Remedial Action Work Plan (RAWP)

229 Homer Street Site
BCP Site No. C905044
Olean, New York

February 2018

0225-015-002

Prepared For:

Homer Street Properties, LLC

Prepared By:

TurnKey Environmental Restoration, LLC

In Association With:

Benchmark Environmental Engineering & Science, PLLC

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CERTIFICATION

I, Thomas H. Forbes, certify that I am currently a NYS registered professional engineer, and that this Remedial Action Work Plan was prepared in accordance with all applicable statutes and regulations and in substantial conformance with the DER Technical Guidance for Site Investigation and Remediation (DER-10).

1.0 INTRODUCTION

This Remedial Action Work Plan (RAWP) has been prepared on behalf of Homer Street Properties, LLC (HSP) for the 229 Homer Street Site in the City of Olean, Cattaraugus County, New York (Site, see Figures 1 and 2).

HSP elected to pursue cleanup and redevelopment of the Site under the New York State Brownfield Cleanup Program (BCP), and executed a Brownfield Cleanup Agreement (BCA) with the New York State Department of Environmental Conservation (NYSDEC) in 2015 (BCP Site No. C905044). On November 25, 2015, the Remedial Investigation/Interim Remedial Measures/Alternatives Analysis (RI/IRM/AA) Work Plan (Ref. 1) was approved by the NYSDEC with concurrence from the New York State Department of Health (NYSDOH). TurnKey Environmental Restoration, LLC, in association with Benchmark Environmental Engineering & Science, PLLC (TurnKey-Benchmark), performed RI activities at the Site in November and December 2015. No IRMs were performed.

This document presents the scope of work and procedures for completion of planned remedial activities by HSP on the Site. The remedial activities will be completed by TurnKey Environmental Restoration, LLC (TurnKey) or other remedial construction contractors under contract to TurnKey or HSP. Benchmark Environmental Engineering & Science, PLLC (Benchmark) will provide all remediation engineering including preparation of the Final Engineering Report (FER). The work will be completed in general accordance with NYSDEC 6NYCRR Part 375, DER-10 guidelines and the November 2016 Decision Document (DD).

1.1 Property and Site Description

The BCP property, located at 229 Homer Street (Tax ID No. 94.032-1-2.5), is situated in a commercial and industrial zoned area of the City of Olean, Cattaraugus County, New York and consists of one parcel measuring 3.34 acres. The Site is currently improved with a one-story building in the central portion of the Site.

The Site and surrounding area was originally developed in approximately 1890 for the oil industry and used for refinery purposes and as a petroleum storage tank farm. The Site is bound by Two Mile Creek and Homer Street to the northwest, a Casella Waste Management of New York transfer station to the northeast, Southern Tier Rail Authority rail lines to the southeast, and 251 Homer Street (a vacant parcel currently being remediated under the NYSDEC BCP) to the southwest (see Figures 1 and 2). The surface of the Site is covered with

a building, concrete, and gravel. Two Mile Creek flows off-site along the western property boundary. A drainage swale is also present on the eastern portion of the Site.

1.2 Site Environmental History

The following assessments and investigations have occurred at the Site.

1.2.1 May 2008 - Phase I Environmental Site Assessment

GZA GeoEnvironmental of New York (GZA) completed a Phase I ESA in May 2008 (Ref. 2). The Phase I ESA identified that the Site was historically occupied by a large tank, used for oil storage by Socony Vacuum and/or Felmont Oil, and two tank berm areas. The Site was identified as part of the Exxon/Mobil Legacy Site (EMLS) Works #3 area. The tank and berm areas were removed by the 1970s.

1.2.2 NYSDEC Spill No. 1300860

In a letter dated April 26, 2013, NYSDEC assigned Spill Number 1300860 to the 229 Homer Street Site and adjacent Southern Tier Rail Authority property for petroleum contained within and potentially spilled from abandoned dilapidated refinery piping associated with the former refinery that was located in this area of the City of Olean. Petroleum contained within piping was identified during IRM activities at 251 Homer Street (BCP Site C905037), adjacent and to the south of the 229 Homer Street Site. The piping was drained, cut-off and capped at the southern property boundary between the 229 Homer Street Site and 251 Homer Street, indicating that the piping extends on to the 229 Homer Street Site in similar condition.

1.2.3 January 2015 Phase II Environmental Investigation Report

TurnKey completed a Phase II Environmental Investigation Report in January 2015. Findings of the Phase II investigation are detailed below:

- The Site is located within the limits of the EMLS. The EMLS operated as an oil refinery under several different names from approximately 1880 to 1950s. The Site is located within the EMLS Works #3 area where oil refining historically took place; based on historical aerial photographs, the area of the Site appears to be primarily an oil storage area.
- The Site historically contained aboveground storage tanks (ASTs) and berm areas similar to the adjacent 251 Homer Street. Based on historic petroleum storage/ refinery use of 229 Homer Street, which was once part of the greater refinery, it is likely that similar subsurface conditions exist at 229 Homer Street that were identified at 251 Homer Street.

- Elevated photoionization detector (PID) readings over 1,000 parts per million (ppm) and olfactory evidence of impacts (petroleum-like odors) were observed in 5 of the 12 test pits, with impacts apparent at depths ranging from 3 to 10 feet below ground surface (fbgs).
- Abandoned refinery piping was observed at two locations, TP-1 (southern portion of the Site) and TP-9 (northern portion of the Site). Light non-aqueous phase liquid (LNAPL) was also observed on the groundwater in TP-9 at approximately 5 fbgs.
- Acetone was detected at concentrations above its respective Part 375 Unrestricted Soil Cleanup Objectives (USCOs) in 4 of the 7 samples analyzed. Elevated volatile organic compound (VOC) tentatively identified compounds (TICs) were also identified in soil samples from TP-1 (23 ppm) and TP-6 (41 ppm).
- Based on evidence of petroleum odors, elevated PID measurements, the presence of abandoned piping and Light Non-Aqueous Phase Liquid (LNAPL), as well as elevated VOC TICs identified, significant petroleum impacts are evident. The environmental impacts can reasonably be attributed to the historical use of the Site as a petroleum refinery and bulk storage facility. Further Site investigation and remediation is warranted, as NYSDEC Spill No. 1300860 will need to be addressed.

1.2.4 Remedial Investigation and Alternative Analysis Report November 2016

TurnKey completed a remedial investigation and alternative analysis report for the Site in 2016 (Reference 1). The findings of the report are consistent with the foregoing and includes the following:

HYDROGEOLOGY

The typical subsurface profile in the northern portion of the Site consists of:

- Fill with sand and gravel ranging in thickness from grade to 4 feet.
- Mixtures of sand, silt, clay and/or gravel ranging in thickness between 2 to 7 feet.
- Sandy gravel to maximum investigation depths between 15 and 20 feet.

In the southern portion of the Site, the typical subsurface profile from ground surface consists of:

- Fill with sand and gravel to 2 feet.
- Gravelly lean clay ranging in thickness between 2 and 10 feet.

- Gravelly lean clay is underlain by sandy gravel to depths of at least 15 and 20 feet.

The water table exists in the sandy gravel layer at depths ranging from 7 to 15 feet. The groundwater flow direction is presented on Figure 3, with groundwater flowing in a southwesterly direction.

ENVIRONMENTAL MEDIA AND ANALYTICAL DATA

The analytical data generated from environmental samples are discussed below.

- **Surface Soil/Fill Results**[1]

The surface soil/fill (0-2") and near-surface soils (2-12") are impacted by arsenic at concentrations exceeding the commercial soil cleanup objectives (CSCOs) at multiple locations across the site (Refer to Figure 4). No other compounds were detected above the CSCOs.

- **Subsurface Soil/Fill Results**

Subsurface soil/fills are impacted by arsenic and polynuclear aromatic hydrocarbons (PAHs) at concentrations exceeding the CSCOs as shown on Figure 4 at four locations. The subsurface soil/fills are impacted by petroleum products which meets the definition of grossly contaminated soil (GCS). The GCS was identified based on strong petroleum-like odors, sheen/floating product and elevated photoionization detector readings (PID) in subsurface soil/fills in across nearly two thirds of the site area as indicated by the pink outline shown on Figure 4. GCS was generally found at depths ranging from approximately 5 to 15 feet below ground surface (fbgs).

UNDERGROUND PIPING

Underground piping presumably containing petroleum products associated with the former EMLS works was encountered in several test pits and trenches as depicted on Figure 4. The majority of the piping was found on the southern and eastern portions of the Site;

[1] The surface soil results were complemented by collecting surface soil samples and near-surface soil samples in August 2017.

however, additional piping was found on the northern portion of the Site. Pipe diameters ranged between 2 and 12 inches with the majority between 4 and 6 inches.

GROUNDWATER

VOCs and SVOCs were predominantly reported as non-detect, trace (estimated), or detected at concentrations below New York State Groundwater Quality Standards and Guidance Values (GWQS/GVs). Only benzene in monitoring well MW-4 and pentachlorophenol in well MW-3 were detected above GWQS/GVs. Gasoline range organics (GROs) were present in all wells with the highest concentrations detected in MW-2 and the blind duplicate for MW-3. Diesel range organics (DROs) were present in all wells with the highest concentration detected in MW-2.

Total and dissolved metals detected at concentrations above GWQS/GVs include naturally occurring minerals such as iron, manganese, magnesium, and sodium. Additionally, total arsenic and total lead were detected slightly above GWQS/GV in MW-1, MW-2, MW-4, and MW-5; however, dissolved arsenic and lead concentrations were not detected. Total barium and total chromium slightly exceeded GWQS/GVs at MW-2. Dissolved barium also slightly exceeded GWQS/GVs at MW-5.

Herbicides and PCBs were reported as non-detect. Estimated low-level concentrations of one or more pesticides were identified in MW-1 through MW-5 at concentrations above GWQS/GVs.

The visual and olfactory evidence of impact observed in the groundwater monitoring wells is likely associated with the subsurface piping and GCS present across the Site**.** Removal of these sources during planned remedial activities will mitigate these groundwater impacts. Groundwater flows in a southwesterly direction away from Two Mile Creek.

SOIL VAPOR INTRUSION

Analytical results from sub-slab and indoor air sampling identified an elevated concentration of dichlorodifluoromethane (Freon 12).

1.3 Primary Constituents of Concern (COCs)

Based on the investigation data, the primary Constituents of Concern (COCs) are:

- ***Soil/Fill:*** GCS and arsenic
- ***Groundwater:*** Benzene

1.4 Remedial Action Objectives

The remedial actions for the 229 Homer Street Site must satisfy Remedial Action Objectives (RAOs). RAOs are site-specific statements that convey the goals for minimizing substantial risks to public health and the environment. For the 229 Homer Street Site, appropriate RAOs have been defined as:

Groundwater

RAOs for Public Health Protection

- Prevent ingestion of groundwater with contaminant levels exceeding drinking water standards.
- Prevent contact with, or inhalation of volatiles, from contaminated groundwater.

RAOs for Environmental Protection

- Remove the source of ground or surface water contamination.

Soil

RAOs for Public Health Protection

- Prevent ingestion/direct contact with contaminated soil.
- Prevent inhalation of or exposure from contaminants volatilizing from contaminants in soil.

RAOs for Environmental Protection

- Prevent migration of contaminants that would result in groundwater or surface water contamination.

Soil Vapor

RAOs for Public Health Protection

- Mitigate impacts to public health resulting from existing, or the potential for, soil vapor intrusion into buildings at a site.

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1.5 Project Organization and Responsibilities

The remedial activities will be completed by remedial construction specialty contractors under contract to HSP and/or TurnKey, in conjunction with Benchmark. The NYSDEC Division of Environmental Remediation will monitor the activities, in consultation with the New York State Department of Health (NYSDOH), to verify that the work is performed in accordance with the BCA, the approved Remedial Action Work Plan, 6NYCRR Part 375, and NYSDEC DER-10 guidance.

2.0 PRE-REMEDIATION TASKS

2.1 Public Information and Outreach

A fact sheet containing information about the planned remedial work will be sent to those individuals on the Brownfield Site Contact List, including property owners and residents adjacent to the Site, environmental groups, local political representatives, and interested regulatory agencies. Furthermore, a copy of this Work Plan will be made available for public review at the NYSDEC Region 9 office and the Olean Public Library, the designated document repository.

2.2 Underground Utilities Location

The remediation contractor will contact underground facilities protection organization (Dig Safely New York, UFPO) to locate utility lines within the work area.

2.3 Health and Safety Plan Development

A Health and Safety Plan (HASP) will be prepared and enforced by the remediation contractor in accordance with the requirements of 29 CFR 1910.120. The HASP will cover all on-site remedial activities. TurnKey will be responsible for Site control and for the health and safety of its authorized site workers. TurnKey's HASP is provided for informational purposes in Appendix A. The remediation contractor will be required to develop a HASP at least as stringent as TurnKey's HASP.

2.4 Mobilization and Site Preparation

The remediation contractor's field operations will commence with mobilizing field trailer(s), equipment, and materials to the Property and erecting safety fencing and other temporary controls as described below. Temporary electrical connections will also be made or portable electric generators provided to power planned remedial systems.

Prior to remedial activities, the Property will be cleared of woody vegetation and any loose debris and construction and demolition (C&D) debris such as a steel piping, bricks, and miscellaneous debris located on the surface of the property. This material will be recycled or disposed off-site as C&D debris. Prior to recycling/disposal, Benchmark/ TurnKey will properly characterize this material in accordance with state and federal requirements to determine recycling/disposal options.

2.5 Temporary Facilities and Controls

Temporary facilities for use during the remedial work may include a construction field trailer and portable toilets. Temporary controls will be employed for protection against off-site migration of soil and safety hazards during construction, including safety fencing, dust suppression, and erosion control as further described below.

2.5.1 Access Controls

The property is currently accessed from Homer Street via a gravel driveway. Temporary safety construction fencing (i.e., 3-foot high orange plastic) will be placed around the perimeter of work area(s) to distinguish the work zone and discourage foot or motor traffic in these areas. The fencing will not be removed until the work activities are completed in a given area.

2.5.2 Dust Monitoring and Controls

A Community Air Monitoring Plan (CAMP), as more fully described in Section 4.1, will be implemented during excavation and intrusive work. If community air monitoring indicates the need for dust suppression or if dust is visually observed leaving the Property, the remediation contractor will apply a water spray across the excavation and surrounding areas, and on haul roads as necessary to mitigate airborne dust formation and migration. Potable water will either be obtained from a public hydrant or provided by the on-site water service, if available. Other dust suppression techniques that may be used to supplement the water spray include:

- Hauling materials in properly tarped containers or vehicles.
- Restricting vehicle speeds on-site.
- Hydro-seeding of final grades.

2.5.3 Erosion and Sedimentation Control

Provisions will be made for erosion and sedimentation control at the work perimeter during remediation activities. A site-specific Master Erosion Control Plan (MECP) has been prepared and incorporated as Appendix B to this Work Plan. This MECP includes provisions for Best Management Practices (BMPs) such as silt fencing, hay baling, mulching, and other measures as warranted. In accordance with DER-10 paragraph 1.10, the Department has the authority to exempt the remedial action from the requirements to obtain a SPDES General Permit for Stormwater Discharges from Construction Activity and prepare a Storm Water Pollution Prevention Plan (SWPPP) since all the criteria listed in paragraph 1.10 will be met.

However, the Department requires that exempt remediation sites submit an "informational" Notice of Intent (NOI) form. Appendix B-1 of the MECP includes the submitted NOI form for the BCP Site.

2.5.4 Stormwater Management

The remedial contractor will follow the MECP (see Appendix B) to assure proper management of stormwater and preclude migration of contaminants to surface waters or other areas of the Property. In general, the remedial contractor will follow these specific measures:

- Clearing and grading only as much area as is necessary to accommodate the construction needs to minimize disturbance of areas subject to erosion (i.e., phasing the work).
- Covering exposed or disturbed areas of the Property as quickly as practical.
- Installing erosion and sediment control measures before disturbing the Property subgrade.
- Minimizing both on-site and off-site tracking of soil by vehicles by using routine entry/exit routes.

3.0 CLEANUP APPROACH

This Remedial Action Work Plan consists of the following major work elements:

- Removal or cleaning of abandoned subsurface piping. Piping contents will be removed and disposed or recycled off-site. The cleaned piping will be recycled for scrap or capped in-place.
- Excavation, transportation and off-site disposal of heavily contaminated GCS soil/fill encountered during subsurface piping removal.
- Relocation of the upper 12" of soil/fill from the northern third of the site to be used as backfill in the areas excavated for piping and GCS removal beneath the soil cover system.
- Installation of air sparging wells and soil vapor extraction wells to mitigate GCS soil/fill and groundwater in-situ.
- Placement of a soil cover system in areas without building or hardscape (i.e., asphalt, concrete).
- Development of a Site Management Plan (SMP) for post-certificate of completion (COC) operation, maintenance, and monitoring.
- Imposition of an Environmental Easement restricting future site use to commercial/industrial operations.

3.1 Abandoned Subsurface Piping and GCS Soil/Fill

The known subsurface piping that was identified by previous work is shown on Figure 5. The procedure for removal of subsurface abandoned conveyance piping is described below.

- Locate an area of subsurface piping and excavate a trench approximately 3 to 6 feet wide down to approximately 6 fbgs (i.e., approximate depth of piping) to expose the piping.
- Excavate the soil above the piping in approximate 50 to 100 LF working areas. Based on previous investigation data, GCS soil/fill has been identified within certain areas of subsurface piping as shown on Figure 5. The GCS soil/fill immediately adjacent to subsurface piping will be excavated and will be transported to a permitted commercial solid waste disposal facility by licensed haulers permitted to transport non-hazardous soil/fill. Pre-characterization and waste profile approvals will be completed to allow for direct loading and off-site transportation of impacted soil/fill. Excavated materials will be directly loaded into lined dump trucks or trailers located near the excavation area. If disposal transport truck scheduling necessitates stockpiling of excavated soil/fill, the stockpiles will be

located on and covered with plastic tarp and ballast during non-working hours. The commercial solid waste disposal facility will provide non-hazardous waste manifests and disposal receipts, which will be submitted in the Final Engineering Report. Non-GCS soil/fill excavated for the purpose of exposing subsurface piping will be field-screened and staged beside the trench and placed back into the excavation in the same general area of origin after the piping has been removed.

- Subsurface piping will be exposed, tapped, drained to the extent practicable, and removed. If piping extends to the property boundary, such piping will be cut and capped at the property boundary and the condition of the piping, its contents (if any), and the soil surrounding the piping will be documented. Any soil/fill incidentally impacted during pipe drainage and fluid handling will immediately be excavated and handled with the GCS soil/fill.
- Any materials (liquid, semi-solid, solid) contained within the encountered piping will be characterized, removed, and containerized in drums or roll-off containers. Upon completion of the piping removal, all of the recovered piping contents will be characterized and properly disposed off-site.
- Piping (after fluid removal) will be transported off-site for disposal/recycling.
- The piping removal/trenching will be completed in sections and backfilled accordingly.
- The subsurface conditions will be documented and photographed.

3.2 Acceptable Backfill Materials

Backfill material used on-site may consist of the following materials:

- Gravel, rock, or stone, consisting of virgin material, from a permitted mine or quarry may be imported, without chemical testing, if it meets the requirements of DER-10, or as otherwise approved by NYSDEC.
- Recycled concrete or brick from a NYSDEC-registered construction and demolition debris processing facility be imported, without chemical testing, if it meets the requirements of DER-10, Section 304 of the New York State Department of Transportation (NYSDOT) *Standard Specifications Construction and Materials Volume 1 (2002)*, or as otherwise approved by NYSDEC.
- Imported soil/fill originating from known off-site sources having no evidence of disposal or releases of hazardous substances, hazardous, toxic or radioactive wastes, or petroleum that meets the chemical criteria of Table 1. No off-site materials meeting the definition of a solid waste as defined in 6NYCRR, Part 360-1.2(a) shall be used as backfill.

- On-site soil not characterized as GCS may be used as subsurface backfill beneath the cover system.

3.2.1 Backfill Characterization Requirements

In addition to the above criteria, backfill materials being imported to the Property will be subject to the following characterization requirements in accordance with DER-10 Table 5.4(e)10:

Required Minimum Number of Soil Samples for Soil Imported to a Site			
Soil Quantity (CY)	**VOCs**	**SVOCs, Inorganics & PCBs/Pesticides**	
	Discrete Samples	**Composite**	**Grab/Composite Samples**
0-50	1	1	3-5 grab samples from different locations in the fill being provided will comprise a composite sample for analysis.
50-100	2	1	
100-200	3	1	
200-300	4	1	
300-400	4	2	
400-500	5	2	
500-800	6	2	
800-1,000	7	2	
>1,000	Add an additional 2 VOC and 1 composite for each additional 1,000 CY or consult with DER		

Each composite sample will be comprised of a minimum of three grab samples (samples for VOC analysis will be collected as individual grabs in lieu of composites). Samples will be analyzed for the following constituents in accordance with USEPA SW-846 methodology:

- TCL VOCs – Method 8260C
- TCL SVOCs – Method 8270D
- TAL Metals – Method 6010B
- TCL Organochlorine Pesticides and PCBs – Method 8081A/8082

Characterization testing will be performed by an independent, NYSDOH ELAP-approved laboratory. An equivalent Category B deliverables package will be furnished with the data to allow data evaluation and preparation of a Data Usability Summary Report by an independent, third party data validation expert. Quality Assurance (QA) samples will be collected to support the data evaluation. The QA samples will include a minimum of one matrix spike, one matrix spike duplicate, and one blind duplicate per 20 verification samples.

3.2.2 Placement and Compaction of Backfill

Backfilling will closely follow the excavation work to minimize the amount of open excavation. However, backfill soil will be maintained at a sufficient distance from the working face of the excavation to prevent contact or mixing with fill soils designated for removal. Wetting of the backfill soil during placement, spreading, and compaction will be performed as required to control fugitive dust within the Community Air Monitoring Plan action limits.

3.3 Management of Dewatering Fluids

Water removed from excavations by dewatering during the impacted soil removal will be treated on-site prior to discharge to the municipal sewer. TurnKey will coordinate with the City of Olean to obtain any necessary temporary sewer discharge permits. In general, water removed from excavations will be stored/settled in a portable 20,000-gallon steel tank(s) and/or pumped through a bag or cartridge filter, or other filter media prior to on-site pre-treatment using granular activated carbon (GAC). Following completion of excavation work, settled solids remaining in the tank and spent filter bags will be containerized for off-site disposal. Spent GAC will be characterized (by TCLP testing) and regenerated off-site, or disposed at a permitted treatment, storage, and disposal facility (TSDF) in accordance with applicable federal and state regulations. The tank will be decontaminated via pressure washing prior to removal.

3.4 In-Situ Air Sparging/Soil Vapor Extraction

In-situ AS/SVE technology will be used to remove nuisance characteristics (i.e., odors and elevated soil vapor concentrations) to the extent feasible from the vadose zone soil/fill and the upper approximate five feet of the groundwater table. The general AS/SVE elements are discussed below followed by the specific implementation and OM&M components for the Site.

3.4.1 Pilot Study

A pilot study was completed to assist with the design of the AS/SVE layout in October 2017. The pilot study consisted of SVE only operations to assess the radius of influence (ROI) of extraction wells followed by air sparging in combination of SVE operations to assess the ROI of air injection wells. The results of the pilot study suggest the following:

- SVE wells will be installed approximately 80 feet on center using an effective ROI of 40 feet;

- AS wells will be installed to a depth of nominally 26 feet with a 1 to 2 foot well screen; and,
- AS wells will be installed approximately 40 feet on center using an effective ROI of 20 feet.

A summary of the pilot study operation and findings are provided in Appendix D.

3.4.2 AS/SVE System and Monitoring Network

The AS/SVE system will be comprised of a series of 53 AS injection wells and 14 vertical extraction wells manifolded to trailer-mounted process units as shown on Figure 6. Figure 7 shows the conceptual design and process schematic.

The AS wells will be installed to a depth of about 26 feet with a 1 to 2-foot screen at the bottom of the well. The SVE wells will be installed to a depth of approximately 13 fbgs with a 5 to 10-foot continuous slot well screen extending to the top of the zone to be treated but no less than 2 fbgs. Each of the wells will be constructed of 2-inch Schedule 40 PVC. Well construction details are presented on Figure 7. The wellheads will have individual high density polyethylene lines (1/2" for AS wells and 2" for the SVE wells). The vertical riser extension on the SVE wells will have a removable cap to allow periodic vacuum measurement via a portable vacuum gauge. To confirm adequate coverage by the SVE wells, existing piezometers, and wells screened in the vadose zone within the SVE radius of influence and the SVE wells themselves will be used to assess that there is coverage throughout the area targeted for remediation.

3.4.3 AS/SVE Process Equipment

Figure 7 presents a process flow schematic for the AS/SVE equipment. AS piping will be charged using a rotary claw pressure blower (performance 150 CFM at 15 psi). An air cooled aftercooler will be employed to lower the temperature of the air in the piping to limit potential for damage to the piping (e.g., melting). Inside the trailer will be a pressure gauge, gate valve, rotameter flow meter, and solenoid valves used to control each AS well.

The SVE system will be operated by two duplex regenerative vacuum blowers (combined performance of 600 CFM at 65" of water vacuum). Each well head will be connected to a 2" header attached to the trailer. Each line will leading to the SVE well will have a 2" gate valve, vacuum gauge, site tubes, and flow meter ports (for velocity measurement). As the extracted air is brought through the trailer, it will pass through a moisture separator to remove excess condensate/water vapor, followed by an inline air filter. A dilution valve on the intake line will reduce vacuum, if required, by allowing for entrance of

dilution air. Inlet air will then pass through the blower intake silencer. A mechanical high-pressure relief valve and high-pressure switch will be located on the discharge line to prevent excess backpressure from damaging the blower.

AS/SVE process conditions will be controlled by a programmable logic controller (PLC) using a web interface module and/or using 10" touchscreen operator interface. Monitored system operating conditions will include: low air vacuum, high air pressure, moisture separator tank high level, and heater/exhaust fan failure. With the exception of heater/exhaust fan failure, these alarm conditions will automatically shut down the AS/SVE system. A summary of the specifications for the AS/SVE systems is provided in Appendix E.

3.4.4 SVE Emission Controls

Treatment of the SVE effluent air will be accomplished with a biofilter contained within a steel roll-off container or similar box outfitted with perforated pipe. The biofilter will consist of an approximate 1-foot thick gravel layer at the base of the box followed by an approximate 1 to 2-foot thick wood chip and compost filter medium to allow the naturally occurring microbes to bioremediate the air stream. The biofilters will be designed and operated to control nuisance odors. Figure 7 presents the details of the biofilter design.

3.4.5 AS/SVE Operation and Monitoring

Following AS/SVE system startup and extraction well vacuum/flow rate adjustment, the SVE system will be operated for a minimum period of approximately one week to reach quasi steady-state conditions (although the radius-of-influence will continue to develop beyond this time period). Vacuum will then be checked at each of the SVE wells. Based on the pilot testing, a minimum vacuum pressure at each SVE well head of 5 inches of water vacuum will be required to achieve the anticipated 40 to 50-foot radius of influence. However, the actual required vacuum pressure at the well heads will be a function of the blower type, piping size, and soil conditions. The radius of influence will be confirmed by spot testing the vacuum in piezometers and existing wells; additional SVE wells will be installed if well spacing is inadequate based on vacuum testing results. Once the vacuum field is established, the photoionization detector readings in the head space of each SVE and from the SVE system exhaust (prior to treatment in the biofilter) will be measured to serve as a baseline.

The AS system will be subdivided into zones (4 to 8); the number of which will be determined by this initial startup and shakedown testing. In order to establish how many wells will be injected at any given time, air will be injected into a series of Zone 1 wells and the PID

of nearby SVE wells and the SVE system exhaust will be monitored intermittently while pumping on the zone until the PID readings stabilize for at least 24 hours. If there is not a significant increase in the PID readings, the number of wells active in Zone 1 will be increased and the procedure repeated. This information will assist in determining the frequency of and the number of wells to be injected. This procedure will be repeated for each zone and we will then set up the controls of the PLC to rotate which wells will be injected and at what frequency.

One air sample will be collected from the SVE system exhaust while the AS system is running prior to passing through the biofilter at or near the system startup period to provide a basis for comparison to subsequent data. The air sample will be collected using a Tedlar bag or summa canister, and analyzed for TCL VOCs plus TICs per USEPA Method TO-15 and MADEP Air Phase Hydrocarbons (APH) for gasoline and diesel range organics (GRO and DRO).

SVE system monitoring will be conducted on a maximum frequency of bi-weekly and minimum frequency of monthly throughout the operation period. SVE system monitoring will include: monitoring of mechanical system components for proper operation, vacuum monitoring at each SVE well and at the main intake; and VOC vapor PID screening at each SVE well and at the biofilter emission point.

3.4.6 SVE Discontinuation Criteria

The SVE systems will not be discontinued unless prior written approval is granted by the NYSDEC. SVE discontinuation will be based on the reduction of VOC concentrations in the untreated air samples and soil/fill samples (pre- and post-treated) and the rate of mass removal of VOCs by the SVE system. Once monitoring data indicates that the SVE system is no longer effective (i.e., when the mass removal of contaminants stabilizes to a diminished rate for several monitoring periods), a proposal to discontinue the SVE system will be submitted by HSP. The proposal will include a specific soil/fill verification sampling plan, identifying the location, depth, and number of soil/fill samples to be collected. Discontinuation of the system will be based on achieving the goal of remediating GCPS soil/fill until nuisance characteristics (i.e., odors and elevated soil vapor concentrations) have been adequately removed to the extent feasible.

3.4.7 Post-SVE Soil/Fill Sampling and Evaluation

Sampling of the unsaturated soil on the Site will be performed to determine if significant reduction of VOCs has been achieved. As stated in Section 3.4.6, a specific soil/fill

verification sampling plan will be submitted to NYSDEC for approval in support of SVE system discontinuation. In general, samples will be collected at five borings locations. Samples will be collected using a direct-push drill rig (e.g., Geoprobe or equivalent rig) or with a backhoe and located with a Trimble Handheld GPS unit. At each location, soil borings will be advanced two feet below the target depth (where the previous boring/test pit showed elevated PID readings) and a soil/fill sample will be collected using a 2-inch macro-core or the bucket of the backhoe, two feet above and below the target interval. The entire sampled zone will be field-screened with a PID and evidence of visual and olfactory impact will be noted.

A letter report will be prepared and transmitted to NYSDEC comparing the data to previously collected data and making recommendations for termination of SVE remedial measures, if appropriate.

3.5 Groundwater Monitoring Plan

Groundwater quality will be monitored during implementation of the above-described remedial measures to assess the remedy's efficacy. Groundwater will be monitored at representative monitoring wells (i.e., wells MW-1 to MW-5) and two new wells (i.e., MW-6 and MW-7) will be installed along the southern property boundary parallel to the Southern Tier Rail Authority railroad tracks. Groundwater samples will be collected semi-annually from these 7 wells and analyzed for VOCs and SVOCs plus TICs.

3.6 Soil Cover System

Historic sampling results indicate that arsenic, to lesser extent, PAHs are present in surface/near-surface soil/fill on-site above Part 375 Commercial SCOs. The remedial evaluation conducted in the Comprehensive RI/AA Report concluded that a Track 2 Commercial cleanup remedy was not practicable; therefore, placement of a soil cover system is a feasible engineering control to protect human health and the environment. The soil cover system will be comprised of:

- **Non-Vegetated Areas:** These areas will be covered by an asphalt/concrete paving system, building foundations approximately 4 to 6 inches thick. Soil cover materials will consist of gravel, crushed concrete or other similar materials will be tested in accordance with Table 5.4(3)10 of DER-10 (refer to Section 3.2.1).
- **Vegetated Areas:** A minimum of 12 inches of imported backfill or re-used on-site soil/fill, tested and determined to meet CSCOs and not exhibit nuisance characteristics (visual and olfactory), will be placed. The uppermost approximate

four inches should be comprised of soil capable of sustaining plant growth. Non-grassed areas (e.g., landscape shrubs/beds) will be covered with chip mulch, stone, or other material to mitigate erosion around plantings.

- **Demarcation Layer:** A demarcation layer (e.g., snow fence, plastic mesh, etc.) will be placed beneath the soil cover system where hardscape (concrete/asphalt) will not be present.

3.7 Site Management Plan

For any BCP site not cleaned up to NYSDEC Part 375 unrestricted or residential SCOs, preparation of a Site Management Plan (SMP) that describes site-specific Institutional Controls and/or Engineering Controls (IC/EC) is a required component of the final remedy. Therefore, as part of the final remedy for the Site, an SMP will be prepared. Consistent with NYSDEC BCP requirements, the SMP will include the following components:

- **Engineering and Institutional Controls Plan**. Engineering controls include any physical barrier or method employed to actively or passively contain, stabilize, or monitor contaminants; restrict the movement of contaminants; or eliminate potential exposure pathways to contaminants. Institutional controls at the site will include groundwater use restrictions and use restrictions of the site to commercial or industrial purposes.
- **Operation and Maintenance Plan** that describes the measures necessary to operate, monitor, and maintain the mechanical components of remediation systems on-site, such as the AS/SVE system and soil cover.
- **Excavation Work Plan** to assure that post-remediation intrusive activities and soil/fill handling at the Property related to redevelopment, operation, and maintenance are completed in a safe and environmentally responsible manner.
- **Site Monitoring Plan** that includes: provisions for a groundwater monitoring plan and a Property-wide inspection program to assure that the IC/ECs remain effective.
- **Environmental Easement** filed with Cattaraugus County.

4.0 REMEDIAL ACTIVITIES SUPPORT DOCUMENTS

4.1 Community Air Monitoring

Real-time community air monitoring will be performed during remedial activities at the Property. A Community Air Monitoring Plan is included with TurnKey's HASP. Particulate and VOC monitoring will be performed along the downwind perimeter of the work area during subgrade excavation, grading, and soil/fill handling activities in accordance with this plan. The CAMP is consistent with the requirements for community air monitoring at remediation sites as established by the NYSDOH and NYSDEC. Accordingly, it follows procedures and practices outlined under DER-10 (Ref. 3) Appendix 1A (NYSDOH's Generic Community Air Monitoring Plan) and Appendix 1B (Fugitive Dust and Particulate Monitoring).

4.2 Health and Safety Protocols

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

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

The HASP also includes a contingency plan that addresses potential site-specific emergencies, and a Community Air Monitoring Plan as described above.

Health and safety activities will be monitored throughout the remedial field activities. A member of the field team will be designated to serve as the Site Safety and Health Officer (SSHO). The SSHO will report directly to the Project Manager and the Corporate Health and Safety Coordinator. The HASP will be subject to revision as necessary, based on new information that is discovered during the field investigation and/or remedial activities.

4.3 Citizen Participation Activities

NYSDEC will coordinate and lead community relations throughout the course of the project with support from TurnKey as requested. A Citizen Participation (CP) Plan has been prepared by TurnKey and approved by NYSDEC. A copy of the CP Plan has been placed in the Olean Public Library, the designated project document repository. The NYSDEC, with input from TurnKey and HSP, will issue project fact sheets to keep the public informed of remedial activities.

5.0 REPORTING

5.1 Remedial Activities Reporting

TurnKey and/or Benchmark environmental professionals will be on-site full-time during all major remedial activities to monitor and document: construction stake-out; record drawings; daily reports of remediation activities; community air monitoring results; post-excavation sampling and analysis; and progress photographs and sketches. On-site observation shall be part-time and intermittent: following completion of continuous remedial construction; and during weather-related shut-downs, holidays, and restoration activities.

5.1.1 Construction Monitoring

Standard daily reporting procedures will include preparation of an Inspector's Daily Report and, when appropriate, problem identification and corrective measures reports. Appendix C contains sample project documentation forms. Information that may be included on the daily report form includes:

- Processes and locations of construction under way.
- Equipment and personnel working in the area, including subcontractors.
- Number and type of truckloads of soil/fill removed from the Site.
- Approximate sampling locations (sketches) or GPS (Trimble) coordinates and sample designations for pre-excavation characterization and post-excavation verification.
- Grid locations and depths being excavated.

The completed reports will be available on-site and submitted to the NYSDEC as part of the Final Engineering Report. The NYSDEC will be promptly notified of problems requiring modifications to this Work Plan prior to proceeding or completion of the construction item.

Photo documentation of the remedial activities will be prepared by a field representative throughout the duration of the project as necessary to convey typical work activities, changed conditions, and/or special circumstances. If determined to be necessary, periodic on-site construction progress meetings will be held to which NYSDEC will receive an invitation.

5.2 Final Engineering Report

A Final Engineering Report (FER) will be prepared at the conclusion of remedial activities. The FER will include the following information and documentation, consistent with the NYSDEC's DER-10 Technical Guidance for Site Remediation:

- Introduction and background.
- Planimetric map showing the areas remediated, including significant site features.
- Map showing the lateral limits of any excavations.
- Tabular summaries of unit quantities including: volume of soil excavated and disposition of excavated soil; volume of piping and piping contents removed; volume of soil treated; and, origin and volume of imported soil.
- Planimetric map showing location of all verification and other sampling locations with sample identification labels/codes.
- Documentation on the disposition of impacted soil removed.
- Documentation on the installation of the AS/SVE System.
- Documentation of the cover system, including survey elevations.
- Copies of daily inspection reports and, if applicable, problem identification and corrective measure reports.
- Photo documentation of remedial activities.
- Text describing the remedial activities performed; a description of any deviations from the Work Plan and associated corrective measures taken; and other pertinent information necessary to document that the Site activities were carried out in accordance with this Work Plan.

In addition, HSP or TurnKey will subcontract for third-party data review of analytical data by a qualified, independent data validation expert. Specifically, a Data Usability Summary Report (DUSR) will be prepared, with appropriate data qualifiers added to the results. The DUSR format will follow the NYSDEC's September 1997 DUSR guidelines and DER-10 guidance. The DUSR and any necessary qualifications to the data will be appended to the FER.

5.3 Site Management Plan

As described in Section 3.7, a SMP will be submitted for the Site. The SMP will include an: Engineering and Institutional Control Plan; Operation & Maintenance Plan; Excavation Plan; a Site Monitoring Plan; and, an Environmental Easement.

6.0 PROJECT SCHEDULE

Figure 8 outlines the anticipated project schedule for the major tasks to be performed during implementation of the Remedial Action Work Plan.

7.0 REFERENCES

1. TurnKey Environmental Restoration, LLC. *Remedial Investigation/Alternative Analysis (RI/AA) Report. 229 Homer Street Site, BCP Site No C905044, Olean, New York*. August 2016.
2. TurnKey Environmental Restoration, LLC. *Revised Alternative Analysis (AA) Report. 229 Homer Street Site, BCP Site No C905044, Olean, New York*. June 2017.
3. New York State Department of Environmental Conservation. *DER-10/Technical Guidance for Site Investigation and Remediation*. May 3, 2010.

TABLES

TABLE 1

CRITERIA FOR USE OF OFF-SITE SOIL

REMEDIAL ACTION WORK PLAN

229 Homer Street Site

Olean, New York

Parameter	Allowable Concentration[1] for Use of Off-Site Soil
Volatile Organic Compounds (mg/kg)	
1,1,1-Trichloroethane	0.68
1,1-Dichloroethane	0.27
1,1-Dichloroethene	0.33
1,2-Dichlorobenzene	1.1
1,2-Dichloroethane	0.02
1,2-Dichloroethene(cis)	0.25
1,2-Dichloroethene(trans)	0.19
1,3-Dichlorobenzene	2.4
1,4-Dichlorobenzene	1.8
1,4-Dioxane	0.1
Acetone	0.05
Benzene	0.06
Butylbenzene	12
Carbon tetrachloride	0.76
Chlorobenzene	1.1
Chloroform	0.37
Ethylbenzene	1
Hexachlorobenzene	3.2
Methyl ethyl ketone	0.12
Methyl tert-butyl ether	0.93
Methylene chloride	0.05
Propylbenzene-n	3.9
Sec-Butylbenzene	11
Tert-Butylbenzene	5.9
Tetrachloroethene	1.3
Toluene	0.7
Trichloroethene	0.47

TABLE 1

CRITERIA FOR USE OF OFF-SITE SOIL

REMEDIAL ACTION WORK PLAN

229 Homer Street Site

Olean, New York

Parameter	Allowable Concentration[1] for Use of Off-Site Soil
Volatile Organic Compounds (mg/kg)	
Trimethylbenzene-1,2,4	3.6
Trimethylbenzene-1,3,5	8.4
Vinyl chloride	0.02
Xylene (mixed)	1.6
Semi-Volatile Organic Compounds (mg/kg)	
Acenaphthene	98
Acenaphthylene	107
Anthracene	500
Benzo(a)anthracene	1
Benzo(a)pyrene	1
Benzo(b)fluoranthene	1.7
Benzo(g,h,i)perylene	500
Benzo(k)fluoranthene	1.7
Chrysene	1
Dibenz(a,h)anthracene	0.56
Fluoranthene	500
Fluorene	386
Indeno(1,2,3-cd)pyrene	5.6
m-Cresol(s)	0.33
Naphthalene	12
o-Cresol(s)	0.33
p-Cresol(s)	0.33
Pentachlorophenol	0.8
Phenanthrene	500
Phenol	0.33
Pyrene	500

TABLE 1

CRITERIA FOR USE OF OFF-SITE SOIL

REMEDIAL ACTION WORK PLAN

229 Homer Street Site

Olean, New York

Parameter	Allowable Concentration[1] for Use of Off-Site Soil
Metals (mg/kg)	
Arsenic	16
Barium	400
Beryllium	47
Cadmium	7.5
Chromium, Hexavalent[2]	19
Chromium, Trivalent[2]	1500
Copper	270
Cyanide	27
Lead	450
Manganese	2000
Mercury (total)	0.73
Nickel	130
Selenium	4
Silver	8.3
Zinc	2480
PCBs/Pesticides (mg/kg)	
2,4,5-TP Acid (Silvex)	3.8
4,4'-DDE	17
4,4'-DDT	47
4,4'-DDD	14
Aldrin	0.19
Alpha-BHC	0.02
Beta-BHC	0.09
Chlordane (alpha)	2.9
Delta-BHC	0.25
Dibenzofuran	210
Dieldrin	0.1
Endosulfan I	102
Endosulfan II	102
PCBs/Pesticides (mg/kg)	
Endosulfan sulfate	200
Endrin	0.06
Heptachlor	0.38
Lindane	0.1
Polychlorinated biphenyls	1

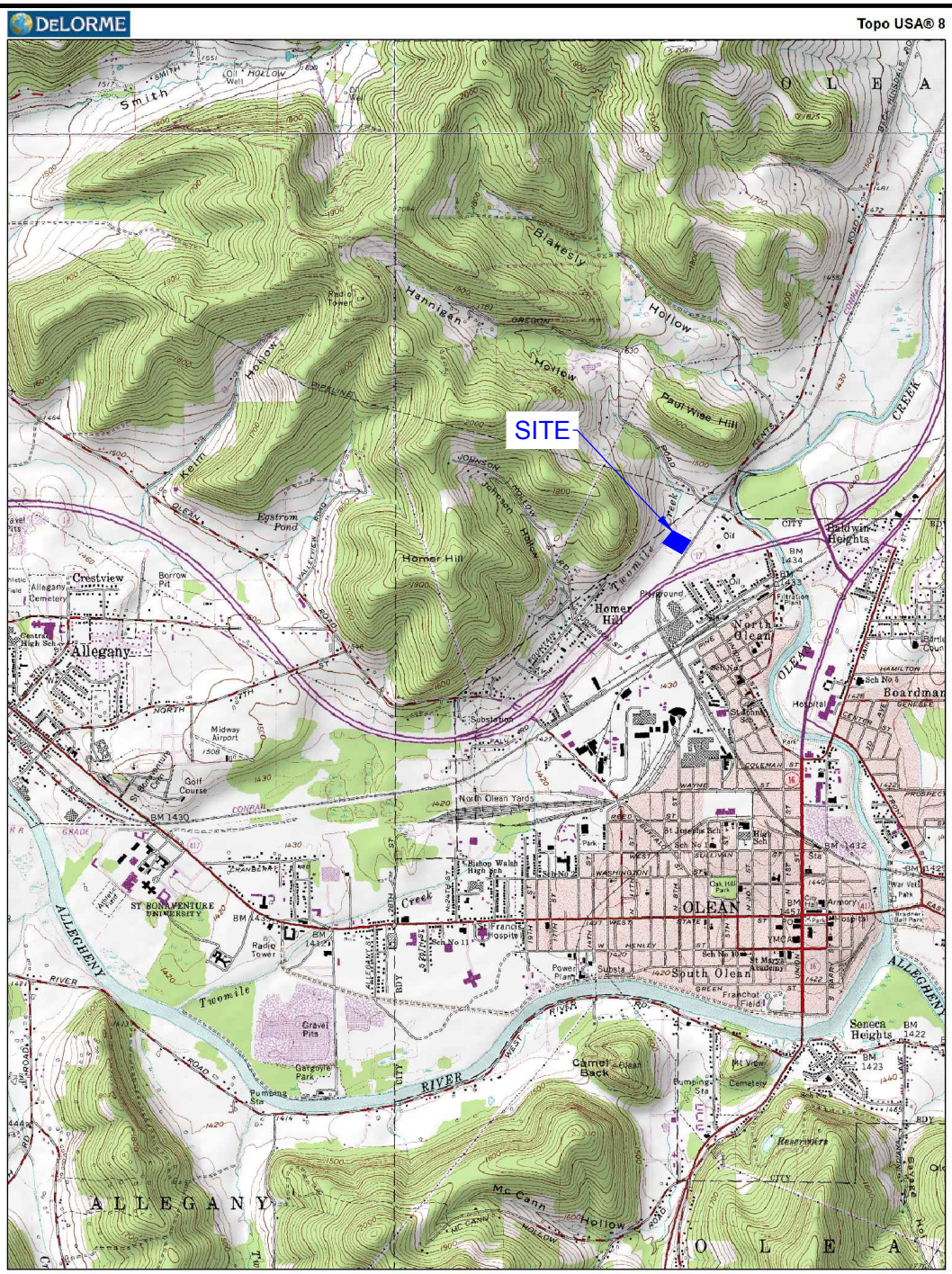
Notes:

1. The lower of Restricted-Commercial SCO and Protection of Groundwater SCO per 6NYCRR Part 375-6.8(b)
2. The SCO for Hexavalent or Trivalent Chromium is considered to be met if the analysis for the total species of this contaminant is below the specific SCO for Hexavalent Chromium.

FIGURES

F:\CAD\TurnKey\Benson\229 Homer Street\RAWP\Figure 1; Site Location and Vicinity Map.dwg, DWG To PDF.pc3

FIGURE 1



BENCHMARK ENVIRONMENTAL ENGINEERING & SCIENCE, PLLC

TURNKEY ENVIRONMENTAL RESTORATION, LLC

2558 HAMBURG TURNPIKE, SUITE 300, BUFFALO, NY 14218, (716) 856-0599

PROJECT NO.: 0225-015-002

DATE: JANUARY 2018

DRAFTED BY: RFL

SITE LOCATION AND VICINITY MAP

REMEDIAL ACTION WORK PLAN

229 HOMER STREET SITE

OLEAN, NEW YORK

PREPARED FOR

HOMER STREET PROPERTIES LLC

F:\CAD\TurnKey\Benson\229 Homer Street\RAWP\Figure 2; Site Plan (aerial).dwg, DWG To PDF.pc3

DATE: JANUARY 2018
DRAFTED BY: RFL

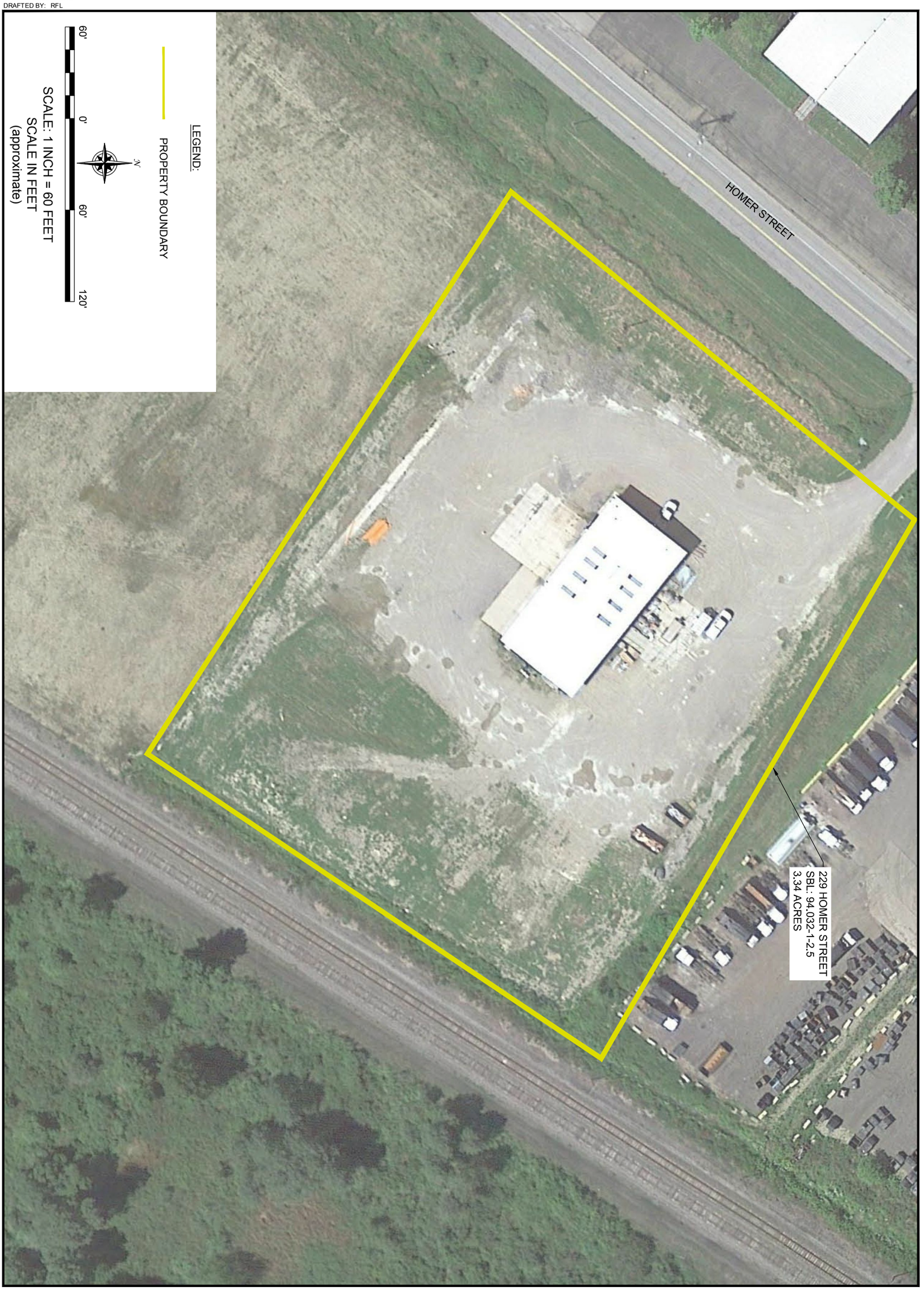


FIGURE 2

SITE PLAN (AERIAL)

REMEDIAL ACTION WORK PLAN

229 HOMER STREET SITE

OLEAN, NEW YORK

PREPARED FOR

HOMER STREET PROPERTIES LLC

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JOB NO.: 0225-015-002

F:\CAD\TurnKey\Benson\229 Homer Street\RAWP\Figure 3; Isopotential map.dwg, DWG to PDF.pc3

DATE: JANUARY 2018
DRAFTED BY: KRR

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2558 HAMBURG TURNPIKE, SUITE 300, BUFFALO, NY 14218, (716) 856-0599

JOB NO.: 0225-015-001

ISOPOTENTIAL MAP (DECEMBER 2015)

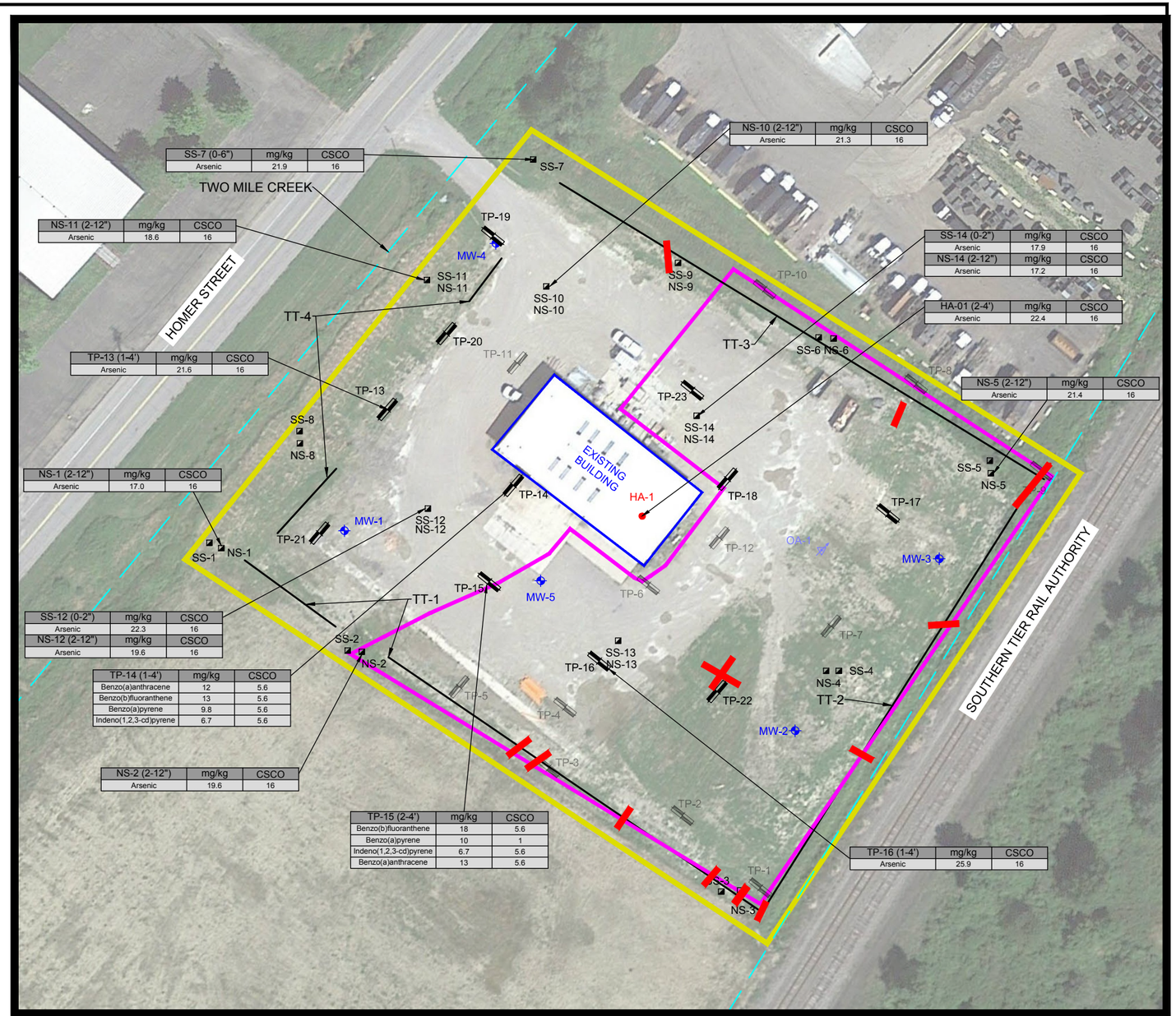
REMEDIAL ACTION WORK PLAN
229 HOMER STREET SITE
OLEAN, NEW YORK
PREPARED FOR
HOMER STREET PROPERTIES LLC

FIGURE 3

F:\CAD\TurnKey\Benson\229 Homer Street\RAWP\Figure 4; Track 4 Cleanup.dwg, DWG to PDF.pc3

LEGEND:

- SITE BOUNDARY
- GENERAL AREA OF PETROLEUM IMPACT
- IN PLACE PIPING ENCOUNTERED
- TEST TRENCH (4)
- TP-1 — PHASE II TEST PIT LOCATION (12)
- SS-1 — SURFACE SOIL SAMPLE - DECEMBER 2015 (8)
- SS-9 — SURFACE SOIL SAMPLE - AUGUST 2017 (6)
- NS-1 — NEAR SURFACE SOIL SAMPLE - AUGUST 2017 (14)
- MW-1 — MONITORING WELL (5)
- TP-13 — RI TEST PIT (11)
- HA-1 — INTERIOR SOIL BORING



SAMPLE DESIGNATION → TP-15 (2-4')
ANALYTES → Benzo(b)fluoranthene, Benzo(a)pyrene, Indeno(1,2,3-cd)pyrene, Benzo(a)anthracene
SOIL CONCENTRATION DETECTED → 18, 10, 6.7, 13
CSCO → 5.6, 1, 5.6, 5.6
CONCENTRATION IN UNITS OF MG/KG

NOTES:
1. ONLY ANALYSES EXCEEDING COMMERCIAL SOIL CLEANUP OBJECTIVES (CSCOs) SHOWN.
2. MG/KG = MILLIGRAMS PER KILOGRAM

N

80' 0' 80' 160'

SCALE: 1 INCH = 80 FEET
SCALE IN FEET
(approximate)

DATE: JANUARY 2018
DRAFTED BY: RFL

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JOB NO.: 0225-015-002

GENERAL AREA OF PETROLEUM IMPACT AND CSCO EXCEEDANCES

REMEDIAL ACTION WORK PLAN

229 HOMER STREET SITE

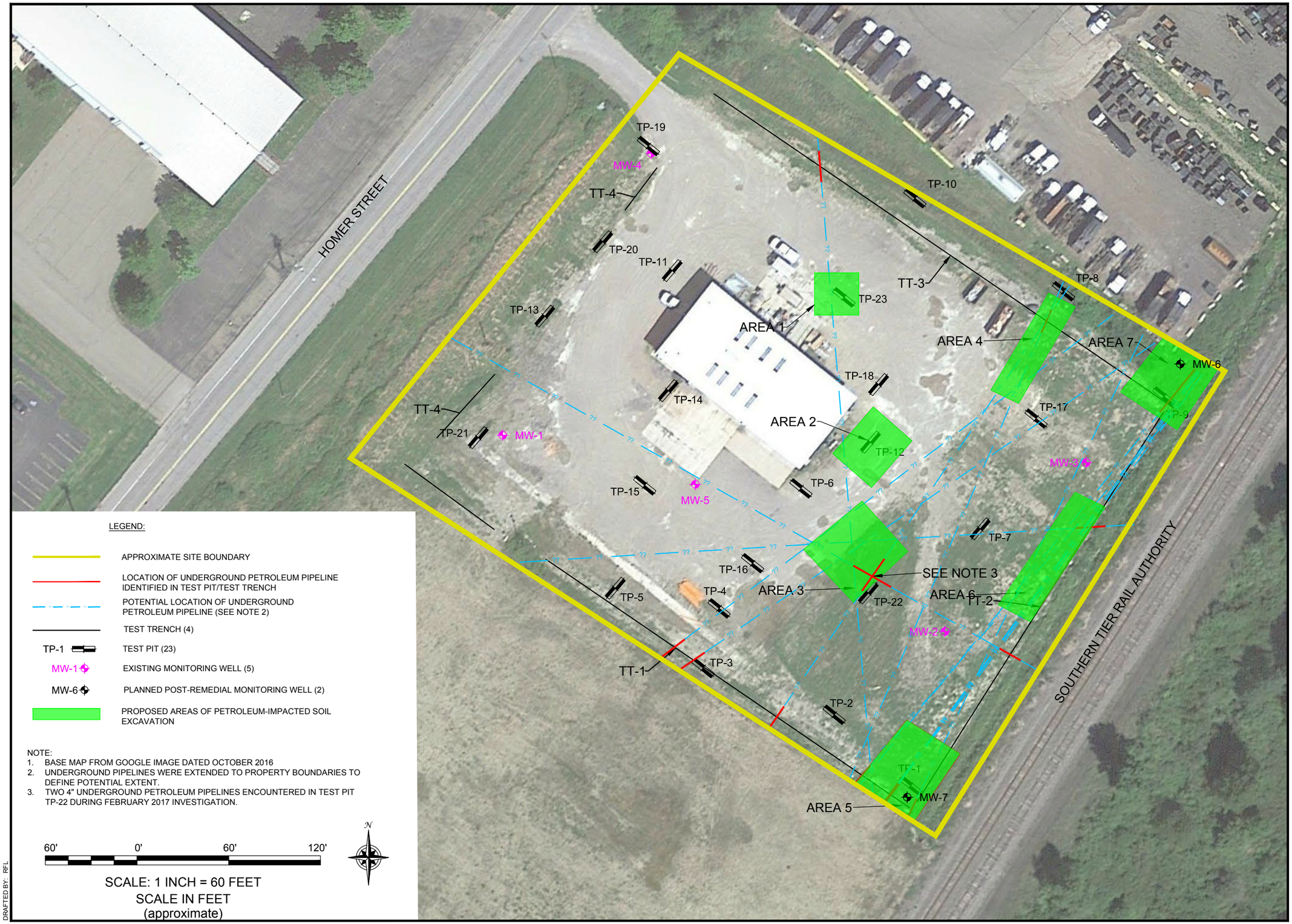
OLEAN, NEW YORK

PREPARED FOR

HOMER STREET PROPERTIES LLC

FIGURE 4

F:\CAD\TurnKey\Benson\229 Homer Street\RAWP\Figure 5; Pipes and Hot Spot Remediation.dwg, DWG To PDF.pc3



LEGEND:

- APPROXIMATE SITE BOUNDARY
- LOCATION OF UNDERGROUND PETROLEUM PIPELINE IDENTIFIED IN TEST PIT/TEST TRENCH
- POTENTIAL LOCATION OF UNDERGROUND PETROLEUM PIPELINE (SEE NOTE 2)
- TEST TRENCH (4)
- TP-1 TEST PIT (23)
- MW-1 EXISTING MONITORING WELL (5)
- MW-6 PLANNED POST-REMEDIAL MONITORING WELL (2)
- PROPOSED AREAS OF PETROLEUM-IMPACTED SOIL EXCAVATION

NOTE:
1. BASE MAP FROM GOOGLE IMAGE DATED OCTOBER 2016
2. UNDERGROUND PIPELINES WERE EXTENDED TO PROPERTY BOUNDARIES TO DEFINE POTENTIAL EXTENT.
3. TWO 4" UNDERGROUND PETROLEUM PIPELINES ENCOUNTERED IN TEST PIT TP-22 DURING FEBRUARY 2017 INVESTIGATION.

60' 0' 60' 120'

SCALE: 1 INCH = 60 FEET
SCALE IN FEET
(approximate)

N

DATE: JANUARY 2018
DRAFTED BY: RFL

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JOB NO.: 0225-015-002

PIPING AND GCS REMOVAL FOR COMMERCIAL USE (TRACK 4) CLEANUP

REMEDIAL ACTION WORK PLAN

229 HOMER STREET SITE

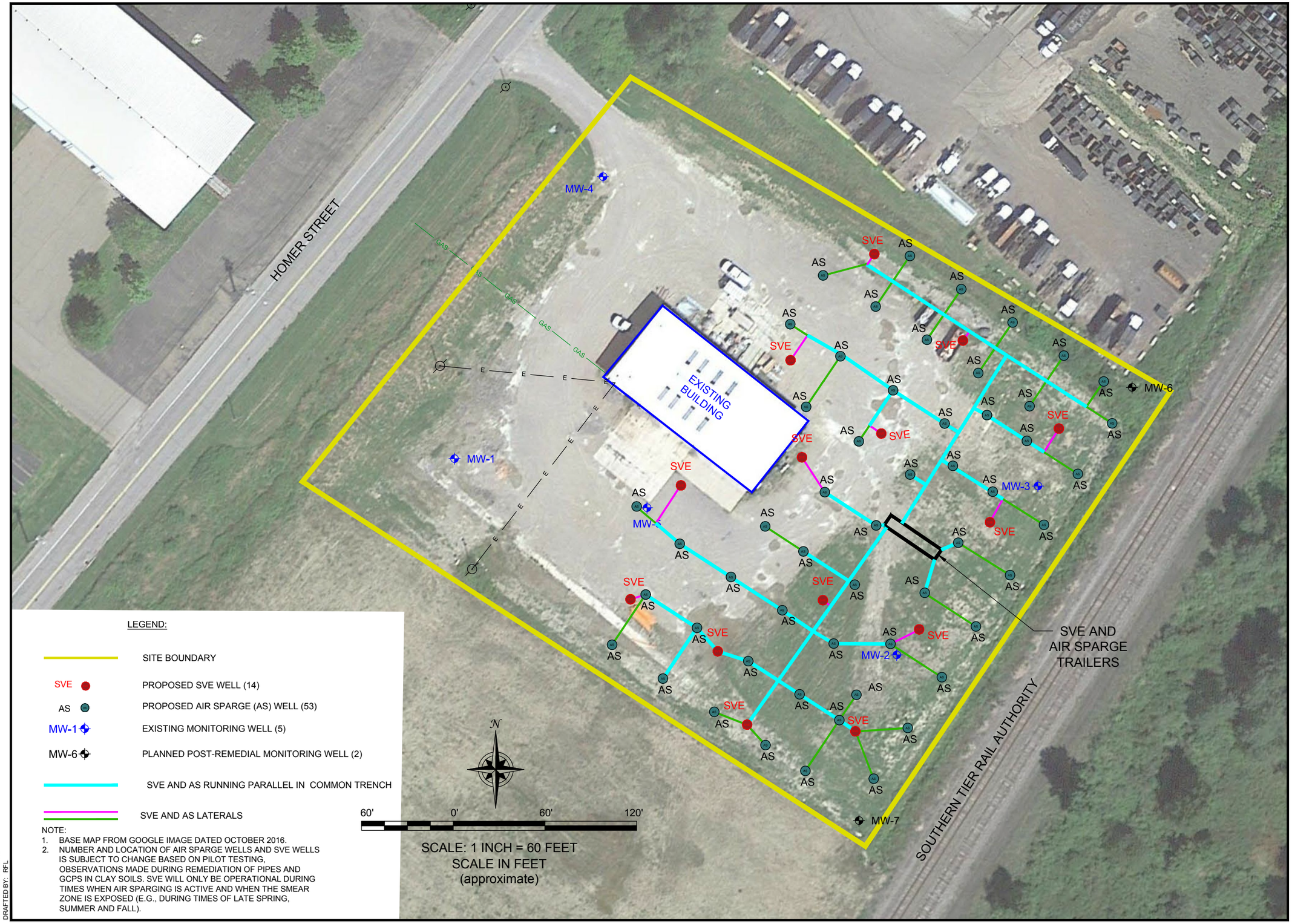
OLEAN, NEW YORK

PREPARED FOR

HOMER STREET PROPERTIES LLC

FIGURE 5

F:\CAD\TurnKey\Benson\229 Homer Street\RAWP\Figure 6; SVE and AS Insitu Remediation rev.dwg, DWG To PDF.pc3



LEGEND:

- SITE BOUNDARY
- SVE — PROPOSED SVE WELL (14)
- AS — PROPOSED AIR SPARGE (AS) WELL (53)
- MW-1 — EXISTING MONITORING WELL (5)
- MW-6 — PLANNED POST-REMEDIAL MONITORING WELL (2)
- SVE AND AS RUNNING PARALLEL IN COMMON TRENCH
- SVE AND AS LATERALS

NOTE:
1. BASE MAP FROM GOOGLE IMAGE DATED OCTOBER 2016.
2. NUMBER AND LOCATION OF AIR SPARGE WELLS AND SVE WELLS IS SUBJECT TO CHANGE BASED ON PILOT TESTING, OBSERVATIONS MADE DURING REMEDIATION OF PIPES AND GCPS IN CLAY SOILS. SVE WILL ONLY BE OPERATIONAL DURING TIMES WHEN AIR SPARGING IS ACTIVE AND WHEN THE SMEAR ZONE IS EXPOSED (E.G., DURING TIMES OF LATE SPRING, SUMMER AND FALL).

DATE: JANUARY 2018
DRAFTED BY: RFL

PLANNED IN-SITU AS/SVE FOR COMMERCIAL USE (TRACK 4) CLEANUP

REMEDIAL ACTION WORK PLAN

229 HOMER STREET SITE

OLEAN, NEW YORK

PREPARED FOR

HOMER STREET PROPERTIES LLC

FIGURE 6

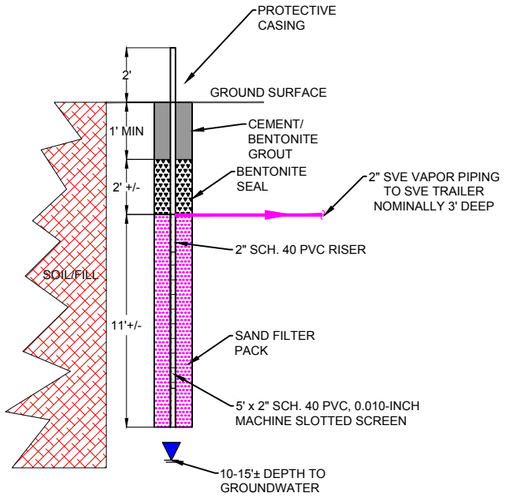
BENCHMARK ENVIRONMENTAL ENGINEERING & SCIENCE, PLLC

TURNKEY ENVIRONMENTAL RESTORATION, LLC

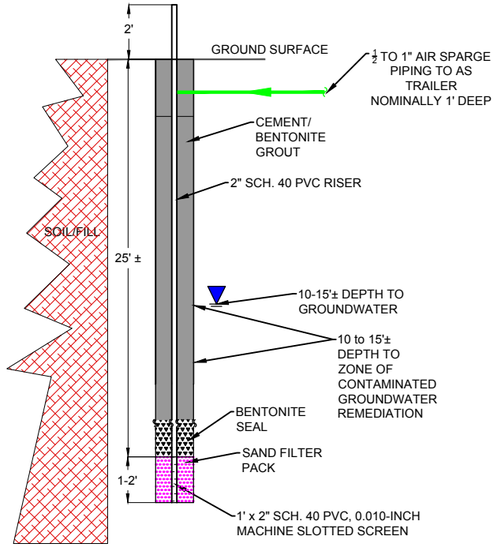
2558 HAMBURG TURNPIKE, SUITE 300, BUFFALO, NY 14218, (716) 856-0599

JOB NO.: 0225-015-002

TYPICAL SVE WELL

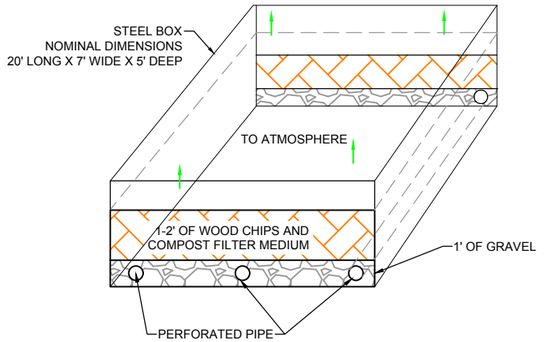


TYPICAL AIR SPARGE WELL

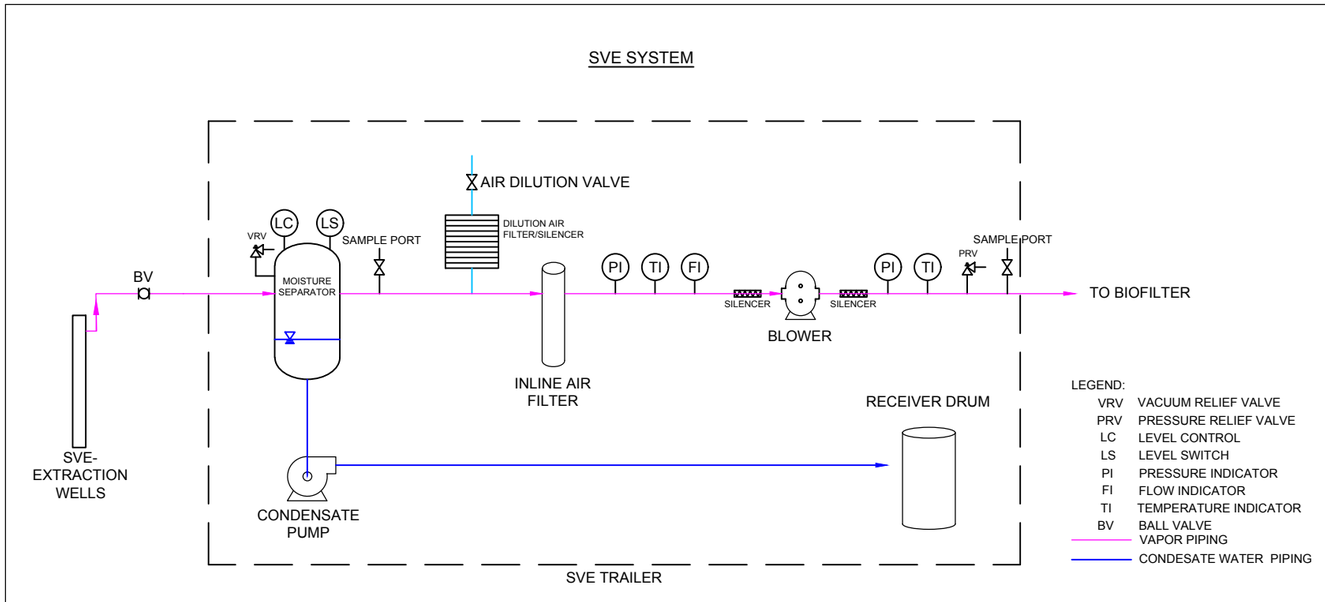


BIOFILTER DETAIL

NTS



SVE SYSTEM



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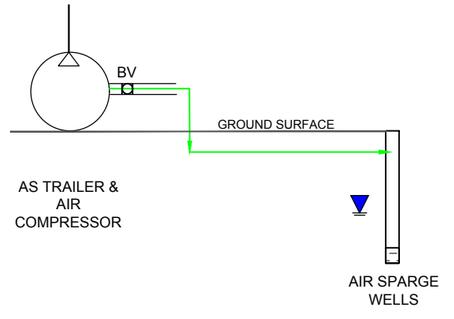

SVE AND AIR SPARGE DETAILS

REMEDIAL ACTION WORK PLAN

229 HOMER STREET SITE

OLEAN, NEW YORK

PREPARED FOR

HOMER STREET PROPERTIES LLC

FIGURE 7

BENCHMARK ENVIRONMENTAL ENGINEERING & SCIENCE, PLLC
TURNKEY ENVIRONMENTAL RESTORATION, LLC
2558 HAMBURG TURNPIKE, SUITE 300, BUFFALO, NY 14218, (716) 856-0599

JOB NO.: 0225-015-001

DATE: DECEMBER 2017
DRAFTED BY: RFL

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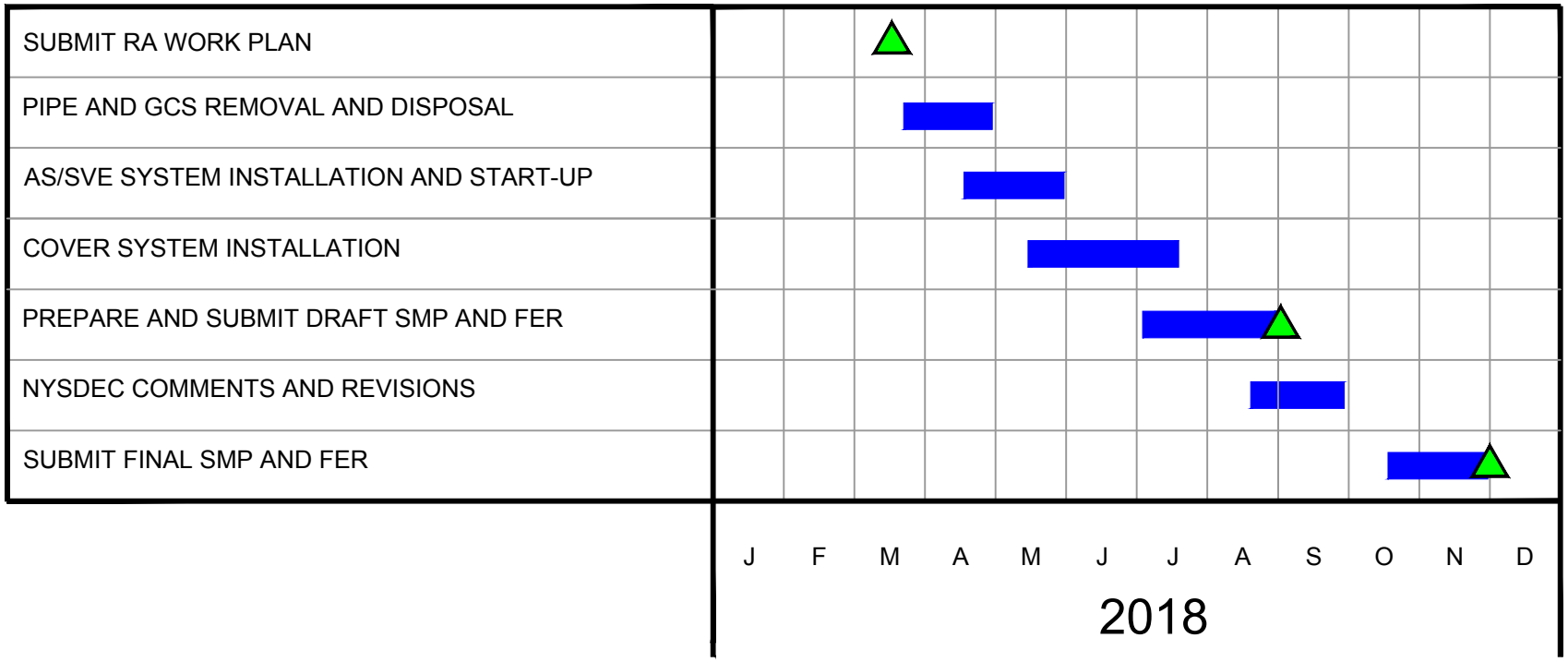
PROJECT TASKS:



BENCHMARK ENVIRONMENTAL ENGINEERING & SCIENCE, PLLC

TURNKEY ENVIRONMENTAL RESTORATION, LLC

2558 HAMBURG TURNPIKE, SUITE 300, BUFFALO, NY 14218, (716) 856-0599

PROJECT NO.: 0225-015-002

DATE: DECEMBER 2017

DRAFTED BY: RFL

PROJECT SCHEDULE

BROWNFIELD CLEANUP PROGRAM
REMEDIAL ACTION WORK PLAN

229 HOMER STREET SITE
OLEAN, NEW YORK

PREPARED FOR

HOMER STREET PROPERTIES LLC

FIGURE 8

APPENDIX A

HEALTH AND SAFETY PLAN

SITE HEALTH AND SAFETY PLAN
for
REMEDIAL DESIGN/REMEDIAL ACTION WORK PLAN

229 HOMER STREET SITE

TOWN OF OLEAN, CATTARAUGUS COUNTY, NEW YORK
SITE NO. 905044

January 2018 0225-015-002

Prepared for:

HOMER STREET PROPERTIES, LLC

Prepared by:

BENCHMARK ENVIRONMENTAL ENGINEERING & SCIENCE, PLLC

In Association With:

TURNKEY ENVIRONMENTAL RESTORATION, LLC

229 HOMER STREET SITE
HEALTH AND SAFETY PLAN FOR REMEDIAL ACTIVITIES

ACKNOWLEDGEMENT

Plan Reviewed by (initial):

Corporate Health and Safety Director: Thomas H. Forbes, P.E.

Project Manager: Michael Lesakowski

Designated Site Safety and Health Officer: Mark Janus

Acknowledgement:
I acknowledge that I have reviewed the information contained in this site-specific Health and Safety Plan, and understand the hazards associated with performance of the field activities described herein. I agree to comply with the requirements of this plan.

NAME (PRINT)	SIGNATURE	DATE

229 HOMER STREET SITE
HEALTH AND SAFETY PLAN FOR REMEDIAL ACTIVITIES

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HEALTH AND SAFETY PLAN FOR REMEDIAL ACTIVITIES

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1.0 INTRODUCTION

1.1 General

In accordance with OSHA requirements contained in 29 CFR 1910.120, this Health and Safety Plan (HASP) describes the specific health and safety practices and procedures to be employed by Benchmark Environmental Engineering & Science, PLLC and TurnKey Environmental Restoration, LLC and employees (referred to jointly hereafter as "Benchmark-TurnKey") during remedial activities at the 229 Homer Street Site (Site) located at 229 Homer Street in the City of Olean, Cattaraugus County, New York. This HASP presents procedures for Benchmark-TurnKey employees who will be involved with remaining remedial activities; it does not cover the activities of other contractors, subcontractors or other individuals on the Site. These firms will be required to develop and enforce their own HASPs as discussed in Section 2.0. Benchmark-TurnKey accepts no responsibility for the health and safety of contractor, subcontractor or other personnel.

This HASP presents information on known Site health and safety hazards using available historical information, and identifies the equipment, materials and procedures that will be used to eliminate or control these hazards. Environmental monitoring will be performed during the course of field activities to provide real-time data for on-going assessment of potential hazards.

1.2 Background

The Site property consists of one tax parcel measuring 3.34 acres (SBL: 94.032-1-2.5). The Site is currently improved with a one-story building in the central portion of the Site.

The Site and surrounding area was originally developed in approximately 1890 for the oil industry and used for refinery purposes and as a petroleum storage tank farm. The Site is bound by Two Mile Creek and Homer Street to the northwest, a Casella Waste Management of New York transfer station to the northeast, Southern Tier Rail Authority rail lines to the southeast, and 251 Homer Street (a vacant parcel currently being remediated under the NYSDEC BCP) to the southwest.

1.3 Known and Suspected Environmental Conditions

Previous investigations have identified that the Site was historically occupied by a large tank, used for oil storage by Socony Vacuum and/or Felmont Oil, and two tank berm areas. The Site was identified as part of the Exxon/Mobil Legacy Site (EMLS) Works #3 area. The tank and berm areas were removed by the 1970s.

In a letter dated April 26, 2013, NYSDEC assigned Spill Number 1300860 to the 229 Homer Street Site and adjacent Southern Tier Rail Authority property for petroleum contained within and potentially spilled from abandoned dilapidated refinery piping associated with the former refinery that was located in this area of the City of Olean. Petroleum contained within piping was identified during IRM activities at 251 Homer Street (BCP Site C905037), adjacent and to the south of the 229 Homer Street Site. The piping was drained, cut-off and capped at the southern property boundary between the 229 Homer Street Site and 251 Homer Street, indicating that the piping extends on to the 229 Homer Street Site in similar condition.

In January 2015, TurnKey completed a Phase II Environmental Investigation at the Site. The following site conditions were observed during the investigation:

- Elevated photoionization detector (PID) readings over 1,000 parts per million (ppm) and olfactory evidence of impacts (petroleum-like odors) were observed in 5 of the 12 test pits, with impacts apparent at depths ranging from 3 to 10 feet below ground surface (fbgs).
- Abandoned refinery piping was observed at two locations, TP-1(southern portion of the Site) and TP-9 (northern portion of the Site). Light non-aqueous phase liquid (LNAPL) was also observed on the groundwater in TP-9 at approximately 5 fbgs.
- Acetone was detected at concentrations above its respective Part 375 Unrestricted Soil Cleanup Objectives (USCOs) in 4 of the 7 samples analyzed. Elevated volatile organic compound (VOC) tentatively identified compounds (TICs) were also identified in soil samples from TP-1 (23 ppm) and TP-6 (41 ppm).

TurnKey completed a Remedial Investigation and Alternatives Analysis Report in 2016. The findings of the report are consistent with the foregoing and include the following:

- The water table exists at depths ranging from 7 to 15 feet. The groundwater flow direction is in a southwesterly direction.
- The surface soil/fill (0-2") and near-surface soils (2-12") are impacted by arsenic at concentrations exceeding the commercial soil cleanup objectives (CSCOs) at multiple locations across the site.
- Subsurface soil/fills are impacted by arsenic and polynuclear aromatic hydrocarbons (PAHs) at concentrations exceeding the CSCOs at four locations.
- Subsurface soil/fill was identified as petroleum grossly contaminated soil (GCS) based on observed petroleum-like odors, sheen/floating product and elevated photoionization detector readings (PID) in subsurface soil/fills in across nearly two thirds of the site area. GCS was generally found at depths ranging from approximately 50 to 15 feet below ground surface (fbgs). It is also possible that GCS extends beneath the existing building.
- Underground piping was encountered in several test pits and trenches. The majority of the pipeing was found on the southern and eastern portions of the Site; however, additional piping was found on the northern portion of the Site.
- Benzene in monitoring well MW-4 and pentachlorophenol in well MW-3 were detected above GWQS/GVs. Gasoline organics (GROs) and Diesel range organics (DROs) were present in all wells.
- Total and dissolved metals detected at concentrations above GWQS/GVs include naturally occurring minerals such as iron, manganese, magnesium, and sodium. Total arsenic, total lead, and dissolved barium were also detected slightly above GWQS/GV.
- Analytical results from sub-slab and indoor air sampling identified an elevated concentration of dichlorodifluoromethane (Freon 12).

1.4 Parameters of Interest

The RI provides a more complete description of the contamination across various Site environmental media with the specific Constituents of Concern including:

Soil / Fill – GCS and arsenic

Groundwater – Benzene

1.5 Remedial Action Activities

Benchmark-TurnKey personnel will be on-site to observe and perform field activities to be completed are described below:

- Removal or cleaning of abandoned subsurface piping. Piping contents will be removed and disposed or recycled off-site. The cleaned piping will be recycled for scrap or capped in-place.
- Excavation, transportation and off-site disposal of heavily contaminated GCS soil/fill encountered during subsurface piping removal.
- Relocation of the upper 12" of soil/fill from the northern third of the site to be used as backfill in the areas excavated for piping and GCS removal beneath the soil cover system.
- Installation of air sparging wells and soil vapor extraction wells to mitigate GCS soil/fill and groundwater in-situ.
- Placements of a soil cover system in areas without building or hardscape (i.e., asphalt, concrete).
- Development of a Site Management Plan (SMP) for post-certificate of completion (COC) operation, maintenance, and monitoring.

2.0 ORGANIZATIONAL STRUCTURE

This section of the HASP describes the lines of authority, responsibility and communication as they pertain to health and safety functions at the Site. The purpose of this chapter is to identify the personnel who impact the development and implementation of the HASP and to describe their roles and responsibilities. This chapter also identifies other contractors and subcontractors involved in work operations and establish the lines of communications among them for health and safety matters. The organizational structure described in this chapter is consistent with the requirements of 29 CFR 1910.120(b)(2). This section will be reviewed by the Project Manager and updated as necessary to reflect the current organizational structure at this Site.

2.1 Roles and Responsibilities

All Benchmark-TurnKey personnel on the Site must comply with the minimum requirements of this HASP. The specific responsibilities and authority of management, safety and health, and other personnel on this Site are detailed in the following paragraphs.

2.1.1 Corporate Health and Safety Director

The Benchmark-TurnKey Corporate Health and Safety Director is ***Mr. Thomas H. Forbes, P.E.*** The Corporate Health and Safety Director responsible for developing and implementing the Health and Safety program and policies for Benchmark Environmental Engineering & Science, PLLC and TurnKey Environmental Restoration, LLC, and consulting with corporate management to ensure adequate resources are available to properly implement these programs and policies. The Corporate Health and Safety Director coordinates Benchmark-TurnKey's Health and Safety training and medical monitoring programs and assists project management and field staff in developing site-specific health and safety plans.

2.1.2 Project Manager

The Project Manager for this Site is ***Mr. Michael Lesakowski.*** The Project Manager has the responsibility and authority to direct all Benchmark-TurnKey work operations at the Site. The Project Manager coordinates safety and health functions with the

Site Safety and Health Officer, and bears ultimate responsibility for proper implementation of this HASP. He may delegate authority to expedite and facilitate any application of the program, including modifications to the overall project approach as necessary to circumvent unsafe work conditions. Specific duties of the Project Manager include:

- Preparing and coordinating the Site work plan.
- Providing Benchmark-TurnKey workers with work assignments and overseeing their performance.
- Coordinating health and safety efforts with the Site Safety and Health Officer (SSHO).
- Reviewing the emergency response coordination plan to assure its effectiveness.
- Serving as the primary liaison with Site contractors and the property owner.

2.1.3 Site Safety and Health Officer

The Site Safety and Health Officer (SSHO) for this Site is ***Mr. Mark Janus***. The qualified alternate SSHO is ***Mr. Brock Greene.*** The SSHO reports to the Project Manager. The SSHO is on-site or readily accessible to the Site during all work operations and has the authority to halt Site work if unsafe conditions are detected. The specific responsibilities of the SSHO are:

- Managing the safety and health functions for Benchmark-TurnKey personnel on the Site.
- Serving as the point of contact for safety and health matters.
- Ensuring that Benchmark-TurnKey field personnel working on the Site have received proper training (per 29 CFR Part 1910.120(e)), that they have obtained medical clearance to wear respiratory protection (per 29 CFR Part 1910.134), and that they are properly trained in the selection, use and maintenance of personal protective equipment, including qualitative respirator fit testing.
- Performing or overseeing Site monitoring as required by the HASP.

- Assisting in the preparation and review of the HASP.
- Maintaining site-specific safety and health records as described in this HASP.
- Coordinating with the Project Manager, Site Workers, and Contractor's SSHO as necessary for safety and health efforts.

2.1.4 Site Workers

Site workers are responsible for: complying with this HASP or a more stringent HASP, if appropriate (i.e., Contractor and Subcontractor's HASP); using proper PPE; reporting unsafe acts and conditions to the SSHO; and following the safety and health instructions of the Project Manager and SSHO.

2.1.5 Other Site Personnel

On-Site contractors will be responsible for developing, implementing and enforcing a Health and Safety Plan equally stringent or more stringent than Benchmark-TurnKey's HASP. Benchmark-TurnKey assumes no responsibility for the health and safety of anyone outside its direct employ. Each Contractor's HASP shall cover all non-Benchmark/TurnKey Site personnel. Each Contractor shall assign a SSHO who will coordinate with Benchmark-TurnKey's SSHO as necessary to ensure effective lines of communication and consistency between contingency plans.

In addition to Benchmark-TurnKey and Contractor personnel, other individuals who may have responsibilities in the work zone include subcontractors and governmental agencies performing Site inspection work (i.e., the New York State Department of Environmental Conservation). The Contractor shall be responsible for ensuring that these individuals have received OSHA-required training (29 CFR 1910.120(e)), including initial, refresher and site-specific training, and shall be responsible for the safety and health of these individuals while they are on-site.

3.0 HAZARD EVALUATION

Due to the presence of certain contaminants at the Site, the possibility exists that workers will be exposed to hazardous substances during field activities. The principal points of exposure would be through direct contact with and incidental ingestion of soil and/or groundwater, and through the inhalation of contaminated particles or vapors. Other points of exposure may include direct contact with groundwater. In addition, the use of drilling and/or medium to large-sized construction equipment (e.g., excavator) will also present conditions for potential physical injury to workers. Further, since work will be performed outdoors, the potential exists for heat/cold stress to impact workers, especially those wearing protective equipment and clothing. Adherence to the medical evaluations, worker training relative to chemical hazards, safe work practices, proper personal protection, environmental monitoring, establishment work zones and Site control, appropriate decontamination procedures and contingency planning outlined herein will reduce the potential for chemical exposures and physical injuries.

3.1 Chemical Hazards

As discussed in Section 1.3, historic activities have potentially resulted in petroleum impacts to Site soils, groundwater, and subslab vapors. Table 1 lists exposure limits for airborne concentrations of the COPCs identified in Section 1.4 of this HASP. Brief descriptions of the toxicology of the prevalent COPCs and related health and safety guidance and criteria are provided below.

- **Benzene (CAS #71-43-2)** poisoning occurs most commonly through inhalation of the vapor, however, benzene can also penetrate the skin and poison in that way. Locally, benzene has a comparatively strong irritating effect, producing erythema and burning and, in more severe cases, edema and blistering. Exposure to high concentrations of the vapor (i.e., 3,000 ppm or higher) may result in acute poisoning characterized by the narcotic action of benzene on the central nervous system. In acute poisoning, symptoms include confusion, dizziness, tightening of the leg muscles, and pressure over the forehead. Chronic exposure to benzene (i.e., long term exposure to concentrations of 100 ppm or less may lead to damage of the blood-forming system. Benzene is very flammable when exposed to heat or flame and can react vigorously with oxidizing materials.

- **Arsenic (CAS #7440-38-2)** is a naturally occurring element and is usually found combined with one or more elements, such as oxygen or sulfur. Inhalation is a more important exposure route than ingestion. First phase exposure symptons include nausea, vomiting, diarrhea and pain in the stomach. Prolonged contact is corrosive to the skin and mucus membranes. Arsenic is considered a Group A human carcinogen by the USEPA. Exposure via inhalation is associated with an increased risk of lung cancer. Exposure via the oral route is associated with an increased risk of skin cancer.

With respect to the anticipated remedial activities discussed in Section 1.5, possible routes of exposure to the above-mentioned contaminants are presented in Table 2. The use of proper respiratory equipment, as outlined in Section 7.0 of this HASP, will minimize the potential for exposure to airborne contamination. Exposure to contaminants through dermal and other routes will also be minimized through the use of protective clothing (Section 7.0), safe work practices (Section 6.0), and proper decontamination procedures (Section 12.0).

3.2 Physical Hazards

Field activities at the Former Doro Dry Cleaners Site may present the following physical hazards:

- The potential for physical injury during heavy construction equipment use, such as backhoes, excavators and drilling equipment.

- The potential for heat/cold stress to employees during the summer/winter months (see Section 10.0).

- The potential for slip and fall injuries due to rough, uneven terrain and/or open excavations.

These hazards represent only some of the possible means of injury that may be present during field and sampling activities at the Site. Since it is impossible to list all potential sources of injury, it shall be the responsibility of each individual to exercise proper care and caution during all phases of the work.

4.0 TRAINING

4.1 Site Workers

All personnel performing remedial activities at the Site (such as, but not limited to, equipment operators, general laborers, and drillers) and who may be exposed to hazardous substances, health hazards, or safety hazards and their supervisors/managers responsible for the Site shall receive training in accordance with 29 CFR 1910.120(e) before they are permitted to engage in operations in the exclusion zone or contaminant reduction zone. This training includes an initial 40-hour Hazardous Waste Site Worker Protection Course, an 8-hour Annual Refresher Course subsequent to the initial 40-hour training, and 3 days of actual field experience under the direct supervision of a trained, experienced supervisor. Additional site-specific training shall also be provided by the SSHO prior to the start of field activities. A description of topics to be covered by this training is provided below.

4.1.1 Initial and Refresher Training

Initial and refresher training is conducted by a qualified instructor as specified under OSHA 29 CFR 1910.120(e)(5), and is specifically designed to meet the requirements of OSHA 29 CFR 1910.120(e)(3) and 1910.120(e)(8). The training covers, as a minimum, the following topics:

- OSHA HAZWOPER regulations.
- Site safety and hazard recognition, including chemical and physical hazards.
- Medical monitoring requirements.
- Air monitoring, permissible exposure limits, and respiratory protection level classifications.
- Appropriate use of personal protective equipment (PPE), including chemical compatibility and respiratory equipment selection and use.
- Work practices to minimize risk.
- Work zones and Site control.

- Safe use of engineering controls and equipment.
- Decontamination procedures.
- Emergency response and escape.
- Confined space entry procedures.
- Heat and cold stress monitoring.
- Elements of a Health and Safety Plan.
- Spill containment.

Initial training also incorporates workshops for PPE and respiratory equipment use (Levels A, B and C), and respirator fit testing. Records and certification received from the course instructor documenting each employee's successful completion of the training identified above are maintained on file at Benchmark-TurnKey's Buffalo, NY office. Contractors and Subcontractors are required to provide similar documentation of training for all their personnel who will be involved in on-site work activities.

Any employee who has not been certified as having received health and safety training in conformance with 29 CFR 1910.120(e) is prohibited from working in the exclusion and contamination reduction zones, or to engage in any on-site work activities that may involve exposure to hazardous substances or wastes.

4.1.2 Site Training

Site workers are given a copy of the HASP and provided a site-specific briefing prior to the commencement of work to ensure that employees are familiar with the HASP and the information and requirements it contains. The Site briefing shall be provided by the SSHO prior to initiating field activities and shall include:

- Names of personnel and alternates responsible for Site safety and health.
- Safety, health and other hazards present on the Site.

- The site lay-out including work zones and places of refuge.
- The emergency communications system and emergency evacuation procedures.
- Use of PPE.
- Work practices by which the employee can minimize risks from hazards.
- Safe use of engineering controls and equipment on the site.
- Medical surveillance, including recognition of symptoms and signs of over-exposure as described in Chapter 5 of this HASP.
- Decontamination procedures as detailed in Chapter 12 of this HASP.
- The emergency response plan as detailed in Chapter 15 of this HASP.
- Confined space entry procedures, if required, as detailed in Chapter 13 of this HASP.
- The spill containment program as detailed in Chapter 9 of this HASP.
- Site control as detailed in Chapter 11 of this HASP.

Supplemental health and safety briefings will also be conducted by the SSHO on an as-needed basis during the course of the work. Supplemental briefings are provided as necessary to notify employees of any changes to this HASP as a result of information gathered during ongoing Site characterization and analysis. Conditions for which the SSHO may schedule additional briefings include, but are not limited to: a change in Site conditions (e.g., based on monitoring results); changes in the work schedule/plan; newly discovered hazards; and safety incidents occurring during Site work.

4.2 Supervisor Training

On-site safety and health personnel who are directly responsible for or who supervise the safety and health of workers engaged in hazardous waste operations (i.e., SSHO) shall receive, in addition to the appropriate level of worker training described in Section 4.1,

above, 8 additional hours of specialized supervisory training, in compliance with 29 CFR 1910.120(e)(4).

4.3 Emergency Response Training

Emergency response training is addressed in Appendix A of this HASP, Emergency Response Plan.

4.4 Site Visitors

Each Contractor's SSHO will provide a site-specific briefing to all Site visitors and other non-Benchmark/TurnKey personnel who enter the Site beyond the Site entry point. The site-specific briefing will provide information about Site hazards, the Site layout including work zones and places of refuge, the emergency communications system and emergency evacuation procedures, and other pertinent safety and health requirements as appropriate.

Site visitors will not be permitted to enter the exclusion zone or contaminant reduction zones unless they have received the level of training required for Site workers as described in Section 4.1.

5.0 MEDICAL MONITORING

Medical monitoring examinations are provided to Benchmark-TurnKey employees as stipulated under 29 CFR Part 1910.120(f). These exams include initial employment, annual and employment termination physicals for all Benchmark-TurnKey employees involved in hazardous waste site field operations. Post-exposure examinations are also provided for employees who may have been injured, received a health impairment, or developed signs or symptoms of over-exposure to hazardous substances or were accidentally exposed to substances at concentrations above the permissible exposure limits without necessary personal protective equipment. Such exams are performed as soon as possible following development of symptoms or the known exposure event.

Medical evaluations are performed by Health Works, an occupational health care provider under contract with Benchmark-TurnKey. Health Works is located in Seneca Square Plaza, 1900 Ridge Road, West Seneca, New York 14224. The facility can be reached at (716) 823-5050 to schedule routine appointments or post-exposure examinations.

Medical evaluations are conducted according to the Benchmark-TurnKey Medical Monitoring Program and include an evaluation of the workers' ability to use respiratory protective equipment. The examinations include:

- Occupational/medical history review.
- Physical exam, including vital sign measurement.
- Spirometry testing.
- Eyesight testing.
- Audio testing (minimum baseline and exit, annual for employees routinely exposed to greater than 85db).
- EKG (for employees >40 yrs age or as medical conditions dictate).
- Chest X-ray (baseline and exit, and every 5 years).
- Blood biochemistry (including blood count, white cell differential count, serum multiplastic screening).

- Medical certification of physical requirements (i.e., sight, musculoskeletal, cardiovascular) for safe job performance and to wear respiratory protection equipment.

The purpose of the medical evaluation is to determine an employee's fitness for duty on hazardous waste sites; and to establish baseline medical data.

In conformance with OSHA regulations, Benchmark-TurnKey will maintain and preserve medical records for a period of 30 years following termination of employment. Employees are provided a copy of the physician's post-exam report, and have access to their medical records and analyses.

6.0 SAFE WORK PRACTICES

All Benchmark-TurnKey employees shall conform to the following safe work practices during all on-site work activities conducted within the exclusion and contamination reduction zones:

- Eating, drinking, chewing gum or tobacco, smoking, or any practice that increases the probability of hand-to-mouth contact is strictly prohibited.

- The hands and face must be thoroughly washed upon leaving the work area and prior to engaging in any activity indicated above.

- Respiratory protective equipment and clothing must be worn by all personnel entering the Site as required by the HASP or as modified by the Site safety officer. Excessive facial hair (i.e., beards, long mustaches or sideburns) that interferes with the satisfactory respirator-to-face seal is prohibited.

- Contact with surfaces/materials either suspected or known to be contaminated will be avoided to minimize the potential for transfer to personnel, cross contamination and need for decontamination.

- Medicine and alcohol can synergize the effects of exposure to toxic chemicals. Due to possible contraindications, use of prescribed drugs should be reviewed with the Benchmark-TurnKey occupational physician. Alcoholic beverage and illegal drug intake are strictly forbidden during the workday.

- All personnel shall be familiar with standard operating safety procedures and additional instructions contained in this Health and Safety Plan.

- On-site personnel shall use the "buddy" system. No one may work alone (i.e., out of earshot or visual contact with other workers) in the exclusion zone.

- Personnel and equipment in the contaminated area shall be minimized, consistent with effective Site operations.

- All employees have the obligation to immediately report and if possible, correct unsafe work conditions.

- Use of contact lenses on-site will not be permitted. Spectacle kits for insertion into full-face respirators will be provided for Benchmark-TurnKey employees, as requested and required.

The recommended specific safety practices for working around the contractor's equipment (e.g., backhoes, bulldozers, excavators, drill rigs etc.) are as follows:

- Although the Contractor and subcontractors are responsible for their equipment and safe operation of the Site, Benchmark-TurnKey personnel are also responsible for their own safety.

- Subsurface work will not be initiated without first clearing underground utility services.

- Heavy equipment should not be operated within 20 feet of overhead wires. This distance may be increased if windy conditions are anticipated or if lines carry high voltage. The Site should also be sufficiently clear to ensure the project staff can move around the heavy machinery safely.

- Care should be taken to avoid overhead wires when moving heavy-equipment from location to location.

- Hard hats, safety boots and safety glasses should be worn at all times in the vicinity of heavy equipment. Hearing protection is also recommended.

- The work Site should be kept neat. This will prevent personnel from tripping and will allow for fast emergency exit from the Site.

- Proper lighting must be provided when working at night.

- Construction activities should be discontinued during an electrical storm or severe weather conditions.

- The presence of combustible gases should be checked before igniting any open flame.

- Personnel shall stand upwind of any construction operation when not immediately involved in sampling/logging/observing activities.

- Personnel will not approach the edge of an unsecured trench/excavation closer than 2 feet.

7.0 PERSONAL PROTECTIVE EQUIPMENT

7.1 Equipment Selection

Personal protective equipment (PPE) will be donned when work activities may result in exposure to physical or chemical hazards beyond acceptable limits, and when such exposure can be mitigated through appropriate PPE. The selection of PPE will be based on an evaluation of the performance characteristics of the PPE relative to the requirements and limitations of the Site, the task-specific conditions and duration, and the hazards and potential hazards identified at the Site.

Equipment designed to protect the body against contact with known or suspect chemical hazards are grouped into four categories according to the degree of protection afforded. These categories designated A through D consistent with United States Environmental Protection Agency (USEPA) Level of Protection designation, are:

- **Level A:** Should be selected when the highest level of respiratory, skin and eye protection is needed.

- **Level B:** Should be selected when the highest level of respiratory protection is needed, but a lesser level of skin protection is required. Level B protection is the minimum level recommended on initial Site entries until the hazards have been further defined by on-site studies. Level B (or Level A) is also necessary for oxygen-deficient atmospheres.

- **Level C:** Should be selected when the types of airborne substances are known, the concentrations have been measured and the criteria for using air-purifying respirators are met. In atmospheres where no airborne contaminants are present, Level C provides dermal protection only.

- **Level D:** Should not be worn on any Site with elevated respiratory or skin hazards. This is generally a work uniform providing minimal protection.

OSHA requires the use of certain PPE under conditions where an immediate danger to life and health (IDLH) may be present. Specifically, OSHA 29 CFR 1910.120(g)(3)(iii) requires use of a positive pressure self-contained breathing apparatus, or positive pressure air-line respirator equipped with an escape air supply when chemical exposure levels present a substantial possibility of immediate serious injury, illness or death, or impair the ability to

escape. Similarly, OSHA 29 CFR 1910.120(g)(3)(iv) requires donning totally-encapsulating chemical protective suits (with a protection level equivalent to Level A protection) in conditions where skin absorption of a hazardous substance may result in a substantial possibility of immediate serious illness, injury or death, or impair the ability to escape.

In situations where the types of chemicals, concentrations, and possibilities of contact are unknown, the appropriate level of protection must be selected based on professional experience and judgment until the hazards can be further characterized. The individual components of clothing and equipment must be assembled into a full protective ensemble to protect the worker from site-specific hazards, while at the same time minimizing hazards and drawbacks of the personal protective gear itself. Ensemble components are detailed below for levels A/B, C, and D protection.

7.2 Protection Ensembles

7.2.1 Level A/B Protection Ensemble

Level A/B ensembles include similar respiratory protection, however Level A provides a higher degree of dermal protection than Level B. Use of Level A over Level B is determined by: comparing the concentrations of identified substances in the air with skin toxicity data, and assessing the effect of the substance (by its measured air concentrations or splash potential) on the small area of the head and neck unprotected by Level B clothing.

The recommended PPE for level A/B is:

- Pressure-demand, full-face piece self-contained breathing apparatus (MSHA/-NIOSH approved) or pressure-demand supplied-air respirator with escape self-contained breathing apparatus (SCBA).
- Chemical-resistant clothing. For Level A, clothing consists of totally-encapsulating chemical resistant suit. Level B incorporates hooded one-or two-piece chemical splash suit.
- Inner and outer chemical resistant gloves.
- Chemical-resistant safety boots/shoes.
- Hardhat.

7.2.2 Level C Protection Ensemble

Level C protection is distinguished from Level B by the equipment used to protect the respiratory system, assuming the same type of chemical-resistant clothing is used. The main selection criterion for Level C is that conditions permit wearing an air-purifying device. The device (when required) must be an air-purifying respirator (MSHA/NIOSH approved) equipped with filter cartridges. Cartridges must be able to remove the substances encountered. Respiratory protection will be used only with proper fitting, training and the approval of a qualified individual. In addition, an air-purifying respirator can be used only if: oxygen content of the atmosphere is at least 19.5% in volume; substances are identified and concentrations measured; substances have adequate warning properties; the individual passes a qualitative fit-test for the mask; and an appropriate cartridge/canister is used, and its service limit concentration is not exceeded.

Recommended PPE for Level C conditions includes:

- Full-face piece, air-purifying respirator equipped with MSHA and NIOSH approved organic vapor/acid gas/dust/mist combination cartridges or as designated by the SSHO.
- Chemical-resistant clothing (hooded, one or two-piece chemical splash suit or disposable chemical-resistant one-piece suit).
- Inner and outer chemical-resistant gloves.
- Chemical-resistant safety boots/shoes.
- Hardhat.

An air-monitoring program is part of all response operations when atmospheric contamination is known or suspected. It is particularly important that the air be monitored thoroughly when personnel are wearing air-purifying respirators. Continual surveillance using direct-reading instruments is needed to detect any changes in air quality necessitating a higher level of respiratory protection.

7.2.3 Level D Protection Ensemble

As indicated above, Level D protection is primarily a work uniform. It can be worn in

areas where only boots can be contaminated, where there are no inhalable toxic substances and where the atmospheric contains at least 19.5% oxygen.

Recommended PPE for Level D includes:

- Coveralls.
- Safety boots/shoes.
- Safety glasses or chemical splash goggles.
- Hardhat.
- Optional gloves; escape mask; face shield.

7.2.4 Recommended Level of Protection for Site Tasks

Based upon current information regarding both the contaminants suspected to be present at the Site and the various tasks that are included in the remedial activities, the minimum required levels of protection for these tasks shall be as identified in Table 3.

8.0 EXPOSURE MONITORING

8.1 General

Based on the results of historic sample analysis and the nature of the proposed work activities at the Site, the possibility exist that organic vapors and/or particulates may be released to the air during intrusive construction activities. Ambient breathing zone concentrations may at times, exceed the permissible exposure limits (PELs) established by OSHA for the individual compounds (see Table 1), in which case respiratory protection will be required. Respiratory and dermal protection may be modified (upgraded or downgraded) by the SSHO based upon real-time field monitoring data.

8.1.1 On-Site Work Zone Monitoring

Benchmark-TurnKey personnel will conduct routine, real-time air monitoring during all intrusive construction phases such as excavation, backfilling, drilling, etc. The work area will be monitored at regular intervals using a photo-ionization detector (PID), combustible gas meter and a particulate meter. Observed values will be recorded and maintained as part of the permanent field record.

Additional air monitoring measurements may be made by Benchmark-TurnKey personnel to verify field conditions during subcontractor oversight activities. Monitoring instruments will be protected from surface contamination during use. Additional monitoring instruments may be added if the situations or conditions change. Monitoring instruments will be calibrated in accordance with manufacturer's instructions before use.

8.1.2 On-Site Work Zone Action Levels

The PID, or other appropriate instrument(s), will be used by Benchmark-TurnKey personnel to monitor organic vapor concentrations as specified in this HASP. Combustible gas will be monitored with the "combustible gas" option on the combustible gas meter or other appropriate instrument(s). In addition, fugitive dust/particulate concentrations will be monitored during major soil intrusion (viz., well/boring installation) using a real-time particulate monitor as specified in this plan. In the absence of such monitoring, appropriate respiratory protection for particulates shall be donned. Sustained readings obtained in the

breathing zone may be interpreted (with regard to other Site conditions) as follows for Benchmark-TurnKey personnel:

- Total atmospheric concentrations of unidentified vapors or gases ranging from 0 to 1 ppm above background on the PID) - Continue operations under Level D (see Appendix A).

- Total atmospheric concentrations of unidentified vapors or gases yielding sustained readings from >1 ppm to 5 ppm above background on the PID (vapors not suspected of containing high levels of chemicals toxic to the skin) - Continue operations under Level C (see Appendix A).

- Total atmospheric concentrations of unidentified vapors or gases yielding sustained readings of >5 ppm to 50 ppm above background on the PID - Continue operations under Level B (see Attachment 1), re-evaluate and alter (if possible) construction methods to achieve lower vapor concentrations.

- Total atmospheric concentrations of unidentified vapors or gases above 50 ppm on the PID - Discontinue operations and exit the work zone immediately.

The particulate monitor will be used to monitor respirable dust concentrations during all intrusive activities and during handling of Site soil/fill. Action levels based on the instrument readings shall be as follows:

- Less than 50 mg/m^3 - Continue field operations.

- 50-150 mg/m^3 - Don dust/particulate mask or equivalent

- Greater than 150 mg/m^3 - Don dust/particulate mask or equivalent. Initiate engineering controls to reduce respirable dust concentration (viz., wetting of excavated soils or tools at discretion of Site Health and Safety Officer).

Readings from the field equipment will be recorded and documented on the appropriate Project Field Forms. All instruments will be calibrated before use on a daily basis and the procedure will be documented on the appropriate Project Field Forms.

8.1.3 Community Air Monitoring Action Levels

In addition to the action levels prescribed in Section 8.2.1 for Benchmark-TurnKey personnel on-site, the following criteria shall also be adhered to for the protection of downwind receptors consistent with NYSDOH requirements (Appendix C):

- **ORGANIC VAPOR PERIMETER MONITORING:**
  - If the sustained ambient air concentration of organic vapors at the downwind perimeter of the exclusion zone exceeds 5 ppm above background for the 15-minute average, work activities will be temporarily halted and monitoring continued. If the sustained organic vapor decreases below 5 ppm over background, work activities can resume with continued monitoring.

  - If the sustained ambient air concentration of organic vapors at the downwind perimeter of the exclusion zone are greater than 5 ppm over background but less than 25 ppm for the 15-minute average, activities can resume provided that: the organic vapor level 200 feet downwind of the working site or half the distance to the nearest off-site residential or commercial structure, whichever is less, but in no case less than 20 feet, is below 5 ppm over background; and more frequent intervals of monitoring, as directed by the Site Health and Safety Officer, are conducted.

  - If the sustained organic vapor level is above 25 ppm at the perimeter of the exclusion zone for the 15-minute average, the Site Health and Safety Officer must be notified and work activities shut down. The Site Health and Safety Officer will determine when re-entry of the exclusion zone is possible and will implement downwind air monitoring to ensure vapor emissions do not impact the nearest off-site residential or commercial structure at levels exceeding those specified in the *Organic Vapor Contingency Monitoring Plan* below. All readings will be recorded and will be available for New York State Department of Environmental Conservation (DEC) and Department of Health (DOH) personnel to review.

- **ORGANIC VAPOR CONTINGENCY MONITORING PLAN:**
  - If the sustained organic vapor level is greater than 5 ppm over background 200 feet downwind from the work area or half the distance to the nearest off-site residential or commercial property, whichever is less, all work activities must be halted.

- If, following the cessation of the work activities or as the result of an emergency, sustained organic levels persist above 5 ppm above background 200 feet downwind or half the distance to the nearest off-site residential or commercial property from the work area, then the air quality must be monitored within 20 feet of the perimeter of the nearest off-site residential or commercial structure (20-foot zone).

- If efforts to abate the emission source are unsuccessful and if sustained organic vapor levels approach or exceed 5 ppm above background within the 20-foot zone for more than 30 minutes, or are sustained at levels greater than 10 ppm above background for longer than one minute, then the ***Major Vapor Emission Response Plan*** (see below) will automatically be placed into effect.

o **MAJOR VAPOR EMISSION RESPONSE PLAN:**

Upon activation, the following activities will be undertaken:

1. All Emergency Response Contacts as listed in this Health and Safety Plan and the Emergency Response Plan (Appendix A) will be advised.

2. The local police authorities will immediately be contacted by the Site Health and Safety Officer and advised of the situation.

3. Frequent air monitoring will be conducted at 30-minute intervals within the 20-foot zone. If two sustained successive readings below action levels are measured, air monitoring may be halted or modified by the Site Health and Safety Officer.

The following personnel are to be notified in the listed sequence in the event that a Major Vapor Emission Plan is activated:

Responsible Person	Contact	Phone Number
SSHO	Police	911
SSHO	State Emergency Response Hotline	(800) 457-7362

Additional emergency numbers are listed in the Emergency Response Plan included as Appendix A.

o **EXPLOSIVE VAPORS:**

- Sustained atmospheric concentrations of greater than 10% LEL in the work area - Initiate combustible gas monitoring at the downwind portion of the Site perimeter.

- Sustained atmospheric concentrations of greater than 10% LEL at the downwind Site perimeter – Halt work and contact local Fire Department.

o **AIRBORNE PARTICULATE COMMUNITY AIR MONITORING**

Respirable (PM-10) particulate monitoring will be performed on a continuous basis at the upwind and downwind perimeter of the exclusion zone. The monitoring will be performed using real-time monitoring equipment capable of measuring PM-10 and integrating over a period of 15-minutes for comparison to the airborne particulate action levels. The equipment will be equipped with an audible alarm to indicate exceedance of the action level. In addition, fugitive dust migration will be visually assessed during all work activities. All readings will be recorded and will be available for NYSDEC and NYSDOH review. Readings will be interpreted as follows:

- If the downwind PM-10 particulate level is 100 micrograms per cubic meter (ug/m^3) greater than the background (upwind perimeter) reading 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 provided that the downwind PM-10 particulate levels do not exceed 150 ug/m^3 above the upwind level and that visible dust is not migrating from the work area.

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

Pertinent emergency response information including the telephone number of the Fire Department is included in the Emergency Response Plan (Appendix A).

9.0 SPILL RELEASE/RESPONSE

This chapter of the HASP describes the potential for and procedures related to spills or releases of known or suspected petroleum and/or hazardous substances on the Site. The purpose of this Section of the HASP is to plan appropriate response, control, counter-measures and reporting, consistent with OSHA requirements in 29 CFR 1910.120(b)(4)(ii)(J) and (j)(1)(viii). The spill containment program addresses the following elements:

- Potential hazardous material spills and available controls.
- Initial notification and evaluation.
- Spill response.
- Post-spill evaluation.

9.1 Potential Spills and Available Controls

An evaluation was conducted to determine the potential for hazardous material and oil/petroleum spills at this Site. For the purpose of this evaluation, hazardous materials posing a significant spill potential are considered to be:

- CERCLA Hazardous Substances as identified in 40 CFR Part 302, where such materials pose the potential for release in excess of their corresponding Reportable Quantity (RQ).

- Extremely Hazardous Substances as identified in 40 CFR Part 355, Appendix A, where such materials pose the potential for release in excess of their corresponding Reportable Quantity (RQ).

- Hazardous Chemicals as defined under Section 311(e) of the Emergency Planning and Community Right-To-Know Act of 1986, where such chemicals are present or will be stored in excess of 10,000 lbs.

- Toxic Chemicals as defined in 40 CFR Part 372, where such chemicals are present or will be stored in excess of 10,000 lbs.

- Chemicals regulated under 6NYCRR Part 597, where such materials pose the potential for release in excess of their corresponding Reportable Quantity (RQ).

Oil/petroleum products are considered to pose a significant spill potential whenever

the following situations occur:

- The potential for a "harmful quantity" of oil (including petroleum and non-petroleum-based fuels and lubricants) to reach navigable waters of the U.S. exists (40 CFR Part 112.4). Harmful quantities are considered by USEPA to be volumes that could form a visible sheen on the water or violate applicable water quality standards.

- The potential for any amount of petroleum to reach any waters of NY State, including groundwater, exists. Petroleum, as defined by NY State in 6NYCRR Part 612, is a petroleum-based heat source, energy source, or engine lubricant/maintenance fluid.

- The potential for any release, to soil or water, of petroleum from a bulk storage facility regulated under 6NYCRR Part 612. A regulated petroleum storage facility is defined by NY State as a site having stationary tank(s) and intra-facility piping, fixtures and related equipment with an aggregate storage volume of 1,100 gallons or greater.

The evaluation indicates that, based on Site history and decommissioning records, a hazardous material spill and/or a petroleum product spill is not likely to occur during remedial efforts.

9.2 Initial Spill Notification and Evaluation

Any worker who discovers a hazardous substance or oil/petroleum spill will immediately notify the Project Manager and SSHO. The worker will, to the best of his/her ability, report the material involved, the location of the spill, the estimated quantity of material spilled, the direction/flow of the spill material, related fire/explosion incidents, if any, and any associated injuries. The Emergency Response Plan presented in Attachment H2 of this HASP will immediately be implemented if an emergency release has occurred.

Following initial report of a spill, the Project Manager will make an evaluation as to whether the release exceeds RQ levels. If an RQ level is exceeded, the Project Manager will notify the Site owner and NYSDEC at 1-800-457-7362 within 2 hours of spill discovery. The Project Manager will also determine what additional agencies (e.g., USEPA) are to be contacted regarding the release, and will follow-up with written reports as required by the applicable regulations.

9.3 Spill Response

For all spill situations, the following general response guidelines will apply:

- Only those personnel involved in overseeing or performing containment operations will be allowed within the spill area. If necessary, the area will be roped, ribboned, or otherwise blocked off to prevent unauthorized access.
- Appropriate PPE, as specified by the SSHO, will be donned before entering the spill area.
- Ignition points will be extinguished/removed if fire or explosion hazards exist.
- Surrounding reactive materials will be removed.
- Drains or drainage in the spill area will be blocked to prevent inflow of spilled materials or applied materials.

For minor spills, the Contractor will maintain a Spill Control and Containment Kit in the Field Office or other readily accessible storage location. The kit will consist of, at a minimum, a 50 lb. bag of "speedy dry" granular absorbent material, absorbent pads, shovels, empty 5-gallon pails and an empty open-top 55-gallon drum. Spilled materials will be absorbed, and shoveled into a 55-gallon drum for proper disposal (NYSDEC approval will be secured for on-site treatment of the impacted soils/absorbent materials, if applicable). Impacted soils will be hand-excavated to the point that no visible signs of contamination remains, and will be drummed with the absorbent.

In the event of a major release or a release that threatens surface water, a spill response contractor will be called to the Site. The response contractor may use heavy equipment (e.g., excavator, backhoe, etc.) to berm the soils surrounding the spill Site or create diversion trenching to mitigate overland migration or release to navigable waters. Where feasible, pumps will be used to transfer free liquid to storage containers. Spill control/cleanup contractors in the Western New York area that may be contacted for assistance include:

- The Environmental Service Group of NY, Inc.: (716) 695-6720
- Environmental Products and Services, Inc.: (716) 447-4700
- Op-Tech: (716) 873-7680

9.4 Post-Spill Evaluation

If a reportable quantity of hazardous material or oil/petroleum is spilled as determined by the Project Manager, a written report will be prepared as indicated in Section 9.2. The report will identify the root cause of the spill, type and amount of material released, date/time of release, response actions, agencies notified and/or involved in cleanup, and procedures to be implemented to avoid repeat incidents. In addition, all re-useable spill cleanup and containment materials will be decontaminated, and spill kit supplies/disposable items will be replenished.

10.0 HEAT/COLD STRESS MONITORING

Since some of the work activities at the Site will be scheduled for both the summer and winter months, measures will be taken to minimize heat/cold stress to Benchmark-TurnKey employees. The Site Safety and Health Officer and/or his or her designee will be responsible for monitoring Benchmark-TurnKey field personnel for symptoms of heat/cold stress.

10.1 Heat Stress Monitoring

Personal protective equipment may place an employee at risk of developing heat stress, a common and potentially serious illnesses often encountered at construction, landfill, waste disposal, industrial or other unsheltered sites. The potential for heat stress is dependent on a number of factors, including environmental conditions, clothing, workload, physical conditioning and age. Personal protective equipment may severely reduce the body's normal ability to maintain temperature equilibrium (via evaporation and convection), and require increased energy expenditure due to its bulk and weight.

Proper training and preventive measures will mitigate the potential for serious illness. Heat stress prevention is particularly important because once a person suffers from heat stroke or heat exhaustion, that person may be predisposed to additional heat related illness. To avoid heat stress, the following steps should be taken:

- Adjust work schedules.
- Modify work/rest schedules according to monitoring requirements.
- Mandate work slowdowns as needed.
- Perform work during cooler hours of the day if possible or at night if adequate lighting can be provided.
- Provide shelter (air-conditioned, if possible) or shaded areas to protect personnel during rest periods.
- Maintain worker's body fluids at normal levels. This is necessary to ensure that the cardiovascular system functions adequately. Daily fluid intake must approximately equal the amount of water lost in sweat (i.e., eight fluid ounces

must be ingested for approximately every 1 lb of weight lost). The normal thirst mechanism is not sensitive enough to ensure that enough water will be consumed to replace lost perspiration. When heavy sweating occurs, workers should be encouraged to drink more.

- Train workers to recognize the symptoms of heat related illness.

Heat-Related Illness - Symptoms:

- Heat rash may result from continuous exposure to heat or humid air.

- Heat cramps are caused by heavy sweating with inadequate electrolyte replacement. Signs and symptoms include: muscle spasms; pain in the hands, feet and abdomen.

- Heat exhaustion occurs from increased stress on various body organs including inadequate blood circulation due to cardiovascular insufficiency or dehydration. Signs and symptoms include: pale, cool, moist skin; heavy sweating; dizziness; nausea; fainting.

- Heat stroke is the most serious form of heat stress. Temperature regulation fails and the body temperature rises to critical levels. Immediate action must be taken to cool the body before serious injury and death occur. Competent medical help must be obtained. Signs and symptoms are: red, hot, usually dry skin; lack of or reduced perspiration; nausea; dizziness and confusion; strong, rapid pulse; coma.

The monitoring of personnel wearing protective clothing should commence when the ambient temperature is 70 degrees Fahrenheit or above. For monitoring the body's recuperative ability to excess heat, one or more of the following techniques should be used as a screening mechanism.

- Heart rate may be measured by the radial pulse for 30 seconds as early as possible in the resting period. The rate at the beginning of the rest period should not exceed 100 beats per minute. If the rate is higher, the next work period should be shortened by 10 minutes (or 33%), while the length of the rest periods stay the same, If the pulse rate is 100 beats per minute at the beginning of the nest rest period, the following work cycle should be further shortened by 33%.

- Body temperature may be measured orally with a clinical thermometer as early as

possible in the resting period. Oral temperature at the beginning of the rest period should not exceed 99.6 degrees Fahrenheit. If it does, the next work period should be shortened by 10 minutes (or 33%), while the length of the rest period remains the same. However, if the oral temperature exceeds 99.6 degrees Fahrenheit at the beginning of the next period, the work cycle may be further shortened by 33%. Oral temperature should be measured at the end of the rest period to make sure that it has dropped below 99.6 degrees Fahrenheit. No Benchmark-TurnKey employee will be permitted to continue wearing semi-permeable or impermeable garments when his/her oral temperature exceeds 100.6 degrees Fahrenheit.

10.2 Cold Stress Monitoring

Exposure to cold conditions may result in frostbite or hypothermia, each of which progresses in stages as shown below.

- **Frostbite** occurs when body tissue (usually on the extremities) begins to freeze. The three states of frostbite are:

    1) **Frost nip** - This is the first stage of the freezing process. It is characterized by a whitened area of skin, along with a slight burning or painful sensation. Treatment consists of removing the victim from the cold conditions, removal of boots and gloves, soaking the injured part in warm water (102 to 108 degrees Fahrenheit) and drinking a warm beverage. Do not rub skin to generate friction/ heat.

    2) **Superficial Frostbite** - This is the second stage of the freezing process. It is characterized by a whitish gray area of tissue, which will be firm to the touch but will yield little pain. The treatment is identical for Frost nip.

    3) **Deep Frostbite** - In this final stage of the freezing process the affected tissue will be cold, numb and hard and will yield little to no pain. Treatment is identical to that for Frost nip.

- **Hypothermia** is a serious cold stress condition occurring when the body loses heat at a rate faster than it is produced. If untreated, hypothermia may be fatal. The stages of hypothermia may not be clearly defined or visible at first, but generally include:

    1) Shivering

2) Apathy (i.e., a change to an indifferent or uncaring mood)
3) Unconsciousness
4) Bodily freezing

Employees exhibiting signs of hypothermia should be treated by medical professionals. Steps that can be taken while awaiting help include:

1) Remove the victim from the cold environment and remove wet or frozen clothing. (Do this carefully as frostbite may have started.)

2) Perform active re-warming with hot liquids for drinking (Note: do not give the victim any liquid containing alcohol or caffeine) and a warm water bath (102 to 108 degrees Fahrenheit).

3) Perform passive re-warming with a blanket or jacket wrapped around the victim.

In any potential cold stress situation, it is the responsibility of the Site Health and Safety Officer to encourage the following:

- Education of workers to recognize the symptoms of frostbite and hypothermia.
- Workers should dress warmly, with more layers of thin clothing as opposed to one thick layer.
- Personnel should remain active and keep moving.
- Personnel should be allowed to take shelter in a heated areas, as necessary.
- Personnel should drink warm liquids (no caffeine or alcohol if hypothermia has set in).
- For monitoring the body's recuperation from excess cold, oral temperature recordings should occur:
  - At the Site Safety Technicians discretion when suspicion is based on changes in a worker's performance or mental status.
  - At a workers request.

- As a screening measure, two times per shift, under unusually hazardous conditions (e.g., wind chill less than 20 degrees Fahrenheit or wind chill less than 30 degrees Fahrenheit with precipitation).

- As a screening measure, whenever anyone worker on-site develops hypothermia.

Any person developing moderate hypothermia (a core body temperature of 92 degrees Fahrenheit) will not be allowed to return to work for 48 hours without the recommendation of a qualified medical doctor.

11.0 WORK ZONES AND SITE CONTROL

Work zones around the areas designated for construction activities will be established on a daily basis and communicated to all employees and other Site users by the SSHO. It shall be each Contractor's Site Safety and Health Officer's responsibility to ensure that all Site workers are aware of the work zone boundaries and to enforce proper procedures in each area. The zones will include:

- Exclusion Zone ("Hot Zone") - The area where contaminated materials may be exposed, excavated or handled and all areas where contaminated equipment or personnel may travel. Flagging tape will delineate the zone. All personnel entering the Exclusion Zone must wear the prescribed level of personal protective equipment identified in Section 7.

- Contamination Reduction Zone - The zone where decontamination of personnel and equipment takes place. Any potentially contaminated clothing, equipment and samples must remain in the Contamination Reduction Zone until decontaminated.

- Support Zone - The part of the site that is considered non-contaminated or "clean." Support equipment will be located in this zone, and personnel may wear normal work clothes within this zone.

In the absence of other task-specific work zone boundaries established by the SSHO, the following boundaries will apply to all investigation and construction activities involving disruption or handling of Site soils or groundwater:

- Exclusion Zone: 50 foot radius from the outer limit of the sampling/construction activity.

- Contaminant Reduction Zone: 100 foot radius from the outer limit of the sampling/construction activity.

- Support Zone: Areas outside the Contaminant Reduction Zone.

Access of non-essential personnel to the Exclusion and Contamination Reduction Zones will be strictly controlled by the SSHO. Only personnel who are essential to the

completion of the task will be allowed access to these areas and only if they are wearing the prescribed level of protection. Entrance of all personnel must be approved by the SSHO.

The SSHO will maintain a Health and Safety Logbook containing the names of Benchmark-TurnKey workers and their level of protection. The zone boundaries may be changed by the SSHO as environmental conditions warrant, and to respond to the necessary changes in work locations on-site.

12.0 DECONTAMINATION

12.1 Decontamination for Benchmark-TurnKey Employees

The degree of decontamination required is a function of a particular task and the environment within which it occurs. The following decontamination procedure will remain flexible, thereby allowing the decontamination crew to respond appropriately to the changing environmental conditions that may arise at the Site. All Benchmark-TurnKey personnel on-site shall follow the procedure below, or the Contractor's procedure (if applicable), whichever is more stringent.

Station 1 - Equipment Drop: Deposit visibly contaminated (if any) re-useable equipment used in the contamination reduction and exclusion zones (tools, containers, monitoring instruments, radios, clipboards, etc.) on plastic sheeting.

Station 2 - Boots and Gloves Wash and Rinse: Scrub outer boots and outer gloves. Deposit tape and gloves in waste disposal container.

Station 3 - Tape, Outer Boot and Glove Removal: Remove tape, outer boots and gloves. Deposit tape and gloves in waste disposal container.

Station 4 - Canister or Mask Change: If worker leaves exclusive zone to change canister (or mask), this is the last step in the decontamination procedure. Worker's canister is exchanged, new outer gloves and boot cover donned, and worker returns to duty.

Station 5 - Outer Garment/Face Piece Removal: Protective suit removed and deposited in separate container provided by Contractor. Face piece or goggles are removed if used. Avoid touching face with fingers. Face piece and/or goggles deposited on plastic sheet. Hard hat removed and placed on plastic sheet.

Station 6 - Inner Glove Removal: Inner gloves are the last personal protective equipment to be removed. Avoid touching the outside of the gloves with bare fingers. Dispose of these gloves in waste disposal container.

Following PPE removal, personnel shall wash hands, face and forearms with absorbent wipes. If field activities proceed for duration of 6 consecutive months or longer, shower facilities will be provided for worker use in accordance with OSHA 29 CFR

1910.120(n).

12.2 Decontamination for Medical Emergencies

In the event of a minor, non-life threatening injury, personnel should follow the decontamination procedures as defined, and then administer first-aid.

In the event of a major injury or other serious medical concern (e.g., heat stroke), immediate first-aid is to be administered and the victim transported to the hospital in lieu of further decontamination efforts unless exposure to a Site contaminant would be considered "Immediately Dangerous to Life or Health."

12.3 Decontamination of Field Equipment

The Contractor in accordance with his approved Health and Safety Plan in the Contamination Reduction Zone will conduct decontamination of heavy equipment. As a minimum, this will include manually removing heavy soil contamination, followed by steam cleaning on an impermeable pad.

Benchmark-TurnKey personnel will conduct decontamination of all tools used for sample collection purposes. It is expected that all tools will be constructed of nonporous, nonabsorbent materials (i.e., metal), which will aid in the decontamination effort. Any tool or part of a tool made of porous, absorbent material (i.e., wood) will be placed into suitable containers and prepared for disposal.

Decontamination of bailers, split-spoons, spatula knives, and other tools used for environmental sampling and examination shall be as follows:

- Disassemble the equipment
- Water wash to remove all visible foreign matter.
- Wash with detergent.
- Rinse all parts with distilled-deionized water.
- Allow to air dry.
- Wrap all parts in aluminum foil or polyethylene.

13.0 CONFINED SPACE ENTRY

OSHA 29 CFR 1910.146 identifies a confined space as a space that is large enough and so configured that an employee can physically enter and do assigned work, has limited or restricted means for entry and exit, and is not intended for continuous employee occupancy. Confined spaces include, but are not limited to, trenches, storage tanks, process vessels, pits, sewers, tunnels, underground utility vaults, pipelines, sumps, wells, and excavations.

Confined space entry by Benchmark-TurnKey employees is not anticipated to be necessary to complete the remedial activities identified in Section 2.0. In the event that the scope of work changes or confined space entry appears necessary, the Project Manager will be consulted to determine if feasible engineering alternatives to confined space entry can be implemented. If confined space entry by Benchmark-TurnKey employees cannot be avoided through reasonable engineering measures, task-specific confined space entry procedures will be developed and a confined-space entry permit will be issued through Benchmark-TurnKey's corporate Health and Safety Director. Benchmark-TurnKey employees shall not enter a confined space without these procedures and permits in place.

14.0 FIRE PREVENTION AND PROTECTION

14.1 General Approach

Recommended practices and standards of the National Fire Protection Association (NFPA) and other applicable regulations will be followed in the development and application of Project Fire Protection Programs. When required by regulatory authorities, the project management will prepare and submit a Fire Protection Plan for the approval of the contracting officers, authorized representative or other designated official. Essential considerations for the Fire Protection Plan will include:

- Proper Site preparation and safe storage of combustible and flammable materials.
- Availability of coordination with private and public fire authorities.
- Adequate job-site fire protection and inspections for fire prevention.
- Adequate indoctrination and training of employees.

14.2 Equipment and Requirements

Fire extinguishers will be provided by each Contractor and are required on all heavy equipment and in each field trailer. Fire extinguishers will be inspected, serviced, and maintained in accordance with the manufacturer's instructions. As a minimum, all extinguishers shall be checked monthly and weighed semi-annually, and recharged if necessary. Recharge or replacement shall be mandatory immediately after each use.

14.3 Flammable and Combustible Substances

All storage, handling or use of flammable and combustible substances will be under the supervision of qualified persons. All tanks, containers and pumping equipment, whether portable or stationary, used for the storage and handling of flammable and combustible liquids, will meet the recommendations of the National Fire Protection Association.

14.4 Hot Work

If the scope of work necessitates welding or blowtorch operation, the hot work permit presented in Appendix B will be completed by the SSHO and reviewed/issued by the Project Manager.

15.0 EMERGENCY INFORMATION

In accordance with OSHA 29 CFR Part 1910, an Emergency Response Plan is attached to this HASP as Appendix A. The hospital route map is presented within Appendix A as Figure 1.

16.0 REFERENCES

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

TABLES

TABLE 1

TOXICITY DATA FOR CONSTITUENTS OF POTENTIAL CONCERN

229 Homer Street Site
Olean, New York

Parameter	Synonyms	CAS No.	Code	Concentration Limits		
				PEL	TLV	IDLH
Volatile Organic Compounds (VOCs): ppm						
Benzene	Benzol, Phenyl hydride	71-43-2	Ca	1	0.5	500
Inorganic Compounds: ppm						
Arsenic	*none*	7440-38-2	Ca	0.01	0.01	5

Ca = NIOSH considers constituent to be a potential occupational carcinogen.
IDLH = Immediately Dangerous to Life or Health.
TLV = Threshold Limit Value, established by American Conference of Industrial Hygienists (ACGIH), equals the maximum exposure concentration allowable for 8 hours/day @ 40 hours/week.

TLVs are the amounts of chemicals in the air that almost all healthy adult workers are predicted to be able to tolerate without adverse effects. There are three types.

TLV-TWA (TLV-Time-Weighted Average) which is averaged over the normal eight-hour day/forty-hour work week. (Most TLVs.)

TLV-STEL or Short Term Exposure Limits are 15 minute exposures that should not be exceeded for even an instant. It is not a stand alone value but is accompanied by the TLV-TWA.

TLV-C or Ceiling limits are the concentration that should not be exceeded during any part of the working exposure.

Unless the initials "STEL" or "C" appear in the Code column, the TLV value should be considered to be the eight-hour TLV-TWA.

PEL = Permissible Exposure Limit, established by OSHA, equals the maximium exposure conconcentration allowable for 8 hours per day @ 40 hours per week

TABLE 2

POTENTIAL ROUTES OF EXPOSURE TO THE CONSTITUENTS OF POTENTIAL CONCERN

229 Homer Street Site
Olean, New York

Activity [1]	Direct Contact with Soil/Fill	Inhalation of Vapors or Dust	Direct Contact with Groundwater
Remedial Investigation Tasks			
Groundwater Sampling		x	x
AS & SVE Well Installation and Pipe Trenching	x	x	
Contaminated soil removal and abandoned pipe removal	x	x	
In-situ Treatment of Soil/Fill & Groundwater	x	x	x
Relocation of upper 12" of soil for reuse as backfill beneath cap and installation of "clean" soil cover system	x	x	

Notes:

1. Activity as described in Section 1.5 of the Health and Safety Plan.

TABLE 3

REQUIRED LEVELS OF PROTECTION
FOR REMEDIAL ACTIVITIES

229 Homer Street Site
Olean, New York

Activity	Respiratory Protection [1]	Clothing	Gloves [2]	Boots [2, 3]	Other Required PPE/Modifications [2, 4]
Remedial Investigation Tasks					
Groundwater Sampling	Level D (upgrade to Level C if necessary)	Work Uniform or Tyvek	L/N	outer: L inner: STSS	HH SGSS
AS & SVE Well Installation and Pipe Trenching	Level D (upgrade to Level C if necessary)	Work Uniform or Tyvek	L/N	outer: L inner: STSS	HH SGSS
Contaminated soil removal and abandoned pipe removal	Level D (upgrade to Level C if necessary)	Work Uniform or Tyvek	L/N	outer: L inner: STSS	HH SGSS
In-situ Treatment of Soil/Fill & Groundwater	Level D (upgrade to Level C if necessary)	Work Uniform or Tyvek	L/N	outer: L inner: STSS	HH SGSS
Relocation of upper 12" of soil for reuse as backfill beneath cap and installation of "clean" soil cover system	Level D (upgrade to Level C if necessary)	Work Uniform or Tyvek	L/N	outer: L inner: STSS	HH SGSS

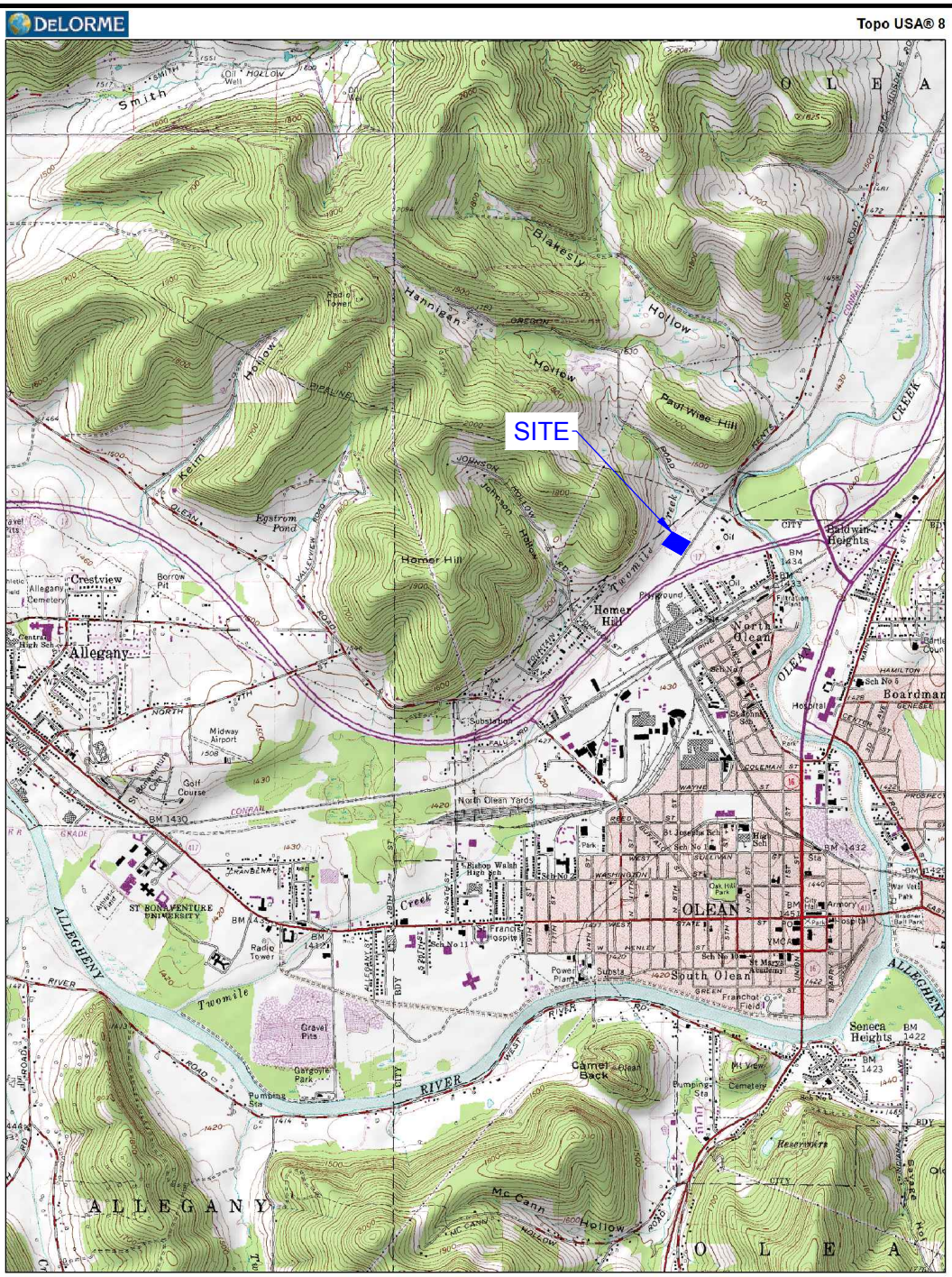
Notes:

1. Respiratory equipment shall conform to guidelines presented in Section 7.0 of this HASP. The Level C requirement is an air-purifying respirator equiped with organic compound/acid
2. HH = hardhat; L= Latex; L/N = latex inner glove, nitrile outer glove; N = Nitrile; SGSS = safety glasses with sideshields; STSS = steel toe safety shoes.
3. Latex outer boot (or approved overboot) required whenever contact with contaminated materials may occur. SSHO may downgrade to STSS (steel-toed safety shoes) if contact will be limited to cover/replacement soils.
4. Dust masks shall be donned as directed by the SSHO (site safety and health officer) or site safety technician whenever potentially contaminated airborne particulates (i.e., dust) are present

FIGURES

F:\CAD\TurnKey\Benson\229 Homer Street\RAWP\Figure 1; Site Location and Vicinity Map.dwg

FIGURE 1



SITE LOCATION AND VICINITY MAP

HEALTH AND SAFETY PLAN

229 HOMER STREET SITE

OLEAN, NEW YORK

PREPARED FOR

HOMER STREET PROPERTIES LLC

TURNKEY ENVIRONMENTAL RESTORATION, LLC

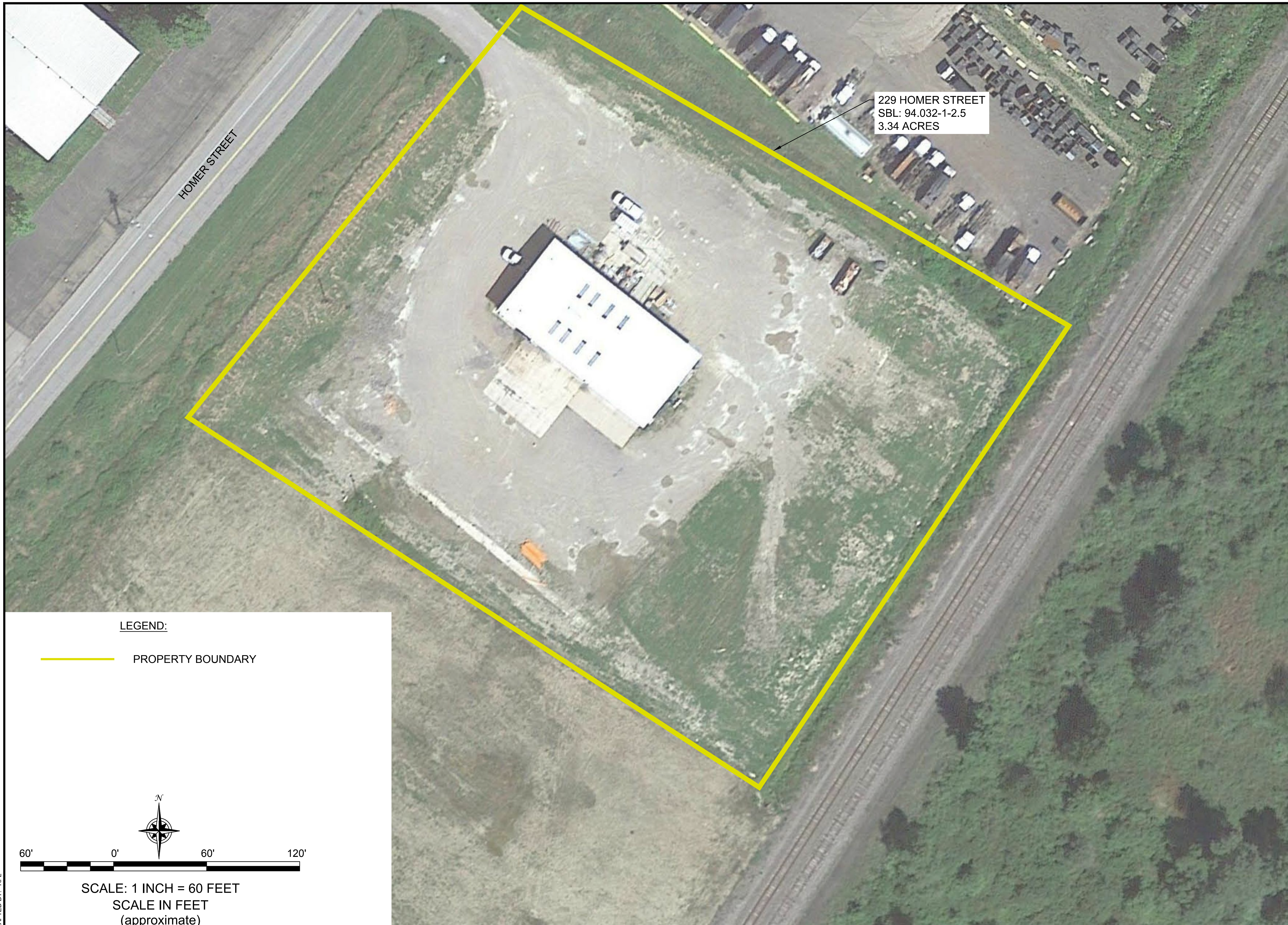
2558 HAMBURG TURNPIKE
SUITE 300
BUFFALO, NY 14218
(716) 856-0635

PROJECT NO.: 0225-015-002

DATE: JANUARY 2018

DRAFTED BY: RFL

F:\CAD\TurnKey\Benson\229 Homer Street\RAWP\Figure 2; Site Plan (aerial).dwg



DATE: JANUARY 2018
DRAFTED BY: RFL

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JOB NO.: 0225-015-002

SITE PLAN (AERIAL)

HEALTH AND SAFETY PLAN

229 HOMER STREET SITE

OLEAN, NEW YORK

PREPARED FOR

HOMER STREET PROPERTIES LLC

FIGURE 2

ATTACHMENT A

EMERGENCY RESPONSE PLAN

EMERGENCY RESPONSE PLAN
for
REMEDIAL ACTIVITIES

229 HOMER STREET SITE
OLEAN, NEW YORK

January 2018 0225-015-002

Prepared by:

Benchmark Environmental Engineering & Science, PLLC
In association with TurnKey Environmental Restoration, LLC

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229 HOMER STREET SITE
HEALTH AND SAFETY PLAN FOR REMEDIAL ACTIVITIES
APPENDIX A: EMERGENCY RESPONSE PLAN

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Figure E-1 Hospital Route Map

1.0 GENERAL

This report presents the site-specific Emergency Response Plan (ERP) referenced in the Site Health and Safety Plan (HASP) prepared for Remedial Activities (RA) at the 229 Homer Street Site located at 229 Homer Street in Olean, New York. This appendix of the HASP describes potential emergencies that may occur at the Site; procedures for responding to those emergencies; roles and responsibilities during emergency response; and training all workers must receive in order to follow emergency procedures. This ERP also describes the provisions this Site has made to coordinate its emergency response planning with other contractors on-site and with off-site emergency response organizations.

This ERP is consistent with the requirements of 29 CFR 1910.120(l) and provides the following site-specific information:

- Pre-emergency planning.
- Personnel roles, lines of authority, and communication.
- Emergency recognition and prevention.
- Safe distances and places of refuge.
- Evacuation routes and procedures.
- Decontamination procedures.
- Emergency medical treatment and first aid.
- Emergency alerting and response procedures.
- Critique of response and follow-up.
- Emergency personal protective equipment (PPE) and equipment.

2.0 PRE-EMERGENCY PLANNING

This Site has been evaluated for potential emergency occurrences, based on site hazards, the required work tasks, the site topography, and prevailing weather conditions. The results of that evaluation indicate the potential for the following site emergencies to occur at the locations indicated.

Type of Emergency:

1. Medical, due to physical injury

Source of Emergency:

1. Slip/trip/fall

Location of Source:

1. Non-specific

3.0 ON-SITE EMERGENCY RESPONSE EQUIPMENT

Emergency procedures may require specialized equipment to facilitate worker rescue, contamination control and reduction, or post-emergency clean up. Emergency response equipment available on the Site is listed below. The equipment inventory and storage locations are based on the potential emergencies described above. This equipment inventory is designed to meet on-site emergency response needs and any specialized equipment needs that off-site responders might require because of the hazards at this Site but not ordinarily stocked.

Any additional personal protective equipment (PPE) required and stocked for emergency response is also listed in below. During an emergency, the Emergency Response Coordinator (ERC) is responsible for specifying the level of PPE required for emergency response. At a minimum, PPE used by emergency responders will comply with Section 7.0, Personal Protective Equipment, of this HASP. Emergency response equipment is inspected at regular intervals and maintained in good working order. The equipment inventory is replenished as necessary to maintain response capabilities.

Emergency Equipment	Quantity	Location
First Aid Kit	1	Site Vehicle
Chemical Fire Extinguisher	2 (minimum)	All heavy equipment and Site Vehicle

Emergency PPE	Quantity	Location
Full-face respirator	1 for each worker	Site Vehicle
Chemical-resistant suits	4 (minimum)	Site Vehicle

4.0 EMERGENCY PLANNING MAPS

An area-specific map of the Site will be developed on a daily basis during performance of field activities. The map will be marked to identify critical on-site emergency planning information, including: emergency evacuation routes, a place of refuge, an assembly point, and the locations of key site emergency equipment. Site zone boundaries will be shown to alert responders to known areas of contamination. There are no major topographical features, however the direction of prevailing winds/weather conditions that could affect emergency response planning are also marked on the map. The map will be posted at site-designated place of refuge and inside the Benchmark-TurnKey personnel field vehicle.

5.0 EMERGENCY CONTACTS

The following identifies the emergency contacts for this ERP.

Emergency Telephone Numbers:

Project Officer: *Paul H Werthman, P.E.*
Work: (716) 856-0599
Mobile: (716) 998-4151

Project Manager: *Michael Lesakowski*
Work: (716) 856-0635
Mobile: (716) 818-3954

Corporate Health and Safety Director: *Thomas H. Forbes, P.E.*
Work: (716) 856-0599
Mobile: (716) 864-1730

Site Safety and Health Officer (SSHO): Mark Janus
Work: (716) 856-0599
Mobile: (716) 200-3196

Alternate SSHO: Brock Greene
Work: (716) 856-0599
Mobile: (716) 225-3314

OLEAN GENERAL HOSPITAL (ER):	(716) 373-2600
FIRE:	911
AMBULANCE:	911
BUFFALO POLICE:	911
STATE EMERGENCY RESPONSE HOTLINE:	(800) 457-7362
NATIONAL RESPONSE HOTLINE:	(800) 424-8802
NYSDOH:	(716) 847-4385
NYSDEC:	(716) 851-7220
NYSDEC 24-HOUR SPILL HOTLINE:	(800) 457-7252

The Site location is:
229 Homer Street
Olean, New York 14760
Site Phone Number: (Insert Cell Phone or Field Trailer): Cellular Phone on-Site

6.0 EMERGENCY ALERTING & EVACUATION

Internal emergency communication systems are used to alert workers to danger, convey safety information, and maintain site control. Any effective system can be employed. Two-way radio headsets or field telephones are often used when work teams are far from the command post. Hand signals and air-horn blasts are also commonly used. Every system must have a backup. It shall be the responsibility of each contractor's Site Health and Safety Officer to ensure all personnel entering the site understand an adequate method of internal communication. Unless all personnel are otherwise informed, the following signals shall be used.

1) Emergency signals by portable air horn, siren, or whistle: two short blasts, personal injury; continuous blast, emergency requiring site excavation.

2) Visual signals: hand gripping throat, out of air/cannot breathe; hands on top of head, need assistance; thumbs up, affirmative/ everything is OK; thumbs down, no/negative; grip partner's wrist or waist, leave area immediately.

If evacuation notice is given, site workers leave the worksite with their respective buddies, if possible, by way of the nearest exit. Emergency decontamination procedures detailed in Section 12.0 of the HASP are followed to the extent practical without compromising the safety and health of site personnel. The evacuation routes and assembly area will be determined by conditions at the time of the evacuation based on wind direction, the location of the hazard source, and other factors as determined by rehearsals and inputs from emergency response organizations. Wind direction indicators are located so that workers can determine a safe up wind or cross wind evacuation route and assembly area if not informed by the emergency response coordinator at the time the evacuation alarm sounds. Since work conditions and work zones within the site may be changing on daily basis, it shall be the responsibility of the construction Site Health and Safety Officer to review evacuation routes and procedures as necessary and to inform all Benchmark-TurnKey workers of any changes.

Personnel exiting the site will gather at a designated assembly point. To determine that everyone has successfully exited the site, personnel will be accounted for at the assembly site. If any worker cannot be accounted for, notification is given to the SSHO (Mark Janus

or ***Brock Greene***) so that appropriate action can be initiated. Contractors and subcontractors on this site have coordinated their emergency response plans to ensure that these plans are compatible and that source(s) of potential emergencies are recognized, alarm systems are clearly understood, and evacuation routes are accessible to all personnel relying upon them.

7.0 EXTREME WEATHER CONDITIONS

In the event of adverse weather conditions, the Site Safety and Health Officer in conjunction with the Contractor's SSHO will determine if engineering operations can continue without sacrificing the health and safety of site personnel. Items to be considered prior to determining if work should continue include but are not limited to:

- Potential for heat/cold stress.
- Weather-related construction hazards (e.g., flooding or wet conditions producing undermining of structures or sheeting, high wind threats, etc).
- Limited visibility.
- Potential for electrical storms.
- Limited site access/egress (e.g., due to heavy snow)

8.0 EMERGENCY MEDICAL TREATMENT & FIRST AID

Personnel Exposure:

The following general guidelines will be employed in instances where health impacts threaten to occur acute exposure is realized:

- Skin Contact: Use copious amounts of soap and water. Wash/rinse affected area for at least 15 minutes. Decontaminate and provide medical attention. Eyewash stations will be provided on site. If necessary, transport to Buffalo General Hospital.
- Inhalation: Move to fresh air and, if necessary, transport to Hospital.
- Ingestion: Decontaminate and transport to Hospital.

Personal Injury:

Minor first-aid will be applied on-site as deemed necessary. In the event of a life threatening injury, the individual should be transported to Hospital via ambulance. The Site Health and Safety Officer will supply available chemical specific information to appropriate medical personnel as requested.

First aid kits will conform to Red Cross and other applicable good health standards, and shall consist of a weatherproof container with individually sealed packages for each type of item. First aid kits will be fully equipped before being sent out on each job and will be checked weekly by the SSHO to ensure that the expended items are replaced.

Directions to Olean General Hospital (see Figure E-1):

The following directions describe the best route from the Site to Olean General Hospital of Olean which is 2 miles away:

- Travel northeast on Homer Street (Right from Site parking lot).
- Turn right onto River Street.
- Continue straight on East Forest Avenue.
- Turn left onto North Union Street.
- Continue straight on Main Street
- Olean General Hospital will be on your left.

9.0 EMERGENCY RESPONSE CRITIQUE & RECORD KEEPING

Following an emergency, the SSHO and Project Manager shall review the effectiveness of this Emergency Response Plan (ERP) in addressing notification, control and evacuation requirements. Updates and modifications to this ERP shall be made accordingly. It shall be the responsibility of each contractor to establish and assure adequate records of the following:

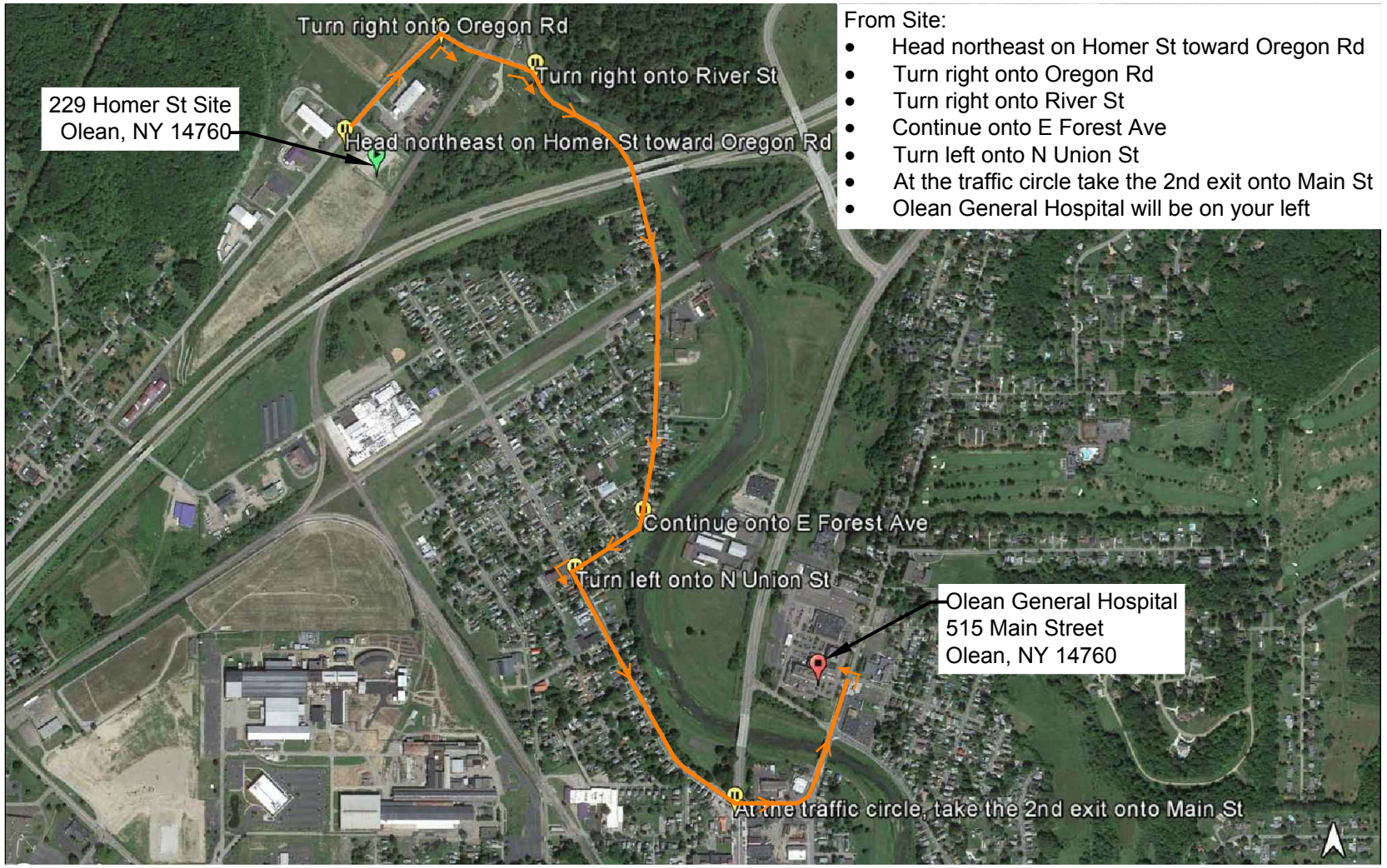
- Occupational injuries and illnesses.
- Accident investigations.
- Reports to insurance carrier or State compensation agencies.
- Reports required by the client.
- Records and reports required by local, state, federal and/or international agencies.
- Property or equipment damage.
- Third party injury or damage claims.
- Environmental testing logs.
- Explosive and hazardous substances inventories and records.
- Records of inspections and citations.
- Safety training.

10.0 EMERGENCY RESPONSE TRAINING

Persons who enter the worksite, including visitors, shall receive a site-specific briefing about anticipated emergency situations and the emergency procedures by the SSHO. Where this site relies on off-site organizations for emergency response, the training of personnel in those off-site organizations has been evaluated and is deemed adequate for response to this site.

FIGURES

F:\CAD\TurnKey\Benson\229 Homer Street\RAWP\Appendix A\Figure E1; HRM.dwg



BENCHMARK ENVIRONMENTAL ENGINEERING & SCIENCE, PLLC

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2558 HAMBURG TURNPIKE, SUITE 300, BUFFALO, NY 14218, (716) 856-0599

PROJECT NO.: 0225-015-002

DATE: JANUARY 2018

DRAFTED BY: RFL

HOSPITAL ROUTE MAP

EMERGENCY RESPONSE PLAN

229 HOMER STREET SITE

OLEAN, NEW YORK

PREPARED FOR

HOMER STREET PROPERTIES, LLC

FIGURE E-1

ATTACHMENT B

HOT WORK PERMIT FORM

HOT WORK PERMIT

PART 1 - INFORMATION

Issue Date:	
Date Work to be Performed: Start:	Finish (permit terminated):
Performed By:	
Work Area:	
Object to be Worked On:	

PART 2 - APPROVAL

(for 1, 2 or 3: mark Yes, No or NA)*

Will working be on or in:	Finish (permit terminated):	
1. Metal partition, wall, ceiling covered by combustible material?	yes	no
2. Pipes, in contact with combustible material?	yes	no
3. Explosive area?	yes	no

* = If any of these conditions exist (marked "yes"), a permit will not be issued without being reviewed and approved by Thomas H. Forbes (Corporate Health and Safety Director). Required Signature below.

PART 3 - REQUIRED CONDITIONS**

(Check all conditions that must be met)

	PROTECTIVE ACTION		PROTECTIVE EQUIPMENT
	Specific Risk Assessment Required		Goggles/visor/welding screen
	Fire or spark barrier		Apron/fireproof clothing
	Cover hot surfaces		Welding gloves/gauntlets/other:
	Move movable fire hazards, specifically		Wellintons/Knee pads
	Erect screen on barrier		Ear protection: Ear muffs/Ear plugs
	Restrict Access		B.A.: SCBA/Long Breather
	Wet the ground		Respirator: Type:
	Ensure adequate ventilation		Cartridge:
	Provide adequate supports		Local Exhaust Ventilation
	Cover exposed drain/floor or wall cracks		Extinguisher/Fire blanket
	Fire watch (must remain on duty during duration of permit)		Personal flammable gas monitor
	Issue additional permit(s):		

Other precautions:

** Permit will not be issued until these conditions are met.

SIGNATURES

Orginating Employee:	Date:
Project Manager:	Date:
Part 2 Approval:	Date:

ATTACHMENT C

NYSDOH GENERIC COMMUNITY AIR MONITORING PLAN

Appendix C1
New York State Department of Health
Generic Community Air Monitoring Plan

Overview

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

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

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

Community Air Monitoring Plan

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

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

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

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

VOC Monitoring, Response Levels, and Actions

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

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

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

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

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

Particulate Monitoring, Response Levels, and Actions

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

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

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

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

December 2009

Appendix C2
Fugitive Dust and Particulate Monitoring

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

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

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

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

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

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

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

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

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

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

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

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

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

APPENDIX B

SITE-SPECIFIC MASTER EROSION CONTROL PLAN

MASTER EROSION CONTROL PLAN

229 HOMER STREET SITE
TOWN OF OLEAN, CATTARAUGUST COUNTY, NEW YORK

January 2018 0225-015-002

Prepared for:

Homer Street Properties, LLC

Prepared By:

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MASTER EROSION CONTROL PLAN
229 HOMER STREET SITE

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Attachment A-1 Erosion Control Details

Attachment A-2 Inspection and Maintenance Report Form

1.0 INTRODUCTION

1.1 Background

The BCP property, located at 229 Homer Street (Tax ID No. 94.032-1-2.5), is situated in a commercial and industrial zoned area of the City of Olean, Cattaraugus County, New York and consists of one parcel measuring 3.34 acres. The Site is currently improved with a one-story building in the central portion of the Site.

The Site and surrounding area was originally developed in approximately 1890 for the oil industry and used for refinery purposes and as a petroleum storage tank farm. The Site is bound by Two Mile Creek and Homer Street to the northwest, a Casella Waste Management of New York transfer station to the northeast, Southern Tier Rail Authority rail lines to the southeast, and 251 Homer Street (a vacant parcel currently being remediated under the NYSDEC BCP) to the southwest (see Figures 1 and 2). The surface of the Site is covered with a building, concrete, and gravel. Two Mile Creek flows off-site along the western property boundary. A drainage swale is also present on the eastern portion of the Site.

1.2 Purpose and Scope

This Master Erosion Control Plan (MECP) was prepared to provide guidance during remedial activities since erosion control will be a critical component of preventing the potential migration of contaminants off-site during excavation activities.

2.0 POTENTIAL EROSION AND SEDIMENT CONTROL CONCERNS

Potential areas and items of concern during remedial activities may include the following:

- Remediated areas or off-site properties adjacent to unremediated parcels need protection so they do not become impacted by Site operations.
- Runoff from soil stockpiles, if any, will require erosion controls.
- Surface slopes need to be minimized as much as practical to control sediment transfer.
- Excavated soil/fill will require proper handling and disposal.

3.0 EROSION AND SEDIMENT CONTROL MEASURES

3.1 Background

Standard soil conservation practices need to be incorporated into remedial activities to mitigate soil erosion damage, off-site sediment migration, and water pollution from erosion. These practices combine vegetative and structural measures, many of which will be permanent in nature and become part of the completed project (i.e., grading). Other measures will be temporary and serve only during the construction stage. Selected erosion and sediment control measures will meet the following criteria:

- Incorporate temporary and permanent erosion control measures.
- Remove sediment from sediment-laden storm water before it leaves the Site.

3.2 Temporary Measures

Temporary erosion and sedimentation control measures and facilities will be used during construction. These temporary measures will be installed and maintained until they are no longer needed or until such time as permanent measures are installed and become effective. Erosion and sediment controls shall be installed in accordance with the standards and specifications presented in Attachment A-1. At a minimum, the following temporary measures will be used:

- Silt fencing, tubular silt socks
- Cautious placement, compaction, and grading of stockpiles

3.2.1 Silt Fencing/Tubular Silt Sock

Remedial activities may result in surface water flow to drainage ditches and adjacent properties. Silt fencing or tubular silt socks will be the primary sediment control measure used in these areas. Prior to extensive soil excavation or grading activities, silt fences or silt socks will be installed along the downgradient perimeter of all construction areas. The orientation of the fencing/socks will be adjusted as necessary as the work proceeds to accommodate changing site conditions.

If necessary, intermediate fencing/socks will be used upgradient of the perimeter fencing to help lower surface water runoff velocities and reduce the volume of sediment to perimeter fencing/socks. Stockpiles will also be surrounded with silt fencing/socks.

As sediment collects, the silt fences/socks will be cleaned as necessary to maintain their integrity. Removed sediment will be used elsewhere on-site as general fill. All perimeter silt fences/silt socks will remain in place until construction activities in an area are completed and vegetative cover has been established.

3.2.2 Cautious Placement of Stockpiles

Installation of the soil vapor extraction and air sparge system may produce stockpiles of soil and subgrade soil/fill materials. Careful placement and construction of stockpiles will be required to control erosion. Stockpiles will be placed no closer than 50 feet from storm water inlets and parcel boundaries. Additionally, stockpiles will be graded and compacted as necessary for positive surface water runoff and dust control.

3.3 Permanent Control Measures during Site Redevelopment

Permanent erosion and sedimentation control measures and structures will be installed as soon as practical during construction for long-term erosion protection. Examples of permanent erosion control measures could include:

- Minimizing the potential contact with, and migration of, subsurface soil/fill through the placement of a "clean" slag cover system in all areas not covered with structures, roads, parking areas, sidewalks, etc.
- Planting and maintaining vegetation.
- Limiting runoff flow velocities to the extent practical.

4.0 CONSTRUCTION MANAGEMENT PRACTICES

4.1 General

The following general construction practices should be evaluated for erosion and sedimentation control purposes during remedial activities:

- Clearing and grading only as much area as is necessary to accommodate the construction needs to minimize disturbance of areas subject to erosion (i.e., phasing the work).
- Covering exposed or disturbed areas of the Site as quickly as practical.
- Installing erosion and sediment control measures before disturbing the Site subgrade.
- Minimizing both on-site and off-site tracking of soil by vehicles by using routine entry/ exit routes.

4.2 Monitoring, Inspection and Maintenance

All erosion and sedimentation controls described in this Plan will be inspected by a qualified representative of the Site Owner within 24 hours of a heavy rainfall event (defined as more than 0.5 inches of precipitation in a 24-hour period) and repaired or modified as necessary to effectively control erosion or turbidity problems. Inspections should include areas under construction, stockpile areas, erosion control devices (i.e., silt fences, silt socks, storm drain inlet protection, etc.) and locations where vehicles enter and leave the Site. Routine inspections of the entire Site should also be made on a weekly basis during development.

If inspections indicate problems, corrective measures should be implemented within 24 hours. A report summarizing the scope of the inspection, name of the inspector, date, observations made, and a description of the corrective actions taken should be completed. Attachment A-2 includes the Inspection and Maintenance Report Form.

4.2.1 Implementation

Erosion controls and features shall, at all times, be properly constructed, operated, and maintained in accordance with regulatory requirements and good engineering and

construction practices. Erosion control measures and activities will be conducted in accordance with currently accepted Best Management Practices (BMPs).

Erosion control monitoring, inspection, and maintenance are an integral part of Site storm water and erosion control. The key elements of the monitoring effort include the following:

- Site inspections and maintenance
- BMPs monitoring
- Recordkeeping
- Review and modifications
- Certification of compliance

4.2.2 Site Inspections and Maintenance Practices

The temporary erosion control features will be maintained until no longer needed or permanent erosion control methods are installed. Site inspections are required every seven days or within 24 hours of a rainfall of 0.5 inches or greater. All disturbed areas, areas for material storage, locations where vehicles enter or exit the site, and all of the erosion and sediment controls identified as part of this Plan must be inspected. Controls must be in good operating condition until the affected area they protect has been completely stabilized and the construction activity is complete. If a repair is necessary, it must be completed within seven days of receipt of a report or notice, if practical. Inspection for specific erosion and sediment controls will include the following:

- Silt fence/silt socks will be inspected to determine the following:
    1) Depth
    2) Condition of fabric
    3) That the fabric is attached to the posts
    4) That the fence posts are firmly in the ground
- The silt fences/silt socks will be inspected weekly and within 24 hours of a 0.5 inch or greater storm event.
- Temporary and permanent seeding and planting will be inspected for bare spots, washouts, and other potential erosion control problems.
- The Contractor shall designate individual(s) that will be responsible for erosion control, maintenance, and repair activities. The designated individual will also be

responsible for inspecting the site and filling out the inspection and maintenance report.

- Personnel selected for inspection and maintenance responsibilities will receive training as directed by the Engineer. They will be trained in all the inspection and maintenance practices necessary for keeping the erosion and sediment controls used on-site in good working order.

The individual inspecting the Site must record any damages or deficiencies on the Inspection and Maintenance Report Form in Attachment A-2. This form can be used to request maintenance and repair and to document inspection and maintenance activities. Damages or deficiencies must be corrected as soon as possible after the inspection. Any changes that may be required to correct deficiencies in this Plan should also be made as soon as possible, but in no case later than seven days after the inspection.

4.2.3 Recordkeeping

A copy of this MECP and inspection and maintenance records must be kept at the Site from the time construction activities begins until the Site is stabilized. These documents will be made available upon request to regulatory agency representatives or members of the public.

4.2.4 Modifications

During the course of construction, unanticipated changes may occur that affect this MECP such as schedule changes, phasing changes, staging area modifications, off-site drainage impacts, and repeated failures of designed controls. Any changes to the activities and controls identified in this Plan must be documented and the Plan revised accordingly. Certification of revisions to this Plan shall be included at the end of the document.

ATTACHMENT A-1

EROSION CONTROL DETAILS

New York State
DEPARTMENT OF ENVIRONMENTAL CONSERVATION

Division of Water

New York State Standards and Specifications for Erosion and Sediment Control

August 2005

New York State
Department of Environmental Conservation

George E. Pataki, Governor

STANDARD AND SPECIFICATIONS FOR SILT FENCE

Definition

A temporary barrier of geotextile fabric installed on the contours across a slope used to intercept sediment laden runoff from small drainage areas of disturbed soil.

Purpose

The purpose of a silt fence is to reduce runoff velocity and effect deposition of transported sediment load. Limits imposed by ultraviolet stability of the fabric will dictate the maximum period the silt fence may be used (approximately one year).

Conditions Where Practice Applies

A silt fence may be used subject to the following conditions:

1. Maximum allowable slope lengths contributing runoff to a silt fence placed on a slope are:

Slope Steepness	Maximum Length (ft.)
2:1	25
3:1	50
4:1	75
5:1 or flatter	100

2. Maximum drainage area for overland flow to a silt fence shall not exceed ¼ acre per 100 feet of fence, with maximum ponding depth of 1.5 feet behind the fence; and

3. Erosion would occur in the form of sheet erosion; and

4. There is no concentration of water flowing to the barrier.

Design Criteria

Design computations are not required for installations of 1 month or less. Longer installation periods should be designed for expected runoff. All silt fences shall be placed as close to the areas as possible, but at least 10 feet from the toe of a slope to allow for maintenance and roll down. The area beyond the fence must be undisturbed or stabilized.

Sensitive areas to be protected by silt fence may need to be reinforced by using heavy wire fencing for added support to prevent collapse.

Where ends of filter cloth come together, they shall be overlapped, folded and stapled to prevent sediment bypass. A detail of the silt fence shall be shown on the plan. See Figure 5A.8 on page 5A.21 for details.

Criteria for Silt Fence Materials

1. Silt Fence Fabric: The fabric shall meet the following specifications unless otherwise approved by the appropriate erosion and sediment control plan approval authority. Such approval shall not constitute statewide acceptance.

Fabric Properties	Minimum Acceptable Value	Test Method
Grab Tensile Strength (lbs)	90	ASTM D1682
Elongation at Failure (%)	50	ASTM D1682

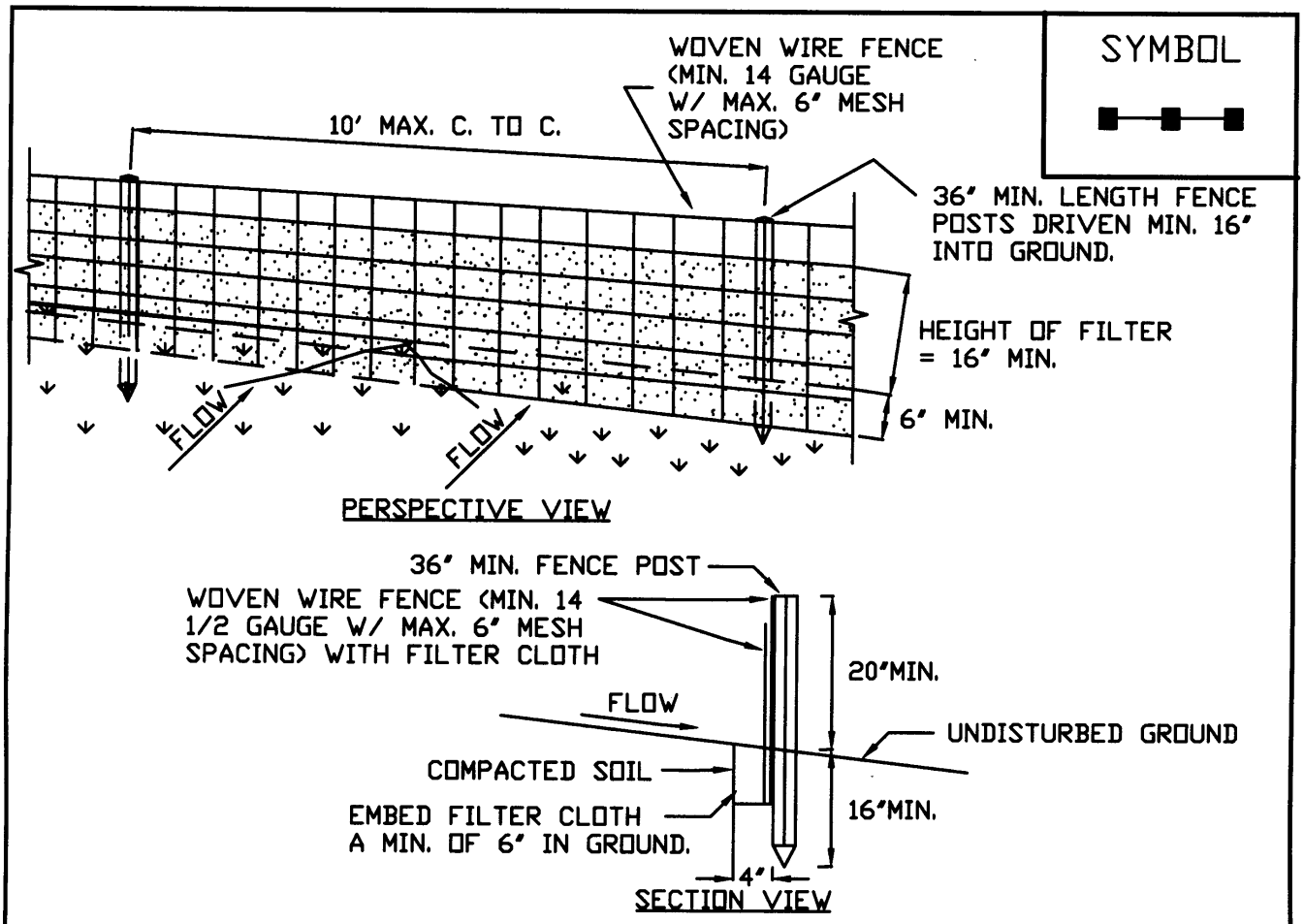
Mullen Burst Strength (PSI)	190	ASTM D3786
Puncture Strength (lbs)	40	ASTM D751 (modified)
Slurry Flow Rate (gal/min/sf)	0.3	
Equivalent Opening Size	40-80	US Std Sieve CW-02215
Ultraviolet Radiation Stability (%)	90	ASTM G-26

2. Fence Posts (for fabricated units): The length shall be a minimum of 36 inches long. Wood posts will be of sound quality hardwood with a minimum cross sectional area of 3.0 square inches. Steel posts will be standard T and U section weighing not less than 1.00 pound per linear foot.

3. Wire Fence (for fabricated units): Wire fencing shall be a minimum 14 gage with a maximum 6 in. mesh opening, or as approved.

4. Prefabricated Units: Envirofence, Geofab, or approved equal, may be used in lieu of the above method providing the unit is installed per details shown in Figure 5A.8.

Figure 5A.8
Silt Fence

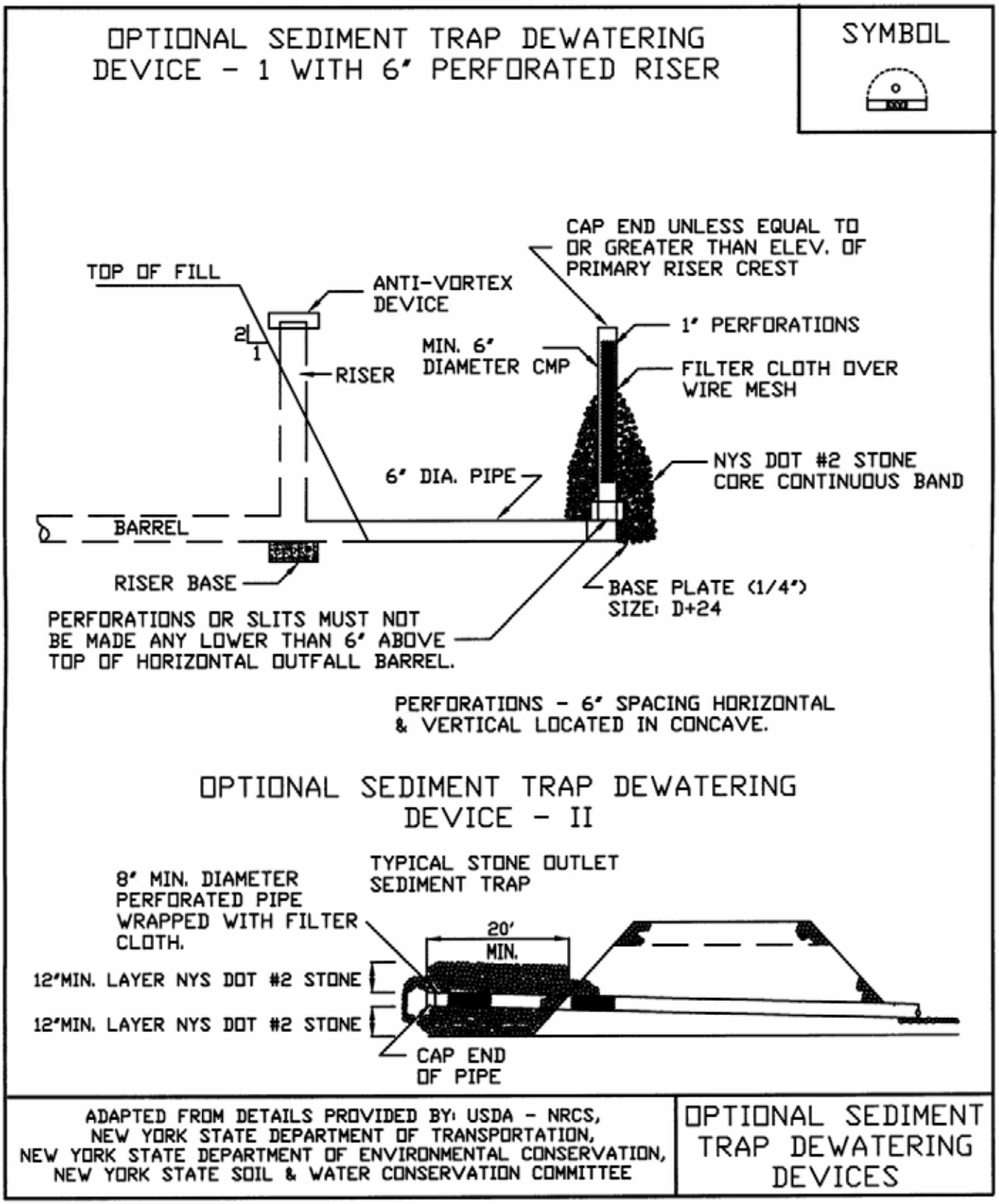


CONSTRUCTION SPECIFICATIONS

1. WOVEN WIRE FENCE TO BE FASTENED SECURELY TO FENCE POSTS WITH WIRE TIES OR STAPLES. POSTS SHALL BE STEEL EITHER "T" OR "U" TYPE OR HARDWOOD.
2. FILTER CLOTH TO BE TO BE FASTENED SECURELY TO WOVEN WIRE FENCE WITH TIES SPACED EVERY 24" AT TOP AND MID SECTION. FENCE SHALL BE WOVEN WIRE, 6" MAXIMUM MESH OPENING.
3. WHEN TWO SECTIONS OF FILTER CLOTH ADJOIN EACH OTHER THEY SHALL BE OVER-LAPPED BY SIX INCHES AND FOLDED. FILTER CLOTH SHALL BE EITHER FILTER X, MIRAFI 100X, STABILINKA T140N, OR APPROVED EQUIVALENT.
4. PREFABRICATED UNITS SHALL BE GEOFAB, ENVIROFENCE, OR APPROVED EQUIVALENT.
5. MAINTENANCE SHALL BE PERFORMED AS NEEDED AND MATERIAL REMOVED WHEN "BULGES" DEVELOP IN THE SILT FENCE.

ADAPTED FROM DETAILS PROVIDED BY: USDA - NRCS, NEW YORK STATE DEPARTMENT OF TRANSPORTATION, NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION, NEW YORK STATE SOIL & WATER CONSERVATION COMMITTEE	SILT FENCE

Figure 5A.21
Optional Sediment Trap Dewatering Devices



ATTACHMENT A-2

INSPECTION AND MAINTENANCE REPORT FORM

Inspection and Maintenance Report Form

To be completed every 7 days and within 24 hours of a rainfall event of 0.5 inches or more

Regular Inspector:_____Rainfall Event Inspector:_____Rainfall (inches):_____

Contractor Activities	OK	NO	N/A	Notes
Are construction onsite traffic routes, parking, and storage of equipment and supplies restricted to areas specifically designated for those uses?				
Are locations of temporary soil stock piles of construction materials in approved areas?				
Is there any evidence of spills and resulting cleanup procedures?				
General Erosion & Sediment Controls				
Are sediment and erosion BMPs installed in the proper location and according to the specifications set out in the SWM & ECP?				
Are all operational storm drain inlets protected from sediment inflow?				
Do any seeded or landscaped areas require maintenance, irrigation, fertilization, seeding or mulching?				
Is there any evidence that sediment is leaving the site?				
Is there any evidence of erosion or cut fill slopes?				
Perimeter Road Use				
Does much sediment get tracked on to the perimeter road?				
Is the gravel clean or is it filled with sediment?				
Does all traffic use the perimeter road to leave the site?				
Is maintenance or repair required for the perimeter road?				

_____ _____

Inspected by (Signature) Date

Inspection and Maintenance Report Form

To be completed every 7 days and within 24 hours of a rainfall event of 0.5 inches or more

Inspector:_____

STABILIZATION MEASURES					
Area	Date Since Last Disturbed	Date of Next Disturbance	Stabilized? Yes/No	Stabilized with	Condition

Stabilization Required:_____

_____

_____

_____

_____

_____

To be performed by: On or before:

APPENDIX C

PROJECT DOCUMENTATION FORMS

INSPECTOR'S DAILY REPORT

Page _____ of _____

CONTRACTOR:	JOB NO.:
CLIENT:	DATE:

LOCATION:		DAY: Su M Tu W Th F Sa	
WEATHER:	TEMP: °F	START:	END:

WORK PERFORMED:

TEST PERFORMED:	QA PERSONNEL:
	SIGNATURE:

INSPECTOR'S DAILY REPORT

(CONTINUED) Page ____ of ____

CONTRACTOR:	JOB NO.:
CLIENT:	DATE:

MEETINGS HELD & RESULTS:

CONTRACTOR'S WORK FORCE AND EQUIPMENT

DESCRIPTION	H	#	DESCRIPTION	H	#	DESCRIPTION	H	#
Field Engineer						Front Loader Ton		
Superintendent						Bulldozer		
Laborer-Foreman						DJ Dump Truck		
Laborer						Water Truck		
Operating Engineer			Equipment			Backhoe		
Carpenter			Generators			Excavator		
Ironworker			Welding Equipment			Pad foot roller		
Concrete Finisher			Roller					
			Paving Equipment					
			Air Compressor					

REMARKS:

REFERENCES TO OTHER FORMS:

SAMPLES COLLECTED:

Sample Number:
Approx. Location of Stockpile:
No. of Stockpile
Date of Collection:
Weather:
Field Observations:

DAILY LOG	DATE			
	REPORT NO.			
	PAGE		OF	

CORRECTIVE MEASURES REPORT

Date:

Project:

Job No:

Location:

CQA Monitor(s):

Client:

Contractor:

Contractor's Supervisor:

WEATHER CONDITIONS:

Ambient Air Temp. - A.M.:

Ambient Air Temp. - P.M.:

Wind Direction:

Wind Speed:

Precipitation:

Corrective Measures Undertaken (reference Problem Identification Report No.)

Retesing Location:

Suggested Method of Minimizing Re-Occurrence:

Approvals (initial):

CQA Engineer:

Project Manager:

Signed:

CQA Representative

DAILY LOG	DATE			
	REPORT NO.			
	PAGE		OF	

PROBLEM IDENTIFICATION REPORT

Date:

Project:

Job No:

Location:

CQA Monitor(s):

Client:

Contractor:

Contractor's Supervisor:

WEATHER CONDITIONS:

Ambient Air Temp. - A.M.:

Ambient Air Temp. - P.M.:

Wind Direction:

Wind Speed:

Precipitation:

Problem Description:

Problem Location (reference test location, sketch on back of form as appropriate)

Problem Causes:

Suggested Corrective Measures or Variances:

Linked to Corrective Measures Report No. *or Variance Log No.*

Approvals (initial):

CQA Engineer:

Project Manager:

Signed:

CQA Representative

APPENDIX D

AS/SVE PILOT STUDY

AIR SPARGING/SOIL VAPOR EXTRACTION PILOT STUDY RESULTS

Below is a summary of the findings of the air sparge/soil vapor extraction (AS/SVE) pilot study for the 229 Homer Street Brownfield Cleanup Program (BCP) Site No. C905044 (Site; see Figure D-1).

Based on the revised Alternatives Analysis (AA) report, the planned remedy is a Track 4 commercial cleanup that includes AS/SVE as a main component of the remedy. Therefore, an AS/SVE pilot study was implemented in accordance with a New York State Department of Environmental Conservation (NYSDEC)-approved Pilot Study Work Plan dated August 25, 2017 to assist in our engineering analysis with regard to planned well numbers and spacing, depths, and air withdrawal and air injection rates.

The objectives of the AS/SVE pilot test were to:

- Evaluate the efficacy and efficiency of AS/SVE application for the removal of petroleum volatile organic compound (VOC) contaminants from overburden soil/fill across the study area; and,
- Determine the radius of influence of one SVE well and two AS points to assist in full-scale system design/layout.

AS/SVE LAYOUT

One SVE extraction well (SVE), three AS points (AS-1, AS-2 and AS-3) and two piezometers (PZ-1 and PZ-2) were installed as shown on Figure 1. The SVE well was installed to a nominal depth of 13 feet below ground surface (fbgs) and screened 8-13 fbgs. The three AS wells were installed to a nominal bottom depth of 21 fbgs with a one-foot screen and sand pack, followed by a one-foot bentonite seal and backfilled to grade with cement bentonite grout. The two piezometers were installed to a nominal depth of 18 fbgs (10 feet of screen, sand pack and a surface seal consisting of a layer of bentonite chips and a cement grout surface seal). MW-2, an existing monitoring well, was also utilized for data collection during this pilot study. Logs for the SVE well, MW-2, AS points and piezometers are included in Attachment 1.

MONITORING AND DATA COLLECTION METHODOLOGY

SVE Operation Only

Prior to initiating the pilot study, groundwater levels and dissolved oxygen measurements (DO) were measured in PZ-1, PZ-2, MW-2, AS-1, AS-2 and AS-3. The pilot study commenced with just SVE

operations at a vapor extraction rate of 42 cubic feet per minute (CFM). The SVE system was activated on October 9, 2017 and monitored to assess the radius of influence of the vacuum induced field by monitoring the vacuum at PZ-1 and PZ-2, and MW-2, using a portable manometer. In addition to measuring the vacuum field in the vadose zone, photoionization detector (PID) measurements were collected to monitor the air quality of the discharged air (SVE effluent); Table 1 shows the SVE data collected. An air sample was collected on October 9, 2017 during SVE only operation using a summa canister, and analyzed by USEPA Method TO-15 plus tentatively identified compounds (TICs); and gasoline range organics (GRO) and diesel range organics (DRO) by MADEP Air Phase Hydrocarbons (APH). At the time of Summa canister sample collection, a concurrent PID reading was made for comparison to the analytical data to serve as a surrogate to assess the air quality over time. The SVE-only portion of the pilot study was run for approximately 2 days to monitor air flow rates, SVE effluent PID readings and vacuum at PZ-1, PZ-2 and MW-2.

AS/SVE Operation

The air sparging portion of the pilot testing commenced on October 12, 2017 at an initial injection pressure of 5 pounds per square inch (psi) and air injection rate of approximately 6.5 CFM. The groundwater levels and DO concentration of the groundwater were measured in all sample locations prior to and during air sparging as shown on Table 2. Initially, AS-1, located approximately 13 feet from SVE, was deployed; the PID readings were monitored at the SVE air discharge and DO and water level measured at MW-2, PZ-1 and PZ-2 to assess the radius-of-influence of the air injected to the AS-1 well. A second air sample was collected on October 13, 12017 from the SVE effluent during the air sparging and tested for GRO, DRO and TO-15 VOCs and TICs. The air sparging was shut-off and SVE operations continued with the procedure repeated at well AS-2.

DATA ANALYSIS AND RESULTS

Based on the data collected, the findings include:

- SVE induced a vacuum ranging from 1.2 to 3.1 inches of water column (in. WC) with an average of 1.8 in. WC at PZ-1 (30 feet from SVE well), from 0.0 to 0.68 in. WC with an average of 0.2 in. WC at PZ-2 (48 feet from SVE well) and 0.27 to 1.2 in. WC with an average of 0.68 at MW-2 (62 feet from SVE well);
- A concurrent PID reading of 27 ppm was observed at the time of collection of the air sample during SVE only operations. The concentration of total C5 to C12 aliphatics was 88 mg/m^3. Therefore a correlation of 3.3 mg/m^3 per 1 ppm PID reading was observed and used to track VOC mass removal over time (see Chart 1);

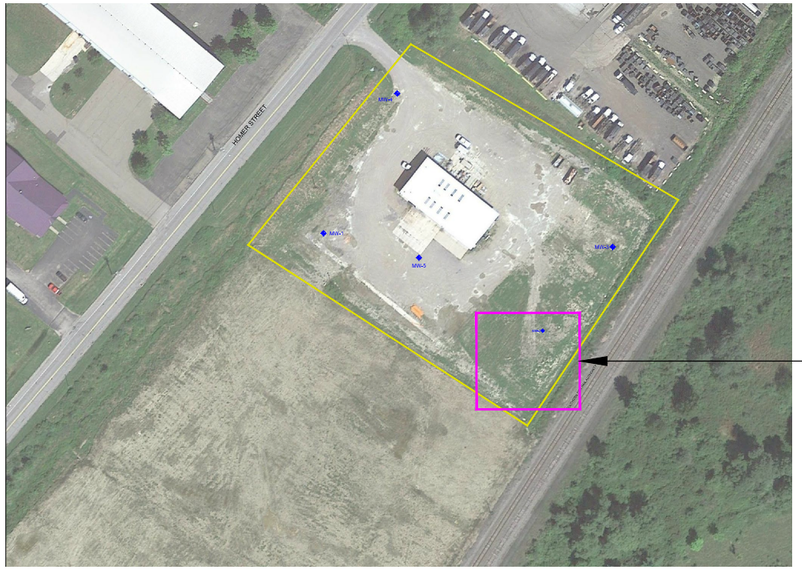
- AS effectively enhanced VOC removal as evidenced by the increase in PID readings when AS was added to SVE. For example, on October 12, 2017, the PID reading during SVE only was 46 ppm. When AS was added, the PID reading steadily increased to 68 ppm over the course of approximately 5 hours. A second air sample collected during AS/SVE which showed a concentration of total C5 to C12 aliphatics of 152 mg/m^3 compared to 88 mg/m^3 during SVE only. A concurrent PID reading of 44 ppm was observed at the time of collection of the air sample during AS/SVE resulted in a correlation factor of 3.8 mg/m^3 per 1 ppm PID, which was used to track VOC mass removal over time (see Chart 1);
- PID readings also increased in the SVE effluent during AS-2 operation from 24 ppm to 34 ppm on October 16, 2017;
- AS increased DO in monitoring points during AS-1 sparging; however, DO in monitoring points either decreased (PZ-1 and PZ-2) or only slightly increased (MW-2) during AS-2 sparging.

RECOMMENDED DESIGN PARAMETERS

The results of this pilot study will be utilized for final design of the AS/SVE system in the Remedial Action Work Plan (RAWP), which will include the following:

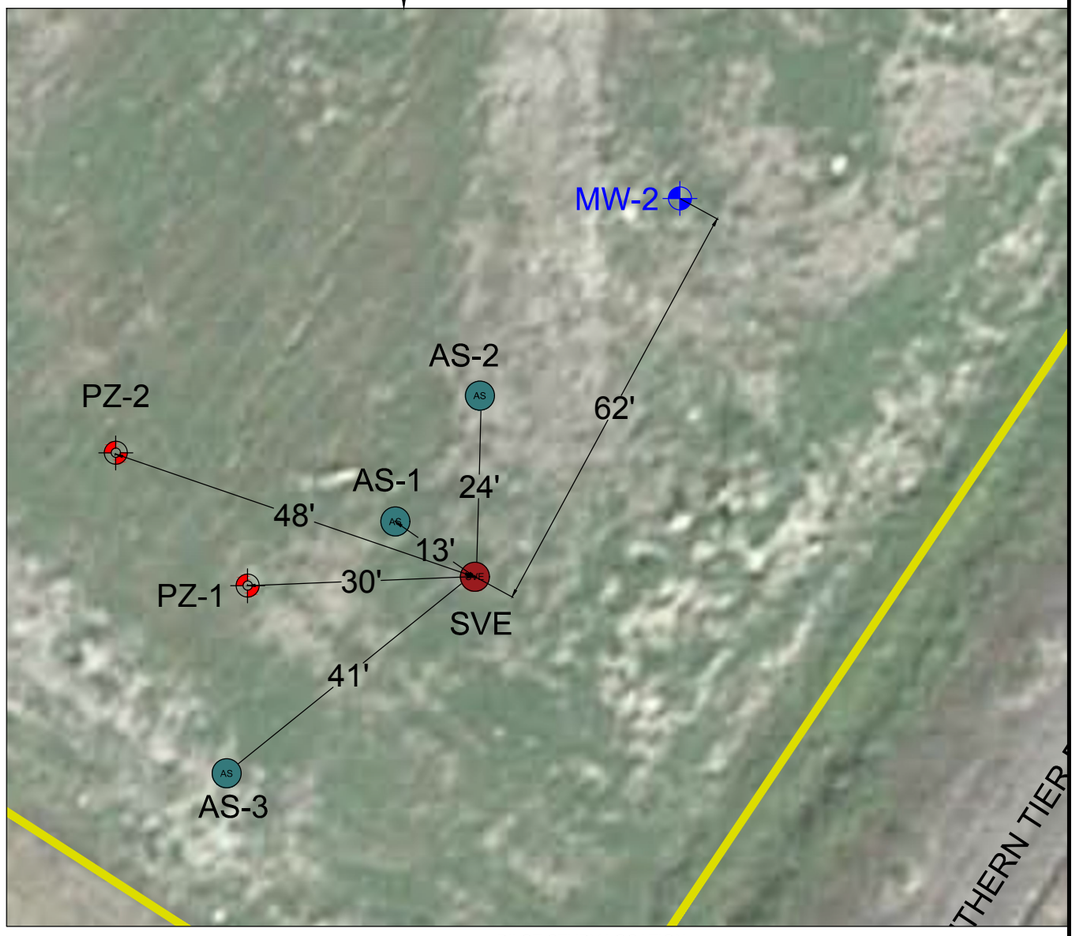
- SVE wells will be installed approximately 80 feet on center using an effective radius of influence of 40 feet;
- Based on groundwater depths greater than what was observed during the RI, AS points will be installed at greater depths than originally anticipated. Therefore, AS wells will be installed to a depth of nominally 26 feet with a 1 to 2 foot well screen; and,
- AS wells will be installed approximately 40 feet on center using an effective radius of influence of 20 feet.

FIGURES



SITE PLAN
1" = 200'

AREA OF PILOT STUDY



PILOT STUDY LOCATION
1" = 20'

LEGEND:

	SITE BOUNDARY
AS-1	AIR SPARGE WELL
SVE	SVE WELL
PZ-1	PIEZOMETER
MW-2	MONITORING WELL

NOTE:
1. BASE MAP FROM GOOGLE IMAGE DATED OCTOBER 2016.

DATE: OCTOBER 2017
DRAFTED BY: RFL

2558 HAMBURG TURNPIKE
SUITE 300
BUFFALO, NY 14218
(716) 856-0635

JOB NO.: 0225-015-001

SVE AND AIR SPARGE PILOT TEST

SVE/AS PILOT-STUDY REPORT
229 HOMER STREET SITE
OLEAN, NEW YORK
PREPARED FOR
BENSON CONSTRUCTION AND DEVELOPMENT, LLC

FIGURE D-1

TABLES

TABLE 1
SVE/AS PILOT STUDY
SVE SYSTEM LOG
229 HOMER STREET SITE

Date	Time	Inspector's Initials	System Running on Arrival? (Y or N)	Pressure Guage (in. WC)	SVE Exhaust PID Reading (PPM)	Condensate Water Present (GAL)	Air Flow Rate (CFM)	Vacuum Measurements			Comments
								PZ-1 (in.WC)	PZ-2 (in.WC)	MW-2 (in.WC)	
10/9/17	13:45	MLJ	Start-up	13.5	17.7	N	42	1.2	0.27	0.27	SVE Start-up
	14:20	MLJ	Y	14	24	N	42	1.5	0.14	0.55	
	14:55	MLJ	Y	15.5	27	N	42	1.5	0.00	0.82	
10/10/17	10:30	MLJ	Y	15==>12.5	35==>16	N	42	1.5	0.00	0.55	Adjusted dilution air
	11:30	MLJ	Y	11	26	N	42	1.5	0.00	0.55	
	12:15	MLJ	Y	11==>15	32.9	N	40	1.4	0.14	0.55	
	13:10	MLJ	Y	14.5	36.3	N	42	1.9	0.00	0.82	
	13:40	MLJ	Y	14.5	30	N	43	1.5	0.27	0.55	
	14:15	MLJ	Y	14.5	33	N	43	1.4	0.14	0.55	
10/12/17	8:20	MLJ	Y	9.5	44	Y (10 GAL)	44	3.1	0.68	1.1	
	9:35	MLJ	Y	6.5	44.4		43	3.0	0.68	1.2	
	10:07	MLJ	Y	6.5	46.4		38	2.0	0.41	0.68	Air sparging start-up at AS-1
	10:45	MLJ	Y	6.5	44.3		42	2.0	0.55	0.82	
	11:05	MLJ	Y	6.5	45.2		42	1.5	0.27	0.68	
	11:45	MLJ	Y	7.5	46.8		38	1.9	0.41	0.68	
	12:20	MLJ	Y	9.5	50.1		35	1.8	0.27	0.68	
	13:15	MLJ	Y	9.5	51		37	1.8	0.41	0.68	
	13:38	MLJ	Y	9	52.5		38	1.8	0.41	0.55	
	14:11	MLJ	Y	9.5	53.5		38	1.8	0.27	0.68	
	14:41	MLJ	Y	9.5	55.1		40	1.6	0.41	0.55	
	15:25	MLJ	Y	9.5	68.2		42	1.8	0.27	0.68	
											Air sparge failed over night
10/13/17	8:55	MLJ	Y	9	33.1	Y (12 GAL)	36	2.0	0.41	0.68	
	9:20	MLJ	Y	10	34.1		34	2.0	0.27	0.68	Air sparge at AS-1 restart at 9:20
	9:41	MLJ	Y	10	35.2		37	1.4	0.27	0.68	
	10:15	MLJ	Y	10	39.4		44	1.1	0.27	0.55	
	10:38	MLJ	Y	10	37.6		33	1.1	0.14	0.55	
	11:15	MLJ	Y	10	41.8		35	1.1	0.27	0.41	
	12:05	MLJ	Y	10	42.3		43	1.1	0.27	0.41	
	12:54	MLJ	Y	13	44.9		43	1.1	0.27	0.55	Increased pressure at 12:20
	13:25	MLJ	Y	13	44.7		41	1.1	0.14	0.55	
	13:45	MLJ	Y	13	44.9		39	0.68	0	0.14	
	14:11	MLJ	Y	13	46		41	0.41	0	0.14	
	15:28	MLJ	Y	13	41.3		41	0.41	0	0.14	
	15:48	MLJ	Y	0	40.2		42	1.8	0.27	0.82	Air sparging ended at 15:45
10/16/17	8:20	MLJ	Y	9.5	21.8	Y (16 GAL)	36	1.37	0.27	0.68	Air sparge AS-2 at 9:22
	9:23	MLJ	Y	9.5	24.1		37	1.37	0.14	0.55	
	9:41	MLJ	Y	9.5	24.7		34	1.50	0.27	0.68	
	10:02	MLJ	Y	10	27.5		36	1.37	0.27	0.55	
	11:15	MLJ	Y	10	25.5		38	0.68	0.14	0.27	
	12:00	MLJ	Y	10	27.2		33	0.55	0.27	0.27	
	12:30	MLJ	Y	10	26.5		37	0.55	0.14	0.27	
	13:14	MLJ	Y	9.5	34		35	0.55	0.00	0.14	
	14:00	MLJ	Y	9.5	35.2		38	0.55	0.00	0.27	
	14:40	MLJ	Y	9.5	34		39	0.55	0.00	0.14	End air sparging at 15:15

NOTES :

Pre-air sparging data

TABLE 2
SVE/AS PILOT STUDY
AIR SPARGE LOG
229 HOMER STREET SITE

Date	Time	Injection Pressure (psi)	Velocity (FPM)	Air Injection Rate (CFM)	PID SVE Exhaust (ppm)	PZ-1		PZ-2		MW-2		AS-1		AS-2		AS-3		Notes
						DO	WL	DO	WL	DO	WL	DO	WL	DO	WL	DO	WL	
10/12/17	Pre-testing					1.94	15.74	1.2	16.05	2.65	13.3	2	17.02	2.89	17.1	2.28	16.79	
Air sparging at AS-1	9:40	5	300	6.5	44.4													
	9:46	5	269	5.9	46.6													
	9:55	5	250	5.4	46.6													
	10:07	5	212	4.6	46.4													
	10:14	5	240	5.2	44.0													
	10:45	5	238	5.2	44.3													
Pressure to 10 psi	10:52	10				1.85	15.72	1.68	16.03	1.72	13.26			2.17	17.03	2.77	16.77	
	11:20	10	242	5.3	45.7													
	11:45	10	262	5.7	46.8													
	12:16	10				3.49	15.75	1.88	16.08	2.75	13.27			3.2	17.09	3.82	16.79	
	12:22	10	276	6.0	50.1													
	12:43	10	275	6.0	51.0													
	13:00	10				3.69	15.75	2.34	16.08	5.91	13.28			3	17.08	3.66	16.77	
	13:15	10	260	5.7	51.0													
	13:38	10	248	5.4	52.5													
	13:57	10				2.48	15.74	2.39	16.08	2.65	13.27			2.32	17.08	2.7	16.77	
	14:10	10	251	5.5	53.5													
	14:41	10	260	5.7	55.1													
	15:06	10				2.76	15.73	2.87	16.05	2.52	13.28			2.74	17.07	2.7	16.77	
	15:25	10	249	5.4	68.2													
10/13/17	9:00				33.1	1.72	15.76	1.81	16.12	1.75	13.27	3.87	17	2.71	17.08	2.14	16.79	Sparge system failed overnight
Air sparge recommenced at 9:20	9:20	10	297	6.5	34.1	1.42	15.72	1.64	16.1	1.88	13.26			1.77	17.05	1.91	16.77	
	9:41	10	268	5.8	35.2													
	10:15	10	260	5.7	39.4													
	10:38	10	279	6.1	37.6													
	10:59	10	270	5.9	40.7													
	11:15	10	279	6.1	41.8	1.67	15.75	1.68	16.09	1.72	13.26			2.6	17.06	2	16.76	
	11:50	10	268	5.8	42.0													
	12:05	10	272	5.9	42.5													
	12:14	10		0.0		1.6	15.74	1.94	16.09	2.4	13.27			2.65	17.06	2.21	16.76	
	12:30	13	299	6.5	44.1													Increase sparge pressure at 12:25
	12:54	13	325	7.1	44.9													
	13:25	13	321	7.0	44.7	1.98	15.75	1.69	16.1	2	13.27			2.57	17.05	1.92	16.77	
	13:45	13	315	6.9	44.9													
	14:11	13	310	6.8	46.0													
	14:15	13		0.0		2.08	15.7	2.26	16.07	2.92	13.21			2.94	17.02	2.81	16.75	
	14:30	13	313	6.8	46.9													
	15:28	13	309	6.7	41.3													Collect Summa can at 15:34
	15:44	13	303	6.6	41													
	15:45	0	0	0.0		1.86	15.76	2.14	16.07	3.05	13.25	6.19	18.05	2.38	17.04	2.82	16.76	Sparge off at 15:46
	15:48	0	0	0.0	40.2													
	16:05	13			39.4													
10/16/17	8:41	7				2.47	15.78	2.64	16.05	2.23	13.29	5.02	17.02	2.44	17.12	1.99	16.82	Air sparge begin at AS-2 9:22
	9:23	7	275	6.0	24.1													
	10:02	7	238	5.2	27.5													
	10:05	7				2.34	15.77	2.17	16.05	2.18	13.28	5.1	17.03			2.94	16.82	
	10:20	7	240	5.2	26.5													
	10:49	7	221	4.8	26.2													
	11:15	7	249	5.4	25.5	1.85	15.76	1.77	16.04	2.28	13.23	4.98	16.95			2.77	16.8	
	11:30	10	252	5.5	25.4													Increase pressure to 10 psi
	12:00	10	315	6.9	27.2													
	12:25	10				1.51	15.75	1.72	16.08	2.59	13.25	4.97	16.95			2.82	16.81	
	12:30	10	310	6.8	26.5													
	13:00	10	291	6.3	33													
	13:15	10			34	1.83	15.75	1.61	16.07	2.57	13.26	4.98	16.96			2.59	16.81	
	13:30	10	292	6.4	33.1													
	14:00	10	276	6.0	35.2													
	14:10	10	285	6.2	35.2													
	14:15	10				1.98	15.75	1.61	16.08	2.8	13.26	4.77	16.95			1.99	16.82	
	14:40	10	303	6.6	34													
	15:00	10	292	6.4	31.2													Sparging shut-down
	15:10													5.92	18.1			

DO = dissolved oxygen;
WL = water level reference to top of riser

ATTACHMENT 1

WELL LOGS

Project No: T0225-015-001

Borehole Number: SVE

Project: 229 Homer Street Site

A.K.A.:

Client: Benson Construction and Development, LLC

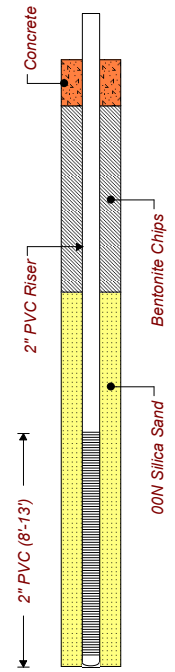
Logged By: BMG

Site Location: Olean, New York

Checked By: RFL

TurnKey Environmental Restoration, LLC
2558 Hamburg Turnpike, Suite 300
Buffalo, NY 14218
(716) 856-0635

SUBSURFACE PROFILE			SAMPLE						
Depth (fbgs)	Elev. /Depth	Description (ASTM D2488: Visual-Manual Procedure)	Sample No.	SPT N-Value	Recovery (ft)	Symbol	PID VOCs ppm (0 – 12.5 – 25)	Lab Sample	Well Completion Details or Remarks
-1.0	0.0	Ground Surface							
	0.0	auger to 13'							
4.0									
9.0									
	-13.0	End of Borehole							
	13.0								
14.0									
19.0									
24.0									



Drilled By: Earth Dimensions
Drill Rig Type: HSA
Drill Method: HOLLOW STEM AUGER 3-3/4" ID
Comments:
Drill Date(s): 10/3/2017

Hole Size: 7"
Stick-up: 2'+/-
Datum:

Sheet: 1 of 1

Project No: T0225-015-001

Borehole Number: PZ-1

Project: 229 Homer Street Site

A.K.A.:

Client: Benson Construction and Development, LLC

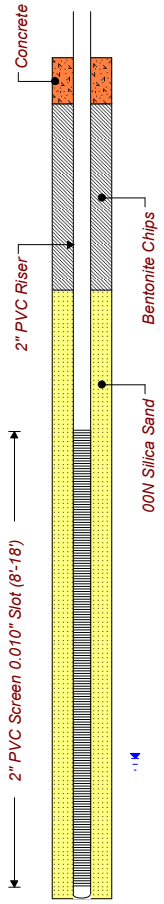
Logged By: BMG

Site Location: Olean, New York

Checked By: RFL

TurnKey Environmental Restoration, LLC
2558 Hamburg Turnpike, Suite 300
Buffalo, NY 14218
(716) 856-0635

SUBSURFACE PROFILE			SAMPLE						
Depth (fbgs)	Elev. /Depth	Description (ASTM D2488: Visual-Manual Procedure)	Sample No.	SPT N-Value	Recovery (ft)	Symbol	PID VOCs ppm 0 12.5 25	Lab Sample	Well Completion Details or Remarks
-1.0	0.0	Ground Surface							
	0.0	auger to 18'							
4.0									
9.0									
14.0	-15.0								
	15.0	groundwater nominally 15'+/-							
	-18.0								
	18.0	End of Borehole							
19.0									
24.0									



Drilled By: Earth Dimensions
Drill Rig Type: HSA
Drill Method: HOLLOW STEM AUGER 3-3/4" ID
Comments:
Drill Date(s): 10/2/2017

Hole Size: 7"
Stick-up: 2'+/-
Datum:

Sheet: 1 of 1

Project No: T0225-015-001

Borehole Number: PZ-2

Project: 229 Homer Street Site

A.K.A.:

Client: Benson Construction and Development, LLC

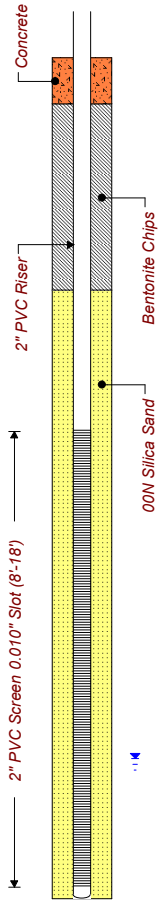
Logged By: BMG

Site Location: Olean, New York

Checked By: RFL

TurnKey Environmental Restoration, LLC
2558 Hamburg Turnpike, Suite 300
Buffalo, NY 14218
(716) 856-0635

SUBSURFACE PROFILE			SAMPLE						
Depth (fbgs)	Elev. /Depth	Description (ASTM D2488: Visual-Manual Procedure)	Sample No.	SPT N-Value	Recovery (ft)	Symbol	PID VOCs ppm 0 12.5 25	Lab Sample	Well Completion Details or Remarks
-1.0	0.0	Ground Surface							
	0.0	auger to 18'							
4.0									
9.0									
14.0	-15.0								
	15.0	groundwater nominally 15'+/-							
	-18.0								
	18.0	End of Borehole							
19.0									
24.0									



Drilled By: Earth Dimensions
Drill Rig Type: HSA
Drill Method: HOLLOW STEM AUGER 3-3/4" ID
Comments:
Drill Date(s): 10/2/2017

Hole Size: 7"
Stick-up: 2'+/-
Datum:

Sheet: 1 of 1

Project No: T0225-015-001

Borehole Number: AS-1

Project: 229 Homer Street Site

A.K.A.:

Client: Benson Construction and Development, LLC

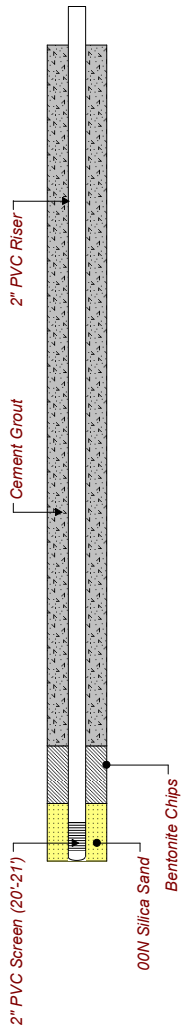
Logged By: BMG

Site Location: Olean, New York

Checked By: RFL

TurnKey Environmental Restoration, LLC
2558 Hamburg Turnpike, Suite 300
Buffalo, NY 14218
(716) 856-0635

SUBSURFACE PROFILE			SAMPLE						
Depth (fbgs)	Elev. /Depth	Description (ASTM D2488: Visual-Manual Procedure)	Sample No.	SPT N-Value	Recovery (ft)	Symbol	PID VOCs ppm (0 – 12.5 – 25)	Lab Sample	Well Completion Details or Remarks
-1.0		Ground Surface							
	0.0								
4.0									
9.0									
14.0									
19.0									
	21.0	End of Borehole							
24.0									
29.0									



Drilled By: Earth Dimensions
Drill Rig Type:
Drill Method: HSA
Comments:
Drill Date(s): 10/4/2017

Hole Size: 7" (3-3/4" HSA)
Stick-up: 2'+/-
Datum:

Sheet: 1 of 1

Project No: T0225-015-001

Borehole Number: AS-2

Project: 229 Homer Street Site

A.K.A.:

Client: Benson Construction and Development, LLC

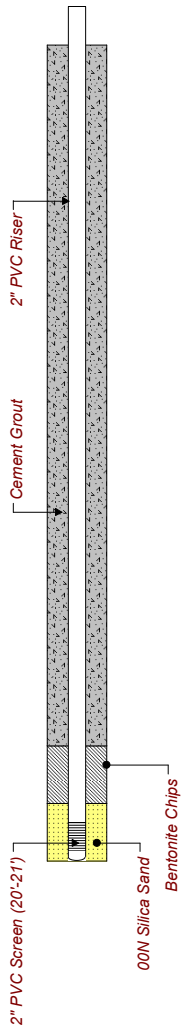
Logged By: BMG

Site Location: Olean, New York

Checked By: RFL

TurnKey Environmental Restoration, LLC
2558 Hamburg Turnpike, Suite 300
Buffalo, NY 14218
(716) 856-0635

SUBSURFACE PROFILE			SAMPLE						
Depth (fbgs)	Elev. /Depth	Description (ASTM D2488: Visual-Manual Procedure)	Sample No.	SPT N-Value	Recovery (ft)	Symbol	PID VOCs ppm (0 – 12.5 – 25)	Lab Sample	Well Completion Details or Remarks
-1.0									
		Ground Surface							
	0.0								
4.0									
9.0									
14.0									
19.0									
	21.0	End of Borehole							
24.0									
29.0									



Drilled By: Earth Dimensions
Drill Rig Type:
Drill Method: HSA
Comments:
Drill Date(s): 10/4/2017

Hole Size: 7" (3-3/4" HSA)
Stick-up: 2'+/-
Datum:

Sheet: 1 of 1

Project No: T0225-015-001

Borehole Number: AS-3

Project: 229 Homer Street Site

A.K.A.:

Client: Benson Construction and Development, LLC

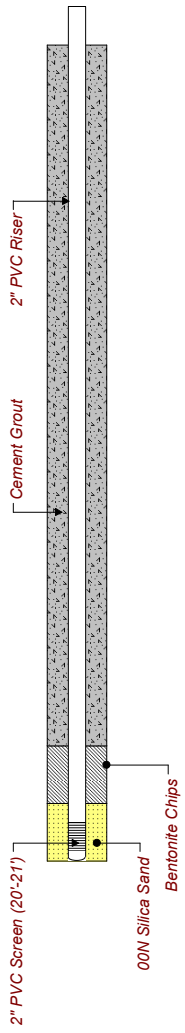
Logged By: BMG

Site Location: Olean, New York

Checked By: RFL

TurnKey Environmental Restoration, LLC
2558 Hamburg Turnpike, Suite 300
Buffalo, NY 14218
(716) 856-0635

SUBSURFACE PROFILE			SAMPLE						
Depth (fbgs)	Elev. /Depth	Description (ASTM D2488: Visual-Manual Procedure)	Sample No.	SPT N-Value	Recovery (ft)	Symbol	PID VOCs ppm (0 – 12.5 – 25)	Lab Sample	Well Completion Details or Remarks
-1.0		Ground Surface							
	0.0								
4.0									
9.0									
14.0									
19.0									
	21.0	End of Borehole							
24.0									
29.0									



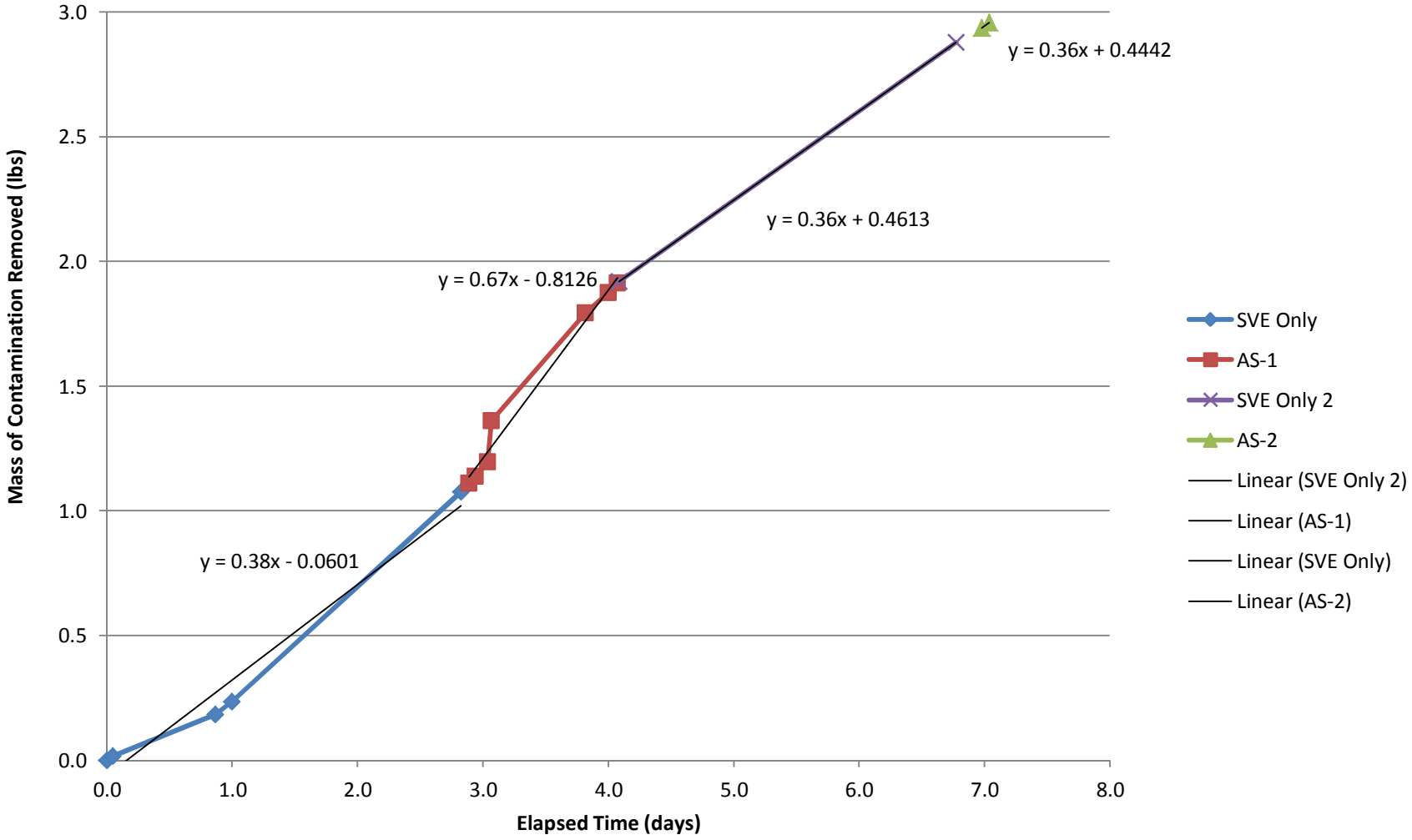
Drilled By: Earth Dimensions
Drill Rig Type:
Drill Method: HSA
Comments:
Drill Date(s): 10/4/2017

Hole Size: 7" (3-3/4" HSA)
Stick-up: 2'+/-
Datum:

Sheet: 1 of 1

CHARTS

Chart 1
VOC Mass Removal as a function of Time
AIR SPARGE AND SVE PILOT TEST
229 Homer Street



ANALYTICAL TEST DATA

TurnKey

ANALYTICAL REPORT

Lab Number:	L1736370
Client:	Benchmark & Turnkey Companies 2558 Hamburg Turnpike Suite 300 Buffalo, NY 14218
ATTN:	Ray Laport
Phone:	(716) 856-0599
Project Name:	229 HOMER ST.
Project Number:	Not Specified
Report Date:	10/30/17

Certifications & Approvals: MA (M-MA030), NH NELAP (2062), NJ NELAP (MA015), CT (PH-0141), FL (E87814), IL (200081), LA (85084), ME (MA00030), MD (350), NY (11627), NC (685), OH (CL106), PA (68-02089), RI (LAO00299), TX (T104704419), VT (VT-0015), VA (460194), WA (C954), US Army Corps of Engineers, USDA (Permit #P330-13-00067), USFWS (Permit #LE2069641).

320 Forbes Boulevard, Mansfield, MA 02048-1806
508-822-9300 (Fax) 508-822-3288 800-624-9220 - www.alphalab.com

Project Name: 229 HOMER ST.
Project Number: Not Specified

Lab Number: L1736370
Report Date: 10/30/17

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L1736370-01	START-UP DISCHARGE	SOIL_VAPOR	OLEAN, NY	10/09/17 14:57	10/09/17

Project Name: 229 HOMER ST.
Project Number: Not Specified

Lab Number: L1736370
Report Date: 10/30/17

Case Narrative

The samples were received in accordance with the Chain of Custody and no significant deviations were encountered during the preparation or analysis unless otherwise noted. Sample Receipt, Container Information, and the Chain of Custody are located at the back of the report.

Results contained within this report relate only to the samples submitted under this Alpha Lab Number and meet NELAP requirements for all NELAP accredited parameters unless otherwise noted in the following narrative. The data presented in this report is organized by parameter (i.e. VOC, SVOC, etc.). Sample specific Quality Control data (i.e. Surrogate Spike Recovery) is reported at the end of the target analyte list for each individual sample, followed by the Laboratory Batch Quality Control at the end of each parameter. Tentatively Identified Compounds (TICs), if requested, are reported for compounds identified to be present and are not part of the method/program Target Compound List, even if only a subset of the TCL are being reported. If a sample was re-analyzed or re-extracted due to a required quality control corrective action and if both sets of data are reported, the Laboratory ID of the re-analysis or re-extraction is designated with an "R" or "RE", respectively. When multiple Batch Quality Control elements are reported (e.g. more than one LCS), the associated samples for each element are noted in the grey shaded header line of each data table. Any Laboratory Batch, Sample Specific % recovery or RPD value that is outside the listed Acceptance Criteria is bolded in the report. All specific QC information is also incorporated in the Data Usability format of our Data Merger tool where it can be reviewed along with any associated usability implications. Soil/sediments, solids and tissues are reported on a dry weight basis unless otherwise noted. Definitions of all data qualifiers and acronyms used in this report are provided in the Glossary located at the back of the report.

In reference to questions H (CAM) or 4 (RCP) when "NO" is checked, the performance criteria for CAM and RCP methods allow for some quality control failures to occur and still be within method compliance. In these instances the specific failure is not narrated but noted in the associated QC table. The information is also incorporated in the Data Usability format of our Data Merger tool where it can be reviewed along with any associated usability implications.

Please see the associated ADEx data file for a comparison of laboratory reporting limits that were achieved with the regulatory Numerical Standards requested on the Chain of Custody.

HOLD POLICY
For samples submitted on hold, Alpha's policy is to hold samples (with the exception of Air canisters) free of charge for 21 calendar days from the date the project is completed. After 21 calendar days, we will dispose of all samples submitted including those put on hold unless you have contacted your Client Service Representative and made arrangements for Alpha to continue to hold the samples. Air canisters will be disposed after 3 business days from the date the project is completed.

Please contact Client Services at 800-624-9220 with any questions.

Project Name:	229 HOMER ST.	**Lab Number:**	L1736370
Project Number:	Not Specified	**Report Date:**	10/30/17

Case Narrative (continued)

Report Submission

This report replaces the one previously issued on October 16, 2017. The report has been revised to report TICs at the request of the client.

Volatile Organics in Air

Canisters were released from the laboratory on October 3, 2017. The canister certification results are provided as an addendum.

L1736370-01: The sample has elevated detection limits due to the dilution required by the elevated concentrations of target compounds in the sample.

L1736370-01 The presence of Acetone could not be determined in this sample due to a non-target compound interfering with the identification and quantification of this compound.

Petroleum Hydrocarbons in Air

All significant concentrations of non-petroleum VOCs detected in the TO-15 analysis were subtracted from the corresponding hydrocarbon ranges.

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

Authorized Signature: Christopher J. Anderson

Title: Technical Director/Representative Date: 10/30/17

AIR

Project Name: 229 HOMER ST. ***Lab Number:*** L1736370

Project Number: Not Specified ***Report Date:*** 10/30/17

SAMPLE RESULTS

Lab ID: L1736370-01 D
Client ID: START-UP DISCHARGE
Sample Location: OLEAN, NY
Matrix: Soil_Vapor
Anaytical Method: 48,TO-15
Analytical Date: 10/13/17 04:08
Analyst: MB

Date Collected: 10/09/17 14:57
Date Received: 10/09/17
Field Prep: Not Specified

	ppbV			ug/m3				
Parameter	**Results**	**RL**	**MDL**	**Results**	**RL**	**MDL**	**Qualifier**	**Dilution Factor**
Volatile Organics in Air - Mansfield Lab								
Dichlorodifluoromethane	ND	15.0	--	ND	74.2	--		74.85
Chloromethane	ND	15.0	--	ND	31.0	--		74.85
Freon-114	ND	15.0	--	ND	105	--		74.85
Vinyl chloride	ND	15.0	--	ND	38.3	--		74.85
1,3-Butadiene	ND	15.0	--	ND	33.2	--		74.85
Bromomethane	ND	15.0	--	ND	58.2	--		74.85
Chloroethane	ND	15.0	--	ND	39.6	--		74.85
Ethanol	26400	374	--	49700	705	--		74.85
Vinyl bromide	ND	15.0	--	ND	65.6	--		74.85
Acetone	ND	74.8	--	ND	178	--		74.85
Trichlorofluoromethane	ND	15.0	--	ND	84.3	--		74.85
Isopropanol	ND	37.4	--	ND	91.9	--		74.85
1,1-Dichloroethene	ND	15.0	--	ND	59.5	--		74.85
Tertiary butyl Alcohol	ND	37.4	--	ND	113	--		74.85
Methylene chloride	ND	37.4	--	ND	130	--		74.85
3-Chloropropene	ND	15.0	--	ND	47.0	--		74.85
Carbon disulfide	ND	15.0	--	ND	46.7	--		74.85
Freon-113	ND	15.0	--	ND	115	--		74.85
trans-1,2-Dichloroethene	ND	15.0	--	ND	59.5	--		74.85
1,1-Dichloroethane	ND	15.0	--	ND	60.7	--		74.85
Methyl tert butyl ether	ND	15.0	--	ND	54.1	--		74.85
2-Butanone	99.6	37.4	--	294	110	--		74.85
cis-1,2-Dichloroethene	ND	15.0	--	ND	59.5	--		74.85
Ethyl Acetate	ND	37.4	--	ND	135	--		74.85

Project Name: 229 HOMER ST. ***Lab Number:*** L1736370

Project Number: Not Specified ***Report Date:*** 10/30/17

SAMPLE RESULTS

Lab ID: L1736370-01 D Date Collected: 10/09/17 14:57

Client ID: START-UP DISCHARGE Date Received: 10/09/17

Sample Location: OLEAN, NY Field Prep: Not Specified

	ppbV			ug/m3				
Parameter	**Results**	**RL**	**MDL**	**Results**	**RL**	**MDL**	**Qualifier**	**Dilution Factor**
Volatile Organics in Air - Mansfield Lab								
Chloroform	ND	15.0	--	ND	73.3	--		74.85
Tetrahydrofuran	248	37.4	--	731	110	--		74.85
1,2-Dichloroethane	ND	15.0	--	ND	60.7	--		74.85
n-Hexane	ND	15.0	--	ND	52.9	--		74.85
1,1,1-Trichloroethane	ND	15.0	--	ND	81.8	--		74.85
Benzene	ND	15.0	--	ND	47.9	--		74.85
Carbon tetrachloride	ND	15.0	--	ND	94.4	--		74.85
Cyclohexane	ND	15.0	--	ND	51.6	--		74.85
1,2-Dichloropropane	ND	15.0	--	ND	69.3	--		74.85
Bromodichloromethane	ND	15.0	--	ND	100	--		74.85
1,4-Dioxane	ND	15.0	--	ND	54.1	--		74.85
Trichloroethene	ND	15.0	--	ND	80.6	--		74.85
2,2,4-Trimethylpentane	27.0	15.0	--	126	70.1	--		74.85
Heptane	ND	15.0	--	ND	61.5	--		74.85
cis-1,3-Dichloropropene	ND	15.0	--	ND	68.1	--		74.85
4-Methyl-2-pentanone	ND	37.4	--	ND	153	--		74.85
trans-1,3-Dichloropropene	ND	15.0	--	ND	68.1	--		74.85
1,1,2-Trichloroethane	ND	15.0	--	ND	81.8	--		74.85
Toluene	ND	15.0	--	ND	56.5	--		74.85
2-Hexanone	ND	15.0	--	ND	61.5	--		74.85
Dibromochloromethane	ND	15.0	--	ND	128	--		74.85
1,2-Dibromoethane	ND	15.0	--	ND	115	--		74.85
Tetrachloroethene	ND	15.0	--	ND	102	--		74.85
Chlorobenzene	ND	15.0	--	ND	69.1	--		74.85
Ethylbenzene	ND	15.0	--	ND	65.2	--		74.85
p/m-Xylene	ND	29.9	--	ND	130	--		74.85
Bromoform	ND	15.0	--	ND	155	--		74.85
Styrene	ND	15.0	--	ND	63.9	--		74.85

Project Name: 229 HOMER ST. ***Lab Number:*** L1736370

Project Number: Not Specified ***Report Date:*** 10/30/17

SAMPLE RESULTS

Lab ID: L1736370-01 D Date Collected: 10/09/17 14:57

Client ID: START-UP DISCHARGE Date Received: 10/09/17

Sample Location: OLEAN, NY Field Prep: Not Specified

	ppbV			ug/m3				
Parameter	**Results**	**RL**	**MDL**	**Results**	**RL**	**MDL**	**Qualifier**	**Dilution Factor**
Volatile Organics in Air - Mansfield Lab								
1,1,2,2-Tetrachloroethane	ND	15.0	--	ND	103	--		74.85
o-Xylene	ND	15.0	--	ND	65.2	--		74.85
4-Ethyltoluene	ND	15.0	--	ND	73.7	--		74.85
1,3,5-Trimethylbenzene	ND	15.0	--	ND	73.7	--		74.85
1,2,4-Trimethylbenzene	ND	15.0	--	ND	73.7	--		74.85
Benzyl chloride	ND	15.0	--	ND	77.7	--		74.85
1,3-Dichlorobenzene	ND	15.0	--	ND	90.2	--		74.85
1,4-Dichlorobenzene	ND	15.0	--	ND	90.2	--		74.85
1,2-Dichlorobenzene	ND	15.0	--	ND	90.2	--		74.85
1,2,4-Trichlorobenzene	ND	15.0	--	ND	111	--		74.85
Hexachlorobutadiene	ND	15.0	--	ND	160	--		74.85

	Results	**Qualifier**	**Units**	**RDL**	**Dilution Factor**
Tentatively Identified Compounds					
Methyl Alcohol	670	NJ	ppbV		74.85
Hexane, 2,4-dimethyl-	710	NJ	ppbV		74.85
Pentane, 2,3-dimethyl-	1200	NJ	ppbV		74.85
Butane, 2,2-dimethyl-	1600	NJ	ppbV		74.85
Pentane, 2,4-dimethyl-	2200	NJ	ppbV		74.85
Butane, 2-Methyl-	1200	NJ	ppbV		74.85
Pentane, 2,2-dimethyl-	960	NJ	ppbV		74.85
unknown cycloalkane	560	J	ppbV		74.85
Butane, 2,3-Dimethyl-	3000	NJ	ppbV		74.85
Hexane, 2,5-dimethyl-	950	NJ	ppbV		74.85

Project Name: 229 HOMER ST.
Project Number: Not Specified

Lab Number: L1736370
Report Date: 10/30/17

SAMPLE RESULTS

Lab ID: L1736370-01 D
Client ID: START-UP DISCHARGE
Sample Location: OLEAN, NY

Date Collected: 10/09/17 14:57
Date Received: 10/09/17
Field Prep: Not Specified

Parameter	ppbV Results	ppbV RL	ppbV MDL	ug/m3 Results	ug/m3 RL	ug/m3 MDL	Qualifier	Dilution Factor
Volatile Organics in Air - Mansfield Lab								

	Results	Qualifier	Units	RDL	Dilution Factor
Tentatively Identified Compounds					

Internal Standard	% Recovery	Qualifier	Acceptance Criteria
1,4-Difluorobenzene	111		60-140
Bromochloromethane	109		60-140
chlorobenzene-d5	115		60-140

Project Name: 229 HOMER ST.
Project Number: Not Specified
Lab Number: L1736370
Report Date: 10/30/17

Method Blank Analysis
Batch Quality Control

Analytical Method: 48,TO-15
Analytical Date: 10/12/17 15:03

Parameter	ppbV Results	ppbV RL	ppbV MDL	ug/m3 Results	ug/m3 RL	ug/m3 MDL	Qualifier	Dilution Factor
Volatile Organics in Air - Mansfield Lab for sample(s): 01 Batch: WG1051746-4								
Propylene	ND	0.500	--	ND	0.861	--		1
Dichlorodifluoromethane	ND	0.200	--	ND	0.989	--		1
Chloromethane	ND	0.200	--	ND	0.413	--		1
Freon-114	ND	0.200	--	ND	1.40	--		1
Vinyl chloride	ND	0.200	--	ND	0.511	--		1
1,3-Butadiene	ND	0.200	--	ND	0.442	--		1
Bromomethane	ND	0.200	--	ND	0.777	--		1
Chloroethane	ND	0.200	--	ND	0.528	--		1
Ethanol	ND	5.00	--	ND	9.42	--		1
Vinyl bromide	ND	0.200	--	ND	0.874	--		1
Acetone	ND	1.00	--	ND	2.38	--		1
Trichlorofluoromethane	ND	0.200	--	ND	1.12	--		1
Isopropanol	ND	0.500	--	ND	1.23	--		1
1,1-Dichloroethene	ND	0.200	--	ND	0.793	--		1
Tertiary butyl Alcohol	ND	0.500	--	ND	1.52	--		1
Methylene chloride	ND	0.500	--	ND	1.74	--		1
3-Chloropropene	ND	0.200	--	ND	0.626	--		1
Carbon disulfide	ND	0.200	--	ND	0.623	--		1
Freon-113	ND	0.200	--	ND	1.53	--		1
trans-1,2-Dichloroethene	ND	0.200	--	ND	0.793	--		1
1,1-Dichloroethane	ND	0.200	--	ND	0.809	--		1
Methyl tert butyl ether	ND	0.200	--	ND	0.721	--		1
Vinyl acetate	ND	1.00	--	ND	3.52	--		1
2-Butanone	ND	0.500	--	ND	1.47	--		1
cis-1,2-Dichloroethene	ND	0.200	--	ND	0.793	--		1

Project Name: 229 HOMER ST.
Project Number: Not Specified
Lab Number: L1736370
Report Date: 10/30/17

Method Blank Analysis
Batch Quality Control

Analytical Method: 48,TO-15
Analytical Date: 10/12/17 15:03

Parameter	ppbV Results	ppbV RL	ppbV MDL	ug/m3 Results	ug/m3 RL	ug/m3 MDL	Qualifier	Dilution Factor
Volatile Organics in Air - Mansfield Lab for sample(s): 01 Batch: WG1051746-4								
Ethyl Acetate	ND	0.500	--	ND	1.80	--		1
Chloroform	ND	0.200	--	ND	0.977	--		1
Tetrahydrofuran	ND	0.500	--	ND	1.47	--		1
1,2-Dichloroethane	ND	0.200	--	ND	0.809	--		1
n-Hexane	ND	0.200	--	ND	0.705	--		1
1,1,1-Trichloroethane	ND	0.200	--	ND	1.09	--		1
Benzene	ND	0.200	--	ND	0.639	--		1
Carbon tetrachloride	ND	0.200	--	ND	1.26	--		1
Cyclohexane	ND	0.200	--	ND	0.688	--		1
1,2-Dichloropropane	ND	0.200	--	ND	0.924	--		1
Bromodichloromethane	ND	0.200	--	ND	1.34	--		1
1,4-Dioxane	ND	0.200	--	ND	0.721	--		1
Trichloroethene	ND	0.200	--	ND	1.07	--		1
2,2,4-Trimethylpentane	ND	0.200	--	ND	0.934	--		1
Heptane	ND	0.200	--	ND	0.820	--		1
cis-1,3-Dichloropropene	ND	0.200	--	ND	0.908	--		1
4-Methyl-2-pentanone	ND	0.500	--	ND	2.05	--		1
trans-1,3-Dichloropropene	ND	0.200	--	ND	0.908	--		1
1,1,2-Trichloroethane	ND	0.200	--	ND	1.09	--		1
Toluene	ND	0.200	--	ND	0.754	--		1
2-Hexanone	ND	0.200	--	ND	0.820	--		1
Dibromochloromethane	ND	0.200	--	ND	1.70	--		1
1,2-Dibromoethane	ND	0.200	--	ND	1.54	--		1
Tetrachloroethene	ND	0.200	--	ND	1.36	--		1
Chlorobenzene	ND	0.200	--	ND	0.921	--		1

Project Name: 229 HOMER ST.
Project Number: Not Specified
Lab Number: L1736370
Report Date: 10/30/17

Method Blank Analysis
Batch Quality Control

Analytical Method: 48,TO-15
Analytical Date: 10/12/17 15:03

Parameter	ppbV Results	ppbV RL	ppbV MDL	ug/m3 Results	ug/m3 RL	ug/m3 MDL	Qualifier	Dilution Factor
Volatile Organics in Air - Mansfield Lab for sample(s): 01 Batch: WG1051746-4								
Ethylbenzene	ND	0.200	--	ND	0.869	--		1
p/m-Xylene	ND	0.400	--	ND	1.74	--		1
Bromoform	ND	0.200	--	ND	2.07	--		1
Styrene	ND	0.200	--	ND	0.852	--		1
1,1,2,2-Tetrachloroethane	ND	0.200	--	ND	1.37	--		1
o-Xylene	ND	0.200	--	ND	0.869	--		1
4-Ethyltoluene	ND	0.200	--	ND	0.983	--		1
1,3,5-Trimethylbenzene	ND	0.200	--	ND	0.983	--		1
1,2,4-Trimethylbenzene	ND	0.200	--	ND	0.983	--		1
Benzyl chloride	ND	0.200	--	ND	1.04	--		1
1,3-Dichlorobenzene	ND	0.200	--	ND	1.20	--		1
1,4-Dichlorobenzene	ND	0.200	--	ND	1.20	--		1
1,2-Dichlorobenzene	ND	0.200	--	ND	1.20	--		1
1,2,4-Trichlorobenzene	ND	0.200	--	ND	1.48	--		1
Hexachlorobutadiene	ND	0.200	--	ND	2.13	--		1

	Results	Qualifier	Units	RDL	Dilution Factor
Tentatively Identified Compounds					
No Tentatively Identified Compounds					

Lab Control Sample Analysis
Batch Quality Control

Project Name: 229 HOMER ST.
Project Number: Not Specified

Lab Number: L1736370
Report Date: 10/30/17

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics in Air - Mansfield Lab Associated sample(s): 01 Batch: WG1051746-3								
Chlorodifluoromethane	95		-		70-130	-		
Propylene	109		-		70-130	-		
Propane	90		-		70-130	-		
Dichlorodifluoromethane	109		-		70-130	-		
Chloromethane	109		-		70-130	-		
1,2-Dichloro-1,1,2,2-tetrafluoroethane	93		-		70-130	-		
Methanol	94		-		70-130	-		
Vinyl chloride	102		-		70-130	-		
1,3-Butadiene	108		-		70-130	-		
Butane	98		-		70-130	-		
Bromomethane	87		-		70-130	-		
Chloroethane	95		-		70-130	-		
Ethyl Alcohol	101		-		70-130	-		
Dichlorofluoromethane	87		-		70-130	-		
Vinyl bromide	79		-		70-130	-		
Acrolein	92		-		70-130	-		
Acetone	107		-		70-130	-		
Acetonitrile	101		-		70-130	-		
Trichlorofluoromethane	86		-		70-130	-		
iso-Propyl Alcohol	104		-		70-130	-		
Acrylonitrile	96		-		70-130	-		
Pentane	95		-		70-130	-		
Ethyl ether	97		-		70-130	-		

Lab Control Sample Analysis

Batch Quality Control

Project Name: 229 HOMER ST.

Project Number: Not Specified

Lab Number: L1736370

Report Date: 10/30/17

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics in Air - Mansfield Lab Associated sample(s): 01 Batch: WG1051746-3								
1,1-Dichloroethene	94		-		70-130	-		
tert-Butyl Alcohol	77		-		70-130	-		
Methylene chloride	108		-		70-130	-		
3-Chloropropene	104		-		70-130	-		
Carbon disulfide	85		-		70-130	-		
1,1,2-Trichloro-1,2,2-Trifluoroethane	83		-		70-130	-		
trans-1,2-Dichloroethene	89		-		70-130	-		
1,1-Dichloroethane	91		-		70-130	-		
Methyl tert butyl ether	77		-		70-130	-		
Vinyl acetate	79		-		70-130	-		
2-Butanone	89		-		70-130	-		
cis-1,2-Dichloroethene	89		-		70-130	-		
Ethyl Acetate	96		-		70-130	-		
Chloroform	88		-		70-130	-		
Tetrahydrofuran	89		-		70-130	-		
2,2-Dichloropropane	76		-		70-130	-		
1,2-Dichloroethane	92		-		70-130	-		
n-Hexane	113		-		70-130	-		
Isopropyl Ether	95		-		70-130	-		
Ethyl-Tert-Butyl-Ether	92		-		70-130	-		
1,1,1-Trichloroethane	102		-		70-130	-		
1,1-Dichloropropene	100		-		70-130	-		
Benzene	104		-		70-130	-		

Lab Control Sample Analysis
Batch Quality Control

Project Name: 229 HOMER ST.
Project Number: Not Specified

Lab Number: L1736370
Report Date: 10/30/17

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics in Air - Mansfield Lab Associated sample(s): 01 Batch: WG1051746-3								
Carbon tetrachloride	104		-		70-130	-		
Cyclohexane	107		-		70-130	-		
Tertiary-Amyl Methyl Ether	86		-		70-130	-		
Dibromomethane	100		-		70-130	-		
1,2-Dichloropropane	116		-		70-130	-		
Bromodichloromethane	111		-		70-130	-		
1,4-Dioxane	103		-		70-130	-		
Trichloroethene	99		-		70-130	-		
2,2,4-Trimethylpentane	115		-		70-130	-		
Methyl Methacrylate	**131**	Q	-		70-130	-		
Heptane	118		-		70-130	-		
cis-1,3-Dichloropropene	114		-		70-130	-		
4-Methyl-2-pentanone	122		-		70-130	-		
trans-1,3-Dichloropropene	98		-		70-130	-		
1,1,2-Trichloroethane	109		-		70-130	-		
Toluene	89		-		70-130	-		
1,3-Dichloropropane	92		-		70-130	-		
2-Hexanone	107		-		70-130	-		
Dibromochloromethane	94		-		70-130	-		
1,2-Dibromoethane	91		-		70-130	-		
Butyl Acetate	85		-		70-130	-		
Octane	85		-		70-130	-		
Tetrachloroethene	82		-		70-130	-		

Lab Control Sample Analysis

Batch Quality Control

Project Name: 229 HOMER ST.

Project Number: Not Specified

Lab Number: L1736370

Report Date: 10/30/17

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics in Air - Mansfield Lab Associated sample(s): 01 Batch: WG1051746-3								
1,1,1,2-Tetrachloroethane	84		-		70-130	-		
Chlorobenzene	90		-		70-130	-		
Ethylbenzene	91		-		70-130	-		
p/m-Xylene	91		-		70-130	-		
Bromoform	93		-		70-130	-		
Styrene	91		-		70-130	-		
1,1,2,2-Tetrachloroethane	106		-		70-130	-		
o-Xylene	95		-		70-130	-		
1,2,3-Trichloropropane	95		-		70-130	-		
Nonane (C9)	104		-		70-130	-		
Isopropylbenzene	88		-		70-130	-		
Bromobenzene	92		-		70-130	-		
o-Chlorotoluene	93		-		70-130	-		
n-Propylbenzene	88		-		70-130	-		
p-Chlorotoluene	88		-		70-130	-		
4-Ethyltoluene	94		-		70-130	-		
1,3,5-Trimethylbenzene	94		-		70-130	-		
tert-Butylbenzene	89		-		70-130	-		
1,2,4-Trimethylbenzene	99		-		70-130	-		
Decane (C10)	103		-		70-130	-		
Benzyl chloride	105		-		70-130	-		
1,3-Dichlorobenzene	92		-		70-130	-		
1,4-Dichlorobenzene	93		-		70-130	-		

Lab Control Sample Analysis
Batch Quality Control

Project Name: 229 HOMER ST.
Project Number: Not Specified

Lab Number: L1736370
Report Date: 10/30/17

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics in Air - Mansfield Lab Associated sample(s): 01 Batch: WG1051746-3								
sec-Butylbenzene	92		-		70-130	-		
p-Isopropyltoluene	84		-		70-130	-		
1,2-Dichlorobenzene	93		-		70-130	-		
n-Butylbenzene	100		-		70-130	-		
1,2-Dibromo-3-chloropropane	106		-		70-130	-		
Undecane	110		-		70-130	-		
Dodecane (C12)	120		-		70-130	-		
1,2,4-Trichlorobenzene	97		-		70-130	-		
Naphthalene	94		-		70-130	-		
1,2,3-Trichlorobenzene	88		-		70-130	-		
Hexachlorobutadiene	86		-		70-130	-		

Lab Duplicate Analysis
Batch Quality Control

Project Name: 229 HOMER ST.
Project Number: Not Specified

Lab Number: L1736370
Report Date: 10/30/17

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Volatile Organics in Air - Mansfield Lab Associated sample(s): 01 QC Batch ID: WG1051746-5 QC Sample: L1736360-03 Client ID: DUP Sample						
Dichlorodifluoromethane	0.361	0.411	ppbV	13		25
Chloromethane	0.396	0.493	ppbV	22		25
1,2-Dichloro-1,1,2,2-tetrafluoroethane	ND	ND	ppbV	NC		25
1,3-Butadiene	0.256	0.270	ppbV	5		25
Bromomethane	ND	ND	ppbV	NC		25
Chloroethane	ND	ND	ppbV	NC		25
Ethyl Alcohol	152	150	ppbV	1		25
Vinyl bromide	ND	ND	ppbV	NC		25
Acetone	33.4	34.3	ppbV	3		25
Trichlorofluoromethane	0.229	0.244	ppbV	6		25
iso-Propyl Alcohol	2.78	2.87	ppbV	3		25
tert-Butyl Alcohol	ND	ND	ppbV	NC		25
Methylene chloride	0.525	0.558	ppbV	6		25
3-Chloropropene	ND	ND	ppbV	NC		25
Carbon disulfide	ND	ND	ppbV	NC		25
1,1,2-Trichloro-1,2,2-Trifluoroethane	ND	ND	ppbV	NC		25
trans-1,2-Dichloroethene	ND	ND	ppbV	NC		25
1,1-Dichloroethane	ND	ND	ppbV	NC		25
Methyl tert butyl ether	ND	ND	ppbV	NC		25
2-Butanone	12.5	12.5	ppbV	0		25
Ethyl Acetate	0.877	0.791	ppbV	10		25

Lab Duplicate Analysis
Batch Quality Control

Project Name: 229 HOMER ST.
Project Number: Not Specified

Lab Number: L1736370
Report Date: 10/30/17

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Volatile Organics in Air - Mansfield Lab Associated sample(s): 01 QC Batch ID: WG1051746-5 QC Sample: L1736360-03 Client ID: DUP Sample						
Chloroform	ND	ND	ppbV	NC		25
Tetrahydrofuran	ND	ND	ppbV	NC		25
1,2-Dichloroethane	ND	ND	ppbV	NC		25
n-Hexane	4.47	4.51	ppbV	1		25
Benzene	2.85	2.90	ppbV	2		25
Cyclohexane	3.54	3.60	ppbV	2		25
1,2-Dichloropropane	ND	ND	ppbV	NC		25
Bromodichloromethane	ND	ND	ppbV	NC		25
1,4-Dioxane	ND	ND	ppbV	NC		25
2,2,4-Trimethylpentane	2.54	2.57	ppbV	1		25
Heptane	3.32	3.34	ppbV	1		25
cis-1,3-Dichloropropene	ND	ND	ppbV	NC		25
4-Methyl-2-pentanone	ND	ND	ppbV	NC		25
trans-1,3-Dichloropropene	ND	ND	ppbV	NC		25
1,1,2-Trichloroethane	ND	ND	ppbV	NC		25
Toluene	10.4	10.7	ppbV	3		25
2-Hexanone	ND	0.200	ppbV	NC		25
Dibromochloromethane	ND	ND	ppbV	NC		25
1,2-Dibromoethane	ND	ND	ppbV	NC		25
Chlorobenzene	ND	ND	ppbV	NC		25
Ethylbenzene	1.96	2.05	ppbV	4		25

Lab Duplicate Analysis
Batch Quality Control

Project Name: 229 HOMER ST.
Project Number: Not Specified

Lab Number: L1736370
Report Date: 10/30/17

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Volatile Organics in Air - Mansfield Lab Associated sample(s): 01 QC Batch ID: WG1051746-5 QC Sample: L1736360-03 Client ID: DUP Sample						
p/m-Xylene	7.48	7.82	ppbV	4		25
Bromoform	ND	ND	ppbV	NC		25
Styrene	2.12	2.15	ppbV	1		25
1,1,2,2-Tetrachloroethane	ND	ND	ppbV	NC		25
o-Xylene	2.86	2.91	ppbV	2		25
4-Ethyltoluene	1.29	1.32	ppbV	2		25
1,3,5-Trimethylbenzene	2.00	2.03	ppbV	1		25
1,2,4-Trimethylbenzene	6.95	7.04	ppbV	1		25
Benzyl chloride	ND	ND	ppbV	NC		25
1,3-Dichlorobenzene	ND	ND	ppbV	NC		25
1,4-Dichlorobenzene	ND	ND	ppbV	NC		25
1,2-Dichlorobenzene	ND	ND	ppbV	NC		25
1,2,4-Trichlorobenzene	ND	ND	ppbV	NC		25
Hexachlorobutadiene	ND	ND	ppbV	NC		25

Project Name: 229 HOMER ST.
Project Number: Not Specified
Lab Number: L1736370
Report Date: 10/30/17

SAMPLE RESULTS

Lab ID:	L1736370-01 D	Date Collected:	10/09/17 14:57
Client ID:	START-UP DISCHARGE	Date Received:	10/09/17
Sample Location:	OLEAN, NY	Field Prep:	Not Specified
Matrix:	Soil_Vapor		
Analytical Method:	96,APH		
Analytical Date:	10/13/17 04:08		
Analyst:	MB		

Quality Control Information

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Petroleum Hydrocarbons in Air - Mansfield Lab						
1,3-Butadiene	ND		ug/m3	38	--	75
Methyl tert butyl ether	ND		ug/m3	52	--	75
Benzene	ND		ug/m3	45	--	75
C5-C8 Aliphatics, Adjusted	73000		ug/m3	750	--	75
Toluene	ND		ug/m3	68	--	75
Ethylbenzene	ND		ug/m3	68	--	75
p/m-Xylene	ND		ug/m3	68	--	75
o-Xylene	ND		ug/m3	68	--	75
Naphthalene	ND		ug/m3	82	--	75
C9-C12 Aliphatics, Adjusted	11000		ug/m3	750	--	75
C9-C10 Aromatics Total	ND		ug/m3	750	--	75

Internal Standard	% Recovery	Qualifier	Acceptance Criteria
1,4-Difluorobenzene	112		50-200
Bromochloromethane	114		50-200
Chlorobenzene-d5	120		50-200

Project Name: 229 HOMER ST.
Project Number: Not Specified
Lab Number: L1736370
Report Date: 10/30/17

Method Blank Analysis
Batch Quality Control

Analytical Method: 96,APH
Analytical Date: 10/12/17 15:03
Analyst: RY

Parameter	Result	Qualifier	Units	RL	MDL
Petroleum Hydrocarbons in Air - Mansfield Lab for sample(s): 01 Batch: WG1051742-4					
1,3-Butadiene	ND		ug/m3	0.50	--
Methyl tert butyl ether	ND		ug/m3	0.70	--
Benzene	ND		ug/m3	0.60	--
C5-C8 Aliphatics, Adjusted	ND		ug/m3	10	--
Toluene	ND		ug/m3	0.90	--
Ethylbenzene	ND		ug/m3	0.90	--
p/m-Xylene	ND		ug/m3	0.90	--
o-Xylene	ND		ug/m3	0.90	--
Naphthalene	ND		ug/m3	1.1	--
C9-C12 Aliphatics, Adjusted	ND		ug/m3	10	--
C9-C10 Aromatics Total	ND		ug/m3	10	--

Lab Control Sample Analysis

Batch Quality Control

Project Name: 229 HOMER ST.

Project Number: Not Specified

Lab Number: L1736370

Report Date: 10/30/17

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Petroleum Hydrocarbons in Air - Mansfield Lab Associated sample(s): 01 Batch: WG1051742-3								
1,3-Butadiene	116		-		70-130	-		
Methyl tert butyl ether	94		-		70-130	-		
Benzene	100		-		70-130	-		
C5-C8 Aliphatics, Adjusted	110		-		70-130	-		
Toluene	90		-		70-130	-		
Ethylbenzene	90		-		70-130	-		
p/m-Xylene	90		-		70-130	-		
o-Xylene	95		-		70-130	-		
Naphthalene	109		-		50-150	-		
C9-C12 Aliphatics, Adjusted	103		-		70-130	-		
C9-C10 Aromatics Total	83		-		70-130	-		

Lab Duplicate Analysis
Batch Quality Control

Project Name: 229 HOMER ST.
Project Number: Not Specified

Lab Number: L1736370
Report Date: 10/30/17

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Petroleum Hydrocarbons in Air - Mansfield Lab Associated sample(s): 01 QC Batch ID: WG1051742-5 QC Sample: L1736314-02 Client ID: DUP Sample						
1,3-Butadiene	ND	ND	ug/m3	NC		30
Methyl tert butyl ether	ND	ND	ug/m3	NC		30
Benzene	ND	ND	ug/m3	NC		30
C5-C8 Aliphatics, Adjusted	210	210	ug/m3	0		30
Toluene	11	12	ug/m3	9		30
Ethylbenzene	3.4	3.6	ug/m3	6		30
p/m-Xylene	14	15	ug/m3	7		30
o-Xylene	4.6	4.7	ug/m3	2		30
Naphthalene	ND	ND	ug/m3	NC		30
C9-C12 Aliphatics, Adjusted	390	420	ug/m3	7		30
C9-C10 Aromatics Total	36	39	ug/m3	8		30

Project Name: 229 HOMER ST.

Lab Number: L1736370

Project Number:

Report Date: 10/30/17

Canister and Flow Controller Information

Samplenum	Client ID	Media ID	Media Type	Date Prepared	Bottle Order	Cleaning Batch ID	Can Leak Check	Initial Pressure (in. Hg)	Pressure on Receipt (in. Hg)	Flow Controler Leak Chk	Flow Out mL/min	Flow In mL/min	% RPD
L1736370-01	START-UP DISCHARGE	172	2.7L Can	10/03/17	250621	L1735097-01	Pass	-30.0	-2.4	-	-	-	-

Project Name: BATCH CANISTER CERTIFICATION
Project Number: CANISTER QC BAT
Lab Number: L1735097
Report Date: 10/30/17

Air Canister Certification Results

Lab ID: L1735097-01
Client ID: CAN 183 SHELF 3
Sample Location:
Matrix: Air
Anaytical Method: 48,TO-15
Analytical Date: 09/29/17 23:31
Analyst: RY

Date Collected: 09/28/17 14:15
Date Received: 09/29/17
Field Prep: Not Specified

Parameter	ppbV Results	ppbV RL	ppbV MDL	ug/m3 Results	ug/m3 RL	ug/m3 MDL	Qualifier	Dilution Factor
Volatile Organics in Air - Mansfield Lab								
Chlorodifluoromethane	ND	0.200	--	ND	0.707	--		1
Propylene	ND	0.500	--	ND	0.861	--		1
Propane	ND	0.500	--	ND	0.902	--		1
Dichlorodifluoromethane	ND	0.200	--	ND	0.989	--		1
Chloromethane	ND	0.200	--	ND	0.413	--		1
Freon-114	ND	0.200	--	ND	1.40	--		1
Methanol	ND	5.00	--	ND	6.55	--		1
Vinyl chloride	ND	0.200	--	ND	0.511	--		1
1,3-Butadiene	ND	0.200	--	ND	0.442	--		1
Butane	ND	0.200	--	ND	0.475	--		1
Bromomethane	ND	0.200	--	ND	0.777	--		1
Chloroethane	ND	0.200	--	ND	0.528	--		1
Ethanol	ND	5.00	--	ND	9.42	--		1
Dichlorofluoromethane	ND	0.200	--	ND	0.842	--		1
Vinyl bromide	ND	0.200	--	ND	0.874	--		1
Acrolein	ND	0.500	--	ND	1.15	--		1
Acetone	ND	1.00	--	ND	2.38	--		1
Acetonitrile	ND	0.200	--	ND	0.336	--		1
Trichlorofluoromethane	ND	0.200	--	ND	1.12	--		1
Isopropanol	ND	0.500	--	ND	1.23	--		1
Acrylonitrile	ND	0.500	--	ND	1.09	--		1
Pentane	ND	0.200	--	ND	0.590	--		1
Ethyl ether	ND	0.200	--	ND	0.606	--		1
1,1-Dichloroethene	ND	0.200	--	ND	0.793	--		1
Tertiary butyl Alcohol	ND	0.500	--	ND	1.52	--		1

Project Name: BATCH CANISTER CERTIFICATION
Project Number: CANISTER QC BAT
Lab Number: L1735097
Report Date: 10/30/17

Air Canister Certification Results

Lab ID: L1735097-01
Client ID: CAN 183 SHELF 3
Sample Location:
Date Collected: 09/28/17 14:15
Date Received: 09/29/17
Field Prep: Not Specified

	ppbV			ug/m3				
Parameter	**Results**	**RL**	**MDL**	**Results**	**RL**	**MDL**	**Qualifier**	**Dilution Factor**
Volatile Organics in Air - Mansfield Lab								
Methylene chloride	ND	0.500	--	ND	1.74	--		1
3-Chloropropene	ND	0.200	--	ND	0.626	--		1
Carbon disulfide	ND	0.200	--	ND	0.623	--		1
Freon-113	ND	0.200	--	ND	1.53	--		1
trans-1,2-Dichloroethene	ND	0.200	--	ND	0.793	--		1
1,1-Dichloroethane	ND	0.200	--	ND	0.809	--		1
Methyl tert butyl ether	ND	0.200	--	ND	0.721	--		1
Vinyl acetate	ND	1.00	--	ND	3.52	--		1
2-Butanone	ND	0.500	--	ND	1.47	--		1
cis-1,2-Dichloroethene	ND	0.200	--	ND	0.793	--		1
Ethyl Acetate	ND	0.500	--	ND	1.80	--		1
Chloroform	ND	0.200	--	ND	0.977	--		1
Tetrahydrofuran	ND	0.500	--	ND	1.47	--		1
2,2-Dichloropropane	ND	0.200	--	ND	0.924	--		1
1,2-Dichloroethane	ND	0.200	--	ND	0.809	--		1
n-Hexane	ND	0.200	--	ND	0.705	--		1
Diisopropyl ether	ND	0.200	--	ND	0.836	--		1
tert-Butyl Ethyl Ether	ND	0.200	--	ND	0.836	--		1
1,1,1-Trichloroethane	ND	0.200	--	ND	1.09	--		1
1,1-Dichloropropene	ND	0.200	--	ND	0.908	--		1
Benzene	ND	0.200	--	ND	0.639	--		1
Carbon tetrachloride	ND	0.200	--	ND	1.26	--		1
Cyclohexane	ND	0.200	--	ND	0.688	--		1
tert-Amyl Methyl Ether	ND	0.200	--	ND	0.836	--		1
Dibromomethane	ND	0.200	--	ND	1.42	--		1
1,2-Dichloropropane	ND	0.200	--	ND	0.924	--		1
Bromodichloromethane	ND	0.200	--	ND	1.34	--		1
1,4-Dioxane	ND	0.200	--	ND	0.721	--		1

Project Name: BATCH CANISTER CERTIFICATION
Project Number: CANISTER QC BAT
Lab Number: L1735097
Report Date: 10/30/17

Air Canister Certification Results

Lab ID: L1735097-01
Client ID: CAN 183 SHELF 3
Sample Location:
Date Collected: 09/28/17 14:15
Date Received: 09/29/17
Field Prep: Not Specified

	ppbV			ug/m3				
Parameter	**Results**	**RL**	**MDL**	**Results**	**RL**	**MDL**	**Qualifier**	**Dilution Factor**
Volatile Organics in Air - Mansfield Lab								
Trichloroethene	ND	0.200	--	ND	1.07	--		1
2,2,4-Trimethylpentane	ND	0.200	--	ND	0.934	--		1
Methyl Methacrylate	ND	0.500	--	ND	2.05	--		1
Heptane	ND	0.200	--	ND	0.820	--		1
cis-1,3-Dichloropropene	ND	0.200	--	ND	0.908	--		1
4-Methyl-2-pentanone	ND	0.500	--	ND	2.05	--		1
trans-1,3-Dichloropropene	ND	0.200	--	ND	0.908	--		1
1,1,2-Trichloroethane	ND	0.200	--	ND	1.09	--		1
Toluene	ND	0.200	--	ND	0.754	--		1
1,3-Dichloropropane	ND	0.200	--	ND	0.924	--		1
2-Hexanone	ND	0.200	--	ND	0.820	--		1
Dibromochloromethane	ND	0.200	--	ND	1.70	--		1
1,2-Dibromoethane	ND	0.200	--	ND	1.54	--		1
Butyl acetate	ND	0.500	--	ND	2.38	--		1
Octane	ND	0.200	--	ND	0.934	--		1
Tetrachloroethene	ND	0.200	--	ND	1.36	--		1
1,1,1,2-Tetrachloroethane	ND	0.200	--	ND	1.37	--		1
Chlorobenzene	ND	0.200	--	ND	0.921	--		1
Ethylbenzene	ND	0.200	--	ND	0.869	--		1
p/m-Xylene	ND	0.400	--	ND	1.74	--		1
Bromoform	ND	0.200	--	ND	2.07	--		1
Styrene	ND	0.200	--	ND	0.852	--		1
1,1,2,2-Tetrachloroethane	ND	0.200	--	ND	1.37	--		1
o-Xylene	ND	0.200	--	ND	0.869	--		1
1,2,3-Trichloropropane	ND	0.200	--	ND	1.21	--		1
Nonane	ND	0.200	--	ND	1.05	--		1
Isopropylbenzene	ND	0.200	--	ND	0.983	--		1
Bromobenzene	ND	0.200	--	ND	0.793	--		1

Project Name: BATCH CANISTER CERTIFICATION
Project Number: CANISTER QC BAT
Lab Number: L1735097
Report Date: 10/30/17

Air Canister Certification Results

Lab ID: L1735097-01
Client ID: CAN 183 SHELF 3
Sample Location:
Date Collected: 09/28/17 14:15
Date Received: 09/29/17
Field Prep: Not Specified

	ppbV			ug/m3				
Parameter	**Results**	**RL**	**MDL**	**Results**	**RL**	**MDL**	**Qualifier**	**Dilution Factor**
Volatile Organics in Air - Mansfield Lab								
2-Chlorotoluene	ND	0.200	--	ND	1.04	--		1
n-Propylbenzene	ND	0.200	--	ND	0.983	--		1
4-Chlorotoluene	ND	0.200	--	ND	1.04	--		1
4-Ethyltoluene	ND	0.200	--	ND	0.983	--		1
1,3,5-Trimethylbenzene	ND	0.200	--	ND	0.983	--		1
tert-Butylbenzene	ND	0.200	--	ND	1.10	--		1
1,2,4-Trimethylbenzene	ND	0.200	--	ND	0.983	--		1
Decane	ND	0.200	--	ND	1.16	--		1
Benzyl chloride	ND	0.200	--	ND	1.04	--		1
1,3-Dichlorobenzene	ND	0.200	--	ND	1.20	--		1
1,4-Dichlorobenzene	ND	0.200	--	ND	1.20	--		1
sec-Butylbenzene	ND	0.200	--	ND	1.10	--		1
p-Isopropyltoluene	ND	0.200	--	ND	1.10	--		1
1,2-Dichlorobenzene	ND	0.200	--	ND	1.20	--		1
n-Butylbenzene	ND	0.200	--	ND	1.10	--		1
1,2-Dibromo-3-chloropropane	ND	0.200	--	ND	1.93	--		1
Undecane	ND	0.200	--	ND	1.28	--		1
Dodecane	ND	0.200	--	ND	1.39	--		1
1,2,4-Trichlorobenzene	ND	0.200	--	ND	1.48	--		1
Naphthalene	ND	0.200	--	ND	1.05	--		1
1,2,3-Trichlorobenzene	ND	0.200	--	ND	1.48	--		1
Hexachlorobutadiene	ND	0.200	--	ND	2.13	--		1

	Results	**Qualifier**	**Units**	**RDL**	**Dilution Factor**
Tentatively Identified Compounds					
No Tentatively Identified Compounds					

Project Name: BATCH CANISTER CERTIFICATION **Lab Number:** L1735097

Project Number: CANISTER QC BAT **Report Date:** 10/30/17

Air Canister Certification Results

Lab ID: L1735097-01 Date Collected: 09/28/17 14:15

Client ID: CAN 183 SHELF 3 Date Received: 09/29/17

Sample Location: Field Prep: Not Specified

	ppbV			ug/m3				
Parameter	**Results**	**RL**	**MDL**	**Results**	**RL**	**MDL**	**Qualifier**	**Dilution Factor**
Volatile Organics in Air - Mansfield Lab								

Internal Standard	% Recovery	Qualifier	Acceptance Criteria
1,4-Difluorobenzene	90		60-140
Bromochloromethane	91		60-140
chlorobenzene-d5	92		60-140

Project Name: BATCH CANISTER CERTIFICATION
Project Number: CANISTER QC BAT
Lab Number: L1735097
Report Date: 10/30/17

Air Canister Certification Results

Lab ID: L1735097-01
Client ID: CAN 183 SHELF 3
Sample Location:
Matrix: Air
Anaytical Method: 48,TO-15-SIM
Analytical Date: 09/29/17 23:31
Analyst: RY

Date Collected: 09/28/17 14:15
Date Received: 09/29/17
Field Prep: Not Specified

Parameter	ppbV Results	ppbV RL	ppbV MDL	ug/m3 Results	ug/m3 RL	ug/m3 MDL	Qualifier	Dilution Factor
Volatile Organics in Air by SIM - Mansfield Lab								
Dichlorodifluoromethane	ND	0.200	--	ND	0.989	--		1
Chloromethane	ND	0.200	--	ND	0.413	--		1
Freon-114	ND	0.050	--	ND	0.349	--		1
Vinyl chloride	ND	0.020	--	ND	0.051	--		1
1,3-Butadiene	ND	0.020	--	ND	0.044	--		1
Bromomethane	ND	0.020	--	ND	0.078	--		1
Chloroethane	ND	0.100	--	ND	0.264	--		1
Acetone	ND	1.00	--	ND	2.38	--		1
Trichlorofluoromethane	ND	0.050	--	ND	0.281	--		1
Acrylonitrile	ND	0.500	--	ND	1.09	--		1
1,1-Dichloroethene	ND	0.020	--	ND	0.079	--		1
Methylene chloride	ND	0.500	--	ND	1.74	--		1
Freon-113	ND	0.050	--	ND	0.383	--		1
Halothane	ND	0.050	--	ND	0.404	--		1
trans-1,2-Dichloroethene	ND	0.020	--	ND	0.079	--		1
1,1-Dichloroethane	ND	0.020	--	ND	0.081	--		1
Methyl tert butyl ether	ND	0.200	--	ND	0.721	--		1
2-Butanone	ND	0.500	--	ND	1.47	--		1
cis-1,2-Dichloroethene	ND	0.020	--	ND	0.079	--		1
Chloroform	ND	0.020	--	ND	0.098	--		1
1,2-Dichloroethane	ND	0.020	--	ND	0.081	--		1
1,1,1-Trichloroethane	ND	0.020	--	ND	0.109	--		1
Benzene	ND	0.100	--	ND	0.319	--		1
Carbon tetrachloride	ND	0.020	--	ND	0.126	--		1
1,2-Dichloropropane	ND	0.020	--	ND	0.092	--		1

Project Name: BATCH CANISTER CERTIFICATION
Project Number: CANISTER QC BAT
Lab Number: L1735097
Report Date: 10/30/17

Air Canister Certification Results

Lab ID: L1735097-01
Client ID: CAN 183 SHELF 3
Sample Location:
Date Collected: 09/28/17 14:15
Date Received: 09/29/17
Field Prep: Not Specified

	ppbV			ug/m3				
Parameter	**Results**	**RL**	**MDL**	**Results**	**RL**	**MDL**	**Qualifier**	**Dilution Factor**
Volatile Organics in Air by SIM - Mansfield Lab								
Bromodichloromethane	ND	0.020	--	ND	0.134	--		1
1,4-Dioxane	ND	0.100	--	ND	0.360	--		1
Trichloroethene	ND	0.020	--	ND	0.107	--		1
cis-1,3-Dichloropropene	ND	0.020	--	ND	0.091	--		1
4-Methyl-2-pentanone	ND	0.500	--	ND	2.05	--		1
trans-1,3-Dichloropropene	ND	0.020	--	ND	0.091	--		1
1,1,2-Trichloroethane	ND	0.020	--	ND	0.109	--		1
Toluene	ND	0.050	--	ND	0.188	--		1
Dibromochloromethane	ND	0.020	--	ND	0.170	--		1
1,2-Dibromoethane	ND	0.020	--	ND	0.154	--		1
Tetrachloroethene	ND	0.020	--	ND	0.136	--		1
1,1,1,2-Tetrachloroethane	ND	0.020	--	ND	0.137	--		1
Chlorobenzene	ND	0.100	--	ND	0.461	--		1
Ethylbenzene	ND	0.020	--	ND	0.087	--		1
p/m-Xylene	ND	0.040	--	ND	0.174	--		1
Bromoform	ND	0.020	--	ND	0.207	--		1
Styrene	ND	0.020	--	ND	0.085	--		1
1,1,2,2-Tetrachloroethane	ND	0.020	--	ND	0.137	--		1
o-Xylene	ND	0.020	--	ND	0.087	--		1
Isopropylbenzene	ND	0.200	--	ND	0.983	--		1
4-Ethyltoluene	ND	0.020	--	ND	0.098	--		1
1,3,5-Trimethybenzene	ND	0.020	--	ND	0.098	--		1
1,2,4-Trimethylbenzene	ND	0.020	--	ND	0.098	--		1
Benzyl chloride	ND	0.200	--	ND	1.04	--		1
1,3-Dichlorobenzene	ND	0.020	--	ND	0.120	--		1
1,4-Dichlorobenzene	ND	0.020	--	ND	0.120	--		1
sec-Butylbenzene	ND	0.200	--	ND	1.10	--		1
p-Isopropyltoluene	ND	0.200	--	ND	1.10	--		1

Project Name: BATCH CANISTER CERTIFICATION **Lab Number:** L1735097

Project Number: CANISTER QC BAT **Report Date:** 10/30/17

Air Canister Certification Results

Lab ID: L1735097-01 Date Collected: 09/28/17 14:15

Client ID: CAN 183 SHELF 3 Date Received: 09/29/17

Sample Location: Field Prep: Not Specified

	ppbV			ug/m3				
Parameter	**Results**	**RL**	**MDL**	**Results**	**RL**	**MDL**	**Qualifier**	**Dilution Factor**
Volatile Organics in Air by SIM - Mansfield Lab								
1,2-Dichlorobenzene	ND	0.020	--	ND	0.120	--		1
n-Butylbenzene	ND	0.200	--	ND	1.10	--		1
1,2,4-Trichlorobenzene	ND	0.050	--	ND	0.371	--		1
Naphthalene	ND	0.050	--	ND	0.262	--		1
1,2,3-Trichlorobenzene	ND	0.050	--	ND	0.371	--		1
Hexachlorobutadiene	ND	0.050	--	ND	0.533	--		1

Internal Standard	**% Recovery**	**Qualifier**	**Acceptance Criteria**
1,4-difluorobenzene	92		60-140
bromochloromethane	94		60-140
chlorobenzene-d5	95		60-140

AIR Petro Can Certification

Project Name: BATCH CANISTER CERTIFICATION **Lab Number:** L1735097

Project Number: CANISTER QC BAT **Report Date:** 10/30/17

AIR CAN CERTIFICATION RESULTS

Lab ID:	L1735097-01	Date Collected:	09/28/17 14:15
Client ID:	CAN 183 SHELF 3	Date Received:	09/29/17
Sample Location:	Not Specified	Field Prep:	Not Specified
Matrix:	Air		
Analytical Method:	96,APH		
Analytical Date:	09/29/17 23:31		
Analyst:	RY		

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Petroleum Hydrocarbons in Air						
1,3-Butadiene	ND		ug/m3	0.50	--	1
Methyl tert butyl ether	ND		ug/m3	0.70	--	1
Benzene	ND		ug/m3	0.60	--	1
C5-C8 Aliphatics, Adjusted	ND		ug/m3	10	--	1
Toluene	ND		ug/m3	0.90	--	1
Ethylbenzene	ND		ug/m3	0.90	--	1
p/m-Xylene	ND		ug/m3	0.90	--	1
o-Xylene	ND		ug/m3	0.90	--	1
Naphthalene	ND		ug/m3	1.1	--	1
C9-C12 Aliphatics, Adjusted	ND		ug/m3	10	--	1
C9-C10 Aromatics Total	ND		ug/m3	10	--	1

Project Name: 229 HOMER ST.
Project Number: Not Specified

Lab Number: L1736370
Report Date: 10/30/17

Sample Receipt and Container Information

Were project specific reporting limits specified? YES

Cooler Information

Cooler	Custody Seal
N/A	Absent

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L1736370-01A	Canister - 2.7 Liter	N/A	NA			Y	Absent		APH-10(30),TO15-LL(30)

*Values in parentheses indicate holding time in days

Project Name:	229 HOMER ST.	**Lab Number:**	L1736370
Project Number:	Not Specified	**Report Date:**	10/30/17

GLOSSARY

Acronyms

EDL	- Estimated Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The EDL includes any adjustments from dilutions, concentrations or moisture content, where applicable. The use of EDLs is specific to the analysis of PAHs using Solid-Phase Microextraction (SPME).
EPA	- Environmental Protection Agency.
LCS	- Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LCSD	- Laboratory Control Sample Duplicate: Refer to LCS.
LFB	- Laboratory Fortified Blank: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
MDL	- Method Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The MDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
MS	- Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available.
MSD	- Matrix Spike Sample Duplicate: Refer to MS.
NA	- Not Applicable.
NC	- Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.
NDPA/DPA	- N-Nitrosodiphenylamine/Diphenylamine.
NI	- Not Ignitable.
NP	- Non-Plastic: Term is utilized for the analysis of Atterberg Limits in soil.
RL	- Reporting Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
RPD	- Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.
SRM	- Standard Reference Material: A reference sample of a known or certified value that is of the same or similar matrix as the associated field samples.
STLP	- Semi-dynamic Tank Leaching Procedure per EPA Method 1315.
TIC	- Tentatively Identified Compound: A compound that has been identified to be present and is not part of the target compound list (TCL) for the method and/or program. All TICs are qualitatively identified and reported as estimated concentrations.

Footnotes

1	- The reference for this analyte should be considered modified since this analyte is absent from the target analyte list of the original method.

Terms

Analytical Method: Both the document from which the method originates and the analytical reference method. (Example: EPA 8260B is shown as 1,8260B.) The codes for the reference method documents are provided in the References section of the Addendum.

Final pH: As it pertains to Sample Receipt & Container Information section of the report, Final pH reflects pH of container determined after adjustment at the laboratory, if applicable. If no adjustment required, value reflects Initial pH.

Frozen Date/Time: With respect to Volatile Organics in soil, Frozen Date/Time reflects the date/time at which associated Reagent Water-preserved vials were initially frozen. Note: If frozen date/time is beyond 48 hours from sample collection, value will be reflected in 'bold'.

Initial pH: As it pertains to Sample Receipt & Container Information section of the report, Initial pH reflects pH of container determined upon receipt, if applicable.

Total: With respect to Organic analyses, a 'Total' result is defined as the summation of results for individual isomers or Aroclors. If a 'Total' result is requested, the results of its individual components will also be reported. This is applicable to 'Total' results for methods 8260, 8081 and 8082.

Data Qualifiers

A	- Spectra identified as "Aldol Condensation Product".
B	- The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For MCP-related

Report Format: Data Usability Report

Project Name:	229 HOMER ST.	**Lab Number:**	L1736370
Project Number:	Not Specified	**Report Date:**	10/30/17

Data Qualifiers

projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank. For NJ-Air-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte above the reporting limit. For NJ-related projects (excluding Air), flag only applies to associated field samples that have detectable concentrations of the analyte, which was detected above the reporting limit in the associated method blank or above five times the reporting limit for common lab contaminants (Phthalates, Acetone, Methylene Chloride, 2-Butanone).

C - Co-elution: The target analyte co-elutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses.

D - Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.

E - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.

G - The concentration may be biased high due to matrix interferences (i.e, co-elution) with non-target compound(s). The result should be considered estimated.

H - The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.

I - The lower value for the two columns has been reported due to obvious interference.

M - Reporting Limit (RL) exceeds the MCP CAM Reporting Limit for this analyte.

NJ - Presumptive evidence of compound. This represents an estimated concentration for Tentatively Identified Compounds (TICs), where the identification is based on a mass spectral library search.

P - The RPD between the results for the two columns exceeds the method-specified criteria.

Q - The quality control sample exceeds the associated acceptance criteria. For DOD-related projects, LCS and/or Continuing Calibration Standard exceedences are also qualified on all associated sample results. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RL. (Metals only.)

R - Analytical results are from sample re-analysis.

RE - Analytical results are from sample re-extraction.

S - Analytical results are from modified screening analysis.

J - Estimated value. This represents an estimated concentration for Tentatively Identified Compounds (TICs).

ND - Not detected at the reporting limit (RL) for the sample.

Report Format: Data Usability Report

REFERENCES

48 Compendium of Methods for the Determination of Toxic Organic Compounds in Ambient Air. Second Edition. EPA/625/R-96/010b, January 1999.

96 Method for the Determination of Air-Phase Petroleum Hydrocarbons (APH), MassDEP, December 2009, Revision 1 with QC Requirements & Performance Standards for the Analysis of APH by GC/MS under the Massachusetts Contingency Plan, WSC-CAM-IXA, July 2010.

LIMITATION OF LIABILITIES

Alpha Analytical performs services with reasonable care and diligence normal to the analytical testing laboratory industry. In the event of an error, the sole and exclusive responsibility of Alpha Analytical shall be to re-perform the work at it's own expense. In no event shall Alpha Analytical be held liable for any incidental, consequential or special damages, including but not limited to, damages in any way connected with the use of, interpretation of, information or analysis provided by Alpha Analytical.

We strongly urge our clients to comply with EPA protocol regarding sample volume, preservation, cooling, containers, sampling procedures, holding time and splitting of samples in the field.

Certification Information

The following analytes are not included in our Primary NELAP Scope of Accreditation:

Westborough Facility
EPA 624: m/p-xylene, o-xylene
EPA 8260C: NPW: 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene, Azobenzene; SCM: Iodomethane (methyl iodide), Methyl methacrylate, 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene.
EPA 8270D: NPW: Dimethylnaphthalene,1,4-Diphenylhydrazine; SCM: Dimethylnaphthalene,1,4-Diphenylhydrazine.
EPA 300: DW: Bromide
EPA 6860: NPW and SCM: Perchlorate
EPA 9010: NPW and SCM: Amenable Cyanide Distillation
EPA 9012B: NPW: Total Cyanide
EPA 9050A: NPW: Specific Conductance
SM3500: NPW: Ferrous Iron
SM4500: NPW: Amenable Cyanide, Dissolved Oxygen; SCM: Total Phosphorus, TKN, NO2, NO3.
SM5310C: DW: Dissolved Organic Carbon

Mansfield Facility
SM 2540D: TSS
EPA 3005A NPW
EPA 8082A: NPW: PCB: 1, 5, 31, 87,101, 110, 141, 151, 153, 180, 183, 187.
EPA TO-15: Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene, 3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene.
Biological Tissue Matrix: EPA 3050B

The following analytes are included in our Massachusetts DEP Scope of Accreditation

Westborough Facility:

Drinking Water
EPA 300.0: Nitrate-N, Fluoride, Sulfate; **EPA 353.2**: Nitrate-N, Nitrite-N; **SM4500NO3-F**: Nitrate-N, Nitrite-N; **SM4500F-C, SM4500CN-CE, EPA 180.1, SM2130B, SM4500Cl-D, SM2320B, SM2540C, SM4500H-B**
EPA 332: Perchlorate; **EPA 524.2:** THMs and VOCs; **EPA 504.1:** EDB, DBCP.
Microbiology: **SM9215B SM9223-P/A, SM9223B-Colilert- T,SM9222D**.

Non-Potable Water
SM4500H,B, EPA 120.1, SM2510B, SM2540C, SM2320B, SM4500CL-E, SM4500F-BC, SM4500NH3-BH, **EPA 350.1**: Ammonia-N, **LACHAT 10-107-06-1-B**: Ammonia-N, **SM4500NO3-F, EPA 353.2**: Nitrate-N**, EPA 351.1, SM4500P-E, SM4500P-B, E, SM4500SO4-E, SM5220D, EPA 410.4, SM5210B, SM5310C, SM4500CL-D, EPA 1664, EPA 420.1, SM4500-CN-CE, SM2540D.**
EPA 624: Volatile Halocarbons & Aromatics,
EPA 608: Chlordane, Toxaphene, Aldrin, alpha-BHC, beta-BHC, gamma-BHC, delta-BHC, Dieldrin, DDD, DDE, DDT, Endosulfan I, Endosulfan II, Endosulfan sulfate, Endrin, Endrin Aldehyde, Heptachlor, Heptachlor Epoxide, PCBs
EPA 625: SVOC (Acid/Base/Neutral Extractables), **EPA 600/4-81-045**: PCB-Oil.
Microbiology: **SM9223B-Colilert- T Enterolert- T, SM9221E.**

Mansfield Facility:

Drinking Water
EPA 200.7: Ba, Be, Cd, Cr, Cu, Ni, Na, Ca. **EPA 200.8:** Sb, As, Ba, Be, Cd, Cr, Cu, Pb, Ni, Se, TL. **EPA 245.1** Hg.

Non-Potable Water
EPA 200.7: Al, Sb, As, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Sr, TL, Ti, V, Zn.
EPA 200.8: Al, Sb, As, Be, Cd, Cr, Cu, Pb, Mn, Ni, Se, Ag, TL, Zn.
EPA 245.1 Hg.
SM2340B

For a complete listing of analytes and methods, please contact your Alpha Project Manager.

AIR ANALYSIS

PAGE 1 OF 1

CHAIN OF CUSTODY

320 Forbes Blvd, Mansfield, MA 02048
TEL: 508-822-9300 FAX: 508-822-3288

Date Rec'd in Lab: 10/10/17

ALPHA Job #: L1736370

Client Information

Client: Benchmark Turnkey
Address: 2558 Hamburg turnpk.
Phone: (716) 856-0635
Fax: (716) 856-0583
Email:
☐ These samples have been previously analyzed by Alpha

Project Information

Project Name: 229 Homer St.
Project Location: Olean N.Y.
Project #: T0225-015-001
Project Manager: Ray LaPort
ALPHA Quote #:

Turn-Around Time

☒ Standard ☐ RUSH (only confirmed if pre-approved!)
Date Due: Time:

Report Information - Data Deliverables

☐ FAX
☐ ADEx
Criteria Checker:
(Default based on Regulatory Criteria Indicated)
Other Formats:
☐ EMAIL (standard pdf report)
☐ Additional Deliverables:
Report to: (if different than Project Manager)

Billing Information

☐ Same as Client info PO #:

Regulatory Requirements/Report Limits

State/Fed	Program	Criteria

Other Project Specific Requirements/Comments:

All Columns Below Must Be Filled Out

ANALYSIS: TO-14A by TO-15 | TO-15 MCP APH | TO-15 SIM APH | FIXED GASES | TO-13A | TO-4 / TO-10

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection Date	Start Time	End Time	Initial Vacuum	Final Vacuum	Sample Matrix*	Sampler's Initials	Can Size	I D Can	I D - Flow Controller	TO-14A by TO-15	TO-15 MCP APH	TO-15 SIM APH	FIXED GASES	TO-13A	TO-4 / TO-10	Sample Comments (i.e. PID)
36370.01	Start-up discharge	10/9/17	2:57 P	2:57 P	9	3.5	SV	MLJ	2.7L	172	N.A.	X						P.I.D on Sample 27 ppm 30 seconds to sample

Test Sample for TO-15 TCL VOCs, MADEP Diesel and gasoline range organics Detected Rpt

*SAMPLE MATRIX CODES

AA = Ambient Air (Indoor/Outdoor)
SV = Soil Vapor/Landfill Gas/SVE
Other = Please Specify

Container Type

Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. All samples submitted are subject to Alpha's Terms and Conditions. See reverse side.

Relinquished By:	Date/Time	Received By:	Date/Time:
AAL	10/9/17 4:30P	AAL	10/9/17 1645
	10/9/17 1645		10/10/17 0420
	10/10/17 0420		

Form No: 101-02 (19-Jun-09)

ANALYTICAL REPORT

Lab Number:	L1737370
Client:	Benchmark & Turnkey Companies 2558 Hamburg Turnpike Suite 300 Buffalo, NY 14218
ATTN:	Ray Laport
Phone:	(716) 856-0599
Project Name:	229 HOMER ST
Project Number:	T0225-015-001
Report Date:	10/30/17

Certifications & Approvals: MA (M-MA030), NH NELAP (2062), NJ NELAP (MA015), CT (PH-0141), FL (E87814), IL (200081), LA (85084), ME (MA00030), MD (350), NY (11627), NC (685), OH (CL106), PA (68-02089), RI (LAO00299), TX (T104704419), VT (VT-0015), VA (460194), WA (C954), US Army Corps of Engineers, USDA (Permit #P330-13-00067), USFWS (Permit #LE2069641).

320 Forbes Boulevard, Mansfield, MA 02048-1806
508-822-9300 (Fax) 508-822-3288 800-624-9220 - www.alphalab.com

Project Name: 229 HOMER ST
Project Number: T0225-015-001

Lab Number: L1737370
Report Date: 10/30/17

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L1737370-01	SVE DISCHARGE AS1	SOIL_VAPOR	OLEAN, N.Y.	10/13/17 15:34	10/16/17

Project Name: 229 HOMER ST
Project Number: T0225-015-001

Lab Number: L1737370
Report Date: 10/30/17

Case Narrative

The samples were received in accordance with the Chain of Custody and no significant deviations were encountered during the preparation or analysis unless otherwise noted. Sample Receipt, Container Information, and the Chain of Custody are located at the back of the report.

Results contained within this report relate only to the samples submitted under this Alpha Lab Number and meet NELAP requirements for all NELAP accredited parameters unless otherwise noted in the following narrative. The data presented in this report is organized by parameter (i.e. VOC, SVOC, etc.). Sample specific Quality Control data (i.e. Surrogate Spike Recovery) is reported at the end of the target analyte list for each individual sample, followed by the Laboratory Batch Quality Control at the end of each parameter. Tentatively Identified Compounds (TICs), if requested, are reported for compounds identified to be present and are not part of the method/program Target Compound List, even if only a subset of the TCL are being reported. If a sample was re-analyzed or re-extracted due to a required quality control corrective action and if both sets of data are reported, the Laboratory ID of the re-analysis or re-extraction is designated with an "R" or "RE", respectively. When multiple Batch Quality Control elements are reported (e.g. more than one LCS), the associated samples for each element are noted in the grey shaded header line of each data table. Any Laboratory Batch, Sample Specific % recovery or RPD value that is outside the listed Acceptance Criteria is bolded in the report. All specific QC information is also incorporated in the Data Usability format of our Data Merger tool where it can be reviewed along with any associated usability implications. Soil/sediments, solids and tissues are reported on a dry weight basis unless otherwise noted. Definitions of all data qualifiers and acronyms used in this report are provided in the Glossary located at the back of the report.

In reference to questions H (CAM) or 4 (RCP) when "NO" is checked, the performance criteria for CAM and RCP methods allow for some quality control failures to occur and still be within method compliance. In these instances the specific failure is not narrated but noted in the associated QC table. The information is also incorporated in the Data Usability format of our Data Merger tool where it can be reviewed along with any associated usability implications.

Please see the associated ADEx data file for a comparison of laboratory reporting limits that were achieved with the regulatory Numerical Standards requested on the Chain of Custody.

HOLD POLICY
For samples submitted on hold, Alpha's policy is to hold samples (with the exception of Air canisters) free of charge for 21 calendar days from the date the project is completed. After 21 calendar days, we will dispose of all samples submitted including those put on hold unless you have contacted your Client Service Representative and made arrangements for Alpha to continue to hold the samples. Air canisters will be disposed after 3 business days from the date the project is completed.

Please contact Client Services at 800-624-9220 with any questions.

Project Name: 229 HOMER ST
Project Number: T0225-015-001
Lab Number: L1737370
Report Date: 10/30/17

Case Narrative (continued)

Report Submission

This report replaces the one previously issued on October 23, 2017. The report has been revised to report TICs at the request of the client.

Volatile Organics in Air

Canisters were released from the laboratory on October 3, 2017. The canister certification results are provided as an addendum.

L1737370-01: The sample has elevated detection limits due to the dilution required by the elevated concentrations of non-target compounds in the sample.

L1737370-01 The presence of Acetone and 2,2,4-Trimethylpentane could not be determined in this sample due to a non-target compounds interfering with the identification and quantification of these compounds.

The WG1054913-3 LCS recovery for vinyl acetate (140%) is above the upper 130% acceptance limit. All samples associated with this LCS do not have reportable amounts of this analyte.

Petroleum Hydrocarbons in Air

L1737370-01: The sample has elevated detection limits due to the dilution required by the elevated concentrations of target compounds in the sample.

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

Authorized Signature: Christopher J. Anderson

Title: Technical Director/Representative Date: 10/30/17

AIR

Project Name: 229 HOMER ST
Project Number: T0225-015-001
Lab Number: L1737370
Report Date: 10/30/17

SAMPLE RESULTS

Lab ID: L1737370-01 D
Client ID: SVE DISCHARGE AS1
Sample Location: OLEAN, N.Y.
Matrix: Soil_Vapor
Anaytical Method: 48,TO-15
Analytical Date: 10/22/17 02:59
Analyst: MB

Date Collected: 10/13/17 15:34
Date Received: 10/16/17
Field Prep: Not Specified

	ppbV			ug/m3				
Parameter	**Results**	**RL**	**MDL**	**Results**	**RL**	**MDL**	**Qualifier**	**Dilution Factor**
Volatile Organics in Air - Mansfield Lab								
Dichlorodifluoromethane	ND	2.00	--	ND	9.89	--		10
Chloromethane	ND	2.00	--	ND	4.13	--		10
Freon-114	ND	2.00	--	ND	14.0	--		10
Vinyl chloride	ND	2.00	--	ND	5.11	--		10
1,3-Butadiene	ND	2.00	--	ND	4.42	--		10
Bromomethane	ND	2.00	--	ND	7.77	--		10
Chloroethane	ND	2.00	--	ND	5.28	--		10
Ethanol	1870	50.0	--	3520	94.2	--		10
Vinyl bromide	ND	2.00	--	ND	8.74	--		10
Acetone	ND	10.0	--	ND	23.8	--		10
Trichlorofluoromethane	ND	2.00	--	ND	11.2	--		10
Isopropanol	ND	5.00	--	ND	12.3	--		10
1,1-Dichloroethene	ND	2.00	--	ND	7.93	--		10
Tertiary butyl Alcohol	ND	5.00	--	ND	15.2	--		10
Methylene chloride	ND	5.00	--	ND	17.4	--		10
3-Chloropropene	ND	2.00	--	ND	6.26	--		10
Carbon disulfide	4.15	2.00	--	12.9	6.23	--		10
Freon-113	ND	2.00	--	ND	15.3	--		10
trans-1,2-Dichloroethene	ND	2.00	--	ND	7.93	--		10
1,1-Dichloroethane	ND	2.00	--	ND	8.09	--		10
Methyl tert butyl ether	ND	2.00	--	ND	7.21	--		10
2-Butanone	ND	5.00	--	ND	14.7	--		10
cis-1,2-Dichloroethene	ND	2.00	--	ND	7.93	--		10
Ethyl Acetate	ND	5.00	--	ND	18.0	--		10

Project Name: 229 HOMER ST
Project Number: T0225-015-001
Lab Number: L1737370
Report Date: 10/30/17

SAMPLE RESULTS

Lab ID: L1737370-01 D
Client ID: SVE DISCHARGE AS1
Sample Location: OLEAN, N.Y.
Date Collected: 10/13/17 15:34
Date Received: 10/16/17
Field Prep: Not Specified

	ppbV			ug/m3				
Parameter	**Results**	**RL**	**MDL**	**Results**	**RL**	**MDL**	**Qualifier**	**Dilution Factor**
Volatile Organics in Air - Mansfield Lab								
Chloroform	ND	2.00	--	ND	9.77	--		10
Tetrahydrofuran	ND	5.00	--	ND	14.7	--		10
1,2-Dichloroethane	ND	2.00	--	ND	8.09	--		10
n-Hexane	ND	2.00	--	ND	7.05	--		10
1,1,1-Trichloroethane	ND	2.00	--	ND	10.9	--		10
Benzene	ND	2.00	--	ND	6.39	--		10
Carbon tetrachloride	ND	2.00	--	ND	12.6	--		10
Cyclohexane	14.0	2.00	--	48.2	6.88	--		10
1,2-Dichloropropane	ND	2.00	--	ND	9.24	--		10
Bromodichloromethane	ND	2.00	--	ND	13.4	--		10
1,4-Dioxane	ND	2.00	--	ND	7.21	--		10
Trichloroethene	ND	2.00	--	ND	10.7	--		10
2,2,4-Trimethylpentane	ND	2.00	--	ND	9.34	--		10
Heptane	ND	2.00	--	ND	8.20	--		10
cis-1,3-Dichloropropene	ND	2.00	--	ND	9.08	--		10
4-Methyl-2-pentanone	ND	5.00	--	ND	20.5	--		10
trans-1,3-Dichloropropene	ND	2.00	--	ND	9.08	--		10
1,1,2-Trichloroethane	ND	2.00	--	ND	10.9	--		10
Toluene	ND	2.00	--	ND	7.54	--		10
2-Hexanone	ND	2.00	--	ND	8.20	--		10
Dibromochloromethane	ND	2.00	--	ND	17.0	--		10
1,2-Dibromoethane	ND	2.00	--	ND	15.4	--		10
Tetrachloroethene	ND	2.00	--	ND	13.6	--		10
Chlorobenzene	ND	2.00	--	ND	9.21	--		10
Ethylbenzene	ND	2.00	--	ND	8.69	--		10
p/m-Xylene	ND	4.00	--	ND	17.4	--		10
Bromoform	ND	2.00	--	ND	20.7	--		10
Styrene	ND	2.00	--	ND	8.52	--		10

Project Name: 229 HOMER ST
Project Number: T0225-015-001
Lab Number: L1737370
Report Date: 10/30/17

SAMPLE RESULTS

Lab ID: L1737370-01 D
Client ID: SVE DISCHARGE AS1
Sample Location: OLEAN, N.Y.
Date Collected: 10/13/17 15:34
Date Received: 10/16/17
Field Prep: Not Specified

Parameter	ppbV Results	ppbV RL	ppbV MDL	ug/m3 Results	ug/m3 RL	ug/m3 MDL	Qualifier	Dilution Factor
Volatile Organics in Air - Mansfield Lab								
1,1,2,2-Tetrachloroethane	ND	2.00	--	ND	13.7	--		10
o-Xylene	ND	2.00	--	ND	8.69	--		10
4-Ethyltoluene	ND	2.00	--	ND	9.83	--		10
1,3,5-Trimethylbenzene	ND	2.00	--	ND	9.83	--		10
1,2,4-Trimethylbenzene	ND	2.00	--	ND	9.83	--		10
Benzyl chloride	ND	2.00	--	ND	10.4	--		10
1,3-Dichlorobenzene	ND	2.00	--	ND	12.0	--		10
1,4-Dichlorobenzene	ND	2.00	--	ND	12.0	--		10
1,2-Dichlorobenzene	ND	2.00	--	ND	12.0	--		10
1,2,4-Trichlorobenzene	ND	2.00	--	ND	14.8	--		10
Hexachlorobutadiene	ND	2.00	--	ND	21.3	--		10

	Results	Qualifier	Units	RDL	Dilution Factor
Tentatively Identified Compounds					
Pentane, 2,3-dimethyl-	2500	NJ	ppbV		10
Unknown Hydrocarbon	990	J	ppbV		10
Hexane, 2,5-dimethyl-	1500	NJ	ppbV		10
Pentane, 2,4-dimethyl-	2900	NJ	ppbV		10
unknown cycloalkane	1400	J	ppbV		10
Pentane, 2,2-dimethyl-	1600	NJ	ppbV		10
Butane, 2,2-dimethyl-	1100	NJ	ppbV		10
Butane, 2-Methyl-	900	NJ	ppbV		10
Butane, 2,3-Dimethyl-	2300	NJ	ppbV		10
Unknown Hydrocarbon	1400	J	ppbV		10

Project Name: 229 HOMER ST
Project Number: T0225-015-001
Lab Number: L1737370
Report Date: 10/30/17

SAMPLE RESULTS

Lab ID: L1737370-01 D
Client ID: SVE DISCHARGE AS1
Sample Location: OLEAN, N.Y.
Date Collected: 10/13/17 15:34
Date Received: 10/16/17
Field Prep: Not Specified

Parameter	ppbV Results	ppbV RL	ppbV MDL	ug/m3 Results	ug/m3 RL	ug/m3 MDL	Qualifier	Dilution Factor
Volatile Organics in Air - Mansfield Lab								

	Results	Qualifier	Units	RDL	Dilution Factor
Tentatively Identified Compounds					

Internal Standard	% Recovery	Qualifier	Acceptance Criteria
1,4-Difluorobenzene	89		60-140
Bromochloromethane	84		60-140
chlorobenzene-d5	137		60-140

Project Name: 229 HOMER ST
Project Number: T0225-015-001
Lab Number: L1737370
Report Date: 10/30/17

Method Blank Analysis
Batch Quality Control

Analytical Method: 48,TO-15
Analytical Date: 10/21/17 14:38

Parameter	ppbV Results	ppbV RL	ppbV MDL	ug/m3 Results	ug/m3 RL	ug/m3 MDL	Qualifier	Dilution Factor
Volatile Organics in Air - Mansfield Lab for sample(s): 01 Batch: WG1054913-4								
Propylene	ND	0.500	--	ND	0.861	--		1
Dichlorodifluoromethane	ND	0.200	--	ND	0.989	--		1
Chloromethane	ND	0.200	--	ND	0.413	--		1
Freon-114	ND	0.200	--	ND	1.40	--		1
Vinyl chloride	ND	0.200	--	ND	0.511	--		1
1,3-Butadiene	ND	0.200	--	ND	0.442	--		1
Bromomethane	ND	0.200	--	ND	0.777	--		1
Chloroethane	ND	0.200	--	ND	0.528	--		1
Ethanol	ND	5.00	--	ND	9.42	--		1
Vinyl bromide	ND	0.200	--	ND	0.874	--		1
Acetone	ND	1.00	--	ND	2.38	--		1
Trichlorofluoromethane	ND	0.200	--	ND	1.12	--		1
Isopropanol	ND	0.500	--	ND	1.23	--		1
1,1-Dichloroethene	ND	0.200	--	ND	0.793	--		1
Tertiary butyl Alcohol	ND	0.500	--	ND	1.52	--		1
Methylene chloride	ND	0.500	--	ND	1.74	--		1
3-Chloropropene	ND	0.200	--	ND	0.626	--		1
Carbon disulfide	ND	0.200	--	ND	0.623	--		1
Freon-113	ND	0.200	--	ND	1.53	--		1
trans-1,2-Dichloroethene	ND	0.200	--	ND	0.793	--		1
1,1-Dichloroethane	ND	0.200	--	ND	0.809	--		1
Methyl tert butyl ether	ND	0.200	--	ND	0.721	--		1
Vinyl acetate	ND	1.00	--	ND	3.52	--		1
2-Butanone	ND	0.500	--	ND	1.47	--		1
cis-1,2-Dichloroethene	ND	0.200	--	ND	0.793	--		1

Project Name: 229 HOMER ST
Project Number: T0225-015-001
Lab Number: L1737370
Report Date: 10/30/17

Method Blank Analysis
Batch Quality Control

Analytical Method: 48,TO-15
Analytical Date: 10/21/17 14:38

Parameter	ppbV Results	ppbV RL	ppbV MDL	ug/m3 Results	ug/m3 RL	ug/m3 MDL	Qualifier	Dilution Factor
Volatile Organics in Air - Mansfield Lab for sample(s): 01 Batch: WG1054913-4								
Ethyl Acetate	ND	0.500	--	ND	1.80	--		1
Chloroform	ND	0.200	--	ND	0.977	--		1
Tetrahydrofuran	ND	0.500	--	ND	1.47	--		1
1,2-Dichloroethane	ND	0.200	--	ND	0.809	--		1
n-Hexane	ND	0.200	--	ND	0.705	--		1
1,1,1-Trichloroethane	ND	0.200	--	ND	1.09	--		1
Benzene	ND	0.200	--	ND	0.639	--		1
Carbon tetrachloride	ND	0.200	--	ND	1.26	--		1
Cyclohexane	ND	0.200	--	ND	0.688	--		1
1,2-Dichloropropane	ND	0.200	--	ND	0.924	--		1
Bromodichloromethane	ND	0.200	--	ND	1.34	--		1
1,4-Dioxane	ND	0.200	--	ND	0.721	--		1
Trichloroethene	ND	0.200	--	ND	1.07	--		1
2,2,4-Trimethylpentane	ND	0.200	--	ND	0.934	--		1
Heptane	ND	0.200	--	ND	0.820	--		1
cis-1,3-Dichloropropene	ND	0.200	--	ND	0.908	--		1
4-Methyl-2-pentanone	ND	0.500	--	ND	2.05	--		1
trans-1,3-Dichloropropene	ND	0.200	--	ND	0.908	--		1
1,1,2-Trichloroethane	ND	0.200	--	ND	1.09	--		1
Toluene	ND	0.200	--	ND	0.754	--		1
2-Hexanone	ND	0.200	--	ND	0.820	--		1
Dibromochloromethane	ND	0.200	--	ND	1.70	--		1
1,2-Dibromoethane	ND	0.200	--	ND	1.54	--		1
Tetrachloroethene	ND	0.200	--	ND	1.36	--		1
Chlorobenzene	ND	0.200	--	ND	0.921	--		1

Project Name: 229 HOMER ST
Project Number: T0225-015-001
Lab Number: L1737370
Report Date: 10/30/17

Method Blank Analysis
Batch Quality Control

Analytical Method: 48,TO-15
Analytical Date: 10/21/17 14:38

Parameter	ppbV Results	ppbV RL	ppbV MDL	ug/m3 Results	ug/m3 RL	ug/m3 MDL	Qualifier	Dilution Factor
Volatile Organics in Air - Mansfield Lab for sample(s): 01 Batch: WG1054913-4								
Ethylbenzene	ND	0.200	--	ND	0.869	--		1
p/m-Xylene	ND	0.400	--	ND	1.74	--		1
Bromoform	ND	0.200	--	ND	2.07	--		1
Styrene	ND	0.200	--	ND	0.852	--		1
1,1,2,2-Tetrachloroethane	ND	0.200	--	ND	1.37	--		1
o-Xylene	ND	0.200	--	ND	0.869	--		1
4-Ethyltoluene	ND	0.200	--	ND	0.983	--		1
1,3,5-Trimethylbenzene	ND	0.200	--	ND	0.983	--		1
1,2,4-Trimethylbenzene	ND	0.200	--	ND	0.983	--		1
Benzyl chloride	ND	0.200	--	ND	1.04	--		1
1,3-Dichlorobenzene	ND	0.200	--	ND	1.20	--		1
1,4-Dichlorobenzene	ND	0.200	--	ND	1.20	--		1
1,2-Dichlorobenzene	ND	0.200	--	ND	1.20	--		1
1,2,4-Trichlorobenzene	ND	0.200	--	ND	1.48	--		1
Hexachlorobutadiene	ND	0.200	--	ND	2.13	--		1

	Results	Qualifier	Units	RDL	Dilution Factor
Tentatively Identified Compounds					
No Tentatively Identified Compounds					

Lab Control Sample Analysis

Batch Quality Control

Project Name: 229 HOMER ST

Project Number: T0225-015-001

Lab Number: L1737370

Report Date: 10/30/17

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics in Air - Mansfield Lab Associated sample(s): 01 Batch: WG1054913-3								
Chlorodifluoromethane	83		-		70-130	-		
Propylene	98		-		70-130	-		
Propane	82		-		70-130	-		
Dichlorodifluoromethane	71		-		70-130	-		
Chloromethane	107		-		70-130	-		
1,2-Dichloro-1,1,2,2-tetrafluoroethane	98		-		70-130	-		
Methanol	93		-		70-130	-		
Vinyl chloride	105		-		70-130	-		
1,3-Butadiene	106		-		70-130	-		
Butane	97		-		70-130	-		
Bromomethane	99		-		70-130	-		
Chloroethane	102		-		70-130	-		
Ethyl Alcohol	101		-		70-130	-		
Dichlorofluoromethane	93		-		70-130	-		
Vinyl bromide	93		-		70-130	-		
Acrolein	91		-		70-130	-		
Acetone	110		-		70-130	-		
Acetonitrile	104		-		70-130	-		
Trichlorofluoromethane	97		-		70-130	-		
iso-Propyl Alcohol	107		-		70-130	-		
Acrylonitrile	102		-		70-130	-		
Pentane	100		-		70-130	-		
Ethyl ether	99		-		70-130	-		

Lab Control Sample Analysis

Batch Quality Control

Project Name: 229 HOMER ST

Project Number: T0225-015-001

Lab Number: L1737370

Report Date: 10/30/17

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics in Air - Mansfield Lab Associated sample(s): 01 Batch: WG1054913-3								
1,1-Dichloroethene	103		-		70-130	-		
tert-Butyl Alcohol	95		-		70-130	-		
Methylene chloride	109		-		70-130	-		
3-Chloropropene	112		-		70-130	-		
Carbon disulfide	97		-		70-130	-		
1,1,2-Trichloro-1,2,2-Trifluoroethane	100		-		70-130	-		
trans-1,2-Dichloroethene	105		-		70-130	-		
1,1-Dichloroethane	94		-		70-130	-		
Methyl tert butyl ether	88		-		70-130	-		
Vinyl acetate	**140**	Q	-		70-130	-		
2-Butanone	89		-		70-130	-		
cis-1,2-Dichloroethene	96		-		70-130	-		
Ethyl Acetate	98		-		70-130	-		
Chloroform	90		-		70-130	-		
Tetrahydrofuran	94		-		70-130	-		
2,2-Dichloropropane	79		-		70-130	-		
1,2-Dichloroethane	89		-		70-130	-		
n-Hexane	100		-		70-130	-		
Isopropyl Ether	90		-		70-130	-		
Ethyl-Tert-Butyl-Ether	89		-		70-130	-		
1,1,1-Trichloroethane	93		-		70-130	-		
1,1-Dichloropropene	95		-		70-130	-		
Benzene	96		-		70-130	-		

Lab Control Sample Analysis

Batch Quality Control

Project Name: 229 HOMER ST

Project Number: T0225-015-001

Lab Number: L1737370

Report Date: 10/30/17

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics in Air - Mansfield Lab Associated sample(s): 01 Batch: WG1054913-3								
Carbon tetrachloride	92		-		70-130	-		
Cyclohexane	100		-		70-130	-		
Tertiary-Amyl Methyl Ether	87		-		70-130	-		
Dibromomethane	92		-		70-130	-		
1,2-Dichloropropane	104		-		70-130	-		
Bromodichloromethane	96		-		70-130	-		
1,4-Dioxane	97		-		70-130	-		
Trichloroethene	96		-		70-130	-		
2,2,4-Trimethylpentane	103		-		70-130	-		
Methyl Methacrylate	112		-		70-130	-		
Heptane	102		-		70-130	-		
cis-1,3-Dichloropropene	105		-		70-130	-		
4-Methyl-2-pentanone	103		-		70-130	-		
trans-1,3-Dichloropropene	90		-		70-130	-		
1,1,2-Trichloroethane	101		-		70-130	-		
Toluene	93		-		70-130	-		
1,3-Dichloropropane	88		-		70-130	-		
2-Hexanone	94		-		70-130	-		
Dibromochloromethane	92		-		70-130	-		
1,2-Dibromoethane	93		-		70-130	-		
Butyl Acetate	82		-		70-130	-		
Octane	86		-		70-130	-		
Tetrachloroethene	89		-		70-130	-		

Lab Control Sample Analysis

Batch Quality Control

Project Name: 229 HOMER ST

Project Number: T0225-015-001

Lab Number: L1737370

Report Date: 10/30/17

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics in Air - Mansfield Lab Associated sample(s): 01 Batch: WG1054913-3								
1,1,1,2-Tetrachloroethane	85		-		70-130	-		
Chlorobenzene	94		-		70-130	-		
Ethylbenzene	94		-		70-130	-		
p/m-Xylene	94		-		70-130	-		
Bromoform	97		-		70-130	-		
Styrene	93		-		70-130	-		
1,1,2,2-Tetrachloroethane	102		-		70-130	-		
o-Xylene	97		-		70-130	-		
1,2,3-Trichloropropane	89		-		70-130	-		
Nonane (C9)	91		-		70-130	-		
Isopropylbenzene	89		-		70-130	-		
Bromobenzene	86		-		70-130	-		
o-Chlorotoluene	90		-		70-130	-		
n-Propylbenzene	87		-		70-130	-		
p-Chlorotoluene	85		-		70-130	-		
4-Ethyltoluene	93		-		70-130	-		
1,3,5-Trimethylbenzene	93		-		70-130	-		
tert-Butylbenzene	92		-		70-130	-		
1,2,4-Trimethylbenzene	100		-		70-130	-		
Decane (C10)	93		-		70-130	-		
Benzyl chloride	97		-		70-130	-		
1,3-Dichlorobenzene	94		-		70-130	-		
1,4-Dichlorobenzene	95		-		70-130	-		

Lab Control Sample Analysis
Batch Quality Control

Project Name: 229 HOMER ST
Project Number: T0225-015-001

Lab Number: L1737370
Report Date: 10/30/17

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics in Air - Mansfield Lab Associated sample(s): 01 Batch: WG1054913-3								
sec-Butylbenzene	91		-		70-130	-		
p-Isopropyltoluene	84		-		70-130	-		
1,2-Dichlorobenzene	92		-		70-130	-		
n-Butylbenzene	93		-		70-130	-		
1,2-Dibromo-3-chloropropane	89		-		70-130	-		
Undecane	97		-		70-130	-		
Dodecane (C12)	109		-		70-130	-		
1,2,4-Trichlorobenzene	101		-		70-130	-		
Naphthalene	88		-		70-130	-		
1,2,3-Trichlorobenzene	87		-		70-130	-		
Hexachlorobutadiene	96		-		70-130	-		

Lab Duplicate Analysis
Batch Quality Control

Project Name: 229 HOMER ST
Project Number: T0225-015-001

Lab Number: L1737370
Report Date: 10/30/17

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Volatile Organics in Air - Mansfield Lab Associated sample(s): 01 QC Batch ID: WG1054913-5 QC Sample: L1738211-01 Client ID: DUP Sample						
Dichlorodifluoromethane	0.287	0.291	ppbV	1		25
Chloromethane	0.428	0.481	ppbV	12		25
1,2-Dichloro-1,1,2,2-tetrafluoroethane	ND	ND	ppbV	NC		25
Vinyl chloride	ND	ND	ppbV	NC		25
1,3-Butadiene	ND	ND	ppbV	NC		25
Bromomethane	ND	ND	ppbV	NC		25
Chloroethane	ND	ND	ppbV	NC		25
Ethyl Alcohol	11.7	11.3	ppbV	3		25
Vinyl bromide	ND	ND	ppbV	NC		25
Acetone	10.4	10.3	ppbV	1		25
Trichlorofluoromethane	0.220	0.217	ppbV	1		25
iso-Propyl Alcohol	2.65	2.56	ppbV	3		25
1,1-Dichloroethene	ND	ND	ppbV	NC		25
tert-Butyl Alcohol	ND	ND	ppbV	NC		25
Methylene chloride	ND	ND	ppbV	NC		25
3-Chloropropene	ND	ND	ppbV	NC		25
Carbon disulfide	ND	ND	ppbV	NC		25
1,1,2-Trichloro-1,2,2-Trifluoroethane	ND	ND	ppbV	NC		25
trans-1,2-Dichloroethene	ND	ND	ppbV	NC		25
1,1-Dichloroethane	ND	ND	ppbV	NC		25
Methyl tert butyl ether	ND	ND	ppbV	NC		25

Lab Duplicate Analysis
Batch Quality Control

Project Name: 229 HOMER ST
Project Number: T0225-015-001

Lab Number: L1737370
Report Date: 10/30/17

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Volatile Organics in Air - Mansfield Lab Associated sample(s): 01 QC Batch ID: WG1054913-5 QC Sample: L1738211-01 Client ID: DUP Sample						
2-Butanone	0.621	0.607	ppbV	2		25
cis-1,2-Dichloroethene	ND	ND	ppbV	NC		25
Ethyl Acetate	ND	ND	ppbV	NC		25
Chloroform	0.399	0.415	ppbV	4		25
Tetrahydrofuran	ND	ND	ppbV	NC		25
1,2-Dichloroethane	ND	ND	ppbV	NC		25
n-Hexane	0.277	0.304	ppbV	9		25
1,1,1-Trichloroethane	ND	ND	ppbV	NC		25
Benzene	0.257	0.269	ppbV	5		25
Carbon tetrachloride	ND	ND	ppbV	NC		25
Cyclohexane	ND	ND	ppbV	NC		25
1,2-Dichloropropane	ND	ND	ppbV	NC		25
Bromodichloromethane	ND	ND	ppbV	NC		25
1,4-Dioxane	ND	ND	ppbV	NC		25
Trichloroethene	ND	ND	ppbV	NC		25
2,2,4-Trimethylpentane	ND	ND	ppbV	NC		25
Heptane	0.476	0.491	ppbV	3		25
cis-1,3-Dichloropropene	ND	ND	ppbV	NC		25
4-Methyl-2-pentanone	ND	ND	ppbV	NC		25
trans-1,3-Dichloropropene	ND	ND	ppbV	NC		25
1,1,2-Trichloroethane	ND	ND	ppbV	NC		25

Lab Duplicate Analysis
Batch Quality Control

Project Name: 229 HOMER ST
Project Number: T0225-015-001

Lab Number: L1737370
Report Date: 10/30/17

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Volatile Organics in Air - Mansfield Lab Associated sample(s): 01 QC Batch ID: WG1054913-5 QC Sample: L1738211-01 Client ID: DUP Sample						
Toluene	1.01	0.986	ppbV	2		25
2-Hexanone	ND	ND	ppbV	NC		25
Dibromochloromethane	ND	ND	ppbV	NC		25
1,2-Dibromoethane	ND	ND	ppbV	NC		25
Tetrachloroethene	0.456	0.480	ppbV	5		25
Chlorobenzene	ND	ND	ppbV	NC		25
Ethylbenzene	ND	ND	ppbV	NC		25
p/m-Xylene	0.485	0.510	ppbV	5		25
Bromoform	ND	ND	ppbV	NC		25
Styrene	ND	ND	ppbV	NC		25
1,1,2,2-Tetrachloroethane	ND	ND	ppbV	NC		25
o-Xylene	ND	ND	ppbV	NC		25
4-Ethyltoluene	ND	ND	ppbV	NC		25
1,3,5-Trimethylbenzene	ND	ND	ppbV	NC		25
1,2,4-Trimethylbenzene	0.230	0.234	ppbV	2		25
Benzyl chloride	ND	ND	ppbV	NC		25
1,3-Dichlorobenzene	ND	ND	ppbV	NC		25
1,4-Dichlorobenzene	1.45	1.49	ppbV	3		25
1,2-Dichlorobenzene	ND	ND	ppbV	NC		25
1,2,4-Trichlorobenzene	ND	ND	ppbV	NC		25
Hexachlorobutadiene	ND	ND	ppbV	NC		25

Project Name: 229 HOMER ST
Project Number: T0225-015-001
Lab Number: L1737370
Report Date: 10/30/17

SAMPLE RESULTS

Lab ID:	L1737370-01 D	Date Collected:	10/13/17 15:34
Client ID:	SVE DISCHARGE AS1	Date Received:	10/16/17
Sample Location:	OLEAN, N.Y.	Field Prep:	Not Specified
Matrix:	Soil_Vapor		
Analytical Method:	96,APH		
Analytical Date:	10/22/17 02:59		
Analyst:	MB		

Quality Control Information

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Petroleum Hydrocarbons in Air - Mansfield Lab						
1,3-Butadiene	ND		ug/m3	5.0	--	10
Methyl tert butyl ether	ND		ug/m3	7.0	--	10
Benzene	ND		ug/m3	6.0	--	10
C5-C8 Aliphatics, Adjusted	140000		ug/m3	100	--	10
Toluene	ND		ug/m3	9.0	--	10
Ethylbenzene	ND		ug/m3	9.0	--	10
p/m-Xylene	ND		ug/m3	9.0	--	10
o-Xylene	ND		ug/m3	9.0	--	10
Naphthalene	ND		ug/m3	11	--	10
C9-C12 Aliphatics, Adjusted	12000		ug/m3	100	--	10
C9-C10 Aromatics Total	ND		ug/m3	100	--	10

Internal Standard	% Recovery	Qualifier	Acceptance Criteria
1,4-Difluorobenzene	91		50-200
Bromochloromethane	90		50-200
Chlorobenzene-d5	128		50-200

Project Name: 229 HOMER ST
Project Number: T0225-015-001
Lab Number: L1737370
Report Date: 10/30/17

Method Blank Analysis
Batch Quality Control

Analytical Method: 96,APH
Analytical Date: 10/21/17 14:38
Analyst: RY

Parameter	Result	Qualifier	Units	RL	MDL
Petroleum Hydrocarbons in Air - Mansfield Lab for sample(s): 01 Batch: WG1054917-4					
1,3-Butadiene	ND		ug/m3	0.50	--
Methyl tert butyl ether	ND		ug/m3	0.70	--
Benzene	ND		ug/m3	0.60	--
C5-C8 Aliphatics, Adjusted	ND		ug/m3	10	--
Toluene	ND		ug/m3	0.90	--
Ethylbenzene	ND		ug/m3	0.90	--
p/m-Xylene	ND		ug/m3	0.90	--
o-Xylene	ND		ug/m3	0.90	--
Naphthalene	ND		ug/m3	1.1	--
C9-C12 Aliphatics, Adjusted	ND		ug/m3	10	--
C9-C10 Aromatics Total	ND		ug/m3	10	--

Lab Control Sample Analysis

Batch Quality Control

Project Name: 229 HOMER ST

Project Number: T0225-015-001

Lab Number: L1737370

Report Date: 10/30/17

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Petroleum Hydrocarbons in Air - Mansfield Lab Associated sample(s): 01 Batch: WG1054917-3								
1,3-Butadiene	97		-		70-130	-		
Methyl tert butyl ether	102		-		70-130	-		
Benzene	96		-		70-130	-		
C5-C8 Aliphatics, Adjusted	100		-		70-130	-		
Toluene	97		-		70-130	-		
Ethylbenzene	97		-		70-130	-		
p/m-Xylene	97		-		70-130	-		
o-Xylene	99		-		70-130	-		
Naphthalene	108		-		50-150	-		
C9-C12 Aliphatics, Adjusted	94		-		70-130	-		
C9-C10 Aromatics Total	83		-		70-130	-		

Lab Duplicate Analysis
Batch Quality Control

Project Name: 229 HOMER ST
Project Number: T0225-015-001

Lab Number: L1737370
Report Date: 10/30/17

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Petroleum Hydrocarbons in Air - Mansfield Lab Associated sample(s): 01 QC Batch ID: WG1054917-5 QC Sample: L1737571-02 Client ID: DUP Sample						
1,3-Butadiene	ND	ND	ug/m3	NC		30
Methyl tert butyl ether	ND	ND	ug/m3	NC		30
Benzene	ND	ND	ug/m3	NC		30
C5-C8 Aliphatics, Adjusted	16	20	ug/m3	22		30
Toluene	7.2	7.2	ug/m3	0		30
Ethylbenzene	ND	ND	ug/m3	NC		30
p/m-Xylene	2.2	2.2	ug/m3	0		30
o-Xylene	ND	ND	ug/m3	NC		30
Naphthalene	2.0	2.0	ug/m3	0		30
C9-C12 Aliphatics, Adjusted	ND	ND	ug/m3	NC		30
C9-C10 Aromatics Total	ND	ND	ug/m3	NC		30

Project Name: 229 HOMER ST

Project Number: T0225-015-001

Lab Number: L1737370

Report Date: 10/30/17

Canister and Flow Controller Information

Samplenum	Client ID	Media ID	Media Type	Date Prepared	Bottle Order	Cleaning Batch ID	Can Leak Check	Initial Pressure (in. Hg)	Pressure on Receipt (in. Hg)	Flow Controler Leak Chk	Flow Out mL/min	Flow In mL/min	% RPD
L1737370-01	SVE DISCHARGE AS1	358	2.7L Can	10/03/17	250621	L1734697-02	Pass	-30.0	-2.2	-	-	-	-

Project Name:

Lab Number: L1734697

Project Number: CANISTER QC BAT

Report Date: 10/30/17

Air Canister Certification Results

Lab ID: L1734697-02
Client ID: CAN 384 SHELF 9
Sample Location:
Matrix: Air
Anaytical Method: 48,TO-15
Analytical Date: 09/28/17 19:21
Analyst: RY

Date Collected: 09/27/17 16:00
Date Received: 09/28/17
Field Prep: Not Specified

	ppbV			ug/m3				
Parameter	**Results**	**RL**	**MDL**	**Results**	**RL**	**MDL**	**Qualifier**	**Dilution Factor**
Volatile Organics in Air - Mansfield Lab								
Chlorodifluoromethane	ND	0.200	--	ND	0.707	--		1
Propylene	ND	0.500	--	ND	0.861	--		1
Propane	ND	0.500	--	ND	0.902	--		1
Dichlorodifluoromethane	ND	0.200	--	ND	0.989	--		1
Chloromethane	ND	0.200	--	ND	0.413	--		1
1,2-Dichloro-1,1,2,2-tetrafluoroethane	ND	0.200	--	ND	1.40	--		1
Methanol	ND	5.00	--	ND	6.55	--		1
Vinyl chloride	ND	0.200	--	ND	0.511	--		1
1,3-Butadiene	ND	0.200	--	ND	0.442	--		1
Butane	ND	0.200	--	ND	0.475	--		1
Bromomethane	ND	0.200	--	ND	0.777	--		1
Chloroethane	ND	0.200	--	ND	0.528	--		1
Ethyl Alcohol	ND	5.00	--	ND	9.42	--		1
Dichlorofluoromethane	ND	0.200	--	ND	0.842	--		1
Vinyl bromide	ND	0.200	--	ND	0.874	--		1
Acrolein	ND	0.500	--	ND	1.15	--		1
Acetone	ND	1.00	--	ND	2.38	--		1
Acetonitrile	ND	0.200	--	ND	0.336	--		1
Trichlorofluoromethane	ND	0.200	--	ND	1.12	--		1
iso-Propyl Alcohol	ND	0.500	--	ND	1.23	--		1
Acrylonitrile	ND	0.500	--	ND	1.09	--		1
Pentane	ND	0.200	--	ND	0.590	--		1
Ethyl ether	ND	0.200	--	ND	0.606	--		1
1,1-Dichloroethene	ND	0.200	--	ND	0.793	--		1
tert-Butyl Alcohol	ND	0.500	--	ND	1.52	--		1

Project Name: **Lab Number:** L1734697

Project Number: CANISTER QC BAT **Report Date:** 10/30/17

Air Canister Certification Results

Lab ID: L1734697-02 Date Collected: 09/27/17 16:00

Client ID: CAN 384 SHELF 9 Date Received: 09/28/17

Sample Location: Field Prep: Not Specified

	ppbV			ug/m3				
Parameter	**Results**	**RL**	**MDL**	**Results**	**RL**	**MDL**	**Qualifier**	**Dilution Factor**
Volatile Organics in Air - Mansfield Lab								
Methylene chloride	ND	0.500	--	ND	1.74	--		1
3-Chloropropene	ND	0.200	--	ND	0.626	--		1
Carbon disulfide	ND	0.200	--	ND	0.623	--		1
1,1,2-Trichloro-1,2,2-Trifluoroethane	ND	0.200	--	ND	1.53	--		1
trans-1,2-Dichloroethene	ND	0.200	--	ND	0.793	--		1
1,1-Dichloroethane	ND	0.200	--	ND	0.809	--		1
Methyl tert butyl ether	ND	0.200	--	ND	0.721	--		1
Vinyl acetate	ND	1.00	--	ND	3.52	--		1
2-Butanone	ND	0.500	--	ND	1.47	--		1
cis-1,2-Dichloroethene	ND	0.200	--	ND	0.793	--		1
Ethyl Acetate	ND	0.500	--	ND	1.80	--		1
Chloroform	ND	0.200	--	ND	0.977	--		1
Tetrahydrofuran	ND	0.500	--	ND	1.47	--		1
2,2-Dichloropropane	ND	0.200	--	ND	0.924	--		1
1,2-Dichloroethane	ND	0.200	--	ND	0.809	--		1
n-Hexane	ND	0.200	--	ND	0.705	--		1
Isopropyl Ether	ND	0.200	--	ND	0.836	--		1
Ethyl-Tert-Butyl-Ether	ND	0.200	--	ND	0.836	--		1
1,1,1-Trichloroethane	ND	0.200	--	ND	1.09	--		1
1,1-Dichloropropene	ND	0.200	--	ND	0.908	--		1
Benzene	ND	0.200	--	ND	0.639	--		1
Carbon tetrachloride	ND	0.200	--	ND	1.26	--		1
Cyclohexane	ND	0.200	--	ND	0.688	--		1
Tertiary-Amyl Methyl Ether	ND	0.200	--	ND	0.836	--		1
Dibromomethane	ND	0.200	--	ND	1.42	--		1
1,2-Dichloropropane	ND	0.200	--	ND	0.924	--		1
Bromodichloromethane	ND	0.200	--	ND	1.34	--		1
1,4-Dioxane	ND	0.200	--	ND	0.721	--		1

Project Name:

Lab Number: L1734697

Project Number: CANISTER QC BAT

Report Date: 10/30/17

Air Canister Certification Results

Lab ID: L1734697-02
Client ID: CAN 384 SHELF 9
Sample Location:

Date Collected: 09/27/17 16:00
Date Received: 09/28/17
Field Prep: Not Specified

Parameter	ppbV Results	ppbV RL	ppbV MDL	ug/m3 Results	ug/m3 RL	ug/m3 MDL	Qualifier	Dilution Factor
Volatile Organics in Air - Mansfield Lab								
Trichloroethene	ND	0.200	--	ND	1.07	--		1
2,2,4-Trimethylpentane	ND	0.200	--	ND	0.934	--		1
Methyl Methacrylate	ND	0.500	--	ND	2.05	--		1
Heptane	ND	0.200	--	ND	0.820	--		1
cis-1,3-Dichloropropene	ND	0.200	--	ND	0.908	--		1
4-Methyl-2-pentanone	ND	0.500	--	ND	2.05	--		1
trans-1,3-Dichloropropene	ND	0.200	--	ND	0.908	--		1
1,1,2-Trichloroethane	ND	0.200	--	ND	1.09	--		1
Toluene	ND	0.200	--	ND	0.754	--		1
1,3-Dichloropropane	ND	0.200	--	ND	0.924	--		1
2-Hexanone	ND	0.200	--	ND	0.820	--		1
Dibromochloromethane	ND	0.200	--	ND	1.70	--		1
1,2-Dibromoethane	ND	0.200	--	ND	1.54	--		1
Butyl Acetate	ND	0.500	--	ND	2.38	--		1
Octane	ND	0.200	--	ND	0.934	--		1
Tetrachloroethene	ND	0.200	--	ND	1.36	--		1
1,1,1,2-Tetrachloroethane	ND	0.200	--	ND	1.37	--		1
Chlorobenzene	ND	0.200	--	ND	0.921	--		1
Ethylbenzene	ND	0.200	--	ND	0.869	--		1
p/m-Xylene	ND	0.400	--	ND	1.74	--		1
Bromoform	ND	0.200	--	ND	2.07	--		1
Styrene	ND	0.200	--	ND	0.852	--		1
1,1,2,2-Tetrachloroethane	ND	0.200	--	ND	1.37	--		1
o-Xylene	ND	0.200	--	ND	0.869	--		1
1,2,3-Trichloropropane	ND	0.200	--	ND	1.21	--		1
Nonane (C9)	ND	0.200	--	ND	1.05	--		1
Isopropylbenzene	ND	0.200	--	ND	0.983	--		1
Bromobenzene	ND	0.200	--	ND	0.793	--		1

Project Name:

Lab Number: L1734697

Project Number: CANISTER QC BAT

Report Date: 10/30/17

Air Canister Certification Results

Lab ID: L1734697-02
Client ID: CAN 384 SHELF 9
Sample Location:

Date Collected: 09/27/17 16:00
Date Received: 09/28/17
Field Prep: Not Specified

	ppbV			ug/m3				
Parameter	**Results**	**RL**	**MDL**	**Results**	**RL**	**MDL**	**Qualifier**	**Dilution Factor**
Volatile Organics in Air - Mansfield Lab								
o-Chlorotoluene	ND	0.200	--	ND	1.04	--		1
n-Propylbenzene	ND	0.200	--	ND	0.983	--		1
p-Chlorotoluene	ND	0.200	--	ND	1.04	--		1
4-Ethyltoluene	ND	0.200	--	ND	0.983	--		1
1,3,5-Trimethylbenzene	ND	0.200	--	ND	0.983	--		1
tert-Butylbenzene	ND	0.200	--	ND	1.10	--		1
1,2,4-Trimethylbenzene	ND	0.200	--	ND	0.983	--		1
Decane (C10)	ND	0.200	--	ND	1.16	--		1
Benzyl chloride	ND	0.200	--	ND	1.04	--		1
1,3-Dichlorobenzene	ND	0.200	--	ND	1.20	--		1
1,4-Dichlorobenzene	ND	0.200	--	ND	1.20	--		1
sec-Butylbenzene	ND	0.200	--	ND	1.10	--		1
p-Isopropyltoluene	ND	0.200	--	ND	1.10	--		1
1,2-Dichlorobenzene	ND	0.200	--	ND	1.20	--		1
n-Butylbenzene	ND	0.200	--	ND	1.10	--		1
1,2-Dibromo-3-chloropropane	ND	0.200	--	ND	1.93	--		1
Undecane	ND	0.200	--	ND	1.28	--		1
Dodecane (C12)	ND	0.200	--	ND	1.39	--		1
1,2,4-Trichlorobenzene	ND	0.200	--	ND	1.48	--		1
Naphthalene	ND	0.200	--	ND	1.05	--		1
1,2,3-Trichlorobenzene	ND	0.200	--	ND	1.48	--		1
Hexachlorobutadiene	ND	0.200	--	ND	2.13	--		1

	Results	**Qualifier**	**Units**	**RDL**	**Dilution Factor**
Tentatively Identified Compounds					

No Tentatively Identified Compounds

Project Name: **Lab Number:** L1734697

Project Number: CANISTER QC BAT **Report Date:** 10/30/17

Air Canister Certification Results

Lab ID: L1734697-02 Date Collected: 09/27/17 16:00

Client ID: CAN 384 SHELF 9 Date Received: 09/28/17

Sample Location: Field Prep: Not Specified

Parameter	ppbV Results	ppbV RL	ppbV MDL	ug/m3 Results	ug/m3 RL	ug/m3 MDL	Qualifier	Dilution Factor
Volatile Organics in Air - Mansfield Lab								

Internal Standard	% Recovery	Qualifier	Acceptance Criteria
1,4-Difluorobenzene	82		60-140
Bromochloromethane	93		60-140
chlorobenzene-d5	86		60-140

Project Name:

Lab Number: L1734697

Project Number: CANISTER QC BAT

Report Date: 10/30/17

Air Canister Certification Results

Lab ID: L1734697-02
Client ID: CAN 384 SHELF 9
Sample Location:
Matrix: Air
Anaytical Method: 48,TO-15-SIM
Analytical Date: 09/28/17 19:21
Analyst: RY

Date Collected: 09/27/17 16:00
Date Received: 09/28/17
Field Prep: Not Specified

Parameter	ppbV Results	ppbV RL	ppbV MDL	ug/m3 Results	ug/m3 RL	ug/m3 MDL	Qualifier	Dilution Factor
Volatile Organics in Air by SIM - Mansfield Lab								
Propylene	ND	0.500	--	ND	0.861	--		1
Dichlorodifluoromethane	ND	0.200	--	ND	0.989	--		1
Chloromethane	ND	0.200	--	ND	0.413	--		1
1,2-Dichloro-1,1,2,2-tetrafluoroethane	ND	0.050	--	ND	0.349	--		1
Vinyl chloride	ND	0.020	--	ND	0.051	--		1
1,3-Butadiene	ND	0.020	--	ND	0.044	--		1
Bromomethane	ND	0.020	--	ND	0.078	--		1
Chloroethane	ND	0.100	--	ND	0.264	--		1
Ethyl Alcohol	ND	5.00	--	ND	9.42	--		1
Vinyl bromide	ND	0.200	--	ND	0.874	--		1
Acetone	ND	1.00	--	ND	2.38	--		1
Trichlorofluoromethane	ND	0.050	--	ND	0.281	--		1
iso-Propyl Alcohol	ND	0.500	--	ND	1.23	--		1
Acrylonitrile	ND	0.500	--	ND	1.09	--		1
1,1-Dichloroethene	ND	0.020	--	ND	0.079	--		1
tert-Butyl Alcohol	ND	0.500	--	ND	1.52	--		1
Methylene chloride	ND	0.500	--	ND	1.74	--		1
3-Chloropropene	ND	0.200	--	ND	0.626	--		1
Carbon disulfide	ND	0.200	--	ND	0.623	--		1
1,1,2-Trichloro-1,2,2-Trifluoroethane	ND	0.050	--	ND	0.383	--		1
Halothane	ND	0.050	--	ND	0.404	--		1
trans-1,2-Dichloroethene	ND	0.020	--	ND	0.079	--		1
1,1-Dichloroethane	ND	0.020	--	ND	0.081	--		1
Methyl tert butyl ether	ND	0.200	--	ND	0.721	--		1
Vinyl acetate	ND	1.00	--	ND	3.52	--		1

Project Name:

Lab Number: L1734697

Project Number: CANISTER QC BAT

Report Date: 10/30/17

Air Canister Certification Results

Lab ID: L1734697-02
Client ID: CAN 384 SHELF 9
Sample Location:

Date Collected: 09/27/17 16:00
Date Received: 09/28/17
Field Prep: Not Specified

	ppbV			ug/m3				
Parameter	**Results**	**RL**	**MDL**	**Results**	**RL**	**MDL**	**Qualifier**	**Dilution Factor**
Volatile Organics in Air by SIM - Mansfield Lab								
2-Butanone	ND	0.500	--	ND	1.47	--		1
cis-1,2-Dichloroethene	ND	0.020	--	ND	0.079	--		1
Ethyl Acetate	ND	0.500	--	ND	1.80	--		1
Chloroform	ND	0.020	--	ND	0.098	--		1
Tetrahydrofuran	ND	0.500	--	ND	1.47	--		1
1,2-Dichloroethane	ND	0.020	--	ND	0.081	--		1
n-Hexane	ND	0.200	--	ND	0.705	--		1
1,1,1-Trichloroethane	ND	0.020	--	ND	0.109	--		1
Benzene	ND	0.100	--	ND	0.319	--		1
Carbon tetrachloride	ND	0.020	--	ND	0.126	--		1
Cyclohexane	ND	0.200	--	ND	0.688	--		1
Dibromomethane	ND	0.200	--	ND	1.42	--		1
1,2-Dichloropropane	ND	0.020	--	ND	0.092	--		1
Bromodichloromethane	ND	0.020	--	ND	0.134	--		1
1,4-Dioxane	ND	0.100	--	ND	0.360	--		1
Trichloroethene	ND	0.020	--	ND	0.107	--		1
2,2,4-Trimethylpentane	ND	0.200	--	ND	0.934	--		1
Heptane	ND	0.200	--	ND	0.820	--		1
cis-1,3-Dichloropropene	ND	0.020	--	ND	0.091	--		1
4-Methyl-2-pentanone	ND	0.500	--	ND	2.05	--		1
trans-1,3-Dichloropropene	ND	0.020	--	ND	0.091	--		1
1,1,2-Trichloroethane	ND	0.020	--	ND	0.109	--		1
Toluene	ND	0.050	--	ND	0.188	--		1
2-Hexanone	ND	0.200	--	ND	0.820	--		1
Dibromochloromethane	ND	0.020	--	ND	0.170	--		1
1,2-Dibromoethane	ND	0.020	--	ND	0.154	--		1
Tetrachloroethene	ND	0.020	--	ND	0.136	--		1
1,1,1,2-Tetrachloroethane	ND	0.020	--	ND	0.137	--		1

Project Name:

Lab Number: L1734697

Project Number: CANISTER QC BAT

Report Date: 10/30/17

Air Canister Certification Results

Lab ID: L1734697-02
Client ID: CAN 384 SHELF 9
Sample Location:

Date Collected: 09/27/17 16:00
Date Received: 09/28/17
Field Prep: Not Specified

Parameter	ppbV Results	ppbV RL	ppbV MDL	ug/m3 Results	ug/m3 RL	ug/m3 MDL	Qualifier	Dilution Factor
Volatile Organics in Air by SIM - Mansfield Lab								
Chlorobenzene	ND	0.100	--	ND	0.461	--		1
Ethylbenzene	ND	0.020	--	ND	0.087	--		1
p/m-Xylene	ND	0.040	--	ND	0.174	--		1
Bromoform	ND	0.020	--	ND	0.207	--		1
Styrene	ND	0.020	--	ND	0.085	--		1
1,1,2,2-Tetrachloroethane	ND	0.020	--	ND	0.137	--		1
o-Xylene	ND	0.020	--	ND	0.087	--		1
1,2,3-Trichloropropane	ND	0.020	--	ND	0.121	--		1
Isopropylbenzene	ND	0.200	--	ND	0.983	--		1
Bromobenzene	ND	0.200	--	ND	0.793	--		1
4-Ethyltoluene	ND	0.020	--	ND	0.098	--		1
1,3,5-Trimethylbenzene	ND	0.020	--	ND	0.098	--		1
1,2,4-Trimethylbenzene	ND	0.020	--	ND	0.098	--		1
Benzyl chloride	ND	0.200	--	ND	1.04	--		1
1,3-Dichlorobenzene	ND	0.020	--	ND	0.120	--		1
1,4-Dichlorobenzene	ND	0.020	--	ND	0.120	--		1
sec-Butylbenzene	ND	0.200	--	ND	1.10	--		1
p-Isopropyltoluene	ND	0.200	--	ND	1.10	--		1
1,2-Dichlorobenzene	ND	0.020	--	ND	0.120	--		1
n-Butylbenzene	ND	0.200	--	ND	1.10	--		1
1,2,4-Trichlorobenzene	ND	0.050	--	ND	0.371	--		1
Naphthalene	ND	0.050	--	ND	0.262	--		1
1,2,3-Trichlorobenzene	ND	0.050	--	ND	0.371	--		1
Hexachlorobutadiene	ND	0.050	--	ND	0.533	--		1

Internal Standard	% Recovery	Qualifier	Acceptance Criteria
1,4-difluorobenzene	89		60-140
bromochloromethane	94		60-140

AIR Petro Can Certification

Project Name: Not Specified **Lab Number:** L1734697

Project Number: CANISTER QC BAT **Report Date:** 10/30/17

AIR CAN CERTIFICATION RESULTS

Lab ID:	L1734697-02	Date Collected:	09/27/17 16:00
Client ID:	CAN 384 SHELF 9	Date Received:	09/28/17
Sample Location:	Not Specified	Field Prep:	Not Specified
Matrix:	Air		
Analytical Method:	96,APH		
Analytical Date:	09/28/17 19:21		
Analyst:	RY		

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Petroleum Hydrocarbons in Air						
1,3-Butadiene	ND		ug/m3	0.50	--	1
Methyl tert butyl ether	ND		ug/m3	0.70	--	1
Benzene	ND		ug/m3	0.60	--	1
C5-C8 Aliphatics, Adjusted	ND		ug/m3	10	--	1
Toluene	ND		ug/m3	0.90	--	1
Ethylbenzene	ND		ug/m3	0.90	--	1
p/m-Xylene	ND		ug/m3	0.90	--	1
o-Xylene	ND		ug/m3	0.90	--	1
Naphthalene	ND		ug/m3	1.1	--	1
C9-C12 Aliphatics, Adjusted	ND		ug/m3	10	--	1
C9-C10 Aromatics Total	ND		ug/m3	10	--	1

Project Name: 229 HOMER ST
Project Number: T0225-015-001

Lab Number: L1737370
Report Date: 10/30/17

Sample Receipt and Container Information

Were project specific reporting limits specified? YES

Cooler Information

Cooler	*Custody Seal*
N/A	Absent

Container Information

Container ID	*Container Type*	*Cooler*	*Initial pH*	*Final pH*	*Temp deg C*	*Pres*	*Seal*	*Frozen Date/Time*	*Analysis(*)*
L1737370-01A	Canister - 2.7 Liter	N/A	NA			Y	Absent		APH-10(30),TO15-LL(30)

*Values in parentheses indicate holding time in days

Project Name:	229 HOMER ST	**Lab Number:**	L1737370
Project Number:	T0225-015-001	**Report Date:**	10/30/17

GLOSSARY

Acronyms

EDL	- Estimated Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The EDL includes any adjustments from dilutions, concentrations or moisture content, where applicable. The use of EDLs is specific to the analysis of PAHs using Solid-Phase Microextraction (SPME).
EPA	- Environmental Protection Agency.
LCS	- Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LCSD	- Laboratory Control Sample Duplicate: Refer to LCS.
LFB	- Laboratory Fortified Blank: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
MDL	- Method Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The MDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
MS	- Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available.
MSD	- Matrix Spike Sample Duplicate: Refer to MS.
NA	- Not Applicable.
NC	- Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.
NDPA/DPA	- N-Nitrosodiphenylamine/Diphenylamine.
NI	- Not Ignitable.
NP	- Non-Plastic: Term is utilized for the analysis of Atterberg Limits in soil.
RL	- Reporting Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
RPD	- Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.
SRM	- Standard Reference Material: A reference sample of a known or certified value that is of the same or similar matrix as the associated field samples.
STLP	- Semi-dynamic Tank Leaching Procedure per EPA Method 1315.
TIC	- Tentatively Identified Compound: A compound that has been identified to be present and is not part of the target compound list (TCL) for the method and/or program. All TICs are qualitatively identified and reported as estimated concentrations.

Footnotes

1	- The reference for this analyte should be considered modified since this analyte is absent from the target analyte list of the original method.

Terms

Analytical Method: Both the document from which the method originates and the analytical reference method. (Example: EPA 8260B is shown as 1,8260B.) The codes for the reference method documents are provided in the References section of the Addendum.

Final pH: As it pertains to Sample Receipt & Container Information section of the report, Final pH reflects pH of container determined after adjustment at the laboratory, if applicable. If no adjustment required, value reflects Initial pH.

Frozen Date/Time: With respect to Volatile Organics in soil, Frozen Date/Time reflects the date/time at which associated Reagent Water-preserved vials were initially frozen. Note: If frozen date/time is beyond 48 hours from sample collection, value will be reflected in 'bold'.

Initial pH: As it pertains to Sample Receipt & Container Information section of the report, Initial pH reflects pH of container determined upon receipt, if applicable.

Total: With respect to Organic analyses, a 'Total' result is defined as the summation of results for individual isomers or Aroclors. If a 'Total' result is requested, the results of its individual components will also be reported. This is applicable to 'Total' results for methods 8260, 8081 and 8082.

Data Qualifiers

A	- Spectra identified as "Aldol Condensation Product".
B	- The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For MCP-related

Report Format: Data Usability Report

Project Name:	229 HOMER ST	**Lab Number:**	L1737370
Project Number:	T0225-015-001	**Report Date:**	10/30/17

Data Qualifiers

projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank. For NJ-Air-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte above the reporting limit. For NJ-related projects (excluding Air), flag only applies to associated field samples that have detectable concentrations of the analyte, which was detected above the reporting limit in the associated method blank or above five times the reporting limit for common lab contaminants (Phthalates, Acetone, Methylene Chloride, 2-Butanone).

C - Co-elution: The target analyte co-elutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses.

D - Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.

E - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.

G - The concentration may be biased high due to matrix interferences (i.e, co-elution) with non-target compound(s). The result should be considered estimated.

H - The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.

I - The lower value for the two columns has been reported due to obvious interference.

M - Reporting Limit (RL) exceeds the MCP CAM Reporting Limit for this analyte.

NJ - Presumptive evidence of compound. This represents an estimated concentration for Tentatively Identified Compounds (TICs), where the identification is based on a mass spectral library search.

P - The RPD between the results for the two columns exceeds the method-specified criteria.

Q - The quality control sample exceeds the associated acceptance criteria. For DOD-related projects, LCS and/or Continuing Calibration Standard exceedences are also qualified on all associated sample results. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RL. (Metals only.)

R - Analytical results are from sample re-analysis.

RE - Analytical results are from sample re-extraction.

S - Analytical results are from modified screening analysis.

J - Estimated value. This represents an estimated concentration for Tentatively Identified Compounds (TICs).

ND - Not detected at the reporting limit (RL) for the sample.

Report Format: Data Usability Report

Project Name:	229 HOMER ST	**Lab Number:**	L1737370
Project Number:	T0225-015-001	**Report Date:**	10/30/17

REFERENCES

48 Compendium of Methods for the Determination of Toxic Organic Compounds in Ambient Air. Second Edition. EPA/625/R-96/010b, January 1999.

96 Method for the Determination of Air-Phase Petroleum Hydrocarbons (APH), MassDEP, December 2009, Revision 1 with QC Requirements & Performance Standards for the Analysis of APH by GC/MS under the Massachusetts Contingency Plan, WSC-CAM-IXA, July 2010.

LIMITATION OF LIABILITIES

Alpha Analytical performs services with reasonable care and diligence normal to the analytical testing laboratory industry. In the event of an error, the sole and exclusive responsibility of Alpha Analytical shall be to re-perform the work at it's own expense. In no event shall Alpha Analytical be held liable for any incidental, consequential or special damages, including but not limited to, damages in any way connected with the use of, interpretation of, information or analysis provided by Alpha Analytical.

We strongly urge our clients to comply with EPA protocol regarding sample volume, preservation, cooling, containers, sampling procedures, holding time and splitting of samples in the field.

Certification Information

The following analytes are not included in our Primary NELAP Scope of Accreditation:

Westborough Facility
EPA 624: m/p-xylene, o-xylene
EPA 8260C: NPW: 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene, Azobenzene; SCM: Iodomethane (methyl iodide), Methyl methacrylate, 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene.
EPA 8270D: NPW: Dimethylnaphthalene,1,4-Diphenylhydrazine; SCM: Dimethylnaphthalene,1,4-Diphenylhydrazine.
EPA 300: DW: Bromide
EPA 6860: NPW and SCM: Perchlorate
EPA 9010: NPW and SCM: Amenable Cyanide Distillation
EPA 9012B: NPW: Total Cyanide
EPA 9050A: NPW: Specific Conductance
SM3500: NPW: Ferrous Iron
SM4500: NPW: Amenable Cyanide, Dissolved Oxygen; SCM: Total Phosphorus, TKN, NO2, NO3.
SM5310C: DW: Dissolved Organic Carbon

Mansfield Facility
SM 2540D: TSS
EPA 3005A NPW
EPA 8082A: NPW: PCB: 1, 5, 31, 87,101, 110, 141, 151, 153, 180, 183, 187.
EPA TO-15: Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene, 3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene.
Biological Tissue Matrix: EPA 3050B

The following analytes are included in our Massachusetts DEP Scope of Accreditation

Westborough Facility:

Drinking Water
EPA 300.0: Nitrate-N, Fluoride, Sulfate; **EPA 353.2**: Nitrate-N, Nitrite-N; **SM4500NO3-F**: Nitrate-N, Nitrite-N; **SM4500F-C, SM4500CN-CE, EPA 180.1, SM2130B, SM4500Cl-D, SM2320B, SM2540C, SM4500H-B**
EPA 332: Perchlorate; **EPA 524.2:** THMs and VOCs; **EPA 504.1:** EDB, DBCP.
Microbiology: **SM9215B SM9223-P/A, SM9223B-Colilert- T,SM9222D**.

Non-Potable Water
SM4500H,B, EPA 120.1, SM2510B, SM2540C, SM2320B, SM4500CL-E, SM4500F-BC, SM4500NH3-BH, **EPA 350.1**: Ammonia-N, **LACHAT 10-107-06-1-B**: Ammonia-N, **SM4500NO3-F, EPA 353.2**: Nitrate-N**, EPA 351.1, SM4500P-E, SM4500P-B, E, SM4500SO4-E, SM5220D, EPA 410.4, SM5210B, SM5310C, SM4500CL-D, EPA 1664, EPA 420.1, SM4500-CN-CE, SM2540D.**
EPA 624: Volatile Halocarbons & Aromatics,
EPA 608: Chlordane, Toxaphene, Aldrin, alpha-BHC, beta-BHC, gamma-BHC, delta-BHC, Dieldrin, DDD, DDE, DDT, Endosulfan I, Endosulfan II, Endosulfan sulfate, Endrin, Endrin Aldehyde, Heptachlor, Heptachlor Epoxide, PCBs
EPA 625: SVOC (Acid/Base/Neutral Extractables), **EPA 600/4-81-045**: PCB-Oil.
Microbiology: **SM9223B-Colilert- T Enterolert- T, SM9221E.**

Mansfield Facility:

Drinking Water
EPA 200.7: Ba, Be, Cd, Cr, Cu, Ni, Na, Ca. **EPA 200.8:** Sb, As, Ba, Be, Cd, Cr, Cu, Pb, Ni, Se, TL. **EPA 245.1** Hg.

Non-Potable Water
EPA 200.7: Al, Sb, As, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Sr, TL, Ti, V, Zn.
EPA 200.8: Al, Sb, As, Be, Cd, Cr, Cu, Pb, Mn, Ni, Se, Ag, TL, Zn.
EPA 245.1 Hg.
SM2340B

For a complete listing of analytes and methods, please contact your Alpha Project Manager.

AIR ANALYSIS

PAGE 1 OF 1

Date Rec'd in Lab: 10/16/17

ALPHA Job #: L1737370

ALPHA ANALYTICAL — CHAIN OF CUSTODY

320 Forbes Blvd, Mansfield, MA 02048
TEL: 508-822-9300 FAX: 508-822-3288

Client Information

Client: Benchmark Tuneskey
Address: 2552 Hamburg Turnpike

Phone: (716) 856 0635
Fax: (716) 856 0583
Email:

☐ These samples have been previously analyzed by Alpha

Project Information

Project Name: 229 Homer St
Project Location: Olean N.Y.
Project #: TO225-015-001
Project Manager: Ray La Pont
ALPHA Quote #:

Turn-Around Time

☒ Standard ☐ RUSH (only confirmed if pre-approved!)

Date Due: Time:

Report Information - Data Deliverables

☐ FAX
☐ ADEx
Criteria Checker:
(Default based on Regulatory Criteria Indicated)
Other Formats:
☐ EMAIL (standard pdf report)
☐ Additional Deliverables:

Report to: (if different than Project Manager)

Billing Information

☐ Same as Client info PO #:

Regulatory Requirements/Report Limits

State/Fed	Program	Criteria

Other Project Specific Requirements/Comments:

All Columns Below Must Be Filled Out

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection Date	Start Time	End Time	Initial Vacuum	Final Vacuum	Sample Matrix*	Sampler's Initials	Can Size	ID Can	ID - Flow Controller	ANALYSIS: TO-14A by TO-15	TO-15 MCP APH	TO-15 SIM APH	FIXED GASES	TO-13A	TO-4 / TO-10	Sample Comments (i.e. PID)
37370-01	SVE Discharge AS1	10/13/17	3:34	3:34:30sec	17	0	SV	MLJ	2.7L	358	N.A.	X						PID on Sample 40.2 ppm 30 seconds to sample Test samples for TO-15 TCL VOCs MADEP Diesel and gasoline range organics DRO + GRO range

*SAMPLE MATRIX CODES

AA = Ambient Air (Indoor/Outdoor)
SV = Soil Vapor/Landfill Gas/SVE
Other = Please Specify

Container Type

Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. All samples submitted are subject to Alpha's Terms and Conditions. See reverse side.

Relinquished By:	Date/Time	Received By:	Date/Time:
AAL	10/16/17 2:31P	AAL	10/16/17 14:37
	10/16/17 14:37		10/17/17 00:55
	10/17/17 0435		10/17/17 0435

Form No: 101-02 (19-Jun-09)

APPENDIX E

AS/SVE SPECIFICATIONS

SPECIALTY SYSTEMS INTEGRATORS INC

March 21, 2016 December 20th Revision SSI Quote #017012D-AS

Mr. Ray Laport
Benchmark

Site = 229 Homer Air Sparge Trailer System

Specialty Systems Integrators, Inc (SSI) appreciates this opportunity to submit this proposal for your consideration. We have prepared this proposal in accordance with our understanding of your application

1 *Air Sparge System*

(1) Rotary Claw Pressure Blower (Performance = 150 CFM @ 15PSI)
- 15HP, 3ph, TEFC, 230/460 VAC motor
- Rotary Claw Design
- Pressure Relief Valve
- Inlet Particulate Filter on outside of trailer
- Outlet Check Valve

(1) Lot of the following instrumentation and filtration equipment
- (1) Pressure Gauge
- (1) Pressure Transmitter
- (2) Temperature Transmitters (pre and post aftercooler)
- (2) Temperature gauges (pre and post aftercooler)
- (1) Main Line Air Flow Meter

(1) Air Cooled Aftercooler
- 20 deg Approach meaning if 100 deg ambient the air effluent air will be 120 deg or less
- 1/4hp, 3ph, TEFC Motor
- Interconnecting hoses to connect to container
- Electrical will be pre-done so hookup will be very easy on site.
- Note: This aftercooler will have to be mounted outside do to it creates a lot of heat on the discharge

(1) 54 Point Manifold
- (1) Main Header (Galvanized Steel)
- (54) 1" Gate Valves
- (54) Pressure Gauges
- (54) Solenoid Valves
- (54) Rotometer Flow Meters
- (54) 1" MNPT connection outside of trailer for customer to connect to

2 *System Controller with Telemetry (NEMA 4)*

UL698A Listed (Industrial Control Panels relating to Hazardous Locations).

SSI's control panel assembled inside a NEMA4 box per UL698A Listing (Industrial Control Panels relating to Hazardous Locations). Each motor and/or device will be controlled via Hand-Off-Auto (HOA) switch located

on the HMI screen. A non-re-settable hour meter for each motor will be programmed into the HMI to account for cumulative run times.

Each motor will be controlled by a manual IEC motor starter with lockout tag-out switch lever. Signal from system control devices such as floats and switches will be processed as Intrinsically Safe (low voltage) as our standard practice.

The system will be controlled by a Siemens Programmable Logic Controller (PLC). A color touch-screen interface with a built-in remote server will be used to control & interface with system, change set points, annunciate and log alarms and view system runtime data.

The system controller can be accessed remotely via any smart phone, tablet or computer. The telemetry screens will look identical to those on the touch-screen. System alarms will be annunciated locally and remotely via email.

The proposed control panel will include the following control circuits:

- Air Sparge Blower (with VFD for Phase Conversion)
- Air Sparge Aftercooler (with VFD for Phase Conversion)
- (54) Air Sparge Manifold Solenoids

Intrinsically Safe Inputs

- VLS High-High Level Switch

Analog Inputs (4-20mA)

- (1) Air Sparge Pressure Transmitter
- (1) Sparge Main Line Flow Meter
- (2) Sparge Temperature Transmitters (pre and post aftercooler)

Telemetry Package

- Programmable Logic Controller (PLC)
- Web Interface Module
- 10" Touchscreen Operator Interface
- Note: You will be able to operate both system from either Touchscreen Operator Interface
- Surge suppressor
- Cellular Modem for System accessibility via Internet
- Annual Cellular service (not included in pricing), this service is $900/year
- Note: We will provision only one of these modems and the system will run off of the one modem until it is time to separate the units then the 2nd modem can be provisioned.
- Battery Backup so user can be notified of power loss

System will be fully accessible via internet with no software to be installed on host computer.

3 *Remediation System Trailer*

Enclosed **Fully Insulated** Tandem Axle Trailer (approx. 7' x 14') and to include the following:

- 6'6" interior height
- Double rear doors
- Stabilizer jacks
- Plywood Floor
- Side Access Door

SPECIALTY SYSTEMS INTEGRATORS INC

- All white interior
- Fully insulated
- Ceiling Vent Louver with Crank
- Walls lined with Sound Absorbing Blanket
- Ambient Temperature Transmitter inside Trailer for remote notification of temperature

The Trailer will include a heater and exhaust fan with intake louvers and light fixture.

Mechanical work to include:

- Mounting of the equipment inside the Trailer except the aftercooler that will have to be mounted external to the trailer
- Extra Plywood under Blower for added rigidity
- 54 Point inlet Sparge Manifold
- Furnish and install all interior piping and associated valves – PVC & Galvanized
- Mount control panel on the inside of the Trailer

Electrical work to include:

- Supply and install 240 VAC, 1ph, NEMA 1 power distribution panel (inside trailer)
- Mounting of the electrical distribution panel and control panel on the inside of the trailer
- Wiring of all equipment back to the control panel
- Note: For the systems to communicate with each other there will have to be an Ethernet cable run between the trailers (by others).

Electrical wiring will be wired per NEC code as Non-Classified.
Electrical service meter and mast is not provided as part of this proposal!

Site Power = 240VAC, 1ph, 60hz, 200 amp

Sincerely,

Mike Veire
Specialty Systems Integrators, Inc.
E-mail = Mikev@2ssi.com

SPECIALTY SYSTEMS INTEGRATORS INC

March 21, 2016 December 20th Revision SSI Quote #017012D-SVE

Mr. Ray Laport
Benchmark

Site = 229 Homer SVE Trailer System

Specialty Systems Integrators, Inc (SSI) appreciates this opportunity to submit this proposal for your consideration. We have prepared this proposal in accordance with our understanding of your application.

1 *SVE System*

(1) Duplex Regenerative Vacuum Blowers (Total Performance = 600 CFM @ 65" H2O)
- Each blower (300 cfm @ 65" H2O) to include:
- 10HP, 3ph, TEFC, 230/460 VAC motor
- Regenerative Maintenance Free Non Contacting Design
- Vacuum Relief Valve
- Inlet Check Valve
- Inline Particulate Filter
- Discharge Check Valve
- Discharge Silencer

(1) TotalSep™ Vapor/Liquid Separator Tank
- 80 gallon air/water separator tank
- Level switches for transfer pump control & HHL Switch
- Liquid level site tube
- Drain port

(1) Liquid Pump-out System
- Single Phase XP Centrifugal pump w/High Vacuum seal

(1) Lot of the following instrumentation and filtration equipment
- (3) Vacuum Gauges
- (1) Temperature gauge
- (1) Vacuum Transmitter
- (1) Dilution Valve
- (1) Pitot Tube Air Flow Meter (one for whole system)
- (1) Hand Held Digital Monometer

(1) 14 Point Manifold (Schedule 40 PVC Construction)
- (1) Main Header (PVC)
- (14) 2" Gate Valves
- (14) Vacuum Gauges
- (14) Clear Site Tubes
- (14) Flow Meter Ports to insert Pitot Tube
- (14) FNPT connection on outside of trailer for customer to connect to

SPECIALTY SYSTEMS INTEGRATORS INC

2 *System Controller with Telemetry (NEMA 4)*

UL698A Listed (Industrial Control Panels relating to Hazardous Locations).

SSI's control panel assembled inside a NEMA4 box per UL698A Listing (Industrial Control Panels relating to Hazardous Locations). Each motor and/or device will be controlled via Hand-Off-Auto (HOA) switch located on the HMI screen. A non-re-settable hour meter for each motor will be programmed into the HMI to account for cumulative run times.

Each motor will be controlled by a manual IEC motor starter with lockout tag-out switch lever. Signal from system control devices such as floats and switches will be processed as Intrinsically Safe (low voltage) as our standard practice.

The system will be controlled by a Siemens Programmable Logic Controller (PLC). A color touch-screen interface with a built-in remote server will be used to control & interface with system, change set points, annunciate and log alarms and view system runtime data.

The system controller can be accessed remotely via any smart phone, tablet or computer. The telemetry screens will look identical to those on the touch-screen. System alarms will be annunciated locally and remotely via email.

The proposed control panel will include the following control circuits:
- (2) SVE Blowers (each with VFD for Phase Conversion)
- VLS Effluent Transfer Pump

Intrinsically Safe Inputs
- VLS High-High Level Switch
- VLS Tank Effluent Pump Start/Stop Switches

Analog Inputs (4-20mA)
- (1) SVE Vacuum Transmitter

Telemetry Package
- Programmable Logic Controller (PLC)
- Web Interface Module
- 10" Touchscreen Operator Interface
- Note: You will be able to operate both system from either Touchscreen Operator Interface
- Surge suppressor
- Cellular Modem for System accessibility via Internet
- Annual Cellular service (not included in pricing), this service is $900/year
- Note: We will provision only one of these modems and the system will run off of the one modem until it is time to separate the units then the 2nd modem can be provisioned.
- Battery Backup so user can be notified of power loss

System will be fully accessible via internet with no software to be installed on host computer.

3 *Remediation System Trailer*

Enclosed **Fully Insulated** Tandem Axle Trailer (approx. 7' x 12-14') and to include the following:

SPECIALTY SYSTEMS INTEGRATORS INC

- 6'6" interior height
- Double rear doors
- Stabilizer jacks
- Plywood Floor
- Side Access Door
- All white interior
- Fully insulated
- Ceiling Vent Louver with Crank
- Ambient Temperature Transmitter inside Trailer for remote notification of temperature

The Trailer will include an explosion-proof heater and exhaust fan with intake louvers, explosion-proof light fixture.

Mechanical work to include:

- Mounting of the equipment inside the Trailer
- Extra Plywood under blower(s) for added rigidity
- 14 Point inlet SVE Manifold
- Furnish and install all interior piping and associated valves – PVC & Galvanized
- Mount control panel on the inside of the enclosure

Electrical work to include:

- Supply and install 240 VAC, 1ph, NEMA 4 power distribution panel (front of trailer)
- Mounting of the electrical distribution panel and control panel on the front of the trailer
- Wiring of all equipment back to the control panel
- Note: For the systems to communicate with each other there will have to be an Ethernet cable run between the trailers (by others).

Electrical wiring will be wired per NEC code as Class 1, Div II
Electrical service meter and mast is not provided as part of this proposal!

Site Power = 240VAC, 1ph, 60hz, 200 amp

Sincerely,

Mike Veire
Specialty Systems Integrators, Inc.
E-mail = Mikev@2ssi.com