFORE EATING/SMOKING. INGEST: DO NOT
INDUCE VOMIT. KEEP PERSON WARM, QUIET & GET MD. ASPIR OF MATL IN
LUNGS CAN CAUSE CHEM PNEUM WHICH CAN BE FATAL.

===== Fire Fighting Measures =====

Flash Point Method:TCC
Flash Point:<0F,<-18C
Lower Limits:SEE INGRED
Extinguishing Media:NFPA CLASS B EXTINGUISHERS (CO2, DRY CHEMICAL OR
FOAM).
Fire Fighting Procedures:WEAR NIOSH/MSHA APPRVD SCBA & FULL PROT EQUIP
. WATER SPRAY MAY BE INEFFECTIVE. WATER MAY BE USED TO COOL CLSD
CNTNRS TO PVNT PRESS BUILDUP (SUPP DATA)
Unusual Fire/Explosion Hazard:KEEP CNTNRS TIGHTLY CLSD. ISOLATE FROM
HEAT, ELEC EQUIP, SPARKS & OPEN FLAME. CLSD CNTNRS MAY EXPLODE WHEN
EXPSD TO EXTREME HEAT. DO NOT APPLY TO HOT SURFACES.

===== Accidental Release Measures =====

Spill Release Procedures:REMOVE ALL SOURCES OF IGNITION, VENTILATE AREA
AND REMOVE WITH INERT ABSORBENT AND NONSPARKING TOOLS.
Neutralizing Agent:NONE SPECIFIED BY MANUFACTURER.

===== Handling and Storage =====

Handling and Storage Precautions:DO NOT STORE ABOVE 120F. DO NOT PUNCTURE.

Other Precautions:INTENTIONAL MISUSE BY DELIBERATELY CONCENTRATING AND INHALING CONTENTS CAN BE HARMFUL OR FATAL.

===== Exposure Controls/Personal Protection =====

Respiratory Protection:USE NIOSH/MSHA APPROVED CHEMICAL CARTRIDGE RESPIRATOR (TC23C) TO REMOVE SOLID AIRBORNE PARTICLES OF OVERSPRAY AND ORGANIC VAPORS DURING SPRAY APPLICATION. IN CONFINED AREAS: USE NIOSH/MSHA APPROVED SUPPLIED-AIR RESPIRATOR OR HOODS (TC19C).

Ventilation:PROVIDE GENERAL OR LOCAL EXHAUST VENT IN VOLUME & PATTERN TO KEEP TLV OF MOST HAZ INGREDIENTS BELOW ACCEPTABLE LIMIT.

Protective Gloves:IMPERVIOUS GLOVES .

Eye Protection:CHEMICAL WORKERS GOGGLES .

Other Protective Equipment:NONE SPECIFIED BY MANUFACTURER.

Work Hygienic Practices:WASH HANDS BEFORE EATING OR SMOKING.

Supplemental Safety and Health

FIRE FIGHT PROC: AND POSSIBLE AUTOIGNITION OR EXPLOSION. IF WATER IS USED, FOG NOZZLES ARE PREFERRED. EFFECTS OF OVEREXPOSURE: SHOWN TO CAUSE PERIPHERAL POLYNEUROPATHY WHICH HAS THE POTENTIAL OF BECOMING IRREVERSIBLE. OVEREXPOSURE TO METHYL ALCOHOL HAS BEEN SHOWN TO AFFECT CNS, ESPECIALLY OPTIC NERVE. MAY BE FATAL OR (SEE ING 10)

===== Physical/Chemical Properties =====

HCC:F2

Boiling Pt:B.P. Text:<0F,<-18C

Vapor Pressure:SEE INGREDIENT

Vapor Density:HVR/AIR

Evaporation Rate & Reference:SLOWER THAN ETHER

Appearance and Odor:NONE SPECIFIED BY MANUFACTURER.

===== Stability and Reactivity Data =====

Stability Indicator/Materials to Avoid:YES

STRONG OXIDIZING AGENTS.

Stability Condition to Avoid:NONE SPECIFIED BY MANUFACTURER.

Hazardous Decomposition Products:BY OPEN FLAME - CO AND CO2.

===== Disposal Considerations =====

Waste Disposal Methods:DISPOSE OF ACCORDING TO LOCAL, STATE AND FEDERAL REGULATIONS. DO NOT INCINERATE CLOSED CONTAINERS.

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Issue Date: 2006-06

Section 1 - Chemical Product and Company Identification

61

Material Name: Methanol

CAS Number: 67-56-1

Chemical Formula: CH₄O

Structural Chemical Formula: CH₃OH

EINECS Number: 200-659-6

ACX Number: X1001287-2

Synonyms: ALCOHOL,METHYL; ALCOOL METHYLIQUE; ALCOOL METILICO; CARBINOL; X-CIDE 402 INDUSTRIAL BACTERICIDE; COAT-B1400; COLONIAL SPIRIT; COLONIAL SPIRITS; COLUMBIAN SPIRIT; COLUMBIAN SPIRITS; EPA PESTICIDE CHEMICAL CODE 053801; EUREKA PRODUCTS CRIOSINE DISINFECTANT; EUREKA PRODUCTS,CRIOSINE; FREERS ELM ARRESTER; IDEAL CONCENTRATED WOOD PRESERVATIVE; METANOL; METANOLO; METHANOL; METHYL ALCOHOL; METHYL HYDRATE; METHYL HYDROXIDE; METHYLALKOHOL; METHYLOL; METYLOWY ALKOHOL; MONOHYDROXYMETHANE; PMC REJEX-IT F-40ME; PYROLIGNEOUS SPIRIT; PYROXYLIC SPIRIT; PYROXYLIC SPIRITS; SURFLO-B17; WILBUR-ELLIS SMUT-GUARD; WOOD ALCOHOL; WOOD NAPHTHA; WOOD SPIRIT

Derivation: Prepared by wood pyrolysis; non-catalytic oxidation of hydrocarbons; as a by-product in the fisher-tropsch synthesis; or by reduction of carbon monoxide.

General Use: Used as an industrial solvent; starting material for organic synthesis; antifreeze for windshield washer fluid; in fuel antifreezes; gasoline octane booster; fuel for stoves; extractant for oils; denaturing ethanol; softening agent; food additive; in paint, varnish removers, and embalming fluids; in the manufacture of photographic film, celluloid, textile soap, wood stains, coated fabrics, shatterproof glass, paper coating, waterproofing formulations, artificial leather, dyes.

Section 2 - Composition / Information on Ingredients

Name	CAS	%
Methanol	67-56-1	ca 100% vol

Trace Impurities: (Grade A): Acetone and aldehydes < 30 ppm, acetic acid < 30 ppm

OSHA PEL

TWA: 200 ppm; 260 mg/m³.

NIOSH REL

TWA: 200 ppm (260 mg/m³);
 STEL: 250 ppm (325 mg/m³);
 skin.

DFG (Germany) MAK

TWA: 200 ppm; PEAK: 800 ppm;
 skin.

ACGIH TLV

TWA: 200 ppm; STEL: 250 ppm;
 skin.

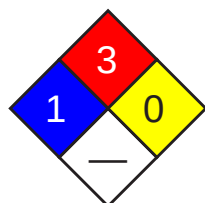
IDLH Level

6000 ppm.

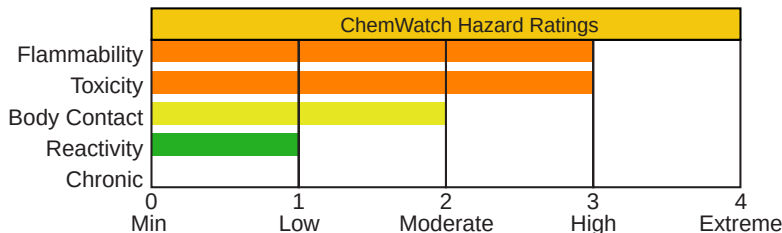
EU OEL

TWA: 260 mg/m³ (200 ppm).

Section 3 - Hazards Identification

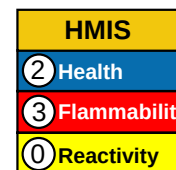


Fire Diamond



ANSI Signal Word

Warning!



Flammable

☆☆☆☆☆ Emergency Overview ☆☆☆☆☆

Colorless liquid; slight alcohol odor when pure or disagreeably pungent odor. Irritating to eyes/skin/respiratory tract. Other Acute Effects: headache, visual disturbance, blindness, respiratory failure. Chronic Effects: reproductive effects reported in animal testing. Flammable; moderate explosion hazard.

Potential Health Effects

Target Organs: Eyes, skin, central nervous system (CNS), gastrointestinal (GI) tract, respiratory system

Primary Entry Routes: Inhalation, ingestion, skin and/or eye contact/absorption

Acute Effects

Inhalation: Irritation, breathing difficulty, headache, drowsiness, vertigo, light-headedness, nausea, vomiting, acidosis (decreased blood alkalinity), visual disturbance, and at high concentrations, CNS damage, convulsions, circulatory collapse, respiratory failure, coma and blindness can result from inhalation of methanol vapor. Concentration ≥ 200 ppm may cause headache; 50,000 ppm can cause death within 1-2 hrs.

Eye: Contact with liquid may result in irritation, inflamed lids, light sensitization, and superficial lesions.

Skin: Contact may cause irritation, dermatitis, swelling, scaling, and systemic effects.

Ingestion: GI irritation and systemic effects. Symptoms may be delayed 18-48 hours. Fatal dose - 2 to 8 ounces.

Carcinogenicity: NTP - Not listed; IARC - Not listed; OSHA - Not listed; NIOSH - Not listed; ACGIH - Not listed; EPA - Not listed; MAK - Not listed.

Medical Conditions Aggravated by Long-Term Exposure: None reported.

Chronic Effects: Exposure to methanol vapors has caused conjunctivitis, headache, giddiness, insomnia, GI disturbance, impaired vision. CNS damage is also likely. Methanol is slowly eliminated from the body; exposure is considered cumulative over the short term.

Section 4 - First Aid Measures

Inhalation: Remove exposed person to fresh air and support breathing as needed.

Eye Contact: *Do not* allow victim to rub or keep eyes tightly shut. Gently lift eyelids and flush immediately and continuously with flooding amounts of water for at least 15 minutes. Consult a physician or ophthalmologist if pain or irritation develops.

Skin Contact: *Quickly* remove contaminated clothing. Rinse with flooding amounts of water for at least 15 min. Wash exposed area with soap and water. For reddened or blistered skin, consult a physician.

Ingestion: Never give anything by mouth to an unconscious or convulsing person. Contact a poison control center. Unless the poison control center advises otherwise, have the *conscious and alert* person drink 1 to 2 glasses of water, then induce vomiting.

After first aid, get appropriate in-plant, paramedic, or community medical support.

Note to Physicians: Follow emesis with rehydration, correction of acidosis, and folate to enhance formate oxidation. Consider IV administration of ethanol (if blood methanol >20 mg/dL) to show metabolic oxidation of methanol. Assay formic acid in urine, blood pH and plasma bicarbonate.

See
DOT
ERG

Section 5 - Fire-Fighting Measures

Flash Point: 54 °F (12 °C), Closed Cup

Burning Rate: 1.7 mm/min

Autoignition Temperature: 867 °F (464 °C)

LEL: 6.0% v/v

UEL: 36% v/v

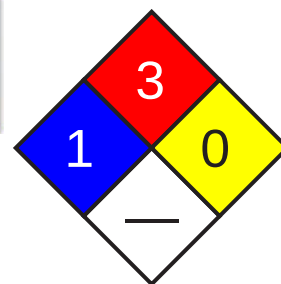
Flammability Classification: OSHA Class IB Flammable Liquid.

Extinguishing Media: Use dry chemical, carbon dioxide, water spray, fog or alcohol-resistant foam. A water spray may be used to cool fire-exposed containers, and flush spills away from ignition sources.

General Fire Hazards/Hazardous Combustion Products: Heating methanol to decomposition can produce carbon oxides (CO_x), formaldehyde, acrid smoke, and irritating fumes. Can form explosive mixtures in the air. The heavier-than-air vapors of methanol may travel along low-lying surfaces to distant sources of ignition and flash back to the material source. Containers may explode in heat of fire.

Fire-Fighting Instructions: *Do not* scatter material with any more water than needed to extinguish fire. *Do not* release runoff from fire control methods to sewers or waterways. Because fire may produce toxic thermal decomposition products, wear a self-contained breathing apparatus (SCBA) with a full facepiece operated in pressure-demand or positive-pressure mode.

See
DOT
ERG



Fire Diamond

Section 6 - Accidental Release Measures

Spill/Leak Procedures: Isolate spill area for at least 330-660 feet (100-200 m) in all directions. Fully encapsulating, vapor protective clothing should be worn for spills and leaks with no fire. Eliminate all ignition sources (no smoking, flares, sparks or flames in immediate area). Ground all equipment used when handling this product. *Do not* touch or walk through spilled material. Stop leak if you can do it without risk. Prevent entry into waterways, sewers, basements or confined areas. A vapor suppressing foam may be used to reduce vapors.

Small Spills: Absorb with earth, sand or other non-combustible material and transfer to containers for later disposal.

See
DOT
ERG

Use clean non-sparking tools to collect absorbed material.

Large Spills: Dike far ahead of liquid spill for later disposal. *Do not* release into sewers or waterways. Ground all equipment. Use non-sparking tools.

Regulatory Requirements: Follow applicable OSHA regulations (29 CFR 1910.120).

Section 7 - Handling and Storage

Handling Precautions: Avoid vapor inhalation, and skin and eye contact. Use only with ventilation sufficient to reduce airborne concentrations to non-hazardous levels (see Sec. 2). Wear protective gloves, goggles, and clothing (see Sec. 8). Keep away from heat and ignition sources. Ground and bond all containers during transfers to prevent static sparks. Use non-sparking tools to open and close containers.

Never eat, drink, or smoke in work areas. Practice good personal hygiene after using this material, especially before eating, drinking, smoking, using the toilet, or applying cosmetics.

Recommended Storage Methods: Store in tightly closed container in cool, well-ventilated area, away from heat, ignition sources and incompatibles (see Sec. 10). Equip drums with self-closing valves, pressure vacuum bungs, and flame arrestors.

Regulatory Requirements: Follow applicable OSHA regulations. Also 29 CFR 1910.106 for Class 1B Flammable Liquids.

Section 8 - Exposure Controls / Personal Protection

Engineering Controls: To prevent static sparks, electrically ground and bond all containers and equipment used in shipping, receiving, or transferring operations. Provide general or local exhaust ventilation systems to maintain airborne concentrations as low as possible. Local exhaust ventilation is preferred because it prevents contaminant dispersion into the work area by controlling it at its source.

Administrative Controls: Enclose operations and/or provide local explosion-proof exhaust ventilation at the site of chemical release. Where possible, transfer methanol from drums or other storage containers to process containers. Minimize sources of ignition in surrounding areas.

Personal Protective Clothing/Equipment: Wear chemically protective gloves, boots, aprons, and gauntlets of butyl rubber, Teflon, Viton, Saranex, 4H, Responder, Trelchem HPS, or Tychem 10000 (Breakthrough Time (BT) >8 hr) to prevent skin contact. Natural rubber, neoprene, nitrile rubber, polyethylene, polyvinyl alcohol and CPF 3 may degrade after contact and are not recommended. Wear splash-proof chemical safety goggles, and face shield, per OSHA eye- and face-protection regulations (29 CFR 1910.133). Contact lenses are not eye protective devices. Appropriate eye protection must be worn instead of, or in conjunction with contact lenses.

Respiratory Protection: Seek professional advice prior to respirator selection and use. Follow OSHA respirator regulations (29 CFR 1910.134) and, if necessary, wear a MSHA/NIOSH-approved respirator. For concentrations ≤ 2000 ppm, use a supplied air respirator; ≤ 5000 ppm, supplied air (SA) respirator in continuous flow mode; ≤ 6000 ppm, SA respirator with tight-fitting face mask operated in continuous flow mode, or SCBA with full facepiece, or SA respirator with full facepiece; > IDLH/unknown/emergency, SCBA with full facepiece operated in pressure-demand or other positive-pressure mode, or SA respirator with full facepiece operated in pressure-demand or other positive-pressure mode in combination with auxiliary SCBA operated in pressure-demand or other positive-pressure mode. For escape, use an appropriate escape-type SCBA. *Warning! Air-purifying respirators do not protect workers in oxygen-deficient atmospheres.* If respirators are used, OSHA requires a written respiratory protection program that includes at least: medical certification, training, fit-testing, periodic environmental monitoring, maintenance, inspection, cleaning, and convenient, sanitary storage areas.

Other: Separate contaminated work clothes from street clothes. Launder before reuse. Remove this material from your shoes and clean personal protective equipment. Make emergency eyewash stations, safety/quick-drench showers, and washing facilities available in work area.

Section 9 - Physical and Chemical Properties

Appearance/General Info: Colorless; slight alcohol odor when pure, disagreeably pungent odor when crude.

Physical State: Liquid

Odor Threshold: 13.1150 to 26840 mg/m³

Vapor Pressure (kPa): 127 mm Hg at 77 °F (25 °C)

Vapor Density (Air=1): 1.11

Bulk Density: 6.59 lbs/gal at 68 F (20 °C)

Formula Weight: 32.04

Density: 0.796 g/mL at 59 °F (15 °C)

Specific Gravity (H₂O=1, at 4 °C): 0.81 at 0 °C/4 °C

Refractive Index: 1.3292 at 68 °F (20 °C)

pH: Slightly acidic

Boiling Point: 148 °F (64.7 °C) at 760 mm Hg

Freezing/Melting Point: -144.04 °F (-97.8 °C)

Viscosity: 0.614 mPa sec

Surface Tension: 22.61 dynes/cm

Ionization Potential (eV): 10.84 eV

Water Solubility: Miscible

Other Solubilities: Ethanol, acetone, benzene, chloroform, DMSO, ether, ketones, most organic solvents.

Section 10 - Stability and Reactivity

Stability/Polymerization/Conditions to Avoid: Methanol is stable at room temperature in closed containers under normal storage and handling conditions. Hazardous polymerization cannot occur. Vapor inhalation, oxidizers.

Storage Incompatibilities: Include beryllium dihydride, metals (potassium, magnesium), oxidants (barium perchlorate, bromine, chlorine, hydrogen peroxide, sodium hypochlorite, phosphorus trioxide), potassium tertbutoxide, carbon tetrachloride and metals, chloroform and heat, diethyl zinc, alkyl aluminum salts, acetyl bromide, chloroform and sodium hydroxide, cyanuric chloride, nitric acid, chromic anhydride, lead perchlorate.

Hazardous Decomposition Products: Thermal oxidative decomposition of methanol can produce carbon oxides (CO_x), formaldehyde, acrid smoke, and irritating fumes.

Section 11 - Toxicological Information

Acute Oral Effects:

Rat, oral, LD₅₀: 5628 mg/kg.

Human, oral, LD_{Lo}: 428 mg/kg produced toxic effects: behavioral - headache; lungs, thorax, or respiration - other changes.

Human, oral, LD_{Lo}: 143 mg/kg produced optic nerve neuropathy, dyspnea, nausea or vomiting.

Acute Inhalation Effects:

Rat, inhalation, LC₅₀: 64000 ppm/4 hr.

Human, inhalation, TC_{Lo}: 300 ppm produced visual field changes, headache; lungs, thorax, or respiration - other changes.

Acute Skin Effects:

Rabbit, skin, LD₅₀: 15800 mg/kg.

Monkey, skin, LD_{Lo}: 393 mg/kg.

Irritation Effects:

Rabbit, standard Draize test: 100 mg/24 hr resulted in moderate irritation.

Rabbit, standard Draize test: 20 mg/24 hr resulted in moderate irritation.

Other Effects:

Rat, oral: 10 µmol/kg resulted in DNA damage.

Rat, inhalation: 50 mg/m³/12 hr/13 weeks intermittently produced degenerative changes to brain and coverings; muscle contraction or spasticity.

Rat, inhalation: 2610 ppm/6 hr/4 weeks intermittently produced toxic effects: endocrine - changes in spleen weight.

Multiple Dose Toxicity Effects - Rat, oral: 12 g/kg/8 weeks intermittently produced toxic effects: behavioral - ataxia; behavioral - alteration of operant conditioning.

Human, lymphocyte: 300 mmol/L resulted in DNA inhibition.

Rat (female), oral: 7500 mg/kg, administered during gestational days 17-19 produced effects on newborn - behavioral.

Rat (female), oral: 35295 mg/kg administered during gestational days 1-15 produced effects on the fertility index; pre implantation mortality; and post-implantation mortality.

Rat (female), inhalation: 20000 ppm/7 hr, administered during gestational days 1-22 produced specific developmental abnormalities - musculoskeletal system; cardiovascular (circulatory) system; urogenital system.

Rat (male), oral: 200 ppm/20 hr, 78 weeks prior to mating produced paternal effects - testes, epididymis, sperm duct.

See RTECS PC1400000, for additional data.

Section 12 - Ecological Information

Environmental Fate: Bioconcentration (BCF, estimated at 0.2) is not expected to be significant. Physical removal from air can occur via rainfall. Relatively rapid evaporation from dry surfaces is likely to occur. If released to the atmosphere, it degrades via reaction with photochemically produced hydroxyl radicals with an approximate half-life of 17.8 days. If released to water or soil, biodegradation is expected to occur. A low K_{oc} indicates little sorption and high mobility in the soil column.

Ecotoxicity: Trout, LC₅₀: 8,000 mg/L/48 hr; *Pimephales promelas* (fathead minnow) LC₅₀: 29.4 g/L/96 hr.

Henry's Law Constant: 4.55 x 10⁻⁶ atm-m³/mole at 77 °F (25 °C)

Octanol/Water Partition Coefficient: log K_{ow} = -0.77

Soil Sorption Partition Coefficient: K_{oc} = 0.44

Section 13 - Disposal Considerations

Disposal: Contact your supplier or a licensed contractor for detailed recommendations. Follow applicable Federal, state, and local regulations.

Section 14 - Transport Information**DOT Hazardous Materials Table Data (49 CFR 172.101):**

Note: This material has multiple possible HMT entries. Choose the appropriate one based on state and condition of specific material when shipped.

Shipping Name and Description: Methanol

ID: UN1230

Hazard Class: 3 - Flammable and combustible liquid

Packing Group: II - Medium Danger

Symbols: + I

Label Codes: 3 - Flammable Liquid, 6.1 - Poison *or* Poison Inhalation Hazard *if inhalation hazard, Zone A or B*

Special Provisions: IB2, T7, TP2

Packaging: Exceptions: 150 **Non-bulk:** 202 **Bulk:** 242

Quantity Limitations: Passenger aircraft/rail: 1 L **Cargo aircraft only:** 60 L

Vessel Stowage: Location: B **Other:** 40



Shipping Name and Description: Methanol

ID: UN1230

Hazard Class: 3 - Flammable and combustible liquid

Packing Group: II - Medium Danger

Symbols: D - Domestic transportation

Label Codes: 3 - Flammable Liquid

Special Provisions: IB2, T7, TP2

Packaging: Exceptions: 150 **Non-bulk:** 202 **Bulk:** 242

Quantity Limitations: Passenger aircraft/rail: 1 L **Cargo aircraft only:** 60 L

Vessel Stowage: Location: B **Other:**

**Section 15 - Regulatory Information****EPA Regulations:**

RCRA 40 CFR: Listed U154 Ignitable Waste

CERCLA 40 CFR 302.4: Listed per RCRA Section 3001 5000 lb (2268 kg)

SARA 40 CFR 372.65: Listed

SARA EHS 40 CFR 355: Not listed

TSCA: Listed

Section 16 - Other Information

Disclaimer: Judgments as to the suitability of information herein for the purchaser's purposes are necessarily the purchaser's responsibility. Although reasonable care has been taken in the preparation of such information, Genium Group, Inc. extends no warranties, makes no representations, and assumes no responsibility as to the accuracy or suitability of such information for application to the purchaser's intended purpose or for consequences of its use.

Section 1 - Chemical Product and Company Identification

61

Material Name: Nitric Acid

CAS Number: 7697-37-2

Chemical Formula: HNO₃

Structural Chemical Formula: HNO₃

EINECS Number: 231-714-2

ACX Number: X1002177-5

Synonyms: ACIDE NITRIQUE; ACIDO NITRICO; AQUA FORTIS; AZOTIC ACID; AZOTOWY KWAS; ENGRAVER'S ACID; ENGRAVERS ACID; HYDROGEN NITRATE; KYSELINA DUSICNE; NITAL; NITRIC ACID; NITRIC ACID OTHER THAN RED FUMING WITH >70% NITRIC ACID; NITRIC ACID OTHER THAN RED FUMING WITH NOT >70% NITRICACID; NITROUS FUMES; NITRYL HYDROXIDE; RED FUMING NITRIC ACID (RFNA); SALPETERSAURE; SALPETERZUUROPOLOSSINGEN; WHITE FUMING NITRIC ACID (WFNA)

General Use: Manufacture of organic and inorganic nitrates and nitro compounds for fertilizers, dye intermediates and many organic chemicals.

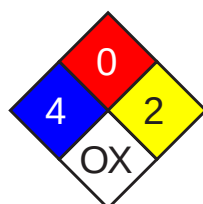
Used for etching and cleaning metals.

Operators should be trained in procedures for safe use of this material.

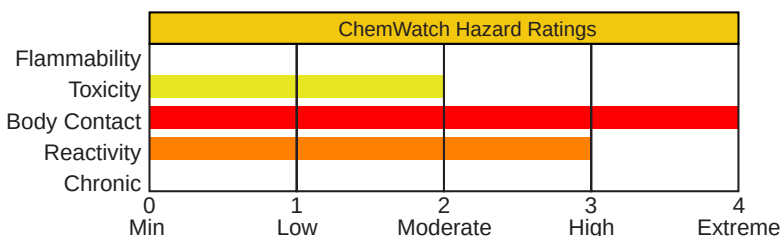
Section 2 - Composition / Information on Ingredients

Name	CAS	%
nitric acid	7697-37-2	>95
OSHA PEL TWA: 2 ppm; 5 mg/m ³ .	NIOSH REL TWA: 2 ppm (5 mg/m ³); STEL: 4 ppm (10 mg/m ³).	DFG (Germany) MAK TWA: 2 ppm; PEAK: 2 ppm.
ACGIH TLV TWA: 2 ppm; STEL: 4 ppm.	IDLH Level 25 ppm.	
EU OEL STEL: 2.6 mg/m ³ (1 ppm).		

Section 3 - Hazards Identification



Fire Diamond



HMIS	
3	Health
0	Flammability
2	Reactivity

ANSI Signal Word

Danger!



☆☆☆☆☆ Emergency Overview ☆☆☆☆☆

Clear to yellow fuming liquid; acrid, suffocating odor. Corrosive. Other Acute Effects: lung damage. Chronic Effects: tooth erosion, bronchitis. Strong oxidizer.

Potential Health Effects

Target Organs: eyes, skin, respiratory system, teeth

Primary Entry Routes: inhalation, ingestion, skin contact, eye contact

Acute Effects

Inhalation: The vapor is extremely discomforting and corrosive to the upper respiratory tract and lungs and the material presents a hazard from a single acute exposure or from repeated exposures over long periods.

Inhalation hazard is increased at higher temperatures.

Reactions may occur following a single acute exposure or may only appear after repeated exposures.

Reactions may not occur on exposure but response may be delayed with symptoms only appearing many hours later. The material may produce respiratory tract irritation which produces an inflammatory response involving the recruitment and activation of many cell types, mainly derived from the vascular system. Unlike most organs the lung can respond to a chemical insult or agent by first trying to remove or neutralize the irritant and then repairing the damage. The repair process, which initially developed to protect mammalian lungs from foreign matter and antigens, may however, cause further damage the lungs when activated by hazardous chemicals. The result is often the impairment of gas exchange, the primary function of the lungs.

Inhalation of nitric acid mist or fumes at 2 to 25 ppm over an 8 hour period may cause pulmonary irritation and symptoms of lung damage.

Only several minutes of exposure to concentrated atmosphere i.e. 200 ppm may cause severe pulmonary damage and even fatality. Death may be delayed for several days.

Exposure to nitric acid fumes (with concurrent inhalation of nitrogen dioxide and nitric oxide) may elicit prompt irritation of the upper respiratory tract leading to coughing, gagging, chest pain, dyspnea, cyanosis if concentrations are sufficiently high and duration of exposure sufficiently long, pulmonary edema.

Eye: The liquid is extremely corrosive to the eyes and contact may cause rapid tissue destruction and is capable of causing severe damage with loss of sight.

The vapor is extremely discomforting to the eyes and is capable of causing pain and severe conjunctivitis.

Corneal injury may develop, with possible permanent impairment of vision, if not promptly and adequately treated.

The material may produce moderate eye irritation leading to inflammation.

Repeated or prolonged exposure to irritants may produce conjunctivitis.

Eye contact with concentrated acid may give no pain, whilst diluted solution causes intense pain and both can cause permanent eye damage or blindness. Burns may result in shrinkage of the eyeball, symblepharon (adhesions between tarsal and bulbar conjunctivae), permanent corneal opacification, and visual impairment leading to blindness.

Skin: The liquid is extremely corrosive to the skin and contact may cause tissue destruction with severe burns.

Bare unprotected skin should not be exposed to this material.

The vapor is highly discomforting to the skin.

The material may cause skin irritation after prolonged or repeated exposure and may produce a contact dermatitis (nonallergic). This form of dermatitis is often characterized by skin redness (erythema) and swelling (edema) which may progress to vesiculation, scaling and thickening of the epidermis. Histologically there may be intercellular edema of the spongy layer (spongiosis) and intracellular edema of the epidermis.

Skin contact causes yellow discoloration of the skin, blisters and scars that may not heal. The skin may be stained bright-yellow or yellowish brown due to the formation of xanthoproteic acid. Dilute solutions may harden the epithelium without producing overt corrosion.

Ingestion: Considered an unlikely route of entry in commercial/industrial environments.

The material is extremely corrosive if swallowed and is capable of causing burns to mouth, throat, esophagus, with extreme discomfort, pain and may be fatal.

Even a small amount causes severe corrosion of the stomach, burning pain, vomiting and shock, possibly causing non-healing scarring of the gastrointestinal tract and stomach. Death may be delayed 12 hours to 14 days or to several months. Such late fatalities are attributed to a chemical lobular pneumonitis secondary to aspiration. Survivors show stricture of the gastric mucosa and subsequent pernicious anemia.

Carcinogenicity: NTP - Not listed; IARC - Not listed; OSHA - Not listed; NIOSH - Not listed; ACGIH - Not listed; EPA - Not listed; MAK - Not listed.

Chronic Effects: Prolonged or repeated overexposure to low concentrations of vapor may cause chronic bronchitis, corrosion of teeth, even chemical pneumonitis.

Section 4 - First Aid Measures

Inhalation: Remove to fresh air.

Lay patient down. Keep warm and rested.

If available, administer medical oxygen by trained personnel.

If breathing is shallow or has stopped, ensure clear airway and apply resuscitation. Transport to hospital or doctor, without delay.

Eye Contact: Immediately hold the eyes open and flush continuously for at least 15 minutes with fresh running water. Ensure irrigation under eyelids by occasionally lifting the upper and lower lids.

Transport to hospital or doctor without delay. Removal of contact lenses after an eye injury should only be undertaken by skilled personnel.

Immediately transport to hospital or doctor. DO NOT delay.

Skin Contact: Immediately flush body and clothes with large amounts of water, using safety shower if available.

Quickly remove all contaminated clothing, including footwear.

Wash affected areas with water (and soap if available) for at least 15 minutes. Transport to hospital or doctor. DO NOT delay.

Ingestion: Contact a Poison Control Center.

Do NOT induce vomiting. Give a glass of water.

Immediately transport to hospital or doctor. DO NOT delay.

See
DOT
ERG

After first aid, get appropriate in-plant, paramedic, or community medical support.

Note to Physicians: For acute or short-term repeated exposures to strong acids:

1. Airway problems may arise from laryngeal edema and inhalation exposure. Treat with 100% oxygen initially.
2. Respiratory distress may require cricothyroidotomy if endotracheal intubation is contraindicated by excessive swelling.
3. Intravenous lines should be established immediately in all cases where there is evidence of circulatory compromise.
4. Strong acids produce a coagulation necrosis characterized by formation of a coagulum (eschar) as a result of the desiccating action of the acid on proteins in specific tissues.

INGESTION:

1. Immediate dilution (milk or water) within 30 minutes post-ingestion is recommended.
2. Do not attempt to neutralize the acid since exothermic reaction may extend the corrosive injury.
3. Be careful to avoid further vomiting since re-exposure of the mucosa to the acid is harmful. Limit fluids to one or two glasses in an adult.
4. Charcoal has no place in acid management.
5. Some authors suggest the use of lavage within 1 hour of ingestion.

SKIN:

1. Skin lesions require copious saline irrigation. Treat chemical burns as thermal burns with non-adherent gauze and wrapping.
2. Deep second-degree burns may benefit from topical silver sulfadiazine.

EYE:

1. Eye injuries require retraction of the eyelids to ensure thorough irrigation of the conjunctival cul-de-sacs. Irrigation should last at least 20-30 minutes. Do not use neutralizing agents or any other additives. Several liters of saline are required.
2. Cycloplegic drops (1% cyclopentolate for short-term use or 5% homatropine for longer term use), antibiotic drops, vasoconstrictive agents, or artificial tears may be indicated dependent on the severity of the injury.
3. Steroid eye drops should only be administered with the approval of a consulting ophthalmologist.

Section 5 - Fire-Fighting Measures

Flash Point: Nonflammable

Autoignition Temperature: Not applicable

LEL: Not applicable

UEL: Not applicable

Extinguishing Media: Water spray or fog; foam, dry chemical powder, or BCF (where regulations permit).
Carbon dioxide.

General Fire Hazards/Hazardous Combustion Products: Will not burn but increases intensity of fire.

Heating may cause expansion or decomposition leading to violent rupture of containers.

Heat affected containers remain hazardous.

Contact with combustibles such as wood, paper, oil or finely divided metal may cause ignition, combustion or violent decomposition.

May emit irritating, poisonous or corrosive fumes.

Decomposes on heating and produces toxic fumes of nitrogen oxides (NO_x) and nitric acid.

Fire Incompatibility: Oxidizing agents as a class are not necessarily combustible themselves, but can increase the risk and intensity of fire in many other substances.

Reacts vigorously with water and alkali.

Avoid reaction with organic materials/compounds, powdered metals, reducing agents and hydrogen sulfide (H_2S) as ignition may result.

Reacts with metals producing flammable/explosive hydrogen gas.

Fire-Fighting Instructions: Contact fire department and tell them location and nature of hazard.

May be violently or explosively reactive. Wear full body protective clothing with breathing apparatus. Prevent, by any means available, spillage from entering drains or waterways. Consider evacuation.

Fight fire from a safe distance, with adequate cover.

Extinguishers should be used only by trained personnel.

Use water delivered as a fine spray to control fire and cool adjacent area.

Avoid spraying water onto liquid pools.

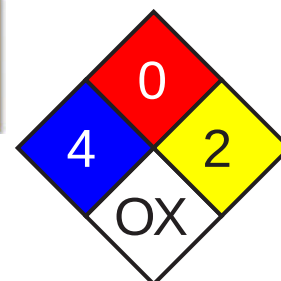
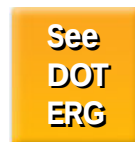
Do not approach containers suspected to be hot.

Cool fire-exposed containers with water spray from a protected location.

If safe to do so, remove containers from path of fire.

If fire gets out of control withdraw personnel and warn against entry.

Equipment should be thoroughly decontaminated after use.



Fire Diamond

Section 6 - Accidental Release Measures

Small Spills: Dangerous levels of nitrogen oxides may form during spills of nitric acid.

Wear fully protective PVC clothing and breathing apparatus.

Clean up all spills immediately. No smoking, bare lights, ignition sources.

Avoid all contact with any organic matter including fuel, solvents, sawdust, paper or cloth and other incompatible materials, as ignition may result.

Avoid breathing dust or vapors and all contact with skin and eyes.

Control personal contact by using protective equipment.

Contain and absorb spill with dry sand, earth, inert material or vermiculite. DO NOT use sawdust as fire may result.

Scoop up solid residues and seal in labeled drums for disposal.

Neutralize/decontaminate area.

Use soda ash or slaked lime to neutralize.

Large Spills: DO NOT touch the spill material. Restrict access to area.

Clear area of personnel and move upwind. Contact fire department and tell them location and nature of hazard.

May be violently or explosively reactive. Wear full body protective clothing with breathing apparatus. Prevent, by any means available, spillage from entering drains or waterways. Consider evacuation.

No smoking, flames or ignition sources. Increase ventilation.

Contain spill with sand, earth or other clean, inert materials.

NEVER use organic absorbents such as sawdust, paper, cloth; as fire may result. Avoid any contamination by organic matter.

Use spark-free and explosion-proof equipment.

Collect any recoverable product into labeled containers for possible recycling. DO NOT mix fresh with recovered material.

Collect residues and seal in labeled drums for disposal.

Wash area and prevent runoff into drains. Decontaminate equipment and launder all protective clothing before storage and reuse.

If contamination of drains or waterways occurs advise emergency services.

DO NOT USE WATER OR NEUTRALIZING AGENTS INDISCRIMINATELY ON LARGE SPILLS.

Regulatory Requirements: Follow applicable OSHA regulations (29 CFR 1910.120).



Section 7 - Handling and Storage

Handling Precautions: Avoid generating and breathing mist. Do not allow clothing wet with material to stay in contact with skin.

Avoid all personal contact, including inhalation.

Wear protective clothing when risk of exposure occurs.

Use in a well-ventilated area.

WARNING: To avoid violent reaction, ALWAYS add material to water and NEVER water to material.

Avoid smoking, bare lights or ignition sources.

Avoid contact with incompatible materials.

When handling, DO NOT eat, drink or smoke.

Keep containers securely sealed when not in use. Avoid physical damage to containers. Always wash hands with soap and water after handling. Work clothes should be laundered separately.

Launder contaminated clothing before reuse.

Use good occupational work practices. Observe manufacturer's storing and handling recommendations. Atmosphere should be regularly checked against established exposure standards to ensure safe working conditions are maintained.

Recommended Storage Methods: Stainless steel drum. Check that containers are clearly labeled.

Packaging as recommended by manufacturer.

Regulatory Requirements: Follow applicable OSHA regulations.

Section 8 - Exposure Controls / Personal Protection

Engineering Controls: Use in a well-ventilated area.

Local exhaust ventilation may be required for safe working, i. e. , to keep exposures below required standards; otherwise, PPE is required.

If risk of overexposure exists, wear NIOSH-approved respirator.

Correct fit is essential to obtain adequate protection.

In confined spaces where there is inadequate ventilation, wear full-face air supplied breathing apparatus.

Personal Protective Clothing/Equipment:

Eyes: Chemical goggles. Full face shield.

DO NOT wear contact lenses. Contact lenses pose a special hazard; soft contact lenses may absorb irritants and all lenses concentrate them.

Hands/Feet: Bare unprotected skin should not be exposed to this material. Impervious, gauntlet length gloves i.e., butyl rubber gloves or Neoprene rubber gloves or wear chemical protective gloves, e.g. PVC.

Wear safety footwear or safety gumboots, e.g. Rubber.

Respiratory Protection:

Exposure Range >2 to <25 ppm: Supplied Air, Constant Flow/Pressure Demand, Half Mask

Exposure Range 25 to unlimited ppm: Self-contained Breathing Apparatus, Pressure Demand, Full Face

Other: Operators should be trained in procedures for safe use of this material.

Acid-resistant overalls or Rubber apron or PVC apron.

Ensure there is ready access to an emergency shower.

Ensure that there is ready access to eye wash unit.

Ensure that there is ready access to breathing apparatus.

Glove Selection Index:

BUTYL Best selection

HYPALON Best selection

NEOPRENE..... Best selection

NEOPRENE/NATURAL..... Best selection

PE/EVAL/PE Best selection

SARANEX-23 Best selection

NATURAL RUBBER..... Satisfactory; may degrade after 4 hours continuous immersion

NATURAL+NEOPRENE..... Satisfactory; may degrade after 4 hours continuous immersion

PVC..... Poor to dangerous choice for other than short-term immersion

NITRILE+PVC Poor to dangerous choice for other than short-term immersion

Section 9 - Physical and Chemical Properties

Appearance/General Info: Clear, colorless to slightly yellow liquid. Sharp strong odor.

CAUTION: exothermic dilution hazard.

HIGHLY CORROSIVE. Corrosive to most metals. Powerful oxidizing agent.

Darkens to brownish color on aging and exposure to light.

Physical State: Liquid

Odor Threshold: 0.75 to 2.50 mg/m³

Vapor Pressure (kPa): 8.26

Vapor Density (Air=1): 1.5

Formula Weight: 63.02

Specific Gravity (H₂O=1, at 4 °C): 1.3-1.42

pH: < 1

pH (1% Solution): 1

Boiling Point: 83 °C (181 °F) at 760 mm Hg

Freezing/Melting Point: -42 °C (-43.6 °F)

Volatile Component (% Vol): 100 (nominal)

Decomposition Temperature (°C): Not applicable

Water Solubility: Soluble in all proportions

Section 10 - Stability and Reactivity

Stability/Polymerization/Conditions to Avoid: Presence of heat source and direct sunlight. Storage in unsealed containers. Hazardous polymerization will not occur.

Storage Incompatibilities: Segregate from reducing agents, finely divided combustible materials, combustible materials, sawdust, metals and powdered metals.

Avoid contamination of water, foodstuffs, feed or seed.

Segregate from alkalis, oxidizing agents and chemicals readily decomposed by acids, i.e. cyanides, sulfides, carbonates.

Section 11 - Toxicological Information

Toxicity

Oral (human) LD₅₀: 430 mg/kg

Inhalation (rat) LC₅₀: 2500 ppm/1 hr

Unreported (man) LD₅₀: 110 mg/kg

Irritation

Nil reported

See RTECS QU 5775000, for additional data.

Section 12 - Ecological Information

Environmental Fate: No data found.

Ecotoxicity: LC₅₀ Starfish 100-300 mg/l/48 hr /Aerated water conditions; LC₅₀ Shore crab 180 mg/l/48 hr /Static, aerated water conditions; LC₅₀ Cockle 330-1000 mg/l/48 hr /Aerated water conditions

BCF: no food chain concentration potential

Biochemical Oxygen Demand (BOD): none

Section 13 - Disposal Considerations

Disposal: Recycle wherever possible. Special hazards may exist - specialist advice may be required.
 Consult manufacturer for recycling options.
 Follow applicable federal, state, and local regulations.
 Treat and neutralize at an approved treatment plant.
 Decontaminate empty containers. Observe all label safeguards until containers are cleaned and destroyed.
 Puncture containers to prevent reuse and bury at an authorized landfill.

Section 14 - Transport Information

DOT Hazardous Materials Table Data (49 CFR 172.101):

Note: This material has multiple possible HMT entries. Choose the appropriate one based on state and condition of specific material when shipped.

Shipping Name and Description: Nitric acid *other than red fuming*, with more than 70 percent nitric acid

ID: UN2031

Hazard Class: 8 - Corrosive material

Packing Group: I - Great Danger

Symbols:

Label Codes: 8 - Corrosive, 5.1 - Oxidizer

Special Provisions: B47, B53, T10, TP2, TP12, TP13

Packaging: Exceptions: None **Non-bulk:** 158 **Bulk:** 243

Quantity Limitations: Passenger aircraft/rail: Forbidden **Cargo aircraft only:** 2.5 L

Vessel Stowage: Location: D **Other:** 44, 66, 89, 90, 110, 111



Shipping Name and Description: Nitric acid *other than red fuming*, with not more than 70 percent nitric acid

ID: UN2031

Hazard Class: 8 - Corrosive material

Packing Group: II - Medium Danger

Symbols:

Label Codes: 8 - Corrosive

Special Provisions: B2, B47, B53, IB2, T8, TP2, TP12

Packaging: Exceptions: None **Non-bulk:** 158 **Bulk:** 242

Quantity Limitations: Passenger aircraft/rail: Forbidden **Cargo aircraft only:** 30 L

Vessel Stowage: Location: D **Other:**



Shipping Name and Description: Nitric acid, red fuming

ID: UN2032

Hazard Class: 8 - Corrosive material

Packing Group: I - Great Danger

Symbols: + - Override definitions

Label Codes: 8 - Corrosive, 5.1 - Oxidizer, 6.1 - Poison or Poison Inhalation Hazard if inhalation hazard, Zone A or B

Special Provisions: 2, B9, B32, B74, T20, TP2, TP12, TP13, TP38, TP45

Packaging: Exceptions: None **Non-bulk:** 227 **Bulk:** 244

Quantity Limitations: Passenger aircraft/rail: Forbidden **Cargo aircraft only:** Forbidden

Vessel Stowage: Location: D **Other:**



Section 15 - Regulatory Information

EPA Regulations:

RCRA 40 CFR: Not listed

CERCLA 40 CFR 302.4: Listed per CWA Section 311(b)(4) 1000 lb (453.5 kg)

SARA 40 CFR 372.65: Listed

SARA EHS 40 CFR 355: Listed

RQ: 1000 lb

TPQ: 1000 lb

TSCA: Listed

Section 16 - Other Information

Disclaimer: Judgments as to the suitability of information herein for the purchaser's purposes are necessarily the purchaser's responsibility. Although reasonable care has been taken in the preparation of such information, Genium Group, Inc. extends no warranties, makes no representations, and assumes no responsibility as to the accuracy or suitability of such information for application to the purchaser's intended purpose or for consequences of its use.

Safety Data Sheet
according to 1907/2006/EC (REACH), 1272/2008/EC (CLP), and
GHS

Page 1/10

Printing date: 31.12.2013

Revision: 31.12.2013

1 Identification of the substance/mixture and of the company/undertaking

- 1.1 Product identifier
- Trade name: **ALCONOX**
- 1.2 Relevant identified uses of the substance or mixture and uses advised against
No further relevant information available.
- Application of the substance / the mixture: Cleaning material/ Detergent
- 1.3 Details of the supplier of the Safety Data Sheet
- Manufacturer/Supplier:
Alconox, Inc.
30 Glenn St., Suite 309
White Plains, NY 10603
Phone: 914-948-4040
- Further information obtainable from: Product Safety Department
- 1.4 Emergency telephone number:
ChemTel Inc.
(800)255-3924, +1 (813)248-0585



2 Hazards identification

- 2.1 Classification of the substance or mixture
- Classification according to Regulation (EC) No 1272/2008



GHS05 corrosion

Eye Dam. 1; H318: Causes serious eye damage.



GHS07

Skin Irrit. 2; H315: Causes skin irritation.

- Classification according to Directive 67/548/EEC or Directive 1999/45/EC



Xi; Irritant

R38-41: Irritating to skin. Risk of serious damage to eyes.

- Information concerning particular hazards for human 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 the latest editions of the EU-lists, 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.

- 2.2 Label elements
- Labelling according to Regulation (EC) No 1272/2008
The product is classified and labelled according to the CLP regulation.

(Contd. on page 2)

Safety Data Sheet
according to 1907/2006/EC (REACH), 1272/2008/EC (CLP), and
GHS

Page 2/10

Printing date: 31.12.2013

Revision: 31.12.2013

Trade name: ALCONOX

(Contd. of page 1)

· **Hazard pictograms**



GHS05

· **Signal word: Danger**

· **Hazard-determining components of labelling:**

sodium dodecylbenzene sulfonate

· **Hazard statements**

H315: Causes skin irritation.

H318: Causes serious eye damage.

· **Precautionary statements**

P280 Wear protective gloves/protective clothing/eye protection/face protection.

P264: Wash thoroughly after handling.

P305+P351+P338: IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

P310: Immediately call a POISON CENTER or doctor/physician.

P321: Specific treatment (see on this label).

P362: Take off contaminated clothing and wash before reuse.

P332+P313: If skin irritation occurs: Get medical advice/attention.

P302+P352: IF ON SKIN: Wash with plenty of soap and water.

· **Hazard description:**

· **WHMIS-symbols:**

D2B - Toxic material causing other toxic effects



· **NFPA ratings (scale 0 - 4)**



Health = 1

Fire = 0

Reactivity = 0

· **HMIS-ratings (scale 0 - 4)**



Health = 1

Fire = 0

Reactivity = 0

· **HMIS Long Term Health Hazard Substances**

None of the ingredients is listed.

· **2.3 Other hazards**

· **Results of PBT and vPvB assessment**

· **PBT:** Not applicable.

· **vPvB:** Not applicable.

(Contd. on page 3)

Safety Data Sheet

according to 1907/2006/EC (REACH), 1272/2008/EC (CLP), and
GHS

Page 3/10

Printing date: 31.12.2013

Revision: 31.12.2013

Trade name: ALCONOX

(Contd. of page 2)

3 Composition/information on ingredients

3.2 Mixtures

· **Description:** Mixture of substances listed below with nonhazardous additions.

· Dangerous components:

CAS: 68081-81-2	sodium dodecylbenzene sulfonate Xn R22; Xi R36 Acute Tox. 4, H302; Eye Irrit. 2, H319	10-25%
CAS: 497-19-8 EINECS: 207-838-8 Index number: 011-005-00-2	Sodium Carbonate Xi R36 Eye Irrit. 2, H319	2,5-10%
CAS: 7722-88-5 EINECS: 231-767-1	tetrasodium pyrophosphate substance with a Community workplace exposure limit	2,5-10%
CAS: 151-21-3 EINECS: 205-788-1	sodium dodecyl sulphate Xn R21/22; Xi R36/38 Acute Tox. 4, H302; Acute Tox. 4, H312; Skin Irrit. 2, H315; Eye Irrit. 2, H319	2,5-10%

· **Additional information:** For the wording of the listed risk phrases refer to section 16.

4 First aid measures

4.1 Description of first aid measures

· **After inhalation:** Supply fresh air; consult doctor in case of complaints.

· **After skin contact:**

Immediately wash with water and soap and rinse thoroughly.

If skin irritation continues, consult a doctor.

· **After eye contact:**

Remove contact lenses if worn.

Rinse opened eye for several minutes under running water. If symptoms persist, consult a doctor.

· **After swallowing:**

Rinse out mouth and then drink plenty of water.

Do not induce vomiting; call for medical help immediately.

4.2 Most important symptoms and effects, both acute and delayed

No further relevant information available.

4.3 Indication of any immediate medical attention and special treatment needed

No further relevant information available.

5 Firefighting measures

5.1 Extinguishing media

· **Suitable extinguishing agents:**

CO₂, powder or water spray. Fight larger fires with water spray or alcohol resistant foam.

(Contd. on page 4)

Safety Data Sheet
according to 1907/2006/EC (REACH), 1272/2008/EC (CLP), and
GHS

Page 4/10

Printing date: 31.12.2013

Revision: 31.12.2013

Trade name: ALCONOX

(Contd. of page 3)

- **5.2 Special hazards arising from the substance or mixture:** No further relevant information available.
- **5.3 Advice for firefighters**
- **Protective equipment:**
 - Wear self-contained respiratory protective device.
 - Wear fully protective suit.
- **Additional information:** No further relevant information available.

6 Accidental release measures

- **6.1 Personal precautions, protective equipment and emergency procedures**
 - Product forms slippery surface when combined with water.
- **6.2 Environmental precautions:** Do not allow to enter sewers/ surface or ground water.
- **6.3 Methods and material for containment and cleaning up:**
 - Pick up mechanically.
 - Clean the affected area carefully; suitable cleaners are:
 - Warm water
- **6.4 Reference to other sections**
 - See Section 7 for information on safe handling.
 - See Section 8 for information on personal protection equipment.
 - See Section 13 for disposal information.

7 Handling and storage

- **7.1 Precautions for safe handling**
 - Prevent formation of dust.
 - Keep receptacles tightly sealed.
- **Information about fire - and explosion protection:** No special measures required.
- **7.2 Conditions for safe storage, including any incompatibilities**
- **Storage:**
 - Requirements to be met by storerooms and receptacles:** No special requirements.
 - Information about storage in one common storage facility:** Not required.
 - Further information about storage conditions:** Protect from humidity and water.
- **7.3 Specific end use(s):** No further relevant information available.

8 Exposure controls/personal protection

- **Additional information about design of technical facilities:** No further data; see item 7.

- **8.1 Control parameters**

- **Ingredients with limit values that require monitoring at the workplace:**

7722-88-5 tetrasodium pyrophosphate

REL (USA) 5 mg/m³

TLV (USA) TLV withdrawn

EV (Canada) 5 mg/m³

(Contd. on page 5)

Safety Data Sheet
according to 1907/2006/EC (REACH), 1272/2008/EC (CLP), and
GHS

Page 5/10

Printing date: 31.12.2013

Revision: 31.12.2013

Trade name: ALCONOX

(Contd. of page 4)

- **Additional information:** The lists valid during the making were used as basis.
- **8.2 Exposure controls**
- **Personal protective equipment:**
- **General protective and hygienic measures:**
 - Keep away from foodstuffs, beverages and feed.
 - Immediately remove all soiled and contaminated clothing.
 - Wash hands before breaks and at the end of work.
 - Avoid contact with the skin.
 - Avoid contact with the eyes and skin.
- **Respiratory protection:**
 - Not required under normal conditions of use.
 - In case of brief exposure or low pollution use respiratory filter device. In case of intensive or longer exposure use self-contained respiratory protective device.
- **Protection of hands:**



Protective gloves

The glove material has to be impermeable and resistant to the product/ the substance/ the preparation. Due to missing tests no recommendation to the glove material can be given for the product/ the preparation/ the chemical mixture. Selection of the glove material on consideration of the penetration times, rates of diffusion and the degradation.

· **Material of gloves**

Butyl rubber, BR
Nitrile rubber, NBR
Natural rubber, NR
Neoprene gloves

The selection of the suitable gloves does not only depend on the material, but also on further marks of quality and varies from manufacturer to manufacturer. As the product is a preparation of several substances, the resistance of the glove material cannot be calculated in advance and has therefore to be checked prior to the application.

· **Penetration time of glove material**

The exact break through time has to be found out by the manufacturer of the protective gloves and has to be observed.

· **Eye protection:**



Safety glasses

- **Body protection:** Protective work clothing

(Contd. on page 6)

Safety Data Sheet
according to 1907/2006/EC (REACH), 1272/2008/EC (CLP), and
GHS

Page 6/10

Printing date: 31.12.2013

Revision: 31.12.2013

Trade name: ALCONOX

(Contd. of page 5)

9 Physical and chemical properties

· 9.1 Information on basic physical and chemical properties

· General Information

· Appearance:

Form:	Powder
Colour:	White
Odour:	Odourless
Odour threshold:	Not determined.

pH-value (10 g/l) at 20 °C:	9,5 (- NA for Powder form)

· Change in condition

Melting point/Melting range:	Not Determined.
Boiling point/Boiling range:	Undetermined.

Flash point:	Not applicable.

Flammability (solid, gaseous):	Not determined.

· Ignition temperature:

Decomposition temperature:	Not determined.

Self-igniting:	Product is not self-igniting.

Danger of explosion:	Product does not present an explosion hazard.

· Explosion limits:

Lower:	Not determined.
Upper:	Not determined.

Vapour pressure:	Not applicable.

Density at 20 °C:	1,1 g/cm ³
Relative density	Not determined.
Vapour density	Not applicable.
Evaporation rate	Not applicable.

Solubility in / Miscibility with water:	Soluble.

Partition coefficient (n-octanol/water):	Not determined.

· Viscosity:

Dynamic:	Not applicable.
Kinematic:	Not applicable.

· Solvent content:

Organic solvents:	0,0 %

Solids content:	100 %

9.2 Other information	No further relevant information available.

(Contd. on page 7)

Safety Data Sheet
according to 1907/2006/EC (REACH), 1272/2008/EC (CLP), and
GHS

Page 7/10

Printing date: 31.12.2013

Revision: 31.12.2013

Trade name: ALCONOX

(Contd. of page 6)

10 Stability and reactivity

- **10.1 Reactivity**
- **10.2 Chemical stability**
- **Thermal decomposition / conditions to be avoided:**
No decomposition if used according to specifications.
- **10.3 Possibility of hazardous reactions**
Reacts with acids.
Reacts with strong alkali.
Reacts with strong oxidizing agents.
- **10.4 Conditions to avoid:** No further relevant information available.
- **10.5 Incompatible materials:** No further relevant information available.
- **10.6 Hazardous decomposition products:**
Carbon monoxide and carbon dioxide
Phosphorus compounds
Sulphur oxides (SOx)

11 Toxicological information

- **11.1 Information on toxicological effects**
- **Acute toxicity:**
- **Primary irritant effect:**
- **On the skin:** Irritant to skin and mucous membranes.
- **On the eye:** Strong irritant with the danger of severe eye injury.
- **Sensitization:** No sensitizing effects known.
- **Additional toxicological information:**
The product shows the following dangers according to the calculation method of the General EU Classification Guidelines for Preparations as issued in the latest version:
Irritant
Swallowing will lead to a strong caustic effect on mouth and throat and to the danger of perforation of esophagus and stomach.

12 Ecological information

- **12.1 Toxicity**
- **Aquatic toxicity:** No further relevant information available.
- **12.2 Persistence and degradability:** No further relevant information available.
- **12.3 Bioaccumulative potential:** Not worth-mentioning accumulating in organisms
- **12.4 Mobility in soil:** No further relevant information available.
- **Additional ecological information:**
- **General notes:**
Water hazard class 2 (German Regulation) (Self-assessment): hazardous for water.
Do not allow product to reach ground water, water course or sewage system.
Danger to drinking water if even small quantities leak into the ground.
- **12.5 Results of PBT and vPvB assessment**
- **PBT:** Not applicable.

(Contd. on page 8)

Safety Data Sheet

according to 1907/2006/EC (REACH), 1272/2008/EC (CLP), and
GHS

Page 8/10

Printing date: 31.12.2013

Revision: 31.12.2013

Trade name: ALCONOX

(Contd. of page 7)

- **vPvB:** Not applicable.
- **12.6 Other adverse effects:** No further relevant information available.

13 Disposal considerations

- **13.1 Waste treatment methods**
- **Recommendation**
Smaller quantities can be disposed of with household waste.
Small amounts may be diluted with plenty of water and washed away. Dispose of bigger amounts in accordance with Local Authority requirements.
The surfactant used in this product complies with the biodegradability criteria as laid down in Regulation (EC) No. 648/2004 on detergents. Data to support this assertion are held at the disposal of the competent authorities of the Member States and will be made available to them, at their direct request or at the request of a detergent manufacturer.
- **Uncleaned packaging:**
- **Recommendation:** Disposal must be made according to official regulations.
- **Recommended cleansing agents:** Water, if necessary together with cleansing agents.

14 Transport information

· 14.1 UN-Number · DOT, ADR, IMDG, IATA, ICAO	Not Regulated
· 14.2 UN proper shipping name · DOT, ADR, IMDG, IATA, ICAO	Not Regulated
· 14.3 Transport hazard class(es) · DOT, ADR, IMDG, IATA, ICAO · Class	Not Regulated
· 14.4 Packing group · DOT, ADR, IMDG, IATA, ICAO	Not Regulated
· 14.5 Environmental hazards: · Marine pollutant:	No
· 14.6 Special precautions for user	Not applicable.
· 14.7 Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code	Not applicable.
· UN "Model Regulation":	Not Regulated

(Contd. on page 9)

Safety Data Sheet
according to 1907/2006/EC (REACH), 1272/2008/EC (CLP), and
GHS

Page 9/10

Printing date: 31.12.2013

Revision: 31.12.2013

Trade name: ALCONOX

(Contd. of page 8)

15 Regulatory information

- **15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture**
- **United States (USA)**
- **SARA**

· **Section 355 (extremely hazardous substances):**

None of the ingredients is listed.

· **Section 313 (Specific toxic chemical listings):**

None of the ingredients is listed.

· **TSCA (Toxic Substances Control Act):**

All ingredients are listed.

· **Proposition 65 (California):**

· **Chemicals known to cause cancer:**

None of the ingredients is listed.

· **Chemicals known to cause reproductive toxicity for females:**

None of the ingredients is listed.

· **Chemicals known to cause reproductive toxicity for males:**

None of the ingredients is listed.

· **Chemicals known to cause developmental toxicity:**

None of the ingredients is listed.

· **Carcinogenic Categories**

· **EPA (Environmental Protection Agency)**

None of the ingredients is listed.

· **IARC (International Agency for Research on Cancer)**

None of the ingredients is listed.

· **TLV (Threshold Limit Value established by ACGIH)**

None of the ingredients is listed.

· **NIOSH-Ca (National Institute for Occupational Safety and Health)**

None of the ingredients is listed.

· **OSHA-Ca (Occupational Safety & Health Administration)**

None of the ingredients is listed.

(Contd. on page 10)

Safety Data Sheet
according to 1907/2006/EC (REACH), 1272/2008/EC (CLP), and
GHS

Page 10/10

Printing date: 31.12.2013

Revision: 31.12.2013

Trade name: ALCONOX

(Contd. of page 9)

· **Canada**

· **Canadian Domestic Substances List (DSL)**

All ingredients are listed.

· **Canadian Ingredient Disclosure list (limit 0.1%)**

None of the ingredients is listed.

· **Canadian Ingredient Disclosure list (limit 1%)**

497-19-8 Sodium Carbonate

7722-88-5 tetrasodium pyrophosphate

151-21-3 sodium dodecyl sulphate

· **15.2 Chemical safety assessment:** A Chemical Safety Assessment has not been carried out.

16 Other information

This information is based on our present knowledge. However, this shall not constitute a guarantee for any specific product features and shall not establish a legally valid contractual relationship.

· **Relevant phrases**

H302: Harmful if swallowed.

H312: Harmful in contact with skin.

H315: Causes skin irritation.

H319: Causes serious eye irritation.

R21/22: Harmful in contact with skin and if swallowed.

R22: Harmful if swallowed.

R36: Irritating to eyes.

R36/38: Irritating to eyes and skin.

· **Abbreviations and acronyms:**

ADR: Accord européen sur le transport des marchandises dangereuses par Route (European Agreement concerning the International Carriage of Dangerous Goods by Road) IMDG: International Maritime Code for Dangerous Goods DOT: US Department of Transportation

IATA: International Air Transport Association

GHS: Globally Harmonized System of Classification and Labelling of Chemicals

ACGIH: American Conference of Governmental Industrial Hygienists

NFPA: National Fire Protection Association (USA)

HMIS: Hazardous Materials Identification System (USA)

WHMIS: Workplace Hazardous Materials Information System (Canada)

Issue Date: 2006-06

Section 1 - Chemical Product and Company Identification

61

Material Name: Hydrochloric Acid

CAS Number: 7647-01-0

Chemical Formula: ClH

Structural Chemical Formula: HCl

EINECS Number: 231-595-7

ACX Number: X1002202-3

Synonyms: 4-D BOWL SANITIZER; ACIDE CHLORHYDRIQUE; ACIDO CLORHIDRICO; ACIDO CLORIDRICO; ANHYDROUS HYDROCHLORIC ACID; ANHYDROUS HYDROGEN CHLORIDE; AQUEOUS HYDROGEN CHLORIDE; BOWL CLEANER; CHLOORWATERSTOF; CHLOROHYDRIC ACID; CHLOROWODOR; CHLORURE D'HYDROGENE; CHLORURE D'HYDROGENE ANHYDRE; CHLORURO DE HIDROGENO; CHLORWASSERSTOFF; CLORURO DE HIDROGENO ANHIDRO; EMULSION BOWL CLEANER; EPA PESTICIDE CHEMICAL CODE 045901; HYDROCHLORIC ACID; HYDROCHLORIC ACID GAS; HYDROCHLORIDE; HYDROGEN CHLORIDE; HYDROGEN CHLORIDE (HCL); HYGEIA CREME MAGIC BOWL CLEANER; MURIATIC ACID; MURIATIC ACID); NOW SOUTH SAFTI-SOL BRAND CONCENTRATED BOWL CLEANSE WITHMAGIC ACTIO; PERCLEEN BOWL AND URINAL CLEANER; SPIRITS OF SALT; VARLEY'S OCEAN BLUE SCENTED TOILET BOWL CLEANER; VARLEY POLY-PAK BOWL CREME; WHITE EMULSION BOWL CLEANER; WUEST BOWL CLEANER SUPER CONCENTRATED

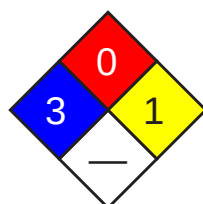
General Use: Hydrogen chloride is used to produce pharmaceutical hydrochlorides; vinyl chloride from acetylene; alkyl chlorides from olefins and arsenious chloride from arsenious oxide; electronic grade for etching semiconductor crystals. Used in the chlorination of rubber; in organic reactions involving isomerization, polymerization and alkylation; as a catalyst and condensing agent; for making chlorine where economical; in the separation of cotton from wool and cotton de-linting; as flux in the babbitt type of metal alloy; etching semi-conductor crystals.

Hydrochloric acid is used for pickling and heavy duty cleaning of metal parts; rust and scale removal. The production of chlorides; neutralizing bases; a laboratory reagent. For hydrolyzing starch and proteins in preparations for food. As a catalyst and solvent in organic synthesis. As "spirits of salts" for cleaning of lime and masonry from new brickwork. As flux or flux component for soldering; manufacture of "killed spirits".

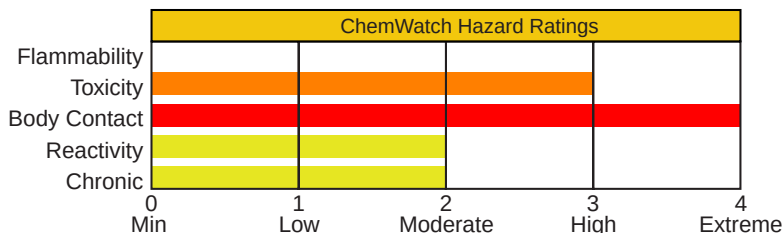
Section 2 - Composition / Information on Ingredients

Name	CAS	%
hydrogen chloride	7647-01-0	> 99.0
OSHA PEL Ceiling: 5 ppm, 7 mg/m ³ .	NIOSH REL Ceiling: 5 ppm (7 mg/m ³).	DFG (Germany) MAK TWA: 5 ppm; PEAK: 5 ppm.
ACGIH TLV Ceiling: 2 ppm.	IDLH Level 50 ppm.	
EU OEL TWA: 5 ppm; STEL: 10 ppm.		

Section 3 - Hazards Identification



Fire Diamond



ANSI Signal Word

Danger!

HMIS	
2	Health
0	Flammability
0	Reactivity



Corrosive



Compressed Gas

☆☆☆☆☆ Emergency Overview ☆☆☆☆☆

Colorless gas; characteristic suffocating, pungent odor. Corrosive. Stored as compressed gas which may cause frostbite. Chronic Effects: erosion of teeth.

Potential Health Effects

Target Organs: eyes, skin, respiratory system, liver (in animals)

Primary Entry Routes: inhalation, skin contact, eye contact

Acute Effects

Inhalation: The vapor is extremely discomforting to the upper respiratory tract, may cause severe mucous membrane damage and may be harmful if inhaled.

Inhalation of quantities of liquid mist may be extremely hazardous, even lethal due to spasm, extreme irritation of larynx and bronchi, chemical pneumonitis and pulmonary edema.

A single severe exposure may cause coughing and choking; bleeding of nose, inflammation and occasionally ulceration of the nose, throat and larynx. Fluid on the lungs followed by generalized lung damage may follow.

Breathing of vapor may aggravate asthma and inflammatory or fibrotic pulmonary disease.

High concentrations cause necrosis of the tracheal and bronchial epithelium, pulmonary edema, atelectasis and emphysema and damage to the pulmonary blood vessels and liver.

Inhalation hazard is increased at higher temperatures.

The vapor from heated material is extremely discomforting to the upper respiratory tract and lungs if inhaled.

Continued severe exposure can result in pulmonary edema and corrosion of tissues in the nose and throat.

Eye: Hydrogen Chloride: The vapor is extremely discomforting to the eyes and is capable of causing pain and severe conjunctivitis. Corneal injury may develop, with possible permanent impairment of vision, if not promptly and adequately treated.

The material may be irritating to the eye, with prolonged contact causing inflammation. Repeated or prolonged exposure to irritants may produce conjunctivitis.

Hydrochloric Acid: Eye contact is extremely painful and may cause rapid corneal damage. The liquid is extremely corrosive to the eyes and is capable of causing severe damage with loss of sight.

The vapor is highly discomforting and may be corrosive to the eyes. The vapor from heated material is extremely discomforting to the eyes.

Skin: The material is corrosive to the skin and may cause chemical burns.

Toxic effects may result from skin absorption. Bare unprotected skin should not be exposed to this material. The material may accentuate any pre-existing skin condition.

The vapor is discomforting to the skin.

Ingestion: Considered an unlikely route of entry in commercial/industrial environments.

The liquid is extremely corrosive if swallowed and is capable of causing burns to mouth, throat, esophagus, with extreme discomfort, pain and may be fatal if swallowed in quantity. Ingestion may result in nausea, abdominal irritation, pain and vomiting.

Carcinogenicity: NTP - Not listed; IARC - Group 3, Not classifiable as to carcinogenicity to humans; OSHA - Not listed; NIOSH - Not listed; ACGIH - Not listed; EPA - Not listed; MAK - Not listed.

Chronic Effects: Chronic exposure may cause discoloration or erosion of the teeth, bleeding of the nose and gums; and ulceration of the nasal mucous membranes.

Repeated exposures of animals to concentrations of about 34 ppm produced no immediate toxic effects.

Workers exposed to hydrochloric acid suffered from gastritis and a number of cases of chronic bronchitis have also been reported.

Repeated or prolonged exposure to dilute solutions may cause dermatitis. Repeated exposure to low vapor concentrations can cause skin tenderness, bleeding of the nose and gums, chronic bronchitis, gastritis.

Section 4 - First Aid Measures

Inhalation: Remove to fresh air.

Lay patient down. Keep warm and rested.

If breathing is shallow or has stopped, ensure clear airway and apply resuscitation. Transport to hospital or doctor.

Eye Contact: Immediately hold the eyes open and flush continuously for at least 15 minutes with fresh running water. Ensure irrigation under eyelids by occasionally lifting the upper and lower lids.

Transport to hospital or doctor without delay. Removal of contact lenses after an eye injury should only be undertaken by skilled personnel.

Skin Contact: Immediately flush body and clothes with large amounts of water, using safety shower if available.

Quickly remove all contaminated clothing, including footwear.

Wash affected areas with water (and soap if available) for at least 15 minutes. Transport to hospital or doctor.

Ingestion: Contact a Poison Control Center. Rinse mouth out with plenty of water. Do NOT induce vomiting. Give a glass of water.

After first aid, get appropriate in-plant, paramedic, or community medical support.

Note to Physicians: For acute or short-term repeated exposures to strong acids:

1. Airway problems may arise from laryngeal edema and inhalation exposure.

Treat with 100% oxygen initially.

2. Respiratory distress may require cricothyroidotomy if endotracheal intubation is contraindicated by excessive swelling.

See
DOT
ERG

3. Intravenous lines should be established immediately in all cases where there is evidence of circulatory compromise.
4. Strong acids produce a coagulation necrosis characterized by formation of a coagulum (eschar) as a result of the desiccating action of the acid on proteins in specific tissues.

INGESTION:

1. Immediate dilution (milk or water) within 30 minutes post-ingestion is recommended.
2. Do not attempt to neutralize the acid since exothermic reaction may extend the corrosive injury.
3. Be careful to avoid further vomiting since re-exposure of the mucosa to the acid is harmful. Limit fluids to one or two glasses in an adult.
4. Charcoal has no place in acid management.
5. Some authors suggest the use of lavage within 1 hour of ingestion.

SKIN:

1. Skin lesions require copious saline irrigation. Treat chemical burns as thermal burns with non-adherent gauze and wrapping.
2. Deep second-degree burns may benefit from topical silver sulfadiazine.

EYE:

1. Eye injuries require retraction of the eyelids to ensure thorough irrigation of the conjunctival cul-de-sacs. Irrigation should last at least 20-30 minutes. Do not use neutralizing agents or any other additives. Several liters of saline are required.
2. Cycloplegic drops (1% cyclopentolate for short-term use or 5% homatropine for longer term use), antibiotic drops, vasoconstrictive agents, or artificial tears may be indicated dependent on the severity of the injury.
3. Steroid eye drops should only be administered with the approval of a consulting ophthalmologist.

Section 5 - Fire-Fighting Measures

Flash Point: Nonflammable**Autoignition Temperature:** Not applicable**LEL:** Not applicable**UEL:** Not applicable**Extinguishing Media:** Water spray or fog; foam;

Bromochlorodifluoromethane (BCF) (where regulations permit); Dry agent; Carbon dioxide.

General Fire Hazards/Hazardous Combustion Products: Noncombustible liquid. Will not burn, but heat produces highly toxic fumes/vapors.

Heating may cause expansion or decomposition leading to violent rupture of containers.

Decomposes on heating and produces toxic fumes of hydrogen chloride. Decomposition may produce toxic fumes of chlorine.

Reacts with metals producing flammable/explosive hydrogen gas. Contact with moisture or water may generate heat causing ignition. Reacts vigorously with alkalis. Moderate fire hazard when in contact with reducing agents.

Fire Incompatibility: Reacts with metals producing flammable/explosive hydrogen gas.

Avoid reactions with metals, metal oxides, hydroxides, amines, carbonates, alkaline materials, acetic anhydride, cyanides, sulphides, sulphites, phosphides, acetylides, borides, carbides, silicides, vinyl acetate, formaldehyde and potassium permanganate, unsaturated organics, metal acetylides, sulphuric acid.

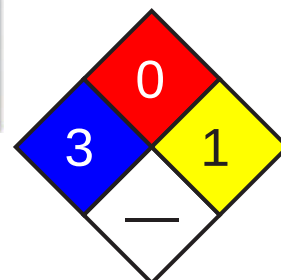
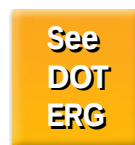
Note: Compatibility with plastics should be confirmed prior to use.

Fire-Fighting Instructions: Contact fire department and tell them location and nature of hazard.

Wear full body protective clothing with breathing apparatus. Prevent, by any means available, spillage from entering drains or waterways. Consider evacuation. Cool fire-exposed containers with water spray from a protected location.

If safe to do so, remove containers from path of fire. Equipment should be thoroughly decontaminated after use.

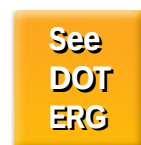
Water spray or fog may be used to disperse vapor. Do not approach cylinders suspected to be hot. If safe to do so, stop flow of gas.



Fire Diamond

Section 6 - Accidental Release Measures

Small Spills: DO NOT touch the spill material. Clean up all spills immediately. Wear fully protective PVC clothing and breathing apparatus. Contain and absorb spill with sand, earth, inert material or vermiculite. Use soda ash or slaked lime to neutralize. Collect residues and place in labeled plastic containers with vented lids. Clear area of personnel and move upwind. Avoid breathing vapors and contact with skin and eyes. Do not exert excessive pressure on valve; do not attempt to operate damaged valve. Water spray or fog may be used to disperse vapor.



Large Spills: Contact fire department and tell them location and nature of hazard. Clear area of personnel and move upwind. Wear full body protective clothing with breathing apparatus. Prevent, by any means available, spillage from entering drains or waterways. Consider evacuation. Stop leak if safe to do so. Remove leaking cylinders to a safe place if possible. Release pressure under safe, controlled conditions by opening the valve. Do not exert excessive pressure on valve; do not attempt to operate damaged valve. Shut off all possible sources of ignition and increase ventilation. Water spray or fog may be used to disperse vapor. Use soda ash or slaked lime to neutralize. Collect and seal in labeled drums for disposal. Wash spill area with large quantities of water. If contamination of

drains or waterways occurs, advise emergency services. After clean-up operations, decontaminate and launder all protective clothing and equipment before storing and reusing. DO NOT touch the spill material. Contain and absorb spill with sand, earth, inert material or vermiculite.

DO NOT USE WATER OR NEUTRALIZING AGENTS INDISCRIMINATELY ON LARGE SPILLS.

Regulatory Requirements: Follow applicable OSHA regulations (29 CFR 1910.120).

Section 7 - Handling and Storage

Handling Precautions: Avoid generating and breathing mist and vapor, breathing vapors and contact with skin and eyes.

Avoid physical damage to containers. Use in a well-ventilated area. Wear protective clothing and gloves when handling containers. Handle and open container with care.

WARNING: To avoid violent reaction, ALWAYS add material to water and NEVER water to material. When handling, DO NOT eat, drink or smoke. Always wash hands with soap and water after handling. Work clothes should be laundered separately. Use good occupational work practices. Observe manufacturer's storing and handling recommendations.

Atmosphere should be regularly checked against established exposure standards to ensure safe working conditions are maintained.

Local exhaust ventilation may be required for safe working, i.e. to keep exposures below required standards; otherwise, PPE is required.

Keep dry. Reacts violently with water.

Transport containers on a trolley. Avoid sources of heat. DO NOT transfer gas from one cylinder to another.

Recommended Storage Methods: Packaging as recommended by manufacturer. Check that containers are clearly labeled.

Cylinder. Ensure the use of equipment rated for cylinder pressure. Ensure the use of compatible materials of construction. Valve protection cap to be in place until cylinder is secured, connected. Cylinder must be properly secured either in use or in storage. Cylinder valve must be closed when not in use or when empty. Segregate full from empty cylinders. **WARNING:** Suckback into cylinder may result in rupture. Use back-flow preventive device in piping.

Hydrochloric acid: Packs of 2.5 litres or less require a child-resistant closure. Glass container or Plastic carboy or Polylined drum.

Regulatory Requirements: Follow applicable OSHA regulations.

Section 8 - Exposure Controls / Personal Protection

Engineering Controls: If risk of overexposure exists, wear air supplied breathing apparatus. Provide adequate ventilation in warehouse or closed storage areas. Use in a well-ventilated area. Local exhaust ventilation may be required for safe working, i. e. , to keep exposures below required standards; otherwise, PPE is required.

If risk of inhalation or overexposure exists, wear NIOSH-approved respirator or work in fume hood. Hydrogen chloride vapors will not be adequately absorbed by organic vapor respirators.

Personal Protective Clothing/Equipment:

Eyes: Chemical goggles. Full face shield.

DO NOT wear contact lenses. Contact lenses pose a special hazard; soft contact lenses may absorb irritants and all lenses concentrate them.

Hands/Feet: Neoprene gloves; rubber gloves. Nitrile gloves.

Safety footwear. Rubber boots.

Hydrochloric acid: Barrier cream and Neoprene gloves or Elbow length PVC gloves. Nitrile gloves.

PVC boots or PVC safety gumboots.

Respiratory Protection:

Exposure Range >5 to <50 ppm: Air Purifying, Negative Pressure, Half Mask

Exposure Range 50 to unlimited ppm: Self-contained Breathing Apparatus, Pressure Demand, Full Face

Cartridge Color: white

Other: Ensure there is ready access to a safety shower; Eyewash unit.

Acid-resistant overalls. Full protective suit. Operators should be trained in procedures for safe use of this material.

Glove Selection Index:

BUTYL Best selection

BUTYL/NEOPRENE Best selection

HYPALON Best selection

NEOPRENE..... Best selection

NEOPRENE/NATURAL..... Best selection

NITRILE+PVC Best selection

PE/EVAL/PE Best selection

SARANEX-23 Best selection

VITON/NEOPRENE Best selection

PVC..... Best selection

NITRILE	Best selection
NATURAL RUBBER.....	Satisfactory; may degrade after 4 hours continuous immersion
NATURAL+NEOPRENE.....	Satisfactory; may degrade after 4 hours continuous immersion
NAT+NEOPR+NITRILE	Poor to dangerous choice for other than short-term immersion

Section 9 - Physical and Chemical Properties

Appearance/General Info: Hydrogen chloride: Colorless, corrosive gas. Pungent suffocating odor. White fumes in moist air. Soluble in methanol, ethanol, ether and benzene.

Hydrochloric acid: Clear to light yellow (orange tint for inhibited grades) fuming corrosive liquid with sharp, suffocating odor.

Physical State: Hydrogen chloride: Compressed gas;

Hydrochloric acid: Liquid

Odor Threshold: 0.26 to 0.3 ppm

Vapor Pressure (kPa): < 24.8 at 25 °C

Vapor Density (Air=1): 1.268 at 20 °C

Formula Weight: 36.461

Specific Gravity (H₂O=1, at 4 °C): < 1.19 at 20 °C

Evaporation Rate: Slow

pH: Hydrochloric acid: < 1

Boiling Point: -85 °C (-121 °F)

Freezing/Melting Point: -114.44 °C (-173.992 °F)

Volatile Component (% Vol): 100

Decomposition Temperature (°C): Not applicable

Water Solubility: 56.1 g/100 cc hot water at 60 °C

Section 10 - Stability and Reactivity

Stability/Polymerization/Conditions to Avoid: Decomposes in the presence of moisture to produce corrosive acid. May generate sufficient heat to ignite combustible materials. Presence of heat source and direct sunlight (ultra-violet radiation). Product is considered stable under normal handling conditions. Hazardous polymerization will not occur.

Storage Incompatibilities: Hydrogen chloride: Segregate from most common metals and their alloys, alkalis, unsaturated organics, fluorine, metal carbides, metal acetylides, potassium permanganate and sulfuric acid.

Compatibility with plastics should be confirmed prior to use.

Hydrochloric acid: Segregate from alkalis, oxidizing agents and chemicals readily decomposed by acids, i.e. cyanides, sulfides, carbonates. Avoid storage with metals, metal oxides, hydroxides, amines, carbonates, alkaline materials, acetic anhydride, cyanides, sulphides, sulphites, phosphides, acetylides, borides, carbides, silicides, vinyl acetate, formaldehyde and potassium permanganate. Reacts with zinc, brass, galvanized iron, aluminum, copper and copper alloys.

Section 11 - Toxicological Information

Toxicity

Inhalation (human) LC_{Lo}: 1300 ppm/30 m

Inhalation (human) LC_{Lo}: 3000 ppm/5 m

Inhalation (rat) LC₅₀: 3124 ppm/60 m

Inhalation (rat) LC₅₀: 4701 ppm/30 m

Oral (rat) LD₅₀: 900 mg/kg

Irritation

Eye (rabbit): 5 mg/30 s - mild

See RTECS MW 4025000, for additional data.

Section 12 - Ecological Information

Environmental Fate: No data found.

Ecotoxicity: TL_m Gambusia affinis (mosquito fish) 282 ppm/96 hr (fresh water) /Conditions of bioassay not specified; Lethal Lepomis macrochirus (bluegill sunfish) 3.6 mg/l/48 hr /Conditions of bioassay not specified; LC₅₀ Cockle 330 to 1,000 mg/l/48 hr /Conditions of bioassay not specified; LC₅₀ Carassius auratus (goldfish) 178 mg/l (1 to 2 hr survival time) /Conditions of bioassay not specified; LC₅₀ Shore crab 240 mg/l/48 hr /Conditions of bioassay not specified; LC₅₀ Shrimp 100 to 330 ppm/48 hr (salt water) /Conditions of bioassay not specified; LC₁₀₀ Trout 10 mg/l 24 hr /Conditions of bioassay not specified

Biochemical Oxygen Demand (BOD): none

Section 13 - Disposal Considerations

Disposal: Recycle wherever possible. Consult manufacturer for recycling options. Treat and neutralize at an effluent treatment plant. Bury residue in an authorized landfill. Decontaminate empty containers with a lime slurry. Return empty containers to supplier or bury empty containers at an authorized landfill.

Return empty cylinders to supplier.

Section 14 - Transport Information

DOT Hazardous Materials Table Data (49 CFR 172.101):

Note: This material has multiple possible HMT entries. Choose the appropriate one based on state and condition of specific material when shipped.

Shipping Name and Description: Hydrogen chloride, anhydrous

ID: UN1050

Hazard Class: 2.3 - Poisonous gas

Packing Group:

Symbols:

Label Codes: 2.3 - Poison Gas, 8 - Corrosive

Special Provisions: 3

Packaging: **Exceptions:** None **Non-bulk:** 304 **Bulk:** None

Quantity Limitations: **Passenger aircraft/rail:** Forbidden **Cargo aircraft only:** Forbidden

Vessel Stowage: **Location:** D **Other:** 40



Shipping Name and Description: Hydrochloric acid

ID: UN1789

Hazard Class: 8 - Corrosive material

Packing Group: II - Medium Danger

Symbols:

Label Codes: 8 - Corrosive

Special Provisions: A3, A6, B3, B15, IB2, N41, T8, TP2, TP12

Packaging: **Exceptions:** 154 **Non-bulk:** 202 **Bulk:** 242

Quantity Limitations: **Passenger aircraft/rail:** 1 L **Cargo aircraft only:** 30 L

Vessel Stowage: **Location:** C **Other:**



Shipping Name and Description: Hydrochloric acid

ID: UN1789

Hazard Class: 8 - Corrosive material

Packing Group: III - Minor Danger

Symbols:

Label Codes: 8 - Corrosive

Special Provisions: IB3, T4, TP1, TP12

Packaging: **Exceptions:** 154 **Non-bulk:** 203 **Bulk:** 241

Quantity Limitations: **Passenger aircraft/rail:** 5 L **Cargo aircraft only:** 60 L

Vessel Stowage: **Location:** C **Other:**



Section 15 - Regulatory Information

EPA Regulations:

RCRA 40 CFR: Not listed

CERCLA 40 CFR 302.4: Listed per CWA Section 311(b)(4) 5000 lb (2268 kg)

SARA 40 CFR 372.65: Listed

SARA EHS 40 CFR 355: Listed

RQ: 5000 lb

TPQ: 500 lb

TSCA: Listed

Section 16 - Other Information

Disclaimer: Judgments as to the suitability of information herein for the purchaser's purposes are necessarily the purchaser's responsibility. Although reasonable care has been taken in the preparation of such information, Genium Group, Inc. extends no warranties, makes no representations, and assumes no responsibility as to the accuracy or suitability of such information for application to the purchaser's intended purpose or for consequences of its use.

Section 1 - Chemical Product and Company Identification

61

Material Name: Sodium Hydroxide

CAS Number: 1310-73-2

Chemical Formula: HNaO

Structural Chemical Formula: NaOH

EINECS Number: 215-185-5

ACX Number: X1000118-8

Synonyms: CAUSTIC SODA; CAUSTIC SODA,BEAD; CAUSTIC SODA,DRY; CAUSTIC SODA,FLAKE; CAUSTIC SODA,GRANULAR; CAUSTIC SODA,SOLID; HYDROXYDE DE SODIUM; LEWIS-RED DEVIL LYE; LYE; NATRIUMHYDROXID; NATRIUMHYDROXYDE; SODA LYE; SODA,CAUSTIC; SODA,HYDRATE; SODIO(IDROSSIDO DI); SODIUM HYDRATE; SODIUM HYDROXIDE; SODIUM HYDROXIDE,BEAD; SODIUM HYDROXIDE,DRY; SODIUM HYDROXIDE,FLAKE; SODIUM HYDROXIDE,GRANULAR; SODIUM HYDROXIDE,SOLID; SODIUM(HYDROXYDE DE); WHITE CAUSTIC

General Use: Component of alkali cleaners. Manufacture of soap, pulp and paper; rayon. Chemical manufacture. Neutralizing agent in petroleum refining; manufacture of aluminum, detergents, textile processing, refining of vegetable oils. Laboratory reagent, for organic fusion, etching of metal. Used for regenerating ion exchange resins, lye peeling of fruits and vegetables in the food industry.

Section 2 - Composition / Information on Ingredients

Name	CAS	%
sodium hydroxide	1310-73-2	>98

OSHA PEL

TWA: 2 mg/m³.

NIOSH REL

Ceiling: 2 mg/m³.

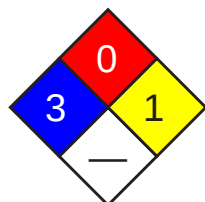
ACGIH TLV

Ceiling: 2 mg/m³.

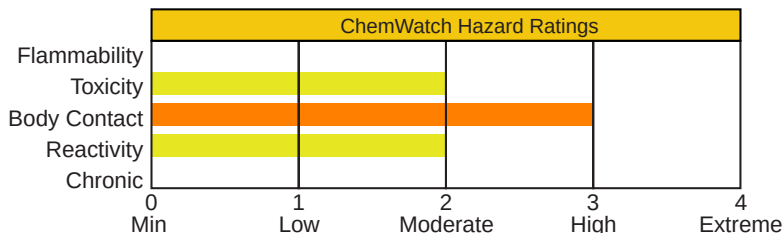
IDLH Level

10 mg/m³.

Section 3 - Hazards Identification



Fire Diamond



HMIS	
③	Health
①	Flammability
①	Reactivity

ANSI Signal Word

Danger!



Corrosive

☆☆☆☆☆ Emergency Overview ☆☆☆☆☆

White, odorless, hygroscopic flakes, lumps, or pellets. Corrosive, causes severe burns to eyes/skin/respiratory tract. Chronic Effects: dermatitis. Reacts with water.

Potential Health Effects

Target Organs: eyes, digestive system, respiratory system, skin

Primary Entry Routes: ingestion, inhalation, skin contact, eye contact

Acute Effects

Inhalation: Generated dust may be highly discomforting and corrosive to the upper respiratory tract if inhaled and is capable of causing severe burns to the upper respiratory tract.

The material may produce respiratory tract irritation which produces an inflammatory response involving the recruitment and activation of many cell types, mainly derived from the vascular system. Unlike most organs the lung can respond to a chemical insult or agent by first trying to remove or neutralize the irritant and then repairing the damage. The repair process, which initially developed to protect mammalian lungs from foreign matter and antigens, may however, cause further damage the lungs when activated by hazardous chemicals. The result is often the impairment of gas exchange, the primary function of the lungs.

Severe acute dust inhalation exposure may be fatal due to spasm, inflammation and edema of the larynx and bronchi, chemical pneumonitis and severe pulmonary edema.

Symptoms of overexposure include burning sensation, coughing, wheezing, laryngitis, shortness of breath, headache, nausea and vomiting.

Eye: The solid/dust is extremely corrosive to the eyes and is capable of causing severe damage with loss of sight. The material may produce severe irritation to the eye causing pronounced inflammation. Repeated or prolonged exposure to irritants may produce conjunctivitis.

Skin: The solid/dust is highly discomforting and extremely corrosive to the skin and is capable of causing severe burns and ulceration.

Bare unprotected skin should not be exposed to this material. The material may produce severe skin irritation after prolonged or repeated exposure, and may produce a contact dermatitis (nonallergic). This form of dermatitis is often characterized by skin redness (erythema) and swelling (edema) which may progress to vesiculation, scaling and thickening of the epidermis. Histologically there may be intercellular edema of the spongy layer (spongiosis) and intracellular edema of the epidermis.

Burns are not immediately painful; onset of pain may be delayed minutes or hours; thus care should be taken to avoid contamination of gloves and boots. A 5% aqueous solution applied to the skin of rabbits for 4 hours produced severe necrosis. Instillation of a 1% solution into the conjunctival sac failed to produce ocular or conjunctival injury in rabbits provided the eye was promptly irrigated with copious amounts of water.

Ingestion: Considered an unlikely route of entry in commercial/industrial environments.

The solid is extremely corrosive to the gastrointestinal tract and may be fatal if swallowed.

Ingestion may result in severe burns to the mouth, throat and stomach, pain, nausea and vomiting, swelling of the larynx and subsequent suffocation, perforation of the gastrointestinal tract.

A 1% aqueous solution (pH 13.4) failed to cause gastric, esophageal or other damage in rabbits.

Carcinogenicity: NTP - Not listed; IARC - Not listed; OSHA - Not listed; NIOSH - Not listed; ACGIH - Not listed; EPA - Not listed; MAK - Not listed.

Chronic Effects: Prolonged contact is unlikely, given the severity of response, but repeated exposures may produce severe ulceration.

Section 4 - First Aid Measures

Inhalation: If dust is inhaled, remove to fresh air. Encourage patient to blow nose to ensure clear breathing passages. Ask patient to rinse mouth with water but to not drink water. Seek immediate medical attention.

Eye Contact: DO NOT delay. Immediately hold the eyes open and wash continuously for at least 15 minutes with fresh running water. Ensure irrigation under eyelids by occasionally lifting the upper and lower lids. Transport to hospital or doctor without delay. Removal of contact lenses after an eye injury should only be undertaken by skilled personnel.

Skin Contact: DO NOT delay. Immediately flush body and clothes with large amounts of water, using safety shower if available. Quickly remove all contaminated clothing, including footwear. Wash affected areas with water (and soap if available) for at least 15 minutes. Transport to hospital or doctor.

In case of burns: Quickly immerse affected area in cold running water for 10 to 15 minutes. Bandage lightly with a sterile dressing. Treat for shock if required. Lay patient down. Keep warm and rested. Transport to hospital or doctor.

Ingestion: DO NOT delay. Contact a Poison Control Center. If swallowed, do NOT induce vomiting. Give a glass of water.

After first aid, get appropriate in-plant, paramedic, or community medical support.

Note to Physicians: For acute or short-term repeated exposures to highly alkaline materials:

1. Respiratory stress is uncommon but presents occasionally because of soft tissue edema.
2. Unless endotracheal intubation can be accomplished under direct vision, cricothyroidotomy or tracheotomy may be necessary.
3. Oxygen is given as indicated.
4. The presence of shock suggests perforation and mandates an intravenous line and fluid administration.
5. Alkali corrosives damage occurs by liquefaction necrosis whereby the saponification of fats and solubilization of proteins allow deep penetration into the tissue. Alkalis continue to cause damage after exposure.

INGESTION:

1. Milk and water are the preferred diluents. No more than 2 glasses of water should be given to an adult.
2. Neutralizing agents should never be given since exothermic heat reaction may compound injury.

* Catharsis and emesis are absolutely contra-indicated.

See
DOT
ERG

* Activated charcoal does not absorb alkali.

* Gastric lavage should not be used.

Supportive care involves the following.

1. Withhold oral feedings initially.

2. If endoscopy confirms transmucosal injury start steroids only within the first 48 hours.

3. Carefully evaluate the amount of tissue necrosis before assessing the need for surgical intervention.

4. Patients should be instructed to seek medical attention whenever they develop difficulty in swallowing (dysphagia).

SKIN AND EYE: Injury should be irrigated for 20-30 minutes. Eye injuries require saline.

Section 5 - Fire-Fighting Measures

Extinguishing Media: Use extinguishing media suitable for surrounding area.

General Fire Hazards/Hazardous Combustion Products: Noncombustible.

Not considered to be a significant fire risk, however containers may burn.

Solid in contact with water or moisture reacts violently, and solutions are highly alkaline and may cause severe skin burns.

Fire Incompatibility: Avoid reaction with strong oxidizers, strong acids, organic materials/compounds.

In presence of moisture, the material is corrosive to aluminum, zinc and tin producing highly flammable hydrogen gas.

Fire-Fighting Instructions: Contact fire department and tell them location and nature of hazard.

Wear full body protective clothing with breathing apparatus. Prevent, by any means available, spillage from entering drains or waterways.

Use fire fighting procedures suitable for surrounding area.

Do not approach containers suspected to be hot.

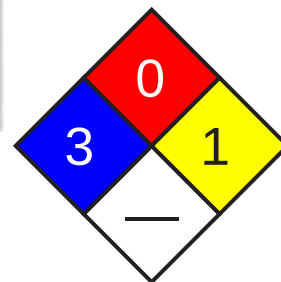
Cool fire exposed containers with water spray from a protected location.

If safe to do so, remove containers from path of fire.

Avoid spraying water onto liquid pools.

Equipment should be thoroughly decontaminated after use.

See
DOT
ERG



Fire Diamond

Section 6 - Accidental Release Measures

Small Spills: DO NOT touch the spill material. Slippery when spilt.

Clean up all spills immediately.

Control personal contact by using protective equipment.

Use dry clean up procedures and avoid generating dust.

Place in suitable containers for disposal.

Large Spills: DO NOT touch the spill material. Slippery when spilt.

Keep dry. Reacts violently with water.

Clear area of personnel and move upwind.

Contact fire department and tell them location and nature of hazard.

Wear full body protective clothing with breathing apparatus. Prevent, by any means available, spillage from entering drains or waterways.

Shut off all possible sources of ignition and increase ventilation.

Stop leak if safe to do so.

Use dry clean up procedures and avoid generating dust. Collect recoverable product into labeled containers for recycling. Collect residues and seal in labeled drums for disposal.

Wash area down with large quantity of water and prevent runoff into drains.

If contamination of drains or waterways occurs, advise emergency services.

After clean up operations, decontaminate and launder all protective clothing and equipment before storing and reusing.

Regulatory Requirements: Follow applicable OSHA regulations (29 CFR 1910.120).

See
DOT
ERG

Section 7 - Handling and Storage

Handling Precautions: Avoid generating and breathing dust. Avoid contact with skin and eyes.

Wear protective clothing when risk of exposure occurs.

Use in a well-ventilated area.

Local exhaust ventilation may be required for safe working, i.e. to keep exposures below required standards, otherwise PPE is required.

Handle and open container with care.

Keep dry. Reacts violently with water.

WARNING: Contact with water generates heat.

Avoid contact with incompatible materials.

Avoid physical damage to containers.

Keep containers securely sealed when not in use.

Always wash hands with soap and water after handling. Work clothes should be laundered separately. Launder contaminated clothing before reuse. Use good occupational work practice. Observe manufacturer's storing and handling recommendations.

Atmosphere should be regularly checked against established exposure standards to ensure safe working conditions are maintained.

Recommended Storage Methods: Plastic bag or Packaging as recommended by manufacturer. Glass container.

Polyethylene or polypropylene container or Polylined drum.

DO NOT use aluminum, galvanized or tin-plated containers.

Check that containers are clearly labeled.

Storage Requirements: Keep dry. Reacts violently with water.

Store in original containers. Keep containers securely sealed. Store in a cool, dry, well-ventilated area. Store away from incompatible materials and foodstuff containers. Protect containers against physical damage and check regularly for leaks.

Observe manufacturer's storing and handling recommendations.

DO NOT use aluminum, galvanized or tin-plated containers.

Regulatory Requirements: Follow applicable OSHA regulations.

Section 8 - Exposure Controls / Personal Protection

Engineering Controls: Use in a well-ventilated area DO NOT handle directly. Wear gloves and use scoop/tongs/tools.

If risk of overexposure exists, wear NIOSH approved respirator.

If conditions are such that worker exposure potential is high, wear full-face air-supplied breathing apparatus and full protective suit.

Personal Protective Clothing/Equipment:

Eyes: Safety glasses with side shields Chemical goggles. Full face shield.

Contact lenses pose a special hazard; soft lenses may absorb irritants and all lenses concentrate them.

Hands/Feet: DO NOT handle directly. Wear gloves and use scoop/tongs/tools.

Elbow length PVC gloves or Butyl rubber gloves or Neoprene rubber gloves.

Safety footwear.

Respiratory Protection:

Exposure Range >2 to <10 mg/m³: Air Purifying, Negative Pressure, Half Mask

Exposure Range 10 to unlimited mg/m³: Self-contained Breathing Apparatus, Pressure Demand, Full Face

Cartridge Color: dust/mist filter (use P100 or consult supervisor for appropriate dust/mist filter)

Other: Overalls. PVC apron. PVC protective suit may be required if exposure severe.

Eyewash unit. Ensure there is ready access to a safety shower.

Section 9 - Physical and Chemical Properties

Appearance/General Info: White hygroscopic, odorless, pellets, flakes, sticks or solid cast mass. Explosive boiling and spitting will occur if added to hot water. Reacts violently with acids. CAUSTIC alkali. Soluble in alcohol, ether, glycerol.

Physical State: Divided solid

pH (1% Solution): 12.7

Vapor Pressure (kPa): Negligible

Boiling Point: 1390 °C (2534 °F)

Formula Weight: 40

Freezing/Melting Point: 318.4 °C (605.12 °F)

Specific Gravity (H₂O=1, at 4 °C): 2.12 at 20 °C

Water Solubility: 1 g dissolves in 0.9 ml water

pH: Not applicable

Section 10 - Stability and Reactivity

Stability/Polymerization/Conditions to Avoid: Vigorously exotherms when mixed with water. In the presence of moisture, highly corrosive to aluminum, zinc and tin.

HIGHLY reactive: with ammonium salts evolves ammonia gas. Rapidly picks up moisture from the air and with carbon dioxide in air forms sodium carbonate.

Presence of incompatible materials and storage in unsealed containers.

Product is considered stable under normal handling conditions.

Hazardous polymerization will not occur.

Storage Incompatibilities: Keep dry. Reacts violently with water.

Segregate from water, strong oxidizers, strong acids, organic materials, ammonium compounds, nitro compounds and trichlorethylene.

Section 11 - Toxicological Information**Toxicity**

No data reported

Irritation

Skin (rabbit): 500 mg/24h SEVERE

Eye (rabbit): 0.05 mg/24h SEVERE

Eye(rabbit):1 mg/24h SEVERE

Eye(rabbit):1 mg/30s rinsed-SEVERE

See RTECS WB 4900000, for additional data.

Section 12 - Ecological Information

Environmental Fate: No data found.

Ecotoxicity: LC₁₀₀ Cyprinus carpio 180 ppm/24 hr at 25 deg; TL_m mosquito fish 125 ppm/96 hr (freshwater) ; TL_m Bluegill 99 mg/L/48 hr (tap water)

Biochemical Oxygen Demand (BOD): none

Octanol/Water Partition Coefficient: log K_{ow} = too low to be measured

Section 13 - Disposal Considerations

Disposal: Recycle wherever possible or consult manufacturer for recycling options.

Follow applicable federal, state, and local regulations.

Treat and neutralize with dilute acid at an effluent treatment plant.

Recycle containers, otherwise dispose of in an authorized landfill.

Section 14 - Transport Information**DOT Hazardous Materials Table Data (49 CFR 172.101):**

Shipping Name and Description: Sodium hydroxide, solid

ID: UN1823

Hazard Class: 8 - Corrosive material

Packing Group: II - Medium Danger

Symbols:

Label Codes: 8 - Corrosive

Special Provisions: IB8, IP2, IP4

Packaging: Exceptions: 154 Non-bulk: 212 Bulk: 240

Quantity Limitations: Passenger aircraft/rail: 15 kg Cargo aircraft only: 50 kg

Vessel Stowage: Location: A Other:

**Section 15 - Regulatory Information****EPA Regulations:**

RCRA 40 CFR: Not listed

CERCLA 40 CFR 302.4: Listed per CWA Section 311(b)(4) 1000 lb (453.5 kg)

SARA 40 CFR 372.65: Not listed

SARA EHS 40 CFR 355: Not listed

TSCA: Listed

Section 16 - Other Information

Disclaimer: Judgments as to the suitability of information herein for the purchaser's purposes are necessarily the purchaser's responsibility. Although reasonable care has been taken in the preparation of such information, Genium Group, Inc. extends no warranties, makes no representations, and assumes no responsibility as to the accuracy or suitability of such information for application to the purchaser's intended purpose or for consequences of its use.

Attachment B - Blank TIP Form

Task Improvement Process			
General			
TIP ID			
Observed Company			
Observation Type			
TIP Form			
Task Observed			
Observee Name			
Observer Name			
Observation Date			
Project Number			
Project Name			
Supervisor			
Equipment On Site			
Pertinent Information			
Observations			
Task	Correct	Questionable	Comments
H&S - Field Multi-task (General)			
General			
PPE worn according to HASP/JLA specifications and inspected before use	☐	☐	
STOP work authority used where appropriate	☐	☐	
Body Use/Positioning			
Proper lifting/pushing / pulling techniques used (no awkward positions/posture; no twisting or excessive reaching; no straining; no excessive weight; load under control/stable; etc.)	☐	☐	
Body parts away from pinch points (clear or protected from being caught between objects/equipment or from contacting sharp objects/edges, etc.)	☐	☐	
Body parts not in the Line of Fire (protected from being struck by traffic, equipment, falling/flying objects, etc.)	☐	☐	
Work Procedures/Environment			
Correct type and number of barricades/warning devices/cones	☐	☐	
Communication with others when necessary (hand signals, flags, etc.)	☐	☐	
Right tools and equipment selected for the job and inspected before use	☐	☐	

Observations

Task	Correct	Questionable	Comments
Tools and equipment used properly	☐	☐	
Housekeeping performed (work areas and pathways clear of hazards, uneven surfaces addressed, etc.)	☐	☐	
Slip/trip/fall hazards addressed (path selected and cleared, eyes on path, speed, footing, etc.)	☐	☐	
Proper energy control (electrical systems grounded, lock out / tag out performed, isolated, cords / fixtures in good condition, GFCI inspected and utilized when appropriate and used properly, etc.)	☐	☐	
Protected from overhead/underground utilities (proper clearance, properly marked, spotters as necessary, etc.)	☐	☐	
Safe work on/near water (appropriate flotation device, appropriate boat for body of water and operation of boat, etc.)	☐	☐	
Chemical/Radiation protection (decontamination ones set up properly, air monitoring completed and logged, etc.)	☐	☐	
Fall from elevated height prevention (maintains 3 -points of contact, appropriate ladder, mounting/dismounting vehicle/equipment, fall arrest system, etc.)	☐	☐	
Any additional safety issues identified?	☐	☐	

TIP Summary

Enter the details of the TIP and follow-up discussion. Provide details on how any questionable items were resolved.

Discussion following the TIP led by	
Date of follow-up discussion	
Positive Comments	
Discussion Summary Completed	☐ Supervisor Led ☐ Peer to Peer ☐ ARCADIS Employee to Subcontractor
Summary of Questionable Items	

Action Items (Optional)

Assign appropriate action items based on the observations made. You can add more than one action item if needed.

Item No.	Action Item	Responsible Person	Due Date	Completed Date
1				
2				

Action Items (Optional)

Assign appropriate action items based on the observations made. You can add more than one action item if needed.

Item No.	Action Item	Responsible Person	Due Date	Completed Date
3				

Standard Review

Reviewed By	Position / Title	Completed Date

Quality Review

Reviewed By	Position / Title	Completed Date

Field Validation and Verification Review

Reviewed By	Position / Title	Completed Date

Task Improvement Process			
General			
TIP ID			
Observed Company			
Observation Type			
TIP Form			
Task Observed			
Observee Name			
Observer Name			
Observation Date			
Project Number			
Project Name			
Supervisor			
Equipment On Site			
Pertinent Information			
Observations			
Task	Correct	Questionable	Comments
H&S - Drilling-Borings/Well Installation			
Equipment Care and Maintenance			
PPE worn according to HASP/JLA specifications and inspected before use	☐	☐	
STOP work authority used where appropriate	☐	☐	
Electrical systems grounded, lock out / tag out performed, cords / fixtures in good condition	☐	☐	
Corded portable power tool or other cord connected equipment plugged into a GFCI whip and GFCI whip plugged directly into power source (electrical outlet)	☐	☐	
GFCI whip inspected, tested, and appropriate size for the equipment	☐	☐	
Wheel chocks in place on heavy vehicles and trailers	☐	☐	
Tool selection/use appropriate for job and inspected before	☐	☐	
Air monitoring equipment is on site, calibrated	☐	☐	
Containers with hazardous materials properly labeled; other containers appropriately labeled; compressed gas bottles separated, secured & upright	☐	☐	
Drill rig appropriate for task, inspected prior to use and in good condition	☐	☐	

Observations

Task	Correct	Questionable	Comments
High energy systems -mud/air/water (hose condition, hose routing, whip checks, and pop offs) inspected and functional	☐	☐	
Hoisting equipment, slings, tag lines and chains inspected prior to use, in good condition and used properly	☐	☐	
Emergency shut-off locations functional	☐	☐	
Work Environment			
Onsite vehicles and equipment located and marked properly, backed in when possible	☐	☐	
Underground utility, piping locates completed and locations marked, utilities and structures checklist used and minimum of 3 lines of evidence	☐	☐	
Maintains appropriate distance between equipment and power lines/ overhead obstructions	☐	☐	
Exclusion zone set up properly with correct type and number of barricades	☐	☐	
Work areas and pathways designated and clear of trip/slip hazards; uneven surfaces identified/addressed	☐	☐	
Work Procedures (Driller)			
Proper lifting/pushing/pulling techniques	☐	☐	
3 points of contact maintained on ladders/steps, no jumping from equipment/platforms	☐	☐	
Pinch points and rotating hazards marked or guarded	☐	☐	
Follows sawcutting and jackhammering procedures and best management practices including mitigation of dust hazards	☐	☐	
Drill rig blocking stable; drill rig not moved when mast is up; spotters used when rig is moved	☐	☐	
Flying debris hazards addressed	☐	☐	
Proper use of tools to handle soil, water during drilling or hole clearance	☐	☐	
Using correct cutting tools to open liners containing soils	☐	☐	
Good housekeeping maintained	☐	☐	
Surface water/run-off diverted from boring	☐	☐	
Soil/water/waste materials stored properly, labeling complete	☐	☐	
Rig movement completely stopped before approaching with workers clear before beginning rotation/movement; rods, auger, casing moved properly, guided with lines	☐	☐	
Use of proper methods to break rods (no use of cheater bars, etc)	☐	☐	
Tag/sand lines used during hoist operations	☐	☐	
Maintain safe distance from moving equipment at full reach	☐	☐	

Observations

Task	Correct	Questionable	Comments
Fall protection available and used at heights greater than 6'	☐	☐	
Open holes protected Proper tools used when installing or opening well lids; well heads closed/locked	☐	☐	
Hands clear of cable when developing new wells	☐	☐	
Personnel deconned per HASP/JLA	☐	☐	
Equipment deconned per HASP/JLA (pressure washer used properly)	☐	☐	
Equipment in passenger compartment/bed of vehicle secured; load distributed evenly	☐	☐	
Any additional safety issues identified?	☐	☐	

Work Procedures (ARCADIS)

Observee performing required air monitoring at specified intervals	☐	☐	
Uses proper lifting techniques	☐	☐	
Not using awkward body positions or heavy lifting when logging samples	☐	☐	
Not using hand tools or hands near borehole to obtain cuttings when rig is in operating	☐	☐	
Using correct cutting tools to open liners containing soils	☐	☐	
Maintains communication with driller	☐	☐	
Maintains good housekeeping in work area and in vehicle	☐	☐	
Maintains safe distance from drill stem when rig is operating	☐	☐	
Establishes work area upwind of drill rig to extent possible	☐	☐	
Has established and maintains any required exclusion zones specified by the HASP or JLA	☐	☐	
Use best practices to perform decontamination of soil sampling equipment (avoids over spraying, contain rinsate, avoids spraying towards body, etc)	☐	☐	
Any additional safety issues identified?	☐	☐	

TIP Summary

Enter the details of the TIP and follow-up discussion. Provide details on how any questionable items were resolved.

Discussion following the TIP led by	
Date of follow-up discussion	
Positive Comments	
Discussion Summary Completed	☐ Supervisor Led ☐ Peer to Peer ☐ ARCADIS Employee to Subcontractor
Summary of Questionable Items	

Action Items (Optional)

Assign appropriate action items based on the observations made. You can add more than one action item if needed.

Item No.	Action Item	Responsible Person	Due Date	Completed Date
1				
2				
3				

Standard Review

Reviewed By	Position / Title	Completed Date

Quality Review

Reviewed By	Position / Title	Completed Date

Field Validation and Verification Review

Reviewed By	Position / Title	Completed Date

Task Improvement Process			
General			
TIP ID			
Observed Company			
Observation Type			
TIP Form			
Task Observed			
Observee Name			
Observer Name			
Observation Date			
Project Number			
Project Name			
Supervisor			
Equipment On Site			
Pertinent Information			
Observations			
Task	Correct	Questionable	Comments
H&S - Groundwater Sampling			
Equipment Care and Maintenance			
PPE worn according to HASP/JLA specifications and inspected before use	☐	☐	
Spill kit, absorbent pads, or other materials available to contain spills. Storm drains or surface water drainage areas protected	☐	☐	
Required monitoring equipment calibrated and used	☐	☐	
Right tools for the job are identified, available, inspected and in good condition	☐	☐	
Electrical systems: a) Grounded b) Lock out / tag out performed	☐	☐	
Battery powered equipment properly connected and disconnected (connect positive then negative, disconnect negative then positive)	☐	☐	
Corded portable power tool or other cord connected equipment is plugged into a GFCI whip and the GFCI whip is plugged directly into the power source (electrical outlet)	☐	☐	
GFCI whip has been inspected and tested, and is appropriate size for the equipment	☐	☐	
Battery posts protected from short circuit	☐	☐	

Observations

Task	Correct	Questionable	Comments
Air monitoring equipment is on site, calibrated according to manufacturer instructions	☐	☐	
STOP work authority used where appropriate	☐	☐	
Work Environment			
Exclusion zone set up properly with correct type and number of barricades, warning devices, delineators	☐	☐	
Site specific traffic hazards addressed	☐	☐	
Well manhole/vault inspected for hazards	☐	☐	
Proper tools or equipment used to remove well manhole/vault covers	☐	☐	
Standing water in well manholes/vaults adequately removed prior to opening well	☐	☐	
Observee not directly over well equipped with water tight cap when removing cap	☐	☐	
Vapors in well allowed to ventilate after opening well	☐	☐	
Well headspace vapor concentration measured when required by HASP or work plan	☐	☐	
Work areas and pathways designated and clear of trip/slip hazards; uneven surfaces addressed	☐	☐	
Work Procedures: Well Gauging/Purging/Sampling			
Knee pads used when kneeling for extended periods of time	☐	☐	
Proper lifting/pushing/pulling techniques	☐	☐	
Correct body positioning (e.g., not bending at waist to gauge wells)	☐	☐	
Proper handling of sample bottles (for example, hand positioning, PPE, not over tightening lids and avoiding glass bottle contact with other objects)	☐	☐	
Dedicated bailers, disposable bailers or properly decontaminated sampling equipment placed in well, water level indicators and oil/water interface probes properly decontaminated	☐	☐	
Purge water containerized or disposed of per the HASP/JLA	☐	☐	
Purge water is containerized, observee is using the proper labeling and marking requirements as required by the project work plan and/or shipping determination	☐	☐	
DOT HazMat #1 trained person collecting samples	☐	☐	
Work Procedures: Free Product Purg/Bail/Samp/Coll			
PPE as specified in HASP/JLA is donned	☐	☐	
Ensured vehicles and structures adequately ventilated to minimize organic vapor levels	☐	☐	

Observations

Task	Correct	Questionable	Comments
Free product is managed for shipment in accordance with the project shipping determination	☐	☐	
Purge water, product, decontamination rinsate water, and other wastes properly stored and secured; disposable equipment containerized or disposed of properly	☐	☐	
Work Procedures: End of Job			
All well caps/plugs and well/vault lids secure and locked	☐	☐	
Housekeeping/site left in proper condition and secured	☐	☐	
Materials of Trade (e.g., compressed gas cylinders, preservatives, calibration solutions) properly secured during transport	☐	☐	
Items stowed in vehicle properly	☐	☐	
Any additional safety issues identified?	☐	☐	

TIP Summary

Enter the details of the TIP and follow-up discussion. Provide details on how any questionable items were resolved.

Discussion following the TIP led by	
Date of follow-up discussion	
Positive Comments	
Discussion Summary Completed	☐ Supervisor Led ☐ Peer to Peer ☐ ARCADIS Employee to Subcontractor
Summary of Questionable Items	

Action Items (Optional)

Assign appropriate action items based on the observations made. You can add more than one action item if needed.

Item No.	Action Item	Responsible Person	Due Date	Completed Date
1				
2				
3				

Standard Review

Reviewed By	Position / Title	Completed Date

Standard Review		
Reviewed By	Position / Title	Completed Date
Quality Review		
Reviewed By	Position / Title	Completed Date
Field Validation and Verification Review		
Reviewed By	Position / Title	Completed Date

Attachment C - Utility Checklist

Utilities and Structures Checklist

Project: _____
 Project Number: _____
 Date: _____

Work locations applicable to this clearance checklist (**Photo Document Work Locations**):

THIS FORM MUST BE COMPLETED IN ENTIRETY PRIOR TO BEGINNING ANY INTRUSIVE WORK

Pre-Field Work

One Call or "811" notified 48-72 hours in advance of work? ☐ Yes ☐ No
 Utility companies notified during the One Call process ☐ See attached ticket

 List any other utilities requiring notification: ☐ None

Private Locator Contacted ☐ Yes ☐ No
 Plan private utility clearance subcontractor assignments, areas, required clearance equipment, depth of clearance needed, types of utilities
 Client provided utility maps or "as built" drawings showing utilities? ☐ Yes ☐ No

Field Work - This must be completed on site, by staff who have a minimum of one year of field experience in identifying utilities

Lines of Evidence - Must have **3 Reliable Lines of Evidence** Prior to Starting any Intrusive Work

☐ One Call/"811"
 Utility Markings Present: ☐ Paint ☐ Pin flags/stakes ☐ Other ☐ None
☐ Client Provided Maps/Drawings **OR** ☐ Maps/Drawings requested but not provided
☐ Client Clearance Name(s)/Affiliation(s) _____
☐ Interview(s): Name(s)/Affiliation(s) _____

Did person(s) interviewed indicate depths of any utilities in the subsurface?

☐ Yes, depths provided:
☐ Did not know or refused to answer
 Additional Comments:

- ☐ Site Inspection & Complete Site Sketch (**Photo Document Marked Utilities & Utility Structures**)
- ☐ GPR
- ☐ Air-Knife
- ☐ Hydro-Knife
- ☐ Public Records/Maps
- ☐ Radiofrequency
- ☐ Metal Detector
- ☐ Handauger
- ☐ Potholing
- ☐ Probing
- ☐ Private Locator: Name and Company: _____
- ☐ Marine Locator: Name and Company: _____
- ☐ Other: _____

Tips for Successful Utility Location:

1. Don't forget to look up
2. Be on site when utilizing private utility locators
3. Select alternate/backup locations during clearance process
4. **Mark out all known utilities. Leave nothing to question**
5. No hammering- no pickaxes-no digging bars-no hurrying or shortcutting
6. No excessive turning or downward force of handaugers/shovels, etc.
7. Utilities may run directly under asphalt/concrete or be > 5 ft. in depth



Site Inspection

Utilities and Structures Checklist

During the site inspection look for the following ("YES" requires additional investigation and must be marked properly prior to performing intrusive work):

	Utility Color Codes		
a) Natural gas line present (evidence of a gas meter)?	Yellow	☐ Yes	☐ No
b) Evidence of electric lines:	Red		
i) Conduits to ground from electric meter or along wall?		☐ Yes	☐ No
ii) Light poles, electric devices with no overhead lines?		☐ Yes	☐ No
iii) Overhead electric lines present?		☐ Yes	☐ No
c) Evidence of sewer drains:	Green		
i) Restrooms or kitchen on site?		☐ Yes	☐ No
ii) Sewer cleanouts present?		☐ Yes	☐ No
iii) Combined sewer /storm lines or multiple sewer lines?		☐ Yes	☐ No
d) Evidence of water lines:	Blue		
i) Water meter on site or multiple water lines?		☐ Yes	☐ No
ii) Fire hydrants in vicinity of work?		☐ Yes	☐ No
iii) Irrigation systems? (Sprinkler heads, valve boxes, controls in building)		☐ Yes	☐ No
e) Evidence of storm drains:	Green		
i) Open curbside or slotted grate storm drains		☐ Yes	☐ No
ii) Gutter down spouts going into ground		☐ Yes	☐ No
f) Evidence of telecommunication lines:	Orange		
i) Fiber optic warning signs in areas?		☐ Yes	☐ No
ii) Lines from cable boxes running into ground?		☐ Yes	☐ No
iii) Conduits from power poles running into ground?		☐ Yes	☐ No
iv) Aboveground boxes or housings or wires in work area?		☐ Yes	☐ No
g) Underground storage tanks:			
i) Tank pit present?		☐ Yes	☐ No
ii) Product lines running to dispensers/buildings?		☐ Yes	☐ No
iii) Vent present away from tank pit?		☐ Yes	☐ No
h) Do utilities enter or exit existing structures/buildings?		☐ Yes	☐ No
If Yes, confirm the utility markings outside of structure/building match up.			
i) Proposed excavation marked in white?	White	☐ Yes	☐ No
j) Overhead Utilities/Communication Lines Look Up:			
i) Overhead electrical conduit, pipe chases, cable trays ?		☐ Yes	☐ No
ii) Overhead fire sprinkler system?		☐ Yes	☐ No
iii) Other overhead lines/utilities, product lines, AC condenser lines?		☐ Yes	☐ No
k) Aboveground Power lines in or near the work area:			
i) < 50 kV within 10 ft. of work area?		☐ Yes	☐ No
ii) >50 - 200 kV within 15 ft. of work area?		☐ Yes	☐ No
iii) >200-350 kV within 20 ft. of work area?		☐ Yes	☐ No
iv) >350-500 kV within 25 ft. of work area?		☐ Yes	☐ No
v) >500-750 kV within 35 ft. of work area?		☐ Yes	☐ No
vi) >750-1000 kV within 45 ft. of work area?		☐ Yes	☐ No
l) Other:			
i) Evidence of linear asphalt or concrete repair?		☐ Yes	☐ No
ii) Evidence of linear ground subsidence or change in vegetation?		☐ Yes	☐ No
iii) Unmarked manholes or valve covers in work area?		☐ Yes	☐ No
iv) Warning signs ("Call Before you Dig", etc.) on or adjacent to site?		☐ Yes	☐ No
v) Utility color markings not illustrated in this checklist?		☐ Yes	☐ No

Do not initiate intrusive work if utilities are suspected to be present in area and are not located, if markings are over 14 days old, or if clearance methods provide incomplete or conflicting information. Do not perform intrusive work within 30 inches of a utility marking without receiving pre-approval by Corporate H&S .

Name and Signature of person completing the checklist: _____
 Date: _____

Attachment D - Tailgate H&S Form

TAILGATE HEALTH & SAFETY MEETING FORM

This form documents the tailgate meeting conducted in accordance with the Project HASP. Personnel who perform work operations on-site during the day are required to attend this meeting and to acknowledge their attendance, at least daily.

Project Name:			Project Location:
Date:	Time:	Conducted by:	Signature/Title:
Client:		Client Contact:	Subcontractor companies:

TRACKing the Tailgate Meeting

Think through the Tasks (list the tasks for the day):

1 _____	3 _____	5 _____
2 _____	4 _____	6 _____

Other Hazardous Activities - Check the box if there are any other ARCADIS, Client or other party activities that may pose hazards to ARCADIS operations ☐

If there are none, write "None" here: _____

If yes, describe them here: _____

How will they be controlled? _____

Pework Authorization - check activities to be conducted that require permit issuance or completion of a checklist or similar before work begins:

Doc #

Doc #

☐ Not applicable <u>Doc #</u> _____	☐ Working at Height _____	☐ Confined Space _____
☐ Energy Isolation (LOTO) _____	☐ Excavation/Trenching _____	☐ Hot Work _____
☐ Mechanical Lifting Ops _____	☐ Overhead & Buried Utilities _____	☐ Other permit _____

Discuss following questions (for some review previous day's post activities). **Check if yes :**

☐ Incidents from day before to review?	☐ Lessons learned from the day before?	☐ Topics from Corp H&S to cover?
☐ Any corrective actions from yesterday?	☐ Will any work deviate from plan?	☐ Any Stop Work Interventions yesterday?
☐ JSAs or procedures are available?	☐ Field teams to "dirty" JSAs, as needed?	☐ If deviations, notify PM & client
☐ Staff has appropriate PPE?	☐ Staff knows Emergency Plan (EAP)?	☐ All equipment checked & OK?
		☐ Staff knows gathering points?

Comments: _____

Recognize the hazards (check all those that are discussed) (Examples are provided) and **Assess** the Risks (Low, Medium, High - circle risk level) - Provide an overall assessment of hazards to be encountered today and briefly list them under the hazard category.

☐ Gravity (i.e., ladder, scaffold, trips) (L M H) _____	☐ Motion (i.e., traffic, moving water) (L M H) _____	☐ Mechanical (i.e., augers, motors) (L M H) _____
☐ Electrical (i.e., utilities, lightning) (L M H) _____	☐ Pressure (i.e., gas cylinders, wells) (L M H) _____	☐ Environment (i.e., heat, cold, ice) (L M H) _____
☐ Chemical (i.e., fuel, acid, paint) (L M H) _____	☐ Biological (i.e., ticks, poison ivy) (L M H) _____	☐ Radiation (i.e., alpha, sun, laser) (L M H) _____
☐ Sound (i.e., machinery, generators) (L M H) _____	☐ Personal (i.e. alone, night, not fit) (L M H) _____	☐ Driving (i.e. car, ATV, boat, dozer) (L M H) _____

Continue TRACK Process on Page 2

TAILGATE HEALTH & SAFETY MEETING FORM - Pg. 2

Control the hazards (Check all and discuss those methods to control the hazards that will be implemented for the day): Review the HASP, applicable JSAs, and other control processes. Discuss and document any additional control processes.

☒ **STOP WORK AUTHORITY** (Must be addressed in every Tailgate meeting - (See statements below)

☐ Elimination ☐ Engineering controls ☐ General PPE Usage ☐ Personal Hygiene ☐ Emergency Action Plan (EAP) ☐ JSA to be developed/used (<u>specify</u>) ☐ ☐	☐ Substitution ☐ Administrative controls ☐ Hearing Conservation ☐ Exposure Guidelines ☐ Fall Protection ☐ TIP conducted (<u>specify job/JSA</u>) ☐ ☐	☐ Isolation ☐ Monitoring ☐ Respiratory Protection ☐ Decon Procedures ☐ Work Zones/Site Control ☐ Traffic Control ☐ Other (<u>specify</u>) ☐ ☐

Signature and Certification Section - Site Staff and Visitors

Name/Company/Signature	Initial & Sign in Time	Initial & Sign out Time	I have read and understand the HASP

Important Information and Numbers	Visitor Name/Co - not involved in work	I will STOP the job any time anyone is concerned or uncertain about health & safety or if anyone identifies a hazard or additional mitigation not recorded in the site, project, job or task hazard assessment.																
All site staff should arrive fit for work. If not, they should report to the supervisor any restrictions or concerns. In the event of an injury, employees will call WorkCare at 1.800.455.6155 and then notify the field supervisor who will, in turn, notify Corp H&S at 1.720.344.3844. In the event of a motor vehicle accident, employees will notify the field supervisor who will then notify Corp H&S at 1.720.344.3844 and then Corp Legal at 1.720.344.3756. In the event of a utility strike or other damage to property of a client or 3rd party, employees will immediately notify the field supervisor, who will then immediately notify Corp Legal at 1.678.373.9556 and Corp H&S at 1.720.344.3500	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr><td style="width: 50%;">In</td><td style="width: 50%;">Out</td></tr> <tr><td> </td><td> </td></tr> <tr><td>In</td><td>Out</td></tr> <tr><td> </td><td> </td></tr> <tr><td>In</td><td>Out</td></tr> <tr><td> </td><td> </td></tr> <tr><td>In</td><td>Out</td></tr> <tr><td> </td><td> </td></tr> </table>	In	Out			In	Out			In	Out			In	Out			I will be alert to any changes in personnel, conditions at the work site or hazards not covered by the original hazard assessments. If it is necessary to STOP THE JOB, I will perform TRACK; and then amend the hazard assessments or the HASP as needed. I will not assist a subcontractor or other party with their work unless it is absolutely necessary and then only after I have done TRACK and I have thoroughly controlled the hazard.
In	Out																	
In	Out																	
In	Out																	
In	Out																	

Post Daily Activities Review - Review at end of day or before next day's work (Check those applicable and explain:)

☐	Lessons learned and best practices learned today:	
☐	Incidents that occurred today:	
☐	Any Stop Work interventions today?	
☐	Corrective/Preventive Actions needed for future work:	
☐	Any other H&S issues:	

Keep H&S 1st in all things

WorkCare - 1.800.455.6155

Attachment E - JSAs

Job Safety Analysis

General

JSA ID	7272	Status	(3) Completed
Job Name	General Industry-Site inspection/walkover - commercial/manufacturin	Created Date	4/9/2012
Task Description	Walkover-building	Completed Date	04/18/2012
Template	True	Auto Closed	False

Client / Project

Client	ARCADIS-AGMI
Project Number	000000100000
Project Name	GENERAL OVERHEAD
PIC	
Project Manager	NO PROJECT MANAGER

User Roles

Role	Employee	Due Date	Completed Date	Supervisor	Active
Developer	Byers, Susan	4/30/2012	4/9/2012	Edwards, Lauren	o
HASP Reviewer	Edwards, Lauren	4/23/2012	4/18/2012	Balcer, Denis	p

Job Steps

Job Step No.	Job Step Description	Potential Hazard	Critical Action	H&S Reference
1	PPE verification	1 Lack of adequate PPE at the facility could lead to injury	Prior to traveling to the site, ask the facility representative/escort for information on the types of PPE required. Verify that all necessary PPE is being worn and that PPE is in good working condition.	ARC HSGE015, ARC Field H&S Handbook Sec III-R.
2	Site safety orientation	1 Inability to quickly and safely exit an unfamiliar facility during an emergency	At the start of the site walk, ask the facility representative/escort for information regarding alarms, evacuation routes, and assembly areas.	
		2 Inability to recognize hazards prior to handling chemicals	At the start of the site walk, ask the facility representative/escort for the location of Material Safety Data Sheets.	
3	Building inspection and site walk	1 Slips, trips and falls	Use caution when walking on uneven or wet surfaces. Use proper footwear with good traction. Pay attention to where you are walking-including foot placement. Walk in designated areas and pathways. Maintain a safe distance from open holes and unprotected edges. Use handrails on stairways.	ARC HSIH008, ARC HSGE007, ARC HSFS021, ARC HSFS003, ARC HSIH013, Elevated Heights JSA, FH5B
		2 Acute exposure to hazardous chemicals	Wear appropriate gloves and eye protection when examining containers holding chemicals, wastes, and other potentially hazardous materials. Note the location of nearby eyewash stations and safety showers. Do not handle containers that are unlabeled or that are leaking. Do not open any chemical containers.	
		3 Falling from ladders	Climb ladders slowly, one person at a time. Maintain three points of contact. Do not climb fixed ladders that require fall protection (above 24 feet). Do not use portable ladders	
		4 Falling from elevated heights	Do not walk on elevated areas (greater than 4 feet above lower level) unless protected with a guardrail. Do not walk on scaffolding.	
		5 Falling from roofs	Do not walk on building roofs unless edges are protected with guardrails and skylights are guarded with railing or screens.	
		6 Hearing damage	Wear hearing protection when noise exceeds 85 dBA and in any areas labeled as requiring	ARC Field H&S Handbook Sec III-L

			hearing protection.	
		7	Hazardous atmosphere or entrapment in a confined space	Do not enter confined spaces, crawl spaces, tanks, utility vaults, or trenches. ARC Field H&S Handbook Sec III-Y
		8	Vehicle / pedestrian accidents	Use caution when walking in areas with vehicle or forklift traffic. Establish eye contact with equipment operators. Maintain a safe distance from moving vehicles and equipment.
		9	Heat illness	If the site walk involves the inspection of outdoor areas in weather conditions that pose a risk for heat illness (based on temperature, humidity, and sunshine), apply sunscreen and bring drinking water to the site walk. ARC Field H&S Handbook Sec III-M
		10	Entrapment and pinch points in automatic gates	Do not walk through or underneath automatic gates designed for vehicles or forklifts.

PPE Personal Protective Equipment			
Type	Personal Protective Equipment	Description	Required
Eye Protection	safety glasses		Required
Foot Protection	steel-toe boots		Required
Hand Protection	chemical resistant gloves (specify type)	as appropriate for chemical hazards	Required
Head Protection	hard hat		Required
Hearing Protection	ear plugs	In excessive noise areas	Required
Miscellaneous PPE	traffic vest--Class II or III		Required

Supplies			
Type	Supply	Description	Required
Communication Devices	mobile phone		Required
Miscellaneous	flashlight		Recommended

Review Comments		
Reviewer	Comments	
Employee: Edwards, Lauren Role HASP Reviewer Review Type Approve Completed Date 4/18/2012		

Job Safety Analysis

General

JSA ID	45	Status	(3) Completed
Job Name	Environmental-Groundwater Sampling and free product recovery	Created Date	2/4/2009
Task Description	Groundwater sampling	Completed Date	02/06/2009
Template	True	Auto Closed	False

Client / Project

Client	ARCADIS-AGMI
Project Number	000000100000
Project Name	GENERAL OVERHEAD
PIC	
Project Manager	NO PROJECT MANAGER

User Roles

Role	Employee	Due Date	Completed Date	Supervisor	Active
Developer	Coppola, Mija	6/12/2012	2/4/2009	McBurney, Lowell	p
HASP Reviewer	Coppola, Mija	2/6/2009	2/6/2009	McBurney, Lowell	p

Job Steps

Job Step No.	Job Step Description	Potential Hazard	Critical Action	H&S Reference
1	Stage at pre-determined sampling location and set up work zone and sampling equipment	1 Personnel could be hit by vehicular traffic	Set up cones and establish work area. Position vehicle so that field crew is protected from site traffic. Unload as close to work area as safely possible.	ARC Field H&S Handbook Sec III-G
		2 Sampling equipment, tools and monitoring well covers can cause tripping hazard	Keep equipment picked up and use TRACK to assess changes.	
2	Open wells to equilibrate and gauge wells	1 When squatting, personnel can be difficult to see by vehicular traffic.	Wear class II traffic vest if wells are located proximal to vehicular traffic. Use tall cones and the buddy system if practicable.	
		2 Pinchpoints on well vault can pinch or lacerate fingers	Use correct tools to open well vault/cap. Wear leather gloves when removing well vault lids, and chemical protective gloves while gauging. Wear proper PPE including safety boots, knee pads and safety glasses.	
		3 Lifting sampling equipment can cause muscle strain	Unload as close to work area as safely possible; use proper lifting and reaching techniques and body positioning; don't carry more than you can handle, and get help moving heavy or awkward objects.	
		4 Pressure can build up inside well causing cap to release under pressure	Keep head away from well cap when removing. If pressure relief valves are on well use prior to opening well	
3	Begin Purging Well and Collecting Parameter Measurements	1 Electrical shock can occur when connecting/disconnecting pump from the battery.	Make sure equipment is turned off when connecting/disconnecting. Wear leather gloves. Use GFCIs when using powered tools and pumps. Do not use in the rain or run electrical cords through wet areas.	ARC Field H&S Handbook Sec III-AA
		2 Purge water can spill or leak from equipment	Stop purging activities immediately, stop leakage and block any drainage grate with absorbent pads. Call PM to notify them of any reportable spill.	
		3 Water spilling on the ground can cause muddy/slippery conditions	Be careful walking in work area when using plastic around well to protect from spillage	
		4 Lacerations can occur when cutting materials such as plastic tubing	When cutting tubing, use tubing cutter. No open fixed blades should ever be used. When possible wear work gloves, leather type.	

		5	Purge water can splash into eyes	Pour water slowly into buckets/drums to minimize splashing. Wear safety glasses.	
4	Collect GW or Free Product Sample	1	Working with bailer rope can cause rope burns on hands.	Slowly raise and lower the rope or string for the bailer. Wear appropriate gloves for the task.	
		2	Sample containers could break or leak preservative	Discard any broken sampleware or glass properly. Do not overtighten sample containers. Wear chemical protective gloves.	
5	Recovery of Free Product from well	1	Exposure to free product	Additional chemical protection may be necessary based on the type of product. Additionally, safety goggles, a faceshield, or respiratory protection may be required. Verify in the HASP.	
6	Staging of Well Purge water and/or Free Product	1	Muscle strains can occur when moving purge water or drums	If using buckets, do not fill buckets up to the top. Always keep lid on buckets when traveling or moving them to another location. Only half fill buckets so when dumping the buckets weigh less. See drum handling JSA for movement of drums.	ARC Field H&S Handbook Sec III-II

PPE Personal Protective Equipment			
Type	Personal Protective Equipment	Description	Required
Dermal Protection	long sleeve shirt/pants		Recommended
Eye Protection	safety glasses		Required
Foot Protection	steel-toe boots		Required
Hand Protection	chemical resistant gloves (specify type)	Nitrile	Required
	work gloves (specify type)	leather	Required
Head Protection	hard hat		Required
Hearing Protection	ear plugs		Recommended
Miscellaneous PPE	other	Knee pads	Required

Supplies			
Type	Supply	Description	Required
Communication Devices	mobile phone		Required
Decontamination	Decon supplies (specify type)	alconox, DI water, spray bottle	Required
Miscellaneous	fire extinguisher		Required
	first aid kit		Required
	flashlight		Required
Personal	eye wash (specify type)	bottle	Required
	insect repellent		Recommended
	sunscreen		Recommended
Traffic Control	barricades		Recommended
	traffic cones		Required

Review Comments		
Reviewer		Comments
Employee: Role Review Type Completed Date	Coppola, Mija HASP Reviewer Approve 2/6/2009	

Job Safety Analysis

General

JSA ID	6684	Status	(3) Completed
Job Name	Environmental-Air Monitoring	Created Date	1/24/2012
Task Description	Indoor Air Sampling	Completed Date	01/25/2012
Template	True	Auto Closed	False

Client / Project

Client	ARCADIS-AGMI
Project Number	000000100000
Project Name	GENERAL OVERHEAD
PIC	
Project Manager	NO PROJECT MANAGER

User Roles

Role	Employee	Due Date	Completed Date	Supervisor	Active
Developer	Edwards, Lauren	5/22/2012	1/24/2012	Balcer, Denis	p
HASP Reviewer	Edwards, Lauren	2/7/2012	1/25/2012	Balcer, Denis	p
Quality Reviewer	Lee, Johannes	2/6/2012	2/6/2012	Proffitt, David	p

Job Steps

Job Step No.	Job Step Description	Potential Hazard	Critical Action	H&S Reference
1	Driving to and from sampling locations.	1 Striking or being struck by another object or vehicle	Follow the 5 Keys of Smith System Driving	ARC Field H&S Handbook Sec III-U, Motor Vehicle Safety HS Standard ARCHSGE004
2	Approach residence and communicate with occupant	1 Hostile or agitated occupants. Occupants may be potentially violent.	Use Stop Work Authority. Never approach a residence alone; always use the buddy system. Always have a cell phone. Do not attempt to enter a residence or communicate with it's occupants, if you feel threatened in any way. Leave the property and call 911 if there is clear and present danger. Call PM after contacting the appropriate authorities. Do not attempt to interact with the occupants but leave the area and wait for authorities. Communicate regularly with PM, giving addresses of each residence prior to entry.	ARC Field H&S Handbook Sec III-H, Stop Work Authority HS Standard ARCHSGE009
3	Enter home to conduct sampling activities	1 Hostile or agitated occupants. Occupants may be potentially violent. Weapons may be present. Illegal drug use may be occurring.	Use Stop Work Authority. Never approach a residence alone; always use the buddy system. Always have a cell phone. Do not attempt to enter a residence or communicate with its occupants, if you feel threatened in any way. Leave the property and call 911 if there is clear and present danger. Call PM after contacting the appropriate authorities. Do not attempt to interact with the occupants but leave the area and wait for authorities. Communicate regularly with PM, giving addresses of each residence prior to entry.	Tailgate Meeting HS Standard, PPE HS Standard, Motor Vehicle Safety HS Standard, ARC Field H&S Handbook Sec III-H
		2 Personal hygiene issues in the residence such as extreme filth, animal and/or pet feces, insect infestation.	Use Stop Work Authority. Contact PM and re-evaluate hazards. Do not attempt to communicate with occupants of the residence regarding the conditions of the home. Consult with HR, Legal Department, H&S, project management team, supervisor and client as necessary to determine the safest approach. Re-entry may require additional PPE.	
		3 Visible and excessive rodent feces.	Contact PM and re-evaluate hazards. Do not attempt to communicate with occupants of the residence regarding the conditions of the home. If it is determined the re-entry is	

				possible. Level C PPE must be worn, including a minimum P100 particulate air purifying respirator (APR).	
4	Sample Canister - sampling prep, collection and shipping	1	Heavy Lifting	Use a dolly, when necessary, to move canisters to and from your vehicle. Practice good lifting techniques and keep your back straight. Avoid twisting or awkward movements/positions. Remove canisters from the box and transport individually. If the box or other equipment are too heavy, request assistance in lifting.	ARC Field H&S Handbook Sec III-EE
		2	Cuts or lacerations from opening the box of canisters	Use appropriate cutting tools such as safety knives and cut away from your body when opening the box.	
		3	Pinch points	Use proper tools for adjusting canister valves. Wear gloves when necessary	
		4	Limited visibility - evening hours	Have a flashlight available or a head lamp for hands free light. Try and schedule work during daylight hours and end sampling events early enough to allow for clean up before dusk.	
5	Sub-Slab soil vapor sampling	1	Slips, trips, falls. Pinch points. Eye injury from debris. Injury from lifting and carrying equipment.	Wear work gloves when handling equipment/materials. Practice good housekeeping. Unload equipment as close to work area as possible. Keep equipment and supplies organized. Wear work gloves when handling equipment/materials. Use correct size wrenches when assembling sampling train. Use safety goggles. Practice good lifting techniques and keep your back straight. Avoid twisting or awkward movements/positions. Use two people to lift items heavier than 50 pounds.	ARC Field H&S Handbook Sec III--AA,CC,L.
		2	Electrical shock from the improper use of power tools (electric hammer drill)	Wear appropriate gloves. Do not remove any safety guards from power tools. Inspect power cords for damage/wear. Be aware of potential for hidden electric sources. Make sure your power source is rated appropriately for the equipment being used. Always unplug equipment before performing any repairs.	
		3	Lacerations from cutting of sample tubing	Use appropriate cutting device and wear gloves when handling blades. Collect purged soil vapor in a Tedlar bag. Discharge purged soil vapor outside building.	
		4	Exposure to constituents in soil vapor	Collect purged soil vapor in a Tedlar bag. Discharge purged soil vapor outside building. Perform air monitoring to monitor exposure.	
		5	Excessive noise generated by hammer drill operation	During drilling operations, hearing protection should be used.	

PPE Personal Protective Equipment			
Type	Personal Protective Equipment	Description	Required
Eye Protection	faceshield		Required
	safety glasses		Required
	safety goggles	When using electric hammer drill	Required
Foot Protection	boots		Required
	steel-toe boots	w/ steel shank	Required
Hand Protection	chemical resistant gloves (specify type)	Nitrile	Required
	work gloves (specify type)	Leather	Required
Head Protection	hard hat	If wearing does not cause hazard	Required
Hearing Protection	ear plugs		Required
Miscellaneous PPE	other	Fall protection when working at heights	Required

Respiratory Protection	full face respirator	When sampling friable asbestos	Required

Supplies			
Type	Supply	Description	Required
Communication Devices	mobile phone		Required
Miscellaneous	fire extinguisher		Required
	first aid kit		Required
	flashlight		Recommended
Personal	eye wash (specify type)		Required

Review Comments		
Reviewer	Comments	
Employee: Role Review Type Completed Date	Edwards, Lauren HASP Reviewer Approve 1/25/2012	
Employee: Role Review Type Completed Date	Lee, Johannes Quality Reviewer NA 2/6/2012	1. Reads like the possibility exists for the building structure to be unsound. If so, beware of trip and fall hazards that may be presented by poor flooring/floor cover condition. 2. If sampling involves access to attic spaces, will need to have adequate load-supporting temporary stepping platforms between ceiling joists. 3. Operations requiring climbing/crawling with hands would indicate the need for hands-free illumination (head/hat-mounted lamps).

Job Safety Analysis

General

JSA ID	166	Status	(3) Completed
Job Name	Environmental-Sample cooler handling	Created Date	5/1/2009
Task Description	Sample cooler handling	Completed Date	05/13/2009
Template	True	Auto Closed	False

Client / Project

Client	ARCADIS-AGMI
Project Number	000000100000
Project Name	GENERAL OVERHEAD
PIC	
Project Manager	NO PROJECT MANAGER

User Roles

Role	Employee	Due Date	Completed Date	Supervisor	Active
Developer	Coppola, Mija	12/19/2011	5/11/2009	McBurney, Lowell	p
HASP Reviewer	Moyers, Sam	5/25/2009	5/13/2009	Kundert, Brian	p

Job Steps

Job Step No.	Job Step Description	Potential Hazard	Critical Action	H&S Reference
1	Transfer field samples to sample packing area	1 Lifting heavy coolers may result in muscle strain especially to lower back.	Use proper lifting techniques and keep back straight. Use buddy system for large coolers, Use mechanical aids like hand trucks if readily available to move coolers. Do not over fill coolers with full sample containers for temporary movement to the sample prep area. Ensure an adequate supply of sample coolers are in field.	
		2 Hazards to hands from broken glass caused by over tightening lids or improper placement in cooler	Inspect all bottles and bottle caps for cracks/leaks before and after filling container. Do not over tighten sample lids. Clean up any broken bottles immediately, avoid contact with sample preservatives. Wear leather gloves when handling broken glass.	
		3 Exposure to chemicals (acid preservatives or site contaminants) on the exterior of sample bottles after filling.	Wear protective gloves for acid preservatives and safety glasses with side shields during all sample container handling activities (before and after filling), Once filled follow project specific HASP PPE requirements for skin and eye protection.	
		4 Samples containing hazardous materials may violate DOT/IATA HazMat shipping regulations	All persons filling a sample bottle or preparing a cooler for shipment must have complete ARCADIS DOT HazMat shipping training. Compare the samples collected to the materials described in the Shipping Determination for the Project and ensure consistent. Re-perform all Shipping determinations if free product is collected and not anticipated during planning.	
2	Sample cooler selection	1 Sample coolers with defective handles, lid hinges, lid hasps cracked or otherwise damaged may result in injury (cuts to hands, crushing of feet if handle breaks etc)	Only use coolers that are new or in like new condition, No rope handled coolers unless part of the manufacturer's handle design.	ARCADIS Shipping Guide US-001
		2 Selection of excessively large coolers introduces lifting hazards once the cooler is filled.	Select coolers and instruct lab to only provide coolers of a size appropriate for the material being shipped. For ordinary sample shipping sample coolers should be 48 quart capacity or smaller to reduce lifting hazards.	
3	Pack Samples	1 Pinch points and abrasions	Beware that lid could slam shut; block/brace	

			to hands from cooler lid closing unexpectedly	if needed; be wary of packing in strong winds. New coolers may be more prone to self closing, tilt cooler back slightly to facilitate keeping lid open.	
		2	Awkward body positions and contact stress to legs and knees when preparing coolers on irregular or hard ground surfaces.	Plan cooler prep activities. Situate cooler where neutral body positions can be maintained if practical, like truck tailgate. Avoid cooler prep on rough gravel surfaces unless knees and legs protected during kneeling.	
		3	Frostbite or potential for oxygen deficiency when packing with dry ice. Contact cold stress to fingers handling blue ice or wet ice	Dry ice temperature is -109.30F. Wear thermal protective gloves. DO NOT TOUCH with bare skin! Dry ice sublimates at room temp and could create oxygen deficiency in closed environment. Maintain adequate ventilation! Do not keep dry ice in cab of truck. Wear gloves when handling blue ice or gaging wet ice. Dry Ice is DOT regulated for air shipping, follow procedures in Shipping Determination.	
4	Sealing, labeling and Marking Cooler	1	Cuts to hands and forearms from strapping tape placement or removing old tape and labels	Do not use a fixed, open-blade knife to remove old tags/labels, USE SCISSORS or other safety style cutting device. Only use devices designed for cutting. Do not hurry through task.	
		2	Lifting and awkward body position hazards from taping heavy coolers, dropping coolers on feet during taping.	Do not hurry through the taping tasks, ensure samples in cooler are evenly distributed in cooler to reduce potential for overhanging cooler falling off edge of tailgate/table when taping.	
		3	Improper labeling and marking may result in violation of DOT/IATA HazMat shipping regulations delaying shipment or resulting in regulatory penalty	Do not deviate from ARCADIS Shipping Guide or Shipping Determination marking or labeling requirements.	
5	Offering sample cooler to a carrier or lab courier for shipment.	1	Lifting heavy coolers may result in muscle strain especially to lower back.	See lifting hazard controls above.	
		2	Carrier refusal to accept cooler may cause shipping delay and/or result in violation of DOT HazMat shipping regulations.	Promptly report all rejected and refused shipments to the ARCADIS DOT Program Manager. Do Not re-offer shipment if carrier requires additional labels markings or paperwork inconsistent with your training or Shipping Determination without contacting the ARCADIS DOT Compliance Manager.	

PPE Personal Protective Equipment

Type	Personal Protective Equipment	Description	Required
Eye Protection	safety glasses		Required
Hand Protection	chemical resistant gloves (specify type)	nitrile	Required
	work gloves (specify type)	leather	Required

Supplies

Type	Supply	Description	Required
Miscellaneous	Other	Scissors	Required

Review Comments

Reviewer	Comments		
Employee: Role Review Type Completed Date	Moyers, Sam HASP Reviewer Revise 5/11/2009	Kevlar is required? Leather work gloves are listed. i suggest just leather gloves.	

Employee: Role Review Type Completed Date	Moyers, Sam HASP Reviewer Approve 5/13/2009	

Job Safety Analysis

General

JSA ID	44	Status	(3) Completed
Job Name	Environmental-Drilling, soil sampling, well installation	Created Date	2/4/2009
Task Description	Drilling, soil sampling, and well installation	Completed Date	02/04/2009
Template	True	Auto Closed	False

Client / Project

Client	ARCADIS-AGMI
Project Number	000000100000
Project Name	GENERAL OVERHEAD
PIC	
Project Manager	NO PROJECT MANAGER

User Roles

Role	Employee	Due Date	Completed Date	Supervisor	Active
Developer	Coppola, Mija	6/28/2012	2/4/2009	Mcburney, Lowell	p
HASP Reviewer	Coppola, Mija	2/6/2009	2/2/2009	Mcburney, Lowell	p

Job Steps

Job Step No.	Job Step Description	Potential Hazard	Critical Action	H&S Reference
1	Set up necessary traffic and public access controls	1 Struck by vehicle due to improper traffic controls	Use a buddy system for placing site control cones and/or signage. Position vehicle so that you are protected from moving traffic. Wear Class II traffic vest	ARC Field H&S Handbook Sec III-G
2	Utility Clearance	1 Potential to encounter underground or above ground utilities while drilling.	Complete utility clearance in accordance with the ARCADIS Utility Clearance H&S Standard.	ARCADIS H&S Standard ARHSFS019, ARC Field H&S Handbook Sec III-MM
3	General drill rig operation	1 Excessive noise is generated by rig operation.	When the engine is used at high RPMs or soil samples are being collected, use hearing protection.	ARC Field H&S Handbook Sec III-L
		2 During drill rig operation, surfaces will become hot and cause burns if touched, and COCs in the soils more readily vaporize generating airborne contaminants.	Due to friction and lack of a drilling fluid, heat will be produced during this method. Mainly drill augers. Be careful handling split spoons. Wear proper work gloves. When soils and parts become heated, the COC could volatilize. Air monitoring should always be performed in accordance with the HASP.	
		3 Moving parts of the drilling rig can pull you in causing injury. Pinch points on the rig and auger connections can cause pinching or crushing of body parts.	Stay at least 5 feet away from moving parts of the drill rig. Know where the kill switch is, and have the drillers test it to verify that it is working. Do not wear loose clothing, and tie long hair back. Avoid wearing jewelry while drilling. Cone off the work area to keep general public away from the drilling rig.	
		4 Dust and debris can cause eye injury and soil cuttings and/or water could contain COCs.	Wear safety glasses and stay as far away from actual drilling operation as practicable. Wear appropriate gloves to protect from COCs.	ARC Field H&S Handbook Sec III-R
		5 Drilling equipment laying on the ground (i.e. augers, split spoons, decon equipment, coolers, etc), create a tripping hazard. Water from decon buckets generate mud and cause a slipping hazard.	Keep equipment and trash picked up, and store away from the primary work area.	ARC Field H&S Handbook Sec III-F
		6 The raised derrick can strike overhead utilities, tree limbs or other elevated items	Never move the rig with the derrick up. Ensure there is proper clearance to raise the derrick, and that you are far enough away from overhead power lines. See the	

				Utility Clearance H&S Standard for guidance.	
4	Mudd rotary drilling	1	The raised derrick can strike overhead utilities, tree limbs or other elevated items.	Never move the rig with the derrick up. Ensure there is proper clearance to raise the derrick, and that you are far enough away from overhead power lines. See the Utility Location H&S policy and procedure for guidance.	
		2	This technology uses fluid, which collects with sediments in large basin. Fluid can splash out and cause slipping/mud hazard. Liquid mixture can splash into your eyes.	Wear rubber boots if needed, and keep clear of muddy/wet area as much as practicable. If area becomes excessively muddy, consider mud spikes or covering the area with a material that improves traction. Wear safety glasses.	
5	Hollow stem auger drilling	1	All hazards in step 3 apply. Additionally, The raised derrick can strike overhead utilities, tree limbs or other elevated items	Never move the rig with the derrick up. Ensure there is proper clearance to raise the derrick, and that you are far enough away from overhead power lines. See the Utility Location H&S policy and procedure for guidance.	
		2	Hands or fingers can get caught and crushed if trying to clean by hand or with tools while the auger is still turning.	Auger should always be stopped and clutch disengaged prior to cleaning.	
6	Air Rotary Drilling	1	This drilling method works with high air pressure and can generate flying debris that can strike your body or get in your eyes.	When the drill rig is being driven into media, it will produce flying debris. The flaps behind the drill rig should stay closed whenever possible to reduce the risk of flying debris. Safety glasses and hard hat should always be worn when the drill rig is operating. When penetrating asphalt, protect surrounding cars that may be present to avoid damage to pain or windshields.	
		2	The raise derrick can strike overhead utilities, tree limbs or other elevated items.	Never move this rig with the derrick up. Ensure there is proper clearance to raise the derrick and that you are far enough away from overhead power lines. See the Utility clearance H&S Standard for guidance.	
		3	When drilling through bedrock prior to groundwater, dust can be produced from pulverization. Inhalation of dusts/powder can occur.	Supplemental water should be used to manage dust and/or dust masks should be used if necessary.	
7	Reverse rotary drilling	1	This method will use fresh water to pump out drill cuttings through the center of the casing. Water/sediment mixture is generated and could cause contact with impacted soils or groundwater.	Ensure the pit construction can hold the amount of cuttings that are anticipated. Air monitoring should also be used of pit area.	
		2	Fire hydrants are often used for water source. Hydrants deliver water at high pressure. Pressurized water can cause flying parts/debris and excessive slipping hazards.	Water usage from fire hydrants should be cleared with local municipalities prior to use. Only persons that know how to use the hydrant should be performing this task. Ensure all connections are tight, and hose line is not run over to cut by traffic. Any leaks from the hydrant should be reported immediately.	
		3	Settling pit construction can cause tripping hazard from excavated soils, and plastic sheeting can cause slipping.	Cone off the area to keep the general public/visitors away from the settling pit. Ensure proper sloping of excavation.	
		4	The raised derrick can strike overhead utilities, tree limbs or other elevated items.	Never move the rig with the derrick up. Ensure there is proper clearance to raise the derrick, and that you are far enough away from overhead power lines. See the Utility Location H&S policy and procedure for guidance.	

8	Rotosonic drilling	1	Fire hydrants are often used for water source. Hydrants deliver water at high pressure. Pressurized water can cause flying parts/debris and excessive slipping hazards.	Water usage from fire hydrants should be cleared with local municipalities prior to use. Only persons that know how to use the hydrant should be performing this task. Ensure all connections are tight, and hose line is not run over to cut by traffic. Any leaks from the hydrant should be reported immediately.	
		2	This method requires a lot of clearance. The drill head can turn 90 degrees to attach to the next drill flight or casing. This usually requires a large support truck to park directly behind the rig. As the drill head raises the new casing flight is angled down at the same time until it can be turned completely vertical.	Ensure sufficient overhead clearance.	
		3	Heavy lifting of cores can cause muscle strain.	Always use 2 people to move core containers. Use caution moving core samples to layout area. Plan layout area to ensure adequate aisle space between core runs for logging. Keep back straight and use job rotation.	
		4	The rotosonic drill head can move very quickly up and down while working on a borehole. Moving parts can strike someone or catch body parts.	The operator and helper must communicate and stay clear of the path of the drill head. The drill utilizes two large hydraulic clamps to continuously hold casings while load/unloading previous casings. Do not wear loose clothing.	
9	Direct push drilling	1	The drill rods will be handled by workers most of the time rather than the rig doing it, therefore pinch points can cause lacerations and crushing of fingers/body parts.	Keep a minimum of 5 feet away from drill rig operation and moving parts.	
		2	The direct push rigs are usually meant to fit in spaces where larger rig can't. Tight spaces can pin workers.	Do not put yourself between the rig and a fixed object. Use Spotters or a tape measure to ensure clearances in tight areas. Pre-plan equipment movement from one location to the next.	
		3	Some direct push equipment is controlled by wireless devices. These controls can fail and equipment can strike workers or cause damage to property.	The drill rig should be used in a large open area to test wireless controls prior to moving to boring locations. The operator of the rig will test the kill switch with wireless remote prior to use. Operator will stay in range of rig while moving so that wireless signal will not be too weak and cause errors to the controls.	
		4	Sampling sleeves must be cut to obtain access to soil. Cutting can cause lacerations.	It's preferable to let the driller cut the sleeves open. Many drillers have holders for the sleeve to allow for stability when cutting. If you cut the sleeves, use a hook blade, change blade regularly, and cut away from the body.	
		5	Soil cores may contain contaminated media.	Wear nitrile gloves and safety glasses for protection from contaminated media when logging soil borings.	
10	Rock coring	1	Flying debris can hit workers or cause debris to get in eyes.	Rock chips or overburden may become airborne from drilling method. Wear safety glasses and hard hat and remain at a safe distance from back of drill rig.	
		2	Heavy lifting of cores can cause muscle strain.	Always use 2 people to move core containers. Use caution moving core samples to layout area. Plan layout area to ensure adequate aisle space between core runs for logging. Keep back straight and use job rotation.	
11	Sample collection and processing	1	Injuries can result from pinch points on sampling	Care should be taken when opening sampling equipment. Look at empty	Sample Cooler Handling JSA

			equipment, and from breakage of sample containers.	containers before picking them up, and do not over-tighten container caps. Use dividers to store containers in the cooler so they do not break.	
		2	Lifting heavy coolers can cause back injuries.	Use two people to move heavy coolers. Use proper lifting techniques.	
12	Monitoring well installation	1	Same hazards as in Step 3 with general drill rig operation	See step 3	
		2	Monitoring well construction materials can clutter the work area causing tripping hazards.	Well construction materials should be picked up during the well installation process.	
		3	Heavy lifting can cause muscle strains, and cutting open bags can cause lacerations.	Well construction materials are usually 50 lbs or greater. Team lift or use drill rig to hoist bags. Always use work gloves while cutting open bags.	
		4	Well pack material (i.e. sand, grout, bentonite) can become airborne and get in your eyes.	Wear safety glasses for protection from airborne sand and dust.	
		5	Cutting the top of the well to size can cause jagged/sharp edges on the top of the well casing.	Wear gloves when working with the top of the well casing, and file any sharp jagged edges that resulted from cutting to size.	
13	Soil cutting and purge water management	1	Moving full drums can cause back injury, or pinching/crushing injury.	Preferably have the drilling contractor move full drums with their equipment. If this is not practicable, use lift assist devices such as drum dollies, lift gates, etc. Employ proper lifting techniques, and perform TRACK to identify pinch/crush points. Wear leather work gloves, and clear all walking and work areas of debris prior to moving a drum.	ARC Field H&S Handbook Sec III-II

PPE Personal Protective Equipment			
Type	Personal Protective Equipment	Description	Required
Eye Protection	safety glasses		Required
Foot Protection	steel-toe boots		Required
Hand Protection	chemical resistant gloves (specify type)	Nitrile	Required
	work gloves (specify type)	leather	Required
Head Protection	hard hat		Required
Hearing Protection	ear plugs		Required
Miscellaneous PPE	traffic vest--Class II or III		Required
Respiratory Protection	dust mask		Recommended

Supplies			
Type	Supply	Description	Required

Communication Devices	mobile phone		Required
Decontamination	Decon supplies (specify type)	Driller to provide and manage	Recommended
Miscellaneous	fire extinguisher		Required
	first aid kit		Required
Personal	eye wash (specify type)	bottle	Required
	water/fluid replacement		Recommended
Traffic Control	traffic cones		Required

Review Comments		
Reviewer		Comments
Employee: Role Review Type Completed Date	Coppola, Mija HASP Reviewer Approve 2/2/2009	

Attachment F - STAR



Site Traffic Awareness and Response (STAR) Plan

Revision 3, 9/18/2013

1.0 General

Project Name:	Riverside Drive Former MGP
Project Number:	B0013140
STAR Plan Developer Name:	Nicholas (Klaus) Beyrle
Reviewed By:	
Duration of Work (hours or days):	10 hrs, daily
Time Restrictions (describe below):	None
Comments:	

2.0 Work Description

Provide a brief description of expected site traffic conditions:

Plant workers and trucks arriving/departing. All work areas are not located in main paths for vehicular traffic.

☐ Work is planned on off site properties but not in the public right-of-way.

To facilitate identification of traffic controls to use, check all that apply to this project:

Notes: Time at a specific location on the project site ("> 8 hours at MW-1" etc). Exclude activities such as monitor well pad setting times where equipment is not at location. Indicate controls to protect monitor well pads in comments below.

Short Duration Work (<1 hour)	Intermediate Duration Work (1-8 hours)
☒ Water-level gauging and well sounding ☐ Surface soil sampling using manual methods ☐ Intermediate depth soil sampling using DPT ☒ Shallow monitor well purging and sampling ☐ Product recovery using manual methods ☐ Surveying ☐ Other (specify): 	☐ Intermediate/deep or > 2 in. diameter well sampling ☐ Slug testing and similar tests ☐ Deep handauger sampling (>20 ft depth) ☐ Manual soil sampling through concrete/asphalt ☐ Deep soil sampling using DPT (>40 ft depth) ☒ Soil sampling using other automated drilling method ☐ Other (specify):
Long Duration Work (>8 hours) ☐ Deep monitor well installation (>50 ft depth) ☒ Monitor wells with surface casing installation ☒ Intermediate depth monitor wells ≥ 4 in. diam. ☐ Long term product recovery using equipment ☐ Long term pump testing ☐ Other (specify): 	Comments: Traffic Type: <i>Check all that apply:</i> ☒ Automobiles ☒ Forklifts ☐ Construction equipment ☒ Straight truck ☐ Bicycles ☐ Semi truck ☒ Pedestrian ☐ Other:

3.0 Traffic Control Layout

The following DOT Fact Sheets and/or diagrams are applicable to this project:

Notes: DOT Fact Sheets have numbered scenarios, select the appropriate scenario(s) for the project and indicate duration [Short (S), Intermediate (I), Long (L)]. Manually revise diagrams, if needed, to convey requirements.

- ☐ [DOT Facts-302a](#) Retail Gas Station/Small Business Parking Lot (<1 Hour)
☐ With Truck ☐ Without Truck
- ☐ [DOT Facts-302b](#) Retail Gas Station/Small Business Parking Lot (1-8 Hours)
- ☐ [DOT Facts-302c](#) Retail Gas Station/Small Business (>8 Hours)
- ☐ [DOT Facts-302e](#) Multi-business Parking Lot
- ☒ [DOT Facts-302e](#) Facility Parking Area
- ☐ Parking Garage (develop drawing for controls)
- ☐ Other (specify): _____
- ☐ STAR Select controls to the right will be used _____

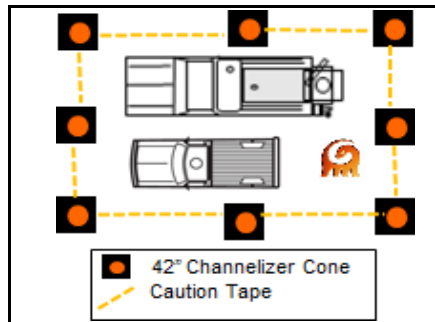
1	2	3	4	5	6	7	8	9	S	I	L
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☐	☐	☐	☐	☐	☐	☐	☐	☐	☒	☒	☐

How will the above documents be communicated to field staff?

(excludes STAR Select)

- ☐ The above documents are attached to this STAR Plan
- ☒ The above documents are appropriate without significant modification and are available to field staff in the

[Field Guide for Roadway Work Zone Safety.](#)



4.0 Required Traffic Control Devices and Phasing

Tasks on this project may be implemented both individually or concurrently. Selection and number of traffic control devices required will be dependent on the scope of work.

Traffic control device help:

[DOT Facts-302d](#)

Check all that apply:	Number:	Phasing:
☐ Channelizer cone (42 inch height, 10 lb base)	_____	1) Position truck as shield, if practical
☐ Channelizer cone (42 inch height, 30 lb base)	_____	2) Deploy traffic control devices
☒ Traffic cones (≥ 18 inches tall)	8	3) Affix flags, caution tape or fencing as prescribed in fact sheet
☐ Barricade	_____	4) Unload project equipment
☐ Flags for cones	_____	5) Commence work
☐ Lights (for night work)	_____	6) SSO to maintain controls
☐ Plastic fencing (rolls)	_____	7) Remove controls in opposite order
☐ Caution tape (rolls)	_____	
☐ Other (specify): _____	_____	

- ☐ Additional client requirements are attached

If vehicle equipped with high intensity strobe or rotating lights, the lights should be utilized during work. If the vehicle is not equipped with supplemental lighting devices, use vehicle flashers (be aware of battery drain when using any of the lighting devices) should be considered.

Personal protective equipment required for this work is listed in the applicable project Job Safety Analysis (JSA) or project specific HASP. A Class II (minimum) high visibility vest is required.

5.0 Approvals

Printed Name

Date

Signature

Plan Developer: Nicholas (Klaus) Beyrle

10/13/2015

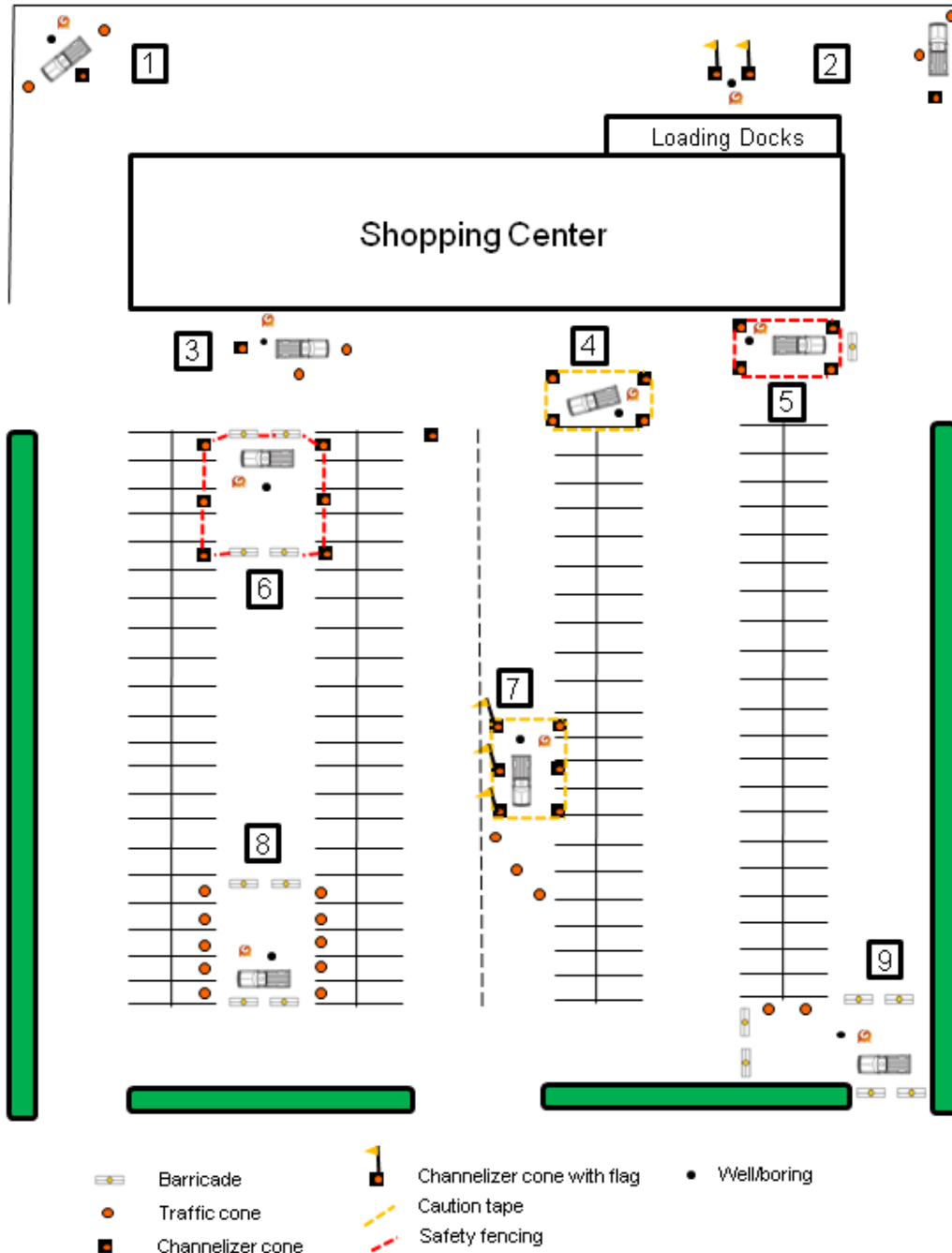
Nicholas (Klaus) Beyrle

Plan Reviewer: _____



DOT Facts-302e
Recommended Best Practices for Multiple Business
and Large Facility Parking Areas

The following configurations should be considered for traffic protection in retail parking areas for multiple businesses (strip malls, etc) and large facility parking lots.



General Guidelines for Safety:

- Use the vehicle as a shield when possible. Orient the rear of the ARCADIS vehicle away from site entrances and areas of increased backing or movement of other vehicles, when practical. Traffic cones used in scenarios above in conjunction with the parked vehicle should be consistent with the ARCADIS Cone and Spotter Program (see ARC HSGE-024 for more information)
- All channelizer cones shall be at least 42 inches in height
- Always work facing the area with greatest traffic movement and least protection
- Always assume vehicles will move in either direction (frontwards or backwards)
- Always use TRACK to predict traffic movement and stage vehicle and Control Zones in manner that offers protection without impairing site entrance or blocking access to loading docks when possible. STAR Plan requirements should be reviewed against HASP exclusion zone requirements for consistency.
- If there is a perceived drivable space or if there is an unused parking space, you must assume that someone will attempt to access or drive to/through the location. Plan, deploy and work accordingly. Block off parking spaces with cones during off hours to ensure no vehicles will occupy the planned work zone.
- Class II high visibility vest (minimum) to be worn at all times (refer to HASP or JLA for additional requirements, if any).
- Discuss with site operator or manager times of lower traffic volume and attempt to schedule work activity during traffic lulls. When working near dumpsters and loading docks find out when the dumpsters are emptied and avoid loading docks during planned delivery times.
- Warning lights shall be used for night work on both the channelizer drums and barricades, if used. Cones used during night work for taper purposes must have retroreflective tape.
- Areas in green above may appear to be site property but may actually be within the roadway right-of-way. Work performed in the right-of-way has additional requirements. See ARC DOT-301 for more information.

Scenario Descriptions:

- 1) Locations to the rear of strip malls and similar operations generally have low traffic volume and low pedestrian activities. Use the truck as a shield to the extent possible and deploy channelizer cone in direction of expected traffic exposure. This scenario may be used for short duration (< 1 hour) and intermediate duration (1-8 hours) daylight work activities. Since deliveries by larger vehicles are generally performed during night hours, long duration (>8 hours) and night time work should employ recommendations described in scenario #5 below, even in these low traffic areas.
- 2) Locations near loading docks involve large vehicle backing with limited visibility. Tight space and work zone proximity to other active operations may preclude the use of the vehicle as a shield in these areas. Work in these areas should use channelizer cones with flags to increase work zone awareness even if the vehicle is being used as a shield. When backing activities are occurring, work should be suspended and employees should leave the area until the backing operations are complete (leaving the traffic control devices in place).
- 3) Short duration work (<1 hour) in high traffic and pedestrian areas should use the vehicle as a shield with the front of the vehicle facing oncoming traffic. A channelizer cone should be deployed in the vicinity of the work zone near the ARCADIS employee's work area
- 4) Intermediate duration work (1-8 hours) in high traffic and pedestrian areas should use the vehicle as a shield with the front of the vehicle facing oncoming traffic. The work zone

should be defined with channelizer cones (10 pound base weight recommended) and caution tape. Leave sufficient space to allow access to all areas of the vehicle.

- 5) Long duration work (> 8 hours) and night work in high traffic and pedestrian areas should use the vehicle as a shield with the front of the vehicle facing oncoming traffic. Utilize standard orange plastic safety fencing and channelizing cones (30 pound base weight recommended) to delineate the work zone. Use of lighted barricades (Type I or II preferred) on the end facing oncoming traffic is recommended, if work is performed near site entrances.
- 6) Complete lane closure in areas of higher traffic and pedestrian flow should utilize barricades (Type I or II preferred) in sufficient number to clearly indicate the lanes are closed. Signs may be used in conjunction with the barricades to further communicate the closure. Channelizer cones should be used in conjunction with caution tape (intermediate duration) and safety fencing (long duration) closure. Place the vehicle as a shield in the area of highest exposure to traffic (at the lane entrance end as shown in the example above) and create adequate buffer zone on the end with lower traffic exposure.
- 7) Large parking areas may have a central thoroughfare leading to a red light at the city street. These areas may have increased traffic control, have wider lanes and traffic may drive in these areas at higher speeds. Work zones in these areas should use the vehicle as a shield with the front of the vehicle facing oncoming traffic. Channelizer cones should be used in conjunction with caution tape (intermediate duration) and safety fencing (long duration) lane closure. If parking spaces across the lanes are useable, use flags with the channelizer cones to increase awareness of the work zone to backing drivers. A taper, using standard traffic cones, may be used to help control traffic control through the area. If these locations have high volumes of traffic, consider using flaggers.
- 8) Work zones away from the active business area of the site and having low traffic and pedestrian flow may be configured using lesser requirements. Use barricades (Type I or II preferred) to close lanes and orient vehicle as a shield in the area of highest traffic exposure. Create a buffer between the work area and the area of lesser traffic exposure. Standard traffic cones may be used to delineate the work zone. Use of this scenario requires an understanding of traffic flow and patterns throughout the planned duration of the work activity. If conditions change, use of controls as described in scenario #6 should be used.
- 9) Complete lane closure involving an entrance should rely on barricades as the primary method of traffic control. Type I, II or III barricades should be used at the site entrance (Type III if the entrance has high traffic volume) for both intermediate and long duration work. Type I or II barricades are recommended for lane closures. Use the vehicle as a shield in the area of highest traffic exposure (usually the entrance). If vehicle or pedestrian traffic is persistent or heavy, controls using caution tape or safety fencing should be employed in conjunction with additional barricades or channelizer cones.





Appendix B

Field Sampling Plan

Rochester Gas & Electric

Site Characterization Work Plan

Appendix B - Field Sampling Plan

112 Riverside Drive Former MGP Site
Geneseo, New York

November 2015



Field Sampling Plan

Riverside Drive Former MGP
Site

Prepared for:
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Our Ref.:
B0013138.0000

Date:
November 2015

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1.	Introduction	1
1.1	General	1
1.2	Objectives	1
1.3	Overview of Investigation Field Activities	1
2.	Field Activities	3
2.1	General Field Guidelines	3
2.2	Sample Labeling, Packing, and Shipping	5
2.3	Equipment Decontamination	6
2.3.1	Drill Rig Decontamination	6
2.3.2	Sampling Equipment Decontamination	7
2.4	Subsurface and Staged Soil Sampling Method	7
2.5	Soil Boring/Monitoring Well Installation and Development	9
2.5.1	Drilling and Geological Logging Methods	9
2.5.2	Monitoring Well Specifications	10
2.5.3	Monitoring Well Development and Well Redevelopment	12
2.6	Rock Coring and Sample Collection	12
2.7	Fluid-Level Measurements	17
2.8	Low-Flow Groundwater Sampling Procedures for Monitoring Wells	17
2.9	Surface Soil Sampling	21
2.10	Test Pit Excavation	23
2.10.1	Procedures for Test Pit Excavation	24
2.11	Soil Vapor/Indoor Air Sampling	25
2.11.1	Soil Vapor Sampling	25
2.11.2	Soil Vapor Sample Collection	26
2.12	Measurement of Fluid Levels	28
2.12.1	Well Fluid Level Gauging	28
2.12.2	Surface-Water Elevation Measurement at Surface-Water Gauges	29

2.13	NAPL Bailing	30
2.14	Air Monitoring	30
3.	Field Instruments	31
3.1	Portable Photoionization Analyzer	31
3.2	Dust Monitor	31
3.3	pH Meter	31
3.4	Specific Conductivity Meter	31
3.5	Dissolved Oxygen Meter	32
3.6	Water-Level Meter	32
3.7	Turbidity Meter	32
3.8	Oxidation-Reduction Potential Meter	32
4.	References	33

Figures

B-1	Sample Chain of Custody Form
B-2	Field Drilling Log
B-3	Monitoring Well Construction Diagram
B-4	Soil Vapor Sampling Point Construction Diagram
B-5	Soil Gas Sampling Log

Attachments

B-1	Calibration, Operation, and Maintenance Procedures
B-2	Field Sampling Logs
B-3	Soil Description Standard Operating Procedure
B-4	Low-Flow Groundwater Purging and Sampling Procedures for Monitoring Wells
B-5	Soil-Gas Sampling and Analysis Using USEPA Method TO-17 and TO-15
B-6	Administering Helium Tracer Gas for Leak Checks of Soil Gas or Sub-slab Sampling Points

1. Introduction

1.1 General

This *Field Sampling Plan* (FSP) supports the Site Characterization Work Plan (SCWP) prepared by Arcadis of New York, Inc. (Arcadis) for the Riverside Drive Former Manufactured Gas Plant (MGP) Site located in Geneseo, New York (site).

This FSP addresses the field procedures and sample collection methods to be used during implementation of the SCWP field activities. In addition, field sampling procedures for other media (e.g., test pit installation) are included in the event that future intrusive work is conducted within potentially MGP-impacted areas of the site. The FSP should be used in conjunction with the SCWP, the *Quality Assurance Project Plan* (QAPP), and an approved *Health and Safety Plan* (HASP). The SCWP presents the site background and defines the required sampling program. The QAPP presents the quality assurance/quality control procedures to be used during field activities, as well as a description of the general field and laboratory procedures.

1.2 Objectives

The purpose of the FSP is to describe the field procedures and sample collection methods to be used during implementation of the SCWP field activities, in addition to field sampling procedures for other media (e.g., test pit installation) in the event that future intrusive work is conducted within potential MGP-impacted areas of the site.

1.3 Overview of Investigation Field Activities

The following activities may be conducted at the site:

- soil boring advancement
- test pit excavation
- bedrock coring
- monitoring well installation
- measurement of fluid levels
- collection of soil samples

- groundwater sampling
- bailing of non-aqueous phase liquid (NAPL) from NAPL recovery wells
- indoor air/soil gas sampling

Sampling locations and rationale for each field sampling activity are described in the SCWP, and therefore, are not further described in this FSP.

A site location map and a figure with sampling locations have been prepared for the site to support the field investigation. These figures are presented in the SCWP.

2. Field Activities

2.1 General Field Guidelines

Underground utilities will be identified prior to any drilling or subsurface sampling. Public and privately owned utilities will be located by contacting responsible agencies by phone so that their underground utilities can be marked at the site. In addition, geophysical methods such as ground penetrating radar (GPR) and electromagnetic (EM) survey will be used to identify utilities within the work area. Other potential onsite hazards, such as traffic, overhead power lines, and building hazards, will be identified during a site reconnaissance visit.

The following is a general list of equipment necessary for sample collection:

- stainless steel spoons and bowls for compositing soil samples
- appropriate sample containers provided by the laboratory (kept closed and in laboratory-supplied coolers until the samples are collected)
- pre-preserved sample containers for aqueous samples
- chain-of-custody record forms
- log book, field sampling records, and indelible ink pens and markers
- laboratory-grade soap (such as Alconox®), reagent grade solvents and acids, and distilled water to be used for decontaminating equipment between sampling stations
- buckets, plastic wash bins, and scrub brushes for decontaminating equipment
- camera
- stakes to identify sampling locations
- shipping labels and forms
- knife
- packing/shipping material for samples bottles

- clear plastic tape
- duct tape
- aluminum foil
- re-closable plastic bags
- portable field instruments, including a photoionization detector (PID), water quality parameter meter, conductivity meter, turbidity meter, and water-level indicator

Field log books will be maintained by the field team leader and other team members to provide a daily record of significant events, observations, and measurements during the field investigation.

Information pertinent to the field investigation and/or sampling activities will also be recorded in the log books. The books will be bound with consecutively numbered pages. Entries in the log book will include, at a minimum, the following information:

- name of author, date of entry, and physical/environmental conditions during field activity
- purpose of sampling activity
- location of sampling activity
- name of field crew members
- name of any site visitors
- sample media (e.g., soil, groundwater)
- sample collection method
- number and volume of sample(s) taken
- description of sampling point(s)
- volume of groundwater removed before sampling (where appropriate)
- preservatives used

- date and time of collection
- sample identification number(s)
- field observations
- any field measurements made, such as, but not limited to, pH, temperature, conductivity, water level

All original data recorded in field log books and chain of custody records will be written with indelible ink. If an error is made on an original document assigned to one individual, that individual will make all corrections simply by crossing a single line through the error and entering the correct information. The erroneous information will not be erased. Any subsequent error discovered on an original document will be corrected by the person who made the entry. All subsequent corrections will be initialed and dated.

2.2 Sample Labeling, Packing, and Shipping

Each sample will be given a unique identification. With this type of identification, no two samples will have the same label.

Samples will be promptly labeled upon collection with the following information:

- project number and site
- unique sample identification
- analysis required
- date and time sampled
- sample type (composite or grab)
- preservative, if applicable

Clear tape will be secured over the sample label and the chain of custody will be initiated. A sample chain of custody form is included on **Figure B-1**.

Appropriate sample containers, preservation methods, and laboratory holding times for each sample type will be applied as identified in the QAPP.

If samples are to be shipped by commercial carrier (e.g., FedEx), sample bottles/jars will be packed in coolers containing the following:

- a drain plug (if present) that has been sealed with duct tape
- 1 to 2 inches of bubble wrap on the bottom of the cooler
- ice packaged in resealable plastic bags
- sufficient bubble wrap to fill in the remaining area
- the completed chain of custody in a resealable plastic bag, taped in place on the inside cover of the cooler

The cooler will then be sealed with tape. Appropriate shipping labels, such as "this-end-up" and "fragile" stickers will be affixed to the cooler. Samples will be hand delivered or delivered by an express carrier within a time frame such that sample holding times are not exceeded. The express carrier will not be required to sign the chain of custody form; however, the shipping receipt should be retained by the sampler and forwarded to the project files.

2.3 Equipment Decontamination

2.3.1 Drill Rig Decontamination

A decontamination pad will be lined with plastic sheeting on a surface sloped to a sump. The sump must also be lined and of sufficient volume to contain approximately 20 gallons of decontamination water. All drilling equipment, including rear-end of drilling rig, augers, bits, rods, tools, split spoon samplers, tremie pipe, etc., will be cleaned on the decontamination pad with a high-pressure hot water "steam cleaner" unit and scrubbed with a wire brush, as needed, to remove dirt, grease, and oil before beginning work in the project area. If heavy accumulation of tars or oils is present on the downhole tools, a citrus-based cleaner (e.g., Citra-Solv[®]) may be used to aid in equipment cleaning. Tools, drill rods, and augers will be placed on sawhorses, decontaminated pallets, or polyethylene plastic sheets following steam cleaning. Direct contact with the ground will be avoided. The back of the drill rig and augers, rods, and tools will be decontaminated between each drilling location according to the above procedures. Decontamination water will be contained in a dedicated plastic tank or 55-gallon open-top drums located onsite. All open-top drums will remain closed when not in use.

Following decontamination of all heavy site equipment, the decontamination pad will be decommissioned. The decommissioning will be completed by:

- Transferring the bulk of the remaining liquids and solids into the drums, tanks, and roll-offs to be provided by RGE or the drilling subcontractor for these materials.
- Rolling the sheeting used in the decontamination pad onto itself to prevent discharge of the remaining materials to the ground surface. Once rolled up, the polyethylene sheeting will be placed in the roll-off or drums used for disposal of personal protective equipment (PPE) and disposable equipment.

Unless sealed in manufacturer's packaging, polyvinyl chloride (PVC) monitoring well casing screens will be decontaminated by the above procedures before installation.

2.3.2 Sampling Equipment Decontamination

Prior to collecting samples to be submitted for chemical analysis, if any, all non-dedicated bowls, spoons, hand augers, bailers, and filtering equipment will be washed with potable water and a detergent (such as Alconox®). Decontamination may take place at the sampling location as long as all liquids are contained in pails and buckets. The sampling equipment will then be rinsed with potable water, followed by a 10% "pesticide-grade" methanol rinse, and finally a distilled water rinse. When sampling for inorganic constituents in an aqueous phase, an additional rinse step will be added prior to the rinse with methanol. The rinse step will entail a rinse with a 10% "ultra pure-grade" nitric acid followed by a distilled water rinse. Between rinses, equipment will be placed on polyethylene sheets or aluminum foil, if necessary. At no time will washed equipment be placed directly on the ground. Equipment will be either be used immediately or wrapped in plastic or aluminum foil for storage or transportation from the designated decontamination area to the sampling location.

2.4 Subsurface and Staged Soil Sampling Method

Continuous soil sampling will be conducted during drilling in the overburden. Continuous core samples of overburden materials will be collected. At select locations designated for geotechnical data collection, the Standard Penetration Test (American Society for Testing and Materials [ASTM] D 1586 84) and hollow-stem augers or flush-joint casing will be used during drilling to collect split-spoon samples from the unconsolidated fill and soils beneath the site. If required, samples selected for laboratory analysis will be based on:

- Their position in relation to potential source areas.
- The visual presence of source materials.

- The relative levels of volatile organics based on PID field screening measurements.
- The discretion of the onsite geologist.

Samples selected for laboratory analysis will be placed in appropriate containers provided by the laboratory. Sample containers for volatile organic analyses will be filled first. Soil samples collected for volatile organic compound (VOC) analysis will be using methanol preservation or analyzed using United States Environmental Protection Agency Method 5035. Next, a sufficient amount of the remaining soil will be homogenized by mixing the sample in a decontaminated stainless steel tray, bowl or disposable resalable plastic bag with a decontaminated stainless steel trowel, disposable scoop or nitrile-gloved hand. Laboratory-supplied sample containers for other analytes will then be filled. Duplicate samples will be collected at the frequency detailed in the QAPP (Appendix C of the SCWP) by alternately filling two sets of sample containers.

If required, representative portions of each soil sample will be placed in a 1 pint jar or re-closable plastic bag, labeled, and stored onsite. This container will be labeled with:

- site
- boring number
- interval sampled
- date
- initials of sampling personnel

These soil samples will be screened for organic vapors using a PID. In addition, a geologist will be onsite during the drilling operations to describe each sample. Soil samples will be described using the methods described in the soil description standard operating procedure (SOP), included as **Attachment B-3**.

For samples that may be submitted for chemical analysis, split-spoons, or any portion of the drilling rig that may contact the sample, will be decontaminated, as specified in Section 2.3.2, after each sample is collected. Sample descriptions, PID readings, and location will be recorded in the field book or on the field drilling log presented on **Figure B-2**. Calibration, operation, and maintenance procedures are included as **Attachment B-1** for one type of PID commonly used in the field. The procedures to be followed will be dependent on the PID acquired for this project, as described in the equipment manual.

2.5 Soil Boring/Monitoring Well Installation and Development

Where required, soil borings and/or monitoring wells will be installed to the depths and at the locations defined in the SCWP. After completion of drilling and well installation, all new wells will be developed to establish hydraulic connection between the well and the formation. The following procedures will be used to drill borings and install and develop monitoring wells.

2.5.1 Drilling and Geological Logging Methods

Drilling and geological logging methods to be completed in connection with monitoring well installation are as follows:

- Boreholes in the overburden will be drilled using hollow-stem augers.
- Continuous soil sampling will be conducted during advancement of soil borings and/or monitoring wells using the either split-spoons of a macrocore sampler. Boreholes will be drilled by first advancing the sampler ahead of the lead auger obtain a soil sample, followed by advancing the auger drill stem to stabilize the borehole.
- Split-spoon sampling will be conducted during the advancement of soil borings for geotechnical data collection. Sampling will be performed in accordance with ASTM Specification D 1586 08 for standard penetration test and split-spoon sampling, unless otherwise authorized by the field geologist.
- The designated field geologist will log borehole geology and monitoring well specifications in the field book and/or field forms.
- A plywood sheet or tub may be placed around the auger or casing when drilling to contain cuttings.
- Soil cuttings will be placed in a drum or roll-off supplied by RGE or the drilling subcontractor. Decontamination water will be placed in plastic tanks/drums supplied by RGE or the drilling subcontractor. Soil cuttings and decontamination water will be picked up and containerized at the end of each work day. The roll-offs or open-top drums used to contain the solids will be covered when not in use.

Results from the drilling efforts will be recorded in the field book.

2.5.2 Monitoring Well Specifications

Figure B-3 shows details of a typical monitoring well construction for shallow wells installed in unconsolidated sediments that do not penetrate a presumed confining layer, above which dense non-aqueous phase liquid (DNAPL) is known or suspected to exist. The overburden monitoring wells will be installed according to the following specifications:

- PVC 2-inch-diameter, threaded, flush joint casing and 10-foot-long, 0.020 inch slot screens will be installed.
- A sump, 2 feet in length and grouted in with cement, may be attached to the bottom of the screen for potential collection of DNAPL, if present.
- The top of the casing will extend approximately 2 feet above ground surface given site-specific considerations; otherwise, flush-mount casings will be used.
- The annulus around the screens will be backfilled with an appropriate size of silica sand, such as Morie #1 sand, to a minimum height of 1 foot above the top of the screen, assuming there is sufficient room to install an appropriate surface seal above the sand.
- An approximately 1-foot-thick chipped bentonite seal or slurry (30 gallons water to 25 to 30 pounds bentonite, or relative proportions) will be placed above the sand pack. The pellet seal must be allowed to partially hydrate before placing grout above the seal.
- The remainder of the annular space will be filled with a cement/bentonite grout to approximately 2 feet below grade. The grout will be placed with a tremie pipe from the bottom up. The grout will consist of a cement mixture of one 94-pound bag of Portland cement, approximately 5 pounds of granular bentonite, and approximately 7 gallons of water. The grout will be allowed to set for a minimum of 24 hours before wells are developed.
- Each monitoring well will have a vented cap and a 4-inch-diameter steel casing with a locking cap placed over the monitoring well. The protective casing will extend approximately 1 to 2 feet below ground surface and be set in concrete. In some areas, it may be necessary to provide flush-mounted casings.
- A concrete seal or pad, approximately 2 feet in diameter and 1.5 feet below grade, will be installed.
- A weep hole will be drilled through the protective standpipe casing just above the top of the concrete seal to allow water between the inner and outer casing to drain.

- The top of the PVC well casing and outer protective casing will be marked and the elevation determined by survey to the nearest 0.01 foot, relative to a fixed benchmark or datum.
- The measuring point on all wells will be on the innermost PVC casing at the highpoint of the casing, if any.

The following characteristics of each newly installed well will be recorded in the field log book:

- date/time of construction
- drilling method and drilling fluid used
- approximate well location
- borehole diameter and well casing diameter
- well depth
- drilling and lithologic logs
- casing materials
- screen materials and design
- casing and screen joint type
- screen slot size/length
- filter pack material/size
- filter pack placement method
- sealant materials
- sealant placement method
- surface seal design/construction
- well development procedure

- type of protective well cap
- detailed drawing of well (including dimensions)

2.5.3 Monitoring Well Development and Well Redevelopment

A minimum of 24 hours after installation, monitoring wells will be developed by surging/bailing using a centrifugal pump and dedicated polyethylene tubing, or by Waterra positive displacement pumps and dedicated polyethylene tubing, or other methods at the discretion of the field geologist. The development water will be contained in a tank on site or in drums to be provided by RGE or the drilling subcontractor. Wells will be developed until water removed from the well is reasonably free of visible sediment (50 nephelometric turbidity units [NTUs]), if possible, or until the turbidity levels stabilize, assuming a minimum of 10 well volumes of water have been removed from the monitoring well during development. Following development, wells will be allowed to recover for at least 1 week before groundwater is purged and sampled. All monitoring of well development will be overseen by a field geologist and the duration, method of development, and approximate volume of water removed will be recorded in the field book.

In the event of sufficient sedimentation of existing site well, redevelopment of those wells may be required. Procedures for redevelopment of wells will be the same as for newly installed wells.

2.6 Rock Coring and Sample Collection

Prior to placing the core barrel into the hole, the driller will use air/water circulation to remove cuttings in the boring that may clog the barrel. Drilling rods will be carefully centered in initial borehole, if any, to reduce the potential for core breakage. The driller will maintain drilling bit pressure and water pressure at a consistent level throughout drilling, and runs will be completed without interruption, to the extent practical, so penetration rates (in feet per minute) can be determined.

Core samples will be placed in core boxes with increasing depths aligned left to right and core runs separated by wood blocks. Man-made breaks will be marked with a pen across the break. Wood blocks will be labeled and placed at the end of each core run to indicate run. A wooden space will be inserted if no sample is recovered and labeled "L.C." (lost core) with corresponding depth.

The following materials will be available during rock coring and sampling activities, as required:

- Core boxes
- Permanent marking pen for labeling boxes and cores

- Wood blocks to separate core runs in core boxes
- Field logbook
- Rock coring logs
- Hand lens
- Pen knife
- 10% solution of hydrochloric acid if drilling through carbonate rock
- Water-level probe
- Munsell rock color chart
- Tape measure
- Rock hammer
- Submersible pump
- Rubber hammer (for tapping rock core out of core barrel)

The supervising geologist or geotechnical engineer will record the following parameters related to the core drilling process:

- penetration rates, drilling time, and core run length (i.e., minutes per foot)
- amount of water loss or gain
- drill type and size

The following rock core characteristics will be described in the field, as appropriate:

- lithology (rock type)
- friability/fissibility

- color
- strength of intact rock
- thickness
- weathered state
- particle angularity/shape
- voids
- particle sizes
- structure/bedding (bedding planes, joints, fractures) orientation
- Rock Quality Designation
- rock core recovery length
- description of discontinuities and fillings (including interpretation of natural vs. artificial bedrock fractures)
- formation name (if known)
- water content
- texture
- odors/discoloration
- hardness
- fossil type
- depth to water
- Munsell color
- geologic contacts when observed

A key to abbreviations that may be used when describing rock core descriptions is presented below.

BkN	broken
CAL	calcareous or calcite
Cl	clay
F	foliation
Fe	iron staining on joint surface
GOG	gouge
HJ	horizontal joint
J	joint *
J//F	joint is parallel to foliation
JxF	joint crosses foliation
L	laminae
//	parallel
M	mud in opening
MB	mechanical break
N	angle of fracture surface from horizontal, where N is the angle in degrees
QTZ	quartz
s	solution enlargement
S	stratification
sa	sand

si	silt
SZ	sheer zone
U	unfoliated or unstratified
v	vuggy
VJ	vertical joint
w	weathered
WZ	weathered zone
X	crossing
Z	zone

* "Joint" indicates any natural fracture.

The geologist/geotechnical engineer will document drilling events in the field logbook. Documented drilling events will include:

- drilling start and finish dates
- project name and location
- project number and client
- corehole numbers
- sample number and depth
- sample type and size
- type of drilling equipment
- casing size

- names of contractor's drillers
- weather conditions

It is advisable to photograph recovered core in the labeled core box. The core should be wet when photographed to improve contrast and visibility of rock features.

2.7 Fluid-Level Measurements

The following procedure will be used to measure fluid-level depths at monitoring wells and surface-water gauges:

- Decontaminate the water-level probe or oil/water interface probe (for wells expected to contain NAPL).
- Measure the static fluid-level, fluid interfaces (i.e., NAPL/water interface), and sound the bottom of the well (if applicable) with reference to the surveyed elevation mark on the top of the PVC casing or surface-water gauge. Record all measurements to nearest 0.01 foot and record in the field book.

The measurements will be made in as short a timeframe as practical to minimize temporal fluctuations in hydraulic conditions. Two rounds of fluid-level elevations will be collected, as discussed in the RD Work Plan.

2.8 Low-Flow Groundwater Sampling Procedures for Monitoring Wells

This protocol describes procedures to be used to collect groundwater samples. No wells will be sampled until well development has been performed. During precipitation events, groundwater sampling will be discontinued until precipitation ceases. When one round of water levels is taken to generate water-elevation data, water levels will be taken consecutively at one time prior to sampling or other activities. Additional procedural information is located in the Low-Flow Groundwater Purging and Sampling SOP, included as **Attachment B-4**.

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

- sample pump
- sample tubing
- power source (i.e., generator, battery)

- PID
- appropriate health and safety equipment, as specified in the HASP
- plastic sheeting (for each sampling location)
- dedicated or disposable bailers
- new disposable polypropylene rope
- buckets to measure purge water
- water-level probe
- 6-foot rule with gradation in hundredths of a foot
- conductivity/temperature meter
- pH meter
- turbidity meter
- dissolved oxygen (DO) meter
- oxidation-reduction potential (ORP) meter
- appropriate water sample containers
- appropriate blanks (trip blank supplied by the laboratory)
- appropriate transport containers (coolers) with ice and appropriate labeling, packing, and shipping materials
- groundwater sampling logs
- chain of custody forms
- indelible ink pens

- site map with well locations and groundwater contour maps
- keys to wells

The following 21 steps detail the monitoring well sampling procedures:

1. Review materials checklist to confirm that the appropriate equipment has been acquired.
2. Identify site and well sampled on sampling log sheets, including date, arrival time, and weather conditions. Identify the personnel and equipment used and other pertinent data requested on the logs (**Attachment B-2**).
3. Label all sample containers using an appropriate label.
4. Use safety equipment, as required in the HASP.
5. Place plastic sheeting adjacent to the well to use as a clean work area.
6. Establish the background reading with the PID and record the reading on the field log.
7. Remove lock from the well, and if rusted or broken, replace with a new keyed-alike lock.
8. Unlock and open the well cover while standing upwind of the well. Remove well cap and place on the plastic sheeting. Insert PID probe in the breathing zone above the well casing following instructions in the HASP.
9. Set out on plastic sheeting the dedicated or disposable sampling device and meters.
10. Prior to sampling, groundwater elevations will be measured at each monitoring well and the presence of light non-aqueous phase liquid (LNAPL) or DNAPL (if any) within the well will be evaluated. Obtain a water-level depth and bottom of well depth using an electric well probe and record on the sampling log sheet. Clean the well probe after each use with a soapy (Alconox®) water wash and a tap water rinse. (Note: water levels will be measured at all wells prior to initiating a sampling event).
11. After groundwater elevations are measured and NAPLs are determined not to be present, groundwater will be purged from the wells. If NAPLs are determined to be present, then a groundwater sample will not be collected; rather, a representative NAPL sample may be collected (if required) using a peristaltic pump or other method determined by the Field Manager/Site Supervisor.

12. Pump, safety cable, electrical lines, and/or tubing (for peristaltic pumps) will be lowered slowly into the well to a depth corresponding to the center of the saturated screen section of the well.
13. Measure the water level again with the pump in the well before starting the pump. Start pumping the well at 100 to 500 milliliters per minute. Ideally, the pump rate should cause little water-level drawdown in the well (less than 0.3 feet and the water level should stabilize). The water level should be monitored every 3 to 5 minutes (or as appropriate) during pumping. Care should be taken not to cause the pump suction to be broken or entrainment of air in the sample. Record pumping rate adjustments and depths to water. Pumping rates should, if needed, be reduced to the minimum capabilities of the pump to avoid pumping the well dry and/or to confirm stabilization of indicator parameters. If the recharge rate of the well is very low, purging should be interrupted so as not to cause the drawdown within the well to advance below the pump. However, a steady flow rate should be maintained to the extent practicable. Sampling should commence as soon as the volume in the well has recovered sufficiently to permit sample collection.
14. During well purging, monitor the field indicator parameters (e.g., turbidity, temperature, specific conductance, pH, DO, and ORP) every 3 to 5 minutes (or as appropriate). The well is considered stabilized and ready for sample collection when the indicator parameters have stabilized for three consecutive readings as follows (Puls and Barcelona, 1996):

± 0.1 for pH

$\pm 3\%$ for specific conductance (conductivity)

± 10 mv for ORP

$\pm 10\%$ for turbidity and DO

Note that turbidity and DO usually require the longest time to achieve stabilization. As such, sampling may be allowed prior to stabilization of turbidity and/or DO if all other parameters have stabilized. The decision to sample under this scenario must be agreed to by the Project Manager.

The pump must not be removed from the well between purging and sampling. If parameters have stabilized, but turbidity is not in the range of the 50 NTU goal, the pump flow rate should be decreased to no more than 100 milliliters per minute. Measurement of the indicator parameters should continue every 3 to 5 minutes. Measurements for parameters may be taken using a flow-thru cell or in a clean container such as a glass beaker.

15. Fill in the sample label and cover the label with clear packing tape to secure the label onto the container.
16. After the groundwater quality parameters have stabilized, as discussed above, obtain the groundwater sample needed for analysis directly from the sampling device in the appropriate container and tightly screw on the caps. Note that groundwater samples collected for analysis of VOCs cannot be collected

using a peristaltic pump. If purging the well using a peristaltic pump, collect all other types of samples (e.g., semivolatile organic compounds [SVOCs], inorganics, etc.) prior to collecting the sample for VOC analysis. Once other samples are collected, remove the peristaltic pump tubing and collect the VOC samples using a new disposable polyethylene bailer. The bailer should be gently lowered to the approximate depth at which the pump intake was set, and then retrieved.

17. Secure with packing material and store at 4 degrees Celsius (°C) on wet ice in an insulated transport container provided by the laboratory.
18. If required, after all sampling containers have been filled, remove one additional volume of groundwater. Check the calibration of the meters and then measure and record on the field log the physical appearance, pH, ORP, DO, temperature, turbidity, and conductivity.
19. Record the time sampling procedures were completed on the field logs.
20. Place all disposable sampling materials (plastic sheeting, disposable bailers, and health and safety equipment) in appropriately labeled containers. Go to the next well and repeat Step 1 through Step 21 until all wells are sampled.
21. Complete the procedures for packaging, shipping, and handling with associated chain of custody forms (Section 2.2).

2.9 Surface Soil Sampling

If required, surface soil samples will be collected from below the vegetative sod layer or sub-base material (if these materials are present at the selected locations) at a depth of approximately 0 to 2 inches below the vegetative sod layer or sub-base material. Sub-samples will be collected from within a 1-square-meter area centered on the sampling location and evenly distributed throughout the square meter area. Each sample will be visually characterized for color, texture, and moisture content.

A grab sample will also be placed into a container or Ziploc® resealable plastic bag (or equivalent) for headspace screening using a PID to measure the relative concentration of total VOC vapors, if any. Equipment, materials, and procedures for collecting surface soil grab samples are presented below.

The following equipment and materials will be available, as required, during the surface soil sampling:

- appropriate health and safety equipment
- camera

- cleaning equipment
- aluminum or stainless steel tray
- measuring device
- appropriate sample containers and forms
- coolers with ice
- field book

The procedures for collecting surface soil samples are presented below:

1. Don PPE (as required by the HASP).
2. Identify sample locations from the sample location plan and note locations in the field notebook. Locations should not be selected in areas covered with crushed stone or hard-packed gravel.
3. Eight sub-soil samples will be collected from a 1-square-meter area centered on the sampling location by carefully cutting into and removing the surface material (e.g., sod, sub-base) with a precleaned stainless steel scoop. The sub-samples will be collected from 0 to 2 inches below the surficial material and placed into a stainless steel or aluminum tray.
4. Gently mix the soil in the tray and obtain one surface soil sample and place it into an 8-ounce jar or Ziploc® resealable plastic bag (or equivalent) and screen the headspace with a PID. Record PID reading in field book. Visually characterize the soil for presence of stains and classify according to ASTM soil classification procedures.
5. Obtain one composite sample and place into appropriate sample containers provided by the analytical laboratory for SVOC, inorganic, and total cyanide analysis.
6. Based on the presence of staining, collect a grab sample from 0 to 2 inches from one of the eight sub-sample locations and place into an appropriate sample container provided by the analytical laboratory for VOC analysis.
7. Fill out sample labels, in accordance with procedures in Section 2.2, and affix the labels on the containers. Also, label the sample bottle caps with the sample ID.

8. Place the sample containers on ice in an insulated transportation cooler.
9. Discard gloves and stainless steel scoop in designated location.
10. Handle, pack, and ship the samples with appropriate chain of custody procedures in accordance with Section 2.2.

Record all other appropriate information in the field log book.

2.10 Test Pit Excavation

If required, test pits/trenches will be excavated using a backhoe equipped with a bucket. If residues are visually observed in the test pit/trenches, the contents may also be sampled.

The following materials will be available, as required, during test pit excavation:

- backhoe with bucket
- shovel
- plastic sheeting
- stainless steel hand trowel
- stainless steel pan
- appropriate sample containers and packing materials, if required
- potable water
- steam cleaning equipment
- appropriate health and safety equipment, as required by the HASP
- PID
- camera/video camera
- test pit/trench log

2.10.1 Procedures for Test Pit Excavation

The following procedures will be used to excavate test pits.

1. Identify the test pit/trench number on an appropriate log or in the designated field notebook, as well as with the temperature, weather, date, time, and personnel at the site.
2. Set up a decontamination station and decontaminate the backhoe, bucket, shovel, and other sampling apparatus with a high-pressure steam rinse using a tap water source.
3. Put on appropriate health and safety equipment.
4. Place the plastic sheeting on the ground next to the test pit/trench location.
5. Position the backhoe and personnel at upwind (to the extent feasible) locations of the test pit/trench area.
6. Turn on the PID. Measure and record on the test pit/trench log background PID readings on the log or in the field book.
7. Excavate the soil with the backhoe in approximately 1 foot increments. At each interval, examine and classify the soils according to applicable standards. Record these observations in the test pit/trench log or field book. Also, screen the soil samples with a PID. These measurements will also be recorded in the test pit/trench log (or field book).
8. If the contents of the test pit/trench visually appear to consist of site residues, the test pit/trench contents may be sampled. If sampling is required, the test pit/trench will be sampled with a shovel if the test pit/trench is less than 3 feet deep. If the test pit/trench is greater than 3 feet deep, then the test pit/trench will be sampled with the backhoe bucket. The contents of the bucket will then be sampled with a cleaned stainless steel hand trowel.
9. If sampling is required, the samples will be collected in the appropriate containers and placed immediately in a cooler of wet ice to maintain a 4°C temperature for preservation. Volatile organic samples will be collected immediately after sample retrieval. Next, a sufficient amount of the remaining soil will be removed from the sampling device and homogenized by mixing thoroughly in a clean stainless steel pan with a clean stainless steel trowel. Samples will be selected for analytical characterization only if visible residues are present and/or relatively high PID screening readings are measured.

10. The test pit/trench will be terminated when significant residues are encountered, the top of the water table is reached, or to the maximum reach of the backhoe, whichever occurs first.
11. Soils generated during drilling will be staged on plastic during excavation, monitored for PID readings and visual observations, then placed back into the test pit/trench. Clean fill will be placed at the surface.
12. A labeled stake will be placed at the test pit/trench location.
13. A photograph of each location before, during, and after each test pit/trench is excavated will be taken.
14. The backhoe, backhoe bucket, and all tools used at the test pit/trench area will be decontaminated using a high-pressure steam rinse using a tap water source. Decontamination water and residual materials associated with decontamination will be contained.

2.11 Soil Vapor/Indoor Air Sampling

Soil vapor, indoor air, and ambient air samples will be collected in general accordance with the New York State Department of Health (NYSDOH) "Guidance for Evaluating Soil Vapor Intrusion in the State of New York" (NYSDOH, October 2006). Indoor air and ambient sampling points only require the SUMMA® canister and regulator as described below. Soil vapor sampling points are described in detail below and in **Attachment B-5 Soil-Gas Sampling and Analysis Using USEPA Method TO-17 and TO-15**.

2.11.1 Soil Vapor Sampling

Soil vapor sampling points will consist of expendable stainless steel screens installed at the required depth with clean fine sand or glass beads placed around the screen as a filter medium. A hydrated bentonite mix will be used as a plug (minimum 2 feet thick) to seal the borehole and prevent short-circuiting to the surface. Laboratory-grade polyethylene tubing of the appropriate diameter will connect the sampling point to a 6-liter SUMMA® canister, in which the soil vapor sample will be collected. The remaining annulus around the tubing can be filled with bentonite, grout or collapsed formation. Prior to collecting a soil vapor sample, the sampling point and tubing will be purged one to three volumes of the sample probe and tube and screened for VOC vapors using a photoionization detector (PID). PID readings will be recorded in the field notebook. Construction details for a typical soil vapor monitoring point are provided on **Figure B-4**.

Samples will be collected using a 6-liter SUMMA® canister with an attached, pre-set flow regulator. The laboratory will provide batch-certified-clean canisters with an initial vacuum of approximately 29 inches of mercury (in. of Hg) for sample collection. Flow regulators will be pre-set by the laboratory to provide uniform sample collection over an approximate 2-hour sampling period (e.g., flow rate of approximately 50 milliliters per minute [mL/min]). The valve on the SUMMA® canister will be closed when approximately 2 in. of Hg

vacuum remains in the canister, leaving a vacuum in the canister as a means for the laboratory to verify that the canister does not leak while in transit.

Field personnel will document the following information (at a minimum) in the project field notebook or on the field soil-gas sampling log presented on **Figure B-5**:

- weather conditions (precipitation, temperature and wind direction) 24 hours prior to, and during, the sampling activities
- date and time (start and end time) each sample was collected
- sample identification
- identification of laboratory samplers/regulators/devices
- purge volumes
- volume of soil vapor extracted
- vacuum pressure of canister (before and after sample collection)
- chain of custody identification

2.11.2 Soil Vapor Sample Collection

Preparation of SUMMA®-Type Canister and Collection of Sample

1. Record the following information in the field notebook, if appropriate (contact the local airport or other suitable information source [e.g., site-specific measurements, weatherunderground.com] to obtain the information):
 - a. wind speed and direction
 - b. ambient temperature
 - c. barometric pressure
 - d. relative humidity

2. Connect a short piece of Teflon tubing to the soil vapor sampling port using a twist-to-lock fitting.
3. Connect a portable vacuum pump to the sample tubing. Purge 1 to 2 (target 1.5) volumes of air from the vapor probe and sampling line using a portable pump [purge volume = $1.5 \text{ Pi r}^2 \text{h}$] at a rate of approximately 100 mL/min. Measure organic vapor levels with the PID. Lower flow rates may be necessary in silt or clay to avoid excessive vacuum. Vacuum is >136 inches of water column are clearly excessive. Other sources site a cutoff of >10 inches of water column.
4. Check the seal established around the soil vapor probe by using a tracer gas (e.g., helium) or other method established in the state guidance documents. Refer to **Attachment B-6, Administering Helium Tracer Gas for Leak Checks of Soil Gas or Sub-Slab Sampling Points**.
5. Remove the brass or stainless steel plug from the SUMMA® canister and connect the flow controller with in-line particulate filter and vacuum gauge to the SUMMA® canister. Do not open the valve on the SUMMA® canister. Record in the field notebook and chain of custody (COC) form the flow controller number with the appropriate SUMMA® canister number.
6. Connect the Teflon sample collection tubing to the flow controller and the SUMMA® canister valve. Record in the field notebook the time sampling began and the canister pressure.
7. Connect the other end of the polyethylene tubing to the sub-slab sampling port.
8. Open the SUMMA® canister valves. Record in the field notebook the time sampling began and the canister pressure.
9. Take a photograph of the SUMMA® canister and surrounding area.

Termination of Sample Collection

1. Arrive at the SUMMA® canister location at least 10 to 15 minutes prior to the end of the required sampling interval (e.g., 30 to 60 minutes).
2. Record the final vacuum pressure. Stop collecting the sample by closing the SUMMA® canister valves. The canister should have a minimum amount of vacuum (approximately 2 inches of Hg or slightly greater).
3. Record the date and local time (24-hour basis) of valve closing in the field notebook, sample collection log and COC form.

4. Remove the particulate filter and flow controller from the SUMMA® canister, re-install the brass plug on the canister fitting, and tighten with the appropriate wrench.
5. Package the canister and flow controller in the shipping container supplied by the laboratory for return shipment to the laboratory. The SUMMA® canister does not require preservation with ice or refrigeration during shipment.
6. Complete the appropriate forms and sample labels as directed by the laboratory (e.g., affix card with a string).

Complete the COC form and place the requisite copies in a shipping container. Close the shipping container and affix a custody seal to the container closure. Ship the container to the laboratory via overnight carrier (e.g., FedEx) for analysis.

2.12 Measurement of Fluid Levels

Fluid levels will be measured using an electronic fluid-level indicator (sounder), steel tape, pressure transducer, or stream gauge at established reference points (e.g. top of casing, stream gauge).

The following materials will be available, as required:

- appropriate health and safety equipment, as specified in the HASP
- laboratory-type soap (Alconox or equivalent)
- electronic water-level indicator (sounder) or pressure transducer
- PID
- analyte-free water
- indelible ink pen

2.12.1 Well Fluid Level Gauging

The following procedures will be used to obtain fluid levels:

1. Identify site and well number in field book, as well as with the date, time, personnel, and weather conditions using indelible ink. Use safety equipment, as specified in the HASP. Clean the water-level

indicator, in accordance with section 2.3.2. Contain rinse water in a portable container that will be transferred to an onsite container.

2. Unlock and open the well cover while standing upwind from the well. Record PID reading in well headspace.
3. Locate a measuring reference point on the well casing. If one is not found, create a reference point by notching the inner casing (or outer if an inner casing is not present) with a hacksaw. All downhole measurements will be taken from one reference point. Document the creation of any new reference point or alteration of the existing reference point.
4. Measure to the nearest 0.01-foot and record the height of the inner and outer casing from reference point to ground level.
5. Lower the water-level indicator probe down the well. Take depth measurements of light product (if any), water, dense product (if any), and bottom. Double check all measurements and record depths to the nearest 0.01-foot.
6. Clean the instrument(s), as specified in Section 2.3.2.
7. Compare the depth of the well to previous records.
8. Lock the well when all activities are completed.

2.12.2 Surface-Water Elevation Measurement at Surface-Water Gauges

1. Identify site and surface-water gauge number in field book, as well as with the date, time, personnel, and weather conditions using indelible ink.
2. Use safety equipment, as specified in the HASP.
3. Clean the water-level indicator, as specified in Section 2.3.2. Contain rinse water in a portable container that will be transferred to an onsite container.
4. Locate a measuring reference point on the surface-water gauge. If one is not found, create a reference point by notching the surface-water gauge with a hacksaw. The surface-water elevation measurement will be taken from one reference point. Document the creation of any new reference point or alteration of the existing reference point.

5. Lower the water-level indicator until it touches the bottom of the staff gauge. Record the depth of the water body. Take water-level measurements as the probe is drawn back up through the water column. Double check all measurements and record depths to the nearest 0.01-foot. Double check that the water level measured inside the stream gauge appears to coincide with the observable level of the waste body outside the stream gauge.
6. Clean the instrument(s), as specified in Section 2.3.2.
7. Compare the measurements to previous records.

2.13 NAPL Bailing

In the event that NAPL product, either LNAPL or DNAPL, is discovered during well gauging, it will be removed via appropriately sized disposable bailers. Bailing will continue until there is no longer recoverable product retrieved in the bailer. All material brought up in the bailer (groundwater and product) will be dumped into a bucket immediately adjacent to the well. Upon completion of bailing of NAPL from a well, the bailed material will be transferred to an onsite storage container (e.g. 55-gallon drum) for storage pending disposal.

2.14 Air Monitoring

Air monitoring will be conducted with a PID and dust monitor during all intrusive activities and only a PID during sampling activities. The PID will be used to monitor organic vapors in the breathing zone and borehole and to screen samples for analysis, and the dust monitor will be used to monitor particulate concentration in the breathing zone for particulates less than 10 microns in diameter.

The PID and dust monitor readings will be recorded in the field book during trenching and drilling activities. The instruments will be calibrated at least once each day and more frequently, if needed. A detailed procedure for the PID calibration is included as **Attachment B-1**.

3. Field Instruments

All field-screening equipment will be calibrated immediately prior to each day's use and more frequently, if required. The calibration procedures will conform to the manufacturer's standard instructions. Records of all instrument calibration will be maintained by the field personnel. Copies of all of the instrument manuals will be maintained onsite by the field personnel.

3.1 Portable Photoionization Analyzer

The photoionization analyzer will be a Photovac MicroTip (or equivalent), equipped with a 10.6 electron volt (eV) lamp. The Photovac is capable of ionizing and detecting compounds with an ionization potential of less than 10.6 eV. This accounts for up to 73% of the VOCs on the Target Compound List. Calibration will be performed according to the procedures outlined in **Attachment B-1**.

3.2 Dust Monitor

The dust monitor will be an MIE DataRAM (or equivalent) and will be calibrated at the start of each day of use. Calibration and maintenance of the dust monitor will be conducted in accordance with the manufacturer's specifications. The calibration data will be recorded in field notebooks.

3.3 pH Meter

The pH meter will be calibrated at the start of each day of use and after very high or low readings, as required by this FSP. National Institute of Standards and Technology traceable standard buffer solutions that bracket the expected pH range will be used. The standards will most likely be a pH of 7.0 and 10.0 standard units. The pH calibration and slope knobs will be used to set the meter to display the value of the standard being checked. The calibration data will be recorded in field notebooks.

3.4 Specific Conductivity Meter

Calibration checks using the appropriate conductivity standard for the meter will be performed at the start of each day of use and after very high or low readings, as required by this FSP. Readings must be within 5% to be acceptable. The thermometer of the meter will be calibrated against the field laboratory thermometer on a weekly basis.

3.5 Dissolved Oxygen Meter

The DO meter will be calibrated and the condition of the DO sensor will be checked at the start of each day of use. Calibration and maintenance of the DO meter will be conducted in accordance with the manufacturer's specifications. The calibration data will be recorded in field notebooks.

3.6 Water-Level Meter

The water-level cable will be checked once to a standard to assess if the meter has been correctly calibrated by the manufacturer or vendor. If the markers are incorrect, the meter will be sent back to the manufacturer or vendor.

3.7 Turbidity Meter

The turbidity meter will be calibrated daily prior to use. Calibration and maintenance will be conducted in accordance with the manufacturer's specifications. Calibration and maintenance information will be recorded in the field notebook.

3.8 Oxidation-Reduction Potential Meter

The ORP meter will be calibrated at the start of each day of use. Calibration and maintenance of the ORP meter will be conducted in accordance with the manufacturer's specifications. The calibration data will be recorded in the field notebook.

4. References

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Figures



CHAIN OF CUSTODY & LABORATORY ANALYSIS REQUEST FORM

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Lab Work Order #

Page ____ of ____

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REMARKS

Special Instructions/Comments: ☐ Special QA/QC Instructions(✓):

Laboratory Information and Receipt		Relinquished By	Received By	Relinquished By	Laboratory Received By
Lab Name:	Cooler Custody Seal (✓)	Printed Name:	Printed Name:	Printed Name:	Printed Name:
☐ Cooler packed with ice (✓)	☐ Intact ☐ Not Intact	Signature:	Signature:	Signature:	Signature:
Specify Turnaround Requirements:	Sample Receipt:	Firm:	Firm/Courier:	Firm/Courier:	Firm:
Shipping Tracking #:	Condition/Cooler Temp: _____	Date/Time:	Date/Time:	Date/Time:	Date/Time:

Date Start/Finish: 8/9/2008 - 8/10/2008
Drilling Company: Drillers, Inc.
Driller's Name: Joe Smith
Drilling Method: Hollow Stem Auger
Auger Size: 4.25" ID
Rig Type: CME-55
Sampling Method: 2" Split Spoon

Northing: 617984.1848
Easting: 559115.8392
Casing Elevation: NA

Borehole Depth: 26' bgs
Surface Elevation: 682.35' AMSL

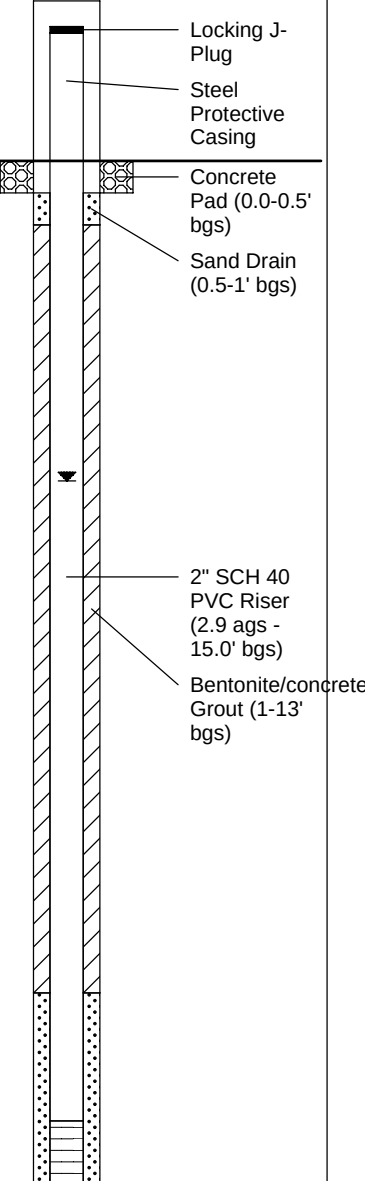
Descriptions By: Katherine Murray

Well/Boring ID: **EXAMPLE BORING**

Client: XYZ Chemical Plant,
An ABC Company

Location: Smith Street Site
Syracuse, NY

DRAFT

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blow Counts	N - Value	PID Headspace (ppm)	Geologic Column	Stratigraphic Description	Well/Boring Construction
685										
0										
		1	0-2	2.0	1 1 2 5	3	1.1		Asphalt surface.	
									Black-gray coarse GRAVEL, some fine Sand, moist.	
									Dark brown to brown fine SAND and Coal SLAG, some medium to coarse Sand, moist.	
680					1				Light gray to white ASH, little rust colored mottles, moist to wet.	
		2	2-4	1.2	2 3 5	5	0.0		Dark gray fine SAND and SILT, trace Clay, slightly plastic, some rust colored layers, wet.	
									Dark gray SILT and CLAY, little fine Gravel, little coarse Sand, medium plasticity, soft, wet. Gravel content increasing to some below 4.7' bgs.	
5		3	4-6	1.1	1 2 1 5	3	0.0		Red to yellow-brown fine to medium GRAVEL and coarse SAND, little Silt, trace Clay, wet.	
									Brown fine to coarse SAND, some fine Gravel, little Silt, moist.	
675		4	6-8	1.3	7 8 1 8	9	0.0		No Recovery.	
									Red to yellow-brown fine to medium GRAVEL and coarse SAND, little Silt, saturated.	
		5	8-10	0.3	1 2 5 4	7	0.0		Color change to brown below 14' bgs.	
10		6	10-12	0.0	6 18 50/0.3	NA	NA			
										
670										
		7	12-14	1.4	6 5 4 6	9	3.5			
										
15		8	14-16	1.5	2 9 1 2	10	4.5			

Remarks: bgs = below ground surface; NA = Not Applicable/Available; AMSL = Above Mean Sea Level.



Client: XYZ Chemical Plant,
An ABC Company

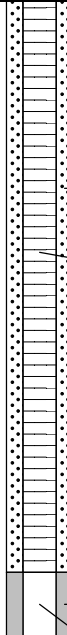
Well/Boring ID: EXAMPLE BORING

Site Location:

Smith Street Site
Syracuse, NY

Borehole Depth: 26' bgs

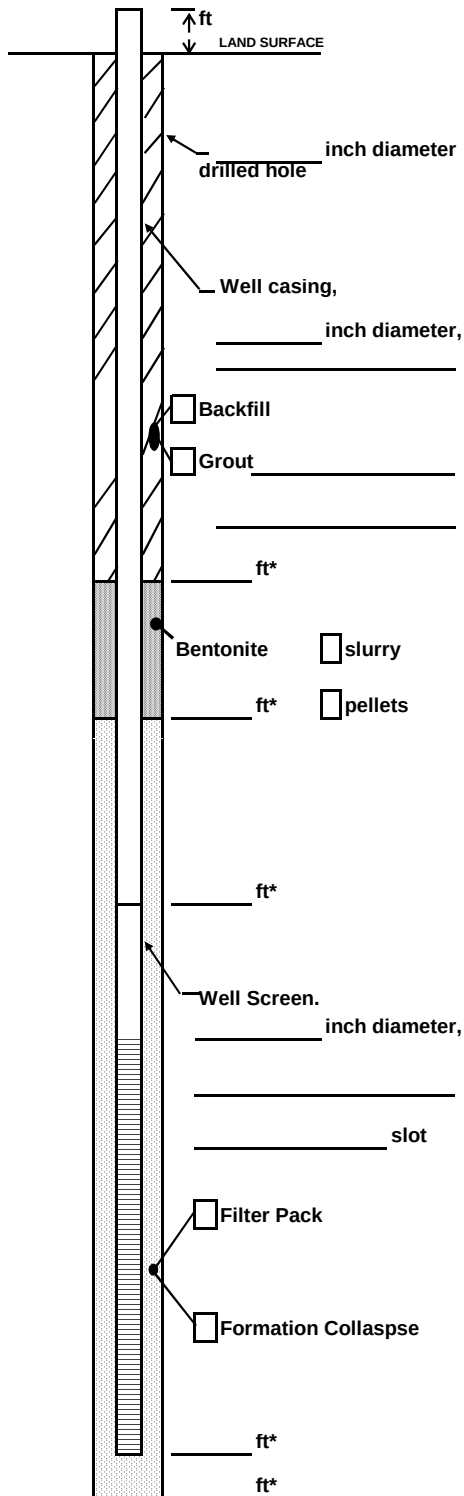
DRAFT

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blows / 6 Inches	N - Value	PID Headspace (ppm)	Geologic Column	Stratigraphic Description	Well/Boring Construction
665		9	16-18	2.0	3 2 1 1	3	0.0		Brown fine to medium GRAVEL and coarse SAND, little Silt, saturated.	 #1 Silica Sand Pack (13-25' bgs) 2" Sch 40 PVC 0.010" Slot Screen (15-25' bgs) Bentonite Seal (25-26' bgs) Sump (25-26' bgs)
		10	18-20	2.0	1 1 2 2	3	0.0			
20		11	20-22	2.0	5 4 1 2	5	0.0			
		12	22-24	1.6	4 13 12 9	15	87			
660		13	24-26	1.7	3 12 9 15	21	112			
25										
655										
30										
650										
35										



Remarks: bgs = below ground surface; NA = Not Applicable/Available; AMSL = Above Mean Sea Level.

Well Construction Log (Unconsolidated)



Project Name and No. _____

Well _____ Town/City _____

County _____ State _____

Permit No. _____

Land-Surface Elevation and Datum:

_____ feet ☐ Surveyed

☐ Estimated

Installation Date(s) _____

Drilling Method _____

Drilling Contractor _____

Drilling Fluid _____

Development Technique(s) and Date(s)

Fluid Loss During Drilling _____ gallons

Water Removed During Development _____ gallons

Static Depth to Water _____ feet below M.P.**

Pumping Depth to Water _____ feet below M.P.**

Pumping Duration _____ hours

Yield _____ gpm Date _____

Specific Capacity _____ gpm/ft

Well Purpose _____

Remarks _____

* Depth Below Land Surface

**Measuring Point is Top of Well Casing Unless Otherwise Noted.

Prepared by _____

Date Start/Finish: 8/9/2007 - 8/10/2007
Drilling Company: Drillers, Inc.
Driller's Name: Joe Smith
Drilling Method: Hollow Stem Auger
Auger Size: 4.25" ID
Rig Type: CME-55
Sampling Method: 2" x 2' Split Spoon

Northing: 617984.1848
Easting: 559115.8392
Casing Elevation: NA

Borehole Depth: 25' bgs
Surface Elevation: 682.35' AMSL

Descriptions By: Joseph Lisi

Well/Boring ID: **EXAMPLE WELL**

Client: XYZ Chemical Plant,
An ABC Company

Location: Smith Street Site
Syracuse, NY

DRAFT

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blow Counts	N - Value	PID Headspace (ppm)	Geologic Column	Stratigraphic Description	Well/Boring Construction
0	0	1	0-2	2.0	1 1 2 5	3	1.1		Asphalt surface. Dark grayish brown (10YR 4/2) coarse rounded PEBBLES, some fine Sand, moist. Grayish brown (10YR 5/2) fine SAND and Coal SLAG, some medium to coarse Sand, moist. Light gray to white ASH, little rust colored mottles, moist to wet.	Steel flushmount cover Locking J-Plug Concrete Pad (0-0.5' bgs) Sand Drain (0.5-1' bgs)
		2	2-4	1.2	1 2 3 5	5	0.0		Dark gray fine SAND and SILT, trace Clay, slightly plastic, some rust colored layers, wet.	
-5	-5	3	4-6	1.1	1 2 1 5	3	0.0		Dark gray SILT and CLAY, little fine Pebbles, little coarse Sand, medium plasticity, soft, wet. Gravel content increasing to some below 4.7' bgs.	Bentonite/concrete Grout (1-8' bgs)
		4	6-8	1.3	7 8 1 8	9	0.0		Red to yellow-brown fine to medium subrounded to sub-angular PEBBLES and subangular coarse SAND, little Silt, trace Clay, wet.	
		5	8-10	0.3	1 2 5 4	7	0.0		Brown fine to coarse SAND, some fine subrounded Pebbles, little Silt, moist.	2" Sch 40 PVC Riser (0.5'-15' bgs) Bentonite Seal (8-10' bgs)
-10	-10	6	10-12	0.0	6 18 50/0.3	NA	NA		No Recovery.	
		7	12-14	1.4	6 5 4 6	9	3.5		Red to yellow-brown fine to medium angular PEBBLE and coarse angular to subangular SAND, little Silt, wet.	#1 Silica Sand Pack (10-24' bgs)
-15	-15	8	14-16	1.5	2 9 1 2	10	4.5		Color change to brown below 14' bgs.	2" Sch 40 PVC 0.010" Slot Screen (12-24' bgs)



Remarks: ags = above ground surface; bgs = below ground surface; NA = Not Applicable/Available; AMSL = Above Mean Sea Level.

Analytical sample collected from 4-5' and 19-20' bgs for VOCs.

Client: XYZ Chemical Plant,
An ABC Company

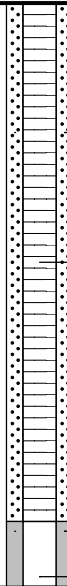
Well/Boring ID: EXAMPLE WELL

Site Location:

Smith Street Site
Syracuse, NY

Borehole Depth: 25' bgs

DRAFT

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blow Counts	N - Value	PID Headspace (ppm)	Geologic Column	Stratigraphic Description	Well/Boring Construction
		9	16-18	2.0	3 2 1 1	3	0.0		Brown fine to medium subrounded PEBBLE and coarse subangular to subrounded SAND, little Silt, wet.	 #1 Silica Sand Pack (10-24' bgs) 2" Sch 40 PVC 0.010" Slot Screen (12-24' bgs) Bentonite Seal (24-25' bgs) Sump (24-25' bgs)
		10	18-20	2.0	1 1 2 2	3	0.0			
20	-20	11	20-22	2.0	5 4 1 2	5	0.0			
		12	22-24	1.8	3 5 8 4	13	1.2			
25	-25	13	24-25	0.5	2 6	NA	108			
30	-30									
35	-35									



Remarks: ags = above ground surface; bgs = below ground surface; NA = Not Applicable/Available; AMSL = Above Mean Sea Level.

Analytical sample collected from 4-5' and 19-20' bgs for VOCs.

 ARCADIS <i>Infrastructure, environment, facilities</i>		Soil-Gas Sample Collection Log	
		Sample ID:	
Client:		Date/Day:	
Project:		Weather:	
Location:		Temperature:	
Project #:		Wind Speed/Direction:	
Samplers:		Subcontractor:	
Logged By:		Equipment:	
Coordinates:		Moisture Content of Sampling Zone (circle one):	Dry / Moist
Sampling Depth:		Approximate Purge Volume:	
Time of Collection:		Background PID Ambient Air Reading:	

Nearby Groundwater Monitoring Wells/Water Levels:

Well ID	Depth to Groundwater (ft)

SUMMA Canister Information:

Size (circle one): 1 L 6 L
 Canister ID: _____

Flow Controller ID: _____

Tracer Gas Information (if applicable)

Tracer Gas:

:

Canister Pressure (inches Hg):		
Reported By Laboratory	Measured Prior to Sample Collection	Measured Following Sample Collection

Tracer Gas Concentration (if applicable):		
Measured in Purge Effluent	Measured in 'Concentrated' Area Prior to Sample Collection	Measured in 'Concentrated' Area Following Sample Collection

General Observations/Notes:

Approximating One-Well Volume (for purging):

When using 1¼-inch "Dummy Point" and a 6-inch sampling interval, the sampling space will have a volume of approximately 150 mL. Each foot of ¼-inch tubing will have a volume of approximately 10 mL.



Attachment B-1

Calibration, Operation, and
Maintenance Procedures

INSTRUMENT CALIBRATION FORM

Project _____
 Project No. _____
 Site Location _____
 Date _____
 Time _____
 Prepared by _____

☐ Ph Cond Tempmeter Model Oakton 300 Services Serial 121686	☐ Turbidity Meter Model 2020 Lamotte Serial 3597-3502	☐ D.O. Meter Model #55/25 FT Serial 00H0611	☐ ORP Meter Model 00702-70 Serial 55386
☐ Multiprobe Model YSI 600 XL Serial 02J0183A1	☐ Turbidity Meter Model 2020 Lamotte Serial _____	☐ D.O. Meter Model _____ Serial _____	☐ ORP Meter Model _____ Serial _____
☐ PID Model Photovac 2020 Serial ED HF 358	☐ PID Model Photovac 2020 Serial _____	☐ pH Cond Temp Model Oakton 300 Series Serial 197765	☐ Rental Model _____ Serial _____

Check appropriate box for equipment calibrated. If two similar items are calibrated, please note two checks under calibration successful

Parameter PID (ppmv)	Value	Calibration Successful
Zero		
Span		

ph (si Units)	Value	Calibration Successful
4.00		
7.00		
10.00		

Conductivity (umhos)	Value	Calibration Successful
84 umhos		
1413 umhos		
Other		

Turbidity (NTU)	Value	Calibration Successful
1.0 NTU		
10 NTU		
40 NTU		
Other		

Parameter D.O.	Calibration Successful
100% Saturated Air	
Barometer Adjustment	
Elevation Adjustment	

* ORP (Mv)	Calibration Successful
Hydroquinone (240) (Black)	
Zobel Solution (237) (yellow)	
Temperature Based Chart Calibration	
* Adjusted	

*** No adjustment on some meters just a probe check, others are adjustable**

RGE

Calibration, Operation, and Maintenance Procedures

112 Riverside Drive Former MGP Site
Geneseo, New York

November 2015



**Calibration, Operation, and
Maintenance Procedures**

112 Riverside Drive- Former
MGP Site

Prepared for:
RGE

Prepared by:
Arcadis
295 Woodcliff Drive
Third Floor
Suite 301
Fairport
New York 14450
Tel 585.385.0090
Fax 585.385.4198

Our Ref.:
B0013138

Date:
November 2015

1. Introduction	1
2. Materials	2
3. Calibration Procedures	3
4. Operation Procedures	4
5. Maintenance Procedure	5

Attachment

1	MicroTip Calibration and Maintenance Log

1. Introduction

The MiniRAE 2000 measures relative total concentrations of organic and inorganic vapors in the field and will be calibrated daily prior to use. The MiniRAE 2000 does not carry an Intrinsic Safety Rating and will be used in a controlled environment only. The MiniRAE2000 will be used to screen soil samples, the head space of soil/water samples, and to monitor the breathing and work zones.

2. Materials

- MiniRAE 2000 (PID)
- isobutylene calibration gas tank with pressure regulator and up to four other selected span gases
- zero span gas (clean outdoor air or zero grade gas)
- gas sampling bag with plastic tubing to connect PID probe to calibration gas
- flow regulator
- PID calibration and maintenance log

3. Calibration Procedures

1. Turn on the MiniRAE 2000 and monitor the ambient air. If there is any doubt of the air quality, then zero grade gas will be obtained.
2. Connect the regulator to the span gas cylinder. Hand-tighten the fittings.
3. Open the valve on the gas bag by turning the valve stem fully counterclockwise.
4. Attach the gas bag to the regulator. Hand-tighten the fittings.
5. Turn the regulator knob counterclockwise half a turn to start the gas flow.
6. Fill the gas bag half full and then close the regulator fully clockwise to turn off the flow of gas.
7. Fill the gas bag and then turn the valve clockwise.
8. Press "MODE" and "N" at the same time to enter the set-up screens. To cycle through the screens press "MODE." Press "Y" for span cal and "Y" again for zero point. Press "Y" to set the zero point.
9. When screen displays "CAL GAS" press "Y" and calibrate the unit with isobutylene calibration gas.
10. Press and hold "MODE" for a few seconds and the display will return to normal screening mode.
11. After 7 hours of use, recharge the battery pack.
12. Record the date, time, your initials, calibration gas, and concentration on the MiniRAE 2000 Calibration and Maintenance Log (Attachment 1).

4. Operation Procedures

1. Use the health and safety equipment, as required by the HASP.
2. Calibrate the instrument, as described in Section 3.
3. Measure and record the background PID reading.
4. If the PID will be used for more than 7 hours during optimal weather conditions (50 degrees or greater) or during extreme cold or precipitation, have a fully charged battery available for use.
5. In the event of precipitation, fully cover the instrument, leaving the probe accessible for measurements.
6. Measure and record PID reading.

5. Maintenance Procedure

1. At the end of each day or when the battery is fully discharged, recharge batteries overnight.
2. Store the instrument in the protective case when not in use.
3. Keep records of operation, maintenance, calibration problems and repairs.
4. A replacement instrument will be available on site or ready for overnight shipment, if necessary.
5. The MiniRAE 2000 will be sent back to the manufacturer for service if needed.



Attachment B-2

Field Sampling Logs

Water Sampling Log

Project _____ Project No. _____

Site Location _____ Date _____

Well No. _____ Replicate No. _____ Weather _____

Sampling Personnel _____ Sampling Time: Begin _____ End _____

Purge Data
Field Parameters

Measuring Point (describe) _____ Sounded Well Depth (ft bmp) _____ Depth to Water (ft bmp) _____ Depth to Packer (ft bmp) _____ Water Column in Well (ft) _____ Casing Diameter _____ Gallons in Well _____ Gallons Purged _____ Prior to Sampling _____ Pump Intake _____ Setting (ft bmp) _____ Packer Pressure (psi) _____ Pumping Rate (gpm) _____ Evacuation Method _____ Sampling Method _____ Purge Time Begin _____ End _____	Color _____ Odor _____ Appearance _____ <table border="1" style="width: 100%; border-collapse: collapse; text-align: center;"> <tr> <th style="width: 15%;">I</th> <th style="width: 15%;">1V</th> <th style="width: 15%;">2V</th> <th style="width: 15%;">3V</th> </tr> <tr> <td> </td><td> </td><td> </td><td> </td></tr> <tr> <td> </td><td> </td><td> </td><td> </td></tr> <tr> <td> </td><td> </td><td> </td><td> </td></tr> <tr> <td> </td><td> </td><td> </td><td> </td></tr> <tr> <td> </td><td> </td><td> </td><td> </td></tr> <tr> <td> </td><td> </td><td> </td><td> </td></tr> <tr> <td> </td><td> </td><td> </td><td> </td></tr> <tr> <td> </td><td> </td><td> </td><td> </td></tr> <tr> <td> </td><td> </td><td> </td><td> </td></tr> <tr> <td> </td><td> </td><td> </td><td> </td></tr> </table> pH (s.u.) _____ Conductivity _____ (mS/cm) or _____ (μmhos/cm) ¹⁾ _____ Temperature (°C) _____ DO (mg/L) _____ ORP (mV) _____ Turbidity (NTU) _____ Time _____ DTW (ft bmp) _____	I	1V	2V	3V																																								
I	1V	2V	3V																																										

 Remarks: _____

Parameter	Container	No.	Preservative
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____

PID Reading _____

Well Casing Volumes				
Gal./Ft.	1 1/4" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1 1/2" = 0.09	2-1/2" = 0.26	3-1/2" = 0.50	6" = 1.47

1) Circle one unit type



Attachment B-3

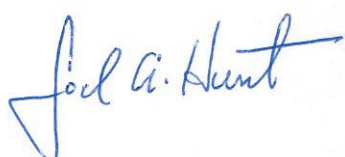
Soil Description Standard
Operating Procedure

Soil Description

Rev. #: 0

Rev Date: May 20, 2008

Approval Signatures

Prepared by: 

Date: 5/22/08

Reviewed by: 
(Technical Expert)

Date: 5/22/08

Reviewed by: 
(Technical Expert)

Date: 5/22/08

I. Scope and Application

This ARCADIS standard operating procedure (SOP) describes proper soil description procedures. This SOP should be followed for all unconsolidated material unless there is an established client-required specific SOP or regulatory-required specific SOP. In cases where there is a required specific SOP, it should be followed and should be referenced and/or provided as an appendix to reports that include soil classifications and/or boring logs. When following a required non-ARCADIS SOP, additional information required by this SOP should be included in field notes with client approval.

This SOP has been developed to emphasize field observation and documentation of details required to:

- make hydrostratigraphic interpretations guided by depositional environment/geologic settings;
- provide information needed to understand the distribution of constituents of concern; properly design wells, piezometers, and/or additional field investigations; and develop appropriate remedial strategies.

This SOP incorporates elements from various standard systems such as ASTM D2488-06, Unified Soil Classification System, Burmister and Wentworth. However, none of these standard systems focus specifically on contaminant hydrogeology and remedial design. Therefore, although each of these systems contain valuable guidance and information related to correct descriptions, strict application of these systems can omit information critical to our clients and the projects that we perform.

This SOP does not address details of health and safety; drilling method selection; boring log preparation; sample collection; or laboratory analysis. Refer to other ARCADIS SOPs, the project work plans including the quality assurance project plan, sampling plan, and health and safety plan (HASP), as appropriate.

II. Personnel Qualifications

Soil descriptions will be completed only by persons who have been trained in ARCADIS soil description procedures. Field personnel will complete training on the ARCADIS soil description SOP in the office and/or in the field under the guidance of an experienced field geologist. For sites where soil descriptions have not previously been well documented, soil descriptions should be performed only by trained persons with a degree in geology or a geology-related discipline.

III. Equipment List

The following equipment should be taken to the field to facilitate soil descriptions:

- field book, field forms or PDA to record soil descriptions;
- field book for supplemental notes;
- this SOP for Soil Descriptions and any project-specific SOP (if required);
- field card showing Wentworth scale;
- Munsell® soil color chart;
- tape measure divided into tenths of a foot;
- stainless steel knife or spatula;
- hand lens;
- water squirt bottle;
- jar with lid;
- personal protective equipment (PPE), as required by the HASP; and
- digital camera.

IV. Cautions

Drilling and drilling-related hazards including subsurface utilities are discussed in other SOPs and site-specific HASPs and are not discussed herein.

Soil samples may contain hazardous substances that can result in exposure to persons describing soils. Routes for exposure may include dermal contact, inhalation and ingestion. Refer to the project specific HASP for guidance in these situations.

V. Health and Safety Considerations

Field activities associated with soil sampling and description will be performed in accordance with a site-specific HASP, a copy of which will be present on site during such activities. Know what hazardous substances may be present in the soil and understand their hazards. Always avoid the temptation to touch soils with bare hands, detect odors by placing soils close to your nose, or tasting soils.

VI. Procedure

1. Select the appropriate sampling method to obtain representative samples in accordance with the selected sub-surface exploration method, e.g. split-spoon or Shelby sample for hollow-stem drilling, Lexan or acetate sleeves for dual-tube direct push, etc.
2. Proceed with field activities in required sequence. Although completion of soil descriptions is often not the first activity after opening sampler, identification of stratigraphic changes is often necessary to select appropriate intervals for field screening and/or selection of laboratory samples.
3. Examine all of each individual soil sample (this is different than examining each sample selected for laboratory analysis), and record the following for each stratum:
 - depth interval;
 - principal component with descriptors, as appropriate;
 - amount and identification of minor component(s) with descriptors as appropriate;
 - moisture;
 - consistency/density;
 - color; and
 - additional description or comments (recorded as notes).

The above is described more fully below.

DEPTH

To measure and record the depth below ground level (bgl) of top and bottom of each stratum, the following information should be recorded.

1. Measured depth to the top and bottom of sampled interval. Use starting depth of sample based upon measured tool length information and the length of sample interval.

2. Length of sample recovered, not including slough (material that has fallen into hole from previous interval), expressed as fraction with length of recovered sample as numerator over length of sampled interval as denominator (e.g. 14/24 for 14 inches recovered from 24-inch sampling interval that had 2 inches of slough discarded).
3. Thickness of each stratum measured sequentially from the top of recovery to the bottom of recovery.
4. Any observations of sample condition or drilling activity that would help identify whether there was loss from the top of the sampling interval, loss from the bottom of the sampling interval, or compression of the sampling interval. Examples: 14/24, gravel in nose of spoon; or 10/18 bottom 6 inches of spoon empty.

DETERMINATION OF COMPONENTS

Obtain a representative sample of soil from a single stratum. If multiple strata are present in a single sample interval, each stratum should be described separately. More specifically, if the sample is from a 2-foot long split-spoon where strata of coarse sand, fine sand and clay are present, then the resultant description should be of the three individual strata unless a combined description can clearly describe the interbedded nature of the three strata. Example: Fine Sand with interbedded lenses of Silt and Clay, ranging between 1 and 3 inches thick.

Identify principal component and express volume estimates for minor components on logs using the following standard modifiers.

Modifier	Percent of Total Sample (by volume)
and	36 - 50
some	21 - 35
little	10 - 20
trace	<10

Determination of components is based on using the Udden-Wentworth particle size classification (see below) and measurement of the average grain size diameter. Each size grade or class differs from the next larger grade or class by a constant ratio of $\frac{1}{2}$. Due to visual limitations, the finer classifications of Wentworth's scale cannot be distinguished in the field and the subgroups are not included. Visual determinations in the field should be made carefully by comparing the sample to the field gauge card that shows Udden-Wentworth scale or by measuring with a ruler. Use of field sieves s

recommended to assist in estimating percentage of coarse grain sizes. Settling test or wash method (Appendix X4 of ASTM D2488) is recommended for determining presence and estimating percentage of clay and silt.

Udden-Wenworth Scale Modified ARCADIS, 2008			
Size Class	Millimeters	Inches	Standard Sieve #
Boulder	256 – 4096	10.08+	
Large cobble	128 - 256	5.04 -10.08	
Small cobble	64 - 128	2.52 – 5.04	
Very large pebble	32 – 64	0.16 - 2.52	
Large pebble	16 – 32	0.63 – 1.26	
Medium pebble	8 – 16	0.31 – 0.63	
Small pebble	4 – 8	0.16 – 0.31	No. 5 +
Granule	2 – 4	0.08 – 0.16	No.5 – No.10
Very coarse sand	1 -2	0.04 – 0.08	No.10 – No.18
Coarse sand	½ - 1	0.02 – 0.04	No.18 - No.35
Medium sand	¼ - ½	0.01 – 0.02	No.35 - No.60
Fine sand	1/8 -¼	0.005 – 0.1	No.60 - No.120
Very fine sand	1/16 – 1/8	0.002 – 0.005	No. 120 – No. 230
Silt (subgroups not included)	1/256 – 1/16	0.0002 – 0.002	Not applicable (analyze by pipette or hydrometer)
Clay (subgroups not included)	1/2048 – 1/256	.00002 – 0.0002	

Identify components as follows. Remove particles greater than very large pebbles (64-mm diameter) from the soil sample. Record the volume estimate of the greater than very large pebbles. Examine the sample fraction of very large pebbles and smaller particles and estimate the volume percentage of the pebbles, granules, sand, silt and clay. Use the jar method, visual method, and/or wash method (Appendix X4 of ASTM D2488) to estimate the volume percentages of each category.

Determination of actual dry weight of each Udden-Wentworth fraction requires laboratory grain-size analysis using sieve sizes corresponding to Udden-Wentworth fractions and is highly recommended to determine grain-size distributions for each hydrostratigraphic unit.

Lab or field sieve analysis is advisable to characterize the variability and facies trends within each hydrostratigraphic unit. Field sieve-analysis can be performed on selected samples to estimate dry weight fraction of each category using ASTM D2488 Standard Practice for Classification of Soils for Engineering Purposes as guidance, but replace required sieve sizes with the following Udden-Wentworth set: U.S. Standard sieve mesh sizes 6; 12; 20; 40; 70; 140; and 270 to retain pebbles; granules; very coarse sand; coarse sand; medium sand; fine sand; and very fine sand, respectively.

PRINCIPAL COMPONENT

The principal component is the size fraction or range of size fractions containing the majority of the volume. Examples: the principal component in a sample that contained 55% pebbles would be "Pebbles"; or the principal component in a sample that was 20% fine sand, 30% medium sand and 25% coarse sand would be "Fine to coarse Sand" or for a sample that was 40% silt and 45% clay the principal component would be "Clay and Silt".

Include appropriate descriptors with the principal component. These descriptors vary for different particle sizes as follows.

Angularity – Describe the angularity for very coarse sand and larger particles in accordance with the table below (ASTM D-2488-06). Figures showing examples of angularity are available in ASTM D-2488-06 and the ARCADIS Soil Description Field Guide.

Description	Criteria
Angular	Particles have sharp edges and relatively plane sides with unpolished surfaces.
Subangular	Particles are similar to angular description but have rounded edges.
Subrounded	Particles have nearly plane sides but have well-rounded corners and edges.
Rounded	Particles have smoothly curved sides and no edges.

Plasticity – Describe the plasticity for silt and clay based on observations made during the following test method (ASTM D-2488-06).

- As in the dilatancy test below, select enough material to mold into a ball about ½ inch (12 mm) in diameter. Mold the material, adding water if necessary, until it has a soft, but not sticky, consistency.
- Shape the test specimen into an elongated pat and roll by hand on a smooth surface or between the palms into a thread about 1/8 inch (3 mm) in diameter. (If the sample is too wet to roll easily, it should be spread into a thin layer and allowed to lose some water by evaporation.) Fold the sample threads and reroll repeatedly until the thread crumbles at a diameter of about 1/8 inch. The thread will crumble when the soil is near the plastic limit.

Description	Criteria
Nonplastic	A 1/8 inch (3 mm) thread cannot be rolled at any water content.
Low	The thread can barely be rolled and the lump cannot be formed when drier than the plastic limit.
Medium	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	It takes considerable time rolling and kneading to reach the plastic limit. The thread can be rolled several times after reaching the plastic limit. The lump can be formed without crumbling when drier than the plastic limit.

Dilatancy – Describe the dilatancy for silt and silt-sand mixtures using the following field test method (ASTM D-2488-06).

- From the specimen select enough material to mold into a ball about $\frac{1}{2}$ inch (12 mm) in diameter. Mold the material adding water if necessary, until it has a soft, but not sticky, consistency.
- Smooth the ball in the palm of one hand with a small spatula.
- Shake horizontally, striking the side of the hand vigorously with the other hand several times.
- Note the reaction of water appearing on the surface of the soil.
- Squeeze the sample by closing the hand or pinching the soil between the fingers, and note the reaction as none, slow, or rapid in accordance with the table below. The reaction is the speed with which water appears while shaking and disappears while squeezing.

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.

MINOR COMPONENT(S)

The minor component(s) are the size fraction(s) containing less than 50% volume. Example: the identified components are estimated to be 60% medium sand to granules, 25 % silt and clay; 15 % pebbles – there are two identified minor components: silt and clay; and pebbles.

Include a standard modifier to indicate percentage of minor components (see Table on Page 5) and the same descriptors that would be used for a principal component. Plasticity should be provided as a descriptor for the silt and clay. Dilatancy should be provided for silt and silt-sand mixtures. Angularity should be provided as a descriptor for pebbles and coarse sand. For the example above, the minor constituents with

modifiers could be: some silt and clay, low plasticity; little medium to large pebbles, sub-round.

SORTING

Sorting is the opposite of grading, which is a commonly used term in the USCS or ASTM methods to describe the uniformity of the particle size distribution in a sample. Well-sorted samples are poorly graded and poorly sorted samples are well graded. ARCADIS prefers the use of sorting for particle size distributions and grading to describe particle size distribution trends in the vertical profile of a sample or hydrostratigraphic unit because of the relationship between sorting and the energy of the depositional process. For soils with sand-sized or larger particles, sorting should be determined as follows:

- Well sorted – the range of particle sizes is limited (e.g. the sample is comprised of predominantly one or two grain sizes)
- Poorly sorted – a wide range of particle sizes are present

You can also use sieve analysis to estimate sorting from a sedimentological perspective; sorting is the statistical equivalent of standard deviation. Smaller standard deviations correspond to higher degree of sorting (see Remediation Hydraulics, 2008).

MOISTURE

Moisture content should be described for every sample since increases or decreases in water content is critical information. Moisture should be described in accordance with the table below (percentages should not be used unless determined in the laboratory).

Description	Criteria
Dry	Absence of moisture, dry to touch, dusty.
Moist	Damp but no visible water.
Wet (Saturated)	Visible free water, soil is usually below the water table.

CONSISTENCY or DENSITY

This can be determined by standard penetration test (SPT) blow counts (ASTM D-1586) or field tests in accordance with the tables below. For SPT blow counts the N-value is used. The N-value is the blows per foot for the 6" to 18" interval. Example: for 24-inch spoon, recorded blows per 6-inch interval are: 4/6/9/22. Since the second interval is 6" to 12", the third interval is 12" to 18", the N value is 6+9, or 15. Fifty blow counts for less than 6 inches is considered refusal.

Fine-grained soil – Consistency

Description	Criteria
Very soft	N-value < 2 or easily penetrated several inches by thumb.
Soft	N-value 2-4 or easily penetrated one inch by thumb.
Medium stiff	N-value 9-15 or indented about ¼ inch by thumb with great effort.
Very stiff	N-value 16-30 or readily indented by thumb nail.
Hard	N-value > than 30 or indented by thumbnail with difficulty

Coarse-grained soil – Density

Description	Criteria
Very loose	N-value 1- 4
Loose	N-value 5-10
Medium dense	N-value 11-30
Dense	N-value 31- 50
Very dense	N-value >50

COLOR

Color should be described using simple basic terminology and modifiers based on the Munsell system. Munsell alpha-numeric codes are required for all samples. If the sample contains layers or patches of varying colors this should be noted and all representative colors should be described. The colors should be described for moist

samples. If the sample is dry it should be wetted prior to comparing the sample to the Munsell chart.

ADDITIONAL COMMENTS (NOTES)

Additional comments should be made where observed and should be presented as notes with reference to a specific depth interval(s) to which they apply. Some of the significant information that may be observed includes the following.

- **Odor** - You should not make an effort to smell samples by placing near your nose since this can result in unnecessary exposure to hazardous materials. However, odors should be noted if they are detected during the normal sampling procedures. Odors should be based upon descriptors such as those used in NIOSH "Pocket Guide to Chemical Hazards", e.g. "pungent" or "sweet" and should not indicate specific chemicals such as "phenol-like" odor or "BTEX" odor.
- Structure
- Bedding planes (laminated, banded, geologic contacts)
- Presence of roots, root holes, organic material, man-made materials, minerals, etc.
- Mineralogy
- Cementation
- NAPL presence/characteristics, including sheen (based on client-specific guidance)
- Reaction with HCl (typically used only for special soil conditions)
- Origin, if known (capital letters: LACUSTRINE; FILL; etc.)

EXAMPLE DESCRIPTIONS

51.4 to 54.0' Clay, some silt, medium to high plasticity; trace small to large pebbles, subround to subangular up to 2" diameter; moist; stiff; dark grayish brown (10YR 4/2) NOTE: Lacustrine; laminated 0.01 to 0.02 feet thick, laminations brownish yellow (10 YR 4/3).



32.5 to 38.0' Sand, medium to Pebbles, coarse; sub-round to sub-angular; trace silt; poorly sorted; wet; grayish brown (10YR5/2). NOTE: sedimentary, igneous and metamorphic particles.

Unlike the first example where a density of cohesive soils could be estimated, this rotonsonic sand and pebble sample was disturbed during drilling (due to vibrations in a loose Sand and Pebble matrix) so no density description could be provided. Neither sample had noticeable odor so odor comments were not included.

The standard generic description order is presented below.

- Depth

- Principal Components
 - o Angularity for very coarse sand and larger particles
 - o Plasticity for silt and clay
 - o Dilatancy for silt and silt-sand mixtures
- Minor Components
- Sorting
- Moisture
- Consistency or Density
- Color
- Additional Comments

VII. Waste Management

Project-specific requirements should be identified and followed. The following procedures, or similar waste management procedures are generally required.

Water generated during cleaning procedures will be collected and contained onsite in appropriate containers for future analysis and appropriate disposal. PPE (such as gloves, disposable clothing, and other disposable equipment) resulting from personnel cleaning procedures and soil sampling/handling activities will be placed in plastic bags. These bags will be transferred into appropriately labeled 55-gallon drums or a covered roll-off box for appropriate disposal.

Soil materials will be placed in sealed 55-gallon steel drums or covered roll-off boxes and stored in a secured area. Once full, the material will be analyzed to determine the appropriate disposal method.

VIII. Data Recording and Management

Upon collection of soil samples, the soil sample should be logged on a standard boring log and/or in the field log book depending on Data Quality Objectives (DQOs) for the task/project. Two examples of standard boring logs are presented below.

Completed logs and/or logbook will be maintained in the task/project field records file. Digital photographs of typical soil types observed at the site and any unusual features should be obtained whenever possible. All photographs should include a ruler or common object for scale. Photo location, depth and orientation must be recorded in the daily log or log book and a label showing this information in the photo is useful.

<http://teams/sites/Offices/North/Northeast Area/Northeast Area Geoscience Forms/Sample Core Log.XLS> - Sheet1

IX. Quality Assurance

Soil descriptions should be completed only by appropriately trained personnel. Descriptions should be reviewed by an experienced field geologist for content, format and consistency. Edited boring logs should be reviewed by the original author to assure that content has not changed.

X. References

ARCADIS Soil Description Field Guide, 2008 (in progress)

Munsell® Color Chart – available from Forestry Suppliers, Inc.- Item 77341 “Munsell® Color Soil Color Charts

Field Gauge Card that Shows Udden-Wentworth scale – available from Forestry Suppliers, Inc. – Item 77332 “Sand Grain Sizing Folder”

ASTM D-1586, Test Method for Penetration Test and Split-Barrel Sampling of Soils

ASTM D-2488-00, Standard Practice for Description and Identification of Soils (Visual-Manual Procedure)

United States Bureau of Reclamation. Engineering Geology Field Manual. United States Department of Interior, Bureau of Reclamation.
<http://www.usbr.gov/pmts/geology/fieldmap.htm>

Petrology of Sedimentary Rocks, Robert L. Folk, 1980, p. 1-48

NIOSH Pocket Guide to Chemical Hazards

Remediation Hydraulics, Fred C. Payne, Joseph A. Quinnan, and Scott T. Potter, 2008, p 59-63



Attachment B-4

Low-Flow Groundwater Purging
and Sampling Procedures for
Monitoring Wells

**Low-Flow Groundwater
Purging and Sampling
Procedures for Monitoring
Wells**

Rev. #: 4

Rev Date: February 2, 2011

Approval Signatures

Prepared by:  Date: 2/2/2011

Reviewed by:  Date: 2/2/2011
(Technical Expert)

I. Scope and Application

Groundwater samples will be collected from monitoring wells to evaluate groundwater quality. The protocol presented in this standard operating procedure (SOP) describes the procedures to be used to purge monitoring wells and collect groundwater samples. This protocol has been developed in accordance with the United States Environmental Protection Agency (USEPA) Region I Low Stress (Low Flow) Purging and Sampling Procedures for the Collection of Groundwater Samples from Monitoring Wells (USEPA SOP No. GW0001; July 30, 1996). Both filtered and unfiltered groundwater samples may be collected using this low-flow sampling method. Filtered samples will be obtained using a 0.45-micron disposable filter. No wells will be sampled until well development has been performed in accordance with the procedures presented in the SOP titled Monitoring Well Development, unless that well has been sampled or developed within the prior 1-year time period. Groundwater samples will not be collected within 1 week following well development.

II. Personnel Qualifications

ARCADIS personnel directing, supervising, or leading groundwater sample collection activities should have a minimum of 2 years of previous groundwater sampling experience. ARCADIS personnel providing assistance to groundwater sample collection and associated activities should have a minimum of 6 months of related experience or an advanced degree in environmental sciences, engineering, hydrogeology, or geology.

The supervisor of the groundwater sampling team will have at least 1 year of previous supervised groundwater sampling experience.

Prior to mobilizing to the field, the groundwater sampling team should review and be thoroughly familiar with relevant site-specific documents including but not limited to the site work plan, field sampling plan, QAPP, HASP, and historical information. Additionally, the groundwater sampling team should review and be thoroughly familiar with documentation provided by equipment manufacturers for all equipment that will be used in the field prior to mobilization.

III. Equipment List

Specific to this activity, the following materials (or equivalent) will be available:

- Health and safety equipment (as required in the site Health and Safety Plan [HASP]).

- Site Plan, well construction records, prior groundwater sampling records (if available).
- Sampling pump, which may consist of one or more of the following:
 - submersible pump (e.g., Grundfos Redi-Flo 2);
 - peristaltic pump (e.g., ISCO Model 150); and/or
 - bladder pump (e.g., Marschalk System 1, QED Well Wizard, Geotech, etc.).
- Appropriate controller and power source for pump:
 - Submersible and peristaltic pumps require electric power from either a generator or a deep cell battery.
 - Submersible pumps such as Grundfos require a pump controller to run the pump
 - Bladder pumps require a pump controller and a gas source (e.g., air compressor or compressed N₂ or CO₂ gas cylinders).
- Teflon[®] tubing or Teflon[®]-lined polyethylene tubing of an appropriate size for the pump being used. For peristaltic pumps, dedicated Tygon[®] tubing (or other type as specified by the manufacturer) will also be used through the pump apparatus.
- Water-level probe (e.g., Solinst Model 101).
- Water-quality (temperature/pH/specific conductivity/ORP/turbidity/dissolved oxygen) meter and flow-through measurement cell. Several brands may be used, including:
 - YSI 6-Series Multi-Parameter Instrument;
 - Hydrolab Series 3 or Series 4a Multiprobe and Display; and/or
 - Horiba U-10 or U-22 Water Quality Monitoring System.
- Supplemental turbidity meter (e.g., Horiba U-10, Hach 2100P, LaMotte 2020). Turbidity measurements collected with multi-parameter meters have been shown to sometimes be unreliable due to fouling of the optic lens of the

turbidity meter within the flow-through cell. A supplemental turbidity meter will be used to verify turbidity data during purging if such fouling is suspected. Note that industry improvements may eliminate the need for these supplemental measurements in the future.

- Appropriate water sample containers (supplied by the laboratory).
- Appropriate blanks (trip blank supplied by the laboratory).
- 0.45-micron disposable filters (if field filtering is required).
- Large glass mixing container (if sampling with a bailer).
- Teflon[®] stirring rod (if sampling with a bailer).
- Cleaning equipment.
- Groundwater sampling log (attached) or bound field logbook.

Note that in the future, the client may acquire different makes/models of some of this equipment if the listed makes/models are no longer available, or as a result of general upgrades or additional equipment acquisitions. In the event that the client uses a different make/model of the equipment listed, the client will use an equivalent type of equipment (e.g., pumps, flow-through analytical cells) and note the specific make/model of the equipment used during a sampling event on the groundwater sampling log. In addition, should the client desire to change to a markedly different sampling methodology (e.g., discrete interval samplers, passive diffusion bags, or a yet to be developed technique), the client will submit a proposed SOP for the new methodology for USEPA approval prior to implementing such a change.

The maintenance requirements for the above equipment generally involve decontamination or periodic cleaning, battery charging, and proper storage, as specified by the manufacturer. For operational difficulties, the equipment will be serviced by a qualified technician.

IV. Cautions

If heavy precipitation occurs and no cover over the sampling area and monitoring well can be erected, sampling must be discontinued until adequate cover is provided. Rain water could contaminate groundwater samples.

Do not use permanent marker or felt-tip pens for labels on sample container or sample coolers – use indelible ink. The permanent markers could introduce volatile constituents into the samples.

It may be necessary to field filter some parameters (e.g., metals) prior to collection, depending on preservation, analytical method, and project quality objectives.

Store and/or stage empty and full sample containers and coolers out of direct sunlight.

To mitigate potential cross-contamination, groundwater samples are to be collected in a pre-determined order from least impacted to impacted based on previous analytical data. If no analytical data are available, samples are collected in order of upgradient, then furthest downgradient to source area locations.

Be careful not to over-tighten lids with Teflon liners or septa (e.g., 40 mL vials). Over-tightening can cause the glass to shatter or impair the integrity of the Teflon seal.

V. Health and Safety Considerations

Use caution and appropriate cut resistant gloves when tightening lids to 40 mL vials. These vials can break while tightening and can lacerate hand. Amber vials (thinner glass) are more prone to breakage.

If thunder or lightning is present, discontinue sampling and take cover until 30 minutes have passed after the last occurrence of thunder or lightning.

Use caution when removing well caps as well may be under pressure, cap can dislodge forcefully and cause injury.

Use caution when opening protective casing on stickup wells as wasps frequently nest inside the tops of the covers. Also watch for fire ant mounds near well pads when sampling in the south or western U.S.

VI. Procedure

Groundwater will be purged from the wells using an appropriate pump. Peristaltic pumps will initially be used to purge and sample all wells when applicable. If the depth to water is below the sampling range of a peristaltic pump (approximately 25 feet), submersible pumps or bladder pumps will be used provided the well is constructed with a casing diameter greater than or equal to 2 inches (the minimum well diameter capable of accommodating such pumps). Bladder pumps are preferred over peristaltic and submersible pumps if sampling of VOCs is required to prevent volatilization. For smaller diameter wells where the depth to water is below the sampling range of a

peristaltic pump, alternative sampling methods (i.e., bailing or small diameter bladder pumps) will be used to purge and sample the groundwater. Purge water will be collected and containerized.

1. Calibrate field instruments according to manufacturer procedures for calibration.
2. Measure initial depth to groundwater prior to placement of pumps.
3. Prepare and install pump in well: For submersible and non-dedicated bladder pumps, decontaminate pump according to site decontamination procedures. Non-dedicated bladder pumps will require a new Teflon[®] bladder and attachment of an air line, sample discharge line, and safety cable prior to placement in the well. Attach the air line tubing to the air port on the top of the bladder pump. Attach the sample discharge tubing to the water port on the top of the bladder pump. Care should be taken not to reverse the air and discharge tubing lines during bladder pump set-up as this could result in bladder failure or rupture. Attach and secure a safety cable to the eyebolt on the top of bladder pump (if present, depending on pump model used). Slowly lower pump, safety cable, tubing, and electrical lines into the well to a depth corresponding to the approximate center of the saturated screen section of the well. Take care to avoid twisting and tangling of safety cable, tubing, and electrical lines while lowering pump into well; twisted and tangled lines could result in the pump becoming stuck in the well casing. Also, make sure to keep tubing and lines from touching the ground or other surfaces while introducing them into the well as this could lead to well contamination. If a peristaltic pump is being used, slowly lower the sampling tubing into the well to a depth corresponding to the approximate center of the saturated screen section of the well. The pump intake or sampling tube must be kept at least 2 feet above the bottom of the well to prevent mobilization of any sediment present in the bottom of the well.
4. If using a bladder pump, connect the air line to the pump controller output port. The pump controller should then be connected to a supply line from an air compressor or compressed gas cylinder using an appropriate regulator and air hose. Take care to tighten the regulator connector onto the gas cylinder (if used) to prevent leaks. Teflon tape may be used on the threads of the cylinder to provide a tighter seal. Once the air compressor or gas cylinder is connected to the pump controller, turn on the compressor or open the valve on the cylinder to begin the gas flow. Turn on the pump controller if an on/off switch is present and verify that all batteries are charged and fully operating before beginning to pump.
5. Connect the pump discharge water line to the bottom inlet port on the flow-through cell connected to the water quality meter.

6. Measure the water level again with the pump in the well before starting the pump. Start pumping the well at 200 to 500 milliliters (mL) per minute (or at lower site-specific rate if specified). The pump rate should be adjusted to cause little or no water level drawdown in the well (less than 0.3 feet below the initial static depth to water measurement) and the water level should stabilize. The water level should be monitored every 3 to 5 minutes (or as appropriate, lower flow rates may require longer time between readings) during pumping if the well diameter is of sufficient size to allow such monitoring. Care should be taken not to break pump suction or cause entrainment of air in the sample. Record pumping rate adjustments and depths to water. If necessary, pumping rates should be reduced to the minimum capabilities of the pump to avoid pumping the well dry and/or to stabilize indicator parameters. A steady flow rate should be maintained to the extent practicable. Groundwater sampling records from previous sampling events (if available) should be reviewed prior to mobilization to estimate the optimum pumping rate and anticipated drawdown for the well in order to more efficiently reach a stabilized pumping condition.

If the recharge rate of the well is very low, alternative purging techniques should be used, which will vary based on the well construction and screen position. For wells screened across the water table, the well should be pumped dry and sampling should commence as soon as the volume in the well has recovered sufficiently to permit collection of samples. For wells screened entirely below the water table, the well should be pumped until a stabilized level (which may be below the maximum displacement goal of 0.3 feet) can be maintained and monitoring for stabilization of field indicator parameters can commence. If a lower stabilization level cannot be maintained, the well should be pumped until the drawdown is at a level slightly higher than the bentonite seal above the well screen. Sampling should commence after one well volume has been removed and the well has recovered sufficiently to permit collection of samples.

During purging, monitor the field indicator parameters (e.g., turbidity, temperature, specific conductance, pH, etc.) every 3 to 5 minutes (or as appropriate). Field indicator parameters will be measured using a flow-through analytical cell or a clean container such as a glass beaker. Record field indicator parameters on the groundwater sampling log. The well is considered stabilized and ready for sample collection when turbidity values remain within 10% (or within 1 NTU if the turbidity reading is less than 10 NTU), the specific conductance and temperature values remain within 3%, ORP readings remain within ± 10 mV and pH remains within 0.1 units for three consecutive readings collected at 3- to 5-minute intervals (or other appropriate interval, alternate stabilization goals may exist in different geographic regions, consult the site-specific Work Plan for stabilization criteria). If the field indicator parameters do not stabilize within 1 hour of the start of purging, but the groundwater turbidity is

below the goal of 50 NTU and the values for all other parameters are within 10%, the well can be sampled. If the parameters have stabilized but the turbidity is not in the range of the 50 NTU goal, the pump flow rate should be decreased to a minimum rate of 100 mL/min to reduce turbidity levels as low as possible. Dissolved oxygen is extremely susceptible to various external influences (including temperature or the presence of bubbles on the DO meter); care should be taken to minimize the agitation or other disturbance of water within the flow-through cell while collecting these measurements. If air bubbles are present on the DO probe or in the discharge tubing, remove them before taking a measurement. If dissolved oxygen values are not within acceptable range for the temperature of groundwater (Attachment 1), then again check for and remove air bubbles on probe before re-measuring. If the dissolved oxygen value is 0.00 or less, then the meter should be serviced and re-calibrated. If the dissolved oxygen values are above possible results, then the meter should be serviced and re-calibrated.

During extreme weather conditions, stabilization of field indicator parameters may be difficult to obtain. Modifications to the sampling procedures to alleviate these conditions (e.g., measuring the water temperature in the well adjacent to the pump intake) will be documented in the field notes. If other field conditions exist that preclude stabilization of certain parameters, an explanation of why the parameters did not stabilize will also be documented in the field logbook.

7. Complete the sample label(s) and cover the label(s) with clear packing tape to secure the label onto the container.
8. After the indicator parameters have stabilized, collect groundwater samples by diverting flow out of the unfiltered discharge tubing into the appropriate labeled sample container. If a flow-through analytical cell is being used to measure field parameters, the flow-through cell should be disconnected after stabilization of the field indicator parameters and prior to groundwater sample collection. Under no circumstances should analytical samples be collected from the discharge of the flow-through cell. When the container is full, tightly screw on the cap. Samples should be collected in the following order: VOCs, TOC, SVOCs, metals and cyanide, and others (or other order as defined in the site-specific Work Plan).
9. If sampling for total and filtered metals and/or PCBs, a filtered and unfiltered sample will be collected. Install an in-line, disposable 0.45-micron particle filter on the discharge tubing after the appropriate unfiltered groundwater sample has been collected. Continue to run the pump until an initial volume of "flush" water has been run through the filter in accordance with the manufacturer's directions (generally 100 to 300 mL). Collect filtered groundwater sample by diverting flow

out of the filter into the appropriately labeled sample container. When the container is full, tightly screw on the cap.

10. Secure with packing material and store at 4°C in an insulated transport container provided by the laboratory.
11. Record on the groundwater sampling log or bound field logbook the time sampling procedures were completed, any pertinent observations of the sample (e.g., physical appearance, and the presence or lack of odors or sheens), and the values of the stabilized field indicator parameters as measured during the final reading during purging (Attachment 2 – Example Sampling Log).
12. Turn off the pump and air compressor or close the gas cylinder valve if using a bladder pump set-up. Slowly remove the pump, tubing, lines, and safety cable from the well. Do not allow the tubing or lines to touch the ground or any other surfaces which could contaminate them. .
13. If tubing is to be dedicated to a well, it should be folded to a length that will allow the well to be capped and also facilitate retrieval of the tubing during later sampling events. A length of rope or string should be used to tie the tubing to the well cap. Alternatively, if tubing and safety line are to be saved and reused for sampling the well at a later date they may be coiled neatly and placed in a clean plastic bag that is clearly labeled with the well ID. Make sure the bag is tightly sealed before placing it in storage.
14. Secure the well and properly dispose of personal protective equipment (PPE) and disposable equipment.
15. Complete the procedures for packaging, shipping, and handling with associated chain-of-custody.
16. Complete decontamination procedures for flow-through analytical cell and submersible or bladder pump, as appropriate.
17. At the end of the day, perform calibration check of field instruments.

If it is not technically feasible to use the low-flow sampling method, purging and sampling of monitoring wells may be conducted using the bailer method as outlined below:

1. Don appropriate PPE (as required by the HASP).
2. Place plastic sheeting around the well.

3. Clean sampling equipment.
4. Open the well cover while standing upwind of the well. Remove well cap and place on the plastic sheeting. Insert PID probe approximately 4 to 6 inches into the casing or the well headspace and cover with gloved hand. Record the PID reading in the field log. If the well headspace reading is less than 5 PID units, proceed; if the headspace reading is greater than 5 PID units, screen the air within the breathing zone. If the breathing zone reading is less than 5 PID units, proceed. If the PID reading in the breathing zone is above 5 PID units, move upwind from well for 5 minutes to allow the volatiles to dissipate. Repeat the breathing zone test. If the reading is still above 5 PID units, don appropriate respiratory protection in accordance with the requirements of the HASP. Record all PID readings. For wells that are part of the regular weekly monitoring program and prior PID measurements have not resulted in a breathing zone reading above 5 PID units, PID measurements will be taken monthly.
5. Measure the depth to water and determine depth of well by examining drilling log data or by direct measurement. Calculate the volume of water in the well (in gallons) by using the length of the water column (in feet), multiplying by 0.163 for a 2-inch well or by 0.653 for a 4-inch well. For other well diameters, use the formula:

$$\text{Volume (in gallons)} = \pi \text{ TIMES well radius (in feet) squared TIMES length of water column (in feet) TIMES 7.481 (gallons per cubic foot)}$$
6. Measure a length of rope or twine at least 10 feet greater than the total depth of the well. Secure one end of the rope to the well casing and secure the other end to the bailer. Test the knots and make sure the rope will not loosen. Check bailers so that all parts are intact and will not be lost in the well.
7. Lower bailer into well and remove one well volume of water. Contain all water in appropriate containers.
8. Monitor the field indicator parameters (e.g., turbidity, temperature, specific conductance, and pH). Measure field indicator parameters using a clean container such as a glass beaker or sampling cups provided with the instrument. Record field indicator parameters on the groundwater sampling log.
9. Repeat Steps 7 and 8 until three or four well volumes have been removed. Examine the field indicator parameter data to determine if the parameters have stabilized. The well is considered stabilized and ready for sample collection when turbidity values remain within 10% (or within 1 NTU if the turbidity reading is less than 10 NTU), the specific conductance and temperature values remain

within 3%, and pH remains within ± 0.1 units for three consecutive readings collected once per well volume removed.

10. If the field indicator parameters have not stabilized, remove a maximum of five well volumes prior to sample collection. Alternatively, five well volumes may be removed without measuring the field indicator parameters.
11. If the recharge rate of the well is very low, wells screened across the water table may be bailed dry and sampling should commence as soon as the volume in the well has recovered sufficiently to permit collection of samples. For wells screened entirely below the water table, the well should only be bailed down to a level slightly higher than the bentonite seal above the well screen. The well should not be bailed completely dry, to maintain the integrity of the seal. Sampling should commence as soon as the well volume has recovered sufficiently to permit sample collection.
12. Following purging, allow water level in well to recharge to a sufficient level to permit sample collection.
13. Complete the sample label and cover the label with clear packing tape to secure the label onto the container.
14. Slowly lower the bailer into the screened portion of the well and carefully retrieve a filled bailer from the well causing minimal disturbance to the water and any sediment in the well.
15. The sample collection order (as appropriate) will be as follows:
 - a. VOCs;
 - b. TOC;
 - c. SVOCs;
 - d. metals and cyanide; and
 - e. others.
16. When sampling for volatiles, collect water samples directly from the bailer into 40-mL vials with Teflon[®]-lined septa.
17. For other analytical samples, remove the cap from the large glass mixing container and slowly empty the bailer into the large glass mixing container. The

sample for dissolved metals and/or filtered PCBs should either be placed directly from the bailer into a pressure filter apparatus or pumped directly from the bailer with a peristaltic pump, through an in-line filter, into the pre-preserved sample bottle.

18. Continue collecting samples until the mixing container contains a sufficient volume for all laboratory samples.
19. Mix the entire sample volume with the Teflon[®] stirring rod and transfer the appropriate volume into the laboratory jar(s). Secure the sample jar cap(s) tightly.
20. If sampling for total and filtered metals and/or PCBs, a filtered and unfiltered sample will be collected. Sample filtration for the filtered sample will be performed in the field using a peristaltic pump prior to preservation. Install new medical-grade silicone tubing in the pump head. Place new Teflon[®] tubing into the sample mixing container and attach to the intake side of pump tubing. Attach (clamp) a new 0.45-micron filter (note the filter flow direction). Turn the pump on and dispense the filtered liquid directly into the laboratory sample bottles.
21. Secure with packing material and store at 4°C in an insulated transport container provided by the laboratory.
22. After sample containers have been filled, remove one additional volume of groundwater. Measure the pH, temperature, turbidity, and conductivity. Record on the groundwater sampling log or bound field logbook the time sampling procedures were completed, any pertinent observations of the sample (e.g., physical appearance, and the presence or lack of odors or sheens), and the values of the field indicator parameters.
23. Remove bailer from well, secure well, and properly dispose of PPE and disposable equipment.
24. If a bailer is to be dedicated to a well, it should be secured inside the well above the water table, if possible. Dedicated bailers should be tied to the well cap so that inadvertent loss of the bailer will not occur when the well is opened.
25. Complete the procedures for packaging, shipping, and handling with associated chain-of-custody.

VII. Waste Management

Materials generated during groundwater sampling activities, including disposable equipment, will be placed in appropriate containers. Containerized waste will be disposed of by the client consistent with the procedures identified in the HASP.

VIII. Data Recording and Management

Initial field logs and chain-of-custody records will be transmitted to the ARCADIS PM at the end of each day unless otherwise directed by the PM. The groundwater team leader retains copies of the groundwater sampling logs.

IX. Quality Assurance

In addition to the quality control samples to be collected in accordance with this SOP, the following quality control procedures should be observed in the field:

- Collect samples from monitoring wells in order of increasing concentration, to the extent known based on review of historical site information if available.
- Equipment blanks should include the pump and tubing (if using disposable tubing) or the pump only (if using tubing dedicated to each well).
- Collect equipment blanks after wells with higher concentrations (if known) have been sampled.
- Operate all monitoring instrumentation in accordance with manufacturer's instructions and calibration procedures. Calibrate instruments at the beginning of each day and verify the calibration at the end of each day. Record all calibration activities in the field notebook.
- Clean all groundwater sampling equipment prior to use in the first well and after each subsequent well using procedures for equipment decontamination.

X. References

United States Environmental Protection Agency (USEPA). 1986. RCRA Groundwater Monitoring Technical Enforcement Guidance Document (September 1986).

USEPA Region II. 1998. *Ground Water Sampling Procedure Low Stress (Low Flow) Purging and Sampling*.

USEPA. 1991. Handbook Groundwater, Volume II Methodology, Office of Research and Development, Washington, DC. USEPN62S, /6-90/016b (July, 1991).

U.S. Geological Survey (USGS). 1977. National Handbook of Recommended Methods for Water-Data Acquisition: USGS Office of Water Data Coordination. Reston, Virginia.

Attachment 1

Groundwater Sampling Log

Attachment 2

Oxygen Solubility in Fresh Water

Temperature (degrees C)	Dissolved Oxygen (mg/L)
0	14.6
1	14.19
2	13.81
3	13.44
4	13.09
5	12.75
6	12.43
7	12.12
8	11.83
9	11.55
10	11.27
11	11.01
12	10.76
13	10.52
14	10.29
15	10.07
16	9.85
17	9.65
18	9.45
19	9.26
20	9.07
21	8.9
22	8.72
23	8.56
24	8.4
25	8.24
26	8.09
27	7.95
28	7.81
29	7.67
30	7.54
31	7.41
32	7.28
33	7.16
34	7.05
35	6.93

Reference: Vesilind, P.A., *Introduction to Environmental Engineering*, PWS Publishing Company, Boston, 468 pages (1996).



Attachment B-5

Soil-Gas Sampling and Analysis
Using USEPA Method TO-17 and
TO-15

Soil-Gas Sampling and Analysis Using USEPA Method TO-17 and TO-15

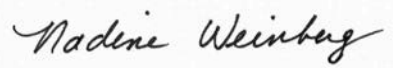
SOP #112409

Rev. #: 2

Rev Date: August 11, 2014

Approval Signatures

Prepared by:  Date: 8/11/2014
Mitch Wacksman, Eric Epple and Andrew Gutherz

Approved by:  Date: 8/11/2014
Nadine Weinberg

I. Scope and Application

This document describes the procedures to collect subsurface soil-gas samples from sub-slab sampling ports and soil vapor monitoring points for the analysis of volatile organic compounds (VOCs) including volatile polyaromatic hydrocarbons (PAHs) by United States Environmental Protection Agency (USEPA) Method TO-17 (TO-17) and USEPA Method TO-15.

The TO-17 method uses a glass or stainless steel tube packed with a sorbent material. Sorbents of increasing strength and composition are packed within the tube. The specific sorbent material packed within each tube is selected based on the target compounds and desired reporting limits. A measured volume of soil-gas is passed through the tube during sample collection.

The TO-15 method uses 1-liter 3-liter or 6-liter SUMMA® passivated stainless steel canister. An evacuated SUMMA canister (less than 28 inches of mercury [Hg]) will provide a recoverable whole-gas sample of approximately 5 liters when allowed to fill to a vacuum of approximately 6 inches of Hg. The whole-air sample is then analyzed for VOCs using a quadrupole or ion-trap gas chromatograph/mass spectrometer (GS/MS) system to provide compound detection limits of 0.5 parts per billion volume (ppbv). Optionally the canister sample can also be analyzed for fixed gasses such as Helium, Carbon dioxide and oxygen. .

Following sample collection the TO-17 tube and TO-15 canister is sent to the laboratory where the sampling media is analyzed for the target compounds.

The following sections list the necessary equipment and provide detailed instructions for the collection of soil-gas samples for analysis using TO-17 and TO-15.

Soil vapor samples can be collected from sub-slab sample probes or soil-vapor ports. Refer to the appropriate standard operating procedure (SOP) from the ARCADIS SOP library for a description of construction methods.

II. Personnel Qualifications

ARCADIS field sampling personnel will have current health and safety training, including 40-hour HAZWOPER training, site supervisor training, site-specific training, first-aid, and cardiopulmonary resuscitation (CPR), as needed. ARCADIS field sampling personnel will be well versed in the relevant standard operating procedures (SOPs) and possess the required skills and experience necessary to successfully complete the desired field work. ARCADIS personnel responsible for leading soil-gas sample collection activities must have previous soil-gas sampling experience.

III. Health and Safety Considerations

All sampling personnel should review the appropriate health and safety plan (HASP) and job loss analysis (JLA) prior to beginning work to be aware of all potential hazards associated with the job site and the specific task. Field sampling equipment must be carefully handled to minimize the potential for injury and the spread of hazardous substances. For sub-slab vapor probe installation, drilling with an electric concrete impact drill should be done only by personnel with prior experience using such a piece of equipment and with the appropriate health and safety measures in place as presented in the JLA

IV Equipment List

The equipment required for collect soil-gas samples for analysis using method TO-15 and TO-17 is presented below:

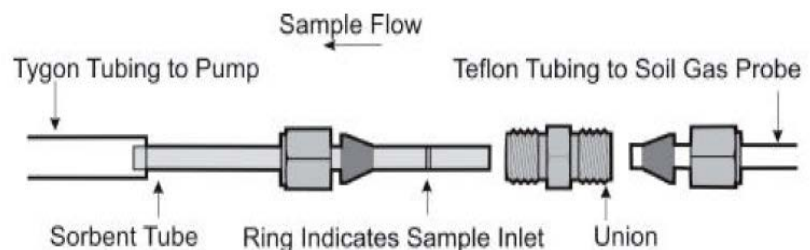
- Appropriate personal protective equipment (PPE; as presented in the site specific HASP and the JLA)
- TO-17 tubes pre-packed by the laboratory with the desired sorbent. Specific sorbents will be recommended by the laboratory considering the target compound list and the necessary reporting limits;
- TO-17 sample flow rate calibration tubes (provided by the laboratory);
- Stainless steel SUMMA[®] canisters (1-liter, 3-liter, or 6-liter; order at least 5% extra, if feasible) (batch certified canisters or individual certified canisters as required by the project)
- Flow controllers with in-line particulate filters and vacuum gauges; flow controllers are pre-calibrated to specified sample duration (e.g., 30 minutes, 8 hours, 24 hours) or flow rate (e.g., 200 milliliters per minute [mL/min]); confirm with the laboratory that the flow controller comes with an in-line particulate filter and pressure gauge (order at least 5% extra, if feasible). Flow rate should be selected based on expected soil type (see below).
- Two decontaminated Swagelok or stainless-steel or comparable two-way ball or needle valve (sized to match sample tubing).
- 1/4-inch outer diameter (OD) tubing (Teflon[®] or Teflon-lined polyethylene);
- Stainless steel or comparable Swagelok[®] or equivalent compression fittings for 1/4-inch OD tubing;

- Stainless steel “T” fitting (if sample train will be assembled with an inline vacuum gauge a four-way fitting will be needed);
- Three Stainless steel duplicate “T” fittings ;
- 2 Portable vacuum pumps capable of producing very low flow rates (e.g., 10 to 200 mL/min) with vacuum gauge;
- Vacuum gauge if monitoring vacuum reading during sample collection is necessary and portable vacuum pump is not equipped with a vacuum gauge;
- Rotameter or an electric flow sensor if vacuum pump does not have a flow gauge (Bios DryCal or equivalent);
- Tracer gas testing supplies (refer to Administering Tracer Gas SOP #41699);
- Photoionization Detector (PID) (with a lamp of 11.7 eV);
- Appropriate-sized open-end wrench (typically 9/16-inch, 1/2-inch , and 3/4-inch);
- 2 Tedlar bags;
- Portable weather meter, if appropriate;
- Chain-of-custody (COC) form;
- Sample collection log;
- Gel ice; and
- Field notebook.

V. Cautions

The following cautions and field tips should be reviewed and considered prior to collecting soil-gas samples.

- Sampling personnel should not handle hazardous substances (such as gasoline), permanent marking pens (sharpies), wear/apply fragrances, or smoke cigarettes/cigars before and/or during the sampling event.
- Care should be taken to ensure that the appropriate sorbent is used in the TO-17 tube preparation. Sorbent should be selected in consultation with the analytical laboratory and in consideration of the target compound list, the necessary reporting limits and the expected range of concentrations in field samples. The expected range of concentrations in field samples may be estimated from previous site data, release history and professional judgment informed by the conceptual site model.
- Flow rates for sample collection with TO-17 sorbent tubes should be determined well in advance of field work in consultation with the laboratory.
- Flow direction on the TO-17 sorbent tubes must be considered. Sorbent tubes are specifically designed to absorb lighter end compound at the influent side of the tube and heavier compounds toward the effluent side of the sorbent tube. Confirm flow direction with analytical laboratory or supplier. The picture below shows a ring indicator on a sorbent tube; this indicates the influent end of the sorbent tube. This ring may also hold labeling clips used to identify the sample. If removed during sample collection or to identify flow direction, remember to replace upon completion. An arrow indicating flow direction may also be printed on the sorbent tube.



- TO-17 sorbent tubes must be oriented vertically during sampling to ensure equal distribution of compounds along the sorbent media.
- A Shipping Determination must be performed, by DOT-trained personnel, for all environmental samples that are to be shipped, as well as some types of environmental equipment/supplies that are to be shipped.
- At the sampling location, keep the tubes in their storage and transportation container to equilibrate with ambient temperature prior to attaching to the sample train.

- Always use clean gloves when handling sampling tubes.
- Seal clean, blank sorbent tubes and sampled tubes using inert, Swagelok®-type fittings and PTFE ferrules. Wrap capped tubes individually in uncoated aluminum foil. Use clean, sealable glass jars or metal cans containing a small packet of activated charcoal or activated charcoal/silica gel for storage and transportation of multiple tubes. This activated charcoal is not analyzed, but serves as a protection for the analytical sorbent tube. Store the multi-tube storage container in a clean environment at 4°C.
- Keep the sample tubes inside the storage container during transportation and only remove them at the monitoring location after the tubes have reached ambient temperature. Store sampled tubes in a refrigerator at 4°C inside the multi-tube container until ready for analysis.
- The purge flow rate of 100 ml/min should be suitable for a variety of silt and sand conditions but will not be achievable in some clays without excessive vacuum. A low vacuum (<10" of mercury) should be maintained. Record the measured flow rate and vacuum pressure during sample collection.

The cutoff value for vacuum differs in the literature from 10" of water column (ITRC 2007) to 136" of water column or 10" of mercury (http://www.dtsc.ca.gov/lawsregspolicies/policies/SiteCleanup/upload/SMBR_ADV_activesoilgasinvst.pdf). A detailed discussion of the achievable flow rates in various permeability materials can be found in Nicholson 2007. Related issues of contaminant partitioning are summarized in ASTM D5314-92. Passive sampling approaches can be considered as an alternative for clay soils. However most passive sampling approaches are not currently capable of quantitative estimation of soil gas concentration.

- It is important to record the canister pressure, start and stop times and ID on a proper field sampling form. You should observe and record the time/pressure at a mid-point in the sample duration. It is a good practice to lightly tap the pressure gauge with your finger before reading it to make sure it isn't stuck.
- Ensure that there is still measureable vacuum in the SUMMA® after sampling. Sometimes the gauges sent from labs have offset errors, or they stick.
- When sampling carefully consider elevation. If your site is over 2,000' above sea level or the difference in elevation between your site and your lab is more than 2,000' then pressure effects will be significant. If you take your samples at a high elevation they will contain less air for a given ending pressure reading. High elevation samples analyzed at low elevation will result in more dilution at the lab, which could affect reporting limits. Conversely low elevation

samples when received at high elevation may appear to not have much vacuum left in them. http://www.uigi.com/Atmos_pressure.html.

- If possible, have equipment shipped a two or three days before the sampling date so that all materials can be checked. Order replacements if needed.
- Requesting extra canisters and extra sorbent tubes from the laboratory should also be considered to ensure that you have enough equipment on site in case of an equipment failure.
- Shallow exterior soil-gas sampling should not proceed within 5 days following a significant rain event (1/2-inch of rainfall or more).

VI. Procedure

Soil-Gas Sample Preparation

Selection of Sorbent and Sampling Volume (to be completed prior to sampling event)

1. Identify the necessary final reporting limit for the target compound(s) in accordance with the project quality assurance plan and/or in consultation with the data end user.
2. Identify the necessary method reporting limit(s). The laboratory will be helpful in providing this information as it is typically specific to the sensitivity of the instrumentation.
3. The minimum sampling volume is the volume of soil-gas sample that must be drawn through the sorbent in order to achieve the desired final reporting limit. Calculate the minimum sampling volume using the following equation:

$$\text{Minimum Sampling Volume (L)} = \frac{\text{Final Reporting Limit } (\mu\text{g})}{\text{Action Level } (\mu\text{g}/\text{m}^3)} \times \frac{1,000 \text{ L}}{\text{m}^3}$$

Where:

L = liters

μg = microgram

m = meter

4. If a timed sample duration is specified in the work plan, calculate the minimum flow rate. The minimum flow rate is the flow rate necessary to achieve the minimum sampling volume using the following formula:

$$\text{Minimum Flow Rate (L/min)} = \frac{\text{Minimum Sampling Volume (L)}}{\text{Sample Duration (min)}}$$

Where:

min = minutes

Then compare the minimum flow rate calculated to the requirements for maximum soil gas sampling without excessive danger of short circuiting, normally stated as 0.2 liters/minute, although it can be lower in tight soils. Soil vapor sampling flow rates should not exceed 200 ml/min.

5. Compare the minimum sampling volume to the safe sampling volume (SSV) for the sorbents selected. SSV for specific sorbents can be provided by the manufacturer or the laboratory, being used (Table 1 and Appendix 1 in Method TO-17). Ensure that the compound will not breakthrough when sampling the volume calculated above.

Soil-Gas Sample Collection

Calibration of the sample pump prior to assembly of sampling train

1. Attach the sample flow rate calibration tube provided by the laboratory to the inlet of the sample pump using a section of tubing. Attach the flow calibrator to the inlet of the sample flow rate calibration tube. The sample flow rate calibration tube should be clearly marked by the laboratory with an arrow indicating flow direction (or as otherwise specified by the laboratory).
2. Turn on the sample pump and adjust the flow rate on the sample pump to achieve the desired minimum flow rate (calculated above) as measured by the flow calibrator.
3. Repeat until each sampling pump has been properly calibrated to its appropriate flow rate.

Assembly of combined TO-17 and TO-15 sampling train

1. Record the following information in the field notebook, if appropriate (contact the local airport or other suitable information source [e.g., site-specific measurements, weatherunderground.com] to obtain the information):
 - a. wind speed and direction;
 - b. ambient temperature;
 - c. barometric pressure; and
 - d. relative humidity.
2. If samples are being collected from temporary or permanent soil vapor points simply remove the cap or plug and proceed to step 3. When collecting samples from a sub-slab port remove the cap or plug from the sampling port. Connect a short piece of Teflon or Teflon-lined tubing to the sampling port using a Swagelok or equivalent stainless-steel or comparable compression fitting.
3. Connect the Teflon or Teflon-lined tubing to a stainless steel T fitting using a Swagelok or equivalent stainless-steel or comparable compression fitting.
4. Remove the brass cap from the SUMMA® canister and connect the flow controller with in-line particulate filter and vacuum gauge to the SUMMA® canister. Do not open the valve on the SUMMA® canister. Record in the field notebook and COC form the flow controller number with the appropriate SUMMA® canister number.
5. Connect the flow controller to the stainless steel T fitting using a Swagelok or equivalent stainless-steel or comparable compression fitting. The TO-15 leg of the combined sampling train is now complete.
6. Attach a length of Teflon or Teflon-lined tubing to the free end of the stainless steel T fitting using a Swagelok or equivalent stainless-steel or comparable compression fitting.
7. Connect TO-17 sorbent tubes with vertical orientation and the correct flow direction using compression fittings and appropriate T's.
8. Complete the remainder of the sampling train as depicted in Figure 1.

Purge Sampling Assembly and Sampling Point Prior to Sample Collection.

1. Ensure the two-way valve next to the flow rate calibration tube is open and the two way valve next to the TO-17 sampling tubes is closed. Purge three volumes of air from the vapor probe and sampling line using the portable pump. Measure organic vapor levels with the PID. Lower flow rates may be necessary in silt or clay to avoid excessive vacuum. Vacuum reading greater than 136 inches of water column are clearly excessive. Other available sources cite a cutoff of greater than 10 inches of water column.
2. Check the seal established around the soil vapor probe and the sampling train fittings by using a tracer gas (e.g., helium) or other method established in applicable regulatory guidance documents. [Note: Refer to ARCADIS SOP "Administering Tracer Gas," adapted from NYSDOH 2005, for procedures on tracer gas use.]
3. When three volumes of air have been purged from the vapor probe and sampling line stop the purge pump and close the valve next to the flow rate calibration tube.

TO-15 Sample Collection

1. Open the SUMMA® canister valve to initiate sample collection. Record on the sample log (attached) the time sampling began and the canister pressure.

If the initial vacuum pressure registered is not between -30 and -25 inches of Hg, then the SUMMA® canister is not appropriate for use and another canister should be used.

2. Take a photograph of the SUMMA® canister and surrounding area (unless photography is restricted by the property owner).
3. Check the SUMMA canister approximately half way through the sample duration and note progress on sample logs.

TO-15 Sample Termination

1. Arrive at the SUMMA® canister location at least 10 to 15 minutes prior to the end of the sampling interval.
2. Record the final vacuum pressure. Stop collecting the sample by closing the SUMMA® canister valves. The canister should have a minimum amount of vacuum (approximately 6 inches of Hg or slightly greater).

3. Record the date and time of valve closing in the field notebook, sample collection log, and COC form.

TO-17 Sample Collection

1. Record in the field notebook and COC form the tube number on the TO-17 tube.
2. Open the two-way valve next to the TO-17 tubes
3. Turn on the sample pump to begin sample collection. Use a stopwatch to ensure accuracy in pumping time. Record in the field notebook and the field sample log the time sampling began and the flow rate from each of the sample pumps.

Termination of Sample Collection

1. Stop the sample pumps after the desired volume of soil-gas has passed through the sorbent, and close the two-way valves next to the TO-17 sample tubes.
2. Record the stop time.
3. Detach the Tedlar bag from each sample pump and measure the helium concentration in the soil-gas collected by the Tedlar bag. Record any detections in the field book and sample collection log.
4. Open the two-way valve to permit flow through the flow rate calibration tube. Reconnect each of the sampling pumps and measure the flow rate. Record the post-sampling flow rates in the field log book and the sample collection logs. The post-sampling flow rate should match within 10% of the pre-sample flow rate. Average the pre-sampling and post-sampling flow rate and record in the field log book, and the sample collection log.
5. Calculate the sample volume using the average of the pre-sample and post-sample flow rate. Record the sample volume in the field log book, the sample collection log, and on the COC.
6. Package the tubes according to laboratory protocol on gel ice and ship to the laboratory for analysis.

VII. Waste Management

The waste materials generated during sampling activities should be minimal. PPE, such as gloves and other disposable equipment (i.e., tubing), will be collected by field personnel for proper disposal.

VIII. Data Recording and Management

Measurements will be recorded in the field notebook at the time of measurement with notations of the project name, sample date, sample start and finish time, sample location (e.g., GPS coordinates, distance from permanent structure), tube type and number and sample volume. Field sampling logs and COC records will be transmitted to the Project Manager.

IX. Quality Assurance

Duplicate samples should be collected in the field as a quality assurance step. Generally, duplicates are taken of 10% of samples, but project specific requirements should take precedence. Duplicate soil gas samples should be collected via a split sample train, allowing the primary and duplicate sample to be collected from the soil-gas probe simultaneously.

Quality assurance planning for method TO-17 should take careful note of the method requirement for distributed volume pairs. Although in some circumstances this requirement may be waived, this does constitute a deviation from the method as written. It is wise to discuss this decision with clients and/or regulators before sampling.

Soil-gas sample analysis will be performed using USEPA TO-17 methodology for a site specific constituent list defined in the work plan. Constituent lists and reporting limits must be discussed with the laboratory prior to mobilizing for sampling. Quality assurance parameters should be confirmed with the laboratory prior to sampling. Field quality assurance parameters should be defined in the site-specific work plan. A trip blank sample should accompany each shipment of soil-gas samples to the laboratory for analysis. Trip blanks assess potential sample contamination resulting from the transportation and storing of samples. Soil-gas sample analysis will generally be performed using USEPA TO-15 methodology or a project specific constituent list. Method TO-15 uses a quadrupole or ion-trap GC/MS with a capillary column to provide optimum detection limits (typically 0.5-ppbv for most VOCs).

X. References

New York State Department of Health (NYSDOH). 2005. DRAFT "Guidance for Evaluating Soil Vapor Intrusion in the State of New York" February 23, 2005.

AirToxics Ltd. "Sorbent & Solution Sampling Guide."



Attachment B-6

Administering Helium Tracer Gas
for Leak Checks of Soil Gas or
Sub-slab Sampling Points

Administering Helium Tracer Gas for Leak Checks of Soil Gas or Sub-slab Sampling Points

SOP #416199

Rev. #: 3

Rev Date: July 7, 2010

Approval Signatures

Prepared by:  Date: 07/07/2010
Mitch Wacksman and Andrew Gutherz

Approved by:  Date: 07/07/2010
Christopher Lutes and Nadine Weinberg

I. Scope and Application

When collecting subsurface vapor samples as part of a vapor intrusion evaluation, a tracer gas serves as a quality assurance/quality control method to verify the integrity of the vapor port seal and the numerous connections comprising the sample train. Without the use of a tracer, verification that a soil vapor sample has not been diluted by ambient or indoor air is difficult.

This standard operating procedure (SOP) focuses on using helium as a tracer gas. However, depending on the nature of the contaminants of concern, other compounds can be used as a tracer including sulfur hexafluoride (SF₆), butane and propane (or other gases). In all cases, the protocol for using a tracer gas is consistent and includes the following basic steps: (1) enrich the atmosphere in the immediate vicinity of the sample port where ambient air could enter the sampling train during sampling with the tracer gas; and (2) measure a vapor sample from the sample tubing for the presence of elevated concentrations (> 10%) of the tracer. A plastic pail, bucket, garbage can or even a plastic bag can serve to keep the tracer gas in contact with the port during the testing.

There are two basic approaches to testing for the tracer gas:

1. Include the tracer gas in the list of target analytes reported by the laboratory; and/or
2. Use a portable monitoring device to analyze a sample of soil vapor for the tracer prior to sampling for the compounds of concern. (Note that tracer gas samples can be collected via syringe, Tedlar bag, etc. They need not be collected in SUMMA® canisters or minicans.)

This SOP focuses on monitoring helium using a portable sampling device, although helium can also be analyzed by the laboratory along with other volatile organic compounds (VOCs). Real-time tracer sampling is generally preferred as the results can be used to confirm the integrity of the port seals prior to formal sample collection.

During the initial stages of a subsurface vapor sampling program, tracer gas samples should be collected at each of the sampling points. If the results of the initial samples indicate that the port seals are adequate, the Project Manager can consider reducing the number of locations at which tracer gas samples are used in future monitoring rounds. At a minimum, at least 5% of the subsequent samples should be supported with tracer gas analyses. When using permanent soil vapor points as part of a long-term monitoring program, the port should be tested prior to the first sampling event. Tracer gas testing of subsequent sampling events may often be reduced or eliminated unless conditions have changed at the site. Soil gas port integrity should certainly be

rechecked with Tracer gas if land clearing/grading activities, freeze thaw cycles, or soil dessication may have occurred. Points should also be rechecked if more than 2 years have elapsed since the last check of that port.

II. Personnel Qualifications

ARCADIS field sampling personnel will have current health and safety training, including 40-hour HAZWOPER training, site supervisor training, site-specific training, first-aid, and cardiopulmonary resuscitation (CPR), as needed. ARCADIS field sampling personnel will be well versed in the relevant SOPs and possess the required skills and experience necessary to successfully complete the desired field work. ARCADIS personnel responsible for leading the tracer gas testing must have previous experience conducting similar tests.

III. Health and Safety Considerations

Field sampling equipment must be carefully handled to minimize the potential for injury and the spread of hazardous substances. All sampling personnel should review the appropriate health and safety plan (HASP) and job safety analysis (JSA) prior to beginning work to be aware of all potential hazards associated with the job site and the specific task. Field staff should review the attachment on safely handling compressed gas cylinders prior to commencing field work.

IV. Equipment List

The equipment required to conduct a helium tracer gas test is presented below:

- Appropriate PPE for site (as required by the Health and Safety Plan)
- Helium (laboratory grade)
- Regulator for helium tank
- Shroud (plastic bucket, garbage can, etc)
 - o The size of the shroud should be sufficient to fit over the sample port. It is worth noting that using the smallest shroud possible will minimize the volume of helium needed; this may be important when projects require a large number of helium tracer tests.
 - o The shroud will need to have three small holes in it. These holes will include one on the top (to accommodate the sample tubing), and two

on the side (one for the helium detector probe, and one for the helium line).

- o The shroud should ideally enclose the sample port and as much as possible of the sampling train.
- Helium detector capable of measuring from 1 - 100% (Dielectric MGD-2002, Mark Model 9522, or equivalent)
- Tedlar bags
- Seal material for shroud (rubber gasket, modeling clay, bentonite, etc) to keep helium levels in shroud high in windy conditions. Although the sealing material is not in direct contact with the sample if leakage does not occur, sealing materials with high levels of VOC emissions should be avoided, since they could contaminate a sample if a leak occurs.
- Sample logs
- Field notebook

V. Cautions

Helium is an asphyxiant! Be cautious with its use indoors! Never release large volumes of helium within a closed room!

Compressed gas cylinders should be handled with caution; see attachment on the use and storage of compressed gasses before beginning field work.

Care should be taken not to pressurize the shroud while introducing helium. If the shroud is completely air tight and the helium is introduced quickly, the shroud can be over-pressurized and helium can be pushed into the ground. Provide a relief valve or small gap where the helium can escape.

Because minor leakage around the port seal should not materially affect the usability of the soil vapor sampling results, the mere presence of the tracer gas in the sample should not be a cause for alarm. Consequently, portable field monitoring devices with detection limits in the low ppm range are more than adequate for screening samples for the tracer. If high concentrations (> 10%) of tracer gas are observed in a sample, the port seal should be enhanced and fittings within the sampling train should be checked and/or tightened to reduce the infiltration of ambient air and the tracer test readministered. If the problem cannot be rectified, a new sample point should be installed or an alternate sampling train used.

VI. Procedure

The procedure used to conduct the helium tracer test should be specific to the shroud being used and the methods of vapor point installation. The helium tracer test can be conducted when using temporary or permanent sampling points and inside or outside a facility. When using the tracer gas within indoor areas you must provide adequate ventilation as helium is an asphyxiant.

1. Attach Teflon or nylon (Nylaflow) sample tubing to the sample point. This can be accomplished utilizing a number of different methods depending on the sample install (i.e., most typically Swage-Lok brand compression fittings, but some quick release fittings could also be used etc.).
2. Place the shroud over the sample point and tubing.
3. Pull the tubing through hole in top of shroud. Seal opening at top of shroud with modeling clay.
4. Place weight on top of shroud to help maintain a good seal with the ground.
5. Insert helium tubing and helium detector probe into side of shroud. Seal both with modeling clay to prevent leaks.
6. Fill shroud with helium. Fill shroud slowly, allowing atmospheric air to escape either by leaving a gap where the shroud meets the ground surface or by providing a release valve on the side of the shroud.
7. Use the helium detector to monitor helium concentration within the shroud from the lowest hole drilled in the shroud (bottom of the shroud nearest where the sample tubing intersects the ground). Helium should be added until the environment inside the shroud has > 60% helium.
8. Purge the sample point through the sample tubing into a Tedlar bag using a hand held sampling pump. The purge rate should at least match the sample collection rate but not exceed 100 ml/min. Test the air in the Tedlar bag for helium using portable helium detector. If the point is free of leaks there should be very low helium in the purge air from the soil. The natural concentration of helium in the atmosphere is 0.00052% by volume and there are few if any natural sources of helium to soil gas.
9. If > 10% helium is noted in purge air, add more clay or other material to the seal the sample port and repeat the testing procedure. If the seal cannot be fixed, re-install sample point.

10. Monitor and record helium level in shroud before, during and after tracer test.
11. Monitor and record helium level in purge exhaust.
12. At successful completion of tracer test and sample point purging, the soil vapor sample can be collected (if the helium shroud must be removed prior to sample collection be mindful not disturb the sample tubing and any established seals).

VII. Data Recording and Management

Measurements will be recorded on the sample logs at the time of measurement with notations of the project name, sample date, sample start and finish time, sample location, and the helium concentrations in both the shroud and the purge air before, during, and after tracer testing. Any problems encountered should also be recorded in the field notes.

ATTACHMENT: Compressed Gases—Use and Storage

In general, a compressed gas is any material contained under pressure that is dissolved or liquefied by compression or refrigeration. Compressed gas cylinders should be handled as high-energy sources and therefore as potential explosives and projectiles. Prudent safety practices should be followed when handling compressed gases since they expose workers to both chemical and physical hazards.

Handling

- Safety glasses with side shields (or safety goggles) and other appropriate personal protective equipment should be worn when working with compressed gases.
- Cylinders should be marked with a label that clearly identifies the contents.
- All cylinders should be checked for damage prior to use. Do not repair damaged cylinders or valves. Damaged or defective cylinders, valves, etc., should be taken out of use immediately and returned to the manufacturer/distributor for repair.
- All gas cylinders (full or empty) should be rigidly secured to a substantial structure at 2/3 height. Only two cylinders per restraint are allowed in the laboratory and only soldered link chains or belts with buckles are acceptable. Cylinder stands are also acceptable but not preferred.
- Handcarts shall be used when moving gas cylinders. Cylinders must be chained to the carts.
- All cylinders must be fitted with safety valve covers before they are moved.
- Only three-wheeled or four-wheeled carts should be used to move cylinders.
- A pressure-regulating device shall be used at all times to control the flow of gas from the cylinder.
- The main cylinder valve shall be the only means by which gas flow is to be shut off. The correct position for the main valve is all the way on or all the way off.
- Cylinder valves should never be lubricated, modified, forced, or tampered with.
- After connecting a cylinder, check for leaks at connections. Periodically check for leaks while the cylinder is in use.
- Regulators and valves should be tightened firmly with the proper size wrench. Do not use adjustable wrenches or pliers because they may damage the nuts.
- Cylinders should not be placed near heat or where they can become part of an electrical circuit.
- Cylinders should not be exposed to temperatures above 50 °C (122 °F). Some rupture devices on cylinders will release at about 65 °C (149 °F). Some small cylinders, such as lecture bottles, are not fitted with rupture devices and may explode if exposed to high temperatures.

- Rapid release of a compressed gas should be avoided because it will cause an unsecured gas hose to whip dangerously and also may build up enough static charge to ignite a flammable gas.
- Appropriate regulators should be used on each gas cylinder. Threads and the configuration of valve outlets are different for each family of gases to avoid improper use. Adaptors and homemade modifications are prohibited.
- Cylinders should never be bled completely empty. Leave a slight pressure to keep contaminants out.

Storage

- When not in use, cylinders should be stored with their main valve closed and the valve safety cap in place.
- Cylinders must be stored upright and not on their side. All cylinders should be secured.
- Cylinders awaiting use should be stored according to their hazard classes.
- Cylinders should not be located where objects may strike or fall on them.
- Cylinders should not be stored in damp areas or near salt, corrosive chemicals, chemical vapors, heat, or direct sunlight. Cylinders stored outside should be protected from the weather.

Special Precautions

Flammable Gases

- No more than two cylinders should be manifolded together; however several instruments or outlets are permitted for a single cylinder.
- Valves on flammable gas cylinders should be shut off when the laboratory is unattended and no experimental process is in progress.
- Flames involving a highly flammable gas should not be extinguished until the source of the gas has been safely shut off; otherwise it can reignite causing an explosion.

Acetylene Gas Cylinders

- Acetylene cylinders must always be stored upright. They contain acetone, which can discharge instead of or along with acetylene. Do not use an acetylene cylinder that has been stored or handled in a nonupright position until it has remained in an upright position for at least 30 minutes.
- A flame arrestor must protect the outlet line of an acetylene cylinder.
- Compatible tubing should be used to transport gaseous acetylene. Some tubing like copper forms explosive acetylides.

Lecture Bottles

- All lecture bottles should be marked with a label that clearly identifies the contents.
- Lecture bottles should be stored according to their hazard classes.
- Lecture bottles that contain toxic gases should be stored in a ventilated cabinet.
- Lecture bottles should be stored in a secure place to eliminate them from rolling or falling.
- Lecture bottles should not be stored near corrosives, heat, direct sunlight, or in damp areas.
- To avoid costly disposal fees, lecture bottles should only be purchased from suppliers that will accept returned bottles (full or empty). Contact the supplier before purchasing lecture bottles to ensure that they have a return policy.
- Lecture bottles should be dated upon initial use. It is advised that bottles be sent back to the supplier after one year to avoid accumulation of old bottles.



Appendix C

Quality Assurance Project Plan

Rochester Gas & Electric

Appendix C - Quality Assurance Project Plan

112 Riverside Drive Former MGP Site
Geneseo, New York

November 2015



Quality Assurance Project Plan

**112 Riverside Drive Former
MGP Site**

Prepared for:
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Date:
November 2015

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Acronyms	i
Preface	i
1. Project Organization and Responsibilities	1
1.1 Project Organization	1
1.1.1 Analytical Laboratory Services and Subcontractors	1
1.1.2 Quality Assurance Staff	1
1.2 Team Member Responsibilities	1
1.2.1 RGE	2
1.2.2 Property Owner	2
1.2.3 NYSDEC	2
1.2.4 Contractors/Consultants	3
1.2.5 Laboratory Subcontractor (to be determined)	4
1.2.6 Data Validator	5
1.2.7 Drilling Subcontractor (to be determined)	5
2. Project Background	6
2.1 Site Location and Description	6
2.2 Objectives	6
3. Quality Objectives and Criteria for Measurement Data	7
3.1 Data Quality Objectives for Intrusive Soil Sampling and Staged Soil Sampling	8
3.2 Data Quality Objectives for Groundwater	8
3.3 Data Quality Objectives for Waste Characterization	9
4. Special Training Requirements/Certification	10
5. Documentation and Records	11
5.1 General	11
5.2 Field Documentation	11
5.3 Laboratory Documentation	12
5.3.1 Laboratory Project Files	12

5.3.2	Laboratory Logbooks	12
5.3.3	Computer Tape and Hard Copy Storage	12
5.4	Data Reporting Requirements	13
5.4.1	Field Data Reporting	13
5.4.2	Laboratory Data Reporting	13
5.5	Project File	14
6.	Sampling Process Design	16
7.	Sampling Method Requirements	17
8.	Sample Handling and Custody Requirements	18
8.1	Sample Containers and Preservation	18
8.2	Packing, Handling, and Shipping Requirements	18
8.3	Field Custody Procedures	19
8.3.1	Field Logbooks	20
8.3.2	Sample Labeling	21
8.3.3	Field Chain of Custody Forms	21
8.4	Management of Investigation-Derived Materials and Wastes	22
8.5	Laboratory Procedures	22
8.5.1	General	22
8.5.2	Sample Receipt and Storage	22
8.5.3	Sample Chain of Custody and Documentation	22
8.5.4	Sample Analysis	23
8.5.5	Sample Storage Following Analysis	23
9.	Analytical Procedures	24
9.1	Field Analytical Procedures	24
9.2	Laboratory Analytical Procedures	24
9.2.1	General	24
9.2.2	Sample Metrics	24

9.2.2.1	Soil	24
9.2.3	Analytical Requirements	24
10.	Quality Control Requirements	25
10.1	Quality Assurance Indicators	25
10.1.1	Representativeness	25
10.1.2	Comparability	25
10.1.3	Completeness	26
10.1.4	Precision	26
10.1.5	Accuracy	26
10.2	Field Quality Control Checks	26
10.2.1	Field Measurements	26
10.2.2	Sample Containers	26
10.2.3	Field Duplicates	27
10.2.4	Rinse Blanks	27
10.2.5	Trip Blanks	27
10.3	Analytical Laboratory Quality Control Checks	27
10.3.1	Method Blanks	27
10.3.2	Matrix Spike/Matrix Spike Duplicates	28
10.3.3	Surrogate Spikes	28
10.3.4	Laboratory Duplicates	28
10.3.5	Calibration Standards	28
10.3.6	Internal Standards	28
10.3.7	Reference Standards/Control Samples	29
10.4	Data Precision Assessment Procedures	29
10.5	Data Accuracy Assessment Procedures	30
10.6	Data Completeness Assessment Procedures	30
11.	Instrument/Equipment Testing, Inspection, and Maintenance Requirements	31

11.1	Field Instruments and Equipment	31
11.2	Laboratory Instruments and Equipment	31
11.2.1	General	31
11.2.2	Instrument Maintenance	31
11.2.3	Equipment Monitoring	32
12.	Instrument Calibration and Frequency	33
12.1	Field Equipment Calibration Procedures and Frequency	33
12.2	Laboratory Equipment Calibration Procedures and Frequency	33
13.	Inspection/Acceptance Requirements for Supplies and Consumables	34
14.	Data Management	35
14.1	Sample Designation System	35
14.2	Field Activities	35
14.2.1	Field Documentation	36
14.2.2	Data Security	37
14.3	Sample Management and Training	37
14.4	Data Management System	38
14.4.1	Computer Hardware	38
14.4.2	Computer Software	38
14.4.3	Surveying Information	38
14.4.4	Field Observations	39
14.4.5	Analytical Results	40
14.4.6	Data Analysis and Reporting	41
14.5	Document Control and Inventory	42
15.	Assessment and Response Actions	43
15.1	Field Audits	43
15.1.1	Performance Audits	43
15.1.2	Internal Systems Audits	43

15.2	Laboratory Audits	43
15.3	Corrective Action	44
15.3.1	Field Procedures	44
15.3.2	Laboratory Procedures	44
16.	Reports to Management	46
16.1	Internal Reporting	46
16.2	Reporting	46
17.	Data Review, Validation, and Verification	47
17.1	Field Data Reduction, Validation, and Reporting	47
17.1.1	Field Data Reduction	47
17.1.2	Field Data Validation	47
17.1.3	Field Data Reporting	48
17.2	Laboratory Data Reduction, Review, and Reporting	48
17.2.1	Laboratory Data Reduction	48
17.2.2	Laboratory Data Review	48
18.	Validation and Verification Methods	49
19.	Reconciliation with User Requirements	51
20.	References	52

Tables

1	Parameters, Methods, and Quantitation Limits
2	Environmental and Quality Control Sample Analysis
3	Sample Containers, Preservation Methods, and Holding Time Requirements
4	Data Validation Checklist – Laboratory Analytical Data

Attachment

C-1	Sample Chain of Custody Form

Acronyms

Arcadis	Arcadis of New York, Inc.
ASP	Analytical Services Protocol
CLP	Contract Laboratory Program
DQO	data quality objective
EDD	electronic data deliverable
FSP	<i>Field Sampling Plan</i>
HASP	<i>Health and Safety Plan</i>
MGP	manufactured gas plant
MS/MSD	matrix spike/matrix spike duplicate
NYSDEC	New York State Department of Environmental Conservation
ORP	oxidation-reduction potential
OSHA	Occupational Safety and Health Administration
QA/QC	quality assurance/quality control
QAM	Quality Assurance Manager
QAPP	<i>Quality Assurance Project Plan</i>
RPD	relative percent difference
SCWP	Site Characterization Work Plan
SDG	sample delivery ground
SUNY	State University of New York



SVOC	semivolatile organic compound
TOC	total organic carbon
USEPA	United States Environmental Protection Agency
VOC	volatile organic compound



Preface

This *Quality Assurance Project Plan* (QAPP) presents the sampling and analytical methods and procedures that will be used during implementation of the Site Characterization Work Plan (SCWP) prepared by Arcadis of New York, Inc. (Arcadis) for the Riverside Drive Former Manufactured Gas Plant (MGP) Site located in Geneseo, New York (site).

This QAPP was prepared in a manner consistent with the following reference and guidance documents:

- United States Environmental Protection Agency's (USEPA's) *Test Methods for Evaluating Solid Waste, SW-846* (USEPA, 1996)
- The USEPA's guidance document entitled *EPA Requirements for Quality Assurance Project Plans for Environmental Operations, EPA-QA/R-5* (USEPA, 2001), which replaces QAMS-005/80 *Interim Guidance and Specifications for Preparing Quality Assurance Project Plans* (USEPA, 1980)
- The National Enforcement Investigations Center *Policies and Procedures Manual* (USEPA, 1991)

Information contained in this QAPP has been organized into the following sections:

Section	Content
	Project Management
1	Project Organization and Responsibilities
2	Project Background
3	Project Description
4	Quality Objectives and Criteria for Measurement Data
5	Special Training Requirements/Certification
6	Documentation and Records
	Measurement/Data Acquisition
7	Sampling Process Design
8	Sampling Method Requirements
9	Sample Handling and Custody Requirements
10	Analytical Procedures
11	Quality Control Requirements
12	Instrument/Equipment Testing, Inspection, and Maintenance Requirements
13	Instrument Calibration and Frequency
14	Inspection/Acceptance Requirements for Supplies and Consumables
15	Data Acquisition Requirements for Nondirect Measurements
16	Data Management
	Assessment/Oversight
17	Assessment and Response Actions
18	Reports to Management

Section	Content
	Data Validation and Usability
19	Data Review, Validation, and Verification
20	Validation and Verification Methods
21	Reconciliation with User Requirements
22	References

Details are provided in the subsequent sections.

1. Project Organization and Responsibilities

1.1 Project Organization

Intrusive work conducted within potentially impacted areas of the Riverside Drive Former MGP site, as identified in the SCWP will require integration of personnel from the organizations identified below, collectively referred to as the project team. A description of the responsibilities of each member of the project team is presented in Section 1.2.

Title	Company/Organization	Name	Phone Number
RGE Project Manager	RGE	Christopher Keipper, PMP	585.771.4560
NYSDEC Project Manager	NYSDEC	Sarah Saucier	518.402.9662

1.1.1 Analytical Laboratory Services and Subcontractors

The analytical services and contractor performing intrusive activities will be determined prior to initiation of field work. Laboratory and subcontractor management personnel are listed below.

Title	Company/Organization	Name	Phone Number
Laboratory Project Manager	To be determined		
Contractors/Consultants	To be determined		

1.1.2 Quality Assurance Staff

Individuals conducting intrusive work within potentially MGP-impacted areas identified in the SCWP will identify quality assurance (QA) personnel. In addition to the contractor's personnel, the following personnel have been assigned to this project component:

Title	Company/Organization	Name	Phone Number
RGE QA Manager	RGE	Christopher Keipper, PMP	585.771.4560
NYSDEC QC Manager	NYSDEC	Sarah Saucier	518.402.9662

1.2 Team Member Responsibilities

This section of the *Quality Assurance Project Plan* (QAPP) discusses the responsibilities and duties of the project team members.

1.2.1 RGE

RGE Project Manager

1. Overall understanding of the nature and extent of MGP-related impacts remaining at the site.
2. Understands proposed intrusive activities within potentially MGP impacted areas.
3. Understand the Work Plan, QAPP, and Field Sampling Plan (FSP) requirements.
4. Ensure Work Plan requirements are implemented.
5. Review results, reports, and all documents prepared by contractors conducting work within potentially impacted areas.
6. Confirm that corrective actions are taken for deficiencies cited during audits of the field activities.

1.2.2 Property Owner

FTT Manufacturing

1. Ensure that all the requirements of the SCWP, QAPP, and FSP are followed for all proposed intrusive work conducted within potentially MGP-impacted area.
2. Communicate/notify the project team regarding proposed intrusive work to be conducted within potentially MGP-impacted areas.

1.2.3 NYSDEC

NYSDEC Project Manager

1. Ensure that all the requirements of the SCWP, QAPP, and FSP are followed for all proposed intrusive work conducted within potentially MGP-impacted areas.
2. Review results, reports, and all documents prepared by contractors conducting work within potentially impacted areas.
3. Overall understanding of the nature and extent of MGP-related impacts remaining at the site.

4. Provide review and approval of contractor's work plans for work proposed within potentially MGP-impacted areas.

1.2.4 Contractors/Consultants

Contractor Project Manager/Field Personnel

1. Management and coordination of all aspects of the project with an emphasis on adhering to the requirements of the SCWP, QAPP, and FSP.
2. Oversight of required media sampling.
3. Oversight of field analysis and collection of QA samples.
4. Reduction of field data calibration and maintenance.
5. Review of the field instrumentation, maintenance, and calibration to maintain quality data.
6. Preparation of draft reports and other key documents.
7. Maintenance of field files of notebooks and logs and calculations.
8. Coordination of field and laboratory schedules.
9. Perform field procedures associated with the tasks and subtasks presented in Section 3.
10. Perform field analyses and collect QA samples maintain sample custody.
11. Prepare field records and logs.
12. Calibrate, operate, and maintain field equipment.
13. Reduce field data.

Quality Assurance Manager

1. Review laboratory data packages.
2. Oversee and interface with the analytical laboratories.

3. Coordinate field quality assurance/quality control (QA/QC) activities with task managers, including audits of field activities, concentrating on field analytical measurements and practices to meet data quality objectives (DQOs).
4. Review field reports.
5. Review audit reports.
6. Prepare a QA/QC report that includes an evaluation of field and laboratory data and data validation reports.

1.2.5 Laboratory Subcontractor (to be determined)

General responsibilities and duties include:

1. Perform sample analyses.
2. Supply sample containers and shipping cartons.
3. Maintain laboratory custody of samples.
4. Strictly adhere to laboratory protocols.

Laboratory Project Manager

1. Serve as primary communication link between Arcadis and laboratory staff.
2. Monitor workloads and confirm availability of resources.
3. Oversee preparation of analytical reports.
4. Supervise in-house chain of custody.

Quality Assurance Officer

1. Supervise technical staff in QA/QC procedures.
2. Conduct audits of all laboratory activities.

1.2.6 Data Validator

1. Provide independent validation of analytical data.

1.2.7 Drilling Subcontractor (to be determined)

1. Performance of groundwater monitoring well installations and test borings in accordance with the SCWP protocols.
2. Decontamination of drilling and sampling equipment.

2. Project Background

The following summarizes background information for the project site. Additional information can be found in the SCWP.

2.1 Site Location and Description

The Riverside Drive former MGP site is located at 112 Riverside Drive in the Village of Geneseo, Livingston County, New York. The Riverside Drive site covers approximately 1 acre and is located on the western side of the village of Geneseo.

The site, which is currently owned by FTT manufacturing, is bound on the north by an apartment rental unit; on the west by Riverside Drive; and by residential properties on the south and east. The property is approximately 500-600 feet east of a bend in the Genesee River.

The FTT Manufacturing building is largely a square building that is cut into a topographic rise to the east. Based on an overlay of historic and modern structures, the former gas production building was likely located under west side of the current FTT Manufacturing building and the former gas holder was likely located partially underneath the south side of the manufacturing building.

2.2 Objectives

This document presents QA/QC requirements for conducting investigative activities at the Riverside Drive Former MGP site. A SCWP was prepared by Arcadis for the Riverside Drive Former MGP Site located in Geneseo, New York (site) in accordance with the *Technical Guidance for Site Investigation and Remediation*, DER-10 (draft) (DER-10) (NYSDEC, 2002). This QAPP was prepared to be an attachment for the SCWP.

3. Quality Objectives and Criteria for Measurement Data

DQOs are qualitative and quantitative statements that specify the quality of data required to support decisions made during site-related activities and are based on end uses of the data to be collected. Preliminary DQOs were identified to confirm that data generated during field investigations will be of adequate quality and sufficient quantity to form a sound basis for decision making relative to the above objectives. DQOs have been specified for each data collection activity or investigation. The DQOs presented herein address investigation efforts only and do not cover health and safety issues, which are addressed in detail in the Health and Safety Plan (HASP) for this project.

A DQO summary for the sampling investigation efforts is presented below. The summary consists of stated DQOs relative to data uses, data types, data quantity, sampling and analytical methods, and data measurement performance criteria.

Three data categories have been defined to address various analytical data uses and the associated QA/QC effort and methods required to achieve the desired levels of quality. These categories are:

Screening Data: Screening data affords a quick assessment of site characteristics or conditions. This objective for data quality is applicable to data collection activities that involve rapid, non-rigorous methods of analysis and QA. This objective is generally applied to physical and/or chemical properties of samples, degree of contamination relative to concentration differences, and preliminary health and safety assessment.

Screening Data with Definitive Confirmation: Screening data allows rapid identification and quantitation, although the quantitation can be relatively imprecise. This objective for data quality is available for data collection activities that require qualitative and/or quantitative verification of a select portion of sample findings (10% or more). This objective can also be used to verify less rigorous laboratory-based methods.

Definitive Data: Definitive data are generated using analytical methods, such as approved USEPA reference methods. Data are analyte-specific, with confirmation of analyte identity and concentration. Methods produce raw data (e.g., chromatograms, spectra, digital values) in the form of paper printouts or computer-generated electronic files.

For this project, three levels of data reporting have been defined. They are as follows:

Level 1 – Minimal Reporting: Minimal or “results only” reporting is used for analyses that, either due to their nature (i.e., field monitoring) or the intended data use (i.e., preliminary screening), do not generate or require extensive supporting documentation.

Level 2 – Modified Reporting: Modified reporting is used for analyses that are performed following standard USEPA-approved methods and QA/QC protocols and that, based on the intended data use, require some supporting documentation but not, however, full “Contract Laboratory Program-type” (CLP-type) reporting.

Level 3 – Full Reporting: Full “CLP-type” reporting is used for those analyses that, based on intended data use, require full documentation. This reporting level would include Analytical Services Protocol (ASP) Superfund and Category B reporting.

The analytical methods to be used during the intrusive activities will be USEPA SW-846 methods with NYSDEC ASP Revision 2000, QA/QC requirements, and Category B reporting deliverables.

3.1 Data Quality Objectives for Intrusive Soil Sampling and Staged Soil Sampling

Excavation and/or soil borings will be advanced to varying depths. Subsurface soil samples will be visually characterized and may not require laboratory analyses.

However, in the event laboratory analyses are required, soil samples may be collected from excavation, boring or staged sources and submitted for analysis. In this instance, it is anticipated that samples may be collected for:

- Volatile organic compounds (VOCs) USEPA SW-846 Method 8260
- Semivolatile organic compounds (SVOCs) USEPA SW-846 Method 8270
- Inorganics USEPA SW-846 Method 6010

The number of required QA/QC samples is summarized in **Table 2**. **Table 1** presents the parameters to be analyzed under each of the methods described above with the laboratory quantitation limits.

3.2 Data Quality Objectives for Groundwater

The number of groundwater QA/QC samples is summarized in **Table 2**. **Table 1** presents the parameters to be analyzed under each of the methods described above with the laboratory quantitation limits. Samples will be analyzed for:

- Benzene, toluene, ethylbenzene, xylene USEPA SW-846 Method 8260
- Polycyclic Aromatic Hydrocarbon USEPA SW-846 Method 8270

As described in the SCWP, both hydrogeologic and water quality data are required to meet the objective of this task. Hydrogeologic data may include water-level information and hydraulic conductivity values that will be used to calculate other hydrogeologic parameters. Groundwater quality data may include field parameters, including pH, oxidation-reduction potential (ORP), turbidity, temperature, conductivity, and dissolved oxygen, as well as the laboratory parameters described below.

Groundwater level measurement procedures, field parameter measurement procedures, and groundwater sampling methods are provided in the FSP.

3.3 Data Quality Objectives for Waste Characterization

In the event that activities create either liquid or soil waste requiring disposal, samples will be collected and analyzed for:

- VOCs USEPA SW-846 Method 8260
- SVOCs USEPA SW-846 Method 8270
- Inorganics USEPA SW-846 Method 6010
- Pesticides/Herbicides USEPA SW-846 Method 8081
- Polychlorinated Biphenyl USEPA SW-846 8082
- Ignitability, Reactivity, Corrosivity

4. Special Training Requirements/Certification

Compliant with the Occupational Safety and Health Administration's (OSHA's) final rule, *Hazardous Waste Operations and Emergency Response*, 29 Code of Federal Regulations Part 1910.120(e), all personnel performing work in potentially MGP-impacted areas will have completed the requirements for OSHA 40-hour Hazardous Waste Operations and Emergency Response training. Persons in field supervisory positions will have also completed the additional OSHA 8-hour Supervisory Training.

5. Documentation and Records

5.1 General

Samples of the various media may be collected, as described in the SCWP. Detailed descriptions of the documentation and reporting requirements are presented below.

5.2 Field Documentation

Field personnel will provide comprehensive documentation covering all aspects of field sampling, field analysis, and sample chain of custody. This documentation constitutes a record that allows reconstruction of all field events to aid in data review and interpretation process. All documents, records, and information relating to performance of field work will be retained in the project file.

The various forms of documentation to be maintained throughout the action include:

- *Daily Production Documentation* – A field notebook consisting of a waterproof, bound notebook that will contain a record of all activities performed at the site.
- *Sampling Information* – Detailed notes will be made as to the exact site of sampling, physical observations, and weather conditions (as appropriate).
- *Sample Chain of Custody* – Chain of custody forms will provide the record of responsibility for sample collection, transport, and submittal to the laboratory. Chain of custody forms will be filled out at each sampling site, at a group of sampling sites, or at the end of each day of sampling by Arcadis field personnel designated to be responsible for sample custody. In the event that samples are relinquished by the designated sampling person to other sampling or field personnel, the chain of custody form will be signed and dated by the appropriate personnel to document the sample transfer. The original chain of custody form will accompany the samples to the laboratory, and copies will be forwarded to the project files. A sample chain of custody form is included in **Attachment C-1**.

Persons will have custody of samples when the samples are in their physical possession, in their view after being in their possession, or in their physical possession and secured so they cannot be tampered with. In addition, when samples are secured in a restricted area accessible only to authorized personnel, they will be deemed to be in the custody of such authorized personnel.

- *Field Equipment, Calibration, and Maintenance Logs* – To document calibration and maintenance of field instrumentation, calibration and maintenance logs will be maintained for each piece of field equipment that is not factory calibrated.

5.3 Laboratory Documentation

5.3.1 Laboratory Project Files

The laboratory will establish a file for all pertinent data. The file will include all correspondence, faxed information, phone logs, and chain of custody forms. The laboratory will retain all project files and data packages for a period of 5 years.

5.3.2 Laboratory Logbooks

Workbooks, bench sheets, instrument logbooks, and instrument printouts will be used to trace the history of samples through the analytical process and document and relate important aspects of the work, including the associated quality controls. As such, all logbooks, bench sheets, instrument logs, and instrument printouts will be part of the permanent record of the laboratory.

Each page or entry will be dated and initialed by the analyst at the time of entry. Errors in entry will be crossed out in indelible ink with a single stroke, corrected without the use of whiteout or by obliterating or writing directly over the erroneous entry, and initialed and dated by the individual making the correction. Pages of logbooks that are not used will be completed by lining out unused portions.

Information regarding the sample, analytical procedures performed, and the results of the testing will be recorded on laboratory forms or personal notebook pages by the analyst. These notes will be dated and will also identify the analyst, the instrument used, and the instrument conditions.

Laboratory notebooks will be periodically reviewed by the laboratory group leaders for accuracy, completeness, and compliance to this QAPP. All entries and calculations will be verified by the laboratory group leader. If all entries on the pages are correct, then the laboratory group leader will initial and date the pages. Corrective action will be taken for incorrect entries before the laboratory group leader signs.

5.3.3 Computer Tape and Hard Copy Storage

All electronic files will be maintained on CD-ROM for 5 years; hard copy data packages will be maintained in files for 5 years.

5.4 Data Reporting Requirements

5.4.1 Field Data Reporting

Information collected in the field through visual observation, manual measurement, and/or field instrumentation will be recorded in field notebooks or data sheets and/or on forms. Such data will be reviewed by the appropriate Task Manager for adherence to the work plan and for consistency. Concerns identified as a result of this review will be discussed with the field personnel, corrected if possible, and, as necessary, incorporated into the data evaluation process.

Where appropriate, field data forms and calculations will be processed and included in appendices to a Site Action Report (when generated). Original field logs, documents, and data reductions will be kept in the project file.

5.4.2 Laboratory Data Reporting

The laboratory is responsible for preparing ASP Category B data packages for all VOC, SVOC, and total organic carbon (TOC) data, reduced data packages, and case narratives for all other analyses.

All data reports for all parameters will include, at a minimum, the following items:

Narrative – Summary of activities that took place during the course of sample analysis, including the following information:

- laboratory name and address
- date of sample receipt
- cross reference of laboratory identification number to contractor sample identification
- analytical methods used
- deviations from specified protocol
- corrective actions taken

Included with the narrative will be any sample handling documents, including field and internal chain of custody forms, air bills, and shipping tags.

Analytical Results – Reported according to analysis type, including the following information, as acceptable:

- sample ID
- laboratory ID
- date of collection
- date of receipt
- date of extraction
- date of analysis
- detection limits

Sample results on report forms will be collected for dilutions. Soil samples will be reported on a dry weight basis. Unless otherwise specified, results will be reported uncorrected for blank contamination.

Data for volatile and semi-volatile analyses will be expanded to include all supporting documentation necessary to provide a Category B package. This additional documentation will include, but is not limited to, all raw data required to recalculate any result, including printouts, chromatograms, and quantitation reports. The report also will include standards used in calibration and calculation of analytical results; sample extraction, digestion, and other preparation logs; standard preparation logs; instrument run logs; and moisture content calculations.

5.5 Project File

Project documentation will be placed in project files for document management. Project files typically consist of the following components:

1. Agreements/Proposals (filed chronologically)
2. Change Orders/Purchase Orders (filed chronologically)
3. Invoices (filed chronologically)
4. Project Management (filed by topic)

5. Correspondence (filed chronologically)
6. Notes and Data (filed by topic)
7. Public Relations Information (filed by topic)
8. Regulatory Documents (filed chronologically)
9. Marketing Documents (filed chronologically)
10. Final Reports/Presentations (filed chronologically)
11. Draft Reports/Presentations (filed chronologically)
12. Documents Prepared by Others (filed chronologically)

Final reports (including QA Reports) are filed in a designated folder within the project file. Analytical laboratory documentation (when received) and field data will also be filed in a designated folder within the project file. Filed materials may be removed and signed out by authorized personnel on a temporary basis only.

6. Sampling Process Design

Information regarding the sampling design and rationale and associated sampling locations can be found in the SCWP.

7. Sampling Method Requirements

Soil and groundwater samples will be collected, as necessary, as described in the FSP. The FSP also contains procedures that will be followed to install monitoring wells; measure water levels; perform field measurements; and handle, package, and ship collected samples.

8. Sample Handling and Custody Requirements

8.1 Sample Containers and Preservation

Appropriate sample containers, preservation methods, and laboratory holding times for the samples are shown in **Table 3**.

The analytical laboratory will supply appropriate sample containers and preservatives, as necessary. Bottles will be purchased pre-cleaned to USEPA Office of Solid Waste and Emergency Response Directive 9240.05A requirements. Field personnel will be responsible for properly labeling containers and preserving samples (as appropriate).

8.2 Packing, Handling, and Shipping Requirements

Sample packaging and shipment procedures are designed to confirm that samples will arrive at the laboratory, with the chain of custody intact.

Samples will be packaged for shipment as outlined below:

- Confirm that all sample containers have the sample labels securely affixed to the container with clear packing tape.
- Check the caps on the sample containers to confirm that they are properly sealed.
- Wrap the sample container cap with clear packing tape to prevent it from becoming loose.
- Complete the chain of custody form with the required sampling information and confirm that the recorded information matches the sample labels. (Note: If the designated sampler relinquishes the samples to other sampling or field personnel for packing or other purposes, the sampler will complete the chain of custody prior to this transfer. The appropriate personnel will sign and date the chain of custody form to document the sample custody transfer.)
- Using duct tape, secure the outside drain plug at the bottom of the cooler.
- Wrap sample containers in bubble wrap or other cushioning material.
- Place 1 to 2 inches of cushioning material at the bottom of the cooler.
- Place the sealed sample containers into the cooler.

- Place ice in plastic bags and seal. Place loosely in the cooler.
- Fill the remaining space in the cooler with cushioning material.
- Place chain of custody forms in a plastic bag and seal. Tape the forms to the inside of the cooler lid.
- Close the lid of the cooler, lock, and secure with duct tape.
- Wrap strapping tape around both ends of the cooler at least twice.
- Mark the cooler on the outside with the following information: shipping address, return address, "Fragile" labels, and arrows indicating "this side up." Cover the labels with clear plastic tape. Place a signed custody seal over the cooler lid.

All samples will be packaged by field personnel and transported as low-concentration environmental samples. The samples will be hand-delivered or delivered by an express carrier within 48 hours of the time of collection. All shipments will be accompanied by the chain of custody form identifying the contents. The original form will accompany the shipment; copies will be retained by the sampler for the sampling office records. If the samples are sent by common carrier, a bill of lading should be used. Receipts or bills of lading will be retained as part of the permanent project documentation. Commercial carriers are not required to sign off on the chain of custody form, as long as the forms are sealed inside the sample cooler and the custody seals remain intact.

Sample custody seals and packing materials for filled sample containers will be provided by the analytical laboratory. The filled, labeled, and sealed containers will be placed in a cooler on ice and carefully packed to eliminate the possibility of container breakage. Trip blank(s) of analyte-free water will be provided by the laboratory and included in each cooler containing aqueous samples to be analyzed for VOCs.

Procedures for packing, handling, and shipping environmental samples are included in the FSP.

8.3 Field Custody Procedures

The objective of field sample custody is to confirm that samples are not tampered with from the time of sample collection through the time of transport to the analytical laboratory. Persons will have "custody of samples" when the samples are in their physical possession, in their view after being in their possession, or in physical possession and secured so they cannot be tampered with. In addition, when samples are secured in a restricted area accessible only to authorized personnel, they will be deemed to be in the custody of such authorized personnel.

Field custody documentation consists of both field logbooks and field chain of custody forms.

8.3.1 Field Logbooks

Field logbooks will provide the means of recording data collecting activities performed. As such, entries will be described in as much detail as possible so that persons going to the site could reconstruct a particular situation without reliance on memory.

Field logbooks will be bound field survey books or notebooks. Logbooks will be assigned to field personnel, but will be stored in a secure location when not in use. Each logbook will be identified by the project-specific document number. The title page of each logbook will contain the following:

- person to whom the logbook is assigned
- logbook number
- project name
- project start date
- end date

Entries into the logbook will contain a variety of information. At the beginning of each entry, the date, start time, weather, names of all sampling team members present, level of personal protection being used, and the signature of the person making the entry will be entered. The names of visitors to the site, field sampling or investigation team personnel, and the purpose of their visit will also be recorded in the field logbook.

Measurements made and samples collected will be recorded. All entries will be made in ink, and no erasures will be made. If an incorrect entry is made, the information will be crossed out with a single strike mark. Whenever a sample is collected or a measurement is made, a detailed description of the location of the station shall be recorded. The number of the photographs taken of the station, if any, will also be noted. All equipment used to make measurements will be identified, as well as with the date of calibration.

Samples will be collected following sampling procedures documented in the FSP. The equipment used to collect samples will be noted, as well as with the time of sampling, sample description, depth at which the sample was collected, volume, and number of containers. Sample identification numbers will be assigned prior to sample collection. Field duplicate samples, which will receive an entirely separate sample identification number, will be noted under sample description.

8.3.2 Sample Labeling

Preprinted sample labels will be affixed to sample bottles prior to delivery at the sampling site. The following information is required in each sample label.

- project
- date collected
- time collected
- location
- sampler
- analysis to be performed
- preservative
- sample number

8.3.3 Field Chain of Custody Forms

Completed chain of custody forms will be required for all samples to be analyzed. Chain of custody forms will be initiated by the sampling crew in the field. The chain of custody forms will contain the sample's unique identification number, sample date and time, sample description, sample type, preservation (if any), and analyses required. The original chain of custody form will accompany the samples to the laboratory. Copies of the chain of custody will be made prior to shipment (or multiple copy forms used) for field documentation. The chain of custody forms will remain with the samples at all times. The samples and signed chain of custody forms will remain in the possession of the sampling crew until the samples are delivered to the express carrier (e.g., FedEx) or hand delivered to a mobile or permanent laboratory, or placed in secure storage.

Sample labels will be completed for each sample using waterproof ink, unless prohibited by weather conditions. The labels will include sample information, such as sample number and location, type of sample, date and time of sampling, sampler's name or initials, preservation, and analyses to be performed. The completed sample labels will be affixed to each sample bottle and covered with clear tape.

Whenever samples are collocated with a source or government agency, a separate Sample Receipt will be prepared for those samples and marked to indicate with whom the samples are being collocated. The person relinquishing the samples to the facility or agency should request the representative's signature, acknowledging sample receipt. If the representative is unavailable or refuses, this is noted in the "Received By" space.

8.4 Management of Investigation-Derived Materials and Wastes

Disposable equipment, debris, and decontamination rinsate (e.g., tap and distilled water containing small amounts of solvent) will be containerized during sampling events and labeled for appropriate disposal.

8.5 Laboratory Procedures

8.5.1 General

Upon sample receipt, laboratory personnel will be responsible for sample custody. A field chain of custody form will accompany all samples requiring laboratory analysis. Samples will be kept secured in the laboratory until all stages of analysis are complete. All laboratory personnel having samples in their custody will be responsible for maintaining sample integrity.

8.5.2 Sample Receipt and Storage

Upon sample receipt, the laboratory sample custodian will verify the package seal, open the package, verify sample integrity, and compare the contents against the field chain of custody. If a sample container is broken, the sample is in an inappropriate container, has not been preserved by appropriate means, or if there is a discrepancy between the chain of custody and the sample shipment, Arcadis will be notified. The laboratory sample custodian will then log the samples in, assign a unique laboratory identification number to each, and label the sample bottle with the laboratory identification number. The project name, field sample code, date sampled, date received, analysis required, storage location and date, and action for final disposition will be recorded in the laboratory information management system.

8.5.3 Sample Chain of Custody and Documentation

Laboratory chain of custody and documentation will follow procedures consistent with Exhibit F of the New York State Department of Environmental Conservation (NYSDEC) ASP 2000.

8.5.4 Sample Analysis

Analysis of an acceptable sample will be initiated by worksheets that contain all pertinent information for analysis. The analyst will sign and date the laboratory chain of custody form when removing the samples from storage.

Samples will be organized into sample delivery groups (SDGs) by the laboratory. A SDG may contain up to 20 field samples (field duplicates, trip blanks, and rinse blanks are considered field samples for the purposes of SDG assignment). All field samples assigned to a single SDG shall be received by the laboratory over a maximum of 7 calendar days, and must be processed through the laboratory (preparation, analysis, and reporting) as a group. Every SDG must include a minimum of one site-specific matrix/matrix spike duplicate (MS/MSD) pair, which shall be received by the laboratory at the start of the SDG assignment.

Each SDG will be self-contained for all of the required QC samples. All parameters within an SDG will be extracted and analyzed together in the laboratory. At no time will the laboratory be allowed to run any sample (including QC samples) at an earlier or later time than the rest of the SDG. These rules for analysis will confirm that the QC samples for an SDG are applicable to the field samples of the same SDG and that the best possible comparisons can be made.

8.5.5 Sample Storage Following Analysis

The remaining samples will be maintained by the laboratory for 1 month after the final report is delivered to Arcadis. After this period, samples will be disposed of in accordance with applicable rules and regulations.

9. Analytical Procedures

9.1 Field Analytical Procedures

Field analytical procedures may include measurement of pH, ORP, turbidity, temperature, conductivity, dissolved oxygen, and groundwater levels. Specific field measurement protocols are provided in the FSP.

9.2 Laboratory Analytical Procedures

Laboratory analytical requirements presented in the subsections below include a general summary of requirements, specifics related to each sample medium that may be analyzed, and details of the methods to be used for this project. SW-846 methods with NYSDEC, ASP, 2000 Revision, QA/QC and reporting deliverables requirements will be used for all analytes.

9.2.1 General

The attached tables summarize general analytical requirements:

Table	Title
Table 1	Parameters, Methods, and Quantitation Limits
Table 2	Environmental and Quality Control Sample Analyses
Table 3	Sample Containers, Preservation Methods, and Holding Times Requirements

9.2.2 Sample Metrics

9.2.2.1 Soil

Analyses in this category will relate to soil samples. Analyses will be performed following methods listed in **Table 2**. Results will be reported as dry weight, in units presented in **Table 1**. Moisture content will be reported separately.

9.2.3 Analytical Requirements

Primary sources to describe analytical methods to be used during investigation are provided in USEPA SW-846 Test Methods for Evaluating Solid Waste, Third Edition and USEPA Methods for Chemical Analysis of Water and Waste with NYSDEC ASP 2000 Revision, QA/QC and reporting deliverables requirements. Detailed information regarding QC procedures, including MS/MSDs, MS blanks, and surrogate recoveries is provided in NYSDEC, ASP 2000 Revision, Exhibit E.

10. Quality Control Requirements

10.1 Quality Assurance Indicators

The overall QA objective for this QAPP is to develop and implement procedures for sampling, chain of custody, laboratory analysis, instrument calibration, data reduction and reporting, internal QC, audits, preventive maintenance, and corrective action such that valid data will be generated. These procedures are presented or referenced in the following sections of the QAPP. Specific QC checks are discussed in Section 11.2.

QA indicators are generally defined in terms of five parameters:

1. representativeness
2. comparability
3. completeness
4. precision
5. accuracy

Each parameter is defined below. Specific objectives for the site actions are set forth in other sections of this QAPP, as referenced below.

10.1.1 Representativeness

Representativeness is the degree to which sampling data accurately and precisely represent site conditions, and is dependent on sampling and analytical variability. The investigation activities have been designed to assess the presence of constituents at the time of sampling. The SCWP presents the rationale for sample quantities and location. The FSP and this QAPP present field sampling methodologies and laboratory analytical methodologies. The use of the prescribed field and laboratory analytical methods with associated holding times and preservation requirements are intended to provide representative data.

10.1.2 Comparability

Comparability is the degree of confidence with which one data set can be compared to another. Comparability between this investigation, and to the extent possible, with existing data will be maintained through consistent sampling and analytical methodology set forth in the FSP and this QAPP, SW-846

analytical methods with NYSDEC ASP Revision 2000 QA/QC requirements and Category B reporting deliverables, and through use of QA/QC procedures and appropriately trained personnel.

10.1.3 Completeness

Completeness is defined as a measure of the amount of valid data obtained from an event and/or investigation compared to the amount that was expected to be obtained under normal conditions. This will be determined upon assessment of the analytical results, as discussed in Section 11.6.

10.1.4 Precision

Precision is the measure of reproducibility of sample results. The goal is to maintain a level of analytical precision consistent with project objectives. To maximize precision, sampling and analytical procedures will be followed. All work for this investigation will adhere to established protocols presented in the SCWP. Checks for analytical precision will include the analysis of MSDs, laboratory duplicates, and field duplicates. Checks for field measurement precision will include obtaining duplicate field measurements. Further discussion of precision QC checks is provided in Section 11.4.

10.1.5 Accuracy

Accuracy is the deviation of a measurement from the true value of a known standard. Both field and analytical accuracy will be monitored through initial and continuing calibration of instruments. In addition, internal standards, MS, blank spikes, and surrogates (system monitoring compounds) will be used to assess the accuracy of the laboratory analytical data. Further discussion of these QC samples is provided in Section 11.4.

10.2 Field Quality Control Checks

10.2.1 Field Measurements

To verify quality of data using field instrumentation, duplicate measurements will be obtained and reported for all field analytical measurements.

10.2.2 Sample Containers

Certified, clean sample containers in accordance with Exhibit I of the NYSDEC ASP Revision 2000 (Eagle Picher pre-cleaned containers or equivalent) will be supplied by the laboratory.

10.2.3 Field Duplicates

Field duplicates will be collected for groundwater and source material/soil samples to check reproducibility of sampling methods. Field duplicates will be prepared as discussed in the FSP. In general, source material/soil and groundwater sample field duplicates will be analyzed at a 5% frequency (every 20 samples). **Table 2** provides an estimated number of field duplicates for each applicable parameter and matrix.

10.2.4 Rinse Blanks

Rinse blanks are used to monitor cleanliness of sampling equipment and effectiveness of cleaning procedures. Rinse blanks will be prepared and submitted for analysis at a frequency of 1 per day (when sample equipment cleaning occurs) or once for every 20 samples collected, whichever is less. Rinse blanks will be prepared by filling sample containers with analyte-free water (supplied by the laboratory), which has been routed through a cleaned sampling device. When dedicated sampling devices are used or sample containers are used to collect the samples, rinse blanks will not be necessary. **Table 2** provides an estimated number of rinse blanks collected during the investigation activities.

10.2.5 Trip Blanks

Trip blanks will be used to assess whether site samples have been exposed to non-site-related volatile constituents during storage and transport. Trip blanks will be analyzed at a frequency of once per day, per cooler containing groundwater samples to be analyzed for VOCs. A trip blank will consist of a container filled with analyte-free water (supplied by the laboratory), which remains unopened with field samples throughout the sampling event. Trip blanks will only be analyzed for aqueous VOCs. **Table 2** provides an estimated number of trip blanks collected for each matrix and parameter during the investigation activities.

10.3 Analytical Laboratory Quality Control Checks

Internal QC procedures are specified in the analytical methods. These specifications include types of QC checks required (method blanks, reagent/preparation blanks, MS/MSDs, calibration standards, internal standards, surrogate standards, specific calibration check standards, laboratory duplicate/replicate analysis), compounds and concentrations to be used, and the QC acceptance criteria.

10.3.1 Method Blanks

Method blanks will serve as a measure of contamination attributable to a variety of sources, including glassware, reagents, and instrumentation. The method blank will be initiated at the beginning of an analytical procedure and is carried through the entire process.

10.3.2 Matrix Spike/Matrix Spike Duplicates

The MS will serve as a measure of method accuracy in a given matrix. The MS and the MSDs together will serve as a measure of method precision.

10.3.3 Surrogate Spikes

Surrogate spikes are organic compounds that have similar properties to those being tested. They will serve as indicators of method performance and accuracy in organic analyses.

10.3.4 Laboratory Duplicates

Laboratory duplicates will serve to measure method precision in inorganic and supplemental analyses.

10.3.5 Calibration Standards

Calibration check standards analyzed within a particular analytical series provide insight regarding the instruments' stability. A calibration check standard will be analyzed at the beginning and end of an analytical series, or periodically throughout a series containing a large number of samples.

In general, calibration check standards will be analyzed after every 12 hours or more frequently, as specified in the applicable analytical method. In analyses where internal standards are used, a calibration check standard will only be analyzed in the beginning of an analytical series. If results of the calibration check standard exceed specified tolerances, then all samples analyzed since the last acceptable calibration check standard will be reanalyzed.

Laboratory instrument calibration standards will be selected utilizing the guidance provided in the analytical methods, as summarized in Section 13.

10.3.6 Internal Standards

Internal standard areas and retention times will be monitored for organic analyses performed by gas chromatograph/mass spectrometer methods. Method-specified internal standard compounds will be spiked into all field samples, calibration standards, and QC samples after preparation and prior to analysis. If internal standard areas in one or more samples exceed the specified tolerances, then cause will be investigated, the instrument will be recalibrated, if necessary, and all affected samples will be reanalyzed.

The acceptability of internal standard performance will be determined using guidance provided within the analytical methods.

10.3.7 Reference Standards/Control Samples

Reference standards are standards of known concentration and independent in origin from the calibration standards. The intent of reference standard analysis is to provide insight into the analytical proficiency within an analytical series. This includes preparation of calibration standards, validity of calibration, sample preparation, instrument set up, and premises inherent in quantitation. Reference standards will be analyzed at frequencies specified within the analytical methods.

10.4 Data Precision Assessment Procedures

Field precision is difficult to measure because of temporal variations in field parameters. However, precision will be controlled through the use of experienced field personnel, properly calibrated meters, and duplicate field measurements. Field duplicates will be used to assess precision for the entire measurement system, including sampling, handling, shipping, storage, preparation, and analysis.

Laboratory data precision for organic analyses will be monitored through the use of MSDs, laboratory duplicate, and field duplicates as identified in **Table 2**.

Precision of data will be measured by calculation of the relative percent differences (RPDs) of duplicate sample sets.

The RPD can be calculated by the following equation:

$$RPD = \frac{(A-B)}{(A+B)/2} \times 100$$

Where:

A = analytical result from one of two duplicate measurements

B = analytical result from the second measurement

Precision objectives for MSD and laboratory duplicate analyses are identified in the NYSDEC ASP Revision 2000.

10.5 Data Accuracy Assessment Procedures

Accuracy of field measurements will be controlled by experienced field personnel, properly calibrated field meters, and adherence to established protocols. Accuracy of field meters will be assessed by review of calibration and maintenance logs.

Laboratory accuracy will be assessed via the use of MS, surrogate spikes, and internal standards. Where available and appropriate, QA performance standards will be analyzed periodically to assess laboratory accuracy. Accuracy will be calculated as a percent recovery as follows:

$$\text{Accuracy} = \frac{A-X}{B} \times 100$$

Where:

A = value measured in spiked sample or standard

X = value measured in original sample

B = true value of amount added to sample or true value of standard

This formula is derived under the assumption of constant accuracy over the original and spiked measurements. If any accuracy calculated by this formula is outside of acceptable levels, data will be evaluated to determine whether the deviation represents unacceptable accuracy, or variable, but acceptable accuracy. Accuracy objectives for MS recoveries and surrogate recovery objectives are identified in the NYSDEC ASP, 2000 Revision.

10.6 Data Completeness Assessment Procedures

Completeness of a field or laboratory data set will be calculated by comparing the number of samples collected or analyzed to the proposed number.

$$\text{Completeness} = \frac{\text{No. Valid Samples Collected or Analyzed}}{\text{No. Proposed Samples Collected or Analyzed}} \times 100$$

As general guidelines, overall project completeness is expected to be at least 90%. The assessment of completeness will require professional judgment to determine data usability for intended purposes.

11. Instrument/Equipment Testing, Inspection, and Maintenance Requirements

Preventive maintenance schedules have been developed for both field and laboratory instruments. A summary of maintenance activities to be performed is presented below.

11.1 Field Instruments and Equipment

Prior to any field sampling, each piece of field equipment will be inspected to confirm that it is operational. If the equipment is not operational, it must be serviced prior to use. All meters that require charging or batteries will be fully charged or have fresh batteries. If instrument servicing is required, it is the responsibility of the Field Activities Task Manager to follow the maintenance schedule and arrange for prompt service.

Field instrumentation to be used in this study includes meters to measure pH, ORP, turbidity, temperature, conductivity, dissolved oxygen, and groundwater levels. Field equipment also includes sampling devices for groundwater. A logbook will be kept for each field instrument. Each logbook contains records of operation, maintenance, calibration, and any problems and repairs. The Field Activities Task Manager will review calibration and maintenance logs.

Field equipment returned from a site will be inspected to confirm it is in working order. This inspection will be recorded in the logbook or field notebooks as appropriate. It will also be the obligation of the last user to record any equipment problems in the logbook.

Non-operational field equipment will be either repaired or replaced. Appropriate spare parts will be made available for field meters. A summary of preventive maintenance requirements for field instruments, and details regarding field equipment maintenance, operation, and calibration, are provided in the FSP.

11.2 Laboratory Instruments and Equipment

11.2.1 General

Only qualified personnel will service instruments and equipment. Repairs, adjustments, and calibrations are documented in the appropriate logbook or data sheet.

11.2.2 Instrument Maintenance

Preventive maintenance of laboratory equipment will follow guidelines recommended by the manufacturer. A malfunctioning instrument will be repaired by in-house staff or through a service call by the manufacturer, as appropriate.

The laboratory will maintain a sufficient supply of spare parts for its instruments to minimize downtime. Whenever possible, backup instrumentation will be retained.

Whenever practical, analytical equipment will be maintained under a service contract. The contract allows for preventative system maintenance and repair on an “as-needed” basis. The laboratory has sufficiently trained staff to allow for the day-to-day maintenance of equipment.

11.2.3 Equipment Monitoring

On a daily basis, the operation of balances, incubators, ovens, refrigerators, and water purification systems will be checked and documented. Any discrepancies will be immediately reported to the appropriate laboratory personnel for resolution.

12. Instrument Calibration and Frequency

12.1 Field Equipment Calibration Procedures and Frequency

Specific procedures for performing and documenting calibration and maintenance for equipment measuring conductivity, temperature, pH, groundwater levels, and surface-water levels are provided in the FSP. Calibration checks will be performed daily when measuring pH, ORP, turbidity, temperature, conductivity, and dissolved oxygen. Field equipment operation, calibration, and maintenance procedures are provided in the FSP.

12.2 Laboratory Equipment Calibration Procedures and Frequency

Instrument calibration will follow specifications provided by the instrument manufacturer or specific analytical method used. Analytical methods for target constituents are identified separately below.

Volatile Organics

Equipment calibration procedures will follow guidelines presented in NYSDEC ASP 2000 Revision, Exhibit E, Part III.

Semivolatile Organics

Equipment calibration procedures will follow guidelines presented in NYSDEC ASP 2000 Revision, Exhibit E, Part IV.

Metals and Cyanide

Equipment calibration procedures will follow guidelines presented in NYSDEC ASP 2000 Revision, Exhibit E, Part VII.

Total Organic Carbon

Equipment calibration procedures will follow guidelines presented in Lloyd Kahn Method.

Supplemental Parameters

Additional parameters (chemical oxygen demand, nitrate, ammonia, sulfate, sulfide, orthophosphate, alkalinity, methane, reactive sulfide, and reactive cyanide) will be calibrated according to their respective methods, following the guidance presented in NYSDEC ASP 2000, Exhibit E, Part VIII.

13. Inspection/Acceptance Requirements for Supplies and Consumables

The laboratory shall inspect/test all supplies and consumables prior to use with samples. Documentation shall be maintained for all associated testing and analyses.

14. Data Management

The purpose of the data management is to confirm that all of the necessary data are accurate and readily accessible to meet analytical and reporting objectives of the project. Field investigations will encompass a large number of samples and a variety of sample matrices and analytes from a large geographic area. From the large amount of resulting data, the need arises for a structured, comprehensive, and efficient program for management of data.

The data management program established for the project includes field documentation and sample QA/QC procedures, methods for tracking and managing data, and a system for filing all site-related information. More specifically, data management procedures will be employed to efficiently process information collected such that data are readily accessible and accurate. These procedures are described in detail in the following section.

The data management plan has five elements:

1. Sample Designation System
2. Field Activities
3. Sample Tracking and Management
4. Data Management System
5. Document Control and Inventory

14.1 Sample Designation System

A concise and easily understandable sample designation system is an important part of project sampling activities. It provides a unique sample number that will facilitate both sample tracking and easy resampling of select locations to evaluate data gaps, if necessary. The sample designation system to be employed during sampling activities will be consistent, yet flexible enough to accommodate unforeseen sampling events or conditions. A combination of letters and numbers will be used to yield a unique sample number for each field sample collected.

14.2 Field Activities

Field activities designed to gather information necessary to make decisions regarding offsite areas require consistent documentation and accurate record keeping. During site activities, standardized procedures will

be used for documentation of field activities, data security, and QA. These procedures are described in further detail in the following subsections.

14.2.1 Field Documentation

Complete and accurate record keeping is a critical component of field investigation activities. When interpreting analytical results and identifying data trends, investigators realize that field notes are an important part of the review and validation process. To confirm that all aspects of field investigation are thoroughly documented, several different information records, each with its own specific reporting requirements, will be maintained, including:

- field logs
- instrument calibration records
- chain-of-custody forms

A description of each of these types of field documentation is provided below.

Field Logs

The personnel performing the activities will keep field logs that detail all observations and measurements made during the investigation. Data will be recorded directly into site-dedicated, bound notebooks, with each entry dated and signed. To confirm at any future date that notebook pages are not missing, each page will be sequentially numbered. Erroneous entries will be corrected by crossing out the original entry, initialing it, and then documenting the proper information. In addition, certain media sampling locations will be surveyed to accurately record their locations. The survey crew will use their own field logs and will supply the sampling location coordinates to the File Custodian.

Instrument Calibration Records

As part of data quality assurance procedures, field monitoring and detection equipment will be routinely calibrated. Instrument calibration confirms that equipment used is of the proper type, range, accuracy, and precision to provide data compatible with specified requirements and desired results. Calibration procedures for the various types of field instrumentation are described in Section 13.1. In order to demonstrate that established calibration procedures have been followed, calibration records will be prepared and maintained to include, as appropriate, the following:

- calibration date and time

- type and identification number of equipment
- calibration frequency and acceptable tolerances
- identification of individual(s) performing calibration
- reference standards used
- calibration data
- information on calibration success or failure

The calibration record will serve as a written account of monitoring or detection equipment QA. All erratic behavior or failures of field equipment will be subsequently recorded in the calibration log.

Chain of Custody Forms

Chain of custody forms are used as a means of documenting and tracking sample possession from time of collection to the time of disposal. A chain of custody form will accompany each field sample collected, and one copy of the form will be filed in the field office. All field personnel will be briefed on the proper use of the chain of custody procedure. A more thorough description of the chain of custody forms is located in the Standard Operating Procedures.

14.2.2 Data Security

Measures will be taken during the field investigation to confirm that samples and records are not lost, damaged, or altered. When not in use, all field notebooks will be stored at the field office in a locked, fireproof cabinet. Access to these files will be limited to the field personnel who utilize them.

14.3 Sample Management and Training

A record of all field documentation, as well as analytical and QA/QC results, will be maintained to confirm the validity of data used in the site analysis. To effectively execute such documentation, carefully constructed sample tracking and data management procedures will be used throughout the sampling program.

Sample tracking will begin with the completion of chain of custody forms, as described in Section 9.3.3. On a daily basis, the completed chain of custody forms associated with samples collected that day will be faxed from the project office to the QA Manager (QAM). Copies of all completed chain of custody forms will be

maintained in the field office. On the following day, the QAM will telephone the laboratory to verify receipt of samples.

When analytical data are received from the laboratory, the QAM will review the incoming analytical data packages against the information on the chains of custody to confirm that the correct analyses were performed for each sample and that results for all samples submitted for analysis were received. Any discrepancies noted will be promptly followed-up by the QAM.

14.4 Data Management System

In addition to the sample tracking system, a data management system may be implemented. The central focus of the data management system will be the development of a personal computer-based project database. The project database, to be maintained by the Database Administrator, will combine pertinent geographical, field, and analytical data. Information that will be used to populate the database will be derived from three primary sources: surveying of sampling locations, field observations, and analytical results. Each of these sources is discussed in the following sections.

14.4.1 Computer Hardware

If required, the database will be constructed on Pentium®-based personal computer work stations connected through a Novell network server. The Novell network will provide access to various hardware peripherals, such as, but not limited to, laser printers, backup storage devices, image scanners, and modems. Computer hardware will be upgraded to industrial and corporate standards, as necessary, in the future.

14.4.2 Computer Software

If required, the database will be written in Microsoft Access, running in a Windows operating system.

14.4.3 Surveying Information

In general, each location sampled will be surveyed to confirm that accurate documentation of sample locations for mapping and geographic information system purposes (if appropriate) to facilitate the resampling of select sample locations during future monitoring programs, if needed, and for any potential remediation activities. The surveying activities that will occur in the field will consist of the collection of information that will be used to compute a northing and easting in state plane coordinates for each sample location and the collection of information to compute elevations relative to the National Geodetic Vertical Datum of 1988 for select sample locations, as appropriate. All field books associated with the surveying activities will be stored as a record of the project activities.

Conventional surveying techniques will be used to gather information, such as the angle and distance between the sample location and the control monument, as well as point attributes. Control monuments will be established using global positioning system techniques. The surveying software allows the rapid computation of a location's state plane coordinates.

Differential leveling techniques will be used to gather information to be used to compute a sample location's (or top-of-casing for groundwater monitoring wells) elevation. During the differential leveling process, which includes at least one benchmark of known elevation, detailed field notes will be kept in a field book.

14.4.4 Field Observations

An important part of information that will ultimately reside in the data management system for use during the project will originate in the observations that are recorded in the field.

Following each sampling event, a status memorandum may be prepared by the field personnel who performed the sampling activities. The purpose of the status memo is to present a summary and a record of the sampling event. Topics to be discussed include the locations sampled, the sampling methodologies used, QA/QC procedures, blind duplicate and MS/MSD sample identification numbers, equipment decontamination procedures, personnel involved in the activity, and any other noteworthy events that occurred.

Tables are typically attached to the memorandum and are used to summarize measurements that were recorded in the field books. It is anticipated that these tables will be developed using a personal computer spreadsheet program to reduce possible transcription error and to facilitate the transfer of information to the data management system. For example, for soil samples, the table would present the sampling date and time, soil depth, depth of soil recovered in a given core, the depth increment submitted for analysis, and a description of the lithology.

Status memos are valuable tools to keep project personnel informed on the details of the field activities and are also invaluable during the development of the final report. Each status memo will be reviewed for accuracy and completeness by the respective sampling activity manager. Following the approval and finalization of each memo, the status memo will be used to transfer field observations into the data management system.

All pertinent field data will be manually entered into the appropriate database tables from the chain of custody forms and field notebooks.

14.4.5 Analytical Results

Analytical results provided by the laboratory will generally be available in both a digital and a hard copy format. Upon receipt of each analytical package, the original chain of custody form will be placed in the project files. The data packages will be examined to confirm that the correct analyses were performed for each sample submitted and that all of the analyses requested on the chain of custody form were performed. If discrepancies are noted, the QAM will be notified and will promptly follow up with the laboratory to resolve any issues.

Where appropriate, the data packages will be validated in accordance with the procedures presented in Section 20. Any data that does not meet the specified standards will be flagged pending resolution of the issue. The flag will not be removed from the data until the issue associated with the sample results is resolved. Although flags may remain for certain data, the use of that data may not necessarily be restricted.

Following completion of the data validation (if necessary), the digital files of analytical data will be processed to populate the appropriate database tables. Specific fields include:

- sample identification number
- date sampled
- date analyzed
- parameter name
- analytical result
- units
- detection limit
- qualifier(s)

The individual electronic data deliverables (EDDs) supplied by the laboratory in either an ASCII comma separated value format or in a Microsoft Excel 97 worksheet, will be loaded into the appropriate database table. Any analytical data that cannot be provided by the laboratory in electronic format will be entered manually.

After entry into the database, the EDD data will be compared to the field information previously entered into the database to confirm that all requested analytical data have been received.

14.4.6 Data Analysis and Reporting

The database management system will have several functions to facilitate review and analysis of the data. Data entry screens will be developed to assist in the keypunching of field observations. Routines will also be developed to permit the user to scan analytical data from a given site for a given media. Several output functions that have been developed by Arcadis will be appropriately modified for use in the data management system.

A valuable function of the data management system will be the generation of tables of analytical results from the project databases. The capability of the data management system to directly produce tables reduces the redundant manual entry of analytical results during report preparation and precludes transcription errors that may occur otherwise. This data management system function creates a digital comma-delimited ASCII file of analytical results and qualifiers for a given media. The ASCII file is then processed through a spreadsheet, which transforms the comma-delimited file into a table of rows and columns. Tables of analytical data will be produced as part of data interpretation tasks and the reporting of data.

Another function of the data management system will be to create digital files of analytical results and qualifiers suitable for transfer to mapping/presentation software. A function has been created by Arcadis that creates a digital file consisting of sample location number, state plane coordinates, sampling date, and detected constituents and associated concentrations and analytical qualifiers. The file is then transferred to an AutoCAD work station, where another program has been developed to plot a location's analytical data in a "box" format at the sample location (represented by the state plane coordinates). This routine greatly reduces the redundant keypunching of analytical results and facilitates the efficient production of interpretative and presentation graphics.

The data management system also has the capability of producing a digital file of select parameters that exists in one or more of the databases. This type of custom function is accomplished on an interactive basis and is best used for transferring select information into a number of analysis tools, such as statistical or graphing programs.

14.5 Document Control and Inventory

Each contractor performing intrusive work within potentially MGP-impacted areas is required to maintain project files. Copies of appropriate portions of the project files will be sent to:

- NYSDEC Project Manager
- RGE Project manager

Arcadis maintains project files in its Fairport, New York office. Each client project is assigned a file/job number (e.g., for the remedial activities, 130.42). Each file is then broken down into the following subfiles:

1. Agreements/Proposals (filed chronologically)
2. Change Orders/Purchase Orders (filed chronologically)
3. Invoices (filed chronologically)
4. Project Management (filed by topic)
5. Correspondence (filed chronologically)
6. Notes and Data (filed by topic)
7. Public Relations Information (filed by topic)
8. Regulatory Documents (filed chronologically)
9. Marketing Documents (filed chronologically)
10. Final Reports/Presentations (filed chronologically)
11. Draft Reports/Presentations (filed chronologically)
12. Documents Prepared by Others (filed chronologically)

Originals, when possible, are placed in the files. These are the central files and will serve as the site-specific files for the off-site investigations.

15. Assessment and Response Actions

Performance and systems audits will be completed in the field and the laboratory during the investigation activities, as described below.

15.1 Field Audits

The following field performance and systems audits will be completed during this project.

15.1.1 Performance Audits

The appropriate Task Manager will monitor field performance. Field performance audit summaries will contain an evaluation of field measurements and field meter calibrations to verify that measurements are taken according to established protocols. The project QAM will review all field reports and communicate concerns to the Project Manager and/or Task Managers, as appropriate. In addition, the QAM will review the rinse and trip blank data to identify potential deficiencies in field sampling and cleaning procedures.

15.1.2 Internal Systems Audits

A field internal systems audit is a qualitative evaluation of all components of field QA/QC. The systems audit compares scheduled QA/QC activities from this document with actual QA/QC activities completed. The appropriate Task Manager will periodically confirm that work is being performed consistent with the work plan, the FSP, and the HASP.

15.2 Laboratory Audits

The laboratory will perform internal audits consistent with NYSDEC ASP, 2000 Revision, Exhibit E.

In addition to the laboratory's internal audits and participation in state and federal certification programs, the laboratory sections at the laboratory are audited by representatives of the regulatory agency issuing certification. Audits are usually conducted on an annual basis and focus on laboratory conformance to the specific program protocols for which the laboratory is seeking certification. The auditor reviews sample handling and tracking documentation, analytical methodologies, analytical supportive documentation, and final reports. The audit findings are formally documented and submitted to the laboratory for corrective action, if necessary.

RGE reserves the right to conduct an on-site audit of the laboratory prior to the start of analyses for the project. Additional audits may be performed during the course of the project, as deemed necessary.

15.3 Corrective Action

Corrective actions are required when field or analytical data are not within the objectives specified in this QAPP, the FSP, or the SCWP. Corrective actions include procedures to promptly investigate, document, evaluate, and correct data collection and/or analytical procedures. Field and laboratory corrective action procedures are described below.

15.3.1 Field Procedures

When conducting field work, if a condition is noted that would have an adverse effect on data quality, corrective action will be taken so as not to repeat this condition. Condition identification, cause, and corrective action implemented will be documented on a Corrective Action Report Form and reported to the appropriate Project Manager and Task Manager.

Examples of situations that would require corrective actions are provided below:

1. Protocols, as defined by this QAPP, the FSP, or the SCWP, have not been followed.
2. Equipment is not in proper working order or properly calibrated.
3. QC requirements have not been met.
4. Issues resulting from performance or systems audits.

Project personnel will continuously monitor ongoing work performance in the normal course of daily responsibilities.

15.3.2 Laboratory Procedures

In the laboratory, when a condition is noted to have an adverse effect on data quality, corrective action will be taken so as not to repeat this condition. Condition identification, cause, and corrective action to be taken will be documented and reported to the appropriate Project Manager and Task Manager.

Corrective action may be initiated, at a minimum, under the following conditions:

1. Specific laboratory analytical protocols have not been followed.
2. Predetermined data acceptance standards are not obtained.

3. Equipment is not in proper working order or calibrated.
4. Sample and test results are not completely traceable.
5. QC requirements have not been met.
6. Issues resulting from performance or systems audits.

Laboratory personnel will continuously monitor ongoing work performance in the normal course of daily responsibilities.

16. Reports to Management

16.1 Internal Reporting

The analytical laboratory will submit analytical reports to the contractor for review. If required, the contractor, or Arcadis will, in turn, submit the reports to the data validator for review. Supporting data (i.e., historic data, related field or laboratory data) will also be reviewed to evaluate data quality, as appropriate. The QAM will incorporate results of the data validation reports (if required) and assessments of data usability into a summary report (if required) that will be submitted to the Project Manager and appropriate Task Managers. If required, this QAPP will be filed in the project file and will include the following:

1. Assessment of data accuracy, precision, and completeness for both field and laboratory data.
2. Results of the performance and systems audits.
3. Significant QA/QC problems, solutions, corrections, and potential consequences.
4. Analytical data validation report.

16.2 Reporting

Upon sample transport to the laboratory, a copy of the chain of custody will be forwarded to RGE. Upon receipt of the ASP – Category B Data Package from the laboratory, the QAM will determine if the data package has met the required DQOs. The analytical data package will be submitted to RGE's Project Manager and will also be incorporated into the reports.

17. Data Review, Validation, and Verification

After field and laboratory data are obtained, these data may be subject to:

1. Validation of the data.
2. Reduction or manipulation of the data mathematically or otherwise into meaningful and useful forms.
3. Organization, interpretation, and reporting of the data.

17.1 Field Data Reduction, Validation, and Reporting

17.1.1 Field Data Reduction

Information that is collected in the field through visual observation, manual measurement, and/or field instrumentation will be recorded in field notebooks, log sheets, and/or other appropriate forms. Such data will be reviewed by the appropriate Task Manager for adherence to the work plan and consistency of data. Any concerns identified as a result of this review will be discussed with the field personnel, corrected if possible, and, as necessary, incorporated into the data evaluation process.

17.1.2 Field Data Validation

Field data calculations, transfers, and interpretations will be conducted by the field personnel and reviewed for accuracy by the appropriate Task Manager and the QAM. Task Managers will recalculate at least 5% of all data reductions. Field documentation and data reduction prepared by field personnel will be reviewed by the appropriate Task Manager and QAM. All logs and documents will be checked for:

1. general completeness
2. readability
3. usage of appropriate procedures
4. appropriate instrument calibration and maintenance
5. reasonableness in comparison to present and past data collected
6. correct sample locations

7. correct calculations and interpretations

17.1.3 Field Data Reporting

Where appropriate, field data forms and calculations will be processed and included in appendices to the reports. The original field logs, documents, and data reductions will be kept in the project file.

17.2 Laboratory Data Reduction, Review, and Reporting

17.2.1 Laboratory Data Reduction

Laboratory analytical data will be directly transferred from the instrument to the computer or the data reporting form (as applicable). Calculation of sample concentrations will be performed using the appropriate regression analysis program, response factors, and dilution factors (where applicable).

17.2.2 Laboratory Data Review

All data will be subject to multi-level review by the laboratory. The group leader will review all data reports prior to release for final data report generation, and the laboratory director will review a cross section of the final data reports. All final data reports are reviewed by the laboratory QAM prior to shipment.

If discrepancies or deficiencies exist in the analytical results, then corrective action will be taken, as discussed in Section 17. Deficiencies discovered as a result of internal data review, as well as the corrective actions to be used to rectify the situation, will be documented on a Corrective Action Form. This form will be submitted to the Project Manager.

18. Validation and Verification Methods

Data validation entails a review of the QC data and the raw data to verify that the laboratory was operating within required limits, the analytical results are correctly transcribed from the instrument, and which, if any, environmental samples are related to any out-of-control QC samples. The objective of data validation is to identify any questionable or invalid laboratory measurements.

Data validation will consist of data screening, checking, reviewing, editing, and interpreting to document analytical data quality and determine if the quality is sufficient to meet the DQOs. The data validation will also include a review of completeness and compliance, including the elements provided in **Table 4**.

The data validator will use the most recent versions of the USEPA functional guidelines for data validation with NYSDEC ASP 2000 Revision, QA/QC and reporting deliverables requirements available at the time of project initiation and for the entire duration of the project, as guidance, where appropriate.

The data validator will verify reduction of laboratory measurements and laboratory reporting of analytical parameters are in accordance with the procedures specified for each analytical method (i.e., perform laboratory calculations in accordance with the method-specific procedure).

If required, upon receipt of the laboratory data, the following reduction, validation, and reporting scheme will be executed by the data validator:

1. Laboratory data will be screened to confirm that the necessary QC procedures (e.g., detection limit verification, initial calibration, continuing calibration, duplicates, spikes, blanks) have been performed. QC information not included or of insufficient frequency will be identified in the validation report, including a discussion of the implications.
2. QC supporting information will subsequently be screened to identify QC data outside established control limits. If out-of-control data are discovered, documentation of appropriate corrective action will be reviewed. Out-of-control data without appropriate corrective action shall result in designation of the affected data as qualified or rejected, as appropriate.

It should be noted that the existence of qualified results does not automatically invalidate data. This point is repeatedly emphasized in the USEPA functional guidelines for data validation and is inherently acknowledged by the very existence of the data validation/flagging guidelines. The goal to produce the best possible data does not necessarily mean producing data without QC qualifiers. Qualified data can provide useful information.

Resolution of any issues regarding laboratory performance or deliverables will be handled between the data validator, laboratory Project Manager, and the Arcadis Project Manager.

Upon completion of the data validation (if required), a data usability summary report addressing the following topics will be prepared.

1. assessment of the data package
2. description of any protocol deviations
3. failures to reconcile reported and/or raw data
4. assessment of any compromised data
5. laboratory case narrative
6. overall appraisal of the analytical data
7. table of site name, sample quantities, data submitted to the laboratory, year of protocol used, matrix, and fractions analyzed

19. Reconciliation with User Requirements

The data results will be examined to determine the performance that was achieved for each data usability criteria. The performance will then be compared with the project objectives. Of particular note will be samples at or near action levels. All deviations from objectives will be noted. Additional action may be warranted when performance does not meet performance objectives for critical data. Action options may include any or all of the following:

- retrieval of missing information
- request for additional explanation or clarification
- reanalysis of sample from extract (when appropriate)
- recalculation or reinterpretation of results by the laboratory

These actions may improve the data quality, reduce uncertainty, and may eliminate the need to qualify or reject data.

If these actions do not improve the data quality to an acceptable level, the following actions may be taken:

- extrapolation of missing data from existing data points
- use of historical data
- evaluation of the critical/noncritical nature of the sample

If the data gap cannot be resolved by these actions, an evaluation of the data bias and potential for false negatives and positives can be performed. If the resultant uncertainty level is unacceptable, then the following action must be taken:

- additional sample collection and analysis

20. References

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Tables

Table 1
Parameter, Methods, and Quantitation Limits

Quality Assurance Project Plan
Rochester Gas & Electric
Riverside Drive Former MGP Site

Parameter	Quantitation Limit¹	
Volatile Organics Method 8260	Water (µg/L)	Soil (µg/kg)²
Chloromethane	5	5
Bromomethane	5	5
Vinyl Chloride	5	5
Chloroethane	5	5
Methylene Chloride	3	3
Acetone	5	5
Carbon Disulfide	5	5
1,1-Dichloroethylene	5	5
1,1-Dichloroethane	5	5
1,2-Dichloroethylene (total)	5	5
Chloroform	5	5
1,2-Dichloroethane	2	2
2-Butanone	5	5
1,1,1-Trichloroethane	5	5
Carbon Tetrachloride	2	2
Bromodichloromethane	1	1
1,2-Dichloropropane	1	1
cis-1,3-Dichloropropene	5	5
Trichloroethane	5	5
Dibromochloromethane	5	5
1,1,2-Trichloroethane	3	3
Benzene	1	1
trans-1,3-Dichloropropene	5	5
Bromoform	4	4
4-Methyl-2-pentanone	5	5
2-Hexanone	5	5
Tetrachloroethene	1	1
Toluene	5	5
1,1,2,2-Tetrachloroethane	1	1
Chlorobenzene	5	5
Ethylbenzene	4	4
Styrene	5	5
2-Chloroethyl Vinyl Ether	5	5
1,2-Dichlorobenzene	5	5
1,3-Dichlorobenzene	5	5
1,4-Dichlorobenzene	5	5
Vinyl Acetate	5	5
Total Xylenes	5	5
Semivolatile Organics Method 8270	Water (µg/L)	Soil (µg/kg)
1,2,4-Trichlorobenzene	1	33
1,2-Dichlorobenzene	10	330
1,2-Diphenylhydrazine	10	330
1,3-Dichlorobenzene	10	330
1,4-Dichlorobenzene	10	330
1,4-Dioxane	10	330
2,4,5-Trichlorophenol	10	330
2,4,6-Trichlorophenol	10	330
2,4-Dichlorophenol	10	330

Table 1
Parameter, Methods, and Quantitation Limits

Quality Assurance Project Plan
Rochester Gas & Electric
Riverside Drive Former MGP Site

Parameter Semivolatile Organics Method 8270 (Cont'd.)	Quantitation Limit ¹	
	Water (µg/L)	Soil (µg/kg)
2,4-Dimethylphenol	10	330
2,4-Dinitrophenol	40	1300
2,4-Dinitrotoluene	2	67
2,6-Dinitrotoluene	2	67
2-Chloronaphthalene	10	330
2-Chlorophenol	10	330
2-Methylnaphthalene	10	330
2-Methylphenol	10	330
2-Nitroaniline	20	670
2-Nitrophenol	10	330
3,3'-Dichlorobenzidene	20	670
3-Nitroaniline	20	670
4,6-Dinitro-2-methylphenol	40	1300
4-Bromophenyl-phenylether	10	330
4-Chloro-3-methylphenol	10	330
4-Chloroaniline	10	330
4-Chlorophenyl-phenylether	10	330
4-Methylphenol	10	330
4-Nitroaniline	20	670
4-Nitrophenol	40	1300
Acenaphthene	10	330
Acenaphthylene	10	330
Acetophenone	10	330
Aniline	10	330
Anthracene	10	330
Atrazine	10	330
Benzaldehyde	10	330
Benzidine	40	1300
Benzo(a)anthracene	1	33
Benzo(a)pyrene	1	33
Benzo(b)fluoranthene	1	33
Benzo(g,h,i)perylene	10	330
Benzo(k)fluoranthene	1	33
Benzoic Acid	10	330
Benzyl Alcohol	10	330
bis(2-chloroethoxy)methane	10	330
bis(2-chloroethyl)ether	1	33
bis(2-chloroisopropyl)ether	10	330
bis(2-ethylhexyl)phthalate	10	330
Butylbenzylphthalate	10	330
Caprolactam	10	330
Carbazole	10	330
Chrysene	10	330
Dibenzo(a,h)anthracene	1	33
Dibenzofuran	10	330
Diethylphthalate	10	330
Dimethylphthalate	10	330
Di-n-butyl phthalate	10	330
Di-n-octyl phthalate	10	330

Table 1
Parameter, Methods, and Quantitation Limits

Quality Assurance Project Plan
Rochester Gas & Electric
Riverside Drive Former MGP Site

Parameter	Quantitation Limit¹	
Semivolatiles	Water	Soil
Method 8270 (Cont'd.)	(µg/L)	(µg/kg)
Diphenyl	10	330
Fluoranthene	10	330
Fluorene	10	330
Hexachlorobenzene	1	33
Hexachlorobutadiene	2	67
Hexachlorocyclopentadiene	10	330
Hexachloroethane	1	33
Indeno(1,2,3-cd)pyrene	1	33
Isophorone	10	330
N,N-Dimethylaniline	1	33
Naphthalene	10	330
Nitrobenzene	1	33
N-Nitrosodimethylamine	10	330
N-Nitroso-di-n-propylamine	1	33
N-Nitrosodiphenylamine	10	330
Pentachlorophenol	40	1300
Phenanthrene	10	330
Phenol	10	330
Pyrene	10	330
Pyridine	10	330
TAL Metals (6010/7470)	Water	Soil
	(µg/L)	(µg/kg)
Aluminum	--	40
Antimony	--	2
Arsenic	--	1
Barium	--	40
Beryllium	--	0.4
Cadmium	--	1
Calcium	--	1000
Chromium	--	2
Cobalt	--	10
Copper	--	5
Iron	--	30
Lead	--	1
Magnesium	--	1000
Manganese	--	3
Mercury	--	0.033
Nickel	--	8
Potassium	--	1000
Selenium	--	1
Silver	--	2
Sodium	--	1000
Thallium	--	2
Vanadium	--	10
Zinc	--	6
Supplemental Parameters	Water	Soil
	(µg/L)	(mg/kg)
Total Organic Carbon (Lloyd Kahn)	NA	100
Chloride Method 325.3	1,000	--

Table 1
Parameter, Methods, and Quantitation Limits

Quality Assurance Project Plan
Rochester Gas & Electric
Riverside Drive Former MGP Site

Parameter	Quantitation Limit ¹	
	Water (µg/L)	Soil (mg/kg)
Supplemental Parameters (Cont'd.)		
Nitrate Method 353.2	100	--
Ammonia Method 350.1	100	--
Iron Method 200.7	150	--
Manganese Method 200.7	15	--
Sulfate Method 375.4	5,000	--
Sulfide Method 376.1	1,000	--
Orthophosphate Method 365.2	30	--
Alkalinity Method 310.1	5,000	--
Methane Method 3810	--	--
Reactive Sulfide	--	20
Reactive Cyanide	--	25
TCLP Benzene	--	1
Total Sulfur	--	50
Chemical Oxygen Demand	--	120

Notes:

¹Specific quantitation limits are highly matrix dependent. The quantitation limits listed are for guidance and may not always be achievable due to matrix interference.

²Quantitation limits for source materials/soil/sediment are based on wet weight. The quantitation limits calculated by the laboratory for source materials/soil/sediment (calculated on a dry weight basis) will be higher.

µg/L = micrograms per liter

µg/kg = micrograms per kilogram

mg/kg = milligrams per kilogram

Table 2
Environmental and Quality Control Analyses

Quality Assurance Project Plan
Rochester Gas & Electric
Riverside Drive Former MGP Site

Environmental Sample Matrix/ Laboratory Parameters	Field QC Analyses					Laboratory QC Analyses ^{1,2}	
	Trip Blank	Field Duplicate	Rinse Blank ³	MS	MSD	MSB	Lab Duplicate
Soils							
Volatile Organics Method 8260	--	1/20	1/20	1/20	1/20	1/20	--
Semivolatile Organics Method 8270	--	1/20	1/20	1/20	1/20	1/20	--
Polychlorinated Biphenyls (PCBs) Method 8082	--	1/20	1/20	1/20	1/20	1/20	--
TAL Metals Method 6010 (Mercury Method 7470/7471) (Cyanide Method 9010)	--	1/20	1/20	1/20	1/20	1/20	--
Total Sulphur Bomb Method D129	--	--	--	--	--	--	--
Chemical Oxygen Demand Hach Method 8034	--	--	--	--	--	--	--
Total Organic Carbon (TOC) (Lloyd Kahn)	--	1/20	--	1/20	1/20	1/20	--
TCLP Benzene (1311/8260)	--	--	--	--	--	--	--

Table 2
Environmental and Quality Control Analyses

**Quality Assurance Project Plan
Rochester Gas & Electric
Riverside Drive Former MGP Site**

Environmental Sample Matrix/ Laboratory Parameters	Field QC Analyses					Laboratory QC Analyses ^{1,2}	
	Trip Blank	Field Duplicate	Rinse Blank ³	MS	MSD	MSB	Lab Duplicate
Reactive Sulfide Method SW846 Chapter 7.3	--	--	--	--	--	--	--
Reactive Cyanide Method SW846 Chapter 7.3	--	--	--	--	--	--	--
Groundwater							
Volatile Organics Method 8260	1/cooler	1/20	--	1/20	1/20	1/20	--
Semivolatile Organics Method 8270	--	1/20	--	1/20	1/20	1/20	--
Nitrate Method 353.2	--	1/20	--	--	--	--	--
Ammonia Method 350.1	--	1/20	--	--	--	--	--
Total Iron & Manganese Method 200.7	--	1/20	--	--	--	--	--
Dissolved Iron & Manganese Method 200.7	--	1/20	--	--	--	--	--
Sulfate Method 375.4	--	1/20	--	--	--	--	--
Sulfide Method 376.1	--	1/20	--	--	--	--	--
Orthophosphate Method 365.2	--	1/20	--	--	--	--	--

**Table 2
Environmental and Quality Control Analyses**

**Quality Assurance Project Plan
Rochester Gas & Electric
Riverside Drive Former MGP Site**

Environmental Sample Matrix/ Laboratory Parameters	Field QC Analyses					Laboratory QC Analyses ^{1,2}	
	Trip Blank	Field Duplicate	Rinse Blank ³	MS	MSD	MSB	Lab Duplicate
Alkalinity Method 310.1	--	1/20	--	--	--	--	--
Methane Method 3810	--	1/20	--	--	--	--	--

Notes:

¹ The number of laboratory QC analyses is based on the frequencies given for the number of environmental samples estimated, not including field QC analyses (i.e., rinse and trip blanks).

² Laboratory QC analyses are listed only for those parameters that must be performed on site samples. The laboratory is required to analyze QC samples for the remaining parameters at the frequency listed in the associated analytical method.

³ Rinse blank samples will be collected only when nondedicated sampling devices are used. Rinse blanks will be collected at a frequency of one per day of use or one per 20 samples, whichever is less.

QC = quality control

MS = matrix spike

MSB = matrix spike blank

MSD = matrix spike duplicate

TAL = Target Analyte List.

TOC = total organic carbon

TCLP = toxicity characteristic leaching procedure

DNAPL = dense nonaqueous phase liquid

Table 3
Sample Containers, Preservation, and Holding Times Requirements

Quality Assurance Project Plan
Rochester Gas & Electric
Riverside Drive Former MGP Site

Parameter	Container	Preservation	Maximum Holding Time from VTSR
Groundwater Samples			
Volatile Organics	(2) 40-mL Teflon®-lined septa (glass)	Cool 4°C HCl to pH <2	7 days (unpreserved) 10 days (preserved)
Semivolatile Organics	(2) 1-liter containers (glass)	Cool 4°C	5 days extraction; 40 days analysis
Nitrate	(1) 500-mL container (plastic/glass)	Cool 4°C	48 hours (from collection)
Ammonia	(1) 500-mL container (plastic/glass)	H ₂ SO ₄ Cool 4°C	26 days
Iron	(1) 1,000-mL container (plastic/glass)	HNO ₃ Cool 4°C	6 months
Manganese	(1) 1,000-mL container (plastic/glass)	HNO ₃ Cool 4°C	6 months
Sulfate	(1) 500-ml container (plastic/glass)	Cool 4°C	26 days
Sulfide	(1) 500-mL container (plastic/glass)	Cool 4°C Zinc acetate NaOH to pH>12	5 days
Orthophosphate	(1) 500-mL container (plastic/glass)	Cool 4°C Filter Immediately	48 hours (from collection)
Alkalinity	(1) 500-mL container (plastic/glass)	Cool 4°C	12 days
Methane	(2) 40-mL Teflon®-lined septa (glass)	Cool 4°C HCl to pH<2	12 days
Soil Samples			
Volatile Organics	(1) 4-oz container (glass)	Cool 4°C	10 days
Semivolatile Organics	(1) 4-oz container (glass)	Cool 4°C	5 days extraction; 40 days analysis
TAL Metals	(1) 250-mL wide mouth container (glass)	Cool 4°C	180 days; 28 days for mercury; 14 days for cyanide
TOC	(1) 8-oz container (glass)	Cool 4°C	14 days
Total Sulfur	(1) 10-oz container (glass)	Cool 4°C	--
Reactive Sulfide	(1) 8-oz container (glass)	Cool 4°C	5 days
Reactive Cyanide	(1) 8-oz container (glass)	Cool 4°C	12 days
TCLP Benzene	(1) 4-oz container (glass)	Cool 4°C	10 days
Chemical Oxygen Demand	(2) 4-oz wide mouth container (glass)	Cool 4°C	26 days

Table 3
Sample Containers, Preservation, and Holding Times Requirements

Quality Assurance Project Plan
Rochester Gas & Electric
Riverside Drive Former MGP Site

Notes:

VTSR = Verifiable time of sample receipt. Samples must be delivered to laboratory within 48 hours from day of collection.

mL = milliliters

oz = ounce

°C = degrees Celsius

TOC = total organic carbon

TCLP = toxicity characteristic leaching procedure

H₂SO₄ = sulfuric acid

HNO₃ = nitric acid

NaOH = sodium hydroxide

Table 4
Data Validation Checklist – Laboratory Analytical Data

**Quality Assurance Project Plan
Rochester Gas & Electric
Riverside Drive Former MGP Site**

REVIEW FOR COMPLETENESS	
1.	Chain of custody forms included.
2.	Sample preparation and analysis summary tables included.
3.	Quality assurance/quality control (QA/QC) summaries of analytical data included.
4.	Relevant calibration data included with analytical data.
5.	Instrument and method performance data included.
6.	Method detection limits documented.
7.	Data report forms of examples for calculations of concentrations.
8.	Raw data used in identification and quantification of the analysis required.
REVIEW OF COMPLIANCE	
1.	Data package completed.
2.	Quality Assurance Project Plan requirements for data met.
3.	QA/QC criteria met.
4.	Instrument type and calibration procedures met.
5.	Initial and continuing calibration met.
6.	Data reporting forms completed.
7.	Problems and corrective actions documented.



Attachment C-1

Sample Chain of Custody Form



CHAIN OF CUSTODY & LABORATORY ANALYSIS REQUEST FORM

ID#:

Lab Work Order #

Page ____ of ____

Send Results to: Contact & Company Name: _____ Telephone: _____ Address: _____ Fax: _____ City _____ State _____ Zip _____ E-mail Address: _____		PARAMETER ANALYSIS & METHOD										Keys Container Information Key: 1. 40 ml Vial 2. 1 L Amber 3. 250 ml Plastic 4. 500 ml Plastic 5. Encore 6. 2 oz Glass 7. 4 oz Glass 8. 8 oz Glass 9. Other: _____ 10. Other: _____	
												Preservation Key: A. H ₂ SO ₄ B. HCl C. HNO ₃ D. NaOH E. None F. Other: _____ G. Other: _____ H. Other: _____	
Project Name/Location (City, State): _____ Project #: _____ Sampler's Printed Name: _____ Sampler's Signature: _____		Collection _____ Time (✓) _____											

REMARKS

Special Instructions/Comments: ☐ Special QA/QC Instructions(✓):

Laboratory Information and Receipt		Relinquished By	Received By	Relinquished By	Laboratory Received By
Lab Name:	Cooler Custody Seal (✓)	Printed Name:	Printed Name:	Printed Name:	Printed Name:
☐ Cooler packed with ice (✓)	☐ Intact ☐ Not Intact	Signature:	Signature:	Signature:	Signature:
Specify Turnaround Requirements:	Sample Receipt:	Firm:	Firm/Courier:	Firm/Courier:	Firm:
Shipping Tracking #:	Condition/Cooler Temp: _____	Date/Time:	Date/Time:	Date/Time:	Date/Time:



Appendix D

Community Air Monitoring Plan

APPENDIX D
New York State Department of Health
Generic Community Air Monitoring Plan

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

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

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

Community Air Monitoring Plan

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

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

Periodic monitoring for VOCs will be required during non-intrusive activities such as the collection of soil and sediment samples or the collection of groundwater samples from existing monitoring wells. "Periodic" monitoring during sample collection might reasonably consist of taking a reading upon arrival at a sample location, monitoring while opening a well cap or overturning soil, monitoring during well baling/purgins, and taking a reading prior to leaving a sample location. In some instances, depending upon the proximity

of potentially exposed individuals, continuous monitoring may be required during sampling activities. Examples of such situations include groundwater sampling at wells on the curb of a busy urban street, in the midst of a public park, or adjacent to a school or residence.

VOC Monitoring, Response Levels, and Actions

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

- If the ambient air concentration of total organic vapors at the downwind perimeter of the work area or exclusion zone exceeds 5 parts per million (ppm) above background for the 15-minute average, work activities must be temporarily halted and monitoring continued. If the total organic vapor level readily decreases (per instantaneous readings) below 5 ppm over background, work activities can resume with continued monitoring.
- If total organic vapor levels at the downwind perimeter of the work area or exclusion zone persist at levels in excess of 5 ppm over background but less than 25 ppm, work activities must be halted, the source of vapors identified, corrective actions taken to abate emissions, and monitoring continued. After these steps, work activities can resume provided that the total organic vapor level 200 feet downwind of the exclusion zone or half the distance to the nearest potential receptor or residential/commercial structure, whichever is less – but in no case less than 20 feet, is below 5 ppm over background for the 15-minute average.
- If the organic vapor level is above 25 ppm at the perimeter of the work area, activities must be shutdown.

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

Particulate Monitoring, Response Levels and Actions

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

- If the downwind PM-10 particulate level is 100 micrograms per cubic meter (mcg/m^3) greater than background (upwind perimeter) for the 15-minute period or if airborne dust is observed leaving the work area, then dust suppression techniques must be employed. Work may continue with dust suppression techniques provided that downwind PM-10 particulate levels do not exceed $150 \text{ mcg}/\text{m}^3$ above the upwind level and provided that no visible dust is migrating from the work area.
- If, after implementation of dust suppression techniques, downwind PM-10 particulate levels are greater than $150 \text{ mcg}/\text{m}^3$ above the upwind level, work must be stopped and a re-evaluation of activities initiated. Work can resume provided that dust suppression measures and other controls are successful in reducing the downwind PM-10 particulate concentration to within $150 \text{ mcg}/\text{m}^3$ of the upwind level and in preventing visible dust migration.

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



Appendix E

Citizen Participation Plan

Rochester Gas & Electric

Site Characterization Work Plan

Appendix E - Citizen Participation Plan

112 Riverside Drive Former MGP Site
Geneseo, New York

March 2016



Citizen Participation Plan

112 Riverside Drive Former
MGP Site

Prepared for:
Rochester Gas & Electric

Prepared by:
Arcadis of New York, Inc.
295 Woodcliff Drive
Third Floor
Suite 301
Fairport
New York 14450
Tel 585 385 0090
Fax 585 385 4198

Our Ref.:
B0013140.0000

Date:
March 2016

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1.	Introduction	1
1.1	Overview	1
1.2	Purpose	1
2.	Manufactured Gas Plants	2
3.	Project Steps	3
3.1	Investigation	3
3.2	Remedial Design	3
3.3	Remediation	3
4.	Site Background and Environmental Activities	4
4.1	Site Background	4
4.1.1	Location and Description	4
4.1.2	Site History	4
4.1.3	Environmental Activities	5
5.	Citizen Participation Activities	6
5.1	Completed Citizen Participation Activities	6
5.2	Anticipated Future Citizen Participation Activities	6
6.	Project Contacts	7
7.	Site Contact List	8
8.	Document Repository	12
9.	Interested Public	13
10.	References	14

Figures

1	Site Location Map
2	Site Map
3	Street Map

1. Introduction

1.1 Overview

Citizen participation is an integral component of remedial programs in New York State. Input from affected or interested individuals and organizations on the remedial program helps ensure outcomes that account for both technical and human concerns for protecting public health and the environment. A project-specific plan is a mechanism to inform and involve community residents, public and private leaders, and other stakeholders. This *Citizen Participation Plan* (CPP) documents the planned project-specific public outreach activities and resources organized for the remedial program associated with the RGE 112 Riverside Drive Former Manufactured Gas Plant (MGP) site located in Geneseo, New York (site).

1.2 Purpose

The primary purpose of this CPP is to outline the communication methods that, based on applicable New York State law and New York State Department of Environmental Conservation (NYSDEC) regulations and guidance, provide for constructive communication of program activities between the stakeholders and other interested parties. This CPP has been prepared in accordance with the NYSDEC guidance document entitled “DER-23 *Citizen Participation Handbook for Remedial Programs*” (NYSDEC, 2010). This document includes methods intended to inform interested parties of program developments, elicit responses and public involvement and provide a central point of contact for inquiries regarding the remedial program for the Park Street Former MGP Site. This CPP presents the planned communication and outreach activities, describes how interested individuals and groups can participate in the remedial program, and provides a variety of reference materials to facilitate gaining access to project-specific information and management personnel.

Both the NYSDEC and RGE are committed to implementation of this CPP as required by 6 NYCRR Part 375, applicable NYSDEC guidance, and the NYSDEC Voluntary Cleanup Agreement No. V00731. As required by 6 NYCRR Part 375-1.10, NYSDEC and RGE will review and update this CPP to account for significant changes in the 112 Riverside Drive Former MGP Site remedial program.

2. Manufactured Gas Plants

Manufactured gas sites were used in the United States from the approximate 1800's to the approximate 1950's to produce a gas that could be distributed and used as fuel. Using a variety of processes, these plants used coal, or a mixture of coal, oil, and water to produce flammable gas for distribution to neighboring homes and businesses. Many of the byproducts of the gas production, such as coal tar (oily waste containing volatile and non-volatile chemicals), sludges, oils, ash, and other compounds are potentially hazardous to human health and the environment. The byproducts from this process were frequently disposed of directly at the plant site and can remain or migrate slowly, serving as a continuous source of soil and groundwater contamination.

3. Project Steps

3.1 Investigation

The site characterization investigation presented in the *Site Characterization Work Plan* (Arcadis, 2015) of the site is tentatively scheduled to take place during fall/winter 2015. The goal of the investigation will be to characterize the extent and degree of impacted soil, bedrock, and groundwater beneath the site. This will involve careful examination of regional surface and bedrock geology, knowledge of processes conducted at the former MGP and collection of localized qualitative and quantitative field data.

3.2 Remedial Design

A remedial design will be prepared following results from investigation activities, if site conditions warrant. Currently, no evidence exists that indicate MGP-related residuals exist at the site; therefore, the need for a remedial design has not been established.

3.3 Remediation

No previous formal environmental studies, interim remedial measures (IRMs), or investigations have been identified at the site; therefore, no information on the potential presence of MGP-related impacts at the site exists. Based on the topography of the site, any MGP-related releases to soil, groundwater, or bedrock would migrate to the northwest, towards the base of the hillside and the Genesee River.

4. Site Background and Environmental Activities

4.1 Site Background

4.1.1 Location and Description

The Riverside Drive former MGP site is located at 112 Riverside Drive at the northwest side of the Village of Geneseo, Livingston County, New York (**Figure 1**). The Riverside Drive site covers approximately 1 acre near the base of the hill on which the village is situated (**Figure 2**). A street map showing streets within a quarter mile radius of the site is provided as **Figure 3**. The Riverside Drive site is bound on the north by an apartment building, to the east by a parking lot and residential properties, to the south by a residential property and Court Street, and to the west by Riverside Drive and commercial buildings and a parking lot. (Note that the site is identified by the NYSDEC environmental database as the Court Street MGP site).

The site, which is owned and used by a commercial firm known as FTT Manufacturing, a small commercial manufacturing and machining company. Most of the site is covered by a single structure, which incorporates the two-story gas production building. The original MGP production building is part of the west side of the building, with a newer commercial building attached to the east side, cut into the hillside. Paved parking areas surround the building on the west, south, and east sides. The new portion of the building appears to cover most of the footprint of the former gas holder.

4.1.2 Site History

According to GEI Consultants (December 2014), the Riverside Drive MGP was built sometime between 1900 and 1906 (it is first shown on the 1906 Sanborn map). The Riverside Drive MGP appears to have started production in 1906 (the year that the Park Street MGP was shut down), and operated to sometime between 1913 and 1930. The 1906 Sanborn shows the plant as consisting of a single gas plant building and a single gas holder located southeast of the building. From north to south the building contained a coal house, retorts, boiler/ furnace, condenser, purifying house, and meter room. Based on the mapped divisions within the building and the existence of a single gas holder, it is likely that the plant used the coal carbonization method of gas production. A railroad spur ran along the west side of the building and connected to a north-south railroad line that was located where Riverside Drive exists today. Several unnamed structures existed immediately north of the MGP plant. No significant changes to the MGP facility or immediate surroundings are shown on the 1913 Sanborn; however, three oil storage tanks owned by Standard Oil of New York are shown north of the site. The gas holder is not shown on the 1930 Sanborn map and the building is labeled as "miscellaneous storage". The 1930 Sanborn map also shows a petroleum tank farm, including four steel bulk storage tanks and filling station owned by Standard Oil of New York located immediately north of the site where the unnamed structures previously existed. No changes to the former MGP structure or immediate surroundings are shown on the 1938 Sanborn map.

The 1949 Sanborn map identifies the former gas building as “fertilizer storage”, and the petroleum storage facility is replaced by a small building identified as a manufacturer of small transformers. The railroad spur and north-south line are also absent in the 1948 map, and a building formerly used as a passenger depot is labeled as “storage and office”. The railroad grade appears to have become Riverside Drive. It is unknown at when the former MGP building was expanded to its current footprint. The building footprint was in its current configuration when FTT Manufacturing acquired the property in October 1994.

4.1.3 Environmental Activities

To achieve the investigation goals, field work will be required to collect pertinent analytical and non-analytical (lithologic) data. Environmental activities to collect this data will initially include a survey of the site layout and utilities and the following:

- Advancement of soil borings
- Installation of monitoring wells
- Coring/investigation of bedrock
- Soil and groundwater sampling
- Collection of soil vapor samples

In addition, excavation of test pits and soil vapor sampling may be conducted as part of future investigation activities.

5. Citizen Participation Activities

This section presents the specific citizen participation and outreach activities planned for implementation during the remedial program in accordance with 6 NYCRR Part 375 and with NYSDEC Program Policy DER-23, *Citizen Participation Handbook for Remedial Programs* (NYSDEC, 2010). Operating under project-specific citizen participation goals, clearly defined objectives will be achieved by implementing a range of communication tools and methods. The planned activities are geared toward making project-specific information (e.g., work plans, technical reports, information sheet summaries) available to the public; facilitating communication among stakeholders including the creation of contact lists; scheduling and conducting public meetings; establishing comment periods; and notifying the public of document availability, public meetings, comment periods, and major program milestones.

5.1 Completed Citizen Participation Activities

No citizen participation activities have been completed to date.

5.2 Anticipated Future Citizen Participation Activities

Anticipated future citizen participation activities to foster effective and open communication among stakeholders and interested parties, RGE, the New York State Department of Health (NYSDOH) and the NYSDEC, include:

- Participation of interested public in the decision making process for remedial actions.
- Public participation that reflects the diversity of interests and perspectives found within a community.
- Public comments at formal milestones, in addition to public input throughout the site remedial process.
- Communication among interested parties and regulatory agencies that promotes exchange of information and strengthens trust among the parties.



Citizens Participation Plan

112 Riverside Drive Former
MGP Site

6. Project Contacts

The following is a list of project contacts overseeing the 112 Riverside Drive Former MGP Site project. For questions related to any aspect of the former MGP Site, please contact the following staff:

NYSDEC Project Manager (for project-related issues)

Sarah Saucier
NYSDEC
Division of Environmental Remediation
625 Broadway, 11th Floor
Albany, New York 12233-7014
Phone: 518.402.9662
Fax: 518.402.9679

NYSDOH Representative (for site-related health concerns)

Anthony Perretta
NYSDOH
ESP Corning Tower, Rm 1787
Albany, New York 12237
Phone: 518.402.7860

RGE Project Manager (RGE Representative)

Christopher Keipper, PMP
RGE
1300 Scottsville Road
Rochester, New York 14624
Phone: 585.771.4560



Citizens Participation Plan

112 Riverside Drive Former
MGP Site

7. Site Contact List

The following is a list of contacts in the vicinity of the site and individuals/entities who would otherwise have the potential to be affected by field investigation activities. The intent of this list is to identify individuals/organizations to receive fact sheets and updates on the status of the project, and to all listed parties who wish to be notified.

Elected Officials

Livingston County

Chief Executive Officer (Chairman of the Board of Supervisors)

Eric R. Gott
PO Box 43
Livonia, New York 14487
Phone: 585.243.7030

Planning Board Chairperson

Angela Ellis
Livingston County Government Center
6 Court Street, Room 305
Geneseo, New York 14454
Phone: 585.243.7550

Town of Geneseo

Chairman of the Board of Supervisors

William Wadsworth
4630 Millennium Drive
Geneseo New York 14454
Phone: 585.991.5005

Planning Board Chairperson

Dwight Folts
9 Oak Street
Geneseo, New York 14454
Phone: 585.243.4904

Village of Geneseo

Mayor

Richard Hatheway
119 Main Street
Geneseo New York 14454
Phone: 585.243.1177



Citizens Participation Plan

112 Riverside Drive Former
MGP Site

Planning Board Chairperson

David Woods
119 Main Street
Geneseo New York 14454
Phone: 585.243.1177

Public Water Supplier

Village of Geneseo Water and Sewer Department

275 Riverside Drive
Geneseo, New York 14454
Director: Steve McTarnaghan
Phone: 585.243.3220

School/Day Care Center

Geneseo Central School District

4050 Avon Rd
Geneseo, New York 14454
Superintendent: Tim Hayes
Elementary Principal: RJ Chesterton
Middle & High School Principal: Michael Salatel
Phone: 585.243.3450

Kid Start Daycare Center

SUNY Geneseo Campus
Holcomb Building
Geneseo, New York
Phone: 585.245.5686

Geneseo Nursery School

31 Center Street
Geneseo, New York 14454
Director: Megan Conklin
Phone: 585.243.0669

Adjacent Properties

LB Riverside Corp.
Thomas LaGrou
118 Riverside Drive
Geneseo, New York 14454



Citizens Participation Plan

112 Riverside Drive Former
MGP Site

86 Court Street Geneseo, LLC.
High Street Property Management, LLC
Rocco Dragani
102 Riverside Drive
Geneseo, New York 14454

21 Orchard St, LLC
No contact identified
21 Orchard Street
Geneseo, New York 14454

G&D Enterprises NY, LLC
Gary Kone
17 Orchard Street
Geneseo, New York 14454

Green Apartments, LLC
John Zmich
15 Orchard Street
Geneseo, New York 14454

Those Guys, Inc.
Kevin Licari
11 Orchard Street
Geneseo, New York 14454

Big Tree Lumber Co.
Livonia Lumber Co. Inc.
Ralph Parker
102 & 104 Court Street
Geneseo, New York 14454

G&D Enterprises NY, LLC
Gary Kone
96 Court Street
Geneseo, New York 14454

Geneseo Highlands Apartments
Related Management Co
Maurie Gambetta
Meadow Drive
Geneseo NY 14454

Scott Kipphut
4359 Lower Court St
Geneseo, NY 14454



Citizens Participation Plan

112 Riverside Drive Former
MGP Site

Riverside Apartments
High Street Property Management, LLC
Rocco Dragani
4353 Lower Court St
Geneseo, NY 14454

VB Builders Corp
No contact identified
4356 Lower Court St
Geneseo, NY 14454

News Outlet

The Livingston County News
John Johnson
122 Main Street
Geneseo, NY 14454

The Genesee Sun
Josh Williams
75 Main Street
Geneseo, NY 14454

The Lamron
SUNY Geneseo's Student Newspaper
Taylor Frank
College Union Box 42
10 Macvittie Circle
SUNY Geneseo, NY 14454

8. Document Repository

Two document repositories will be established in publicly accessible locations that have accommodations necessary to house and make project-related documents available for community reference and review. The use of document repositories is intended to maximize public access to site information while minimizing abuse, destruction or theft of project documentation.

The document repositories for the Park Street Former MGP Site are:

Wadsworth Library
24 Center Street
Geneseo, New York 14454
585.243.0440

NYSDEC
Division of Environmental Remediation
625 Broadway, 11th Floor
Albany, New York 12233-7014
518.402.9662
Attn: Sarah Saucier

9. Interested Public

There are many ways to reach and communicate with the community and other interested parties as this CPP is implemented over the course of the remedial program. A variety of outreach tools and methods will be used to ensure proper communication with the interested parties that include various organizations, public and business leaders and a diverse assemblage of individuals of all ages, education backgrounds and cultures.

Interested parties will be informed and invited to participate in the planned citizen participation activities through appropriate means such as mailings to the contact list, legal notice in newspapers, press releases, information sheets and other documents made available in the document repository.

Specific public participation activities will be implemented as required by 6 NYCRR Part 375 and current NYSDEC guidance.

In addition, an availability session may be conducted by the NYSDEC prior to the start of environmental activities at the site. An availability session is an informal gathering of the NYSDEC staff, RGE representatives and the public. The NYSDEC will distribute public notification at least 2 weeks prior to the scheduled session. The availability session would be used to describe to the public the upcoming environmental activities. Sessions would provide citizens the opportunity to interact with project experts one-on-one.



Citizens Participation Plan

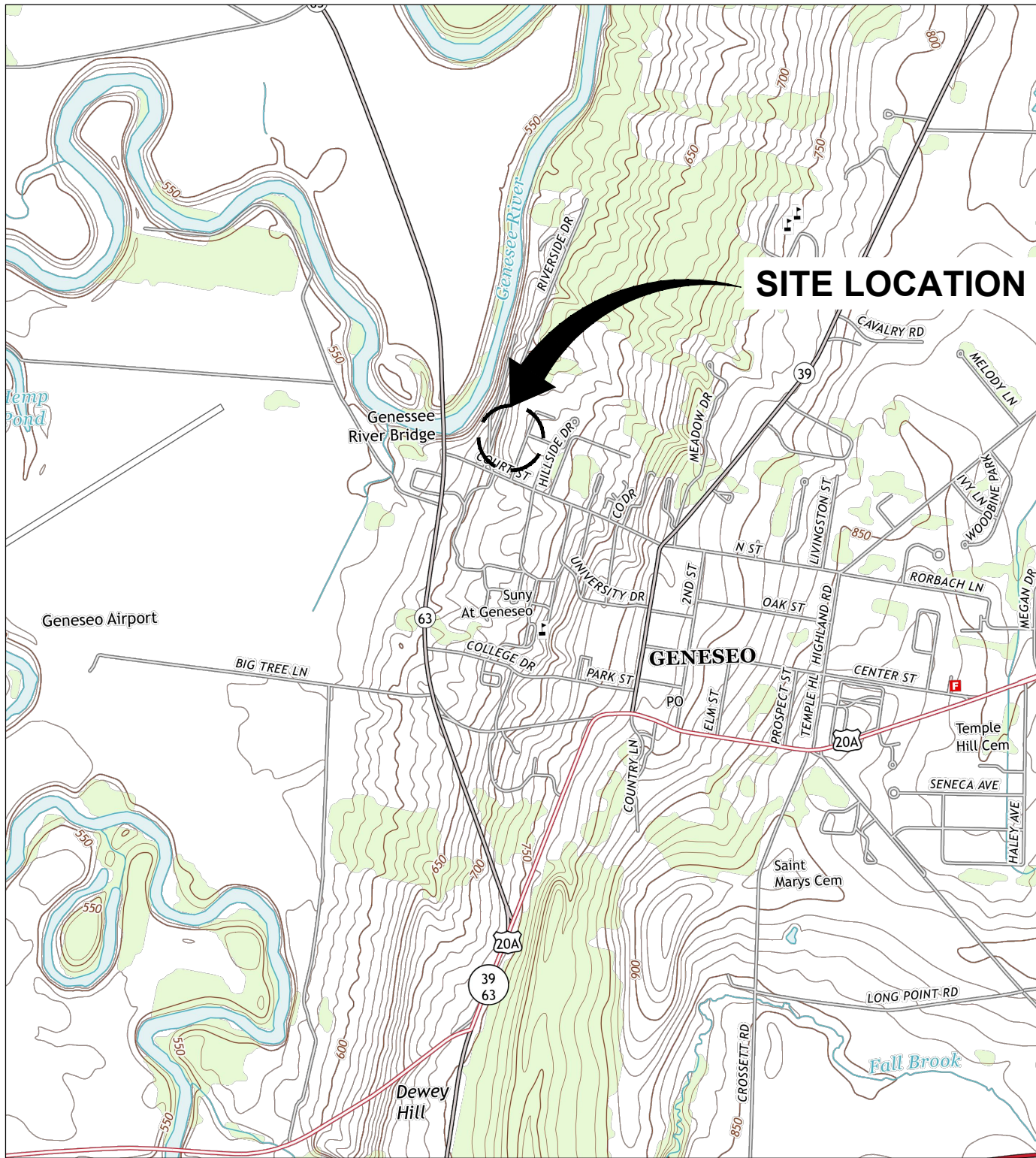
112 Riverside Drive Former
MGP Site

10. References

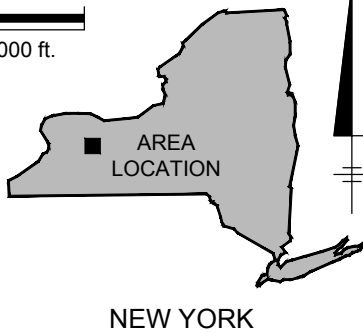
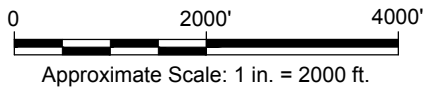
Arcadis. 2015. *Site Characterization Work Plan*. November, 2015

NYSDEC. 2010. *DER-23. Citizen Participation Handbook for Remedial Programs*. January, 2010.

Figures

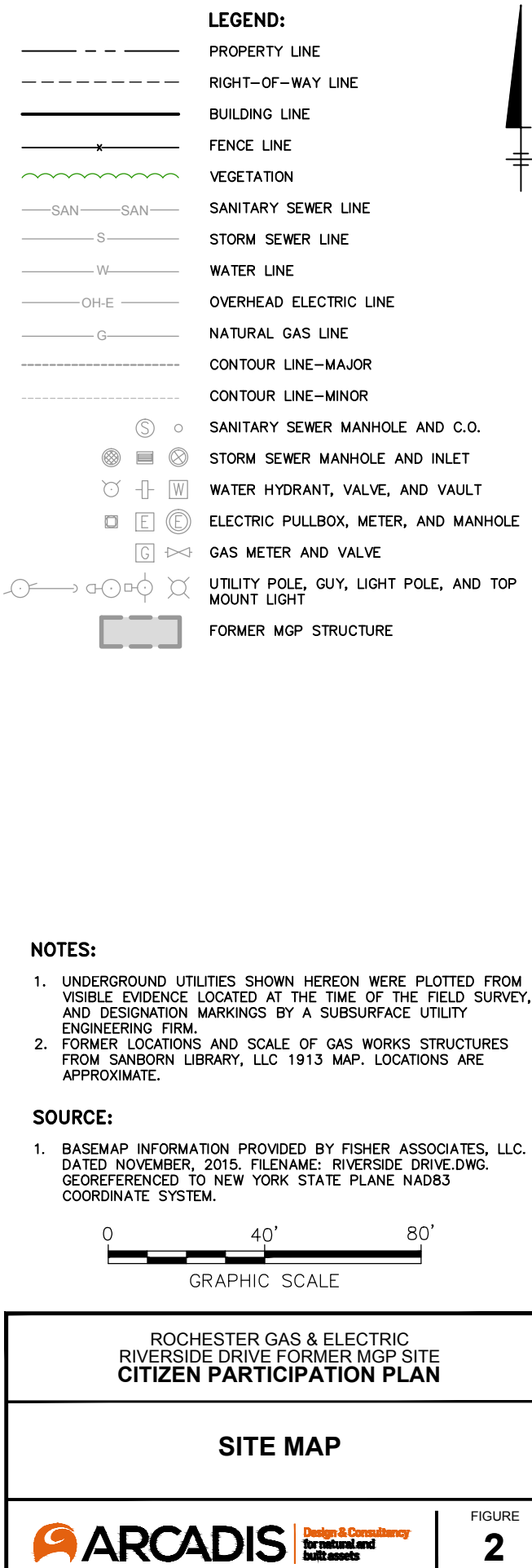


REFERENCE: BASE MAP USGS 7.5. MIN. TOPO. QUAD., GENESEO, NY, 2013



ROCHESTER GAS & ELECTRIC
RIVERSIDE DRIVE FORMER MGP SITE
SITE CHARACTERIZATION WORK PLAN

SITE LOCATION MAP



A horizontal graphic scale bar with alternating black and white segments. It is marked with '0' at the left end, '200'' at the midpoint, and '400'' at the right end. The text 'GRAPHIC SCALE' is centered below the bar.

STREET MAP



Appendix F

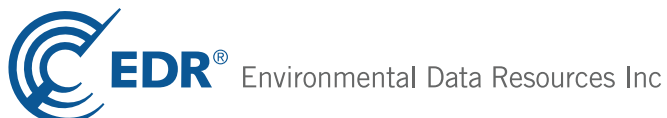
Environmental Data Resources
Report (on Compact Disc)

Geneseo Riverside Drive

112 Riverside Drive
Geneseo, NY 14454

Inquiry Number: 4416319.2s
September 21, 2015

The EDR Radius Map™ Report with GeoCheck®



6 Armstrong Road, 4th floor
Shelton, CT 06484
Toll Free: 800.352.0050
www.edrnet.com

TABLE OF CONTENTS

<u>SECTION</u>	<u>PAGE</u>
Executive Summary	ES1
Overview Map	2
Detail Map	3
Map Findings Summary	4
Map Findings	8
Orphan Summary	57
Government Records Searched/Data Currency Tracking	GR-1
 <u>GEOCHECK ADDENDUM</u>	
Physical Setting Source Addendum	A-1
Physical Setting Source Summary	A-2
Physical Setting Source Map	A-7
Physical Setting Source Map Findings	A-8
Physical Setting Source Records Searched	PSGR-1

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 1527-13) or custom requirements developed for the evaluation of environmental risk associated with a parcel of real estate.

TARGET PROPERTY INFORMATION

ADDRESS

112 RIVERSIDE DRIVE
GENESEO, NY 14454

COORDINATES

Latitude (North):	42.8036000 - 42° 48' 12.96"
Longitude (West):	77.8247000 - 77° 49' 28.92"
Universal Transverse Mercator:	Zone 18
UTM X (Meters):	269017.6
UTM Y (Meters):	4742661.0
Elevation:	596 ft. above sea level

USGS TOPOGRAPHIC MAP ASSOCIATED WITH TARGET PROPERTY

Target Property Map:	5939013 GENESEO, NY
Version Date:	2013

AERIAL PHOTOGRAPHY IN THIS REPORT

Portions of Photo from:	20110603
Source:	USDA

MAPPED SITES SUMMARY

Target Property Address:
112 RIVERSIDE DRIVE
GENESEO, NY 14454

Click on Map ID to see full detail.

MAP ID	SITE NAME	ADDRESS	DATABASE ACRONYMS	RELATIVE ELEVATION	DIST (ft. & mi.) DIRECTION
A1	GENESEO GAS LIGHT CO	COURT STREET	EDR MGP	Higher	1 ft.
A2	AMERICAN ROCK SALT C	10 LOWER COURT ST	RCRA NonGen / NLR, FINDS	Lower	2, 0.000,
A3	BUELL OIL COMPANY IN	111 RIVERSIDE DRIVE	AST	Lower	5, 0.001,
A4	BUELL OIL COMPANY IN	111 RIVERSIDE DRIVE	HIST UST, HIST AST, NY Spills	Lower	5, 0.001,
A5	BUELL OIL COMPANY IN	111 RIVERSIDE DRIVE	UST	Lower	5, 0.001,
B6	VITALE BROS CONTRACT	LOWER COURT STREET	UST, HIST UST	Higher	8, 0.002, South
B7	GENESEO VILLAGE STP	RIVERSIDE DRIVE	NY Spills	Higher	122, 0.023, SSW
B8	CHAMPION PRODUCTS IN	COURT ST	RCRA NonGen / NLR, MANIFEST	Lower	148, 0.028, SSW
9	HIGHLAND APARTMENT	95 MEADOW DRIVE	NY Spills	Higher	481, 0.091, East
C10	LEAST INC	COURT ST & RTE 63	RCRA NonGen / NLR, MANIFEST	Lower	625, 0.118, West
C11	CHAUVIN SAND & GRAVE	ROUTE 63 & COURT STR	NY Spills	Lower	625, 0.118, West
C12	ROUTE 63 & COURT STR	ROUTE 63 & COURT STR	NY Spills	Lower	625, 0.118, West
C13	LIVINGSTON COUNTY	CT & RTE 63	RCRA NonGen / NLR, MANIFEST	Lower	625, 0.118, West
14	NYS DOT BIN 1028700	RT 63 OVER GENESEE R	UST, RCRA NonGen / NLR, MANIFEST	Lower	679, 0.129, WNW
15	LIVINGSTON COUNTY SH	COURT AND MAIN STREE	LTANKS	Higher	2322, 0.440, ESE
D16	NYS ARMORY/NATIONAL	34 AVON ROAD ROUTE 3	LTANKS, NY Spills	Higher	2616, 0.495, ESE
D17	NYS ARMORY	ROUTE 39	LTANKS, NY Spills	Higher	2616, 0.495, ESE
18	GENESEO GAS WORKS	PARK AND MAIN STREET	EDR MGP	Higher	3245, 0.615, SSE

EXECUTIVE SUMMARY

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:

STANDARD ENVIRONMENTAL RECORDS

Federal NPL site list

NPL..... National Priority List
Proposed NPL..... Proposed National Priority List Sites
NPL LIENS..... Federal Superfund Liens

Federal Delisted NPL site list

Delisted NPL..... National Priority List Deletions

Federal CERCLIS list

FEDERAL FACILITY..... Federal Facility Site Information listing
CERCLIS..... Comprehensive Environmental Response, Compensation, and Liability Information System

Federal CERCLIS NFRAP site List

CERC-NFRAP..... CERCLIS No Further Remedial Action Planned

Federal RCRA CORRACTS facilities list

CORRACTS..... Corrective Action Report

Federal RCRA non-CORRACTS TSD facilities list

RCRA-TSDF..... RCRA - Treatment, Storage and Disposal

Federal RCRA generators list

RCRA-LQG..... RCRA - Large Quantity Generators
RCRA-SQG..... RCRA - Small Quantity Generators
RCRA-CESQG..... RCRA - Conditionally Exempt Small Quantity Generator

Federal institutional controls / engineering controls registries

LUCIS..... Land Use Control Information System
US ENG CONTROLS..... Engineering Controls Sites List

EXECUTIVE SUMMARY

US INST CONTROL..... Sites with Institutional Controls

Federal ERNS list

ERNS..... Emergency Response Notification System

State- and tribal - equivalent CERCLIS

SHWS..... Inactive Hazardous Waste Disposal Sites in New York State

VAPOR REOPENED..... Vapor Intrusion Legacy Site List

State and tribal landfill and/or solid waste disposal site lists

SWF/LF..... Facility Register

State and tribal leaking storage tank lists

INDIAN LUST..... Leaking Underground Storage Tanks on Indian Land

HIST LTANKS..... Listing of Leaking Storage Tanks

State and tribal registered storage tank lists

FEMA UST..... Underground Storage Tank Listing

CBS UST..... Chemical Bulk Storage Database

MOSF UST..... Major Oil Storage Facilities Database

CBS..... Chemical Bulk Storage Site Listing

MOSF..... Major Oil Storage Facility Site Listing

CBS AST..... Chemical Bulk Storage Database

MOSF AST..... Major Oil Storage Facilities Database

INDIAN UST..... Underground Storage Tanks on Indian Land

State and tribal institutional control / engineering control registries

RES DECL..... Restrictive Declarations Listing

ENG CONTROLS..... Registry of Engineering Controls

INST CONTROL..... Registry of Institutional Controls

State and tribal voluntary cleanup sites

VCP..... Voluntary Cleanup Agreements

INDIAN VCP..... Voluntary Cleanup Priority Listing

State and tribal Brownfields sites

BROWNFIELDS..... Brownfields Site List

ERP..... Environmental Restoration Program Listing

ADDITIONAL ENVIRONMENTAL RECORDS

Local Brownfield lists

US BROWNFIELDS..... A Listing of Brownfields Sites

Local Lists of Landfill / Solid Waste Disposal Sites

SWRCY..... Registered Recycling Facility List

EXECUTIVE SUMMARY

SWTIRE..... Registered Waste Tire Storage & Facility List
 INDIAN ODI..... Report on the Status of Open Dumps on Indian Lands
 ODI..... Open Dump Inventory
 DEBRIS REGION 9..... Torres Martinez Reservation Illegal Dump Site Locations

Local Lists of Hazardous waste / Contaminated Sites

US HIST CDL..... National Clandestine Laboratory Register
 DEL SHWS..... Delisted Registry Sites
 US CDL..... Clandestine Drug Labs

Local Lists of Registered Storage Tanks

HIST AST..... Historical Petroleum Bulk Storage Database

Local Land Records

LIENS..... Spill Liens Information
 LIENS 2..... CERCLA Lien Information

Records of Emergency Release Reports

HMIRS..... Hazardous Materials Information Reporting System
 NY Hist Spills..... SPILLS Database
 SPILLS 90..... SPILLS 90 data from FirstSearch
 SPILLS 80..... SPILLS 80 data from FirstSearch

Other Ascertainable Records

FUDS..... Formerly Used Defense Sites
 DOD..... Department of Defense Sites
 SCRDRYCLEANERS..... State Coalition for Remediation of Drycleaners Listing
 US FIN ASSUR..... Financial Assurance Information
 EPA WATCH LIST..... EPA WATCH LIST
 2020 COR ACTION..... 2020 Corrective Action Program List
 TSCA..... Toxic Substances Control Act
 TRIS..... Toxic Chemical Release Inventory System
 SSTS..... Section 7 Tracking Systems
 ROD..... Records Of Decision
 RMP..... Risk Management Plans
 RAATS..... RCRA Administrative Action Tracking System
 PRP..... Potentially Responsible Parties
 PADS..... PCB Activity Database System
 ICIS..... Integrated Compliance Information System
 FTTS..... FIFRA/ TSCA Tracking System - FIFRA (Federal Insecticide, Fungicide, & Rodenticide Act)/TSCA (Toxic Substances Control Act)
 MLTS..... Material Licensing Tracking System
 COAL ASH DOE..... Steam-Electric Plant Operation Data
 COAL ASH EPA..... Coal Combustion Residues Surface Impoundments List
 PCB TRANSFORMER..... PCB Transformer Registration Database
 RADINFO..... Radiation Information Database
 HIST FTTS..... FIFRA/TSCA Tracking System Administrative Case Listing
 DOT OPS..... Incident and Accident Data
 CONSENT..... Superfund (CERCLA) Consent Decrees
 INDIAN RESERV..... Indian Reservations

EXECUTIVE SUMMARY

UMTRA.....	Uranium Mill Tailings Sites
LEAD SMELTERS.....	Lead Smelter Sites
US AIRS.....	Aerometric Information Retrieval System Facility Subsystem
US MINES.....	Mines Master Index File
FINDS.....	Facility Index System/Facility Registry System
AIRS.....	Air Emissions Data
COAL ASH.....	Coal Ash Disposal Site Listing
DRYCLEANERS.....	Registered Drycleaners
E DESIGNATION.....	E DESIGNATION SITE LISTING
Financial Assurance.....	Financial Assurance Information Listing
HSWDS.....	Hazardous Substance Waste Disposal Site Inventory
SPDES.....	State Pollutant Discharge Elimination System
UIC.....	Underground Injection Control Wells

EDR HIGH RISK HISTORICAL RECORDS

EDR Exclusive Records

EDR US Hist Auto Stat.....	EDR Exclusive Historic Gas Stations
EDR US Hist Cleaners.....	EDR Exclusive Historic Dry Cleaners

EDR RECOVERED GOVERNMENT ARCHIVES

Exclusive Recovered Govt. Archives

RGA HWS.....	Recovered Government Archive State Hazardous Waste Facilities List
RGA LF.....	Recovered Government Archive Solid Waste Facilities List

SURROUNDING SITES: SEARCH RESULTS

Surrounding sites were identified in the following databases.

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.

STANDARD ENVIRONMENTAL RECORDS

State and tribal leaking storage tank lists

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 07/21/2015 has revealed that there are 3

EXECUTIVE SUMMARY

LTANKS sites within approximately 0.5 miles of the target property.

<u>Equal/Higher Elevation</u>	<u>Address</u>	<u>Direction / Distance</u>	<u>Map ID</u>	<u>Page</u>
LIVINGSTON COUNTY SH Spill Number/Closed Date: 8181205 / 1/1/1983 Site ID: 98738 Program Number: 8181205	COURT AND MAIN STREE	ESE 1/4 - 1/2 (0.440 mi.)	15	49
NYS ARMORY/NATIONAL Spill Number/Closed Date: 9609264 / 2/28/2000 Site ID: 168192 Program Number: 9609264	34 AVON ROAD ROUTE 3	ESE 1/4 - 1/2 (0.495 mi.)	D16	50
NYS ARMORY Spill Number/Closed Date: 8800030 / 10/31/1988 Spill Number/Closed Date: 8903188 / 6/27/1989 Site ID: 191170 Site ID: 138359 Program Number: 8800030 Program Number: 8903188	ROUTE 39	ESE 1/4 - 1/2 (0.495 mi.)	D17	52

State and tribal registered storage tank lists

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 07/29/2015 has revealed that there are 3 UST sites within approximately 0.25 miles of the target property.

<u>Equal/Higher Elevation</u>	<u>Address</u>	<u>Direction / Distance</u>	<u>Map ID</u>	<u>Page</u>
VITALE BROS CONTRACT Id/Status:: 8-015156	LOWER COURT STREET	S 0 - 1/8 (0.002 mi.)	B6	19
<u>Lower Elevation</u>	<u>Address</u>	<u>Direction / Distance</u>	<u>Map ID</u>	<u>Page</u>
BUELL OIL COMPANY IN Id/Status:: 8-390690	111 RIVERSIDE DRIVE	0 - 1/8 (0.001 mi.)	A5	19
NYSDOT BIN 1028700 Id/Status:: 8-035262	RT 63 OVER GENESEE R	WNW 1/8 - 1/4 (0.129 mi.)	14	44

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 07/29/2015 has revealed that there is 1 AST site within approximately 0.25 miles of the target property.

<u>Lower Elevation</u>	<u>Address</u>	<u>Direction / Distance</u>	<u>Map ID</u>	<u>Page</u>
BUELL OIL COMPANY IN Facility Id: 8-390690	111 RIVERSIDE DRIVE	0 - 1/8 (0.001 mi.)	A3	10

EXECUTIVE SUMMARY

ADDITIONAL ENVIRONMENTAL RECORDS

Local Lists of Registered Storage Tanks

HIST 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 HIST UST list, as provided by EDR, and dated 01/01/2002 has revealed that there are 2 HIST UST sites within approximately 0.25 miles of the target property.

<u>Equal/Higher Elevation</u>	<u>Address</u>	<u>Direction / Distance</u>	<u>Map ID</u>	<u>Page</u>
VITALE BROS CONTRACT Facility Status: 2 PBS Number: 8-015156 Tank Status: 3	LOWER COURT STREET	S 0 - 1/8 (0.002 mi.)	B6	19

<u>Lower Elevation</u>	<u>Address</u>	<u>Direction / Distance</u>	<u>Map ID</u>	<u>Page</u>
BUELL OIL COMPANY IN Facility Status: 2 PBS Number: 8-390690 Tank Status: 1	111 RIVERSIDE DRIVE	0 - 1/8 (0.001 mi.)	A4	12

Records of Emergency Release Reports

NY Spills: Data collected on spills reported to NYSDEC. is 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.

A review of the NY Spills list, as provided by EDR, and dated 07/21/2015 has revealed that there are 5 NY Spills sites within approximately 0.125 miles of the target property.

<u>Equal/Higher Elevation</u>	<u>Address</u>	<u>Direction / Distance</u>	<u>Map ID</u>	<u>Page</u>
GENESEO VILLAGE STP Spill Number/Closed Date: 9201347 / 3/8/1995 spillno: 9201347 Site ID: 136630	RIVERSIDE DRIVE	SSW 0 - 1/8 (0.023 mi.)	B7	24

HIGHLAND APARTMENT Spill Number/Closed Date: 9710475 / 12/12/1997 spillno: 9710475 Site ID: 159971	95 MEADOW DRIVE	E 0 - 1/8 (0.091 mi.)	9	28

<u>Lower Elevation</u>	<u>Address</u>	<u>Direction / Distance</u>	<u>Map ID</u>	<u>Page</u>
BUELL OIL COMPANY IN Spill Number/Closed Date: 9106374 / 9/13/1991 Spill Number/Closed Date: 8906968 / Not Reported spillno: 8906968 spillno: 9106374	111 RIVERSIDE DRIVE	0 - 1/8 (0.001 mi.)	A4	12

EXECUTIVE SUMMARY

Site ID: 300032

Site ID: 300033

CHAUVIN SAND & GRAVE	ROUTE 63 & COURT STR	W 0 - 1/8 (0.118 mi.)	C11	40
Spill Number/Closed Date: 8908449 / 10/22/1990				
spillno: 8908449				
Site ID: 168671				
ROUTE 63 & COURT STR	ROUTE 63 & COURT STR	W 0 - 1/8 (0.118 mi.)	C12	41
Spill Number/Closed Date: 8902044 / 5/30/1989				
spillno: 8902044				
Site ID: 168670				

Other Ascertainable Records

RCRA NonGen / NLR: 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. 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). Non-Generators do not presently generate hazardous waste.

A review of the RCRA NonGen / NLR list, as provided by EDR, and dated 06/09/2015 has revealed that there are 5 RCRA NonGen / NLR sites within approximately 0.25 miles of the target property.

Lower Elevation	Address	Direction / Distance	Map ID	Page
AMERICAN ROCK SALT C	10 LOWER COURT ST	0 - 1/8 (0.000 mi.)	A2	8
CHAMPION PRODUCTS IN	COURT ST	SSW 0 - 1/8 (0.028 mi.)	B8	25
LEAST INC	COURT ST & RTE 63	W 0 - 1/8 (0.118 mi.)	C10	29
LIVINGSTON COUNTY	CT & RTE 63	W 0 - 1/8 (0.118 mi.)	C13	42
NYSDOT BIN 1028700	RT 63 OVER GENESEE R	WNW 1/8 - 1/4 (0.129 mi.)	14	44

MANIFEST: Manifest is a document that lists and tracks hazardous waste from the generator through transporters to a TSD facility.

A review of the MANIFEST list, as provided by EDR, and dated 08/01/2015 has revealed that there are 4 MANIFEST sites within approximately 0.25 miles of the target property.

Lower Elevation	Address	Direction / Distance	Map ID	Page
CHAMPION PRODUCTS IN EPA ID: NYD986945798	COURT ST	SSW 0 - 1/8 (0.028 mi.)	B8	25
LEAST INC EPA ID: NYD013593504	COURT ST & RTE 63	W 0 - 1/8 (0.118 mi.)	C10	29
LIVINGSTON COUNTY EPA ID: NYP000959544	CT & RTE 63	W 0 - 1/8 (0.118 mi.)	C13	42
NYSDOT BIN 1028700 EPA ID: NYD986878734	RT 63 OVER GENESEE R	WNW 1/8 - 1/4 (0.129 mi.)	14	44

EXECUTIVE SUMMARY

EDR HIGH RISK HISTORICAL RECORDS

EDR Exclusive Records

EDR MGP: 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.

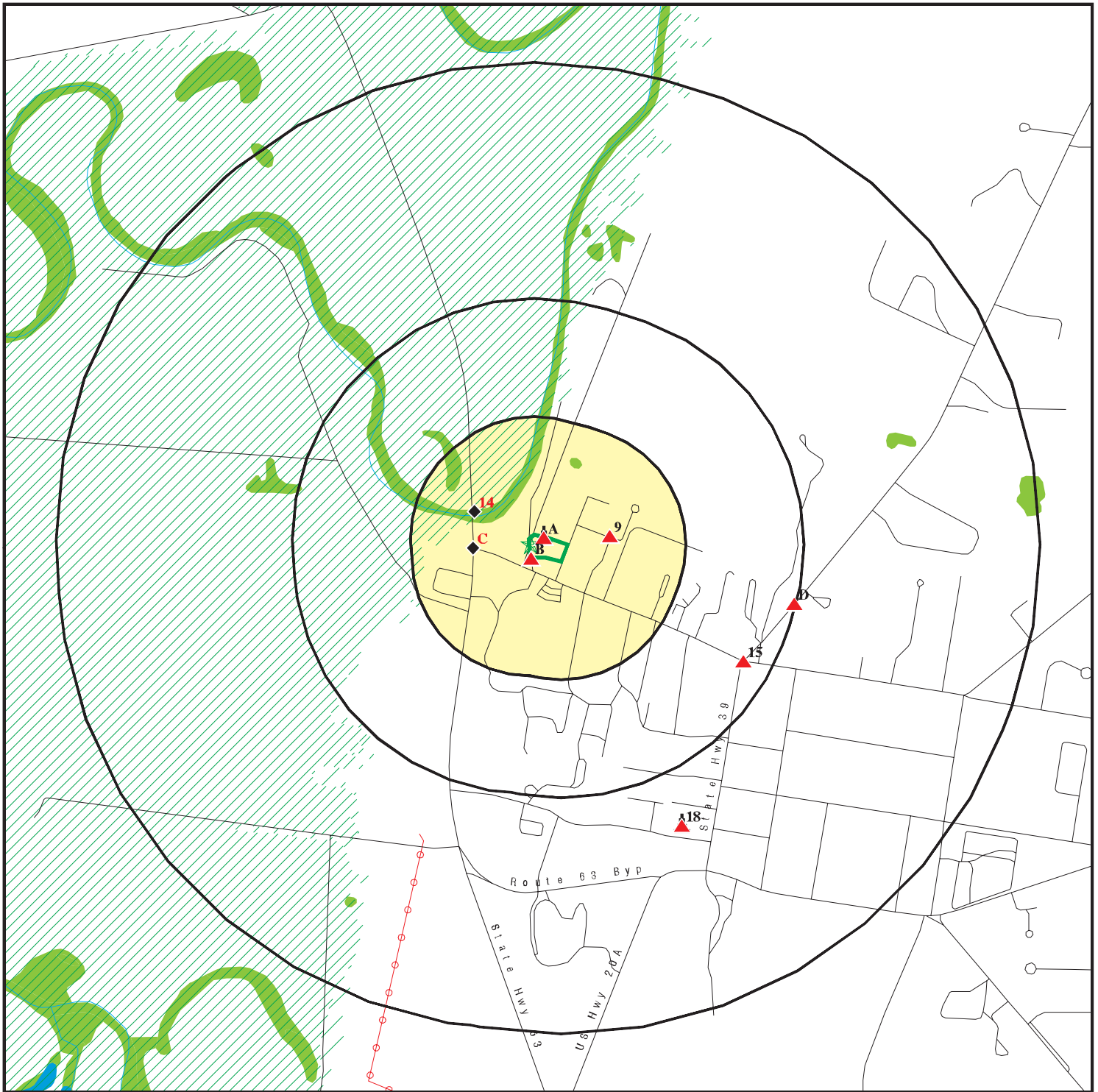
A review of the EDR MGP list, as provided by EDR, has revealed that there are 2 EDR MGP sites within approximately 1 mile of the target property.

<u>Equal/Higher Elevation</u>	<u>Address</u>	<u>Direction / Distance</u>	<u>Map ID</u>	<u>Page</u>
GENESEO GAS LIGHT CO	COURT STREET	0 - 1/8 (0.000 mi.)	A1	8
GENESEO GAS WORKS	PARK AND MAIN STREET	SSE 1/2 - 1 (0.615 mi.)	18	56

EXECUTIVE SUMMARY

There were no unmapped sites in this report.

OVERVIEW MAP - 4416319.2S



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

Dept. Defense Sites

Indian Reservations BIA

Power transmission lines

100-year flood zone

500-year flood zone

National Wetland Inventory

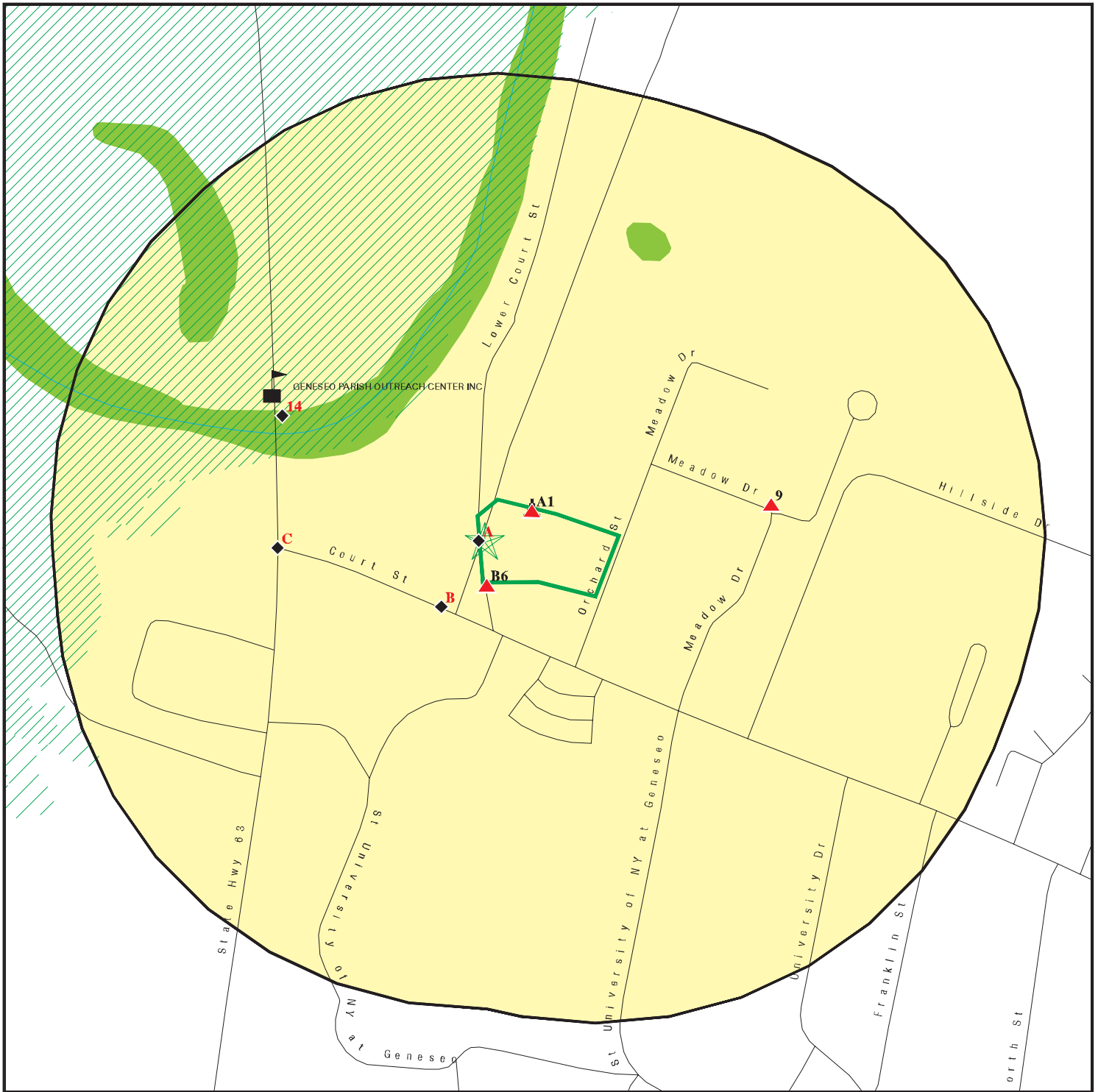
State Wetlands

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: Geneseo Riverside Drive
ADDRESS: 112 Riverside Drive
Geneseo NY 14454
LAT/LONG: 42.8036 / 77.8247

CLIENT: ARCADIS U.S., Inc.
CONTACT: Nicholas Beyrle
INQUIRY #: 4416319.2s
DATE: September 21, 2015 1:07 pm

DETAIL MAP - 4416319.2S



-  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
-  Dept. Defense Sites

-  Indian Reservations BIA
-  100-year flood zone
-  500-year flood zone
-  National Wetland Inventory
-  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: Geneseo Riverside Drive
 ADDRESS: 112 Riverside Drive
 Geneseo NY 14454
 LAT/LONG: 42.8036 / 77.8247

CLIENT: ARCADIS U.S., Inc.
 CONTACT: Nicholas Beyrle
 INQUIRY #: 4416319.2s
 DATE: September 21, 2015 1:09 pm

MAP FINDINGS SUMMARY

Database	Search Distance (Miles)	Target Property	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
STANDARD ENVIRONMENTAL RECORDS								
<i>Federal NPL site list</i>								
NPL	1.000		0	0	0	0	NR	0
Proposed NPL	1.000		0	0	0	0	NR	0
NPL LIENS	TP		NR	NR	NR	NR	NR	0
<i>Federal Delisted NPL site list</i>								
Delisted NPL	1.000		0	0	0	0	NR	0
<i>Federal CERCLIS list</i>								
FEDERAL FACILITY	0.500		0	0	0	NR	NR	0
CERCLIS	0.500		0	0	0	NR	NR	0
<i>Federal CERCLIS NFRAP site List</i>								
CERC-NFRAP	0.500		0	0	0	NR	NR	0
<i>Federal RCRA CORRACTS facilities list</i>								
CORRACTS	1.000		0	0	0	0	NR	0
<i>Federal RCRA non-CORRACTS TSD facilities list</i>								
RCRA-TSDF	0.500		0	0	0	NR	NR	0
<i>Federal RCRA generators list</i>								
RCRA-LQG	0.250		0	0	NR	NR	NR	0
RCRA-SQG	0.250		0	0	NR	NR	NR	0
RCRA-CESQG	0.250		0	0	NR	NR	NR	0
<i>Federal institutional controls / engineering controls registries</i>								
LUCIS	0.500		0	0	0	NR	NR	0
US ENG CONTROLS	0.500		0	0	0	NR	NR	0
US INST CONTROL	0.500		0	0	0	NR	NR	0
<i>Federal ERNS list</i>								
ERNS	TP		NR	NR	NR	NR	NR	0
<i>State- and tribal - equivalent CERCLIS</i>								
SHWS	1.000		0	0	0	0	NR	0
VAPOR REOPENED	1.000		0	0	0	0	NR	0
<i>State and tribal landfill and/or solid waste disposal site lists</i>								
SWF/LF	0.500		0	0	0	NR	NR	0
<i>State and tribal leaking storage tank lists</i>								
INDIAN LUST	0.500		0	0	0	NR	NR	0
LTANKS	0.500		0	0	3	NR	NR	3
HIST LTANKS	0.500		0	0	0	NR	NR	0

MAP FINDINGS SUMMARY

Database	Search Distance (Miles)	Target Property	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
State and tribal registered storage tank lists								
FEMA UST	0.250		0	0	NR	NR	NR	0
UST	0.250		2	1	NR	NR	NR	3
CBS UST	0.250		0	0	NR	NR	NR	0
MOSF UST	0.500		0	0	0	NR	NR	0
CBS	0.250		0	0	NR	NR	NR	0
MOSF	0.500		0	0	0	NR	NR	0
AST	0.250		1	0	NR	NR	NR	1
CBS AST	0.250		0	0	NR	NR	NR	0
MOSF AST	0.500		0	0	0	NR	NR	0
INDIAN UST	0.250		0	0	NR	NR	NR	0
State and tribal institutional control / engineering control registries								
RES DECL	0.125		0	NR	NR	NR	NR	0
ENG CONTROLS	0.500		0	0	0	NR	NR	0
INST CONTROL	0.500		0	0	0	NR	NR	0
State and tribal voluntary cleanup sites								
VCP	0.500		0	0	0	NR	NR	0
INDIAN VCP	0.500		0	0	0	NR	NR	0
State and tribal Brownfields sites								
BROWNFIELDS	0.500		0	0	0	NR	NR	0
ERP	0.500		0	0	0	NR	NR	0
ADDITIONAL ENVIRONMENTAL RECORDS								
Local Brownfield lists								
US BROWNFIELDS	0.500		0	0	0	NR	NR	0
Local Lists of Landfill / Solid Waste Disposal Sites								
SWRCY	0.500		0	0	0	NR	NR	0
SWTIRE	0.500		0	0	0	NR	NR	0
INDIAN ODI	0.500		0	0	0	NR	NR	0
ODI	0.500		0	0	0	NR	NR	0
DEBRIS REGION 9	0.500		0	0	0	NR	NR	0
Local Lists of Hazardous waste / Contaminated Sites								
US HIST CDL	TP		NR	NR	NR	NR	NR	0
DEL SHWS	1.000		0	0	0	0	NR	0
US CDL	TP		NR	NR	NR	NR	NR	0
Local Lists of Registered Storage Tanks								
HIST UST	0.250		2	0	NR	NR	NR	2
HIST AST	TP		NR	NR	NR	NR	NR	0
Local Land Records								
LIENS	TP		NR	NR	NR	NR	NR	0

MAP FINDINGS SUMMARY

Database	Search Distance (Miles)	Target Property	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
LIENS 2	TP		NR	NR	NR	NR	NR	0
Records of Emergency Release Reports								
HMIRS	TP		NR	NR	NR	NR	NR	0
NY Spills	0.125		5	NR	NR	NR	NR	5
NY Hist Spills	0.125		0	NR	NR	NR	NR	0
SPILLS 90	0.125		0	NR	NR	NR	NR	0
SPILLS 80	0.125		0	NR	NR	NR	NR	0
Other Ascertainable Records								
RCRA NonGen / NLR	0.250		4	1	NR	NR	NR	5
FUDS	1.000		0	0	0	0	NR	0
DOD	1.000		0	0	0	0	NR	0
SCRD DRYCLEANERS	0.500		0	0	0	NR	NR	0
US FIN ASSUR	TP		NR	NR	NR	NR	NR	0
EPA WATCH LIST	TP		NR	NR	NR	NR	NR	0
2020 COR ACTION	0.250		0	0	NR	NR	NR	0
TSCA	TP		NR	NR	NR	NR	NR	0
TRIS	TP		NR	NR	NR	NR	NR	0
SSTS	TP		NR	NR	NR	NR	NR	0
ROD	1.000		0	0	0	0	NR	0
RMP	TP		NR	NR	NR	NR	NR	0
RAATS	TP		NR	NR	NR	NR	NR	0
PRP	TP		NR	NR	NR	NR	NR	0
PADS	TP		NR	NR	NR	NR	NR	0
ICIS	TP		NR	NR	NR	NR	NR	0
FTTS	TP		NR	NR	NR	NR	NR	0
MLTS	TP		NR	NR	NR	NR	NR	0
COAL ASH DOE	TP		NR	NR	NR	NR	NR	0
COAL ASH EPA	0.500		0	0	0	NR	NR	0
PCB TRANSFORMER	TP		NR	NR	NR	NR	NR	0
RADINFO	TP		NR	NR	NR	NR	NR	0
HIST FTTS	TP		NR	NR	NR	NR	NR	0
DOT OPS	TP		NR	NR	NR	NR	NR	0
CONSENT	1.000		0	0	0	0	NR	0
INDIAN RESERV	1.000		0	0	0	0	NR	0
UMTRA	0.500		0	0	0	NR	NR	0
LEAD SMELTERS	TP		NR	NR	NR	NR	NR	0
US AIRS	TP		NR	NR	NR	NR	NR	0
US MINES	0.250		0	0	NR	NR	NR	0
FINDS	TP		NR	NR	NR	NR	NR	0
AIRS	TP		NR	NR	NR	NR	NR	0
COAL ASH	0.500		0	0	0	NR	NR	0
DRYCLEANERS	0.250		0	0	NR	NR	NR	0
E DESIGNATION	0.125		0	NR	NR	NR	NR	0
Financial Assurance	TP		NR	NR	NR	NR	NR	0
HSWDS	0.500		0	0	0	NR	NR	0
MANIFEST	0.250		3	1	NR	NR	NR	4
SPDES	TP		NR	NR	NR	NR	NR	0
UIC	TP		NR	NR	NR	NR	NR	0

EDR HIGH RISK HISTORICAL RECORDS

EDR Exclusive Records

EDR MGP	1.000		1	0	0	1	NR	2

MAP FINDINGS SUMMARY

Database	Search Distance (Miles)	Target Property	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
EDR US Hist Auto Stat	0.250		0	0	NR	NR	NR	0
EDR US Hist Cleaners	0.250		0	0	NR	NR	NR	0
<u>EDR RECOVERED GOVERNMENT ARCHIVES</u>								
<i>Exclusive Recovered Govt. Archives</i>								
RGA HWS	TP		NR	NR	NR	NR	NR	0
RGA LF	TP		NR	NR	NR	NR	NR	0
- Totals --		0	18	3	3	1	0	25

NOTES:

TP = Target Property

NR = Not Requested at this Search Distance

Sites may be listed in more than one database

Map ID
Direction
Distance
Elevation

MAP FINDINGS

EDR ID Number
EPA ID Number

	Site	Database(s)	EDR ID Number EPA ID Number
A1 < 1/8 1 ft.	GENESEO GAS LIGHT CO COURT STREET GENESEO, NY 14454 Site 1 of 5 in cluster A	EDR MGP	1008407935 N/A
Relative: Higher	Manufactured Gas Plants: No additional information available		
Actual: 614 ft.			
A2 < 1/8 0.000 mi. 2 ft.	AMERICAN ROCK SALT CO LLC 10 LOWER COURT ST GENESEO, NY 14454 Site 2 of 5 in cluster A	RCRA NonGen / NLR FINDS	1001482844 NYR000069013
Relative: Lower	RCRA NonGen / NLR: Date form received by agency: 01/01/2007 Facility name: AMERICAN ROCK SALT CO LLC Facility address: 10 LOWER COURT ST GENESEO, NY 14454 EPA ID: NYR000069013 Mailing address: LOWER COURT ST GENESEO, NY 14454 Contact: ROBERT BLANC Contact address: LOWER COURT ST GENESEO, NY 14454 Contact country: US Contact telephone: (716) 243-2255 Contact email: Not reported EPA Region: 02 Classification: Non-Generator Description: Handler: Non-Generators do not presently generate hazardous waste		
Actual: 595 ft.			
	Owner/Operator Summary: Owner/operator name: AMERICAN ROCK SALT CO LLC Owner/operator address: PO BOX 172 GRORELAND, NY 14462 Owner/operator country: US Owner/operator telephone: (716) 243-9510 Legal status: Private Owner/Operator Type: Operator Owner/Op start date: Not reported Owner/Op end date: Not reported Owner/operator name: AMERICAN ROCK SALT CO LLC Owner/operator address: PO BOX 172 GRORELAND, NY 14462 Owner/operator country: US Owner/operator telephone: (716) 243-9510 Legal status: Private Owner/Operator Type: Owner Owner/Op start date: Not reported Owner/Op end date: Not reported		
	Handler Activities Summary: U.S. importer of hazardous waste: No Mixed waste (haz. and radioactive): No		

Map ID
Direction
Distance
Elevation

MAP FINDINGS

Site

Database(s)

EDR ID Number
EPA ID Number

AMERICAN ROCK SALT CO LLC (Continued)

1001482844

Recycler of hazardous waste: No
Transporter of hazardous waste: No
Treater, storer or disposer of HW: No
Underground injection activity: No
On-site burner exemption: No
Furnace exemption: No
Used oil fuel burner: No
Used oil processor: No
User oil refiner: No
Used oil fuel marketer to burner: No
Used oil Specification marketer: No
Used oil transfer facility: No
Used oil transporter: No

Historical Generators:

Date form received by agency: 01/01/2006

Site name: AMERICAN ROCK SALT CO LLC

Classification: Not a generator, verified

Date form received by agency: 03/23/1999

Site name: AMERICAN ROCK SALT CO LLC

Classification: Small Quantity Generator

. Waste code: D001
. Waste name: IGNITABLE WASTE

. Waste code: D018
. Waste name: BENZENE

. Waste code: D039
. Waste name: TETRACHLOROETHYLENE

. Waste code: D040
. Waste name: TRICHLOROETHYLENE

Violation Status: No violations found

FINDS:

Registry ID: 110004551896

Environmental Interest/Information System

RCRAInfo is a national information system that supports the Resource Conservation and Recovery Act (RCRA) program through the tracking of events and activities related to facilities that generate, transport, and treat, store, or dispose of hazardous waste. RCRAInfo allows RCRA program staff to track the notification, permit, compliance, and corrective action activities required under RCRA.

Map ID
Direction
Distance
Elevation

MAP FINDINGS

Site

Database(s)

EDR ID Number
EPA ID Number

A3
< 1/8
0.001 mi.
5 ft.

BUELL OIL COMPANY INC
111 RIVERSIDE DRIVE
GENESEO, NY 14454

Site 3 of 5 in cluster A

AST **A100382921**
N/A

Relative:
Lower

AST:

Region: STATE
DEC Region: 8
Site Status: Unregulated/Closed
Facility Id: 8-390690
Program Type: PBS
UTM X: 268991.40648000001
UTM Y: 4742809.3280100003
Expiration Date: 06/30/1992
Site Type: Storage Terminal/Petroleum Distributor

Actual:
595 ft.

Tank Info:

Tank Number: 001
Tank Id: 147409
Tank Location: 3
Tank Type: Steel/Carbon Steel/Iron
Tank Status: Closed - In Place
Pipe Model: Not reported
Install Date: 11/01/1971
Capacity Gallons: 25000
Tightness Test Method: NN
Date Test: Not reported
Next Test Date: Not reported
Date Tank Closed: 12/01/1992
Register: True
Modified By: TRANSLAT
Last Modified: 03/04/2004
Material Name: Not reported

Tank Number: 002
Tank Id: 147410
Tank Location: 3
Tank Type: Steel/Carbon Steel/Iron
Tank Status: Closed - In Place
Pipe Model: Not reported
Install Date: 11/01/1971
Capacity Gallons: 25000
Tightness Test Method: NN
Date Test: Not reported
Next Test Date: Not reported
Date Tank Closed: 12/01/1992
Register: True
Modified By: TRANSLAT
Last Modified: 03/04/2004
Material Name: Not reported

Tank Number: 003
Tank Id: 147411
Tank Location: 3
Tank Type: Steel/Carbon Steel/Iron
Tank Status: Closed - In Place

Map ID
Direction
Distance
Elevation

MAP FINDINGS

Site

Database(s)

EDR ID Number
EPA ID Number

BUELL OIL COMPANY INC (Continued)

A100382921

Pipe Model: Not reported
Install Date: 11/01/1971
Capacity Gallons: 10000
Tightness Test Method: NN
Date Test: Not reported
Next Test Date: Not reported
Date Tank Closed: 12/01/1992
Register: True
Modified By: TRANSLAT
Last Modified: 03/04/2004
Material Name: Not reported

Tank Number: 004
Tank Id: 147412
Tank Location: 1
Tank Type: Steel/Carbon Steel/Iron
Tank Status: Closed - In Place
Pipe Model: Not reported
Install Date: 08/01/1985
Capacity Gallons: 20000
Tightness Test Method: NN
Date Test: Not reported
Next Test Date: Not reported
Date Tank Closed: 12/01/1992
Register: True
Modified By: TRANSLAT
Last Modified: 03/04/2004
Material Name: Not reported

Tank Number: 005
Tank Id: 147413
Tank Location: 1
Tank Type: Steel/Carbon Steel/Iron
Tank Status: Closed - In Place
Pipe Model: Not reported
Install Date: 08/01/1985
Capacity Gallons: 20000
Tightness Test Method: NN
Date Test: Not reported
Next Test Date: Not reported
Date Tank Closed: 12/01/1992
Register: True
Modified By: TRANSLAT
Last Modified: 03/04/2004
Material Name: Not reported

Map ID
Direction
Distance
Elevation

MAP FINDINGS

Site

Database(s)

EDR ID Number
EPA ID Number

A4
BUELL OIL COMPANY INC
111 RIVERSIDE DRIVE
GENESEO, NY 14454

< 1/8
0.001 mi.
5 ft.

Site 4 of 5 in cluster A

HIST UST
HIST AST
NY Spills

U003314767
N/A

Relative:
Lower

HIST UST:

Actual:
595 ft.

PBS Number: 8-390690
SPDES Number: Not reported
Emergency Contact: T R BUELL
Emergency Telephone: (716) 243-5303
Operator: BUELL OIL CO INC
Operator Telephone: (716) 243-2140
Owner Name: BUELL OIL COMPANY INC
Owner Address: 111 RIVERSIDE DRIVE
Owner City,St,Zip: GENESEO, NY 14454
Owner Telephone: (716) 243-2140
Owner Type: Corporate/Commercial
Owner Subtype: Not reported
Mailing Name: BUELL OIL COMPANY INC
Mailing Address: 111 RIVERSIDE DRIVE
Mailing Address 2: Not reported
Mailing City,St,Zip: GENESEO, NY 14454
Mailing Contact: Not reported
Mailing Telephone: (716) 243-2140
Owner Mark: First Owner
Facility Status: 2 - Unregulated by PBS (the total capacity is less than 1,101 gallons)
and Subpart 360-14.
Facility Addr2: Not reported
SWIS ID: 2426
Old PBS Number: Not reported
Facility Type: STORAGE TERMINAL/PETROLEUM DISTRIBUTOR
Inspected Date: 01/25/1993
Inspector: C2H
Inspection Result: Not reported
Federal ID: Not reported
Certification Flag: False
Certification Date: 06/30/1987
Expiration Date: 06/30/1992
Renew Flag: False
Renewal Date: Not reported
Total Capacity: 1000
FAMT: True
Facility Screen: No Missing Data
Owner Screen: Minor Data Missing
Tank Screen: Minor Data Missing
Dead Letter: False
CBS Number: Not reported
Town or City: GENESEO
County Code: 24
Town or City: 26
Region: 8

Tank Id: 006
Tank Location: UNDERGROUND
Tank Status: In Service
Install Date: 06/01/1985
Capacity (gals): 1000
Product Stored: UNLEADED GASOLINE

Map ID
Direction
Distance
Elevation

MAP FINDINGS

Site

Database(s)

EDR ID Number
EPA ID Number

BUELL OIL COMPANY INC (Continued)

U003314767

Tank Type: Steel/carbon steel
Tank Internal: Not reported
Tank External: Not reported
Pipe Location: Underground
Pipe Type: GALVANIZED STEEL
Pipe Internal: Not reported
Pipe External: Not reported
Second Containment: None
Leak Detection: None
Overfill Prot: Not reported
Dispenser: Suction
Date Tested: Not reported
Next Test Date: Not reported
Missing Data for Tank: Minor Data Missing
Date Closed: 11/01/1992
Test Method: Not reported
Deleted: False
Updated: True
Lat/long: Not reported

HIST AST:

PBS Number: 8-390690
SWIS Code: 2426
Operator: BUELL OIL CO INC
Facility Phone: (716) 243-2140
Facility Addr2: Not reported
Facility Type: STORAGE TERMINAL/PETROLEUM DISTRIBUTOR
Emergency: T R BUELL
Emergency Tel: (716) 243-5303
Old PBSNO: Not reported
Date Inspected: 01/25/1993
Inspector: C2H
Result of Inspection: Not reported
Owner Name: BUELL OIL COMPANY INC
Owner Address: 111 RIVERSIDE DRIVE
Owner City,St,Zip: GENESEO, NY 14454
Federal ID: Not reported
Owner Tel: (716) 243-2140
Owner Type: Corporate/Commercial
Owner Subtype: Not reported
Mailing Contact: Not reported
Mailing Name: BUELL OIL COMPANY INC
Mailing Address: 111 RIVERSIDE DRIVE
Mailing Address 2: Not reported
Mailing City,St,Zip: GENESEO, NY 14454
Mailing Telephone: (716) 243-2140
Owner Mark: First Owner
Facility Status: 2 - Unregulated by PBS (the total capacity is less than 1,101 gallons)
and Subpart 360-14.
Certification Flag: False
Certification Date: 06/30/1987
Expiration: 06/30/1992
Renew Flag: False
Renew Date: Not reported
Total Capacity: 1000
FAMT: True
Facility Screen: No Missing Data

Map ID
Direction
Distance
Elevation

MAP FINDINGS

Site

Database(s)

EDR ID Number
EPA ID Number

BUELL OIL COMPANY INC (Continued)

U003314767

Owner Screen: Minor Data Missing
Tank Screen: Minor Data Missing
Dead Letter: False
CBS Number: Not reported
Town or City: GENESEO
County Code: 24
Town or City Code: 26
Region: 8

Tank ID: 001
Tank Location: ABOVEGROUND ON SADDLES LEGS, STILTS, RACK, OR CRADLE
Tank Status: Closed-In Place
Install Date: 11/01/1971
Capacity (Gal): 25000
Product Stored: UNLEADED GASOLINE
Tank Type: Steel/carbon steel
Tank Internal: 0
Tank External: 0
Pipe Location: Aboveground
Pipe Type: GALVANIZED STEEL
Pipe Internal: None
Pipe External: 0
Tank Containment: 89
Leak Detection: 0
Overfill Protection: 0
Dispenser Method: Suction
Date Tested: Not reported
Next Test Date: Not reported
Missing Data for Tank: No Missing Data
Date Closed: 12/01/1992
Test Method: Not reported
Deleted: False
Updated: True
SPDES Number: Not reported
Lat/Long: Not reported

Tank ID: 002
Tank Location: ABOVEGROUND ON SADDLES LEGS, STILTS, RACK, OR CRADLE
Tank Status: Closed-In Place
Install Date: 11/01/1971
Capacity (Gal): 25000
Product Stored: LEADED GASOLINE
Tank Type: Steel/carbon steel
Tank Internal: 0
Tank External: 0
Pipe Location: Aboveground
Pipe Type: GALVANIZED STEEL
Pipe Internal: None
Pipe External: 0
Tank Containment: 89
Leak Detection: 0
Overfill Protection: 0
Dispenser Method: Suction
Date Tested: Not reported
Next Test Date: Not reported
Missing Data for Tank: No Missing Data

Map ID
Direction
Distance
Elevation

MAP FINDINGS

Site

Database(s)

EDR ID Number
EPA ID Number

BUELL OIL COMPANY INC (Continued)

U003314767

Date Closed: 12/01/1992
Test Method: Not reported
Deleted: False
Updated: True
SPDES Number: Not reported
Lat/Long: Not reported

Tank ID: 003
Tank Location: ABOVEGROUND ON SADDLES LEGS, STILTS, RACK, OR CRADLE
Tank Status: Closed-In Place
Install Date: 11/01/1971
Capacity (Gal): 10000
Product Stored: KEROSENE
Tank Type: Steel/carbon steel
Tank Internal: 0
Tank External: 0
Pipe Location: Aboveground
Pipe Type: GALVANIZED STEEL
Pipe Internal: None
Pipe External: 0
Tank Containment: 89
Leak Detection: 0
Overfill Protection: 0
Dispenser Method: Suction
Date Tested: Not reported
Next Test Date: Not reported
Missing Data for Tank: No Missing Data
Date Closed: 12/01/1992
Test Method: Not reported
Deleted: False
Updated: True
SPDES Number: Not reported
Lat/Long: Not reported

Tank ID: 004
Tank Location: ABOVEGROUND
Tank Status: Closed-In Place
Install Date: 08/01/1985
Capacity (Gal): 20000
Product Stored: NOS 1,2, OR 4 FUEL OIL
Tank Type: Steel/carbon steel
Tank Internal: 0
Tank External: 0
Pipe Location: Aboveground
Pipe Type: GALVANIZED STEEL
Pipe Internal: None
Pipe External: 0
Tank Containment: 89
Leak Detection: 0
Overfill Protection: 0
Dispenser Method: Suction
Date Tested: Not reported
Next Test Date: Not reported
Missing Data for Tank: No Missing Data
Date Closed: 12/01/1992

Map ID
Direction
Distance
Elevation

MAP FINDINGS

Site

Database(s)

EDR ID Number
EPA ID Number

BUELL OIL COMPANY INC (Continued)

U003314767

Test Method: Not reported
Deleted: False
Updated: True
SPDES Number: Not reported
Lat/Long: Not reported

Tank ID: 005
Tank Location: ABOVEGROUND
Tank Status: Closed-In Place
Install Date: 08/01/1985
Capacity (Gal): 20000
Product Stored: NOS 1,2, OR 4 FUEL OIL
Tank Type: Steel/carbon steel
Tank Internal: 0
Tank External: 0
Pipe Location: Aboveground
Pipe Type: GALVANIZED STEEL
Pipe Internal: None
Pipe External: 0
Tank Containment: 89
Leak Detection: 0
Overfill Protection: 0
Dispenser Method: Suction
Date Tested: Not reported
Next Test Date: Not reported
Missing Data for Tank: No Missing Data
Date Closed: 12/01/1992
Test Method: Not reported
Deleted: False
Updated: True
SPDES Number: Not reported
Lat/Long: Not reported

SPILLS:

Facility ID: 9106374
Facility Type: ER
DER Facility ID: 48760
Site ID: 300033
DEC Region: 8
Spill Date: 9/12/1991
Spill Number/Closed Date: 9106374 / 9/13/1991
Spill Cause: Human Error
Spill Class: Known release with minimal potential for fire or hazard. DEC Response.
Willing Responsible Party. Corrective action taken.
SWIS: 2626
Investigator: CAHETTEN
Referred To: Not reported
Reported to Dept: 9/12/1991
CID: Not reported
Water Affected: ON LAND
Spill Source: Tank Truck
Spill Notifier: Responsible Party
Cleanup Ceased: 9/13/1991
Cleanup Meets Std: True
Last Inspection: Not reported
Recommended Penalty: False

Map ID
Direction
Distance
Elevation

MAP FINDINGS

Site

Database(s)

EDR ID Number
EPA ID Number

BUELL OIL COMPANY INC (Continued)

U003314767

UST Trust: False
Remediation Phase: 0
Date Entered In Computer: 9/23/1991
Spill Record Last Update: 9/22/2009
Spiller Name: DENNIS BROWN
Spiller Company: CROSSETT TRUCKING
Spiller Address: 201 SOUTH CARVER ST
Spiller City,St,Zip: WARREN, PA 16365
Spiller Company: 001
Contact Name: DENNIS BROWN
Contact Phone: (814) 723-2200
DEC Memo: Prior to Sept, 2004 data translation this spill Lead_DEC Field was "CH".09/12/91: WHEN DRIVER BEGAN TO OFF LOAD & OPENED VENT LINE, PRODUCT CAME OUT VENT. FIRE DEPT RESPONDS TO SCENE & APPLIES SPEEDY-DRY. FIRE CHIEF STEVE ZABRACKI 739-1278. TOM PEARSON STEUBEN CO HAZ MAT ON SCENE. 09/12/91: SPEEDY DRY CLEANED UP AND PUT IN DRUMS. CROSSETT WILL HAUL DEBRIS TO THEIR WARREN FACILITY AND DISPOSE OF WITH OTHER SPILL DEBRIS. ADVISE THEM THEY CAN ONLY HAUL IF UNDER 500 POUNDS.NO FURTHER ACTION NECESSARY. 03/23/06: PAPER FILE REMOVED PER FILE RETENTION POLICY.
Remarks: DRIVER WAS OFF LOADING TANK TRUCK & HAD A SPILL OF GASOLINE. TRUCK WAS ON A HILL, DRIVER OPENED ALL INTERNAL VALVES CAUSING PRODUCT FROM FRONT COMPARTMENTS TO PRESSURIZE REAR COMPARTMENT.

Material:
Site ID: 300033
Operable Unit ID: 960696
Operable Unit: 01
Material ID: 422084
Material Code: 0009
Material Name: gasoline
Case No.: Not reported
Material FA: Petroleum
Quantity: 30
Units: Gallons
Recovered: No
Resource Affected: Not reported
Oxygenate: False

Tank Test:

Facility ID: 8906968
Facility Type: ER
DER Facility ID: 48760
Site ID: 300032
DEC Region: 8
Spill Date: 10/16/1989
Spill Number/Closed Date: 8906968 / Not Reported
Spill Cause: Housekeeping
Spill Class: Known release that creates potential for fire or hazard. DEC Response. Unable/unwilling Responsible Party. Corrective action taken. (ISR)
SWIS: 2626
Investigator: tghall
Referred To: Not reported
Reported to Dept: 10/16/1989
CID: Not reported

Map ID
Direction
Distance
Elevation

MAP FINDINGS

Site

Database(s)

EDR ID Number
EPA ID Number

BUELL OIL COMPANY INC (Continued)

U003314767

Water Affected: Not reported
Spill Source: Non Major Facility > 1,100 gal
Spill Notifier: DEC
Cleanup Ceased: Not reported
Cleanup Meets Std: False
Last Inspection: Not reported
Recommended Penalty: False
UST Trust: False
Remediation Phase: 4
Date Entered In Computer: 12/11/1989
Spill Record Last Update: 9/22/2009
Spiller Name: Not reported
Spiller Company: BUELL OIL CO
Spiller Address: 111 RIVERSIDE DRIVE
Spiller City,St,Zip: GENESEO, NY 14454
Spiller Company: 001
Contact Name: Not reported
Contact Phone: Not reported
DEC Memo: 10/16/89: 10/16/89 GARY MARSH REPORTS SPILLAGE ON 10/16/89 DURING PBS INSPECTION. CLEANUP AND IMPROVED HOUSEKEEPING NEEDED. 09/18/07 DT & BF INSPECT SITE AND FIND THAT THERE ARE NO TANKS AND SITE APPEARS TO BE ABANDONED.07/23/90: B. SHUTTS INSPECTED SITE & NOTICED HOUSEKEEPING PROBLEMS DETECTED BY MARSH. SPOKE W/RON SAWDEY & REQUESTED THEY UNDERTAKE BETTER HOUSEKEEPING MEASURES. 07/23/90: CONTAMINATED SOIL PRESENT W/IN CEMENT DIKING AROUND TANKS. B. SHUTTS TO CONTACT BUELL OIL TO REQUEST FURTHER INVESTIGATION. 07/27/90: B SHUTTS SENT OUT GROUNDWATER INVESTIGATION FORM LETTER TO BUELL OIL COMPANY. 08/09/90: RECEIVED LETTER FROM BUELL REGARDING GROUNDWATER INVESTIGATION LETTER STATING THEY WOULD LIKE TO HIRE A.E.S. & DON SEYMOUR OF GRIFFITH OIL TO DO SUBSURFACE INVESTIGATION. 09/07/90: SHUTTS TRIED TO CONTACT MRS BUELL VIA PHONE @ 0900HRS TO DISCUSS SUBSURFACE INVESTIGATION SCHEDULE BUT BUELL NOT AROUND. 11/27/90: C HERINGTON OF PBS ISSUED FOLLOW-UP INSPECTION LETTER & REITERATED OUR CONCERNS FOR CLEANUP. 01/16/91: B SHUTTS INSPECTED SITE & SPOKE W/RON SAWDEY OF BUELL OIL. AES & SEYMOUR NOT IN PLANS FOR SUBSURFACE WORK ACCORDING TO SAWDEY. THEY HAVE CONTACTED PASSERO ASSOCIATES TO UNDERGO WORK REQUESTED. 01/16/91: BS ASKED A FEW QUESTIONS CONCERNING PBS STAFF & LEFT SITE. 04/28/94: BS MET ON SITE WITH JOH NORTON OF BUELL OIL WHO WAS TO SIGN PROPERTY RELEASE FORM. HOWEVER, NORTON OPTED NOT TO SIGN FORM & ASKED TO WAIT UNTIL TOM BUELL ARRIVED BACK IN TOWN TO DISCUSS.
Remarks: SPILLAGE NOTED ON EARTHEN FLOOR WITHIN CEMENT DIKING AROUND TANK AREA DURING PBS INSPECTION.
Material:
Site ID: 300032
Operable Unit ID: 931897
Operable Unit: 01
Material ID: 443774
Material Code: 0001A
Material Name: #2 fuel oil
Case No.: Not reported
Material FA: Petroleum
Quantity: 0
Units: Gallons
Recovered: No
Resource Affected: Not reported
Oxygenate: False

Map ID
Direction
Distance
Elevation

MAP FINDINGS

Site

Database(s)

EDR ID Number
EPA ID Number

BUELL OIL COMPANY INC (Continued)

U003314767

Tank Test:

A5
< 1/8
0.001 mi.
5 ft.
BUELL OIL COMPANY INC
111 RIVERSIDE DRIVE
GENESEO, NY 14454
Site 5 of 5 in cluster A

UST **U004199372**
N/A

Relative: UST:
Lower Id/Status: 8-390690 / Unregulated/Closed
Program Type: PBS
Region: STATE
Actual: DEC Region: 8
595 ft. Expiration Date: 06/30/1992
UTM X: 268991.40648000001
UTM Y: 4742809.3280100003
Site Type: Storage Terminal/Petroleum Distributor

Tank Info:

Tank Number: 006
Tank ID: 147414
Tank Status: In Service
Material Name: In Service
Capacity Gallons: 1000
Install Date: 06/01/1985
Date Tank Closed: Not reported
Registered: True
Tank Location: Underground
Tank Type: Steel/carbon steel
Tightness Test Method: NN
Date Test: Not reported
Next Test Date: Not reported
Pipe Model: Not reported
Modified By: TRANSLAT
Last Modified: 03/04/2004

B6
South
< 1/8
0.002 mi.
8 ft.
VITALE BROS CONTRACTORS INC
LOWER COURT STREET
GENESEO, NY 14454
Site 1 of 3 in cluster B

UST **U001849678**
HIST UST **N/A**

Relative: UST:
Higher Id/Status: 8-015156 / Unregulated/Closed
Program Type: PBS
Region: STATE
Actual: DEC Region: 8
600 ft. Expiration Date: 09/02/2001
UTM X: 269024.56423000002
UTM Y: 4742832.6807700004
Site Type: Other
Affiliation Records:
Site Id: 47647
Affiliation Type: Facility Owner

Map ID
Direction
Distance
Elevation

MAP FINDINGS

Site

Database(s)

EDR ID Number
EPA ID Number

VITALE BROS CONTRACTORS INC (Continued)

U001849678

Company Name: VITALE BROS CONTRACTORS INC
Contact Type: Not reported
Contact Name: Not reported
Address1: 3204 GENESEE STREET BOX 79
Address2: Not reported
City: PIFFARD
State: NY
Zip Code: 14533
Country Code: 001
Phone: (716) 243-1420
EMail: Not reported
Fax Number: Not reported
Modified By: TRANSLAT
Date Last Modified: 3/4/2004

Site Id: 47647
Affiliation Type: Mail Contact
Company Name: VITALE BROS CONTRACTORS INC
Contact Type: Not reported
Contact Name: Not reported
Address1: 3204 GENESEE STREET
Address2: BOX 79
City: PIFFARD
State: NY
Zip Code: 14533-0079
Country Code: 001
Phone: (716) 243-1420
EMail: Not reported
Fax Number: Not reported
Modified By: TRANSLAT
Date Last Modified: 3/4/2004

Site Id: 47647
Affiliation Type: On-Site Operator
Company Name: VITALE BROS CONTRACTORS INC
Contact Type: Not reported
Contact Name: VITALE BROS CONTRACTORS INC
Address1: Not reported
Address2: Not reported
City: Not reported
State: NN
Zip Code: Not reported
Country Code: 001
Phone: (716) 243-1420
EMail: Not reported
Fax Number: Not reported
Modified By: TRANSLAT
Date Last Modified: 3/4/2004

Site Id: 47647
Affiliation Type: Emergency Contact
Company Name: VITALE BROS CONTRACTORS INC
Contact Type: Not reported
Contact Name: WILLIAM VITALE
Address1: Not reported
Address2: Not reported
City: Not reported

Map ID
Direction
Distance
Elevation

MAP FINDINGS

Site

Database(s)

EDR ID Number
EPA ID Number

VITALE BROS CONTRACTORS INC (Continued)

U001849678

State: NN
Zip Code: Not reported
Country Code: 001
Phone: (716) 243-0829
EMail: Not reported
Fax Number: Not reported
Modified By: TRANSLAT
Date Last Modified: 3/4/2004

Tank Info:

Tank Number: 001
Tank ID: 141284
Tank Status: Closed - Removed
Material Name: Closed - Removed
Capacity Gallons: 3000
Install Date: Not reported
Date Tank Closed: 05/01/1997
Registered: True
Tank Location: Underground
Tank Type: Steel/carbon steel
Material Code: 0008
Common Name of Substance: Diesel

Tightness Test Method: 03
Date Test: 04/01/1993
Next Test Date: Not reported
Pipe Model: Not reported
Modified By: TRANSLAT
Last Modified: 03/04/2004

Equipment Records:

B01 - Tank External Protection - Painted/Asphalt Coating
C02 - Pipe Location - Underground/On-ground
F00 - Pipe External Protection - None
A00 - Tank Internal Protection - None
D02 - Pipe Type - Galvanized Steel
G00 - Tank Secondary Containment - None
H99 - Tank Leak Detection - Other
J02 - Dispenser - Suction Dispenser
I00 - Overfill - None

Tank Number: 002
Tank ID: 141285
Tank Status: Closed - Removed
Material Name: Closed - Removed
Capacity Gallons: 3000
Install Date: Not reported
Date Tank Closed: 05/01/1997
Registered: True
Tank Location: Underground
Tank Type: Steel/carbon steel
Material Code: 0009
Common Name of Substance: Gasoline

Tightness Test Method: 03

Map ID
Direction
Distance
Elevation

MAP FINDINGS

Site

Database(s)

EDR ID Number
EPA ID Number

VITALE BROS CONTRACTORS INC (Continued)

U001849678

Date Test: 04/01/1993
Next Test Date: Not reported
Pipe Model: Not reported
Modified By: TRANSLAT
Last Modified: 03/04/2004

Equipment Records:

B01 - Tank External Protection - Painted/Asphalt Coating
C02 - Pipe Location - Underground/On-ground
F00 - Pipe External Protection - None
A00 - Tank Internal Protection - None
D02 - Pipe Type - Galvanized Steel
G00 - Tank Secondary Containment - None
H99 - Tank Leak Detection - Other
J02 - Dispenser - Suction Dispenser
I00 - Overfill - None

HIST UST:

PBS Number: 8-015156
SPDES Number: Not reported
Emergency Contact: WILLIAM VITALE
Emergency Telephone: (716) 243-0829
Operator: VITALE BROS CONTRACTORS INC
Operator Telephone: (716) 243-1420
Owner Name: VITALE BROS CONTRACTORS INC
Owner Address: 3204 GENESEE STREET BOX 79
Owner City,St,Zip: PIFFARD, NY 14533
Owner Telephone: (716) 243-1420
Owner Type: Corporate/Commercial
Owner Subtype: Not reported
Mailing Name: VITALE BROS CONTRACTORS INC
Mailing Address: 3204 GENESEE STREET
Mailing Address 2: BOX 79
Mailing City,St,Zip: PIFFARD, NY 14533-0079
Mailing Contact: Not reported
Mailing Telephone: (716) 243-1420
Owner Mark: First Owner
Facility Status: 2 - Unregulated by PBS (the total capacity is less than 1,101 gallons)
and Subpart 360-14.
Facility Addr2: Not reported
SWIS ID: 2426
Old PBS Number: Not reported
Facility Type: OTHER
Inspected Date: 04/03/1997
Inspector: MZ
Inspection Result: Not reported
Federal ID: Not reported
Certification Flag: False
Certification Date: 08/01/1996
Expiration Date: 09/02/2001
Renew Flag: False
Renewal Date: Not reported
Total Capacity: 0
FAMT: True
Facility Screen: No Missing Data
Owner Screen: No Missing Data
Tank Screen: 0

Map ID
Direction
Distance
Elevation

MAP FINDINGS

Site

Database(s)

EDR ID Number
EPA ID Number

VITALE BROS CONTRACTORS INC (Continued)

U001849678

Dead Letter: False
CBS Number: Not reported
Town or City: GENESEO
County Code: 24
Town or City: 26
Region: 8

Tank Id: 001
Tank Location: UNDERGROUND
Tank Status: Closed-Removed
Install Date: Not reported
Capacity (gals): 3000
Product Stored: DIESEL
Tank Type: Steel/carbon steel
Tank Internal: None
Tank External: Painted/Asphalt Coating
Pipe Location: Underground
Pipe Type: GALVANIZED STEEL
Pipe Internal: None
Pipe External: None
Second Containment: None
Leak Detection: Other
Overfill Prot: None
Dispenser: Suction
Date Tested: 04/01/1993
Next Test Date: Not reported
Missing Data for Tank: No Missing Data
Date Closed: 05/01/1997
Test Method: Horner EZ Check
Deleted: False
Updated: True
Lat/long: Not reported

Tank Id: 002
Tank Location: UNDERGROUND
Tank Status: Closed-Removed
Install Date: Not reported
Capacity (gals): 3000
Product Stored: LEADED GASOLINE
Tank Type: Steel/carbon steel
Tank Internal: None
Tank External: Painted/Asphalt Coating
Pipe Location: Underground
Pipe Type: GALVANIZED STEEL
Pipe Internal: None
Pipe External: None
Second Containment: None
Leak Detection: Other
Overfill Prot: None
Dispenser: Suction
Date Tested: 04/01/1993
Next Test Date: Not reported
Missing Data for Tank: No Missing Data
Date Closed: 05/01/1997
Test Method: Horner EZ Check
Deleted: False

Map ID
Direction
Distance
Elevation

MAP FINDINGS

Site

Database(s)

EDR ID Number
EPA ID Number

VITALE BROS CONTRACTORS INC (Continued)

U001849678

Updated: True
Lat/long: Not reported

B7
SSW
< 1/8
0.023 mi.
122 ft.

GENESEO VILLAGE STP
RIVERSIDE DRIVE
GENESEO, NY 14454
Site 2 of 3 in cluster B

NY Spills S102127118
N/A

Relative:
Higher

Actual:
599 ft.

SPILLS:

Facility ID: 9201347
Facility Type: ER
DER Facility ID: 116914
Site ID: 136630
DEC Region: 8
Spill Date: 4/29/1992
Spill Number/Closed Date: 9201347 / 3/8/1995
Spill Cause: Equipment Failure
Spill Class: Known release that creates potential for fire or hazard. DEC Response.
Willing Responsible Party. Corrective action taken.

SWIS: 2626
Investigator: VOLLMER
Referred To: Not reported
Reported to Dept: 4/30/1992
CID: Not reported
Water Affected: IN SEWER (FUMES)
Spill Source: Commercial/Industrial
Spill Notifier: Affected Persons
Cleanup Ceased: 11/14/1994
Cleanup Meets Std: True
Last Inspection: Not reported
Recommended Penalty: False
UST Trust: False
Remediation Phase: 0
Date Entered In Computer: 5/5/1992
Spill Record Last Update: 3/22/2006
Spiller Name: MICH IDE
Spiller Company: IDEAL CHEVY-OLDS
Spiller Address: 4181 LAKEVILLE ROAD
Spiller City,St,Zip: GENESEO, NY 14454
Spiller Company: 001
Contact Name: MITCH IDE
Contact Phone: (716) 243-2002
DEC Memo:

Prior to Sept, 2004 data translation this spill Lead_DEC Field was
"BS".04/30/92: B SHUTTS TO RESPOND. 01/25/93: BS MET ON SITE & SPOKE
W/MITCH IDE & SHOP MGR. BS ASKED ABOUT DISPOSAL OF WASTE OIL DRUMS.
DRUMS STILL ON SITE & HAVE YET TO BE SAMPLED. BS TOLD IDE THAT DRUMS
MUST BE SAMPLED, ANALYZED & DISPOSED OF PROPERLY AS SOON AS POSSIBLE.
IDE TO SEND COPIES OF DISPOSAL RECEIPTS WHEN CLEANUP COMPLETE.
11/14/94: BS INSPECTED SITE 7 FOUND DRUMS HAVE BEEN DISPOSED OF
OFF-SITE. NO FURTHER ACTION NEEDED AT THIS TIME. 03/22/06: PAPER FILE
REMOVED PER FILE RETENTION POLICY.
Remarks: TREATMENT PLANT SUPERVISOR INFORMED T PEARSON OF OIL/SOLVENT MATERIAL
ENTERING INTO PRIMARY CLARIFIERS OF PLANT. MICH IDE'S CAR DEALERSHIP
IS SUSPECTED SPILLER. CONTACT: MITCH IDE

Material:
Site ID: 136630

Map ID
Direction
Distance
Elevation

MAP FINDINGS

Site

Database(s)

EDR ID Number
EPA ID Number

GENESEO VILLAGE STP (Continued)

S102127118

Operable Unit ID: 968718
Operable Unit: 01
Material ID: 412670
Material Code: 0022
Material Name: waste oil/used oil
Case No.: Not reported
Material FA: Petroleum
Quantity: 0
Units: Gallons
Recovered: No
Resource Affected: Not reported
Oxygenate: False

Tank Test:

B8
SSW
< 1/8
0.028 mi.
148 ft.

CHAMPION PRODUCTS INC
COURT ST
GENESEO, NY 14454

RCRA NonGen / NLR **1004757661**
MANIFEST **NYD986945798**

Site 3 of 3 in cluster B

Relative:
Lower

RCRA NonGen / NLR:

Date form received by agency: 01/01/2007

Facility name: CHAMPION PRODUCTS INC

Facility address: COURT ST
GENESEO, NY 14454

EPA ID: NYD986945798

Contact: KARL SCHLIFKE

Contact address: COURT ST
GENESEO, NY 14454

Contact country: US

Contact telephone: (716) 237-6111

Contact email: Not reported

EPA Region: 02

Classification: Non-Generator

Description: Handler: Non-Generators do not presently generate hazardous waste

Owner/Operator Summary:

Owner/operator name: CHAMPION PRODUCTS INC
Owner/operator address: 3141 MONROE AVE
ROCHESTER, NY 14603

Owner/operator country: US
Owner/operator telephone: (716) 385-3200

Legal status: Private

Owner/Operator Type: Owner

Owner/Op start date: Not reported

Owner/Op end date: Not reported

Owner/operator name: CHAMPION PRODUCTS INC
Owner/operator address: 3141 MONROE AVE
ROCHESTER, NY 14603

Owner/operator country: US
Owner/operator telephone: (716) 385-3200

Legal status: Private

Owner/Operator Type: Operator

Owner/Op start date: Not reported

Map ID
Direction
Distance
Elevation

MAP FINDINGS

Site

Database(s)

EDR ID Number
EPA ID Number

CHAMPION PRODUCTS INC (Continued)

1004757661

Owner/Op end date: Not reported

Handler Activities Summary:

U.S. importer of hazardous waste: No
Mixed waste (haz. and radioactive): No
Recycler of hazardous waste: No
Transporter of hazardous waste: No
Treater, storer or disposer of HW: No
Underground injection activity: No
On-site burner exemption: No
Furnace exemption: No
Used oil fuel burner: No
Used oil processor: No
User oil refiner: No
Used oil fuel marketer to burner: No
Used oil Specification marketer: No
Used oil transfer facility: No
Used oil transporter: No

Historical Generators:

Date form received by agency: 01/01/2006

Site name: CHAMPION PRODUCTS INC

Classification: Not a generator, verified

Date form received by agency: 03/27/1991

Site name: CHAMPION PRODUCTS INC

Classification: Conditionally Exempt Small Quantity Generator

. Waste code: D001
. Waste name: IGNITABLE WASTE

. Waste code: D018
. Waste name: BENZENE

. Waste code: F002
. Waste name: 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 SOLVENTS LISTED IN F001, F004, AND F005; AND STILL BOTTOMS FROM THE RECOVERY OF THESE SPENT SOLVENTS AND SPENT SOLVENT MIXTURES.

Violation Status: No violations found

NY MANIFEST:

EPA ID: NYD986945798
Country: USA
Location Address 1: 102 COURT STREET
Location Address 2: Not reported
Location City: GENESEO
Location State: NY
Location Zip Code: 14454
Location Zip Code 4: Not reported

Map ID
Direction
Distance
Elevation

MAP FINDINGS

Site

Database(s)

EDR ID Number
EPA ID Number

CHAMPION PRODUCTS INC (Continued)

1004757661

Mailing Info:

Name: CHAMPION PRODUCTS
Contact: DARYLE DEGROFF
Address: 102 COURT STREET
City/State/Zip: GENESEO, NY 14454
Country: USA
Phone: 716-243-0080

Manifest:

Document ID: NYB4766904
Manifest Status: Completed after the designated time period for a TSDF to get a copy to the DEC
Trans1 State ID: NYGJ5250
Trans2 State ID: 10218PNY
Generator Ship Date: 04/22/1992
Trans1 Recv Date: 04/22/1992
Trans2 Recv Date: 05/01/1992
TSD Site Recv Date: 05/02/1992
Part A Recv Date: / /
Part B Recv Date: 05/29/1992
Generator EPA ID: NYD986945798
Trans1 EPA ID: ILD051060408
Trans2 EPA ID: NYD980769947
TSDF ID: KYD053348108
Waste Code: F001 - UNKNOWN
Quantity: 00501
Units: P - Pounds
Number of Containers: 001
Container Type: DM - Metal drums, barrels
Handling Method: B Incineration, heat recovery, burning.
Specific Gravity: 100
Waste Code: F001 - UNKNOWN
Quantity: 00625
Units: P - Pounds
Number of Containers: 001
Container Type: DM - Metal drums, barrels
Handling Method: B Incineration, heat recovery, burning.
Specific Gravity: 100
Waste Code: F001 - UNKNOWN
Quantity: 00625
Units: P - Pounds
Number of Containers: 001
Container Type: DM - Metal drums, barrels
Handling Method: R Material recovery of more than 75 percent of the total material.
Specific Gravity: 100
Year: 1992

Map ID
Direction
Distance
Elevation

MAP FINDINGS

Site

Database(s)

EDR ID Number
EPA ID Number

9
East
< 1/8
0.091 mi.
481 ft.

HIGHLAND APARTMENT
95 MEADOW DRIVE
GENESEO, NY

NY Spills **S102963603**
N/A

Relative:
Higher

Actual:
645 ft.

SPILLS:

Facility ID: 9710475
Facility Type: ER
DER Facility ID: 135126
Site ID: 159971
DEC Region: 8
Spill Date: 12/12/1997
Spill Number/Closed Date: 9710475 / 12/12/1997
Spill Cause: Equipment Failure
Spill Class: Possible release with minimal potential for fire or hazard or Known release with no damage. DEC Response. Willing Responsible Party. Corrective action taken.

SWIS: 2626
Investigator: DLTILTON
Referred To: Not reported
Reported to Dept: 12/12/1997
CID: 369
Water Affected: Not reported
Spill Source: Commercial Vehicle
Spill Notifier: Responsible Party
Cleanup Ceased: 12/12/1997
Cleanup Meets Std: False
Last Inspection: Not reported
Recommended Penalty: False
UST Trust: False
Remediation Phase: 0
Date Entered In Computer: 12/12/1997
Spill Record Last Update: 12/16/1997
Spiller Name: DUANE WILLIAMS
Spiller Company: CID REFUSE
Spiller Address: 10860 OLEAN ROAD
Spiller City,St,Zip: CHAFFEE, NY 14030-001
Contact Name: Not reported
Contact Phone: Not reported
DEC Memo: Prior to Sept, 2004 data translation this spill Lead_DEC Field was "DT"

Remarks: Spill to blacktop cleanup underway. No further action needed by spills. Closed 12/12/97.

Material:

Site ID: 159971
Operable Unit ID: 1056853
Operable Unit: 01
Material ID: 328769
Material Code: 0010
Material Name: hydraulic oil
Case No.: Not reported
Material FA: Petroleum
Quantity: 4
Units: Gallons
Recovered: 4
Resource Affected: Not reported
Oxygenate: False

Map ID
Direction
Distance
Elevation

MAP FINDINGS

Site

Database(s)

EDR ID Number
EPA ID Number

HIGHLAND APARTMENT (Continued)

S102963603

Tank Test:

C10
West
< 1/8
0.118 mi.
625 ft.

LEAST INC
COURT ST & RTE 63
GENESEO, NY 14454

RCRA NonGen / NLR **1000387469**
MANIFEST **NYD013593504**

Site 1 of 4 in cluster C

Relative:
Lower

RCRA NonGen / NLR:

Date form received by agency: 01/01/2007

Facility name: LEAST INC

Facility address: COURT ST & RTE 63
GENESEO, NY 14454

EPA ID: NYD013593504

Contact: Not reported

Contact address: COURT ST & RTE 63
GENESEO, NY 14454

Contact country: US

Contact telephone: Not reported

Contact email: Not reported

EPA Region: 02

Classification: Non-Generator

Description: Handler: Non-Generators do not presently generate hazardous waste

Actual:
570 ft.

Owner/Operator Summary:

Owner/operator name: LEAST INC

Owner/operator address: NOT REQUIRED
NOT REQUIRED, WY 99999

Owner/operator country: US

Owner/operator telephone: (212) 555-1212

Legal status: Private

Owner/Operator Type: Operator

Owner/Op start date: Not reported

Owner/Op end date: Not reported

Owner/operator name: LEAST INC

Owner/operator address: NOT REQUIRED
NOT REQUIRED, WY 99999

Owner/operator country: US

Owner/operator telephone: (212) 555-1212

Legal status: Private

Owner/Operator Type: Owner

Owner/Op start date: Not reported

Owner/Op end date: Not reported

Handler Activities Summary:

U.S. importer of hazardous waste: No

Mixed waste (haz. and radioactive): No

Recycler of hazardous waste: No

Transporter of hazardous waste: No

Treater, storer or disposer of HW: No

Underground injection activity: No

On-site burner exemption: No

Furnace exemption: No

Used oil fuel burner: No

Map ID
Direction
Distance
Elevation

MAP FINDINGS

Site

Database(s)

EDR ID Number
EPA ID Number

LEAST INC (Continued)

1000387469

Used oil processor: No
User oil refiner: No
Used oil fuel marketer to burner: No
Used oil Specification marketer: No
Used oil transfer facility: No
Used oil transporter: No

Historical Generators:

Date form received by agency: 01/01/2006
Site name: LEAST INC
Classification: Not a generator, verified

Date form received by agency: 03/31/1995
Site name: LEAST INC
Classification: Unverified

. Waste code: NONE
. Waste name: None

Date form received by agency: 01/02/1987
Site name: LEAST INC
Classification: Small Quantity Generator

. Waste code: F003
. Waste name: THE FOLLOWING SPENT NONHALOGENATED SOLVENTS: XYLENE, ACETONE, ETHYL 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 NONHALOGENATED SOLVENTS; AND ALL SPENT SOLVENT MIXTURES/BLENDS CONTAINING, BEFORE USE, ONE OR MORE OF THE ABOVE NONHALOGENATED 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.

. Waste code: F005
. Waste name: THE FOLLOWING SPENT NONHALOGENATED 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 NONHALOGENATED SOLVENTS OR THOSE SOLVENTS LISTED IN F001, F002, OR F004; AND STILL BOTTOMS FROM THE RECOVERY OF THESE SPENT SOLVENTS AND SPENT SOLVENT MIXTURES.

. Waste code: U002
. Waste name: 2-PROPANONE (I) (OR) ACETONE (I)

. Waste code: U019
. Waste name: BENZENE (I,T)

. Waste code: U037
. Waste name: BENZENE, CHLORO- (OR) CHLOROBENZENE

. Waste code: U077
. Waste name: ETHANE, 1,2-DICHLORO- (OR) ETHYLENE DICHLORIDE

. Waste code: U080

Map ID
Direction
Distance
Elevation

MAP FINDINGS

Site

Database(s)

EDR ID Number
EPA ID Number

LEAST INC (Continued)

1000387469

. Waste name: METHANE, DICHLORO- (OR) METHYLENE CHLORIDE
. Waste code: U134
. Waste name: HYDROFLUORIC ACID (C,T) (OR) HYDROGEN FLUORIDE (C,T)
. Waste code: U145
. Waste name: LEAD PHOSPHATE (OR) PHOSPHORIC ACID, LEAD(2+) SALT (2:3)
. Waste code: U154
. Waste name: METHANOL (I) (OR) METHYL ALCOHOL (I)
. Waste code: U159
. Waste name: 2-BUTANONE (I,T) (OR) METHYL ETHYL KETONE (MEK) (I,T)
. Waste code: U161
. Waste name: 4-METHYL-2-PENTANONE (I) (OR) METHYL ISOBUTYL KETONE (I) (OR) PENTANOL, 4-METHYL-
. Waste code: U165
. Waste name: NAPHTHALENE
. Waste code: U220
. Waste name: BENZENE, METHYL- (OR) TOLUENE
. Waste code: U228
. Waste name: ETHENE, TRICHLORO- (OR) TRICHLOROETHYLENE
. Waste code: U239
. Waste name: BENZENE, DIMETHYL- (I,T) (OR) XYLENE (I)

Violation Status: No violations found

NY MANIFEST:

EPA ID: NYD013593504
Country: USA
Location Address 1: COURT STREET AT ROUTE 63
Location Address 2: Not reported
Location City: GENESEO
Location State: NY
Location Zip Code: 14454
Location Zip Code 4: Not reported

Mailing Info:

Name: LEASED FORD MERCURY
Contact: LEASED FORD MERCURY
Address: COURT STREET AT ROUTE 63
City/State/Zip: GENESEO, NY 14454
Country: USA
Phone: 716-243-4041

Manifest:

Document ID: NYB5825943
Manifest Status: Completed copy
Trans1 State ID: NYDX5496
Trans2 State ID: Not reported
Generator Ship Date: 12/03/1992
Trans1 Recv Date: 12/03/1992

Map ID
Direction
Distance
Elevation

MAP FINDINGS

Site

Database(s)

EDR ID Number
EPA ID Number

LEAST INC (Continued)

1000387469

Trans2 Recv Date: / /
TSD Site Recv Date: 12/04/1992
Part A Recv Date: 12/14/1992
Part B Recv Date: 12/24/1992
Generator EPA ID: NYD013593504
Trans1 EPA ID: ILD051060408
Trans2 EPA ID: Not reported
TSDF ID: NYD980753784
Waste Code: F005 - UNKNOWN
Quantity: 00150
Units: P - Pounds
Number of Containers: 003
Container Type: DM - Metal drums, barrels
Handling Method: B Incineration, heat recovery, burning.
Specific Gravity: 100
Year: 1992

Document ID: PAC8438463
Manifest Status: Completed copy
Trans1 State ID: PA0331148
Trans2 State ID: Not reported
Generator Ship Date: 11/06/1992
Trans1 Recv Date: 11/06/1992
Trans2 Recv Date: / /
TSD Site Recv Date: 11/07/1992
Part A Recv Date: 11/23/1992
Part B Recv Date: 11/20/1992
Generator EPA ID: NYD013593504
Trans1 EPA ID: ILD051060408
Trans2 EPA ID: Not reported
TSDF ID: PAD981737109
Waste Code: D008 - LEAD 5.0 MG/L TCLP
Quantity: 00100
Units: G - Gallons (liquids only)* (8.3 pounds)
Number of Containers: 001
Container Type: TT - Cargo tank, tank trucks
Handling Method: T Chemical, physical, or biological treatment.
Specific Gravity: 100
Year: 1992

Document ID: NYC0888063
Manifest Status: Completed after the designated time period for a TSDF to get a copy to the DEC
Trans1 State ID: NYDX5496
Trans2 State ID: Not reported
Generator Ship Date: 04/11/1991
Trans1 Recv Date: 04/11/1991
Trans2 Recv Date: / /
TSD Site Recv Date: 04/12/1991
Part A Recv Date: 06/17/1991
Part B Recv Date: 05/02/1991
Generator EPA ID: NYD013593504
Trans1 EPA ID: ILD051060408
Trans2 EPA ID: Not reported
TSDF ID: NYD980753784
Waste Code: F005 - UNKNOWN

Map ID
Direction
Distance
Elevation

MAP FINDINGS

Site

Database(s)

EDR ID Number
EPA ID Number

LEAST INC (Continued)

1000387469

Quantity: 00123
Units: P - Pounds
Number of Containers: 002
Container Type: DM - Metal drums, barrels
Handling Method: B Incineration, heat recovery, burning.
Specific Gravity: 100
Year: 1991

Document ID: NYC0694372
Manifest Status: Completed copy
Trans1 State ID: NYDX5496
Trans2 State ID: Not reported
Generator Ship Date: 01/16/1991
Trans1 Recv Date: 01/16/1991
Trans2 Recv Date: / /
TSD Site Recv Date: 01/17/1991
Part A Recv Date: 02/05/1991
Part B Recv Date: 02/04/1991
Generator EPA ID: NYD013593504
Trans1 EPA ID: ILD051060408
Trans2 EPA ID: Not reported
TSDF ID: NYD980753784
Waste Code: F005 - UNKNOWN
Quantity: 00027
Units: P - Pounds
Number of Containers: 001
Container Type: DM - Metal drums, barrels
Handling Method: B Incineration, heat recovery, burning.
Specific Gravity: 100
Year: 1991

Document ID: NYC0788714
Manifest Status: Completed copy
Trans1 State ID: NYDX5496
Trans2 State ID: Not reported
Generator Ship Date: 02/27/1991
Trans1 Recv Date: 02/27/1991
Trans2 Recv Date: / /
TSD Site Recv Date: 02/27/1991
Part A Recv Date: 03/08/1991
Part B Recv Date: 03/12/1991
Generator EPA ID: NYD013593504
Trans1 EPA ID: ILD051060408
Trans2 EPA ID: Not reported
TSDF ID: NYD980753784
Waste Code: F005 - UNKNOWN
Quantity: 00027
Units: P - Pounds
Number of Containers: 001
Container Type: DM - Metal drums, barrels
Handling Method: B Incineration, heat recovery, burning.
Specific Gravity: 100
Year: 1991

Map ID
Direction
Distance
Elevation

MAP FINDINGS

Site

Database(s)

EDR ID Number
EPA ID Number

LEAST INC (Continued)

1000387469

Document ID: NYC0716398
Manifest Status: Completed after the designated time period for a TSDF to get a copy to the DEC
Trans1 State ID: NYDX5496
Trans2 State ID: Not reported
Generator Ship Date: 02/05/1991
Trans1 Recv Date: 02/05/1991
Trans2 Recv Date: / /
TSD Site Recv Date: 02/05/1991
Part A Recv Date: 02/13/1991
Part B Recv Date: 03/08/1991
Generator EPA ID: NYD013593504
Trans1 EPA ID: ILD051060408
Trans2 EPA ID: Not reported
TSDF ID: NYD980753784
Waste Code: F005 - UNKNOWN
Quantity: 00027
Units: P - Pounds
Number of Containers: 001
Container Type: DM - Metal drums, barrels
Handling Method: B Incineration, heat recovery, burning.
Specific Gravity: 100
Year: 1991

Document ID: NYC1022128
Manifest Status: Completed after the designated time period for a TSDF to get a copy to the DEC
Trans1 State ID: NYDX5496
Trans2 State ID: Not reported
Generator Ship Date: 06/10/1991
Trans1 Recv Date: 06/10/1991
Trans2 Recv Date: / /
TSD Site Recv Date: 06/11/1991
Part A Recv Date: 07/23/1991
Part B Recv Date: 06/20/1991
Generator EPA ID: NYD013593504
Trans1 EPA ID: ILD051060408
Trans2 EPA ID: Not reported
TSDF ID: NYD980753784
Waste Code: F005 - UNKNOWN
Quantity: 00027
Units: P - Pounds
Number of Containers: 001
Container Type: DM - Metal drums, barrels
Handling Method: B Incineration, heat recovery, burning.
Specific Gravity: 100
Year: 1991

Document ID: NYC0935188
Manifest Status: Completed copy
Trans1 State ID: NYDX5496
Trans2 State ID: Not reported
Generator Ship Date: 04/30/1991
Trans1 Recv Date: 04/30/1991
Trans2 Recv Date: / /
TSD Site Recv Date: 04/30/1991
Part A Recv Date: 05/09/1991

Map ID
Direction
Distance
Elevation

MAP FINDINGS

Site

Database(s)

EDR ID Number
EPA ID Number

LEAST INC (Continued)

1000387469

Part B Recv Date: 05/15/1991
Generator EPA ID: NYD013593504
Trans1 EPA ID: ILD051060408
Trans2 EPA ID: Not reported
TSDF ID: NYD980753784
Waste Code: F005 - UNKNOWN
Quantity: 00027
Units: P - Pounds
Number of Containers: 001
Container Type: DM - Metal drums, barrels
Handling Method: B Incineration, heat recovery, burning.
Specific Gravity: 100
Year: 1991

Document ID: NYC0987006
Manifest Status: Completed copy
Trans1 State ID: NYDX5496
Trans2 State ID: Not reported
Generator Ship Date: 05/23/1991
Trans1 Recv Date: 05/23/1991
Trans2 Recv Date: / /
TSD Site Recv Date: 05/24/1991
Part A Recv Date: 06/03/1991
Part B Recv Date: 06/06/1991
Generator EPA ID: NYD013593504
Trans1 EPA ID: ILD051060408
Trans2 EPA ID: Not reported
TSDF ID: NYD980753784
Waste Code: F005 - UNKNOWN
Quantity: 00027
Units: P - Pounds
Number of Containers: 001
Container Type: DM - Metal drums, barrels
Handling Method: B Incineration, heat recovery, burning.
Specific Gravity: 100
Year: 1991

Document ID: NYC0862446
Manifest Status: Completed copy
Trans1 State ID: NYDX5496
Trans2 State ID: Not reported
Generator Ship Date: 03/18/1991
Trans1 Recv Date: 03/18/1991
Trans2 Recv Date: / /
TSD Site Recv Date: 03/20/1991
Part A Recv Date: 03/26/1991
Part B Recv Date: 03/28/1991
Generator EPA ID: NYD013593504
Trans1 EPA ID: ILD051060408
Trans2 EPA ID: Not reported
TSDF ID: NYD980753784
Waste Code: F005 - UNKNOWN
Quantity: 00027
Units: P - Pounds
Number of Containers: 001

Map ID
Direction
Distance
Elevation

MAP FINDINGS

Site

Database(s)

EDR ID Number
EPA ID Number

LEAST INC (Continued)

1000387469

Container Type: DM - Metal drums, barrels
Handling Method: B Incineration, heat recovery, burning.
Specific Gravity: 100
Year: 1991

Document ID: NYC0487203
Manifest Status: Completed copy
Trans1 State ID: 000000000
Trans2 State ID: 000000000
Generator Ship Date: 09/12/1990
Trans1 Recv Date: 09/12/1990
Trans2 Recv Date: / /
TSD Site Recv Date: 09/13/1990
Part A Recv Date: 10/03/1990
Part B Recv Date: 09/25/1990
Generator EPA ID: NYD013593504
Trans1 EPA ID: ILD051060408
Trans2 EPA ID: Not reported
TSDF ID: NYD980753784
Waste Code: F005 - UNKNOWN
Quantity: 00027
Units: P - Pounds
Number of Containers: 001
Container Type: DM - Metal drums, barrels
Handling Method: B Incineration, heat recovery, burning.
Specific Gravity: 100
Year: 1990

Document ID: NYC0580948
Manifest Status: Completed after the designated time period for a TSDF to get a copy to the DEC
Trans1 State ID: NYDX5496
Trans2 State ID: Not reported
Generator Ship Date: 11/12/1990
Trans1 Recv Date: 11/12/1990
Trans2 Recv Date: / /
TSD Site Recv Date: 11/12/1990
Part A Recv Date: 12/10/1990
Part B Recv Date: 12/10/1990
Generator EPA ID: NYD013593504
Trans1 EPA ID: ILD051060408
Trans2 EPA ID: Not reported
TSDF ID: NYD980753784
Waste Code: F005 - UNKNOWN
Quantity: 00027
Units: P - Pounds
Number of Containers: 001
Container Type: DM - Metal drums, barrels
Handling Method: B Incineration, heat recovery, burning.
Specific Gravity: 100
Year: 1990

Document ID: NYC0447603
Manifest Status: Completed copy
Trans1 State ID: NYLK5272

Map ID
Direction
Distance
Elevation

MAP FINDINGS

Site

Database(s)

EDR ID Number
EPA ID Number

LEAST INC (Continued)

1000387469

Trans2 State ID: Not reported
Generator Ship Date: 08/20/1990
Trans1 Recv Date: 08/20/1990
Trans2 Recv Date: / /
TSD Site Recv Date: 08/21/1990
Part A Recv Date: 09/12/1990
Part B Recv Date: 09/13/1990
Generator EPA ID: NYD013593504
Trans1 EPA ID: ILD051060408
Trans2 EPA ID: Not reported
TSDF ID: NYD980753784
Waste Code: F005 - UNKNOWN
Quantity: 00027
Units: P - Pounds
Number of Containers: 001
Container Type: DM - Metal drums, barrels
Handling Method: B Incineration, heat recovery, burning.
Specific Gravity: 100
Year: 1990

Document ID: NYC0125469
Manifest Status: Completed copy
Trans1 State ID: 000000000
Trans2 State ID: 000000000
Generator Ship Date: 02/14/1990
Trans1 Recv Date: 02/14/1990
Trans2 Recv Date: / /
TSD Site Recv Date: 02/15/1990
Part A Recv Date: 03/01/1990
Part B Recv Date: 03/05/1990
Generator EPA ID: NYD013593504
Trans1 EPA ID: ILD051060408
Trans2 EPA ID: Not reported
TSDF ID: NYD980753784
Waste Code: F003 - UNKNOWN
Quantity: 00123
Units: P - Pounds
Number of Containers: 002
Container Type: DM - Metal drums, barrels
Handling Method: B Incineration, heat recovery, burning.
Specific Gravity: 100
Year: 1990

Document ID: NYA9435093
Manifest Status: Completed copy
Trans1 State ID: 000000000
Trans2 State ID: 000000000
Generator Ship Date: 04/27/1989
Trans1 Recv Date: 04/27/1989
Trans2 Recv Date: / /
TSD Site Recv Date: 05/03/1989
Part A Recv Date: 05/03/1989
Part B Recv Date: 05/12/1989
Generator EPA ID: NYD013593504
Trans1 EPA ID: ILD051060408

Map ID
Direction
Distance
Elevation

MAP FINDINGS

Site

Database(s)

EDR ID Number
EPA ID Number

LEAST INC (Continued)

1000387469

Trans2 EPA ID: Not reported
TSDF ID: NYD980753784
Waste Code: F003 - UNKNOWN
Quantity: 00123
Units: P - Pounds
Number of Containers: 002
Container Type: DM - Metal drums, barrels
Handling Method: R Material recovery of more than 75 percent of the total material.
Specific Gravity: 100
Year: 1989

Document ID: NYA9626523
Manifest Status: Completed copy
Trans1 State ID: 000000000
Trans2 State ID: 000000000
Generator Ship Date: 08/09/1989
Trans1 Recv Date: 08/09/1989
Trans2 Recv Date: / /
TSD Site Recv Date: 08/11/1989
Part A Recv Date: 08/14/1989
Part B Recv Date: 08/17/1989
Generator EPA ID: NYD013593504
Trans1 EPA ID: ILD051060408
Trans2 EPA ID: Not reported
TSDF ID: NYD980753784
Waste Code: F003 - UNKNOWN
Quantity: 00123
Units: P - Pounds
Number of Containers: 002
Container Type: DM - Metal drums, barrels
Handling Method: R Material recovery of more than 75 percent of the total material.
Specific Gravity: 100
Year: 1989

Document ID: NYC0373263
Manifest Status: Completed after the designated time period for a TSDF to get a copy to the DEC
Trans1 State ID: 000000000
Trans2 State ID: 000000000
Generator Ship Date: 07/09/1990
Trans1 Recv Date: 07/09/1990
Trans2 Recv Date: / /
TSD Site Recv Date: 07/10/1990
Part A Recv Date: 08/09/1990
Part B Recv Date: 08/01/1990
Generator EPA ID: NYD013593504
Trans1 EPA ID: ILD051060408
Trans2 EPA ID: Not reported
TSDF ID: NYD980753784
Waste Code: F005 - UNKNOWN
Quantity: 00027
Units: P - Pounds
Number of Containers: 001
Container Type: DM - Metal drums, barrels
Handling Method: B Incineration, heat recovery, burning.
Specific Gravity: 100

Map ID
Direction
Distance
Elevation

MAP FINDINGS

Site

Database(s)

EDR ID Number
EPA ID Number

LEAST INC (Continued)

1000387469

Year: 1990

Document ID: NYA9386864
Manifest Status: Completed copy
Trans1 State ID: NYMF6725
Trans2 State ID: Not reported
Generator Ship Date: 03/14/1989
Trans1 Recv Date: 03/14/1989
Trans2 Recv Date: / /
TSD Site Recv Date: 03/15/1989
Part A Recv Date: 03/21/1989
Part B Recv Date: 03/20/1989
Generator EPA ID: NYD013593504
Trans1 EPA ID: ILD051060408
Trans2 EPA ID: Not reported
TSDF ID: NYD980753784
Waste Code: F003 - UNKNOWN
Quantity: 00144
Units: P - Pounds
Number of Containers: 002
Container Type: DM - Metal drums, barrels
Handling Method: B Incineration, heat recovery, burning.
Specific Gravity: 000
Year: 1989

Document ID: NYA9849205
Manifest Status: Completed copy
Trans1 State ID: 000000000
Trans2 State ID: 000000000
Generator Ship Date: 12/14/1989
Trans1 Recv Date: 12/14/1989
Trans2 Recv Date: / /
TSD Site Recv Date: 12/15/1989
Part A Recv Date: 12/20/1989
Part B Recv Date: 12/29/1989
Generator EPA ID: NYD013593504
Trans1 EPA ID: ILD051060408
Trans2 EPA ID: Not reported
TSDF ID: NYD980753784
Waste Code: F003 - UNKNOWN
Quantity: 00027
Units: P - Pounds
Number of Containers: 001
Container Type: DM - Metal drums, barrels
Handling Method: B Incineration, heat recovery, burning.
Specific Gravity: 100
Year: 1989

Document ID: NYA9557032
Manifest Status: Completed copy
Trans1 State ID: 000000000
Trans2 State ID: 000000000
Generator Ship Date: 06/28/1989
Trans1 Recv Date: 06/28/1989

Map ID
Direction
Distance
Elevation

MAP FINDINGS

Site

Database(s)

EDR ID Number
EPA ID Number

LEAST INC (Continued)

1000387469

Trans2 Recv Date: / /
TSD Site Recv Date: 06/29/1989
Part A Recv Date: 07/03/1989
Part B Recv Date: 07/12/1989
Generator EPA ID: NYD013593504
Trans1 EPA ID: ILD051060408
Trans2 EPA ID: Not reported
TSDF ID: NYD980753784
Waste Code: F003 - UNKNOWN
Quantity: 00027
Units: P - Pounds
Number of Containers: 001
Container Type: DM - Metal drums, barrels
Handling Method: R Material recovery of more than 75 percent of the total material.
Specific Gravity: 100
Year: 1989

C11
West
< 1/8
0.118 mi.
625 ft.

CHAUVIN SAND & GRAVEL
ROUTE 63 & COURT STREET
GENESEO, NY 14454

Site 2 of 4 in cluster C

NY Spills S102128965
N/A

Relative:
Lower

SPILLS:

Facility ID: 8908449
Facility Type: ER
DER Facility ID: 311683
Site ID: 168671
DEC Region: 8
Spill Date: 11/21/1989
Spill Number/Closed Date: 8908449 / 10/22/1990
Spill Cause: Traffic Accident
Spill Class: Known release with minimal potential for fire or hazard. DEC Response.
Willing Responsible Party. Corrective action taken.

Actual:
570 ft.

SWIS: 2626
Investigator: PCLINDEN
Referred To: Not reported
Reported to Dept: 11/21/1989
CID: Not reported
Water Affected: ON LAND
Spill Source: Commercial Vehicle
Spill Notifier: Police Department
Cleanup Ceased: 10/22/1990
Cleanup Meets Std: True
Last Inspection: Not reported
Recommended Penalty: False
UST Trust: False
Remediation Phase: 0
Date Entered In Computer: 11/28/1989
Spill Record Last Update: 3/23/2006
Spiller Name: Not reported
Spiller Company: CHAUVIN SAND & GRAVEL
Spiller Address: 6081 MUDVILLE ROAD
Spiller City,St,Zip: BREWERTON, NY 13029
Spiller Company: 001
Contact Name: Not reported
Contact Phone: Not reported
DEC Memo: Prior to Sept, 2004 data translation this spill Lead_DEC Field was

Map ID
Direction
Distance
Elevation

MAP FINDINGS

Site

Database(s)

EDR ID Number
EPA ID Number

CHAUVIN SAND & GRAVEL (Continued)

S102128965

Remarks: "PL".11/21/89: 11/21/89 POLICE HAD GOTTEN VITALE CONSTRUCTION TO DROP OFF SAND TO ABSORB LIQUID. MIKE DALEY, SUNY GENESEO FACILITIES & PLANNING SERVICES PROVIDED 2 EMPTY DRUMS. 11/21/89: 11/21/89 AFTER PHONING CHAUVIN ABOUT PROPER DISPOSAL, BOTH DRIVERS AGREED TO SWEEP UP CONTAMINATED SAND INTO DRUMS FOR STAGING ON DOT RIGHT-OF-WAY @ SE CORNER W/BUTTON'S (DOT ENG) & DALEY'S APPROVAL. 10/22/90: CLEANUP COMPLETE. 09/28/95: This is additional information about material spilled from the translation of the old spill file: MOTOR OIL, ANTI-FREE.03/23/06: PAPER FILE REMOVED PER FILE RETENTION POLICY. A CHAUVIN SAND & GRAVEL TRACTOR TRAILER RAMMED ANOTHER FROM BEHIND.

Material:
Site ID: 168671
Operable Unit ID: 935802
Operable Unit: 01
Material ID: 445189
Material Code: 0016A
Material Name: non PCB oil
Case No.: Not reported
Material FA: Petroleum
Quantity: 0
Units: Gallons
Recovered: No
Resource Affected: Not reported
Oxygenate: False

Tank Test:

C12
West
< 1/8
0.118 mi.
625 ft.

ROUTE 63 & COURT STREET
ROUTE 63 & COURT STREET
GENESEO, NY 14454

NY Spills **S102128749**
N/A

Site 3 of 4 in cluster C

Relative:
Lower

Actual:
570 ft.

SPILLS:
Facility ID: 8902044
Facility Type: ER
DER Facility ID: 311683
Site ID: 168670
DEC Region: 8
Spill Date: 5/30/1989
Spill Number/Closed Date: 8902044 / 5/30/1989
Spill Cause: Unknown
Spill Class: Possible release with minimal potential for fire or hazard or Known release with no damage. DEC Response. Willing Responsible Party. Corrective action taken.

SWIS:
Investigator: BLUEY
Referred To: Not reported
Reported to Dept: 5/30/1989
CID: Not reported
Water Affected: Not reported
Spill Source: Unknown
Spill Notifier: DEC
Cleanup Ceased: 5/30/1989
Cleanup Meets Std: True
Last Inspection: Not reported

Map ID
Direction
Distance
Elevation

MAP FINDINGS

Site

Database(s)

EDR ID Number
EPA ID Number

ROUTE 63 & COURT STREET (Continued)

S102128749

Recommended Penalty: False
UST Trust: False
Remediation Phase: 0
Date Entered In Computer: 12/2/2003
Spill Record Last Update: 1/16/2015
Spiller Name: Not reported
Spiller Company: UNKNOWN
Spiller Address: Not reported
Spiller City,St,Zip: NY
Spiller Company: 999
Contact Name: Not reported
Contact Phone: Not reported
DEC Memo: Prior to Sept, 2004 data translation this spill Lead_DEC Field was
"CB"05/30/89: 05/30/89 SHERIFF'S OFFICE CALLED TRACED GAS BACK TO A
CERTAIN LUMBER YARD THAT WAS LEAKING GAS. NO FURTHER ACTION NEEDED.
Remarks: CALLER NOTED GAS FLOWING DOWN ROAD INTO STORM SEWER WHICH PROBABLY
GOES TO GENESEE RIVER.

Material:
Site ID: 168670
Operable Unit ID: 927905
Operable Unit: 01
Material ID: 449765
Material Code: 0009
Material Name: gasoline
Case No.: Not reported
Material FA: Petroleum
Quantity: 0
Units: Gallons
Recovered: No
Resource Affected: Not reported
Oxygenate: False

Tank Test:

C13
West
< 1/8
0.118 mi.
625 ft.

LIVINGSTON COUNTY
CT & RTE 63
GENESEO, NY 14454

RCRA NonGen / NLR 1009218059
MANIFEST NYP000959544

Site 4 of 4 in cluster C

Relative:
Lower

RCRA NonGen / NLR:
Date form received by agency: 12/10/2005
Facility name: LIVINGSTON COUNTY
Facility address: CT & RTE 63
GENESEO, NY 14454
EPA ID: NYP000959544
Mailing address: CT ST
GENESEO, NY 14462
Contact: KEVIN NIEDERMAIER
Contact address: CT ST
GENESEO, NY 14462
Contact country: US
Contact telephone: (585) 243-7160
Contact email: Not reported
EPA Region: 02
Classification: Non-Generator

Actual:
570 ft.

Map ID
Direction
Distance
Elevation

MAP FINDINGS

Site

Database(s)

EDR ID Number
EPA ID Number

LIVINGSTON COUNTY (Continued)

1009218059

Description: Handler: Non-Generators do not presently generate hazardous waste

Handler Activities Summary:

U.S. importer of hazardous waste: No
Mixed waste (haz. and radioactive): No
Recycler of hazardous waste: No
Transporter of hazardous waste: No
Treater, storer or disposer of HW: No
Underground injection activity: No
On-site burner exemption: No
Furnace exemption: No
Used oil fuel burner: No
Used oil processor: No
User oil refiner: No
Used oil fuel marketer to burner: No
Used oil Specification marketer: No
Used oil transfer facility: No
Used oil transporter: No

Historical Generators:

Date form received by agency: 12/09/2005
Site name: LIVINGSTON COUNTY
Classification: Not a generator, verified

Date form received by agency: 12/08/2005
Site name: LIVINGSTON COUNTY
Classification: Not a generator, verified

Violation Status: No violations found

NY MANIFEST:

EPA ID: NYP000959544
Country: USA
Location Address 1: COURT & ROUTE 63
Location Address 2: Not reported
Location City: GENESEO
Location State: NY
Location Zip Code: 14454
Location Zip Code 4: Not reported

Mailing Info:

Name: LIVINGSTON COUNTY
Contact: SARAH LONG
Address: 6 COURT STREET
City/State/Zip: GENESEO, NY 14454
Country: USA
Phone: 585-243-7160

Manifest:

Document ID: NYC7688957
Manifest Status: Not reported
Trans1 State ID: TXR000050930
Trans2 State ID: NJD071629976
Generator Ship Date: 02/17/2006
Trans1 Recv Date: 02/17/2006
Trans2 Recv Date: 02/24/2006

Map ID
Direction
Distance
Elevation

MAP FINDINGS

Site

Database(s)

EDR ID Number
EPA ID Number

LIVINGSTON COUNTY (Continued)

1009218059

TSD Site Recv Date: 02/27/2006
Part A Recv Date: Not reported
Part B Recv Date: Not reported
Generator EPA ID: NYP000959544
Trans1 EPA ID: NY27336JS
Trans2 EPA ID: T2L227
TSD ID: KYD053348108
Waste Code: D006 - CADMIUM 1.0 MG/L TCLP
Quantity: 00055
Units: P - Pounds
Number of Containers: 001
Container Type: DM - Metal drums, barrels
Handling Method: B Incineration, heat recovery, burning.
Specific Gravity: 01.00
Year: 2006

14
WNW
1/8-1/4
0.129 mi.
679 ft.

NYSDOT BIN 1028700
RT 63 OVER GENESEE RIVER
GENESEO, NY 14454

UST **1000191606**
RCRA NonGen / NLR **NYD986878734**
MANIFEST

Relative:
Lower

UST:
Id/Status: 8-035262 / Unregulated/Closed
Program Type: PBS
Region: STATE
DEC Region: 8
Expiration Date: 10/09/2001
UTM X: 268937.48493999999
UTM Y: 4741264.1117900005
Site Type: Trucking/Transportation/Fleet Operation

Actual:
536 ft.

Affiliation Records:
Site Id: 47825
Affiliation Type: Facility Owner
Company Name: NYS DIVISION OF STATE POLICE
Contact Type: Not reported
Contact Name: Not reported
Address1: 4638 ROUTE #63
Address2: Not reported
City: GENESEO
State: NY
Zip Code: 14454
Country Code: 001
Phone: (716) 657-7794
EMail: Not reported
Fax Number: Not reported
Modified By: TRANSLAT
Date Last Modified: 3/4/2004

Site Id: 47825
Affiliation Type: Mail Contact
Company Name: NYS DIVISION OF STATE POLICE
Contact Type: Not reported
Contact Name: MAJOR ADMINISTRATION
Address1: BLDG 22, STATE CAMPUS
Address2: 1220 WASHINGTON AVE
City: ALBANY

Map ID
Direction
Distance
Elevation

MAP FINDINGS

Site

Database(s)

EDR ID Number
EPA ID Number

NYS DOT BIN 1028700 (Continued)

1000191606

State: NY
Zip Code: 12226-2252
Country Code: 001
Phone: (518) 457-6811
EMail: Not reported
Fax Number: Not reported
Modified By: TRANSLAT
Date Last Modified: 3/4/2004

Site Id: 47825
Affiliation Type: On-Site Operator
Company Name: NYS POLICE GENESEO
Contact Type: Not reported
Contact Name: NEW YORK STATE POLICE
Address1: Not reported
Address2: Not reported
City: Not reported
State: NN
Zip Code: Not reported
Country Code: 001
Phone: (716) 657-7794
EMail: Not reported
Fax Number: Not reported
Modified By: TRANSLAT
Date Last Modified: 3/4/2004

Site Id: 47825
Affiliation Type: Emergency Contact
Company Name: NYS DIVISION OF STATE POLICE
Contact Type: Not reported
Contact Name: STATION COMMANDER
Address1: Not reported
Address2: Not reported
City: Not reported
State: NN
Zip Code: Not reported
Country Code: 999
Phone: (607) 347-4400
EMail: Not reported
Fax Number: Not reported
Modified By: MJROMOCK
Date Last Modified: 1/19/2012

Tank Info:

Tank Number: 001
Tank ID: 141854
Tank Status: Closed - Removed
Material Name: Closed - Removed
Capacity Gallons: 1500
Install Date: 08/01/1967
Date Tank Closed: 09/01/1998
Registered: True
Tank Location: Underground
Tank Type: Steel/carbon steel
Material Code: 0009
Common Name of Substance: Gasoline

Map ID
Direction
Distance
Elevation

MAP FINDINGS

Site

Database(s)

EDR ID Number
EPA ID Number

NYS DOT BIN 1028700 (Continued)

1000191606

Tightness Test Method: 02
Date Test: 08/01/1994
Next Test Date: Not reported
Pipe Model: Not reported
Modified By: TRANSLAT
Last Modified: 03/04/2004

Equipment Records:

I00 - Overfill - None
F01 - Pipe External Protection - Painted/Asphalt Coating
H00 - Tank Leak Detection - None
A00 - Tank Internal Protection - None
D02 - Pipe Type - Galvanized Steel
G00 - Tank Secondary Containment - None
J02 - Dispenser - Suction Dispenser
B01 - Tank External Protection - Painted/Asphalt Coating
C02 - Pipe Location - Underground/On-ground

RCRA NonGen / NLR:

Date form received by agency: 01/01/2007
Facility name: NYS DOT BIN 1028700
Facility address: RT 63 OVER GENESEE RIVER
GENESEO, NY 14454
EPA ID: NYD986878734
Mailing address: NYS DOT - 1530 JEFFERSON RD
ROCHESTER, NY 14623
Contact: JOHN LEONARD
Contact address: NYS DOT - 1530 JEFFERSON RD
ROCHESTER, NY 14623
Contact country: US
Contact telephone: (716) 385-6461
Contact email: Not reported
EPA Region: 02
Classification: Non-Generator
Description: Handler: Non-Generators do not presently generate hazardous waste

Owner/Operator Summary:

Owner/operator name: NYS DOT
Owner/operator address: NOT REQUIRED
NOT REQUIRED, WY 99999
Owner/operator country: US
Owner/operator telephone: (212) 555-1212
Legal status: State
Owner/Operator Type: Owner
Owner/Op start date: Not reported
Owner/Op end date: Not reported

Owner/operator name: NYS DOT
Owner/operator address: NOT REQUIRED
NOT REQUIRED, WY 99999
Owner/operator country: US
Owner/operator telephone: (212) 555-1212
Legal status: State
Owner/Operator Type: Operator
Owner/Op start date: Not reported
Owner/Op end date: Not reported

Map ID
Direction
Distance
Elevation

MAP FINDINGS

Site

Database(s)

EDR ID Number
EPA ID Number

NYSDOT BIN 1028700 (Continued)

1000191606

Handler Activities Summary:

U.S. importer of hazardous waste: No
Mixed waste (haz. and radioactive): No
Recycler of hazardous waste: No
Transporter of hazardous waste: No
Treater, storer or disposer of HW: No
Underground injection activity: No
On-site burner exemption: No
Furnace exemption: No
Used oil fuel burner: No
Used oil processor: No
User oil refiner: No
Used oil fuel marketer to burner: No
Used oil Specification marketer: No
Used oil transfer facility: No
Used oil transporter: No

Historical Generators:

Date form received by agency: 01/01/2006

Site name: NYSDOT BIN 1028700

Classification: Not a generator, verified

Date form received by agency: 03/01/1990

Site name: NEW YORK STATE DEPT OF TRANSPORTATION

Classification: Large Quantity Generator

Date form received by agency: 11/23/1988

Site name: NYSDOT BIN 1028700

Classification: Not a generator, verified

. Waste code: D000

. Waste name: Not Defined

. Waste code: D008

. Waste name: LEAD

Violation Status: No violations found

NY MANIFEST:

EPA ID: NYD986878734

Country: USA

Location Address 1: ROUTE 63 OV GENESEE RIV

Location Address 2: Not reported

Location City: GENESEO

Location State: NY

Location Zip Code: Not reported

Location Zip Code 4: Not reported

Mailing Info:

Name: NYSDOT- BIN 1028700

Contact: NYSDOT

Address: 1530 JEFFERSON ROAD

City/State/Zip: ROCHESTER, NY 14623

Country: USA

Phone: 716-385-6461

Map ID
Direction
Distance
Elevation

MAP FINDINGS

Site

Database(s)

EDR ID Number
EPA ID Number

NYSDOT BIN 1028700 (Continued)

1000191606

Manifest:

Document ID:	NYA8332686
Manifest Status:	Completed copy
Trans1 State ID:	000000000
Trans2 State ID:	000000000
Generator Ship Date:	03/15/1989
Trans1 Recv Date:	03/15/1989
Trans2 Recv Date:	/ /
TSD Site Recv Date:	03/16/1989
Part A Recv Date:	03/27/1989
Part B Recv Date:	03/23/1989
Generator EPA ID:	NYD986878734
Trans1 EPA ID:	NYD094166873
Trans2 EPA ID:	Not reported
TSD ID:	NYD049836679
Waste Code:	D008 - LEAD 5.0 MG/L TCLP
Quantity:	50260
Units:	P - Pounds
Number of Containers:	001
Container Type:	DT - Dump trucks
Handling Method:	L Landfill.
Specific Gravity:	100
Year:	1989
Document ID:	NYB4896108
Manifest Status:	Not reported
Trans1 State ID:	T424YS
Trans2 State ID:	Not reported
Generator Ship Date:	02/25/2000
Trans1 Recv Date:	02/25/2000
Trans2 Recv Date:	Not reported
TSD Site Recv Date:	02/25/2000
Part A Recv Date:	Not reported
Part B Recv Date:	Not reported
Generator EPA ID:	NYD986878734
Trans1 EPA ID:	OHD980568992
Trans2 EPA ID:	Not reported
TSD ID:	OHD980568992
Waste Code:	D008 - LEAD 5.0 MG/L TCLP
Quantity:	00400
Units:	P - Pounds
Number of Containers:	001
Container Type:	DM - Metal drums, barrels
Handling Method:	T Chemical, physical, or biological treatment.
Specific Gravity:	01.00
Year:	2000

Map ID
Direction
Distance
Elevation

MAP FINDINGS

Site

Database(s)

EDR ID Number
EPA ID Number

15
ESE
1/4-1/2
0.440 mi.
2322 ft.

LIVINGSTON COUNTY SHERIFF
COURT AND MAIN STREET
GENESEO, NY 14454

LTANKS S101508586
N/A

Relative:
Higher

Actual:
770 ft.

LTANKS:

Site ID: 98738
Spill Number/Closed Date: 8181205 / 1/1/1983
Spill Date: 12/4/1981
Spill Cause: Tank Failure
Spill Source: Institutional, Educational, Gov., Other
Spill Class: Known release with minimal potential for fire or hazard. DEC Response.
Willing Responsible Party. Corrective action taken.
Cleanup Ceased: 1/1/1983
Cleanup Meets Standard: True
SWIS: 2626
Investigator: PCLINDEN
Referred To: Not reported
Reported to Dept: 12/4/1981
CID: Not reported
Water Affected: GROUNDWATER
Spill Notifier: Other
Last Inspection: Not reported
Recommended Penalty: False
UST Involvement: True
Remediation Phase: 0
Date Entered In Computer: 12/2/2003
Spill Record Last Update: 3/23/2006
Spiller Name: Not reported
Spiller Company: LIVINGSTON COUNTY SHERIFF
Spiller Address: COURT AND MAIN STREET
Spiller City,St,Zip: GENESEO, NY 14454
Spiller County: 001
Spiller Contact: SKIP PERRY-DOT
Spiller Phone: Not reported
Spiller Extention: Not reported
DEC Region: 8
DER Facility ID: 87808
DEC Memo: Prior to Sept, 2004 data translation this spill Lead_DEC Field was
"PL".12/04/81: DOT USING ABSORBENT PADS.SKIP PERRY FROM DOT ON
SCENE.03/23/06: PAPER FILE REMOVED PER FILE RETENTION POLICY.
Remarks: WHILE REMOVING COUNTY GAOLINE TANK (UNDERGROUND), A JOINT BROKE
SPILLING FUEL.

Material:

Site ID: 98738
Operable Unit ID: 892956
Operable Unit: 01
Material ID: 484224
Material Code: 0009
Material Name: gasoline
Case No.: Not reported
Material FA: Petroleum
Quantity: 10
Units: Gallons
Recovered: 10
Resource Affected: Not reported
Oxygenate: False

Map ID
Direction
Distance
Elevation

MAP FINDINGS

Site

Database(s)

EDR ID Number
EPA ID Number

LIVINGSTON COUNTY SHERIFF (Continued)

S101508586

Tank Test:

D16
ESE
1/4-1/2
0.495 mi.
2616 ft.

NYS ARMORY/NATIONAL GUARD
34 AVON ROAD ROUTE 39
GENESEO, NY 14454

LTANKS
NY Spills
S100781082
N/A

Site 1 of 2 in cluster D

Relative:
Higher

LTANKS:

Actual:
772 ft.

Site ID: 168192
Spill Number/Closed Date: 9609264 / 2/28/2000
Spill Date: 10/24/1996
Spill Cause: Tank Failure
Spill Source: Institutional, Educational, Gov., Other
Spill Class: Known release that creates potential for fire or hazard. DEC Response.
Willing Responsible Party. Corrective action taken.
Cleanup Ceased: 2/28/2000
Cleanup Meets Standard: True
SWIS: 2626
Investigator: TGHALL
Referred To: Not reported
Reported to Dept: 10/24/1996
CID: 297
Water Affected: ON LAND
Spill Notifier: Responsible Party
Last Inspection: 10/29/1996
Recommended Penalty: False
UST Involvement: True
Remediation Phase: 0
Date Entered In Computer: 10/24/1996
Spill Record Last Update: 3/20/2007
Spiller Name: REGGIE HARRIS
Spiller Company: NYS ARMORY
Spiller Address: 34 AVON RD
Spiller City,St,Zip: GENESEO, NY 14454-001
Spiller County:
Spiller Contact: HEIDI GABLE
Spiller Phone: (518) 786-4347
Spiller Extention: Not reported
DEC Region: 8
DER Facility ID: 311642
DEC Memo: 10/25/96: BS INSPECTED THE SITE & FOUND CONTRACTOR, HITCHMAN EXCAVATING, OUT OF REGION 5 AREA, IN THE PROCESS OF REMOVING A 2500 GALLON UNDERGROUND GASOLINE TANK. THERE WAS FREE PRODUCT ON THE WATER IN THE EXCAVATION, @ APPROXIMATELY 1-1/2' BELOW GROUND SURFACE. THE CONTRACTOR WAS PADDING UP FREE PRODUCT. THE TOP OF THE TANK IS NOT EXPOSED YET. HITCHMAN IS TO SUBCONTRACT OUT EP&S FOR THE TANK CLEANING & SOIL SAMPLING PROCEDURES, DUE TO THEIR UNFAMILIARITY WITH REGIONAL TANK CLOSURE POLICY. THE CONTRACTOR IS TO STOCKPILE THE CONTAMINATED SOIL ON SITE. HITCHMAN ALSO IS SCHEDULED TO REMOVE A 2500 GALLON UNDERGROUND DIESEL FUEL TANK. BS TO SUPPLY HITCHMAN WITH REGIONAL UST REMOVAL GUIDANCE.10/28/96: JM ON SITE WITH HITCHMAN EXCAVATING; TWO DOUBLE WALLED FIBERGLASS TANKS ARE OUT OF THE GROUND. SOME CONTAMINATED SOIL HAS BEEN REMOVED AND STOCKPILED ON SITE. TO CONTINUE REMOVING SOIL AND ENVIRONMENTAL PRODUCTS TO BE ON SITE TOMORROW TO TAKE SOIL AND WATER SAMPLES FROM THE EXCAVATION.10/29/96:

Map ID
Direction
Distance
Elevation

MAP FINDINGS

Site

Database(s)

EDR ID Number
EPA ID Number

NYS ARMORY/NATIONAL GUARD (Continued)

S100781082

JM ON SITE WITH RICH HICHTMAN AND RANDY KLOSKO; EXCAVATION HAD BEEN CLEANED OUT. ADDITIONAL CONTAMINATED SOIL HAS BEEN REMOVED. SOIL SAMPLES HAVE BEEN TAKEN FROM THE SIDEWALLS AND A WATER SAMPLE FROM THE BOTTOM OF THE EXCAVATION. MONITORING WELLS ARE TO BE INSTALLED IN THE BACKFILL.03/20/98: TRANSFERRED BS TO SR.09/25/98: TRANSFERED SR TO TH.01/31/00: LETTER REQUEST FOR CLOSURE DOCUMENTATION SENT TO HEIDI GABLE.02/28/00: CLOSURE REPORT RECEIVED. NO FURTHER ACTION REQUIRED BY SPILLS - CLOSED.03/14/07 PAPER FILE REMOVED PER FILE RETENTION POLICY.

Remarks: CALLER DISCOVERED CONTAMINATED SOIL AFTER A TANK REMOVAL. CLEAN UP WILL BE DONE.

Material:

Site ID: 168192
Operable Unit ID: 1040581
Operable Unit: 01
Material ID: 344996
Material Code: 0009
Material Name: gasoline
Case No.: Not reported
Material FA: Petroleum
Quantity: 0
Units: Gallons
Recovered: No
Resource Affected: Not reported
Oxygenate: False

Tank Test:

SPILLS:

Facility ID: 9308278
Facility Type: ER
DER Facility ID: 311642
Site ID: 168191
DEC Region: 8
Spill Date: 9/16/1993
Spill Number/Closed Date: 9308278 / 4/29/1996
Spill Cause: Other
Spill Class: Known release that creates potential for fire or hazard. DEC Response. Willing Responsible Party. Corrective action taken.
SWIS: 2626
Investigator: CAHETTEN
Referred To: Not reported
Reported to Dept: 10/7/1993
CID: Not reported
Water Affected: Not reported
Spill Source: Commercial/Industrial
Spill Notifier: Responsible Party
Cleanup Ceased: 4/29/1996
Cleanup Meets Std: False
Last Inspection: Not reported
Recommended Penalty: False
UST Trust: False
Remediation Phase: 0
Date Entered In Computer: 10/8/1993

Map ID
Direction
Distance
Elevation

MAP FINDINGS

Site

Database(s)

EDR ID Number
EPA ID Number

NYS ARMORY/NATIONAL GUARD (Continued)

S100781082

Spill Record Last Update: 3/22/2006
Spiller Name: Not reported
Spiller Company: NYS ARMORY
Spiller Address: 27 MASTEN AVENUE
Spiller City,St,Zip: BUFFALO, NY 14204
Spiller Company: 001
Contact Name: Not reported
Contact Phone: Not reported
DEC Memo: Prior to Sept, 2004 data translation this spill Lead_DEC Field was "CH"10/07/93: DUG TWO FT BELOW TANK, PID READINGS AT ZERO. NO READINGS ABOVE BACKGROUND ON WALLS. NO WATER IN EXCAVATION. CONFIRMATORY SAMPLES TAKEN FROM EXCAVATION-WILL RUN 8021 METHOD. 10/07/93: DUG OUT OF CONTAMINATION. NEED DOCUMENTATION AND PROPER DISPOSAL RECEIPTS. 10/07/93: CONTACT PERSON: LESLIE T FISHER 716-881-7417.01/24/96: SOIL SAMPLE REPORT RECEIVED FROM ADVANCED ENVIRONMENTAL SERVICES.03/22/06: PAPER FILE REMOVED PER FILE RETENTION POLICY.
Remarks: DURING THE REMOVAL OF A 1,000 GALLON UNDERGROUND STORAGE TANK, CONTAMINATION WAS ENCOUNTERED. NO VISIBLE HOLES. SUCTION SYSTEM. TPA CONSTRUCTION REMOVED & STOCKPILED APPROXIMATELY 15-20 CUBIC YARDS OF CONTAMINATED SOIL.
Material:
Site ID: 168191
Operable Unit ID: 989811
Operable Unit: 01
Material ID: 394511
Material Code: 0009
Material Name: gasoline
Case No.: Not reported
Material FA: Petroleum
Quantity: 0
Units: Gallons
Recovered: No
Resource Affected: Not reported
Oxygenate: False

Tank Test:

D17
ESE
1/4-1/2
0.495 mi.
2616 ft.

NYS ARMORY
ROUTE 39
GENESEO, NY 14454
Site 2 of 2 in cluster D

LTANKS **S100250812**
NY Spills **N/A**

Relative:
Higher

Actual:
772 ft.

LTANKS:
Site ID: 191170
Spill Number/Closed Date: 8800030 / 10/31/1988
Spill Date: 4/1/1988
Spill Cause: Tank Test Failure
Spill Source: Institutional, Educational, Gov., Other
Spill Class: Known release with minimal potential for fire or hazard. DEC Response. Willing Responsible Party. Corrective action taken.
Cleanup Ceased: 10/31/1988
Cleanup Meets Standard: True
SWIS: 2626
Investigator: SCHMIDT

Map ID
Direction
Distance
Elevation

MAP FINDINGS

Site

Database(s)

EDR ID Number
EPA ID Number

NYS ARMORY (Continued)

S100250812

Referred To: Not reported
Reported to Dept: 4/1/1988
CID: Not reported
Water Affected: GROUND WATER
Spill Notifier: Tank Tester
Last Inspection: Not reported
Recommended Penalty: False
UST Involvement: False
Remediation Phase: 0
Date Entered In Computer: 4/15/1988
Spill Record Last Update: 3/23/2006
Spiller Name: BOB TEMPLETON
Spiller Company: NEW YORK STATE ARMORY
Spiller Address: 34 AVON ROAD
Spiller City,St,Zip: GENESEO, NY 14454
Spiller County: 001
Spiller Contact: BOB TEMPLETON
Spiller Phone: (716) 243-0140
Spiller Extension: Not reported
DEC Region: 8
DER Facility ID: 159465
DEC Memo: Prior to Sept, 2004 data translation this spill Lead_DEC Field was "CS". / / : 4/26 SPOKE W/TEMPLETON. UNABLE TO TEST DUE TO VAPOR POCKET. WILL BE EXCAVATING. STEVE STOCKMAN-AES WILL BE CONTACT RE TESTING. 03/28/88: NEW OIL FURNACE INSTALLED. NOTICED FUEL OIL TANK LOST PRODUCT. THERE IS UNDERGROUND COPPER PIPE FROM TANK TO FURNACE. NEW ABOVEGROUND LINE INSTALLED. NO SIGNS OF ANY OIL IN BASEMENT (WAS AN ODOR). 04/01/88: AIR POCKET IS BELIEVED TO BE THE PROBLEM. BOB TEMPLETON, 243-0140 CHECKED TANK ON SATURDAY AND SUNDAY AND THE LEVEL IN THE TANK REMAINED CONSTANT. 04/01/88: HE IS TO CHECK ON MONDAY TO DETERMINE IF TANK IS TO BE RETESTED. 04/04/88: TEMPLETON REPORTS THAT MONITORING SHOWS NO LOSS OF PRODUCT. RETEST FORTHCOMING - MONITORING SHALL CONTINUE. 04/15/88: CONTACT PERSON, BOB TEMPLETON, 243-0140. 10/31/88: PBS,WW WILL ACCEPT SUBMITTED RESULTS AS VALID FOR RETEST HORNER EZ CHECK IN 10/88. TESTED TIGHT. NO FURTHER ACTION REQUIRED.03/23/06: PAPER FILE REMOVED PER FILE RETENTION POLICY.
Remarks: A 10,000 GALLON UNDERGROUND STORAGE TANK FAILED A TIGHTNESS TEST AT -0.7924 GALLONS/HR.

Material:

Site ID: 191170
Operable Unit ID: 916870
Operable Unit: 01
Material ID: 462755
Material Code: 0001A
Material Name: #2 fuel oil
Case No.: Not reported
Material FA: Petroleum
Quantity: 0
Units: Pounds
Recovered: No
Resource Affected: Not reported
Oxygenate: False

Tank Test:

Site ID: 191170

Map ID
Direction
Distance
Elevation

MAP FINDINGS

Site

Database(s)

EDR ID Number
EPA ID Number

NYS ARMORY (Continued)

S100250812

Spill Tank Test: 1533550
Tank Number: Not reported
Tank Size: 0
Test Method: 00
Leak Rate: 0
Gross Fail: Not reported
Modified By: Spills
Last Modified: 10/1/2004
Test Method: Unknown

Site ID: 138359
Spill Number/Closed Date: 8903188 / 6/27/1989
Spill Date: 6/26/1989
Spill Cause: Tank Test Failure
Spill Source: Institutional, Educational, Gov., Other
Spill Class: Known release with minimal potential for fire or hazard. DEC Response.
Willing Responsible Party. Corrective action taken.

Cleanup Ceased: 6/27/1989
Cleanup Meets Standard: True
SWIS: 2626
Investigator: MAGER
Referred To: Not reported
Reported to Dept: 6/26/1989
CID: Not reported
Water Affected: GROUND WATER
Spill Notifier: Responsible Party
Last Inspection: Not reported
Recommended Penalty: False
UST Involvement: True
Remediation Phase: 0
Date Entered In Computer: 12/2/2003
Spill Record Last Update: 3/23/2006
Spiller Name: Not reported
Spiller Company: NYS ARMORY
Spiller Address: ROUTE 39
Spiller City,St,Zip: GENESEO, NY 14454
Spiller County: 001
Spiller Contact: DON TIMMERMAN
Spiller Phone: (716) 624-9470
Spiller Extention: Not reported
DEC Region: 8
DER Facility ID: 311690
DEC Memo: Prior to Sept, 2004 data translation this spill Lead_DEC Field was

"DM".06/26/89: 06/26/89 DM WITNESSED REMOVAL OF ONE 2,000 GAL UG GAS TANK. CONSIDERABLE SOIL CONTAMINATION WAS OBSERVED. CONTAMINATED SOIL WAS NOT BACKFILLED. EARL RHODES OF OGS-SONYEA WAS AT THE SITE.NO FURTHER ACTION NECESSARY. 03/23/06: PAPER FILE REMOVED PER FILE RETENTION POLICY.
Remarks: 2,000 GAL UG TANK REMOVED BY LIVINGSTON MECHANICAL. CONSIDERABLE AMOUNT OF CONTAMINATED SOIL WAS FOUND.

Material:
Site ID: 138359
Operable Unit ID: 928614
Operable Unit: 01
Material ID: 447301

Map ID
Direction
Distance
Elevation

MAP FINDINGS

Site

Database(s)

EDR ID Number
EPA ID Number

NYS ARMORY (Continued)

S100250812

Material Code: 0009
Material Name: gasoline
Case No.: Not reported
Material FA: Petroleum
Quantity: 0
Units: Gallons
Recovered: No
Resource Affected: Not reported
Oxygenate: False

Tank Test:

Site ID: 138359
Spill Tank Test: 1535644
Tank Number: Not reported
Tank Size: 0
Test Method: 00
Leak Rate: 0
Gross Fail: Not reported
Modified By: Spills
Last Modified: 10/1/2004
Test Method: Unknown

SPILLS:

Facility ID: 0109912
Facility Type: ER
DER Facility ID: 283054
Site ID: 138357
DEC Region: 8
Spill Date: 1/8/2002
Spill Number/Closed Date: 0109912 / 1/14/2002
Spill Cause: Deliberate
Spill Class: Known release with minimal potential for fire or hazard. DEC Response.
Willing Responsible Party. Corrective action taken.
SWIS: 2600
Investigator: DLTILTON
Referred To: Not reported
Reported to Dept: 1/14/2002
CID: 281
Water Affected: Not reported
Spill Source: Commercial/Industrial
Spill Notifier: Citizen
Cleanup Ceased: 1/14/2002
Cleanup Meets Std: False
Last Inspection: Not reported
Recommended Penalty: False
UST Trust: False
Remediation Phase: 0
Date Entered In Computer: 1/14/2002
Spill Record Last Update: 1/24/2002
Spiller Name: Not reported
Spiller Company: SAME
Spiller Address: Not reported
Spiller City,St,Zip: NY
Spiller Company: 999
Contact Name: NONE

Map ID
Direction
Distance
Elevation

MAP FINDINGS

Site

Database(s)

EDR ID Number
EPA ID Number

NYS ARMORY (Continued)

S100250812

Contact Phone: (000) 000-0000
DEC Memo: Prior to Sept, 2004 data translation this spill Lead_DEC Field was "DT"
Remarks: CALLER STATES THAT ON THE ABOVE DATE AND TIME AT BALCONI PONTIAC-BUICK, HE WITNESSED AN EMPLOYEE DUMP WHAT APPEARED TO BE ANTIFREEZE INTO THE STORM DRAIN INSIDE THE SERVICE SHOP. CALLER WISHES NOT TO BE IDENTIFIED. COPY TO LAW ENFORCEMENT. LIVINGSTON COUNTY NOTIFIED. COPY TO WATER.

Material:

Site ID: 138357
Operable Unit ID: 847032
Operable Unit: 01
Material ID: 527554
Material Code: 0028A
Material Name: ethylene glycol
Case No.: 00107211
Material FA: Hazardous Material
Quantity: 2
Units: Gallons
Recovered: No
Resource Affected: Not reported
Oxygenate: False

Tank Test:

18
SSE
1/2-1
0.615 mi.
3245 ft.

**GENESEO GAS WORKS
PARK AND MAIN STREET
GENESEO, NY 14454**

**EDR MGP 1008407936
N/A**

**Relative:
Higher**

Manufactured Gas Plants:
No additional information available

**Actual:
753 ft.**

Count: 0 records.

ORPHAN SUMMARY

City	EDR ID	Site Name	Site Address	Zip	Database(s)
NO SITES FOUND					

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.

STANDARD ENVIRONMENTAL RECORDS

Federal NPL site list

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: 03/26/2015	Source: EPA
Date Data Arrived at EDR: 04/08/2015	Telephone: N/A
Date Made Active in Reports: 06/22/2015	Last EDR Contact: 07/09/2015
Number of Days to Update: 75	Next Scheduled EDR Contact: 10/19/2015
	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 7
Telephone: 913-551-7247

EPA Region 4
Telephone 404-562-8033

EPA Region 8
Telephone: 303-312-6774

EPA Region 5
Telephone 312-886-6686

EPA Region 9
Telephone: 415-947-4246

EPA Region 10
Telephone 206-553-8665

Proposed NPL: Proposed National Priority List Sites

A site that has been proposed for listing on the National Priorities List through the issuance of a proposed rule in the Federal Register. EPA then accepts public comments on the site, responds to the comments, and places on the NPL those sites that continue to meet the requirements for listing.

Date of Government Version: 03/26/2015	Source: EPA
Date Data Arrived at EDR: 04/08/2015	Telephone: N/A
Date Made Active in Reports: 06/22/2015	Last EDR Contact: 07/09/2015
Number of Days to Update: 75	Next Scheduled EDR Contact: 10/19/2015
	Data Release Frequency: Quarterly

NPL LIENS: Federal Superfund Liens

Federal Superfund Liens. Under the authority granted the USEPA by 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 received notification of potential liability. USEPA compiles a listing of filed notices of Superfund Liens.

Date of Government Version: 10/15/1991	Source: EPA
Date Data Arrived at EDR: 02/02/1994	Telephone: 202-564-4267
Date Made Active in Reports: 03/30/1994	Last EDR Contact: 08/15/2011
Number of Days to Update: 56	Next Scheduled EDR Contact: 11/28/2011
	Data Release Frequency: No Update Planned

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

Federal Delisted NPL site list

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: 03/26/2015	Source: EPA
Date Data Arrived at EDR: 04/08/2015	Telephone: N/A
Date Made Active in Reports: 06/22/2015	Last EDR Contact: 07/09/2015
Number of Days to Update: 75	Next Scheduled EDR Contact: 10/19/2015
	Data Release Frequency: Quarterly

Federal CERCLIS list

FEDERAL FACILITY: Federal Facility Site Information listing

A listing of National Priority List (NPL) and Base Realignment and Closure (BRAC) sites found in the Comprehensive Environmental Response, Compensation and Liability Information System (CERCLIS) Database where EPA Federal Facilities Restoration and Reuse Office is involved in cleanup activities.

Date of Government Version: 03/26/2015	Source: Environmental Protection Agency
Date Data Arrived at EDR: 04/08/2015	Telephone: 703-603-8704
Date Made Active in Reports: 06/11/2015	Last EDR Contact: 07/10/2015
Number of Days to Update: 64	Next Scheduled EDR Contact: 10/19/2015
	Data Release Frequency: Varies

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: 10/25/2013	Source: EPA
Date Data Arrived at EDR: 11/11/2013	Telephone: 703-412-9810
Date Made Active in Reports: 02/13/2014	Last EDR Contact: 05/29/2015
Number of Days to Update: 94	Next Scheduled EDR Contact: 09/07/2015
	Data Release Frequency: Quarterly

Federal CERCLIS NFRAP site List

CERCLIS-NFRAP: CERCLIS No Further Remedial Action Planned

Archived sites are sites that have been removed and archived from the inventory of CERCLIS sites. Archived status indicates that, to the best of EPA's knowledge, assessment at a site has been completed and that EPA has determined no further steps will be taken to list this site on the National Priorities List (NPL), unless information indicates this decision was not appropriate or other considerations require a recommendation for listing at a later time. This decision does not necessarily mean that there is no hazard associated with a given site; it only means that, based upon available information, the location is not judged to be a potential NPL site.

Date of Government Version: 10/25/2013	Source: EPA
Date Data Arrived at EDR: 11/11/2013	Telephone: 703-412-9810
Date Made Active in Reports: 02/13/2014	Last EDR Contact: 05/29/2015
Number of Days to Update: 94	Next Scheduled EDR Contact: 09/07/2015
	Data Release Frequency: Quarterly

Federal RCRA CORRACTS facilities list

CORRACTS: Corrective Action Report

CORRACTS identifies hazardous waste handlers with RCRA corrective action activity.

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

Date of Government Version: 06/09/2015
Date Data Arrived at EDR: 06/26/2015
Date Made Active in Reports: 09/16/2015
Number of Days to Update: 82

Source: EPA
Telephone: 800-424-9346
Last EDR Contact: 06/26/2015
Next Scheduled EDR Contact: 10/12/2015
Data Release Frequency: Quarterly

Federal RCRA non-CORRACTS TSD facilities list

RCRA-TSDF: RCRA - Treatment, Storage and Disposal

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. 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). 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.

Date of Government Version: 06/09/2015
Date Data Arrived at EDR: 06/26/2015
Date Made Active in Reports: 09/16/2015
Number of Days to Update: 82

Source: Environmental Protection Agency
Telephone: (212) 637-3660
Last EDR Contact: 06/26/2015
Next Scheduled EDR Contact: 10/12/2015
Data Release Frequency: Quarterly

Federal RCRA generators list

RCRA-LQG: RCRA - Large Quantity Generators

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. 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). Large quantity generators (LQGs) generate over 1,000 kilograms (kg) of hazardous waste, or over 1 kg of acutely hazardous waste per month.

Date of Government Version: 06/09/2015
Date Data Arrived at EDR: 06/26/2015
Date Made Active in Reports: 09/16/2015
Number of Days to Update: 82

Source: Environmental Protection Agency
Telephone: (212) 637-3660
Last EDR Contact: 06/26/2015
Next Scheduled EDR Contact: 10/12/2015
Data Release Frequency: Quarterly

RCRA-SQG: RCRA - Small Quantity Generators

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. 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). Small quantity generators (SQGs) generate between 100 kg and 1,000 kg of hazardous waste per month.

Date of Government Version: 06/09/2015
Date Data Arrived at EDR: 06/26/2015
Date Made Active in Reports: 09/16/2015
Number of Days to Update: 82

Source: Environmental Protection Agency
Telephone: (212) 637-3660
Last EDR Contact: 06/26/2015
Next Scheduled EDR Contact: 10/12/2015
Data Release Frequency: Quarterly

RCRA-CESQG: RCRA - Conditionally Exempt Small Quantity Generators

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. 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.

Date of Government Version: 06/09/2015
Date Data Arrived at EDR: 06/26/2015
Date Made Active in Reports: 09/16/2015
Number of Days to Update: 82

Source: Environmental Protection Agency
Telephone: (212) 637-3660
Last EDR Contact: 06/26/2015
Next Scheduled EDR Contact: 10/12/2015
Data Release Frequency: Varies

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

Federal institutional controls / engineering controls registries

LUCIS: Land Use Control Information System

LUCIS contains records of land use control information pertaining to the former Navy Base Realignment and Closure properties.

Date of Government Version: 05/28/2015	Source: Department of the Navy
Date Data Arrived at EDR: 05/29/2015	Telephone: 843-820-7326
Date Made Active in Reports: 06/11/2015	Last EDR Contact: 08/12/2015
Number of Days to Update: 13	Next Scheduled EDR Contact: 11/30/2015
	Data Release Frequency: Varies

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: 06/09/2015	Source: Environmental Protection Agency
Date Data Arrived at EDR: 06/26/2015	Telephone: 703-603-0695
Date Made Active in Reports: 09/02/2015	Last EDR Contact: 08/31/2015
Number of Days to Update: 68	Next Scheduled EDR Contact: 12/14/2015
	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: 06/09/2015	Source: Environmental Protection Agency
Date Data Arrived at EDR: 06/26/2015	Telephone: 703-603-0695
Date Made Active in Reports: 09/02/2015	Last EDR Contact: 08/31/2015
Number of Days to Update: 68	Next Scheduled EDR Contact: 12/14/2015
	Data Release Frequency: Varies

Federal ERNS list

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: 06/22/2015	Source: National Response Center, United States Coast Guard
Date Data Arrived at EDR: 06/26/2015	Telephone: 202-267-2180
Date Made Active in Reports: 09/16/2015	Last EDR Contact: 06/26/2015
Number of Days to Update: 82	Next Scheduled EDR Contact: 10/12/2015
	Data Release Frequency: Annually

State- and tribal - equivalent CERCLIS

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: 06/26/2015	Source: Department of Environmental Conservation
Date Data Arrived at EDR: 06/30/2015	Telephone: 518-402-9622
Date Made Active in Reports: 07/22/2015	Last EDR Contact: 06/26/2015
Number of Days to Update: 22	Next Scheduled EDR Contact: 08/31/2015
	Data Release Frequency: Annually

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

VAPOR REOPENED: Vapor Intrusion Legacy Site List

New York is currently re-evaluating previous assumptions and decisions regarding the potential for soil vapor intrusion exposures at sites. As a result, all past, current, and future contaminated sites will be evaluated to determine whether these sites have the potential for exposures related to soil vapor intrusion.

Date of Government Version: 11/01/2014	Source: Department of Environmental Conservation
Date Data Arrived at EDR: 11/19/2014	Telephone: 518-402-9814
Date Made Active in Reports: 01/12/2015	Last EDR Contact: 05/22/2015
Number of Days to Update: 54	Next Scheduled EDR Contact: 08/31/2015
	Data Release Frequency: Varies

State and tribal landfill and/or solid waste disposal site lists

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: 06/24/2015	Source: Department of Environmental Conservation
Date Data Arrived at EDR: 07/08/2015	Telephone: 518-457-2051
Date Made Active in Reports: 07/22/2015	Last EDR Contact: 07/06/2015
Number of Days to Update: 14	Next Scheduled EDR Contact: 10/19/2015
	Data Release Frequency: Semi-Annually

State and tribal leaking storage tank lists

INDIAN LUST R1: Leaking Underground Storage Tanks on Indian Land

A listing of leaking underground storage tank locations on Indian Land.

Date of Government Version: 02/03/2015	Source: EPA Region 1
Date Data Arrived at EDR: 04/30/2015	Telephone: 617-918-1313
Date Made Active in Reports: 06/22/2015	Last EDR Contact: 07/31/2015
Number of Days to Update: 53	Next Scheduled EDR Contact: 11/09/2015
	Data Release Frequency: Varies

INDIAN LUST R4: Leaking Underground Storage Tanks on Indian Land

LUSTs on Indian land in Florida, Mississippi and North Carolina.

Date of Government Version: 09/30/2014	Source: EPA Region 4
Date Data Arrived at EDR: 03/03/2015	Telephone: 404-562-8677
Date Made Active in Reports: 03/13/2015	Last EDR Contact: 07/22/2015
Number of Days to Update: 10	Next Scheduled EDR Contact: 11/09/2015
	Data Release Frequency: Semi-Annually

INDIAN LUST R10: Leaking Underground Storage Tanks on Indian Land

LUSTs on Indian land in Alaska, Idaho, Oregon and Washington.

Date of Government Version: 02/03/2015	Source: EPA Region 10
Date Data Arrived at EDR: 02/12/2015	Telephone: 206-553-2857
Date Made Active in Reports: 03/13/2015	Last EDR Contact: 07/22/2015
Number of Days to Update: 29	Next Scheduled EDR Contact: 11/09/2015
	Data Release Frequency: Quarterly

INDIAN LUST R9: Leaking Underground Storage Tanks on Indian Land

LUSTs on Indian land in Arizona, California, New Mexico and Nevada

Date of Government Version: 01/08/2015	Source: Environmental Protection Agency
Date Data Arrived at EDR: 01/08/2015	Telephone: 415-972-3372
Date Made Active in Reports: 02/09/2015	Last EDR Contact: 07/31/2015
Number of Days to Update: 32	Next Scheduled EDR Contact: 11/09/2015
	Data Release Frequency: Quarterly

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

INDIAN LUST R6: Leaking Underground Storage Tanks on Indian Land LUSTs on Indian land in New Mexico and Oklahoma.

Date of Government Version: 03/17/2015	Source: EPA Region 6
Date Data Arrived at EDR: 05/01/2015	Telephone: 214-665-6597
Date Made Active in Reports: 06/22/2015	Last EDR Contact: 07/22/2015
Number of Days to Update: 52	Next Scheduled EDR Contact: 11/09/2015
	Data Release Frequency: Varies

INDIAN LUST R7: Leaking Underground Storage Tanks on Indian Land LUSTs on Indian land in Iowa, Kansas, and Nebraska

Date of Government Version: 03/30/2015	Source: EPA Region 7
Date Data Arrived at EDR: 04/28/2015	Telephone: 913-551-7003
Date Made Active in Reports: 06/22/2015	Last EDR Contact: 07/22/2015
Number of Days to Update: 55	Next Scheduled EDR Contact: 11/09/2015
	Data Release Frequency: Varies

INDIAN LUST R8: Leaking Underground Storage Tanks on Indian Land LUSTs on Indian land in Colorado, Montana, North Dakota, South Dakota, Utah and Wyoming.

Date of Government Version: 04/30/2015	Source: EPA Region 8
Date Data Arrived at EDR: 05/05/2015	Telephone: 303-312-6271
Date Made Active in Reports: 06/22/2015	Last EDR Contact: 07/22/2015
Number of Days to Update: 48	Next Scheduled EDR Contact: 11/09/2015
	Data Release Frequency: Quarterly

INDIAN LUST R5: Leaking Underground Storage Tanks on Indian Land Leaking underground storage tanks located on Indian Land in Michigan, Minnesota and Wisconsin.

Date of Government Version: 04/30/2015	Source: EPA, Region 5
Date Data Arrived at EDR: 05/29/2015	Telephone: 312-886-7439
Date Made Active in Reports: 06/22/2015	Last EDR Contact: 07/22/2015
Number of Days to Update: 24	Next Scheduled EDR Contact: 11/09/2015
	Data Release Frequency: Varies

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: 07/21/2015	Source: Department of Environmental Conservation
Date Data Arrived at EDR: 07/21/2015	Telephone: 518-402-9549
Date Made Active in Reports: 08/04/2015	Last EDR Contact: 07/21/2015
Number of Days to Update: 14	Next Scheduled EDR Contact: 08/31/2015
	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: 01/01/2002	Source: Department of Environmental Conservation
Date Data Arrived at EDR: 07/08/2005	Telephone: 518-402-9549
Date Made Active in Reports: 07/14/2005	Last EDR Contact: 07/07/2005
Number of Days to Update: 6	Next Scheduled EDR Contact: N/A
	Data Release Frequency: No Update Planned

State and tribal registered storage tank lists

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

FEMA UST: Underground Storage Tank Listing

A listing of all FEMA owned underground storage tanks.

Date of Government Version: 01/01/2010
Date Data Arrived at EDR: 02/16/2010
Date Made Active in Reports: 04/12/2010
Number of Days to Update: 55

Source: FEMA
Telephone: 202-646-5797
Last EDR Contact: 07/10/2015
Next Scheduled EDR Contact: 10/28/2015
Data Release Frequency: Varies

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: 07/29/2015
Date Data Arrived at EDR: 07/29/2015
Date Made Active in Reports: 08/21/2015
Number of Days to Update: 23

Source: Department of Environmental Conservation
Telephone: 518-402-9549
Last EDR Contact: 07/29/2015
Next Scheduled EDR Contact: 10/12/2015
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: 01/01/2002
Date Data Arrived at EDR: 02/20/2002
Date Made Active in Reports: 03/22/2002
Number of Days to Update: 30

Source: NYSDEC
Telephone: 518-402-9549
Last EDR Contact: 10/24/2005
Next Scheduled EDR Contact: 01/23/2006
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: 01/01/2002
Date Data Arrived at EDR: 02/20/2002
Date Made Active in Reports: 03/22/2002
Number of Days to Update: 30

Source: NYSDEC
Telephone: 518-402-9549
Last EDR Contact: 07/25/2005
Next Scheduled EDR Contact: 10/24/2005
Data Release Frequency: No Update Planned

MOSF: Major Oil Storage Facility Site Listing

These facilities may be onshore facilities or vessels, with petroleum storage capacities of 400,000 gallons or greater.

Date of Government Version: 07/29/2015
Date Data Arrived at EDR: 07/29/2015
Date Made Active in Reports: 08/21/2015
Number of Days to Update: 23

Source: Department of Environmental Conservation
Telephone: 518-402-9549
Last EDR Contact: 07/29/2015
Next Scheduled EDR Contact: 10/12/2015
Data Release Frequency: Quarterly

CBS: Chemical Bulk Storage Site Listing

These facilities 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: 07/29/2015
Date Data Arrived at EDR: 07/29/2015
Date Made Active in Reports: 08/21/2015
Number of Days to Update: 23

Source: Department of Environmental Conservation
Telephone: 518-402-9549
Last EDR Contact: 07/29/2015
Next Scheduled EDR Contact: 10/12/2015
Data Release Frequency: Quarterly

AST: Petroleum Bulk Storage

Registered Aboveground Storage Tanks.

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

Date of Government Version: 07/29/2015
Date Data Arrived at EDR: 07/29/2015
Date Made Active in Reports: 08/21/2015
Number of Days to Update: 23

Source: Department of Environmental Conservation
Telephone: 518-402-9549
Last EDR Contact: 07/29/2015
Next Scheduled EDR Contact: 10/12/2015
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: 01/01/2002
Date Data Arrived at EDR: 02/20/2002
Date Made Active in Reports: 03/22/2002
Number of Days to Update: 30

Source: NYSDEC
Telephone: 518-402-9549
Last EDR Contact: 07/25/2005
Next Scheduled EDR Contact: 10/24/2005
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: 01/01/2002
Date Data Arrived at EDR: 02/20/2002
Date Made Active in Reports: 03/22/2002
Number of Days to Update: 30

Source: NYSDEC
Telephone: 518-402-9549
Last EDR Contact: 07/25/2005
Next Scheduled EDR Contact: 10/24/2005
Data Release Frequency: No Update Planned

INDIAN UST R5: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 5 (Michigan, Minnesota and Wisconsin and Tribal Nations).

Date of Government Version: 04/30/2015
Date Data Arrived at EDR: 05/26/2015
Date Made Active in Reports: 06/22/2015
Number of Days to Update: 27

Source: EPA Region 5
Telephone: 312-886-6136
Last EDR Contact: 07/22/2015
Next Scheduled EDR Contact: 11/09/2015
Data Release Frequency: Varies

INDIAN UST R7: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 7 (Iowa, Kansas, Missouri, Nebraska, and 9 Tribal Nations).

Date of Government Version: 09/23/2014
Date Data Arrived at EDR: 11/25/2014
Date Made Active in Reports: 01/29/2015
Number of Days to Update: 65

Source: EPA Region 7
Telephone: 913-551-7003
Last EDR Contact: 07/22/2015
Next Scheduled EDR Contact: 11/09/2015
Data Release Frequency: Varies

INDIAN UST R6: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 6 (Louisiana, Arkansas, Oklahoma, New Mexico, Texas and 65 Tribes).

Date of Government Version: 03/17/2015
Date Data Arrived at EDR: 05/01/2015
Date Made Active in Reports: 06/22/2015
Number of Days to Update: 52

Source: EPA Region 6
Telephone: 214-665-7591
Last EDR Contact: 07/22/2015
Next Scheduled EDR Contact: 11/09/2015
Data Release Frequency: Semi-Annually

INDIAN UST R8: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 8 (Colorado, Montana, North Dakota, South Dakota, Utah, Wyoming and 27 Tribal Nations).

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

Date of Government Version: 04/30/2015
Date Data Arrived at EDR: 05/05/2015
Date Made Active in Reports: 06/22/2015
Number of Days to Update: 48

Source: EPA Region 8
Telephone: 303-312-6137
Last EDR Contact: 07/22/2015
Next Scheduled EDR Contact: 11/09/2015
Data Release Frequency: Quarterly

INDIAN UST R4: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 4 (Alabama, Florida, Georgia, Kentucky, Mississippi, North Carolina, South Carolina, Tennessee and Tribal Nations)

Date of Government Version: 09/30/2014
Date Data Arrived at EDR: 03/03/2015
Date Made Active in Reports: 03/13/2015
Number of Days to Update: 10

Source: EPA Region 4
Telephone: 404-562-9424
Last EDR Contact: 07/22/2015
Next Scheduled EDR Contact: 11/09/2015
Data Release Frequency: Semi-Annually

INDIAN UST R1: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 1 (Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island, Vermont and ten Tribal Nations).

Date of Government Version: 02/03/2015
Date Data Arrived at EDR: 04/30/2015
Date Made Active in Reports: 06/22/2015
Number of Days to Update: 53

Source: EPA, Region 1
Telephone: 617-918-1313
Last EDR Contact: 07/31/2015
Next Scheduled EDR Contact: 11/09/2015
Data Release Frequency: Varies

INDIAN UST R9: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 9 (Arizona, California, Hawaii, Nevada, the Pacific Islands, and Tribal Nations).

Date of Government Version: 12/14/2014
Date Data Arrived at EDR: 02/13/2015
Date Made Active in Reports: 03/13/2015
Number of Days to Update: 28

Source: EPA Region 9
Telephone: 415-972-3368
Last EDR Contact: 07/31/2015
Next Scheduled EDR Contact: 11/09/2015
Data Release Frequency: Quarterly

INDIAN UST R10: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 10 (Alaska, Idaho, Oregon, Washington, and Tribal Nations).

Date of Government Version: 05/06/2015
Date Data Arrived at EDR: 05/19/2015
Date Made Active in Reports: 06/22/2015
Number of Days to Update: 34

Source: EPA Region 10
Telephone: 206-553-2857
Last EDR Contact: 07/22/2015
Next Scheduled EDR Contact: 11/09/2015
Data Release Frequency: Quarterly

State and tribal institutional control / engineering control registries

RES DECL: Restrictive Declarations Listing

A restrictive declaration is a covenant running with the land which binds the present and future owners of the property. As a condition of certain special permits, the City Planning Commission may require an applicant to sign and record a restrictive declaration that places specified conditions on the future use and development of the property. Certain restrictive declarations are indicated by a D on zoning maps.

Date of Government Version: 11/18/2010
Date Data Arrived at EDR: 06/30/2014
Date Made Active in Reports: 07/21/2014
Number of Days to Update: 21

Source: NYC Department of City Planning
Telephone: 212-720-3401
Last EDR Contact: 06/25/2015
Next Scheduled EDR Contact: 10/05/2015
Data Release Frequency: Varies

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

ENV RES DECL: Environmental Restrictive Declarations

The Environmental Restrictive Declarations (ERD) listed were recorded in connection with a zoning action against the noted Tax Blocks and Tax Lots, or portion thereof, and are available in the property records on file at the Office of the City Register for Bronx, Kings, New York and Queens counties or at the Richmond County Clerk's office. They contain environmental requirements with respect to hazardous materials, air quality and/or noise in accordance with Section 11-15 of this Resolution.

Date of Government Version: 03/31/2015	Source: New York City Department of City Planning
Date Data Arrived at EDR: 06/25/2015	Telephone: 212-720-3300
Date Made Active in Reports: 07/22/2015	Last EDR Contact: 06/19/2015
Number of Days to Update: 27	Next Scheduled EDR Contact: 10/05/2015
	Data Release Frequency: Varies

ENG CONTROLS: Registry of Engineering Controls

Environmental Remediation sites that have engineering controls in place.

Date of Government Version: 06/26/2015	Source: Department of Environmental Conservation
Date Data Arrived at EDR: 06/30/2015	Telephone: 518-402-9553
Date Made Active in Reports: 07/22/2015	Last EDR Contact: 06/26/2015
Number of Days to Update: 22	Next Scheduled EDR Contact: 08/31/2015
	Data Release Frequency: Quarterly

INST CONTROL: Registry of Institutional Controls

Environmental Remediation sites that have institutional controls in place.

Date of Government Version: 06/26/2015	Source: Department of Environmental Conservation
Date Data Arrived at EDR: 06/30/2015	Telephone: 518-402-9553
Date Made Active in Reports: 07/22/2015	Last EDR Contact: 06/26/2015
Number of Days to Update: 22	Next Scheduled EDR Contact: 08/31/2015
	Data Release Frequency: Quarterly

State and tribal voluntary cleanup sites

INDIAN VCP R7: Voluntary Cleanup Priority Listing

A listing of voluntary cleanup priority sites located on Indian Land located in Region 7.

Date of Government Version: 03/20/2008	Source: EPA, Region 7
Date Data Arrived at EDR: 04/22/2008	Telephone: 913-551-7365
Date Made Active in Reports: 05/19/2008	Last EDR Contact: 04/20/2009
Number of Days to Update: 27	Next Scheduled EDR Contact: 07/20/2009
	Data Release Frequency: Varies

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: 06/26/2015	Source: Department of Environmental Conservation
Date Data Arrived at EDR: 06/30/2015	Telephone: 518-402-9711
Date Made Active in Reports: 07/22/2015	Last EDR Contact: 06/26/2015
Number of Days to Update: 22	Next Scheduled EDR Contact: 08/31/2015
	Data Release Frequency: Semi-Annually

INDIAN VCP R1: Voluntary Cleanup Priority Listing

A listing of voluntary cleanup priority sites located on Indian Land located in Region 1.

Date of Government Version: 09/29/2014	Source: EPA, Region 1
Date Data Arrived at EDR: 10/01/2014	Telephone: 617-918-1102
Date Made Active in Reports: 11/06/2014	Last EDR Contact: 06/26/2015
Number of Days to Update: 36	Next Scheduled EDR Contact: 10/12/2015
	Data Release Frequency: Varies

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

State and tribal Brownfields sites

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: 06/26/2015
Date Data Arrived at EDR: 06/30/2015
Date Made Active in Reports: 07/22/2015
Number of Days to Update: 22

Source: Department of Environmental Conservation
Telephone: 518-402-9764
Last EDR Contact: 06/26/2015
Next Scheduled EDR Contact: 08/31/2015
Data Release Frequency: Semi-Annually

ERP: Environmental Restoration Program Listing

In an effort to spur the cleanup and redevelopment of brownfields, New Yorkers approved a \$200 million Environmental Restoration or Brownfields Fund as part of the \$1.75 billion Clean Water/Clean Air Bond Act of 1996 (1996 Bond Act). Enhancements to the program were enacted on October 7, 2003. Under the Environmental Restoration Program, the State provides grants to municipalities to reimburse up to 90 percent of on-site eligible costs and 100% of off-site eligible costs for site investigation and remediation activities. Once remediated, the property may then be reused for commercial, industrial, residential or public use.

Date of Government Version: 06/26/2015
Date Data Arrived at EDR: 06/30/2015
Date Made Active in Reports: 07/22/2015
Number of Days to Update: 22

Source: Department of Environmental Conservation
Telephone: 518-402-9622
Last EDR Contact: 06/26/2015
Next Scheduled EDR Contact: 08/31/2015
Data Release Frequency: Quarterly

ADDITIONAL ENVIRONMENTAL RECORDS

Local Brownfield lists

US BROWNFIELDS: A Listing of Brownfields Sites

Brownfields are real property, the expansion, redevelopment, or reuse of which may be complicated by the presence or potential presence of a hazardous substance, pollutant, or contaminant. Cleaning up and reinvesting in these properties takes development pressures off of undeveloped, open land, and both improves and protects the environment. Assessment, Cleanup and Redevelopment Exchange System (ACRES) stores information reported by EPA Brownfields grant recipients on brownfields properties assessed or cleaned up with grant funding as well as information on Targeted Brownfields Assessments performed by EPA Regions. A listing of ACRES Brownfield sites is obtained from Cleanups in My Community. Cleanups in My Community provides information on Brownfields properties for which information is reported back to EPA, as well as areas served by Brownfields grant programs.

Date of Government Version: 06/22/2015
Date Data Arrived at EDR: 06/24/2015
Date Made Active in Reports: 09/02/2015
Number of Days to Update: 70

Source: Environmental Protection Agency
Telephone: 202-566-2777
Last EDR Contact: 06/24/2015
Next Scheduled EDR Contact: 10/05/2015
Data Release Frequency: Semi-Annually

Local Lists of Landfill / Solid Waste Disposal Sites

SWRCY: Registered Recycling Facility List

A listing of recycling facilities.

Date of Government Version: 06/24/2015
Date Data Arrived at EDR: 07/08/2015
Date Made Active in Reports: 07/22/2015
Number of Days to Update: 14

Source: Department of Environmental Conservation
Telephone: 518-402-8705
Last EDR Contact: 07/06/2015
Next Scheduled EDR Contact: 10/19/2015
Data Release Frequency: Semi-Annually

SWTIRE: Registered Waste Tire Storage & Facility List

A listing of facilities registered to accept waste tires.

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

Date of Government Version: 08/01/2006
Date Data Arrived at EDR: 11/15/2006
Date Made Active in Reports: 11/30/2006
Number of Days to Update: 15

Source: Department of Environmental Conservation
Telephone: 518-402-8694
Last EDR Contact: 07/15/2015
Next Scheduled EDR Contact: 11/02/2015
Data Release Frequency: Annually

INDIAN ODI: Report on the Status of Open Dumps on Indian Lands

Location of open dumps on Indian land.

Date of Government Version: 12/31/1998
Date Data Arrived at EDR: 12/03/2007
Date Made Active in Reports: 01/24/2008
Number of Days to Update: 52

Source: Environmental Protection Agency
Telephone: 703-308-8245
Last EDR Contact: 05/01/2015
Next Scheduled EDR Contact: 08/17/2015
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: 06/30/1985
Date Data Arrived at EDR: 08/09/2004
Date Made Active in Reports: 09/17/2004
Number of Days to Update: 39

Source: Environmental Protection Agency
Telephone: 800-424-9346
Last EDR Contact: 06/09/2004
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

DEBRIS REGION 9: Torres Martinez Reservation Illegal Dump Site Locations

A listing of illegal dump sites location on the Torres Martinez Indian Reservation located in eastern Riverside County and northern Imperial County, California.

Date of Government Version: 01/12/2009
Date Data Arrived at EDR: 05/07/2009
Date Made Active in Reports: 09/21/2009
Number of Days to Update: 137

Source: EPA, Region 9
Telephone: 415-947-4219
Last EDR Contact: 07/22/2015
Next Scheduled EDR Contact: 11/09/2015
Data Release Frequency: No Update Planned

Local Lists of Hazardous waste / Contaminated Sites

US HIST CDL: National Clandestine Laboratory Register

A listing of clandestine drug lab locations. The U.S. Department of Justice ("the Department") provides this web site as a public service. It contains addresses of some locations where law enforcement agencies reported they found chemicals or other items that indicated the presence of either clandestine drug laboratories or dumpsites. In most cases, the source of the entries is not the Department, and the Department has not verified the entry and does not guarantee its accuracy. Members of the public must verify the accuracy of all entries by, for example, contacting local law enforcement and local health departments.

Date of Government Version: 06/01/2015
Date Data Arrived at EDR: 06/02/2015
Date Made Active in Reports: 09/16/2015
Number of Days to Update: 106

Source: Drug Enforcement Administration
Telephone: 202-307-1000
Last EDR Contact: 08/31/2015
Next Scheduled EDR Contact: 12/14/2015
Data Release Frequency: No Update Planned

DEL SHWS: Delisted Registry Sites

A database listing of sites delisted from the Registry of Inactive Hazardous Waste Disposal Sites.

Date of Government Version: 06/26/2015
Date Data Arrived at EDR: 06/30/2015
Date Made Active in Reports: 07/22/2015
Number of Days to Update: 22

Source: Department of Environmental Conservation
Telephone: 518-402-9622
Last EDR Contact: 06/26/2015
Next Scheduled EDR Contact: 08/31/2015
Data Release Frequency: Annually

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

US CDL: Clandestine Drug Labs

A listing of clandestine drug lab locations. The U.S. Department of Justice ("the Department") provides this web site as a public service. It contains addresses of some locations where law enforcement agencies reported they found chemicals or other items that indicated the presence of either clandestine drug laboratories or dumpsites. In most cases, the source of the entries is not the Department, and the Department has not verified the entry and does not guarantee its accuracy. Members of the public must verify the accuracy of all entries by, for example, contacting local law enforcement and local health departments.

Date of Government Version: 05/15/2015
Date Data Arrived at EDR: 06/02/2015
Date Made Active in Reports: 09/16/2015
Number of Days to Update: 106

Source: Drug Enforcement Administration
Telephone: 202-307-1000
Last EDR Contact: 08/31/2015
Next Scheduled EDR Contact: 12/14/2015
Data Release Frequency: Quarterly

Local Lists of Registered Storage Tanks

HIST UST: Historical Petroleum Bulk Storage Database

These facilities have petroleum storage capacities in excess of 1,100 gallons and less than 400,000 gallons. This database contains detailed information per site. It is no longer updated due to the sensitive nature of the information involved. See UST for more current data.

Date of Government Version: 01/01/2002
Date Data Arrived at EDR: 06/02/2006
Date Made Active in Reports: 07/20/2006
Number of Days to Update: 48

Source: Department of Environmental Conservation
Telephone: 518-402-9549
Last EDR Contact: 10/23/2006
Next Scheduled EDR Contact: 01/22/2007
Data Release Frequency: Varies

HIST AST: Historical Petroleum Bulk Storage Database

These facilities have petroleum storage capabilities in excess of 1,100 gallons and less than 400,000 gallons. This database contains detailed information per site. No longer updated due to the sensitive nature of the information involved. See AST for more current data.

Date of Government Version: 01/01/2002
Date Data Arrived at EDR: 06/02/2006
Date Made Active in Reports: 07/20/2006
Number of Days to Update: 48

Source: Department of Environmental Conservation
Telephone: 518-402-9549
Last EDR Contact: 10/23/2006
Next Scheduled EDR Contact: 01/22/2007
Data Release Frequency: No Update Planned

Local Land Records

LIENS: Spill Liens Information

Lien information from the Oil Spill Fund.

Date of Government Version: 08/10/2015
Date Data Arrived at EDR: 08/11/2015
Date Made Active in Reports: 08/21/2015
Number of Days to Update: 10

Source: Office of the State Comptroller
Telephone: 518-474-9034
Last EDR Contact: 08/10/2015
Next Scheduled EDR Contact: 11/23/2015
Data Release Frequency: Varies

LIENS 2: CERCLA Lien Information

A Federal CERCLA ('Superfund') lien can exist by operation of law at any site or property at which EPA has spent Superfund monies. These monies are spent to investigate and address releases and threatened releases of contamination. CERCLIS provides information as to the identity of these sites and properties.

Date of Government Version: 02/18/2014
Date Data Arrived at EDR: 03/18/2014
Date Made Active in Reports: 04/24/2014
Number of Days to Update: 37

Source: Environmental Protection Agency
Telephone: 202-564-6023
Last EDR Contact: 07/22/2015
Next Scheduled EDR Contact: 11/09/2015
Data Release Frequency: Varies

Records of Emergency Release Reports

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

HMIRS: Hazardous Materials Information Reporting System

Hazardous Materials Incident Report System. HMIRS contains hazardous material spill incidents reported to DOT.

Date of Government Version: 06/24/2015	Source: U.S. Department of Transportation
Date Data Arrived at EDR: 06/26/2015	Telephone: 202-366-4555
Date Made Active in Reports: 09/02/2015	Last EDR Contact: 06/26/2015
Number of Days to Update: 68	Next Scheduled EDR Contact: 10/12/2015
	Data Release Frequency: Annually

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: 07/21/2015	Source: Department of Environmental Conservation
Date Data Arrived at EDR: 07/21/2015	Telephone: 518-402-9549
Date Made Active in Reports: 08/04/2015	Last EDR Contact: 07/21/2015
Number of Days to Update: 14	Next Scheduled EDR Contact: 08/31/2015
	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: 01/01/2002	Source: Department of Environmental Conservation
Date Data Arrived at EDR: 07/08/2005	Telephone: 518-402-9549
Date Made Active in Reports: 07/14/2005	Last EDR Contact: 07/07/2005
Number of Days to Update: 6	Next Scheduled EDR Contact: N/A
	Data Release Frequency: No Update Planned

SPILLS 90: SPILLS90 data from FirstSearch

Spills 90 includes those spill and release records available exclusively from FirstSearch databases. Typically, they may include chemical, oil and/or hazardous substance spills recorded after 1990. Duplicate records that are already included in EDR incident and release records are not included in Spills 90.

Date of Government Version: 12/14/2012	Source: FirstSearch
Date Data Arrived at EDR: 01/03/2013	Telephone: N/A
Date Made Active in Reports: 02/12/2013	Last EDR Contact: 01/03/2013
Number of Days to Update: 40	Next Scheduled EDR Contact: N/A
	Data Release Frequency: No Update Planned

SPILLS 80: SPILLS80 data from FirstSearch

Spills 80 includes those spill and release records available from FirstSearch databases prior to 1990. Typically, they may include chemical, oil and/or hazardous substance spills recorded before 1990. Duplicate records that are already included in EDR incident and release records are not included in Spills 80.

Date of Government Version: 11/02/2010	Source: FirstSearch
Date Data Arrived at EDR: 01/03/2013	Telephone: N/A
Date Made Active in Reports: 03/07/2013	Last EDR Contact: 01/03/2013
Number of Days to Update: 63	Next Scheduled EDR Contact: N/A
	Data Release Frequency: No Update Planned

Other Ascertainable Records

RCRA NonGen / NLR: RCRA - Non Generators / No Longer Regulated

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. 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). Non-Generators do not presently generate hazardous waste.

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

Date of Government Version: 06/09/2015
Date Data Arrived at EDR: 06/26/2015
Date Made Active in Reports: 09/16/2015
Number of Days to Update: 82

Source: Environmental Protection Agency
Telephone: (212) 637-3660
Last EDR Contact: 06/26/2015
Next Scheduled EDR Contact: 10/12/2015
Data Release Frequency: Varies

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: 06/06/2014
Date Data Arrived at EDR: 09/10/2014
Date Made Active in Reports: 09/18/2014
Number of Days to Update: 8

Source: U.S. Army Corps of Engineers
Telephone: 202-528-4285
Last EDR Contact: 07/08/2015
Next Scheduled EDR Contact: 09/21/2015
Data Release Frequency: Varies

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: 12/31/2005
Date Data Arrived at EDR: 11/10/2006
Date Made Active in Reports: 01/11/2007
Number of Days to Update: 62

Source: USGS
Telephone: 888-275-8747
Last EDR Contact: 07/14/2015
Next Scheduled EDR Contact: 10/28/2015
Data Release Frequency: Semi-Annually

FEDLAND: Federal and Indian Lands

Federally and Indian administrated lands of the United States. Lands included are administrated by: Army Corps of Engineers, Bureau of Reclamation, National Wild and Scenic River, National Wildlife Refuge, Public Domain Land, Wilderness, Wilderness Study Area, Wildlife Management Area, Bureau of Indian Affairs, Bureau of Land Management, Department of Justice, Forest Service, Fish and Wildlife Service, National Park Service.

Date of Government Version: 12/31/2005
Date Data Arrived at EDR: 02/06/2006
Date Made Active in Reports: 01/11/2007
Number of Days to Update: 339

Source: U.S. Geological Survey
Telephone: 888-275-8747
Last EDR Contact: 07/14/2015
Next Scheduled EDR Contact: 10/28/2015
Data Release Frequency: N/A

SCRD DRYCLEANERS: State Coalition for Remediation of Drycleaners Listing

The State Coalition for Remediation of Drycleaners was established in 1998, with support from the U.S. EPA Office of Superfund Remediation and Technology Innovation. It is comprised of representatives of states with established drycleaner remediation programs. Currently the member states are Alabama, Connecticut, Florida, Illinois, Kansas, Minnesota, Missouri, North Carolina, Oregon, South Carolina, Tennessee, Texas, and Wisconsin.

Date of Government Version: 03/07/2011
Date Data Arrived at EDR: 03/09/2011
Date Made Active in Reports: 05/02/2011
Number of Days to Update: 54

Source: Environmental Protection Agency
Telephone: 615-532-8599
Last EDR Contact: 05/21/2015
Next Scheduled EDR Contact: 08/31/2015
Data Release Frequency: Varies

US FIN ASSUR: Financial Assurance Information

All owners and operators of facilities that treat, store, or dispose of hazardous waste are required to provide proof that they will have sufficient funds to pay for the clean up, closure, and post-closure care of their facilities.

Date of Government Version: 06/01/2015
Date Data Arrived at EDR: 06/02/2015
Date Made Active in Reports: 09/16/2015
Number of Days to Update: 106

Source: Environmental Protection Agency
Telephone: 202-566-1917
Last EDR Contact: 08/12/2015
Next Scheduled EDR Contact: 11/30/2015
Data Release Frequency: Quarterly

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

EPA WATCH LIST: EPA WATCH LIST

EPA maintains a "Watch List" to facilitate dialogue between EPA, state and local environmental agencies on enforcement matters relating to facilities with alleged violations identified as either significant or high priority. Being on the Watch List does not mean that the facility has actually violated the law only that an investigation by EPA or a state or local environmental agency has led those organizations to allege that an unproven violation has in fact occurred. Being on the Watch List does not represent a higher level of concern regarding the alleged violations that were detected, but instead indicates cases requiring additional dialogue between EPA, state and local agencies - primarily because of the length of time the alleged violation has gone unaddressed or unresolved.

Date of Government Version: 08/30/2013	Source: Environmental Protection Agency
Date Data Arrived at EDR: 03/21/2014	Telephone: 617-520-3000
Date Made Active in Reports: 06/17/2014	Last EDR Contact: 08/04/2015
Number of Days to Update: 88	Next Scheduled EDR Contact: 11/23/2015
	Data Release Frequency: Quarterly

2020 COR ACTION: 2020 Corrective Action Program List

The EPA has set ambitious goals for the RCRA Corrective Action program by creating the 2020 Corrective Action Universe. This RCRA cleanup baseline includes facilities expected to need corrective action. The 2020 universe contains a wide variety of sites. Some properties are heavily contaminated while others were contaminated but have since been cleaned up. Still others have not been fully investigated yet, and may require little or no remediation. Inclusion in the 2020 Universe does not necessarily imply failure on the part of a facility to meet its RCRA obligations.

Date of Government Version: 04/22/2013	Source: Environmental Protection Agency
Date Data Arrived at EDR: 03/03/2015	Telephone: 703-308-4044
Date Made Active in Reports: 03/09/2015	Last EDR Contact: 05/14/2015
Number of Days to Update: 6	Next Scheduled EDR Contact: 08/24/2015
	Data Release Frequency: Varies

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: 12/31/2012	Source: EPA
Date Data Arrived at EDR: 01/15/2015	Telephone: 202-260-5521
Date Made Active in Reports: 01/29/2015	Last EDR Contact: 06/25/2015
Number of Days to Update: 14	Next Scheduled EDR Contact: 10/05/2015
	Data Release Frequency: Every 4 Years

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: 12/31/2013	Source: EPA
Date Data Arrived at EDR: 02/12/2015	Telephone: 202-566-0250
Date Made Active in Reports: 06/02/2015	Last EDR Contact: 01/29/2015
Number of Days to Update: 110	Next Scheduled EDR Contact: 06/08/2015
	Data Release Frequency: Annually

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: 12/31/2009	Source: EPA
Date Data Arrived at EDR: 12/10/2010	Telephone: 202-564-4203
Date Made Active in Reports: 02/25/2011	Last EDR Contact: 07/22/2015
Number of Days to Update: 77	Next Scheduled EDR Contact: 11/09/2015
	Data Release Frequency: Annually

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

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: 11/25/2013
Date Data Arrived at EDR: 12/12/2013
Date Made Active in Reports: 02/24/2014
Number of Days to Update: 74

Source: EPA
Telephone: 703-416-0223
Last EDR Contact: 06/12/2015
Next Scheduled EDR Contact: 09/21/2015
Data Release Frequency: Annually

RMP: Risk Management Plans

When Congress passed the Clean Air Act Amendments of 1990, it required EPA to publish regulations and guidance for chemical accident prevention at facilities using extremely hazardous substances. The Risk Management Program Rule (RMP Rule) was written to implement Section 112(r) of these amendments. The rule, which built upon existing industry codes and standards, requires companies of all sizes that use certain flammable and toxic substances to develop a Risk Management Program, which includes a(n): Hazard assessment that details the potential effects of an accidental release, an accident history of the last five years, and an evaluation of worst-case and alternative accidental releases; Prevention program that includes safety precautions and maintenance, monitoring, and employee training measures; and Emergency response program that spells out emergency health care, employee training measures and procedures for informing the public and response agencies (e.g the fire department) should an accident occur.

Date of Government Version: 02/01/2015
Date Data Arrived at EDR: 02/13/2015
Date Made Active in Reports: 03/25/2015
Number of Days to Update: 40

Source: Environmental Protection Agency
Telephone: 202-564-8600
Last EDR Contact: 07/22/2015
Next Scheduled EDR Contact: 11/09/2015
Data Release Frequency: Varies

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: 04/17/1995
Date Data Arrived at EDR: 07/03/1995
Date Made Active in Reports: 08/07/1995
Number of Days to Update: 35

Source: EPA
Telephone: 202-564-4104
Last EDR Contact: 06/02/2008
Next Scheduled EDR Contact: 09/01/2008
Data Release Frequency: No Update Planned

PRP: Potentially Responsible Parties

A listing of verified Potentially Responsible Parties

Date of Government Version: 10/25/2013
Date Data Arrived at EDR: 10/17/2014
Date Made Active in Reports: 10/20/2014
Number of Days to Update: 3

Source: EPA
Telephone: 202-564-6023
Last EDR Contact: 05/14/2015
Next Scheduled EDR Contact: 08/24/2015
Data Release Frequency: Quarterly

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: 07/01/2014
Date Data Arrived at EDR: 10/15/2014
Date Made Active in Reports: 11/17/2014
Number of Days to Update: 33

Source: EPA
Telephone: 202-566-0500
Last EDR Contact: 07/17/2015
Next Scheduled EDR Contact: 10/28/2015
Data Release Frequency: Annually

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

ICIS: Integrated Compliance Information System

The Integrated Compliance Information System (ICIS) supports the information needs of the national enforcement and compliance program as well as the unique needs of the National Pollutant Discharge Elimination System (NPDES) program.

Date of Government Version: 01/23/2015	Source: Environmental Protection Agency
Date Data Arrived at EDR: 02/06/2015	Telephone: 202-564-5088
Date Made Active in Reports: 03/09/2015	Last EDR Contact: 07/09/2015
Number of Days to Update: 31	Next Scheduled EDR Contact: 10/28/2015
	Data Release Frequency: Quarterly

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: 04/09/2009	Source: EPA/Office of Prevention, Pesticides and Toxic Substances
Date Data Arrived at EDR: 04/16/2009	Telephone: 202-566-1667
Date Made Active in Reports: 05/11/2009	Last EDR Contact: 05/20/2015
Number of Days to Update: 25	Next Scheduled EDR Contact: 09/07/2015
	Data Release Frequency: Quarterly

FTTS INSP: FIFRA/ TSCA Tracking System - FIFRA (Federal Insecticide, Fungicide, & Rodenticide Act)/TSCA (Toxic Substances Control Act)

A listing of FIFRA/TSCA Tracking System (FTTS) inspections and enforcements.

Date of Government Version: 04/09/2009	Source: EPA
Date Data Arrived at EDR: 04/16/2009	Telephone: 202-566-1667
Date Made Active in Reports: 05/11/2009	Last EDR Contact: 05/20/2015
Number of Days to Update: 25	Next Scheduled EDR Contact: 09/07/2015
	Data Release Frequency: Quarterly

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: 03/31/2015	Source: Nuclear Regulatory Commission
Date Data Arrived at EDR: 04/09/2015	Telephone: 301-415-7169
Date Made Active in Reports: 06/11/2015	Last EDR Contact: 06/04/2015
Number of Days to Update: 63	Next Scheduled EDR Contact: 09/21/2015
	Data Release Frequency: Quarterly

COAL ASH DOE: Steam-Electric Plant Operation Data

A listing of power plants that store ash in surface ponds.

Date of Government Version: 12/31/2005	Source: Department of Energy
Date Data Arrived at EDR: 08/07/2009	Telephone: 202-586-8719
Date Made Active in Reports: 10/22/2009	Last EDR Contact: 07/13/2015
Number of Days to Update: 76	Next Scheduled EDR Contact: 10/28/2015
	Data Release Frequency: Varies

COAL ASH EPA: Coal Combustion Residues Surface Impoundments List

A listing of coal combustion residues surface impoundments with high hazard potential ratings.

Date of Government Version: 07/01/2014	Source: Environmental Protection Agency
Date Data Arrived at EDR: 09/10/2014	Telephone: N/A
Date Made Active in Reports: 10/20/2014	Last EDR Contact: 06/12/2015
Number of Days to Update: 40	Next Scheduled EDR Contact: 09/21/2015
	Data Release Frequency: Varies

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

PCB TRANSFORMER: PCB Transformer Registration Database

The database of PCB transformer registrations that includes all PCB registration submittals.

Date of Government Version: 02/01/2011	Source: Environmental Protection Agency
Date Data Arrived at EDR: 10/19/2011	Telephone: 202-566-0517
Date Made Active in Reports: 01/10/2012	Last EDR Contact: 07/31/2015
Number of Days to Update: 83	Next Scheduled EDR Contact: 11/09/2015
	Data Release Frequency: Varies

RADINFO: Radiation Information Database

The Radiation Information Database (RADINFO) contains information about facilities that are regulated by U.S. Environmental Protection Agency (EPA) regulations for radiation and radioactivity.

Date of Government Version: 07/07/2015	Source: Environmental Protection Agency
Date Data Arrived at EDR: 07/09/2015	Telephone: 202-343-9775
Date Made Active in Reports: 09/16/2015	Last EDR Contact: 07/09/2015
Number of Days to Update: 69	Next Scheduled EDR Contact: 10/19/2015
	Data Release Frequency: Quarterly

HIST FTTS: FIFRA/TSCA Tracking System Administrative Case Listing

A complete administrative case listing from the FIFRA/TSCA Tracking System (FTTS) for all ten EPA regions. The information was obtained from the National Compliance Database (NCDB). NCDB supports the implementation of FIFRA (Federal Insecticide, Fungicide, and Rodenticide Act) and TSCA (Toxic Substances Control Act). Some EPA regions are now closing out records. Because of that, and the fact that some EPA regions are not providing EPA Headquarters with updated records, it was decided to create a HIST FTTS database. It included records that may not be included in the newer FTTS database updates. This database is no longer updated.

Date of Government Version: 10/19/2006	Source: Environmental Protection Agency
Date Data Arrived at EDR: 03/01/2007	Telephone: 202-564-2501
Date Made Active in Reports: 04/10/2007	Last EDR Contact: 12/17/2007
Number of Days to Update: 40	Next Scheduled EDR Contact: 03/17/2008
	Data Release Frequency: No Update Planned

HIST FTTS INSP: FIFRA/TSCA Tracking System Inspection & Enforcement Case Listing

A complete inspection and enforcement case listing from the FIFRA/TSCA Tracking System (FTTS) for all ten EPA regions. The information was obtained from the National Compliance Database (NCDB). NCDB supports the implementation of FIFRA (Federal Insecticide, Fungicide, and Rodenticide Act) and TSCA (Toxic Substances Control Act). Some EPA regions are now closing out records. Because of that, and the fact that some EPA regions are not providing EPA Headquarters with updated records, it was decided to create a HIST FTTS database. It included records that may not be included in the newer FTTS database updates. This database is no longer updated.

Date of Government Version: 10/19/2006	Source: Environmental Protection Agency
Date Data Arrived at EDR: 03/01/2007	Telephone: 202-564-2501
Date Made Active in Reports: 04/10/2007	Last EDR Contact: 12/17/2008
Number of Days to Update: 40	Next Scheduled EDR Contact: 03/17/2008
	Data Release Frequency: No Update Planned

DOT OPS: Incident and Accident Data

Department of Transportation, Office of Pipeline Safety Incident and Accident data.

Date of Government Version: 07/31/2012	Source: Department of Transportation, Office of Pipeline Safety
Date Data Arrived at EDR: 08/07/2012	Telephone: 202-366-4595
Date Made Active in Reports: 09/18/2012	Last EDR Contact: 08/04/2015
Number of Days to Update: 42	Next Scheduled EDR Contact: 11/16/2015
	Data Release Frequency: Varies

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.

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

Date of Government Version: 12/31/2014
Date Data Arrived at EDR: 04/17/2015
Date Made Active in Reports: 06/02/2015
Number of Days to Update: 46

Source: Department of Justice, Consent Decree Library
Telephone: Varies
Last EDR Contact: 06/22/2015
Next Scheduled EDR Contact: 10/12/2015
Data Release Frequency: Varies

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: 12/31/2011
Date Data Arrived at EDR: 02/26/2013
Date Made Active in Reports: 04/19/2013
Number of Days to Update: 52

Source: EPA/NTIS
Telephone: 800-424-9346
Last EDR Contact: 05/29/2015
Next Scheduled EDR Contact: 09/07/2015
Data Release Frequency: Biennially

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: 12/31/2005
Date Data Arrived at EDR: 12/08/2006
Date Made Active in Reports: 01/11/2007
Number of Days to Update: 34

Source: USGS
Telephone: 202-208-3710
Last EDR Contact: 07/14/2015
Next Scheduled EDR Contact: 10/28/2015
Data Release Frequency: Semi-Annually

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: 09/14/2010
Date Data Arrived at EDR: 10/07/2011
Date Made Active in Reports: 03/01/2012
Number of Days to Update: 146

Source: Department of Energy
Telephone: 505-845-0011
Last EDR Contact: 05/26/2015
Next Scheduled EDR Contact: 09/07/2015
Data Release Frequency: Varies

LEAD SMELTER 1: Lead Smelter Sites

A listing of former lead smelter site locations.

Date of Government Version: 11/25/2014
Date Data Arrived at EDR: 11/26/2014
Date Made Active in Reports: 01/29/2015
Number of Days to Update: 64

Source: Environmental Protection Agency
Telephone: 703-603-8787
Last EDR Contact: 07/07/2015
Next Scheduled EDR Contact: 10/19/2015
Data Release Frequency: Varies

LEAD SMELTER 2: Lead Smelter Sites

A list of several hundred sites in the U.S. where secondary lead smelting was done from 1931 and 1964. These sites may pose a threat to public health through ingestion or inhalation of contaminated soil or dust

Date of Government Version: 04/05/2001
Date Data Arrived at EDR: 10/27/2010
Date Made Active in Reports: 12/02/2010
Number of Days to Update: 36

Source: American Journal of Public Health
Telephone: 703-305-6451
Last EDR Contact: 12/02/2009
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

US AIRS (AFS): Aerometric Information Retrieval System Facility Subsystem (AFS)

The database is a sub-system of Aerometric Information Retrieval System (AIRS). AFS contains compliance data on air pollution point sources regulated by the U.S. EPA and/or state and local air regulatory agencies. This information comes from source reports by various stationary sources of air pollution, such as electric power plants, steel mills, factories, and universities, and provides information about the air pollutants they produce. Action, air program, air program pollutant, and general level plant data. It is used to track emissions and compliance data from industrial plants.

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

Date of Government Version: 07/22/2015
Date Data Arrived at EDR: 07/24/2015
Date Made Active in Reports: 09/02/2015
Number of Days to Update: 40

Source: EPA
Telephone: 202-564-2496
Last EDR Contact: 06/22/2015
Next Scheduled EDR Contact: 10/05/2015
Data Release Frequency: Annually

US AIRS MINOR: Air Facility System Data

A listing of minor source facilities.

Date of Government Version: 07/22/2015
Date Data Arrived at EDR: 07/24/2015
Date Made Active in Reports: 09/02/2015
Number of Days to Update: 40

Source: EPA
Telephone: 202-564-2496
Last EDR Contact: 06/22/2015
Next Scheduled EDR Contact: 10/22/2015
Data Release Frequency: Annually

US 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: 05/14/2015
Date Data Arrived at EDR: 06/03/2015
Date Made Active in Reports: 09/02/2015
Number of Days to Update: 91

Source: Department of Labor, Mine Safety and Health Administration
Telephone: 303-231-5959
Last EDR Contact: 09/01/2015
Next Scheduled EDR Contact: 12/14/2015
Data Release Frequency: Semi-Annually

US MINES 2: Ferrous and Nonferrous Metal Mines Database Listing

This map layer includes ferrous (ferrous metal mines are facilities that extract ferrous metals, such as iron ore or molybdenum) and nonferrous (Nonferrous metal mines are facilities that extract nonferrous metals, such as gold, silver, copper, zinc, and lead) metal mines in the United States.

Date of Government Version: 12/05/2005
Date Data Arrived at EDR: 02/29/2008
Date Made Active in Reports: 04/18/2008
Number of Days to Update: 49

Source: USGS
Telephone: 703-648-7709
Last EDR Contact: 06/05/2015
Next Scheduled EDR Contact: 09/14/2015
Data Release Frequency: Varies

US MINES 3: Active Mines & Mineral Plants Database Listing

Active Mines and Mineral Processing Plant operations for commodities monitored by the Minerals Information Team of the USGS.

Date of Government Version: 04/14/2011
Date Data Arrived at EDR: 06/08/2011
Date Made Active in Reports: 09/13/2011
Number of Days to Update: 97

Source: USGS
Telephone: 703-648-7709
Last EDR Contact: 06/05/2015
Next Scheduled EDR Contact: 09/14/2015
Data Release Frequency: Varies

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: 01/18/2015
Date Data Arrived at EDR: 02/27/2015
Date Made Active in Reports: 03/25/2015
Number of Days to Update: 26

Source: EPA
Telephone: (212) 637-3000
Last EDR Contact: 06/10/2015
Next Scheduled EDR Contact: 09/21/2015
Data Release Frequency: Quarterly

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

AIRS: Air Emissions Data

Point source emissions inventory data.

Date of Government Version: 04/17/2015
Date Data Arrived at EDR: 04/23/2015
Date Made Active in Reports: 05/20/2015
Number of Days to Update: 27

Source: Department of Environmental Conservation
Telephone: 518-402-8452
Last EDR Contact: 07/27/2015
Next Scheduled EDR Contact: 11/09/2015
Data Release Frequency: Annually

COAL ASH: Coal Ash Disposal Site Listing

A listing of coal ash disposal site locations.

Date of Government Version: 07/05/2015
Date Data Arrived at EDR: 07/08/2015
Date Made Active in Reports: 07/22/2015
Number of Days to Update: 14

Source: Department of Environmental Conservation
Telephone: 518-402-8660
Last EDR Contact: 07/06/2015
Next Scheduled EDR Contact: 10/19/2015
Data Release Frequency: Varies

DRYCLEANERS: Registered Drycleaners

A listing of all registered drycleaning facilities.

Date of Government Version: 07/02/2015
Date Data Arrived at EDR: 07/13/2015
Date Made Active in Reports: 07/22/2015
Number of Days to Update: 9

Source: Department of Environmental Conservation
Telephone: 518-402-8403
Last EDR Contact: 06/11/2015
Next Scheduled EDR Contact: 09/28/2015
Data Release Frequency: Varies

E DESIGNATION: E DESIGNATION SITE LISTING

The (E (Environmental)) designation would ensure that sampling and remediation take place on the subject properties, and would avoid any significant impacts related to hazardous materials at these locations. The (E) designations would require that the fee owner of the sites conduct a testing and sampling protocol, and remediation where appropriate, to the satisfaction of the NYCDEP before the issuance of a building permit by the Department of Buildings pursuant to the provisions of Section 11-15 of the Zoning Resolution (Environmental Requirements). The (E) designations also include a mandatory construction-related health and safety plan which must be approved by NYCDEP.

Date of Government Version: 05/27/2015
Date Data Arrived at EDR: 06/25/2015
Date Made Active in Reports: 07/22/2015
Number of Days to Update: 27

Source: New York City Department of City Planning
Telephone: 718-595-6658
Last EDR Contact: 06/19/2015
Next Scheduled EDR Contact: 10/05/2015
Data Release Frequency: Varies

Financial Assurance 1: Financial Assurance Information Listing

Financial assurance information.

Date of Government Version: 07/13/2015
Date Data Arrived at EDR: 07/14/2015
Date Made Active in Reports: 08/04/2015
Number of Days to Update: 21

Source: Department of Environmental Conservation
Telephone: 518-402-8660
Last EDR Contact: 07/06/2015
Next Scheduled EDR Contact: 10/19/2015
Data Release Frequency: Quarterly

Financial Assurance 2: Financial Assurance Information Listing

A listing of financial assurance information for hazardous waste facilities. Financial assurance is intended to ensure that resources are available to pay for the cost of closure, post-closure care, and corrective measures if the owner or operator of a regulated facility is unable or unwilling to pay.

Date of Government Version: 10/01/2014
Date Data Arrived at EDR: 01/06/2015
Date Made Active in Reports: 01/29/2015
Number of Days to Update: 23

Source: Department of Environmental Conservation
Telephone: 518-402-8712
Last EDR Contact: 05/18/2015
Next Scheduled EDR Contact: 08/31/2015
Data Release Frequency: Varies

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

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: 01/01/2003
Date Data Arrived at EDR: 10/20/2006
Date Made Active in Reports: 11/30/2006
Number of Days to Update: 41

Source: Department of Environmental Conservation
Telephone: 518-402-9564
Last EDR Contact: 05/26/2009
Next Scheduled EDR Contact: 08/24/2009
Data Release Frequency: No Update Planned

NY MANIFEST: Facility and Manifest Data

Manifest is a document that lists and tracks hazardous waste from the generator through transporters to a TSD facility.

Date of Government Version: 08/01/2015
Date Data Arrived at EDR: 08/06/2015
Date Made Active in Reports: 08/24/2015
Number of Days to Update: 18

Source: Department of Environmental Conservation
Telephone: 518-402-8651
Last EDR Contact: 08/06/2015
Next Scheduled EDR Contact: 11/16/2015
Data Release Frequency: 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: 07/29/2015
Date Data Arrived at EDR: 07/31/2015
Date Made Active in Reports: 08/21/2015
Number of Days to Update: 21

Source: Department of Environmental Conservation
Telephone: 518-402-8233
Last EDR Contact: 07/27/2015
Next Scheduled EDR Contact: 11/09/2015
Data Release Frequency: No Update Planned

UIC: Underground Injection Control Wells

A listing of enhanced oil recovery underground injection wells.

Date of Government Version: 06/05/2015
Date Data Arrived at EDR: 06/11/2015
Date Made Active in Reports: 07/22/2015
Number of Days to Update: 41

Source: Department of Environmental Conservation
Telephone: 518-402-8056
Last EDR Contact: 06/11/2015
Next Scheduled EDR Contact: 09/21/2015
Data Release Frequency: Quarterly

EDR HIGH RISK HISTORICAL RECORDS

EDR Exclusive Records

EDR MGP: 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.

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

Date of Government Version: N/A
Date Data Arrived at EDR: N/A
Date Made Active in Reports: N/A
Number of Days to Update: N/A

Source: EDR, Inc.
Telephone: N/A
Last EDR Contact: N/A
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

EDR US Hist Auto Stat: EDR Exclusive 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. This database falls within a category of information EDR classifies as "High Risk Historical Records", or HRHR. EDR's HRHR effort presents unique and sometimes proprietary data about past sites and operations that typically create environmental concerns, but may not show up in current government records searches.

Date of Government Version: N/A
Date Data Arrived at EDR: N/A
Date Made Active in Reports: N/A
Number of Days to Update: N/A

Source: EDR, Inc.
Telephone: N/A
Last EDR Contact: N/A
Next Scheduled EDR Contact: N/A
Data Release Frequency: Varies

EDR US Hist Cleaners: EDR Exclusive 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. This database falls within a category of information EDR classifies as "High Risk Historical Records", or HRHR. EDR's HRHR effort presents unique and sometimes proprietary data about past sites and operations that typically create environmental concerns, but may not show up in current government records searches.

Date of Government Version: N/A
Date Data Arrived at EDR: N/A
Date Made Active in Reports: N/A
Number of Days to Update: N/A

Source: EDR, Inc.
Telephone: N/A
Last EDR Contact: N/A
Next Scheduled EDR Contact: N/A
Data Release Frequency: Varies

EDR RECOVERED GOVERNMENT ARCHIVES

Exclusive Recovered Govt. Archives

RGA HWS: Recovered Government Archive State Hazardous Waste Facilities List

The EDR Recovered Government Archive State Hazardous Waste database provides a list of SHWS incidents derived from historical databases and includes many records that no longer appear in current government lists. Compiled from Records formerly available from the Department of Environmental Conservation in New York.

Date of Government Version: N/A
Date Data Arrived at EDR: 07/01/2013
Date Made Active in Reports: 12/30/2013
Number of Days to Update: 182

Source: Department of Environmental Conservation
Telephone: N/A
Last EDR Contact: 06/01/2012
Next Scheduled EDR Contact: N/A
Data Release Frequency: Varies

RGA LF: Recovered Government Archive Solid Waste Facilities List

The EDR Recovered Government Archive Landfill database provides a list of landfills derived from historical databases and includes many records that no longer appear in current government lists. Compiled from Records formerly available from the Department of Environmental Conservation in New York.

Date of Government Version: N/A
Date Data Arrived at EDR: 07/01/2013
Date Made Active in Reports: 01/10/2014
Number of Days to Update: 193

Source: Department of Environmental Conservation
Telephone: N/A
Last EDR Contact: 06/01/2012
Next Scheduled EDR Contact: N/A
Data Release Frequency: Varies

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

COUNTY RECORDS

CORTLAND COUNTY:

Cortland County Storage Tank Listing

A listing of aboveground storage tank sites located in Cortland County.

Date of Government Version: 06/05/2015	Source: Cortland County Health Department
Date Data Arrived at EDR: 06/09/2015	Telephone: 607-753-5035
Date Made Active in Reports: 06/19/2015	Last EDR Contact: 08/03/2015
Number of Days to Update: 10	Next Scheduled EDR Contact: 11/16/2015
	Data Release Frequency: Quarterly

Cortland County Storage Tank Listing

A listing of underground storage tank sites located in Cortland County.

Date of Government Version: 06/05/2015	Source: Cortland County Health Department
Date Data Arrived at EDR: 06/09/2015	Telephone: 607-753-5035
Date Made Active in Reports: 06/19/2015	Last EDR Contact: 08/03/2015
Number of Days to Update: 10	Next Scheduled EDR Contact: 11/16/2015
	Data Release Frequency: Quarterly

NASSAU COUNTY:

Registered Tank Database

A listing of aboveground storage tank sites located in Nassau County.

Date of Government Version: 04/16/2015	Source: Nassau County Health Department
Date Data Arrived at EDR: 07/07/2015	Telephone: 516-571-3314
Date Made Active in Reports: 08/12/2015	Last EDR Contact: 07/01/2015
Number of Days to Update: 36	Next Scheduled EDR Contact: 10/19/2015
	Data Release Frequency: No Update Planned

Storage Tank Database

A listing of aboveground storage tank sites located in Nassau County.

Date of Government Version: 02/15/2011	Source: Nassau County Office of the Fire Marshal
Date Data Arrived at EDR: 02/23/2011	Telephone: 516-572-1000
Date Made Active in Reports: 03/29/2011	Last EDR Contact: 08/03/2015
Number of Days to Update: 34	Next Scheduled EDR Contact: 11/16/2015
	Data Release Frequency: Varies

Registered Tank Database

A listing of underground storage tank sites located in Nassau County.

Date of Government Version: 04/16/2015	Source: Nassau County Health Department
Date Data Arrived at EDR: 07/07/2015	Telephone: 516-571-3314
Date Made Active in Reports: 08/12/2015	Last EDR Contact: 07/01/2015
Number of Days to Update: 36	Next Scheduled EDR Contact: 10/19/2015
	Data Release Frequency: No Update Planned

Storage Tank Database

A listing of underground storage tank sites located in Nassau County.

Date of Government Version: 02/15/2011	Source: Nassau County Office of the Fire Marshal
Date Data Arrived at EDR: 02/23/2011	Telephone: 516-572-1000
Date Made Active in Reports: 03/29/2011	Last EDR Contact: 08/03/2015
Number of Days to Update: 34	Next Scheduled EDR Contact: 11/16/2015
	Data Release Frequency: Varies

ROCKLAND COUNTY:

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

Petroleum Bulk Storage Database

A listing of aboveground storage tank sites located in Rockland County.

Date of Government Version: 06/17/2015
Date Data Arrived at EDR: 06/19/2015
Date Made Active in Reports: 07/23/2015
Number of Days to Update: 34

Source: Rockland County Health Department
Telephone: 914-364-2605
Last EDR Contact: 06/08/2015
Next Scheduled EDR Contact: 09/21/2015
Data Release Frequency: Quarterly

Petroleum Bulk Storage Database

A listing of underground storage tank sites located in Rockland County.

Date of Government Version: 06/17/2015
Date Data Arrived at EDR: 06/19/2015
Date Made Active in Reports: 07/23/2015
Number of Days to Update: 34

Source: Rockland County Health Department
Telephone: 914-364-2605
Last EDR Contact: 06/08/2015
Next Scheduled EDR Contact: 09/21/2015
Data Release Frequency: Quarterly

SUFFOLK COUNTY:

Storage Tank Database

A listing of aboveground storage tank sites located in Suffolk County.

Date of Government Version: 03/03/2015
Date Data Arrived at EDR: 03/10/2015
Date Made Active in Reports: 03/23/2015
Number of Days to Update: 13

Source: Suffolk County Department of Health Services
Telephone: 631-854-2521
Last EDR Contact: 08/03/2015
Next Scheduled EDR Contact: 11/16/2015
Data Release Frequency: No Update Planned

Storage Tank Database

A listing of underground storage tank sites located in Suffolk County.

Date of Government Version: 03/03/2015
Date Data Arrived at EDR: 03/10/2015
Date Made Active in Reports: 03/23/2015
Number of Days to Update: 13

Source: Suffolk County Department of Health Services
Telephone: 631-854-2521
Last EDR Contact: 08/03/2015
Next Scheduled EDR Contact: 11/16/2015
Data Release Frequency: No Update Planned

WESTCHESTER COUNTY:

Listing of Storage Tanks

A listing of aboveground storage tank sites located in Westchester County.

Date of Government Version: 12/11/2014
Date Data Arrived at EDR: 12/12/2014
Date Made Active in Reports: 01/13/2015
Number of Days to Update: 32

Source: Westchester County Department of Health
Telephone: 914-813-5161
Last EDR Contact: 07/31/2015
Next Scheduled EDR Contact: 08/17/2015
Data Release Frequency: Varies

Listing of Storage Tanks

A listing of underground storage tank sites located in Westchester County.

Date of Government Version: 12/11/2014
Date Data Arrived at EDR: 12/12/2014
Date Made Active in Reports: 01/13/2015
Number of Days to Update: 32

Source: Westchester County Department of Health
Telephone: 914-813-5161
Last EDR Contact: 07/31/2015
Next Scheduled EDR Contact: 08/17/2015
Data Release Frequency: Varies

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

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.

CT MANIFEST: Hazardous Waste Manifest Data

Facility and manifest data. Manifest is a document that lists and tracks hazardous waste from the generator through transporters to a tsd facility.

Date of Government Version: 07/30/2013
Date Data Arrived at EDR: 08/19/2013
Date Made Active in Reports: 10/03/2013
Number of Days to Update: 45

Source: Department of Energy & Environmental Protection
Telephone: 860-424-3375
Last EDR Contact: 05/18/2015
Next Scheduled EDR Contact: 08/31/2015
Data Release Frequency: No Update Planned

NJ MANIFEST: Manifest Information

Hazardous waste manifest information.

Date of Government Version: 12/31/2013
Date Data Arrived at EDR: 07/17/2015
Date Made Active in Reports: 08/12/2015
Number of Days to Update: 26

Source: Department of Environmental Protection
Telephone: N/A
Last EDR Contact: 07/13/2015
Next Scheduled EDR Contact: 10/28/2015
Data Release Frequency: Annually

PA MANIFEST: Manifest Information

Hazardous waste manifest information.

Date of Government Version: 12/31/2014
Date Data Arrived at EDR: 07/24/2015
Date Made Active in Reports: 08/18/2015
Number of Days to Update: 25

Source: Department of Environmental Protection
Telephone: 717-783-8990
Last EDR Contact: 07/20/2015
Next Scheduled EDR Contact: 11/02/2015
Data Release Frequency: Annually

RI MANIFEST: Manifest information

Hazardous waste manifest information

Date of Government Version: 12/31/2013
Date Data Arrived at EDR: 06/19/2015
Date Made Active in Reports: 07/15/2015
Number of Days to Update: 26

Source: Department of Environmental Management
Telephone: 401-222-2797
Last EDR Contact: 05/26/2015
Next Scheduled EDR Contact: 09/07/2015
Data Release Frequency: Annually

VT MANIFEST: Hazardous Waste Manifest Data

Hazardous waste manifest information.

Date of Government Version: 03/26/2015
Date Data Arrived at EDR: 06/03/2015
Date Made Active in Reports: 07/20/2015
Number of Days to Update: 47

Source: Department of Environmental Conservation
Telephone: 802-241-3443
Last EDR Contact: 07/20/2015
Next Scheduled EDR Contact: 11/02/2015
Data Release Frequency: Annually

WI MANIFEST: Manifest Information

Hazardous waste manifest information.

Date of Government Version: 12/31/2014
Date Data Arrived at EDR: 03/19/2015
Date Made Active in Reports: 04/07/2015
Number of Days to Update: 19

Source: Department of Natural Resources
Telephone: N/A
Last EDR Contact: 06/11/2015
Next Scheduled EDR Contact: 09/28/2015
Data Release Frequency: Annually

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

Oil/Gas Pipelines

Source: PennWell Corporation

Telephone: 281-546-1505

Petroleum Bundle (Crude Oil, Refined Products, Petrochemicals, Gas Liquids (LPG/NGL), and Specialty Gases (Miscellaneous)) N = Natural Gas Bundle (Natural Gas, Gas Liquids (LPG/NGL), and Specialty Gases (Miscellaneous)). 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.

Electric Power Transmission Line Data

Source: PennWell Corporation

Telephone: 800-823-6277

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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 2003 & 2011 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, 2005 and 2010 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

Current USGS 7.5 Minute Topographic Map
Source: U.S. Geological Survey

STREET AND ADDRESS INFORMATION

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GEOCHECK[®] - PHYSICAL SETTING SOURCE ADDENDUM

TARGET PROPERTY ADDRESS

GENESEO RIVERSIDE DRIVE
112 RIVERSIDE DRIVE
GENESEO, NY 14454

TARGET PROPERTY COORDINATES

Latitude (North):	42.8036 - 42° 48' 12.96"
Longitude (West):	77.8247 - 77° 49' 28.92"
Universal Transverse Mercator:	Zone 18
UTM X (Meters):	269017.6
UTM Y (Meters):	4742661.0
Elevation:	596 ft. above sea level

USGS TOPOGRAPHIC MAP

Target Property Map:	5939013 GENESEO, NY
Version Date:	2013

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 principal 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).

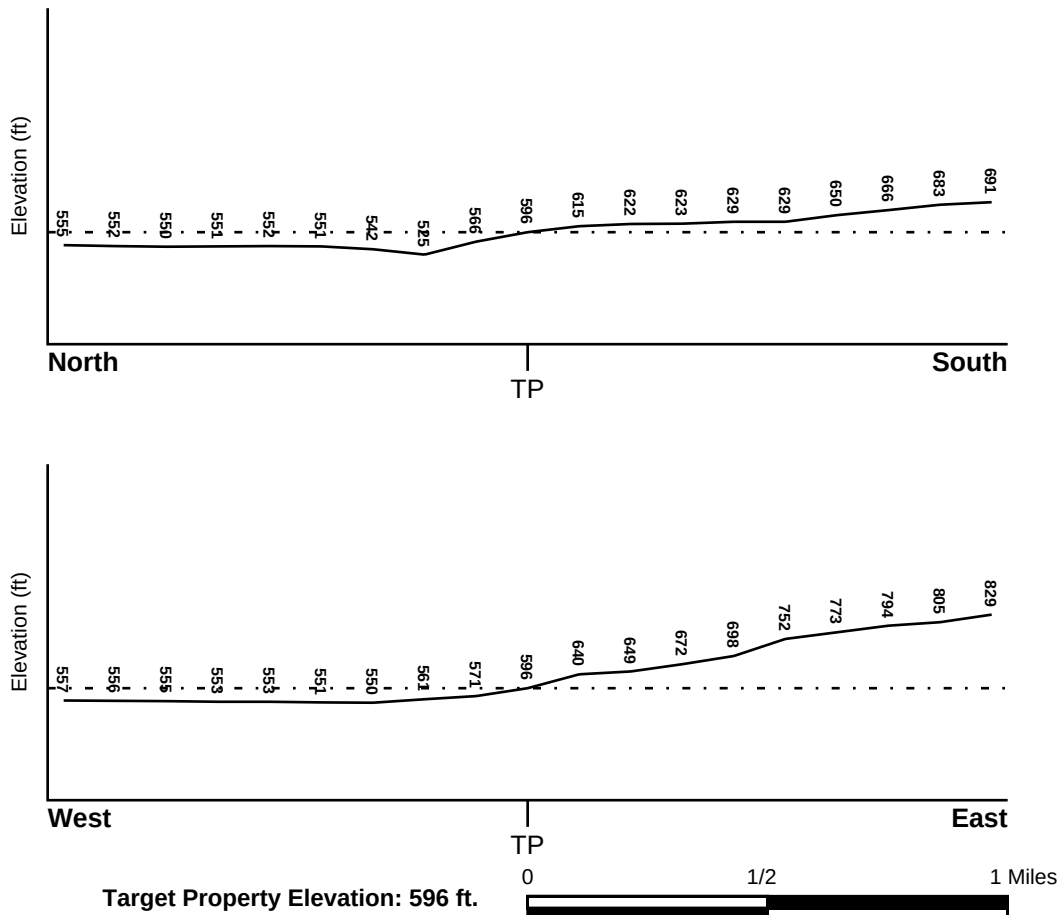
TOPOGRAPHIC INFORMATION

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

General Topographic Gradient: General NW

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
LIVINGSTON, NY

FEMA Flood
Electronic Data
YES - refer to the Overview Map and Detail Map

Flood Plain Panel at Target Property: 3614520001C - FEMA Q3 Flood data

Additional Panels in search area:

- 3603840005C - FEMA Q3 Flood data
- 3603840010C - FEMA Q3 Flood data
- 3612890024A - FEMA Q3 Flood data
- 3603840012C - FEMA Q3 Flood data
- 3603840016C - FEMA Q3 Flood data
- 3603840011C - FEMA Q3 Flood data

NATIONAL WETLAND INVENTORY

NWI Quad at Target Property
GENESEO

NWI Electronic
Data Coverage
YES - refer to the Overview Map and Detail Map

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.

<u>MAP ID</u>	<u>LOCATION FROM TP</u>	<u>GENERAL DIRECTION GROUNDWATER FLOW</u>
Not Reported		

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

Era: Paleozoic
System: Devonian
Series: Middle Devonian
Code: D2 (decoded above as Era, System & Series)

GEOLOGIC AGE IDENTIFICATION

Category: Stratified Sequence

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: DARIEN
Soil Surface Texture: silt loam
Hydrologic Group: Class C - Slow infiltration rates. Soils with layers impeding downward movement of water, or soils with moderately fine or fine textures.
Soil Drainage Class: Somewhat poorly. Soils commonly have a layer with low hydraulic conductivity, wet state high in profile, etc. Depth to water table is 1 to 3 feet.

Hydric Status: Soil does not meet the requirements for a hydric soil.

Corrosion Potential - Uncoated Steel: HIGH

Depth to Bedrock Min: > 60 inches

Depth to Bedrock Max: > 60 inches

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

Soil Layer Information							
Layer	Boundary		Soil Texture Class	Classification		Permeability Rate (in/hr)	Soil Reaction (pH)
	Upper	Lower		AASHTO Group	Unified Soil		
1	0 inches	10 inches	silt loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	FINE-GRAINED SOILS, Silts and Clays (liquid limit less than 50%), silt.	Max: 2.00 Min: 0.60	Max: 7.30 Min: 5.60
2	10 inches	32 inches	clay loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	FINE-GRAINED SOILS, Silts and Clays (liquid limit less than 50%), Lean Clay	Max: 0.60 Min: 0.20	Max: 7.30 Min: 6.10
3	32 inches	40 inches	clay loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	FINE-GRAINED SOILS, Silts and Clays (liquid limit less than 50%), Lean Clay	Max: 0.60 Min: 0.20	Max: 8.40 Min: 7.40
4	40 inches	60 inches	shaly - clay loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	FINE-GRAINED SOILS, Silts and Clays (liquid limit less than 50%), Lean Clay	Max: 0.20 Min: 0.06	Max: 8.40 Min: 7.40

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: silty clay loam

Surficial Soil Types: silty clay loam

Shallow Soil Types: silty clay loam
channery - silt loam
silt loam

Deeper Soil Types: gravelly - silty clay loam
silty clay
weathered bedrock
silty clay loam
gravelly - loam
channery - silt loam
channery - loam

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

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

<u>DATABASE</u>	<u>SEARCH DISTANCE (miles)</u>
Federal USGS	1.000
Federal FRDS PWS	Nearest PWS within 1 mile
State Database	1.000

FEDERAL USGS WELL INFORMATION

<u>MAP ID</u>	<u>WELL ID</u>	<u>LOCATION FROM TP</u>
1	USGS40000862545	1/4 - 1/2 Mile SE
A2	USGS40000862527	1/2 - 1 Mile ESE
A4	USGS40000862526	1/2 - 1 Mile ESE

FEDERAL FRDS PUBLIC WATER SUPPLY SYSTEM INFORMATION

<u>MAP ID</u>	<u>WELL ID</u>	<u>LOCATION FROM TP</u>
3	NY0001017	1/2 - 1 Mile SE

Note: PWS System location is not always the same as well location.

STATE DATABASE WELL INFORMATION

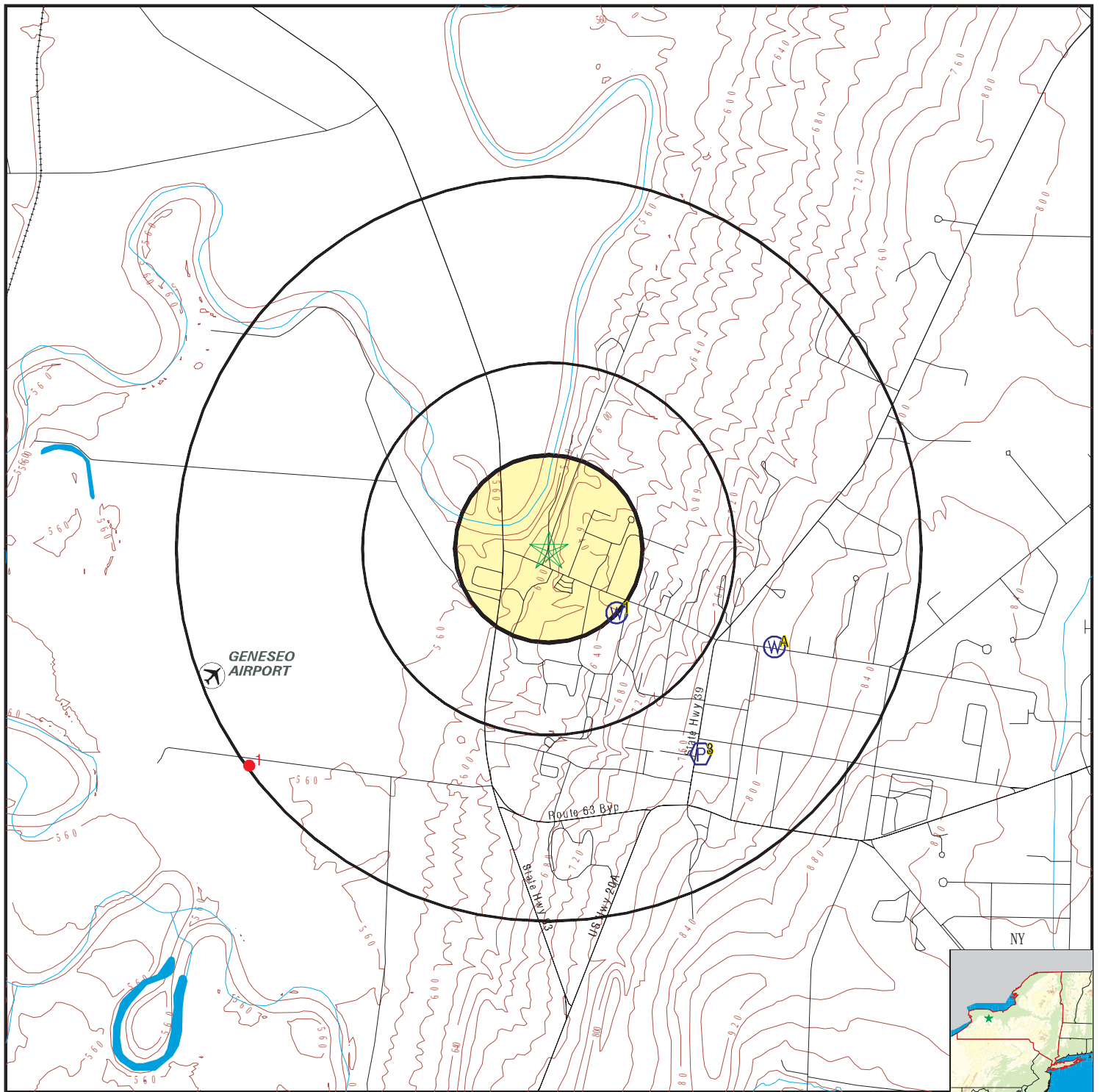
<u>MAP ID</u>	<u>WELL ID</u>	<u>LOCATION FROM TP</u>
No Wells Found		

OTHER STATE DATABASE INFORMATION

STATE OIL/GAS WELL INFORMATION

<u>MAP ID</u>	<u>WELL ID</u>	<u>LOCATION FROM TP</u>
1	NYOG80000035128	1/2 - 1 Mile SW

PHYSICAL SETTING SOURCE MAP - 4416319.2s



- 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
- Oil, gas or related wells

SITE NAME: Geneseo Riverside Drive
 ADDRESS: 112 Riverside Drive
 Geneseo NY 14454
 LAT/LONG: 42.8036 / 77.8247

CLIENT: ARCADIS U.S., Inc.
 CONTACT: Nicholas Beyrle
 INQUIRY #: 4416319.2s
 DATE: September 21, 2015 1:10 pm

GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS

Map ID
Direction
Distance
Elevation

Database EDR ID Number

1
SE
1/4 - 1/2 Mile
Higher

FED USGS USGS40000862545

Org. Identifier:	USGS-NY		
Formal name:	USGS New York Water Science Center		
Monloc Identifier:	USGS-424804077491601		
Monloc name:	LV 332		
Monloc type:	Well		
Monloc desc:	Not Reported		
Huc code:	Not Reported	Drainagearea value:	Not Reported
Drainagearea Units:	Not Reported	Contrib drainagearea:	Not Reported
Contrib drainagearea units:	Not Reported	Latitude:	42.8011111
Longitude:	-77.8211111	Sourcemap scale:	24000
Horiz Acc measure:	1	Horiz Acc measure units:	minutes
Horiz Collection method:	Global positioning system (GPS), uncorrected		
Horiz coord refsys:	NAD83	Vert measure val:	650
Vert measure units:	feet	Vertacc measure val:	10
Vert accmeasure units:	feet		
Vertcollection method:	Interpolated from topographic map		
Vert coord refsys:	NGVD29	Countrycode:	US
Aquifername:	Other aquifers		
Formation type:	Hamilton Group		
Aquifer type:	Confined multiple aquifer		
Construction date:	20070103	Welldepth:	410.75
Welldepth units:	ft	Wellholedepth:	410.75
Wellholedepth units:	ft		

Ground-water levels, Number of Measurements: 0

A2
ESE
1/2 - 1 Mile
Higher

FED USGS USGS40000862527

Org. Identifier:	USGS-NY		
Formal name:	USGS New York Water Science Center		
Monloc Identifier:	USGS-424759077484901		
Monloc name:	LV 142		
Monloc type:	Well		
Monloc desc:	Not Reported		
Huc code:	04130003	Drainagearea value:	Not Reported
Drainagearea Units:	Not Reported	Contrib drainagearea:	Not Reported
Contrib drainagearea units:	Not Reported	Latitude:	42.799785
Longitude:	-77.8133359	Sourcemap scale:	24000
Horiz Acc measure:	5	Horiz Acc measure units:	seconds
Horiz Collection method:	Interpolated from map		
Horiz coord refsys:	NAD83	Vert measure val:	795.00
Vert measure units:	feet	Vertacc measure val:	5.0
Vert accmeasure units:	feet		
Vertcollection method:	Interpolated from topographic map		
Vert coord refsys:	NGVD29	Countrycode:	US
Aquifername:	Not Reported		
Formation type:	Till		

GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS

Aquifer type:	Not Reported	Welldepth:	28.4
Construction date:	Not Reported	Wellholeddepth:	Not Reported
Welldepth units:	ft		
Wellholeddepth units:	Not Reported		

Ground-water levels, Number of Measurements: 1

Date	Feet below Surface	Feet to Sealevel
1964-10-26	8.70	

3
SE
1/2 - 1 Mile
Higher

FRDS PWS **NY0001017**

PWS ID:	NY0001017	Date Deactivated:	Not Reported
Date Initiated:	Not Reported		
PWS Name:	GENESEO VILLAGE		
	119 MAIN STREET		
	GENESEO, NY 14454		

Addressee / Facility:	System Owner/Responsible Party
	HATHAWAY RICHARD B
	MAYOR
	119 MAIN STREET
	GENESEO, NY 14454

Facility Latitude:	42 47 44	Facility Longitude:	077 49 01
Facility Latitude:	42 47 39	Facility Longitude:	077 43 15
City Served:	GENESEO		
Treatment Class	Not Reported	Population:	Not Reported

Violations information not reported.

A4
ESE
1/2 - 1 Mile
Higher

FED USGS **USGS40000862526**

Org. Identifier:	USGS-NY		
Formal name:	USGS New York Water Science Center		
Monloc Identifier:	USGS-424759077484501		
Monloc name:	LV 1		
Monloc type:	Well		
Monloc desc:	Not Reported		
Huc code:	04130003	Drainagearea value:	Not Reported
Drainagearea Units:	Not Reported	Contrib drainagearea:	Not Reported
Contrib drainagearea units:	Not Reported	Latitude:	42.799785
Longitude:	-77.8122248	Sourcemap scale:	24000
Horiz Acc measure:	5	Horiz Acc measure units:	seconds
Horiz Collection method:	Interpolated from map		
Horiz coord refs:	NAD83	Vert measure val:	795.00
Vert measure units:	feet	Vertacc measure val:	5
Vert accmeasure units:	feet		
Vertcollection method:	Interpolated from topographic map		
Vert coord refs:	NGVD29	Countrycode:	US
Aquifername:	Not Reported		
Formation type:	Till		

GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS

Aquifer type: Not Reported
 Construction date: Not Reported
 Welldepth units: ft
 Wellholedepth units: ft

Welldepth: 28.4
 Wellholedepth: 28.4

Ground-water levels, Number of Measurements: 374

Date	Feet below Surface	Feet to Sealevel	Date	Feet below Surface	Feet to Sealevel
1973-09-19	7.89		1973-08-25	7.25	
1973-07-25	6.35		1973-06-25	4.92	
1973-05-25	4.40		1973-04-25	4.89	
1973-03-25	4.21		1973-02-25	4.84	
1973-01-25	4.98		1972-12-25	3.57	
1972-11-25	4.28		1972-10-25	6.80	
1972-09-25	7.13		1972-08-25	6.11	
1972-07-25	5.24		1972-06-28	3.99	
1972-05-25	4.52		1972-04-27	4.30	
1972-03-25	4.17		1972-02-25	4.62	
1972-01-28	4.48		1971-12-31	5.58	
1971-12-02	7.24		1970-07-24	6.29	
1970-06-30	1.11		1970-05-26	1.70	
1970-04-24	2.37		1970-02-25	2.77	
1970-01-27	2.27		1969-10-27	7.10	
1969-09-26	7.34		1969-08-26	6.36	
1969-07-29	1.50		1969-06-26	3.59	
1969-05-23	2.37		1969-04-25	3.55	
1969-03-25	4.53		1969-02-25	4.94	
1969-02-11	4.32		1968-11-25	5.45	
1968-10-25	6.52		1968-09-25	7.10	
1968-08-26	6.48		1968-07-26	5.78	
1968-06-25	4.97		1968-05-27	4.83	
1968-04-25	4.97		1968-03-25	4.22	
1968-02-26	5.11		1968-01-25	4.97	
1967-12-27	4.67		1967-11-27	3.94	
1967-10-26	4.02		1967-10-02	6.72	
1967-08-25	6.98		1967-07-26	6.45	
1967-06-26	5.66		1967-05-26	4.76	
1967-04-26	4.57		1967-03-28	4.33	
1967-02-24	4.69		1967-01-25	5.84	
1966-12-27	5.55		1966-11-25	6.89	
1966-10-31	7.10		1966-09-25	6.00	
1966-08-25	6.15		1966-07-25	5.84	
1966-06-24	5.20		1966-05-25	4.79	
1966-04-29	4.49		1966-03-25	4.38	
1966-02-25	4.45		1966-01-25	4.76	
1965-12-31	4.58		1965-11-24	6.99	
1965-10-25	8.26		1965-09-30	8.13	
1965-08-26	7.36		1965-07-25	6.55	
1965-06-25	5.99		1965-05-25	5.02	
1965-04-30	4.29		1965-03-28	4.42	
1965-02-26	4.79		1965-01-31	6.73	
1964-12-31	8.25		1964-11-30	9.09	
1964-10-30	8.78		1964-09-26	7.97	
1964-08-28	7.30		1964-07-28	6.60	
1964-06-26	5.50		1964-05-26	5.00	
1964-04-25	4.40		1964-03-25	3.90	
1964-02-25	3.90		1964-01-28	4.20	
1963-12-24	6.40		1963-11-26	7.40	

GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS

Ground-water levels, continued.

Date	Feet below Surface	Feet to Sealevel
1963-10-25	8.10	
1963-08-29	5.80	
1963-06-25	5.80	
1963-04-25	4.50	
1963-02-25	5.30	
1962-12-27	5.20	
1962-10-25	6.40	
1962-08-30	6.80	
1962-06-25	5.00	
1962-05-25	4.90	
1962-03-24	5.00	
1962-01-25	5.90	
1961-11-25	7.20	
1961-09-25	6.20	
1961-07-25	5.10	
1961-05-25	4.30	
1961-04-25	3.20	
1961-02-27	6.00	
1960-12-27	6.10	
1960-09-26	7.00	
1960-07-25	5.40	
1960-05-25	3.90	
1960-04-22	4.50	
1960-02-25	4.40	
1959-12-24	4.30	
1959-10-26	4.80	
1959-08-25	7.80	
1959-06-26	5.50	
1959-03-26	4.90	
1959-01-23	4.60	
1958-11-25	4.68	
1958-09-25	5.30	
1958-07-25	5.00	
1958-04-25	4.18	
1958-02-26	6.30	
1957-12-26	7.35	
1957-10-25	8.05	
1957-08-24	6.50	
1957-06-25	5.10	
1957-05-20	3.27	
1957-03-25	3.97	
1957-01-25	4.20	
1956-11-26	7.62	
1956-09-25	7.25	
1956-07-25	6.20	
1956-06-26	5.46	
1956-04-26	3.60	
1956-02-25	4.16	
1955-12-27	4.70	
1955-10-25	4.57	
1955-08-25	7.20	
1955-06-27	6.39	
1955-05-24	5.18	
1955-03-25	3.74	
1955-01-25	4.80	

Date	Feet below Surface	Feet to Sealevel
1963-09-30	7.50	
1963-07-25	6.40	
1963-05-25	4.80	
1963-03-25	4.10	
1963-01-25	5.30	
1962-11-25	5.60	
1962-09-25	7.70	
1962-08-01	6.40	
1962-06-04	4.96	
1962-04-25	4.40	
1962-02-26	5.60	
1961-12-26	6.00	
1961-10-25	6.80	
1961-08-28	5.20	
1961-06-28	4.00	
1961-04-26	3.40	
1961-03-25	4.80	
1961-01-25	6.10	
1960-10-26	8.40	
1960-08-25	5.80	
1960-06-27	4.80	
1960-04-25	4.60	
1960-03-25	4.60	
1960-01-26	4.60	
1959-11-25	4.70	
1959-09-25	8.50	
1959-07-26	6.90	
1959-04-30	4.60	
1959-02-25	5.10	
1958-12-26	5.07	
1958-10-27	5.28	
1958-08-25	5.00	
1958-05-25	4.97	
1958-03-25	3.95	
1958-01-27	7.00	
1957-11-25	8.20	
1957-09-26	7.30	
1957-07-25	5.05	
1957-05-24	3.98	
1957-04-26	3.90	
1957-02-25	4.90	
1956-12-26	4.90	
1956-10-26	7.90	
1956-08-27	7.17	
1956-06-27	5.40	
1956-05-25	4.68	
1956-03-26	2.06	
1956-01-25	4.80	
1955-11-25	4.30	
1955-09-28	5.90	
1955-07-26	7.60	
1955-05-26	5.23	
1955-04-25	3.90	
1955-02-25	4.60	
1954-12-28	5.78	

GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS

Ground-water levels, continued.

Date	Feet below Surface	Feet to Sealevel	Date	Feet below Surface	Feet to Sealevel
1954-11-26	5.90		1954-10-25	6.30	
1954-09-24	6.65		1954-08-25	6.80	
1954-07-24	6.49		1954-06-25	5.17	
1954-05-26	4.88		1954-04-24	3.97	
1954-03-25	4.23		1954-02-25	4.08	
1954-01-26	6.05		1953-12-24	6.55	
1953-11-25	8.04		1953-10-31	8.25	
1953-09-25	7.70		1953-08-31	7.30	
1953-07-27	6.00		1953-06-26	5.34	
1953-06-02	4.38		1953-05-25	4.31	
1953-04-29	4.55		1953-03-25	3.87	
1953-02-25	5.80		1953-01-24	7.82	
1953-01-07	8.85		1952-11-29	9.74	
1952-10-25	9.42		1952-10-23	9.37	
1952-10-04	9.06		1952-08-25	8.07	
1952-07-25	6.87		1952-06-26	5.75	
1952-05-27	4.70		1952-04-29	4.50	
1952-03-25	4.00		1952-02-25	4.59	
1952-01-25	4.48		1951-12-26	7.20	
1951-11-24	8.40		1951-10-25	8.41	
1951-09-25	6.90		1951-08-25	7.02	
1951-07-25	5.84		1951-06-26	5.30	
1951-05-25	4.92		1951-04-25	4.41	
1951-03-24	4.20		1951-02-24	3.74	
1951-01-25	4.05		1950-12-28	4.65	
1950-11-25	6.76		1950-10-25	7.94	
1950-09-25	7.75		1950-08-28	5.25	
1950-07-25	5.99		1950-06-26	5.40	
1950-05-25	4.63		1950-04-25	4.40	
1950-03-25	3.55		1950-02-25	5.40	
1950-01-25	8.35		1949-12-27	9.54	
1949-11-25	9.50		1949-10-25	9.14	
1949-09-26	7.91		1949-08-25	8.45	
1949-07-25	7.48		1949-06-27	6.50	
1949-05-26	5.30		1949-04-25	4.65	
1949-03-25	4.59		1949-02-25	4.30	
1949-01-25	4.70		1948-12-29	5.80	
1948-11-24	7.00		1948-10-25	7.70	
1948-09-27	7.30		1948-08-26	6.30	
1948-07-26	6.10		1948-06-25	5.20	
1948-05-25	4.54		1948-04-26	4.78	
1948-03-26	4.10		1948-03-02	4.74	
1948-01-27	5.45		1947-12-24	5.00	
1947-11-25	6.10		1947-10-25	6.46	
1947-09-25	5.67		1947-08-25	5.79	
1947-07-28	5.64		1947-06-25	5.18	
1947-05-26	4.50		1947-04-25	3.97	
1947-03-25	4.23		1947-02-24	4.94	
1947-01-27	4.56		1946-12-30	4.47	
1946-11-25	4.98		1946-10-26	5.58	
1946-09-25	6.58		1946-08-26	5.95	
1946-07-27	5.73		1946-06-25	5.20	
1946-05-25	4.57		1946-04-26	5.14	
1946-03-25	4.74		1946-02-25	5.10	
1946-01-25	4.85		1945-12-24	4.75	

GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS

Ground-water levels, continued.

Date	Feet below Surface	Feet to Sealevel
1945-11-26	4.45	
1945-09-25	5.75	
1945-07-25	4.77	
1945-05-28	4.51	
1945-03-15	0.30	
1945-01-25	5.78	
1944-12-16	8.12	
1944-11-15	8.45	
1944-10-10	8.00	
1944-09-15	7.60	
1944-08-01	6.13	
1944-06-26	4.69	
1944-04-27	3.72	
1944-02-25	5.84	
1944-01-26	6.69	
1943-11-29	7.65	
1943-10-25	8.42	
1943-09-20	7.77	
1943-08-15	6.57	
1943-07-18	5.68	
1943-06-20	4.84	
1943-05-02	3.85	
1943-03-31	4.44	
1943-02-28	4.55	
1943-02-06	4.40	
1943-01-03	3.81	
1942-12-14	5.42	

Date	Feet below Surface	Feet to Sealevel
1945-10-25	4.58	
1945-08-25	5.75	
1945-06-25	5.09	
1945-04-25	4.80	
1945-02-26	3.95	
1944-12-26	7.52	
1944-11-25	8.51	
1944-11-01	8.35	
1944-09-25	7.75	
1944-08-25	6.92	
1944-07-25	5.83	
1944-05-29	4.76	
1944-03-27	3.37	
1944-02-18	6.20	
1943-12-24	7.07	
1943-11-14	8.33	
1943-09-29	7.79	
1943-08-25	6.87	
1943-07-26	5.96	
1943-06-25	5.01	
1943-05-25	4.29	
1943-04-26	4.25	
1943-03-25	4.34	
1943-02-26	4.55	
1943-01-25	4.53	
1942-12-26	4.68	
1942-11-17	4.51	

GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS

Map ID
Direction
Distance

Database EDR ID Number

1
SW
1/2 - 1 Mile

OIL_GAS NYOG80000035128

Api wellno:	31051138980000	Cnty:	51
Hole:	13898	Sidetrck:	0
Completion:	0	Well name:	Fee 7901
Company na:	AKZO NOBEL SALT INC.	Operator n:	1380
Well type:	MB	Map symbol:	SMP
Well statu:	PA	Date statu:	1996-04-12 00:00:00
Date permi:	1979-02-27 00:00:00	Permit iss:	1979-03-01 00:00:00
Date spudd:	1979-09-14 00:00:00	Date total:	1979-10-05 00:00:00
Date well :	1979-10-05 00:00:00	Date wel00:	1996-04-12 00:00:00
Date wel01:	Not Reported	Confid:	No
Town:	Geneseo	Quad:	Geneseo
Quadsec:	D	Producing :	Not Applicable
Producin00:	Not Applicable	Financial :	Not Reported
Slant:	Vertical	County:	Livingston
Region:	8	State leas:	NA
Proposed d:	1100	Surface lo:	SURF
Surface 00:	-77.84052		
Surface la:	42.79517		
Bottom hol:	BH		
Bottom h00:	-77.84052		
Bottom h01:	42.79517		
True verti:	1040	Measured d:	1040
Kickoff:	0	Drilleddep:	1040
Elevation:	558	Original w:	NL
Permit fee:	0	Objective :	Not Applicable
Depth fee:	-100	Spacing:	Not Reported
Spacing ac:	Not Reported	Integratio:	Not Reported
Dt hearing:	Not Reported	Dt mod:	2014-05-07 12:08:38.020000000
Link:	http://www.dec.ny.gov/cfm/xtapps/GasOil/search/wells/index.cfm?api=31051138980000		
Site id:	NYOG80000035128		

GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS

RADON

AREA RADON INFORMATION

State Database: NY Radon

Radon Test Results

County	Town	Num Tests	Avg Result	Geo Mean	Max Result
LIVINGSTON	AVON	92	2.96	2.29	16.1
LIVINGSTON	CALEDONIA	97	29.8	12.39	157.6
LIVINGSTON	CONESUS	17	4.48	3.11	17.4
LIVINGSTON	GENESEO	129	3.16	2.37	13.9
LIVINGSTON	GROVELAND	23	5.06	3.48	20.6
LIVINGSTON	LEICESTER	28	4.18	2.38	17.8
LIVINGSTON	LIMA	91	5.51	3.59	38
LIVINGSTON	LIVONIA	72	3.72	2.32	34
LIVINGSTON	MT. MORRIS	42	5.78	3	58.6
LIVINGSTON	NO. DANSVILLE	80	7.13	4.76	43.7
LIVINGSTON	NUNDA	43	12.52	4.93	98.3
LIVINGSTON	OSSIAN	7	6.2	4.93	12.3
LIVINGSTON	PORTAGE	10	3.84	2.72	9.4
LIVINGSTON	SPARTA	19	4.76	3.13	19.2
LIVINGSTON	SPRINGWATER	18	10.69	4.5	85.4
LIVINGSTON	W. SPARTA	8	2.26	1.85	4.5
LIVINGSTON	YORK	26	4.11	2.87	13.3

Federal EPA Radon Zone for LIVINGSTON 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 LIVINGSTON COUNTY, NY

Number of sites tested: 33

Area	Average Activity	% <4 pCi/L	% 4-20 pCi/L	% >20 pCi/L
Living Area	1.310 pCi/L	69%	23%	8%
Basement	3.040 pCi/L	58%	42%	0%

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 and updated it in 2006. The 7.5 minute DEM corresponds to the USGS 1:24,000- and 1:25,000-scale topographic quadrangle maps. The DEM provides elevation data with consistent elevation units and projection.

Current USGS 7.5 Minute Topographic Map

Source: U.S. Geological Survey

HYDROLOGIC INFORMATION

Flood Zone Data: This data, available in select counties across the country, was obtained by EDR in 2003 & 2011 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, 2005 and 2010 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 Database

Source: Department of Agriculture, Natural Resources Conservation Services (NRCS)

Telephone: 800-672-5559

SSURGO is the most detailed level of mapping done by the Natural Resources Conservation Services, mapping scales generally range from 1:12,000 to 1:63,360. Field mapping methods using national standards are used to construct the soil maps in the Soil Survey Geographic (SSURGO) database. SSURGO digitizing duplicates the original soil survey maps. This level of mapping is designed for use by landowners, townships and county natural resource planning and management.

PHYSICAL SETTING SOURCE RECORDS SEARCHED

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.

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

Oil and Gas Well Database

Department of Environmental Conservation

Telephone: 518-402-8072

These files contain records, in the database, of wells that have been drilled.

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

Earthquake Fault Lines: The fault lines displayed on EDR's Topographic map are digitized quaternary faultlines, prepared in 1975 by the United State Geological Survey

PHYSICAL SETTING SOURCE RECORDS SEARCHED

STREET AND ADDRESS INFORMATION

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Appendix G

Fishers Associates Survey (on
Compact Disc)



Appendix H

Underground Services Survey
Results

SoftDig®

Underground Services Inc.

N



	Catch Basin		Water Valve
	Storm MH		Gas
	Gas Valve		Sanitary
	PIV		Storm
	Sanitary MH		Water

0 55 110 220 Feet

Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community



Appendix I

Utilities and Structures Checklist

Utilities and Structures Checklist

Project: _____
 Project Number: _____
 Date: _____

Work locations applicable to this clearance checklist (**Photo Document Work Locations**):

THIS FORM MUST BE COMPLETED IN ENTIRETY PRIOR TO BEGINNING ANY INTRUSIVE WORK

Pre-Field Work

One Call or "811" notified 48-72 hours in advance of work? ☐ Yes ☐ No
 Utility companies notified during the One Call process ☐ See attached ticket

 List any other utilities requiring notification: ☐ None

Private Locator Contacted ☐ Yes ☐ No
 Plan private utility clearance subcontractor assignments, areas, required clearance equipment, depth of clearance needed, types of utilities
 Client provided utility maps or "as built" drawings showing utilities? ☐ Yes ☐ No

Field Work - This must be completed on site, by staff who have a minimum of one year of field experience in identifying utilities

Lines of Evidence - Must have **3 Reliable Lines of Evidence** Prior to Starting any Intrusive Work

☐ One Call/"811"
 Utility Markings Present: ☐ Paint ☐ Pin flags/stakes ☐ Other ☐ None
☐ Client Provided Maps/Drawings **OR** ☐ Maps/Drawings requested but not provided
☐ Client Clearance Name(s)/Affiliation(s) _____
☐ Interview(s): Name(s)/Affiliation(s) _____

Did person(s) interviewed indicate depths of any utilities in the subsurface?

☐ Yes, depths provided:
☐ Did not know or refused to answer
 Additional Comments:

- ☐ Site Inspection & Complete Site Sketch (**Photo Document Marked Utilities & Utility Structures**)
- ☐ GPR
- ☐ Air-Knife
- ☐ Hydro-Knife
- ☐ Public Records/Maps
- ☐ Radiofrequency
- ☐ Metal Detector
- ☐ Handauger
- ☐ Potholing
- ☐ Probing
- ☐ Private Locator: Name and Company: _____
- ☐ Marine Locator: Name and Company: _____
- ☐ Other: _____

Tips for Successful Utility Location:

1. Don't forget to look up
2. Be on site when utilizing private utility locators
3. Select alternate/backup locations during clearance process
4. **Mark out all known utilities. Leave nothing to question**
5. No hammering- no pickaxes-no digging bars-no hurrying or shortcutting
6. No excessive turning or downward force of handaugers/shovels, etc.
7. Utilities may run directly under asphalt/concrete or be > 5 ft. in depth



Site Inspection

Utilities and Structures Checklist

During the site inspection look for the following ("YES" requires additional investigation and must be marked properly prior to performing intrusive work):

	Utility Color Codes		
a) Natural gas line present (evidence of a gas meter)?	Yellow	☐ Yes	☐ No
b) Evidence of electric lines:	Red		
i) Conduits to ground from electric meter or along wall?		☐ Yes	☐ No
ii) Light poles, electric devices with no overhead lines?		☐ Yes	☐ No
iii) Overhead electric lines present?		☐ Yes	☐ No
c) Evidence of sewer drains:	Green		
i) Restrooms or kitchen on site?		☐ Yes	☐ No
ii) Sewer cleanouts present?		☐ Yes	☐ No
iii) Combined sewer /storm lines or multiple sewer lines?		☐ Yes	☐ No
d) Evidence of water lines:	Blue		
i) Water meter on site or multiple water lines?		☐ Yes	☐ No
ii) Fire hydrants in vicinity of work?		☐ Yes	☐ No
iii) Irrigation systems? (Sprinkler heads, valve boxes, controls in building)		☐ Yes	☐ No
e) Evidence of storm drains:	Green		
i) Open curbside or slotted grate storm drains		☐ Yes	☐ No
ii) Gutter down spouts going into ground		☐ Yes	☐ No
f) Evidence of telecommunication lines:	Orange		
i) Fiber optic warning signs in areas?		☐ Yes	☐ No
ii) Lines from cable boxes running into ground?		☐ Yes	☐ No
iii) Conduits from power poles running into ground?		☐ Yes	☐ No
iv) Aboveground boxes or housings or wires in work area?		☐ Yes	☐ No
g) Underground storage tanks:			
i) Tank pit present?		☐ Yes	☐ No
ii) Product lines running to dispensers/buildings?		☐ Yes	☐ No
iii) Vent present away from tank pit?		☐ Yes	☐ No
h) Do utilities enter or exit existing structures/buildings?		☐ Yes	☐ No
If Yes, confirm the utility markings outside of structure/building match up.			
i) Proposed excavation marked in white?	White	☐ Yes	☐ No
j) Overhead Utilities/Communication Lines Look Up:			
i) Overhead electrical conduit, pipe chases, cable trays ?		☐ Yes	☐ No
ii) Overhead fire sprinkler system?		☐ Yes	☐ No
iii) Other overhead lines/utilities, product lines, AC condenser lines?		☐ Yes	☐ No
k) Aboveground Power lines in or near the work area:			
i) < 50 kV within 10 ft. of work area?		☐ Yes	☐ No
ii) >50 - 200 kV within 15 ft. of work area?		☐ Yes	☐ No
iii) >200-350 kV within 20 ft. of work area?		☐ Yes	☐ No
iv) >350-500 kV within 25 ft. of work area?		☐ Yes	☐ No
v) >500-750 kV within 35 ft. of work area?		☐ Yes	☐ No
vi) >750-1000 kV within 45 ft. of work area?		☐ Yes	☐ No
l) Other:			
i) Evidence of linear asphalt or concrete repair?		☐ Yes	☐ No
ii) Evidence of linear ground subsidence or change in vegetation?		☐ Yes	☐ No
iii) Unmarked manholes or valve covers in work area?		☐ Yes	☐ No
iv) Warning signs ("Call Before you Dig", etc.) on or adjacent to site?		☐ Yes	☐ No
v) Utility color markings not illustrated in this checklist?		☐ Yes	☐ No

Do not initiate intrusive work if utilities are suspected to be present in area and are not located, if markings are over 14 days old, or if clearance methods provide incomplete or conflicting information. Do not perform intrusive work within 30 inches of a utility marking without receiving pre-approval by Corporate H&S .

Name and Signature of person completing the checklist: _____
 Date: _____