
INTERIM REMEDIAL MEASURE CONSTRUCTION COMPLETION REPORT FOR BUILDING 1 AREA

Prepared By:



Taconic, Inc.
136 Coon Brook Road
Petersburgh, New York 12138

NYSDEC Site No. 442047

APRIL 2025

Certification Statement

I, A. Jeffrey Mirarchi, certify that I am currently a NYS registered professional engineer and that this Construction Completion Report 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) and that all activities were performed in full accordance with the DER-approved work plan and any DER-approved modifications.

066542
NYS Professional Engineer #

04/02/2025
Date

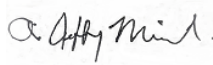

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1 INTRODUCTION

Tonoga, Inc. d/b/a Taconic (Taconic) has prepared this Interim Remedial Measure (IRM) Construction Completion Report (CCR) for the Taconic Site (Site) located in the Town of Petersburg (Town), Rensselaer County, New York (Figure 1). The IRM was conducted voluntarily in companion with work being conducted in accordance with the requirements of the Administrative Settlement Agreement and Order on Consent (Index No. CO 4-20160519- 01) (Settlement Agreement) executed between the New York State Department of Environmental Conservation (NYSDEC) and Taconic, with an effective date of November 20, 2016. The Site is listed on the New York State Registry of Inactive Hazardous Waste Disposal Sites as a Class 2 site (Site No. 442047).

The purpose of this document is to describe the completed IRM, including site preparation, remedial excavation, off-site disposal, backfill, and restoration for the drainage swale area located behind Building 1 at the Site.

1.1 Site Description

The Taconic facility manufactures polytetrafluoroethylene (PTFE) coated fabrics. The Site is located in a rural area, at the northernmost intersection of Coon Brook Road and State Route 22 (Figure 1). The Site is a 23.54-acre area that features nine structures related to manufacturing and three parking lots. There is an unnamed stream that runs through the Site. The Site is currently an operating manufacturing facility and employs over 200 people. The surrounding parcels (some of which are owned by Taconic) are residential or undeveloped. The Little Hoosic River runs south to north on the opposite side of Route 22 from the Site.

On February 13, 2016, NYSDEC and the New York State Department of Health (NYSDOH) began sampling and testing for perfluorooctanoic acid (PFOA). The tests confirmed the presence of PFOA at the Site and in the drinking water of the Town's public water supply. Since that time, Taconic has worked with the Town, Rensselaer County Department of Health (RCDOH) and NYSDOH to implement several interim measures, including:

- Provided residents of the Town with bottled water at multiple locations, free of charge, including home delivery to residents with special needs.
- Provided a climate-controlled bottled water headquarters at the Town Hall where Taconic continues to distribute free water to Town residents.
- Provided a recycling center for Town residents' empty water bottles.
- Installed over 100 point of entry treatment (POET) systems on private wells in the Town and is currently providing sampling and maintenance of the POET systems. At the time of this report, approximately 3,000 samples of residential water supplies have been collected and analyzed to ensure the POET systems continue to provide drinking water to residents in the Town without detectable traces of PFOA and other related poly- and perfluoroalkyl substance (PFAS) compounds.
- Collected samples of residential water supplies throughout the Area of Interest to ensure the raw water quality in wells that are not equipped with POET systems remain below the action levels established by the State. At the time of this report, over 650 samples of raw water supplies have been sampled and analyzed for PFOA and related compounds.
- Designed and installed a customized granular activated carbon (GAC) water treatment system and a building to house the water treatment system for the Town Public Water Supply. The GAC water treatment system has been in operation since the Spring of 2017, with PFOA and related compounds below detectable levels in the treated water. As of this writing, over 200 samples of the Town's water supply have been

collected and analyzed to ensure the GAC water treatment system continues to provide drinking water to residents in the Town without detectable traces of PFOA, and other related PFAS compounds.

- Designed and installed modifications to the GAC water treatment system in 2018 consisting of a recirculation loop and tank bypass line. The recirculation loop was installed to ensure the minimum flow requirements of the GAC water treatment system would be met during periods in which the Town was experiencing low well yields. The tank bypass line was installed to provide the make-up water for the recirculation loop and to facilitate future tank cleaning, inspection, and upgrade projects planned by the Town.

With approval from NYSDEC, and to expedite data collection associated with the Remedial Investigation (RI), the three production wells at the Site were sampled on September 1, 2016, for PFAS (including PFOA, PFOS and 15 other compounds). The production wells were also sampled for a full suite of constituents including volatile organic compounds (VOCs), semivolatile organic compounds (SVOCs), pesticides, polychlorinated biphenyls (PCBs), metals, and cyanide. Initial groundwater results showed that PFOA is a constituent of potential concern (COPC) in groundwater at the Site; VOCs, SVOCs, pesticides, PCBs, and cyanide were reported as not being present in the samples, and the concentrations of metals in the groundwater samples appear to be representative of background.

Taconic is currently conducting quarterly sampling of four production wells (raw water) and quarterly mid-GAC and post-GAC water sampling of the GAC water treatment system associated with each production well.

Building 1 is located on the north side of Coon Brook Road at the intersection with Russell Road and is the oldest building at the Site. The supply water for Building 1 comes from Unnamed Pond 1 located on Russell Road to the north. The water from Unnamed Pond 1, also referred to as the “Russell Road Pond,” is used in Building 1 for sinks and toilets, which is treated with a GAC system that was installed in Building 1 in February 2016.

Wastewater from Building 1 was previously discharged into a former dry well currently located under an addition (an active laboratory area) on the south side of Building 1. This dry well was closed in place in September 2010 before the addition was constructed. There were also two outfalls (003 and 004, see Figure 2). The former outfalls and dry well represent potential historic sources of PFOA to soil, groundwater, surface water and/or sediment before discharges of process water were discontinued in 1999.

1.2 Previous Site Characterization Activities

A phased investigation approach was established in the Remedial Investigation/Feasibility Study (RI/FS) Work Plan (OBG 2018) and approved by the NYSDEC. The status of the RI phases and the associated Interim Data Deliverable (IID) reports is as follows:

- Phases 1a and 1b have been completed, and the results are presented in the Phase 1 IID (Parsons 2020). A summary of the Phase 1 RI is provided in Section 1.2.1 below.
- Phase 2a and the Supplemental Building 1 investigation have been completed, and the results are presented in the Phase 2 IID (Parsons 2022). A summary of the Phase 2a RI and the Supplemental Building 1 investigation is provided in Section 1.2.2 below.
- Phase 2b has been completed, and the results are presented in the Phase 2b IID (Taconic 2024). Phase 2b of the RI assessed the presence of PFAS in local agricultural products and did not generate any data relevant to the Building 1 IRM
- Phase 2c of the RI is currently underway. Field sample collection began in the fall of 2023 and is

expected to be completed in 2025. The IID for Phase 2c will be prepared and submitted after the collection of the field data and laboratory analysis is completed

A subset of analytical results from samples collected in the vicinity of Building 1 throughout the various phases of the RI are shown in Figure 2.

1.2.1 Phase 1 Remedial Investigation

The objectives of the Phase 1 RI were to define the nature of COPCs, evaluate the extent of COPC impacts in environmental media (e.g., groundwater, surface water, and soil), and develop a preliminary conceptual site model (CSM).

Phase 1 involved sampling of relevant media (e.g., surface water, sediment, groundwater, surface soil, subsurface soil, wastewater and sludge) to define the nature of the COPCs and evaluate their extent. Phase 1 included the sampling of environmental media on the Site and nearby Taconic-owned properties, with laboratory analysis for PFAS, Target Compound List (TCL)/Target Analyte List (TAL) constituents, cyanide, total organic carbon (TOC), major cations/anions, grain size, and pH. Phase 1 was broken into subtasks of Phase 1a and Phase 1b. Phase 1 activities are summarized below and described in detail in the Phase 1 IID (Parsons 2020).

1.2.1.1 Phase 1a

The objective of Phase 1a was to begin to define the nature of the COPCs and evaluate their extent through the collection of environmental samples. The environmental media sampled included groundwater, surface water, sediment, surface soil, and subsurface soil. Wastewater and sludge in tanks were also sampled during Phase 1a for laboratory analysis. A primary objective of Phase 1a was also to collect preliminary groundwater data to inform the placement of groundwater monitoring wells to be installed in Phase 1b.

Phase 1a field activities were implemented from April 2018 through September 2018 and included:

- Subsurface utility location and mark-out;
- Collection and analysis of 26 surface water samples;
- Collection and analysis of 15 sediment samples;
- Collection and analysis of 80 surface soil samples;
- Collection and analysis of wastewater and sludge samples;
- Installation of two exploratory boreholes (with completion as open shallow bedrock monitoring wells);
- Borehole geophysical testing and concurrent depth-discrete groundwater profiling;
- Direct-push overburden investigation, including:
 - Direct sensing at four locations;
 - Collection and analysis of 33 discrete-interval groundwater samples; and
- Collection and analysis of 41 subsurface soil samples.

Phase 1a analytical results for surface water, sediment, subsurface soil, and overburden groundwater indicated a potential PFAS source area behind Building 1. A source area is defined in DER-10/Technical Guidance for Site Investigation and Remediation as “a portion of a site or area of concern at a site where the investigation has identified a discrete area of soil, sediment, surface water or groundwater containing contaminants in sufficient concentrations to migrate in that medium, or to release significant levels of contaminants to another environmental medium, which could result in a threat to public health and the environment” (NYSDEC 2010). Additional investigation during Phase 1b, Phase 2a and the Supplemental Building 1 RI was performed to further define the potential source area, investigate potential migration pathways, and support the development of an IRM if warranted. This additional investigation work is described below.

1.2.1.2 Phase 1b

Based on the results of the Phase 1a RI, Taconic implemented Phase 1b of the RI. Phase 1b involved installation and sampling of groundwater monitoring wells to further define the nature of the COPCs and evaluate their extent. Groundwater monitoring well locations were chosen based on data from the direct-push overburden investigation, completed as part of Phase 1a.

Phase 1b field activities were implemented from April 2019 through October 2019 and included:

- Installation of 24 overburden monitoring wells;
- Collection of subsurface soil at 4 monitoring well locations;
- Well development;
- Hydraulic conductivity testing;
- Collection and analysis of groundwater samples (24 overburden monitoring wells, and two former residential wells, one at a Taconic-owned property on Coon Brook Road and another at the Taconic-owned campground adjacent to the Little Hoosic River);
- Site topographic surveying;
- Collection of two rounds of stormflow sampling from natural surface water features and stormwater conveyances, with three locations sampled during both events and one sampled only during the second event; and
- Performance of packer sampling, including collection of a total of four samples from four discrete intervals, from production well PW-4.

The results of the Phase 1a and 1b RI are summarized in the IID, which was submitted to NYSDEC on February 28, 2020 (Parsons 2020). The Phase 1a and 1b results served as the basis for the additional investigations for Building 1 and Phase 2 of the RI.

1.2.2 Phase 2a and Supplemental Building 1 Remedial Investigation

Phase 2 is intended to complete the requirements of an RI as described in DER-10/Technical Guidance for Site Investigation and Remediation (NYSDEC 2010). The objective of the Phase 2 RI is to expand the sampling and analysis of environmental media within the Site and adjacent off-site areas to further define the potential source areas, migration pathways, and the nature and extent of the compounds at or emanating from the Site. Similarly, to Phase 1 of the RI, Phase 2 is being completed in iterative phases, whereby data gathered in the initial phases will be used to plan and implement subsequent phases, as needed, to identify and design potential IRMs and to ultimately complete the RI.

Phase 2a investigation activities involved collection of additional data and environmental samples to further delineate the extent of COPCs in environmental media and refine understanding of the geology and hydrogeology to assist with identification of primary migration pathways. In addition, as a result of detections of elevated concentrations of PFAS in the Building 1 area, particularly in the vicinity of Former Outfalls 003 and 004, a Supplemental Building 1 Remedial Investigation was performed. Activities performed during the Phase 2a and Building 1 RI work are summarized below and presented in detail in the Phase 2A IID (Parsons 2022).

Phase 2a field activities were implemented from November 2020 through March 2022 and included:

- Collection and analysis of 48 natural surface water samples during baseflow conditions, collected over two rounds of sampling;
- Collection and analysis of 37 stormwater and natural surface water samples during stormflow conditions, collected over two rounds of sampling;
- Collection and analysis of 12 sediment samples;
- Collection of 90 surface, near surface, and subsurface soil samples from 33 off-site sample locations;
- Collection of 13 surface, near surface, and subsurface soil samples from three on-site soil boring locations

- drilled for monitoring well installation;
- Collection of 17 subsurface soil samples from eight soil boring locations around Building 1;
- Installation, development, and sampling of two shallow/deep overburden monitoring well pairs (co-located with new bedrock well locations);
- Installation of three new overburden monitoring wells adjacent to Building 1;
- Development and sampling of two out of three new overburden wells adjacent to Building 1;
- Sampling of five existing overburden monitoring wells to assist with investigation of Building 1 groundwater;
- Surface geophysics to preliminarily characterize subsurface conditions, prior to installation of additional groundwater monitoring wells;
- Installation of seven bedrock groundwater monitoring wells;
- Sampling of mixed borehole groundwater from four new bedrock groundwater monitoring wells;
- Borehole geophysics to identify potential water-bearing fracture zones for discrete interval groundwater sampling;
- Discrete interval bedrock groundwater sampling using packer sampling methods in six new bedrock groundwater monitoring wells;
- Installation and two rounds of gauging of three staff gauges in local rivers and streams; and
- Three rounds of monitoring well gauging.

The investigation work conducted during the RI and the Supplemental Building 1 RI identified elevated PFAS concentrations in surface water, subsurface soils, and shallow groundwater along the swale behind Building 1.

1.3 Preliminary Conceptual Site Model

A preliminary CSM for the Building 1 area is presented below. Additional investigative results are available in the two IIDs (Parsons 2020 and Parsons 2022) and Figure 2.

The drainage swale behind Building 1 receives surface water runoff from upslope areas. The Building 1 foundation is assumed to be completed near the top of bedrock and may be causing ponding within the swale by blocking infiltration and downslope runoff. Elevated concentrations of PFAS compounds were observed in surface water in the drainage swale behind Building 1, downstream in the drainage channel along Coon Brook Road, and Unnamed Pond 3 (Figure 1). Surface water from Unnamed Pond 3 flows under Route 22 and discharges to the Little Hoosic River. The Little Hoosic River has been sampled both upstream and downstream of where the drainage channel discharges to the Little Hoosic River during both base- and storm-flow conditions, and results indicate that PFAS within the on-site surface water drainage system are not measurably impacting the water quality in the Little Hoosic River.

Although isolated pockets of contaminated overburden groundwater were detected in monitoring wells around Building 1 (monitoring wells (MW)-3 and MW-4 installed during Phase 1 and MW-25 and MW-26 installed during Phase 2) the geologic conditions around Building 1 do not seem to indicate overburden groundwater is a major migration pathway from Building 1. Building 1 is located on the up-sloping, terraced edge of the Little Hoosic River Valley. On this edge, the overburden is much thinner (i.e., zero to approximately six feet [ft] deep) as compared to an average overburden thickness of approximately 60 to 100 ft generally present throughout the site. Around Building 1, the thin overburden does not contain any significant water bearing zones. Most borings in this area did not encounter groundwater sufficient for the installation of monitoring wells. Phase 1 upgradient overburden boring MW-2S, attempted east of Building 1, was dry and no wells were installed as planned. Additional Phase 1 borings around Building 1 (MW-3 and MW-4) and downgradient of Building 1 (MW-5 and MW-6S) did not encounter significant water bearing zones. Although wells were installed at these locations, the wells frequently run dry during purging and sampling. Similar conditions were observed in the nine additional borings (SB-12 through SB-20) installed around Building 1 during Phase 2a. Three of these borings were converted to

monitoring wells. However, only two of these wells produce enough groundwater volume for sampling. An overburden well was also planned at the MW-20 location just north of Building 1; however, overburden groundwater zones were not encountered in this area and therefore only a bedrock well (MW-20BR) was installed at this location.

The shallow bedrock and lack of the silt/clay aquitard (present throughout most of the site) in this area indicates a potential for the contaminated surface water to migrate to the bedrock aquifer. PFAS concentrations in MW-20BR, installed adjacent to Building 1, are slightly higher than PFAS concentrations in bedrock wells further downgradient to the northeast, such as MW-23BR and RW-159CBR. However, the overall impact of the Building 1 area on bedrock groundwater quality requires further evaluation under the RI.

1.4 IRM Objectives

The objectives of this IRM were as follows:

- Remove PFOA-contaminated sediment and soil in the swale area to eliminate the direct contact with surface water.
- Reconstruct the drainage swale area to eliminate the hydraulic gradient on contaminated subsurface soils.
- Reduce potential for off-site migration of contaminated surface water and suspended sediments.
- Reduce the discharge of contaminated surface water and sediment to the Little Hoosic River.
- Minimize the leaching of contamination from sediment and soil to the groundwater.

The approach for the IRM consisted of the following elements:

- Implementation of the community air monitoring plan (CAMP) for dust (PM10), including controls to address elevated dust levels;
- Site preparation activities, including establishing erosion and sedimentation controls, utility clearance, and decommissioning/abandonment of existing monitoring wells.
- Excavation of PFOA-contaminated sediment, surface soils, and subsurface soils.
- Placement of soil backfill material to 1 ft below final grade.
- Placement of a geosynthetic clay layer to provide an impermeable surface to eliminate the hydraulic gradient from surface waters to subsurface soils and groundwater.
- Placement of a 1 ft thick layer of gravel or crushed stone for the remaining final swale cover layer.
- Restoration of the remaining surfaces outside of the swale limits with a standard lawn seed mix and rolled erosion control matting.

Specific elements of the IRM are outlined in the following sections.

2 HEALTH AND SAFETY

2.1 Health and Safety Plan

The selected Contractor, Clean Harbors, prepared an amendment to the existing site-specific Health and Safety Plan (HASP, OBG 2016) in accordance with the requirements of 29 CFR 1910.120 and/or 29 CFR 1926.65, other applicable Occupational Safety and Health Administration (OSHA) regulations and published guidelines. Clean Harbors' HASP Amendment is provided in Appendix A.

Clean Harbors personnel were required to have certification that they have completed OSHA 40-hour Hazardous Waste Operations and Emergency Response (HAZWOPER) training, annual eight-hour refresher training (as appropriate), and other training and medical monitoring as needed to meet OSHA requirements.

The Contractor maintained the HAZWOPER training certificates, including annual physicals for the individual workers on-site during all construction activities.

Clean Harbors' HASP provided for regular atmospheric monitoring at work zones to determine the level of personal protective equipment (i.e. Level D, Modified Level D or Level C) that was required for Clean Harbors personnel. Based on the work zone monitoring, Level D was worn by personnel during the implementation of the IRM.

2.2 Community Air Monitoring Plan

The NYSDOH generic Community Air Monitoring Plan (CAMP) (NYSDEC 2010) was implemented for real-time monitoring of particulates (dust) and VOCs during intrusive remedial activities to confirm that the community is not adversely impacted (see Appendix B). Parsons was responsible for implementation of the CAMP.

As described in the CAMP, action levels and response actions for dust were as follows:

- If the downwind particulate level was 100 micrograms per cubic meter ($\mu\text{g}/\text{m}^3$) greater than background for a 15-minute average or if particulates were observed leaving the work area, then:
 - Particulate suppression techniques would be applied
 - Work activities could resume if the downwind particulate levels did not exceed 150 $\mu\text{g}/\text{m}^3$ over background.
- If the downwind particulate level was 150 $\mu\text{g}/\text{m}^3$ over background, then:
 - Work activities would be halted
 - Corrective actions would have been taken to minimize particulate generation
 - Particulate suppression techniques would be applied
 - Work activities could resume if the downwind particulate levels did not exceed 150 $\mu\text{g}/\text{m}^3$ over background.

Upwind and downwind particulate levels were monitored during ground intrusive work using TSI DustTrak2 8530 monitors. There was one reading that showed a downwind particulate level 105 $\mu\text{g}/\text{m}^3$ greater than the upwind particulate level during delivery of crushed stone on August 13, 2024. It took less than one minute for dust to settle, and the observed dust was not due to ground intrusive activities. There were no exceedances of action levels during ground intrusive work activities.

As described in the CAMP, action levels and response actions for VOCs are as follows:

- If total VOC levels at the downwind perimeter of the work zone were more than 5 parts per million (ppm) over background for a 15-minute average, then:
 - Work activities would be temporarily halted and monitoring continued
 - Work activities could resume if the VOC levels readily decreased (per instantaneous readings) below 5 ppm above background.
- If total VOC levels at the downwind perimeter of the work zone persisted at levels greater than 5 ppm above background but less than 25 ppm, then:
 - Work activities would be halted, the source of vapors identified, corrective actions taken to abate emissions, and monitoring continued.
 - Work activities could resume if total VOC levels 200 feet downwind of the work zone or half the distance to the nearest potential receptor or residential/commercial structure, whichever was less – but in no case less than 20 feet, was less than 5 ppm above background for a 15-minute average.
- If total VOC levels were greater than 25 ppm at the perimeter of the work zone, activities would be shut down and would not resume until the source of vapors was identified, corrective actions were implemented, and VOC levels decreased sufficiently, as described above.

Upwind and downwind VOCs were monitored during ground intrusive work using MiniRAE 3000 PIDs. There were no exceedances of action levels based on comparison of the downwind reading to the background (upwind) reading during implementation of the IRM.

Particulate and VOC levels were recorded and are attached as Appendix C (separate electronic submittal).

3 IRM IMPLEMENTATION

Taconic was responsible for implementing the remediation activities with Parsons overseeing the Contractor, Clean Harbors. Taconic arranged for and coordinated the pre-construction, post-excavation, and post - construction (as-built) surveys by a licensed third-party surveyor (Gilbert VanGuilder Land Surveyor, PLLC). Parsons completed daily reports for each day of oversight (Appendix D). NYSDEC personnel were on- site periodically to observe work activities. Communication with regulatory agencies and with members of the surrounding community was managed by Taconic. Taconic was responsible for all on-site operations during the project. The remediation activities performed by Clean Harbors were observed for compliance with the IRM Work Plan by Parsons and Taconic. Clean Harbors prepared a Construction Work Plan and submitted the workplan to Taconic for approval prior to beginning IRM work (Appendix E). This workplan was submitted to NYSDEC on July 25, 2024,

3.1 Site Preparation

Mobilization was initiated by Clean Harbors after notification from Taconic to proceed. In general, mobilization consisted of bringing personnel, equipment, and materials to the Site to support the remedial activities. Mobilization activities included the following:

- Mobilizing and establishing workspace to be utilized during implementation of the remedial activities as described in the Work Plan.
- Reviewing the location and types of utilities in the area with Taconic.
- Providing and maintaining first-aid facilities and portable sanitary services for use by on-site personnel engaged in remedial activities.

During mobilization activities, Clean Harbors performed site preparation activities, which consisted of the following:

1. Verifying site conditions and identifying, marking, and verifying the locations of aboveground and underground utilities, equipment, and existing structures and site features (e.g., manholes, outfalls, buildings), as necessary, to implement the remedial activities. Current site conditions (i.e., a site plan) are shown on Figure 3.
2. Contacting UDig NY to initiate a subsurface utility clearance request a minimum of three business days before the start of the remedial activities, to identify and mark the locations of underground utilities (e.g., electricity, telecommunications, water, natural gas, and storm and sanitary sewer) and associated structures at and near the work areas.
3. Verifying the pre-construction survey and work limits as established during the pre-construction survey conducted on August 1, 2024.
4. Installing temporary erosion and sediment controls in accordance with *New York State Standards and Specifications for Erosion and Sediment Control* (Blue Book; NYSDEC 2016).

5. Installing work zone air monitoring equipment, which consisted of a PID, as required by the HASP.
6. Installing site control and safety measures, including temporary construction fencing, traffic controls, and project/warning signs.
7. Constructing support areas, which included the following:
 - Impacted material staging areas
 - On-site storage areas (for clean materials)
 - Equipment, material, and personnel decontamination areas
 - Access roads as necessary to provide safe and stable access to and egress from remediation work areas

Clean Harbors was responsible for locating staging/support areas in consultation with Taconic and Parsons. This included construction of the soil staging area (as described in Section 3.4), the decontamination area (as described in Section 3.7), and the access road. To construct the access road, vegetation was cleared and geotextile separation fabric was laid and covered with approximately 10-12 inches of crushed #2 stone.

Clean Harbors was responsible for maintaining the construction support areas, including the integrity of the liner system within the excavated soil staging area, as necessary during implementation of the IRM activities.

Site control measures were established prior to the initiation of the IRM, including the establishment and maintenance of exclusion zones, controlling site access, traffic control measures and measures to protect existing structures and surfaces.

Access to the project area was restricted by installing temporary fencing. Security around active work areas, staging, handling, decontamination, and storage areas was maintained during both work and non-work hours. The level of security was dependent on the activities being performed and location of activities. Security measures included:

- Temporary perimeter fencing and signs
- Maintenance of sign-in sheets
- Implementation of safe work practices

Temporary fencing was installed and relocated, as needed, during the remedial activities to limit access to the active work area.

Traffic control measures and temporary barriers were also implemented as necessary, including provisions to prevent vehicular and pedestrian traffic from inadvertently entering the work areas. Temporary traffic barriers were installed along perimeter of the active work areas as needed to divert vehicle and pedestrian traffic from the work areas.

Clean Harbors was responsible for implementing the following:

- Worker breathing zone air monitoring (for Clean Harbors employees)
- Noise monitoring, as necessary

Clean Harbors was also responsible for implementing corrective actions in consultation with Parsons and Taconic in the event of an exceedance. No exceedances were observed during implementation of the IRM.

3.1.1 Permitting

No federal, state, or local permits were identified as being necessary for completion of the IRM work.

3.1.2 Utility Clearance

Taconic provided Clean Harbors with drawings showing locations of existing surveyed utilities and walked the site with Clean Harbors to review the locations (Figure 3). Drawings were based on existing Taconic drawings with results of a ground penetrating radar (GPR) survey transcribed on the drawing. In compliance with state regulations, Clean Harbors notified UDig NY, prior to commencing field activities to identify public utility lines that were located within or near the proposed excavation areas. One potential non-potable water supply line and valve box, owned and operated by Taconic, was identified in the work area and the contractor performed hand excavation within this area.

3.1.3 Soil and Sediment Erosion Control / Stormwater Management

A Stormwater Pollution Prevention Plan (SWPPP) was not required since the total area of disturbance was less than one acre. Clean Harbors installed silt fence (Carthage Mills CM10C-3608-EE48 material) to provide soil and sediment erosion control. The silt fence was installed and maintained in accordance with manufacturer's instructions and with the *New York State Standards and Specifications for Erosion and Sediment Control* (NYSDEC 2016, or latest version) (see photos in Appendix D, 8/14/24 Daily Report). Silt fence installation was completed prior to completion of ground intrusive work after some initial clearing of vegetation was completed to provide access to the area.

Clean Harbors implemented the remedy in such a manner as to minimize soil erosion and sedimentation including minimizing routing of stormwater over disturbed areas via a corrugated double-walled HDPE pipe that was placed under the access road to provide drainage (see photos in Appendix D, 8/13/24 Daily Report). Polyethylene sheeting was used to cover work areas prior to storm events to prevent accumulation of stormwater within the excavated areas. All soil erosion and sediment controls were inspected daily, and no repairs were needed during the implementation of the IRM. Roadways were kept free of debris and soil from the site. The containment area for excavated material stockpiles was constructed with geotextile fabric and geomembrane liner with haybales placed around the perimeter and sandbags used to secure the geomembrane containment (see photos in Appendix D, 8/23/24 Daily Report). Stockpiles of clean backfill were lined and covered as necessary to prevent migration of soil or dust from the stockpiles.

3.1.4 Monitoring Well Abandonment

MW-4, MW-25, and MW-26 were located within the excavation area and, therefore, needed to be removed and decommissioned in accordance with the IRM workplan and CP-43 (NYSDEC 2009). Since the existing monitoring wells were shallow overburden wells, well abandonment was completed by removing the well casing during excavation activities (see photo in Appendix D, 8/20/24 Daily Report). No grouting of the boreholes was necessary since the wells were within the footprint of the excavation.

3.2 Excavation

Photographs were taken of the work and support areas prior to beginning work to develop a record of existing site conditions (see photos in Appendix D, 8/12/24 Daily Report). Taconic retained Gilbert VanGilder Land Surveyor, PLLC, a New York state licensed professional land surveyor (PLS), to conduct survey control during the remedial activities. The Contractor supplied the survey information (including an as-built survey, signed and sealed by the Contractor's New York state licensed PLS) to Taconic for inclusion in the Construction Completion Report (CCR, see Section 5). The survey was referenced horizontally to the North American Datum

of 1983, 2011 adjustment (NAD 83/2011) and vertically to the North American Vertical Datum of 1988 (NAVD88), and had data accuracy within + / - 0.1 ft.

The following topographic and photographic surveys were conducted:

1. Pre-construction survey of the excavation areas prior to initiation of removal activities. This survey was completed on August 1, 2024.
2. Post-removal survey of the excavation bottoms, prior to backfilling, to document horizontal and vertical limits of removal. This survey was completed on August 23, 2024.
3. Post-construction survey of the restored areas, including the excavation areas (post-backfill) and support areas surveyed during the pre-construction survey. The post-construction survey of the removal areas was completed at the same coordinates (x,y,z) as the pre-construction survey to confirm the areas were restored to final grades, including grading to steepen the drainage swale and to promote drainage away from the base of Building 1. Post-construction survey of the restored areas was conducted on September 25, 2024 after completion of all site restoration activities and prior to demobilization.

Clearing and grubbing were performed to the extent necessary to construct the access road and complete the excavation work. Cleared vegetation was reused onsite by chipping the material and using the mulch on the access road area.

Excavation was performed within the boundaries and limits shown in the as-built drawing (Figure 4). Excavation occurred to bedrock, with benching and sloping resulting in excavation to shallower depths along either side of the excavation. On the building (southern) side of the excavation, a one-ft wide bench along the building foundation was excavated to a depth of one foot. Benching and sloping as shown on Figure 4 was used on either side of the excavation area until refusal was reached, with a maximum vertical face of 3.5 ft used for benching. Consistent with boring information, the top of bedrock was encountered at the base of the excavation throughout the entire length of the drainage swale.

Based on the off-site waste shipments tracked by manifests (see Section 3.4 and Appendix F), 298.43 tons of soil were removed from the drainage swale during implementation of the IRM.

All excavation work complied with the requirements of Title 29 Code of Federal Regulations, Part 1926.650-652, (Subpart P – Excavations), OSHA Safety and Health Regulations for Construction. Clean Harbors installed and maintained sufficient barricades or signs around the excavation as necessary to ensure safety until the excavation was backfilled and graded to a safe condition.

3.3 Documentation Sampling

After completion of the excavation and prior to backfilling, five documentation soil samples were collected at the base of the excavation (sample IDs PEB-01 through PEB-05) and were analyzed for PFAS by Method 1633. The locations of these samples and associated results are shown in Figure 4. PFOA results ranged from 15 to 9300 ppb in soil. Since the excavation was completed to bedrock, only a minimal amount of residual soil remained on the surface of the bedrock within the excavation footprint. These documentation samples were collected by scraping residual soils from the surface of the bedrock.

3.4 Waste Characterization, Management, and Disposal

Soil, debris, and miscellaneous wastes generated during the IRM activities were handled, transported, and

disposed of off-site in accordance with applicable federal, state, and local regulations.

Excavated material was staged in a stockpile containment area prior to off-site disposal. The containment area was constructed of geotextile fabric and a geomembrane liner. The perimeter was bolstered with haybales, and the geomembrane containment was secured with sandbags (see photo in Appendix D, 8/20/24 Daily Report). The excavated material was loaded via excavator from the stockpile onto end-dump trucks for off-site disposal. Stockpiled material was covered with polyethylene sheeting, as needed.

The disposal facility was approved by Taconic. All excavated materials were shipped to Clean Harbors' Landfill in Corunna, ON. Soil was disposed of as non-hazardous waste. Miscellaneous solid waste (e.g., disposable PPE, plastic sheeting, miscellaneous construction debris) was also disposed of at the Clean Harbor's Landfill as non-hazardous waste. Consistent with the IRM workplan, the one large boulder encountered during excavation was cleaned and re-used at the Site. All trucks transporting excavated materials were lined and equipped with a sealed tailgate (see photo in Appendix D, 8/22/24 Daily Report). Transportation to the designated approved disposal facility was conducted by a licensed hauler in accordance with applicable local, state, and federal regulations. Each waste transporter had a valid waste transporter permit (6 NYCRR Part 364).

Wastes were transported under non hazardous waste manifests that listed Taconic as the waste generator to the US-Canadian border. Wastes were then transported under a Canadian bill of lading, with Safety-Kleen Systems, Inc as the consignor, from the US-Canadian border to the landfill in Corunna, ON. Completed copies of the manifests, bills of lading, and weight tickets are provided in Appendix F. A running summary of off-site waste shipments was maintained for each waste stream including sequential load number, manifest number, date of shipment, facility ticket number, and facility weight (Appendix F).

3.5 Swale Construction

3.5.1 Backfill Materials

To ensure compliance with DER-10, Section 5.4(e), 6 NYCRR Part 360.13, and "Sampling, Analysis, and Assessment of Per- and Polyfluoroalkyl Substances (PFAS) Under NYSDEC's Part 375 Remedial Programs" (NYSDEC 2022), the Request to Import/ Reuse Fill or Soil form was submitted to NYSDEC for backfill material to be used in the IRM. Appendix G contains copies of the submitted forms and associated approvals for backfill material used at the site.

3.5.2 Subgrade Preparation

The excavation area was backfilled with clean run-of-bank (ROB) gravel following completion of excavation activities. Clean Harbors backfilled the excavation to within approximately 12 inches of the finished grade (see photo in Appendix D, 8/26/24 Daily Report) and prepared this subgrade to facilitate placement of the geosynthetic liner. The cross-sections on Figure 4 provide details on the installed backfill (also see photos in Appendix D, 8/26/24 through 9/4/24 Daily Reports).

3.5.3 Geosynthetic Clay Liner

Following preparation of the subgrade, a geosynthetic clay liner (GCL; Cetco Bentomat ST) was installed over the prepared subgrade in accordance with the manufacturer's specifications. The GCL was anchored immediately adjacent to the bench on the building side of the excavation and at the outer limit of where a 12-inch depth was obtained on the slope side of the excavation. Figure 4 provides GCL installation details (also see

Appendix D, 9/5/24 Daily Report).

3.5.4 Swale Restoration

Following placement of the GCL, a 12-inch thick layer of a mix of #1 and #2 stone was placed over the GCL. Figure 4 and Figure 5 provide excavation area restoration details. (also see Appendix D, 9/6/24 Daily Report)

3.6 Site Restoration

After completion of the remedy, the following site restoration activities were completed:

- Clean up and shaping of stone cover along swale edges
- Grading and smoothing soil along access road
- Placement of seed and straw covering for exposed soil along access road
- Smoothing and grading of staging/ parking areas, including spreading gravel cover using excess leftover stone from swale cover
- Placing fresh stone along roadway shoulders using excess leftover stone from swale cover
- Removing debris, including stumps, cut vegetation, flex drain pipe, and other construction debris, and disposing in rolloff dumpster as non-hazardous waste

The extent of the gravel-lined swale and the areas restored by vegetative cover on shown on Figure 5.

3.7 Decontamination Procedures and Demobilization

Clean Harbors decontaminated all personnel and equipment that came into contact with excavated materials. The decontamination area was located adjacent to the soil staging area and was equipped with geotextile fabric and a geomembrane liner. Clean Harbors conducted decontamination of personnel and equipment within the constructed decontamination area. All construction vehicles leaving the project area were decontaminated by Clean Harbors, as necessary, to prevent the tracking of soil off-site. Vehicles transporting clean fill to the project area did not enter any contaminated work area.

Clean Harbors decontaminated the project equipment, including, but not limited to, excavation equipment, trucks, pumps, and hand tools, that contacted excavated materials prior to demobilizing and prior to handling clean material. Clean Harbors performed decontamination activities until no visible soil, debris, or stains were present on the equipment surfaces.

Any equipment to be taken off-site by Clean Harbors was cleaned within the constructed decontamination area. Precautions were taken to limit contact between the equipment, personnel performing the cleaning activities and any cleaning liquids that accumulated in the decontamination area. The extent and method of cleaning was inspected by Taconic and/or Parsons for any visible soils, staining, or other debris prior to demobilization.

Clean Harbors managed the solid and liquid waste streams generated by the decontamination activities for off-site disposal at the Clean Harbor's Landfill facility approved by Taconic.

Following completion of all IRM actions, the Contractor conducted the following demobilization activities:

1. Completion of “punch list” items.
2. Dismantled the work area(s) and decontamination area.
3. Removed specified erosion and sediment control measures.
4. Removed/disposed of project-related material, equipment, and support structures from the project area, as appropriate.

4 REFERENCES

NYSDEC. 2009. *CP-43: Groundwater Monitoring Well Decommissioning Policy*. November 3.

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

NYSDEC. 2016. *New York State Standards and Specifications for Erosion and Sediment Control*.

NYSDEC. 2022. *Sampling, Analysis, and Assessment of Per- and Polyfluoroalkyl Substances (PFAS) Under NYSDEC's Part 375 Remedial Programs*. November.

OBG. 2016. *Health and Safety Plan, Taconic Site, NYSDEC Site No. 442047*. December.

OBG. 2018. *Remedial Investigation/Feasibility Study Work Plan, Taconic Site, NYSDEC Site No. 442047*, April 9.

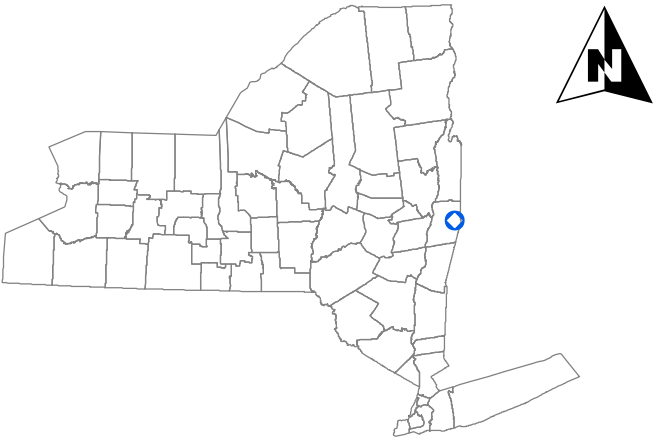
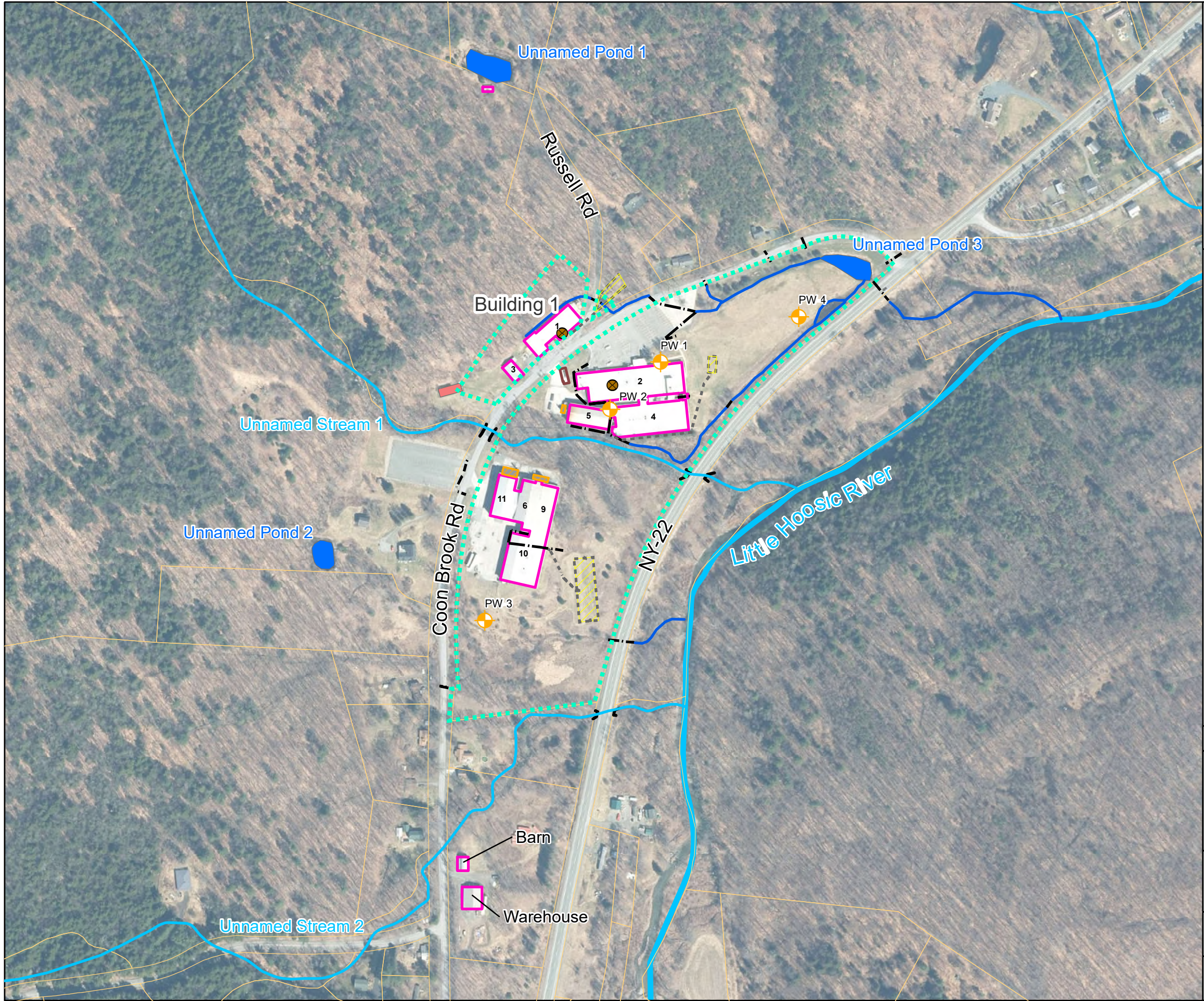
Parsons. 2020. *Interim Investigation Deliverable, NYSDEC Site No. 442047*. February.

Parsons. 2022. *Phase 2A Interim Investigation Deliverable, NYSDEC Site No. 442047*. June.

Taconic. 2024. *Phase 2B Interim Investigation Deliverable, NYSDEC Site No. 442047*. October.

FIGURES

Plot Date: 12/29/2022 Plotted By: Sisson, Evan



- Site Boundary
- Inactive Drywell
- Production Well Location
- Utilities**
- Sanitary Sewer
- Storm Ditch
- Storm Sewer
- Culvert
- Natural Gas Tank
- Pond
- Leach Field
- Fume Eliminators
- Sludge Roll-off Storage Pad
- Building Footprint
- Tax Parcel Boundaries

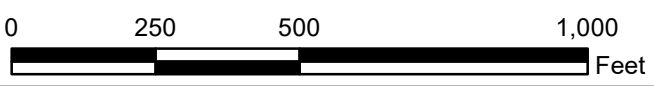
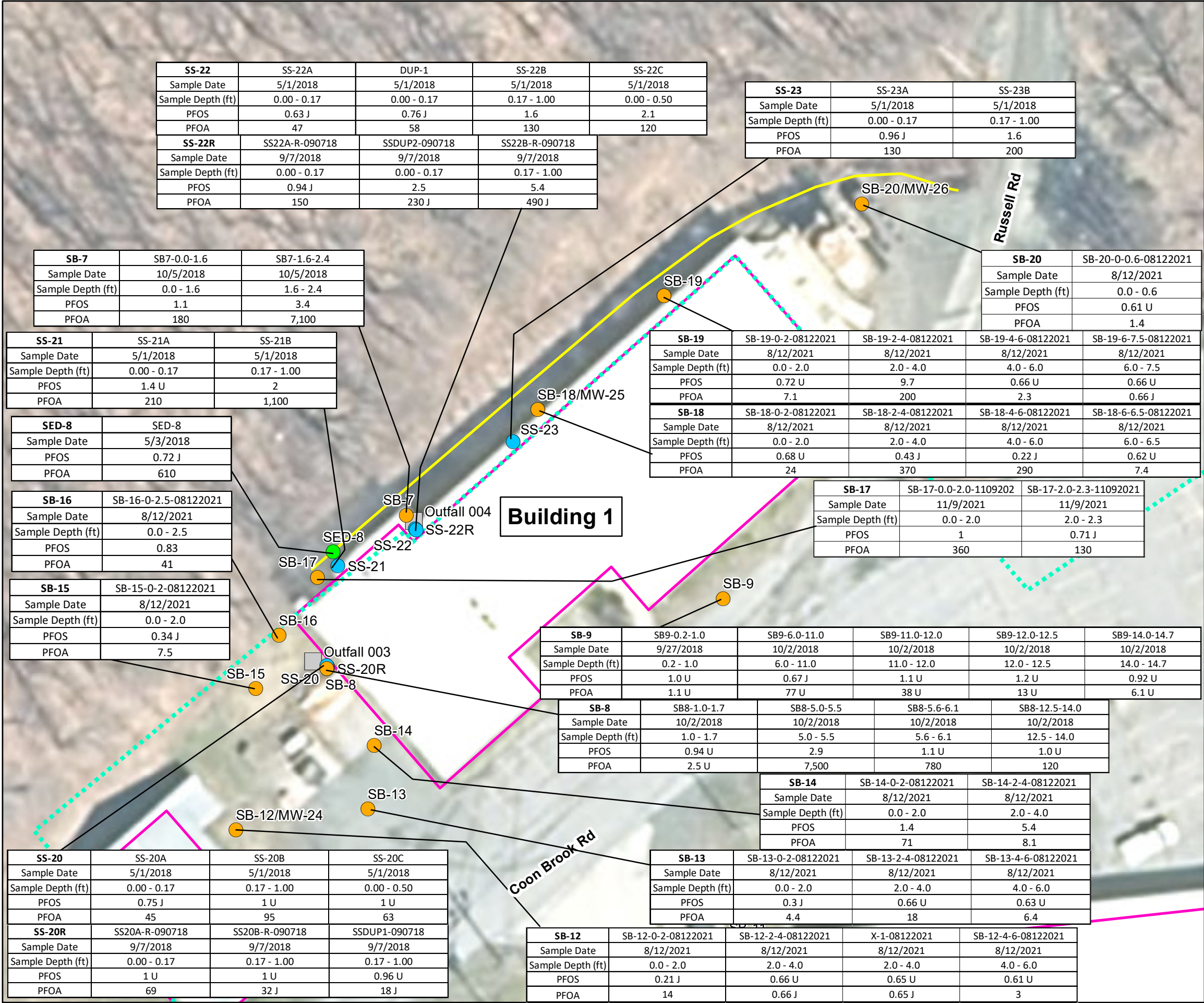


FIGURE 1



SITE LAYOUT AND FEATURES

Plot Date: 2/10/2023
Plotted By: Schneider, Chris





P.N. 097.00-1-61

P.N. 097.00-1-63

P.N. 097.00-1-62

LEGEND:

	EXISTING MAJOR CONTOUR		EXISTING WELL
	EXISTING MAJOR CONTOUR		EXISTING MANHOLE
	PARCEL BOUNDARY (NOTE 1)		EXISTING HYDRANT
	EXISTING GAS LINE		EXISTING UTILITY POLE
	EXISTING OVERHEAD WIRE		EXISTING GUY WIRE ANCHOR
	EXISTING FENCELINE		EXISTING ASPHALT

NOTES:

1. PARCEL BOUNDARIES WERE DOWNLOADED FROM THE RENSSELAER COUNTY ONLINE GIS DATABASE (RENSCO.COM/GEOGRAPHIC INFORMATION SYSTEMS) AND ARE APPROXIMATE.
2. BASE MAPPING CONDUCTED BY GILBERT VAN GUILDER LAND SURVEYOR, LLC. SURVEY DATA COLLECTED THROUGH MAY 24, 2022.

**NOT FOR
CONSTRUCTION**

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SCALE: 1"=40'

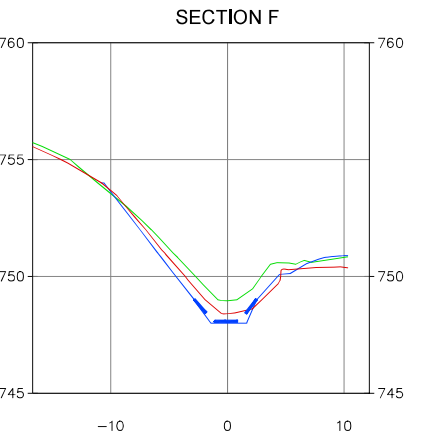
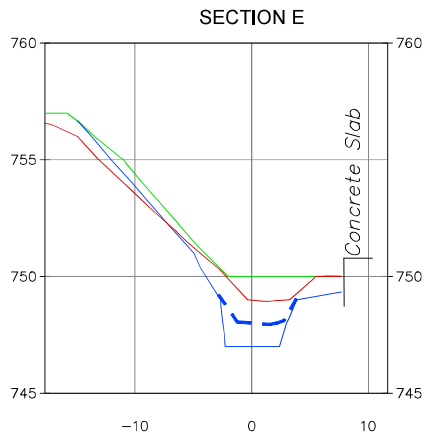
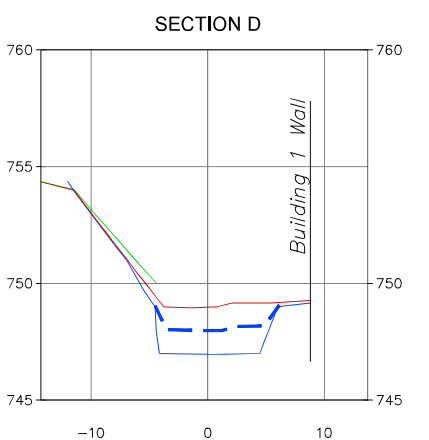
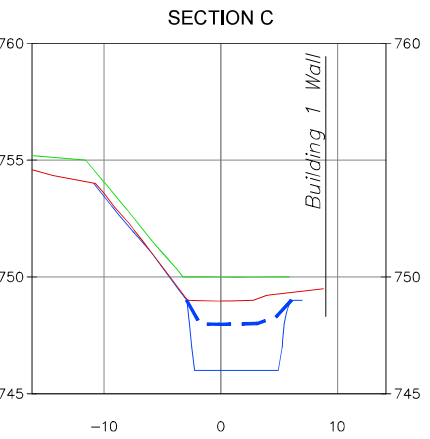
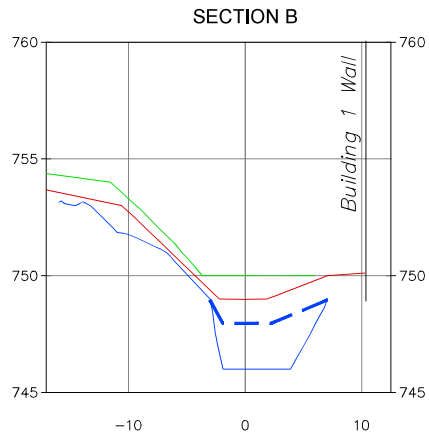
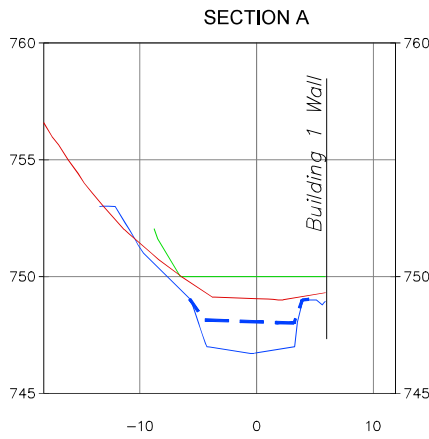
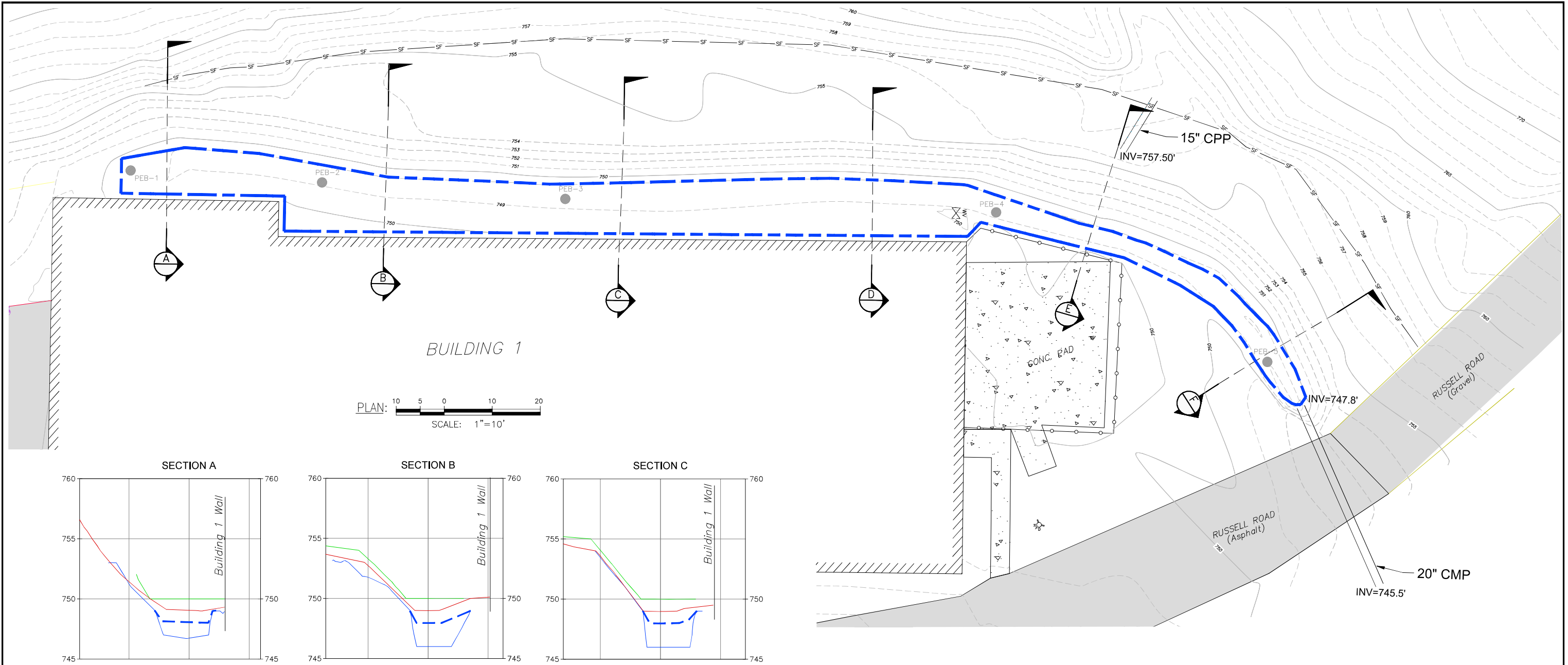
FIGURE 3

TACONIC INC. INTERIM REMEDIAL MEASURE
136 COON BROOK ROAD
PETERSBURG, NY 12138

EXISTING CONDITIONS AND
SITE UTILITY PLAN



301 Plainfield Rd, Ste 350, Syracuse, NY, Ph: 315-451-9560

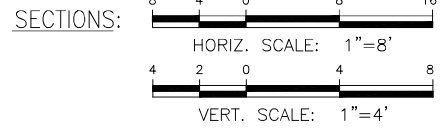


NOTES:

- SURVEYS PERFORMED BY GILBERT VANGUILDER LAND SURVEYOR PLLC:
 - PRE-CONSTRUCTION SURVEY: MAY 25, 2022
 - PRE-CONSTRUCTION STAKE-OUT: AUGUST 1, 2024
 - POST EXCAVATION ELEVATIONS: AUGUST 23, 2024
 - POST-BACKFILL FINAL ELEVATIONS: SEPTEMBER 25, 2024
- THE SURVEY DATA IS REFERENCED TO THE NORTH AMERICAN DATUM OF 1983, 2011 ADJUSTMENT (NAD 83-2011) AND VERTICALLY TO THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88), WITH A DATA ACCURACY OF 0.1 FT.

LEGEND:

- PLAN**
- PEB-1 POST EXCAVATION SOIL SAMPLE
 - EXCAVATION BOUNDARY/LINER LIMITS
 - EXISTING CONTOUR
 - SILT FENCE
- SECTION**
- PRE-CONSTRUCTION
 - POST-EXCAVATION
 - GEOSYNTHETIC LINER
 - FINAL-CONSTRUCTION



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ANTHONY J. MIRARCHI
NYSPE: 066542



DESIGNED:						
DRAWN:						
CHECKED:						
APPROVED:						
DATE:						
	REV.	DATE	BY	SUB	APP.	DESCRIPTION

TACONIC
136 COONBROOK ROAD
PETERSBURGH, NEW YORK 12138

TACONIC 442047
FIGURE 4
BUILDING 1 IRM
AS-BUILT CONDITIONS

CADD FILENAME B1_As-Built_20250326.dwg	
SIZE: SCALE D AS SHOWN	REV. A
PROJECT NO.	PAGE NO.
CONTRACT SHEET NO.	

APPENDICES

APPENDIX A CONTRACTOR HEALTH AND SAFETY PLAN (HASP)

Site-Specific Health & Safety Plan

Prepared for:



Taconic, Inc.
136 Coon Brook Road,
Petersburgh, NY 12138

Prepared by:



Project Services Group
42 Longwater Dr.
Norwell MA

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Revision Summary

[illegible]

Plan Approval

Scott Thayer

General Manager

7/23/2024

Date

Jeff Wickham

Project Manager

7/23/2024

Date

Sup

7/23/2024

Date



Health and Safety Manager

7/23/2024

Date

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SITE-SPECIFIC HEALTH AND SAFETY PLAN

PROJECT NAME: Taconic

PROJECT LOCATION: 136 Coon Brook Road
Petersburgh, NY 12138

INTRODUCTION

This Site Health and Safety Plan Standard is designed to establish policies and procedures for protecting the health and safety of Clean Harbors, Inc. and its subsidiaries (hereinafter referred to as "Clean Harbors") employees during operations associated with emergency response and remediation activities.

Due to the unpredictable and hazardous nature of these operations, it is impossible to identify, evaluate and control all possible hazards. Strict adherence to this plan will reduce, not eliminate, the potential for injury. Therefore, Clean Harbors cannot and does not guarantee the health and safety of on-site personnel. It is the responsibility of on-site personnel to report all potential hazards to the Project Manager and Site Health & Safety Officer.

1.0 SITE BACKGROUND

Taconic owns and operates a facility in Petersburg, New York where it manufactures polytetrafluoroethylene (PTFE) coated fabrics. The Site is in a rural area, at the northernmost intersection of Coonbrook Road and State Route 22. The Site is a 23.54-acre area that features nine structures related to manufacturing and three parking lots. There is an unnamed stream that runs through the Site and another running south of the Site. The Site is currently an operating manufacturing facility. The surrounding parcels (some of which are owned by Taconic) are residential or undeveloped. The Little Hoosic River runs south to north on the opposite side of Route 22 from the Site.

2.0 SAFETY AND HEALTH PROGRAM

Clean Harbors has developed an extensive program to ensure the health and safety of all employees as well as the public. The goal of the Health & Safety Program is to minimize the risk of illness, injury or environmental perturbation during site evaluation and hazardous waste cleanup. Clean Harbors' Health & Safety Program provides the basis for the site-specific health and safety plan that is developed for each hazardous waste remedial operation. Routine activities are also accomplished through the implementation of Clean Harbors' standardized Health & Safety programs and standards.

A Table of Contents is found in Appendix A of this plan.

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3.0 ORGANIZATIONAL STRUCTURE/PROJECT CONTACTS

Clean Harbors Project Management	
General Manager	
Name:	Scott Thayer
Telephone:	207-289-7988
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Project Manager	
Name:	Jeff Wickham
Telephone:	812-480-3914
Email:	jwickham@hepaco.com
Supervisor	
Name:	
Telephone:	
Email:	
Health & Safety Manager	
Name:	Greg Bird, CSP
Telephone:	781-792-5826
Email:	bird.gregory@cleanharbors.com
Off-Hours phone coverage provided by Clean Harbors 24-Hour Emergency Operations Center Telephone – (800) 282-0058	

Project Contacts	
Name:	Jeffrey Mirarchi, P.E.
Organization:	Taconic
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Email:	jeffm@4taconic.com
Name:	
Organization:	
Telephone:	
Email:	
Name:	
Organization:	
Telephone:	
Email:	
Name:	
Organization:	
Telephone:	
Email:	

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Roles and Responsibilities

Field Management

Field Management is responsible for:

- (1) Ensuring that the provisions of this plan and any other supporting documentation (i.e., SOP, JHA, SWP, etc.) are implemented for all operations under their control.
- (2) Stopping all site activities that pose an immediate threat to the health or safety of on-site personnel or the surrounding community.

Employees

Employees are to ensure they are aware and adhere to Health & Safety protocols established by Clean Harbors or clients. Prior to commencing work activity, all workers must ensure they are aware of the following:

- (1) Location of emergency equipment such as first aid stations, fire extinguishers, safety showers/eye washes, spill response equipment or any other equipment as the project requires.
- (2) How to activate Emergency alarms or initiate a site evacuation.
- (3) Be familiar with evacuation procedures and Emergency Muster Point locations.
- (4) Stopping all site activities that pose an immediate threat to the health or safety of on-site personnel or the surrounding community.

Health & Safety

Health & Safety Manager, National Remediation

The Health and Safety Manager will have overall responsibility for the development and implementation of the Site Health and Safety Plan. If revisions to the Site Health and Safety Plan become necessary due to changes in site conditions or operations, the proposed revisions will be presented to the Health and Safety Manager for review and final approval before any revisions will be implemented on site.

Site Health & Safety Officer

The Site Health & Safety Officer (SHSO) Reports to the Health and Safety Manager.

SHSO Responsibilities:

1. Obligated to stop or start the work when it is necessary or advisable for reasons of health or safety.
2. Conduct health and safety training sessions and daily site safety meetings.
3. Implementation and daily enforcement and monitoring of the HASP.
4. Be on the Site during the execution of work at the Site and report directly to and be under the direction of the Health and Safety Manager.

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5. Verify that all on-Site personnel are made aware of the provisions of the HASP and have been informed of the nature of physical and/or chemical hazards associated with Site activities.
6. Maintain a daily log of all significant health and safety activities and incidents.
7. Verify that on-Site personnel and visitors have received the required training, including instructions for safety equipment and PPE use.
8. Suspend work if health and/or safety-related concerns arise and to seek resolution involving the Health and Safety Manager.
9. Provide on-Site technical assistance.
10. Conduct the Site and personal air monitoring program.
11. Issue/obtain required work permits.
12. Conduct Site safety orientation training and daily safety meetings.
13. Maintain the Exclusion Zone, Contaminant Reduction Zone, and restricted work areas.
14. Follow emergency procedures.
15. Conduct on-Site Project Safety Orientations.
16. Supervise and inspect equipment cleaning.
17. Maintain the on-Site Hazard Communication Program including copies of all SDSs.
18. Verify that on-Site personnel have received the required physical examinations and medical certifications.
19. Review Site activities with respect to the adequacy of the HASP.
20. Maintain required health and safety documents and records on Site.

4.0 TRAINING

The following training is required for this project.

For all personnel and Visitors:

Project Safety Orientation

For General Site Workers:

Project Safety Orientation
OSHA 40-Hour HAZWOPER
OSHA 8-Hour Refresher

For Project Managers/Supervisors:

Project Safety Orientation
OSHA 40-Hour HAZWOPER
OSHA 8-Hour Supervisor
OSHA 8-Hour Refresher

Additional task-specific training may be required and will be identified on the specific task JHA.

5.0 MEDICAL SURVEILANCE

- Medical Clearance for HAZWOPER required under 1910.120(f)
- Medical Evaluation for Respiratory Protection required under 1910.134(e)
- Respirator Fit Test required under 1910.134(f)

6.0 WORK ZONES

The Clean Harbors Work area will be generally off limits to personnel not involved in the mobilization and set-up.

7.0 DECONTAMINATION PROCEDURES (General)

All personnel and equipment leaving the Exclusion Zone must be thoroughly decontaminated before passing to the Support Zone. The Project Manager must designate decontamination stations, as necessary, and continually evaluate and implement the site-specific decontamination procedures.

Based on the associated hazards and levels of protection required with this operation, the specific decontamination steps will be taken from those listed below during the decontamination of personnel and personal protective equipment.

In general, basic decontamination will include the following steps. These may be modified as necessary based on contaminants, the level of contamination on personnel and equipment:

Step 1:	SEGREGATED EQUIPMENT DROP: Deposit equipment used on site on plastic drop cloths.
Step 2:	BOOT COVER, GLOVE, CHEMICAL-RESISTANT COVERALL WASH/RINSE: Outer gloves, boot covers, and chemical protective clothing will be rinsed to remove any visible contaminants.
Step 3:	TAPE REMOVAL: Remove tape from around boot covers and outer gloves and deposit in appropriate waste container.
Step 4:	BOOT COVER AND OUTER GLOVE REMOVAL: Remove boot covers, followed by outer glove removal, and deposit in appropriate waste container.
Step 5:	CHEMICAL RESISTANT SUIT REMOVAL: Remove chemical resistant suit and deposit in appropriate waste container.
Step 6:	RESPIRATOR REMOVAL: Remove respirator and place in soap/water solution for further cleaning and decontamination.
Step 7:	INNER GLOVE REMOVAL: Remove inner gloves and place in appropriate waste container.

8.0 AIR MONITORING

Air monitoring will be conducted with a PID meter.

Project Action Levels

SUBSTANCE	LEVEL B ²	Level C ³	LEVEL D
Carbon Monoxide - CO	1200.0ppm	12.50ppm	12.50 ppm
Hydrogen Sulfide - H ₂ S	100.0ppm	1.00ppm	1.00ppm
Oxygen – O ₂	19.5-22.0%		
Lower Explosive Limit - LEL	<10.0%	<10.0%	<10.0%
VOCs*	500.0 ppm	50.0 ppm	5.0 ppm
NOTES: * Based on Tetrachloroethylene (PEC) ¹ Action Levels are above background and are maximums for the Level of Protection. If these concentrations are exceeded, unless addressed below, the level of protection must be upgraded. ² If the airborne levels exceed this concentration, even instantaneously, STOP WORK IMMEDIATELY and contact the Regional Health and Safety Representative, Corporate Industrial Hygienist, or the Manager Health and Safety. ³ Airborne levels may exceed the Level C limit for up to five (5) minutes so long as the PEAK MAXIMUM concentration is not exceeded. This may happen up to three (3) times during any eight (8) hour shift. IF: LEVEL "C" MAXIMUM is exceeded more than three (3) times in any one shift. THEN: UPGRADE TO LEVEL "B".			

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9.0 STANDARD SAFETY PRECAUTIONS/ WORK PRACTICES

Standing Safety Orders:

- *"Five-Foot Rule":*
 - o No heavy equipment is allowed within 5ft of a person, building, structure, obstacle or another operating machine.
 - o HEOs must shut down hydraulics/engine when anyone is within 5ft
- *"Gold Shovel":*
 - o Only hand-digging when within 5 feet of a marked, or suspected, underground utility location.
- *Marking Overhead Hazards:*
 - o A high-visibility warning line or rope must be erected 10 feet below any overhead hazard.
 - o "Overhead Hazard" signs must be placed underneath any overhead hazards in the work zone.
- *End-of-Shift Safety Debriefs:*
 - o All project sites must conduct end-of-shift safety debrief meetings that covers:
 - Any safety Incident, near miss, Safe Stop.
 - Equip, tools to needed
- *Spill Control and Containment:*
 - o Place all vessels, anything with a tank, on poly or in temporary secondary containment
 - o Park all yellow iron on poly sheeting when not in use.
- *Rigging and Lifting of Loads:*
 - o A basic rigging plan is required whenever using rigging straps, cables, chains, shackles, etc.
 - o Except for palletized loads, all items must be secured with straps when lifting with forks or machine buckets.
- *Cutting Tools:*
 - o Only scissors, shears or protected blade tools are allowed for cutting.
 - o Open blade cutting tools are not allowed, including spring loaded safety knives.
- *Cell Phone/Smart Device Usage:*
 - o Consistent with State laws and CHES policies on cell phone/smart device use in vehicles, cell phone/smart device use is not permitted when operating heavy equipment, forklifts, telehandlers or other operator-controlled equipment.

10.0 INFORMATIONAL PROGRAMS/HAZARD COMMUNICATION

Clean Harbors will notify employees, contractors, and subcontractors of the nature, level and degree of exposure likely as a result of participation at this hazardous waste operation.

Procedures – Employees

- (1) Safety Data Sheets (SDS) will be obtained for all hazardous materials that are anticipated to exceed established permissible exposure limits.
- (2) Employees will be provided training as specified under Clean Harbors Hazard Communication Standard, Section 5.0.
- (3) The Training Documentation Form (HCP - Form 1) or equivalent will be completed. Refer to Section 4.4 of the Hazard Communication Standard for guidance on form completion.

Procedures – Contractor and Subcontractor

- (1) Appropriate SDS will be provided to all contractors.
- (2) Information contained in this Health & Safety Plan will be discussed with all contractors.
- (3) Procedure to be followed in the event an unanticipated hazardous chemical is encountered will also be discussed.

Procedures – Employees, Contractors, Subcontractors

- (1) Discuss exposure level estimates.
- (2) Explain operations where exposures are anticipated.
- (3) Explain degree of risk as the result of exposure levels and participation in the specific operations at the site.

11.0 SITE COMMUNICATION

For all work, personnel shall communicate by voice and radio as needed.

12.0 SAFETY MEETINGS

Daily safety meetings are held to discuss the following:

- A. Contents of this Site-Specific Health & Safety Plan.
- B. Hazards of materials handled at the specific job.
- C. Safety precautions/ work practice.
- D. Daily activities.

A daily Hazardous Work Permit shall be completed listing the information discussed at the safety meeting and those in attendance. The sheet will be available for on-site inspection by the Client, the Project Manager, any member of the Health & Safety organization or any Clean Harbors manager. These sheets will be maintained in the job file.

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13.0 SUBSTANCES OF CONCERN

Elevated concentrations of Per- and Polyfluoroalkyl Substances (PFAS/PFOS) have been observed in surface water, sediment, and subsurface soil in the drainage swale.

Chemicals/Products to be used on site for this project:

CHEMICAL NAME	TASK USED FOR	QUANTITY OF CHEMICAL
Diesel fuel	Site Equipment Refueling	100 gal.
Gasoline	Equipment	100 gal.
Simple Green Detergent	Decontamination	10 gal.
Grease	Machine Maintenance	1 qt.
Hydraulic Oil	Machine Maintenance	5 gal.
Bentonite	Slurry Wall	Bulk

14.0 HAZARD ANALYSIS AND CONTROL

To complete project objectives, the following tasks will be conducted:

TASKS

- Mobilize and Site Preparation
- Excavation
- Backfilling
- Disposal
- Swale Construction
- Site Restoration

A Task Hazard and Personal Protective Equipment Analyses identified anticipated hazards and recommends control measures.

Job Hazard Analyses have been developed for each of the listed tasks below and are found in Appendix C of this plan. JHAs may be “dirty-up” as site personnel identify unanticipated hazards identified work. Additional JHAs will be developed as the project progresses as needed.

Safety guidance and controls are provided in this HASP, JHAs, CHES safety program standards and Physical Hazard Evaluation documents found in the appendices to this plan.

PPE Ensembles listed below include likely modifications to the standard levels referenced in 1910.120 and 1926.65.

PPE Ensembles							
Level of Protection	Hands	Feet	Head	Body	Respirator	Eyes	Ears
D	Work Gloves	ASTMF 2413-2005 Safety Shoes	LT/HT ANSI/ISEA Z89.1 Type 1, Class E Hard Hat	Work uniform Class 2 Reflective Vest	None	ANSI/ISEA Z87.1-2015 Safety Glasses	CSA Z94.2-2014 Hearing Protection NRR29
“Mod D”	Nitrile Gloves	ASTMF 2413-2005 Safety Shoes	LT/HT ANSI/ISEA Z89.1 Type 1, Class E Hard Hat	Work uniform Tyvek Coveralls Class 2 Reflective Vest	None	ANSI/ISEA Z87.1-2015 Safety Glasses	CSA Z94.2-2014 Hearing Protection NRR29
“Mod C”	Work Gloves	ASTMF 2413-2005 Safety Shoes	LT/HT ANSI/ISEA Z89.1 Type 1, Class E Hard Hat	Work uniform Class 2 Reflective Vest	Full Face APR / GMA-P100	None	CSA Z94.2-2014 Hearing Protection NRR29
C	Nitrile Gloves	ASTMF 2413-2005 Safety Shoes with booties	LT/HT ANSI/ISEA Z89.1 Type 1, Class E Hard Hat	Work uniform Tyvek Coveralls Class 2 Reflective Vest	Full Face APR / GMA-P100	None	CSA Z94.2-2014 Hearing Protection NRR29
B	Nitrile Gloves	ASTMF 2413-2005 Safety Shoes with booties	LT/HT ANSI/ISEA Z89.1 Type 1, Class E Hard Hat	Work uniform Tyvek Coveralls Class 2 Reflective Vest	Full Face SAR	None	CSA Z94.2-2014 Hearing Protection NRR29

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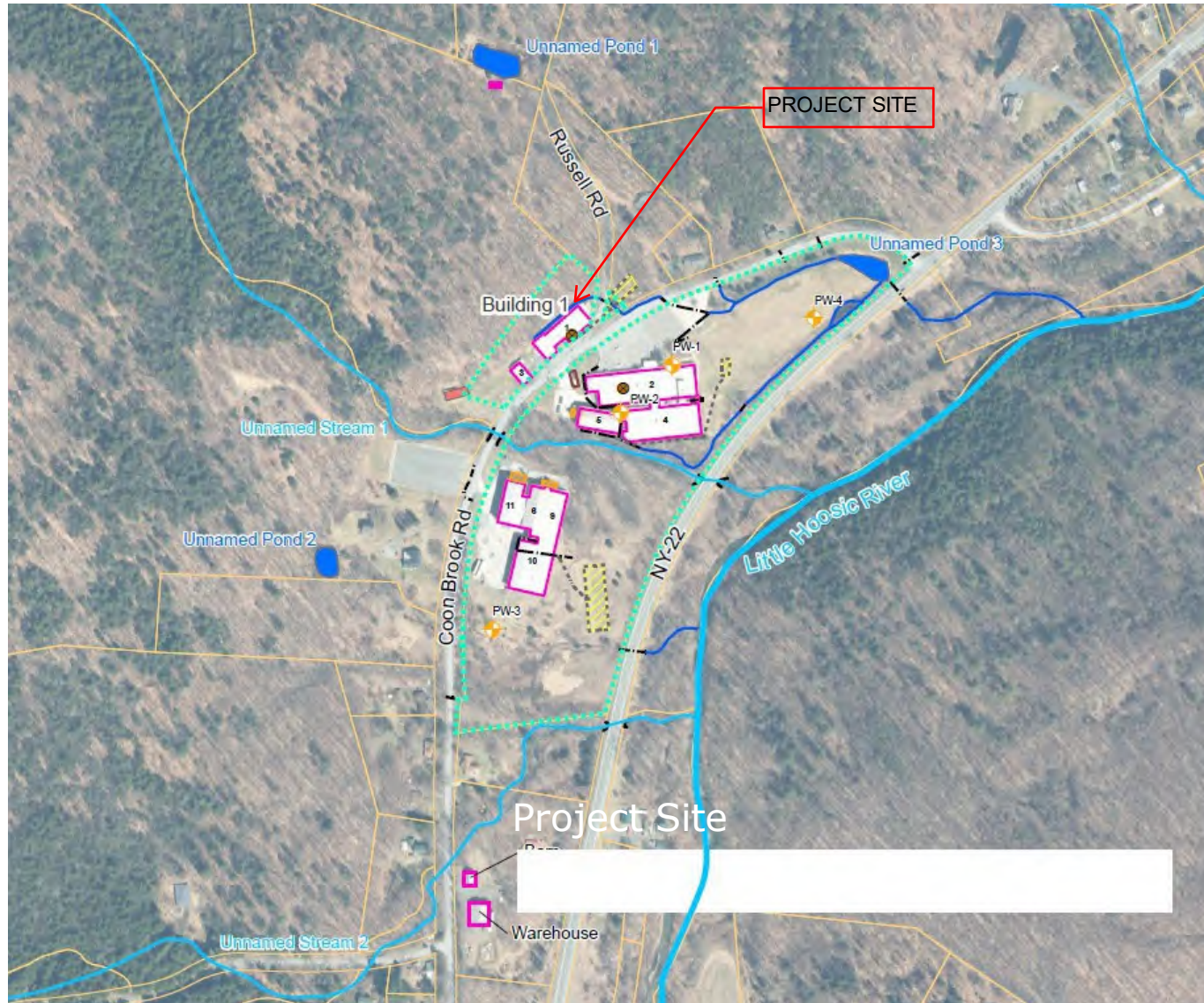
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HAZARD ANALYSIS																															
HAZARDS																															
Task	Crushed By / Struck- By	Caught in Moving Parts	Lacerations	Strains/Sprains	Limited Communications	Heavy Equipment	Slip-Trip-Falls	Skin Contact	High Noise Levels	Site Traffic	Underground Utility	Overhead Utility	Biological / Wildlife	Fire /Hot Work	Electrical	Energized Equipment (LOTO)	Pinch Point	Falls from Height (>6 ft)	Working Near Water	Hoisting / Rigging	Hazardous Atmospheres	Confined Space	Heat Stress	Cold Stress	Hazard Communication/GHS	Area Lighting	Adverse/Severe Weather	Hand / Power Tools	Portable Generators	Compressors	Working Alone
TASKS																															
Mobilize and Site Preparation	X			X		X	X			X		X	X										X				X				
Excavation		X		X	X	X	X		X	X	X	X	X										X				X				
Disposal		X		X		X	X		X	X													X				X				
Swale Construction		X		X	X	X	X		X	X	X		X										X				X				
Site restoration	X			X			X		X			X	X										X				X				

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Site Layout



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Compliance Agreement

I have read and understand the contents of this site-specific health and safety plan and have had all relevant questions answered to my satisfaction. In addition, I agree to comply with the conditions/provisions outlined therein.

NAME (Print)	SIGNATURE	COMPANY/ CH BRANCH	DATE

Page ____ of ____

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APPENDIX A: Clean Harbors Safety Program Table of Contents

Management Leadership, Employee Involvement and Program Administration

- 1-A: Management Commitment (HS.00001.PLC-10HS)**
- 1-B: Planning and Resources (HS.00002.PLC-10HS)**
- 1-C: Health and Safety Policies (HS.00003.PLC-10HS)**
- 1-D: Authority Responsibility Line Accountability (HS.00004.PLC-10HS)**
- 1-E: Contractors and Contract Employees (HS.00005.PLC-10HS)**
- 1-F: Employee Involvement Policy (HS.00006.PLC-10HS)**
 - Behavioral Based Safety Standard (HS.00082.T2S-10HS)*
 - Health and Safety Committee Standard (HS.00083.T2S-10HS)*
- 1-G: HS System Goals (HS.00007.PLC-10HS) FINAL**
- 1-H: Health and Safety System Evaluation (HS.00008.PLC-10HS)**
- 1-I: Legislative Compliance (HS.00009.PLC-10HS)**
 - Employee Health Safety Rules Standard (HS.00084.T2S-10HS)*
 - Hazard Communication Standard (HS.00085.T2S-10HS)*

2-A: Hazard Analysis_Change Routine Activity Prevention Control (HS.0010.PLC-10HS)

- 1,3-Butadiene Handling and Exposure Standard (HS.00001.T2S-10HS)*
- Abrasive Blasting Standard (HS.00011.T2S-10HS)*
- Acrylonitrile Standard (HS.00048.T2S-10HS)*
- Ammonia Waste Safety Standard (HS.00013.T2S-10HS)*
- Arsenic Standard (HS.00049.T2S-10HS)*
- Asbestos Standard (HS.00040.T2S-10HS)*
- Benzene Handling and Exposure (HS.00014.T2S-10HS)*
- Beryllium Standard (HS.00050.T2S-10HS)*
- Bio-Haz Infectious Substances Bloodborne Path Exposure Control Standard (HS.00015.T2S-10HS)*
- Bonding and Grounding Standard (HS.00017.T2S-10HS)*
- Bulging Container Management Standard (HS.00016.T2S-10HS)*
- Cadmium Standard (HS.00051.T2S-10HS)*
- Cold Stress Standard (HS.00018.T2S-10HS)*
- Combustible Dust Safety Control & Mitigation Standard (HS.00094.T2S-10HS)*
- Confined Space Entry Standard (HS.00030.T2S-10HS)*
- Crystalline Silica (Quartz) Standard (HS.00012.T2S-10HS)*
- Cyanide Handling Standard (HS.00020.T2S-10HS)*
- Decontamination Standard (HS.00021.T2S-10HS)*
- Drum and Container Handling Standard (HS.00022.T2S-10HS)*
- Electricity Safety Standard (HS.00023.T2S-10HS)*
- Employee Safety Meetings Standard (HS.00024.T2S-10HS)*
- Ergonomics Program Standard (HS.00025.T2S-10HS)*
- Ethylene Oxide Standard (HS.00041.T2S-10HS)*
- Excavation and Trenching Standard (HS.00026.T2S-10HS)*
- Explosives Handling, Storage and Disposal Standard (HS.00092.T2S-10HS)*
- Fall Protection-Working from Heights (HS.00027.T2S-10HS)*
- Formaldehyde Standard (HS.00052.T2S-10HS)*
- Heat Stress Standard (HS.00029.T2S-10HS)*
- Hexavalent Chromium Standard (HS.00053.T2S-10HS)*
- Highly Hazardous Materials Acceptance Program Standard (HS.00059.T2S-10HS)*
- Hot Work Permit Standard (HS.00035.T2S-10HS)*
- Household Hazardous Waste Collections Standard (HS.00036.T2S-10HS)*
- HPWJ Standard (HS.00031.T2S-10HS)*
- Hydrogen Fluoride Safety Standard (HS.00042.T2S-10HS)*
- Hydrogen Sulfide Awareness Standard (HS.00044.T2S-10HS)*
- Job Hazard Analysis Standard (HS.00086.T2S-10HS)*
- Lead Standard (HS.00054.T2S-10HS)*
- Line and Equipment Opening Program Standard (HS.00037.T2S-10HS)*
- Lock-out/ Tag-out Standard (HS.00045.T2S-10HS)*
- Management of Change Standard (HS.00046.T2S-10HS)*
- Marine (Boating) Safety Standard (HS.00061.T2S-10HS)*



Health and Safety Policies and Standards

Worksite Analysis (Cont'd)

Mercury Management Standard (HS.00039.T2S-10HS)
Methylene Chloride Standard (HS.00055.T2S-10HS)
Mobile Cranes Standard (HS.00047.T2S-10HS)
Pesticide Waste Collection Standard (HS.00057.T2S-10HS)
Pressure Relief Valves on Double Diaphragm Pumps Standard (HS.00087.T2S-10HS)
Pressure Washing Standard (HS.00066.T2S-10HS)
Radiation Protection Safety Standard (HS.00064.T2S-10HS)
Rail Transportation Bloodborne Response Standard (HS.00060.T2S-10HS)
Site Access Control Standard (HS.00065.T2S-10HS)
Site Characterization and Analysis Standard (HS.00062.T2S-10HS)
Site Specific Health & Safety Plan Standard (HS.00063.T2S-10HS)
Stationary Crane Standard (HS.00095.T2S-10HS)
Vinyl Chloride Standard (HS.00056.T2S-10HS)
Wildlife Awareness Program Standard (HS.00093.T2S-10HS)
Working Alone or in Isolation (HS.00002.T2S-10HS)
Working Safely on Petroleum Storage Tank Floating Roofs Standard (HS.00034.T2S-10HS)

2-B: Routine Inspections (HS.00011.PLC-10HS)

Ladders-Step Fixed Extension Standard (HS.00067.T2S-10HS)
Mechanical Retrieval Inspection Standard (HS.00089.T2S-10HS)
Sling Inspection Standard (HS.00090.T2S-10HS)
Ventilation Performance Testing Standard (HS.00096.T2S-10HS)

2-C: Hazard Reporting and Correction Tracking (HS.00013.PLC-10HS)

2-D: Incident Reporting and Investigations (HS.00014.PLC-10HS)

2-E: Trend Analysis (HS.00015.PLC-10HS)

3-A: Discipline Policy (HS.00016.PLC-10HS)

3-B: Predictive Preventive Maintenance (HS.00017.PLC-10HS)

Preventative Maintenance Standard (HS.00038.T2S-10HS)

3-C: Emergency/Security Procedures (HS.00018.PLC-10HS)

Emergency Response Standard (HS.00070.T2S-10HS)
First Aid Standard (HS.00071.T2S-10HS)
Fire Protection Standard (HS.00058.T2S-10HS)

3-D: Personal Protective Equipment (PPE) Policy (HS.00019.PLC-10HS)

Personal Protective Equipment Standard (HS.00072.T2S-10HS)
Respiratory Protection Standard (HS.00073.T2S-10HS)

3-E: Process Safety Management (HS.00020.PLC-10HS)

3-F: IIPP Policy (HS.00021.PLC-10HS)

3-G: Occupational Health Care Program (HS.00022.PLC-10HS)

Hearing Conservation Standard (HS.00075.T2S-10HS)
Industrial Hygiene Standard (HS.00076.T2S-10HS)
Medical Surveillance Program (HS.00003.T2S-10HS)
Return to Work for Non-Work Injuries or Illnesses (HS.00004.T2S-10HS)
Workplace Fetal Protection Standard (HS.00077.T2S-10HS)

3-H: Recordkeeping (HS.00023.PLC-10HS)

3-I: Document Control (HS.00024.PLC-10HS)

3-J: Safety Glasses and Safety Boots Reimbursement Policy (HS.00028.PLC-10HS)

4-A: Health and Safety Training Recordkeeping (HS.00025.PLC-10HS)

Heavy Equipment Operator Standard (HS.00079.T2S-10HS)
Mobile Crane Training (HS.00078.T2S-10HS)
New Employee-Short Service Worker Standard (HS.00032.T2S-10HS)
Powered Industrial Vehicles Standard (HS.00043.T2S-10HS)

APPENDIX B: Emergency Response / Contingency Plan

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EMERGENCY RESPONSE /CONTINGENCY PLANNING

1.0 EMERGENCY CONTACTS

Type	Emergency #	Agency	Non-Emergency#
Fire	911	Petersburgh FD	518-205-5221
Medical	911	Petersburgh EMS	518-205-5221
Security	911	Petersburgh PD	727-893-7780
HAZMAT	800-424-9300	CHEMTREC	---
POISON	911 / 800-222-1222	National Poison Control	800-222-1222

Nearest Hospital GPS Address:

Southwestern VT. Emergency Dept.
100 Hospital Drive
Bennington, VT 05201

802-42-6361

2.0 HOSPITAL DIRECTIONS/MAPS

136 Coon Brook Rd
Petersburgh, NY 12138

- ↑ 1. Head northeast on Coon Brook Rd toward NY-22 S
41 sec (0.2 mi)

Continue on NY-22 N. Take NY-7 E to Dewey St in
Bennington

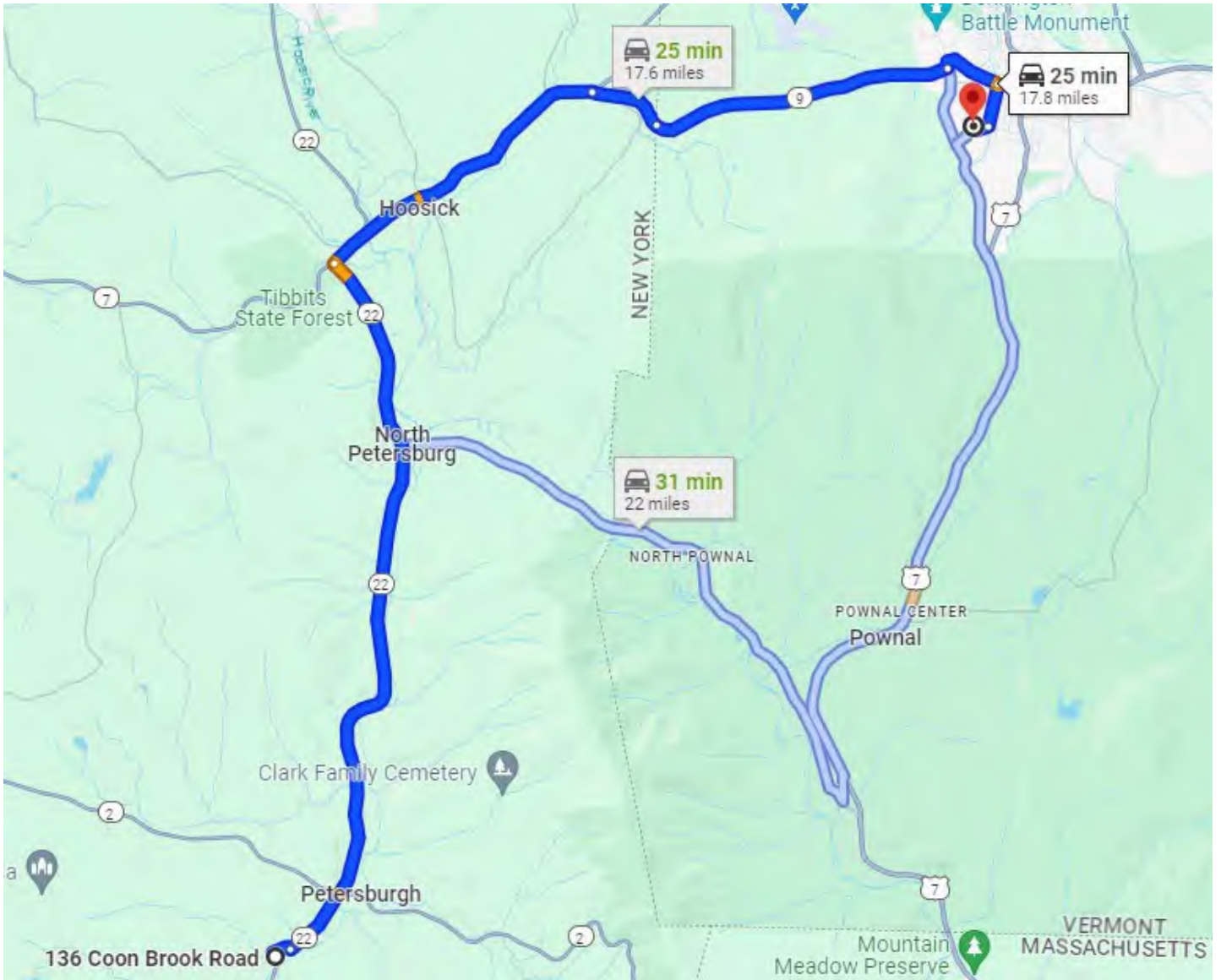
- ↩ 2. Turn left onto NY-22 N
22 min (16.9 mi)
- ↪ 3. Turn right onto NY-22 N/NY-7 E
8.4 mi
Continue to follow NY-7 E
- ↪ 4. Turn right to stay on NY-7 E
3.6 mi
Entering Vermont
- ↑ 5. Continue onto VT-9 E/West Rd
0.9 mi
- ↩ 6. Turn left onto W Main St
3.4 mi
- 0.7 mi

Continue on Dewey St to your destination

- ↪ 7. Turn right onto Dewey St
2 min (0.7 mi)
- ↪ 8. Turn right onto Hospital Dr
0.5 mi
- ↪ 9. Turn right
0.1 mi
- ↪ 10. Turn right
233 ft
Destination will be on the right
- 105 ft

SVMC Emergency Room
100 Hospital Dr, Bennington, VT 05201

HOSPITAL ROUTE MAP



3.0 EMERGENCY PREVENTION

3.1 Spill Controls

1. Preventative measures will include at a minimum:
2. Secondary containment for all potentially hazardous liquid storage.
3. Minimization of quantity of liquids stored on-Site.
4. Provision of a spill kit of adequate size to handle potential Site spills (i.e. sorbent pads, booms, powders, etc.)

control and of a spill, the procedures outlined in the plan shall be followed to contain, control, and remediate the incident. At a minimum, Site personnel, at the direction of the site Health and Safety Officer, will use on-Site equipment to contain the spill and prevent further contamination, within their capabilities and resources.

The project leader and client site contact will be notified of any spill of potentially hazardous materials.

If the spill is unable to be contained by on-Site personnel/resources, and/or a potential threat to off-Site populations or resources exists, additional resources shall be obtained through a Clean Harbors Services office.

3.2 Emergency Recognition

Emergency conditions are considered to exist if:

1. There is a fire, explosion, deflagration, hazardous material spill or vehicular incident.
2. A medical emergency such as an injury, bodily contamination, sickness, etc.
3. A release of suspected release of hazardous vapors, liquids or contaminated soil.
4. A condition is discovered that suggests the existence of a situation more hazardous than anticipated.
5. In incident occurs that results in damage to equipment or property.
6. A reaction of incompatible materials

3.3 SITE SECURITY AND CONTROL

Site Security and Control is provided by Navy Regional Security at the base.

4.0 EVACUATION ROUTES.

- 4.1 In the event an evacuation is required personnel will leave the work area and muster at the site entrance closest to the work area. The Site Safety Officer will report all hands accounted for to the site Emergency Response leader.

5.0 Emergency procedures and notification

5.1 General

For all incidents, all site work will stop, and the following steps will be taken.

1. Survey the area to assure all personnel and equipment is safe
2. Evaluate the incident and assess the need for evacuation or assistance from emergency response agencies.
3. Initiate evacuation if necessary.
4. Call 911 to summon appropriate assistances (Fire Dept., Medical, Spills, Releases, Emissions)
5. Notify the Client project representative.
6. Notify Clean Harbors H&S and Remediation General Manager
7. Personnel are prohibited from discussing emergencies, or any project details, with outside groups. Any questions or inquiries by members of the public, the media or government agencies are to be referred to Client.

5.2 Emergency Coordination and Notification

For all emergency situations, the following coordination and communication steps shall be followed:

1. Summon 911 assistance.
2. Notify the following persons:
 - i. CHES Site Safety Officer
 - ii. Site ER Contact
3. Entry to site:
 - a. Site HSO meets emergency responders at the primary or secondary site entrances and escorts them to the emergency scene.

5.3 Evacuation Procedure

When site evacuation is required, do the following:

1. Notify site Emergency Response Coordinator to sound evacuation alarm.
2. All personnel assemble at the primary muster point closest to the work area.
3. The CHES PM, SSR or designee will take attendance of all site personnel to assure all are safe and accounted for.

5.4 Fires:

In the event of a fire or explosion, personnel shall:

1. Immediately dial 911 and notify the site Health and Safety Officer.
2. Work shall be immediately stopped.
3. Order an evacuation ordered via the evacuation procedures noted above.
4. Meet emergency response personnel at the designated entrance and escort them to the scene.

5.5 Spills:

1. All spills of any quantity or material must be reported according to the requirements listed above.
2. Incident Spills: Small incidental spills that do not require additional resources in personnel or equipment, workers may contain and clean up the materials.
3. Reportable Quantity or Larger spills requiring additional personnel and equipment support, mobilize resources from the nearest Clean Harbors Service Center. Clean Harbors 24-Hour Emergency Response Center will affect a coordinated response as required.
4. Gather Information.
 - a. Location of the release or threatened release.
 - b. The material released or threatened to be released.
 - c. The approximate quantity and concentration of the release or threatened; and
 - d. Any other information as required for compliance with the National Response Center (NRC) or State reporting requirements.

5.6 Medical Emergencies:

First Aid Cases

For minor injuries, trained employees will evaluate and apply first aid treatment as necessary to the injured.

Treatment beyond First Aid

For medical emergencies, trained employees shall:

1. Survey the scene. Determine if it is safe to proceed. Try to determine if the conditions that caused the incident are still a threat. Protect yourself from hazards before attempting to assist the injured.
2. Apply basic first aid techniques:
3. Do a primary survey of the injured. Check for airway obstruction, breathing, and pulse. Assess likely routes of chemical exposure by examining the eyes, mouth, nose, and skin of the victim for symptoms.
4. Phone Emergency Medical Services (911). Give the location, telephone number used, caller's name, what happened, number of victims, victims' condition, and help being given.
5. Maintain airway and perform rescue breathing as necessary.
6. Perform CPR as necessary.
7. Do a secondary survey of the victim. Check vital signs and do a head-to-toe exam.
8. Treat other conditions as necessary. If the victim can be moved, take the victim to a location away from the work area where EMS can gain access.

5.7 HAZMAT Vapor Release

1. Any employee advising of symptoms of exposure to airborne substances will be removed from the work area and transported to the designated medical facility for examination and, if required, treatment.
2. Air sampling of the perimeter will be conducted to determine if evacuation is needed from off-site properties.
3. Identify vapor source (excavation, drum area, etc.)
4. Apply vapor suppression controls at the direction of the incident commander.

5.8 Emergency Equipment

- Spill Containment and Control supplies
- Air Monitoring instruments.
- First Aid Equipment
- Eye Wash Station

APPENDIX C: Clean Harbors Standards

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	Issued By: Health & Safety		Document Control No: HS.00026.T2S-10HS	
	Revised By: Health & Safety		Revision Date: 08-Oct-2019	Revision Number: 06
	Owner: Health & Safety		Review Date: 08-Oct-2019	Next Review Date: 30-Sept-2022

Excavation and Trenching Standard

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	Issued By: Health & Safety		Document Control No: HS.00026.T2S-10HS
	Revision Date: 08-Oct-2019	Next Review Date: 30-Sept-2022	Revision Number: 06
Document Name: Excavation and Trenching Standard			

Revision Summary

Section	Revision Detail (Please provide rationale)	Approved By (Name & Title)	Date Approved
New	Development of new Standard	Kirk Baker; Randy Nielsen – Health & Safety Team	2-Aug-2011
2.0, 6.3.5, 6.4.2.1	Added metric conversions	Jerry Huber, Director, H&S	28-Aug-2013
2.0(9)	Added new point to identify the requirements of this Standard.		
7.3	Removed Guidelines that no longer apply		
Appendices	Removed Appendix 1: Case Studies and replaced Appendix 2: with new checklist. It now becomes Appendix 1		
All	Updated Header & Copyright Date	Bev Rancier, H&S Mgr	19-Feb-2016
3.2	Replaced existing Responsibilities for Facility and Field Management.	Kirk Baker, Radiation Safety Officer/H&S Mgr; Michelle Krancz, Director H&S	22-Dec-2016
3.3	(1): Replaced "Follow" with "Comply with the" and added "and all Customer, Federal, State, Provincial, Territorial and local regulatory requirements." (4): Added new point to include additional training requirements.		
3.4	Added last sentence to ensure appropriate notifications are made to authorities in the case of a line strike.		
4.0	Added "Confined Space" definition.		
5.0	Added new section 5.0 Training Programs.		
6.1	(2): Added last sentence to point (a); new point (c) and replaced "not" with "must only" in point (d).		
7.1.3	New 7.1.3 Confined Spaces		
7.1.8	New points (2) & (3)		
7.3	Replace first sentence Reference to OSHA regulations to a more general term to encompass all of Clean Harbors' potential legislative requirements.		
All	Added Territorial throughout the document when referring to regulations.		
All	General formatting and word structure throughout document for ease of reading.	Sean Benoit, Director H&S; Andrew Box, Reg'l H&S Mgr; Greg Bird, Sr. H&S Mgr	08-Oct-2019
2.0	Replaced Scope to simply identify the actual scope of the document.		
4.0	Competent Person Definition: Replaced "is capable of identifying" with "can identify"; Added "and passed an approved"; and removed "and passed a written exam (with a score of at least 70%)". Added "Hazardous Atmosphere" Definition		

	Issued By: Health & Safety		Document Control No: HS.00026.T2S-10HS
	Revision Date: 08-Oct-2019	Next Review Date: 30-Sept-2022	Revision Number: 06
Document Name: Excavation and Trenching Standard			

Section	Revision Detail (Please provide rationale)	Approved By (Name & Title)	Date Approved
5.0	(2): Added new point to include Golden Shovel Training Program or awareness equivalent; (3): Removed reference to Golden Shovel training program		
6.1	(2) (a): added new point to address need for following Gold Shovel Standards and training; (2) (b): Removed "It is also important that all necessary emergency response agencies (i.e., fire department, etc.) are made aware of the activities as per regulating authority; (2) (e): Removed "Boomed"; "must only be allowed to work within allowable limits of" and replaced it with " <i>Equipment shall be located as far as possible from...</i> " and added " <i>distances shall not exceed the following</i> ". Added a table with distance requirements for overhead power lines.		
6.3	(2) (b): Replaced "two (2) feet" with "3 feet (1 meter)".		
6.4	(2) (b): Moved "Pumps should be used to keep rain and/or ground water from collecting at the bottom of an excavation or trench" to (d) and added new point (b) and (c);		
7.1.3	Removed "permit-required"; Replaced "have" with " <i>the crew has</i> "; Added: " <i>When an excavation contains or has the potential to contain a hazardous atmosphere as defined in this standard a hazard control plan must be reviewed and approved by Health & Safety</i> ".		

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1.0 PURPOSE

The objective of this Standard is to outline and provide Clean Harbors, Inc. and its subsidiaries (hereinafter referred to as "Clean Harbors") employees with information that will assist them in making decisions which will assure safe working conditions while working in and around excavation sites.

This Standard will provide information on the following:

- (1) Definitions applicable to excavations and trenching.
- (2) Soil evaluation and classification as described by regulatory standards.
- (3) Hazards associated with excavations and trenching.
- (4) Causes and signs of soil failures and cave-ins.

2.0 SCOPE

This Standard shall apply to all Clean Harbors, Inc., and its subsidiaries (hereinafter referred to as "Clean Harbors") employees engaged in excavation and trenching activities or exposed to excavations and trenches.

the requirements in this Standard represent the Company's minimum requirements for excavation and trenching tasks. If Provincial, State, Territorial, or local regulations and requirements differ from the requirements included in this document, and are more stringent than the requirements included here, the Provincial, State, Territorial or local requirements shall apply. In no case will the Provincial, State, Territorial or local requirements apply if those requirements are less stringent than the requirements included in this Standard.

3.0 RESPONSIBILITIES

3.1 Executive Management

Executive Management shall ensure all Policies and Procedures associated with the Company's Excavation and Trenching Standard are in place, monitored, updated as necessary and followed by all employees in the organization.

3.2 Facility and Field Management

Facility and Field Management shall:

- (1) Ensure that all affected employees have completed the necessary training.
- (2) Ensure compliance with this Standard and all Customer and regulating authority requirements.
- (3) Make available to affected employees, all information within this Standard.
- (4) Be directly involved in the development of hazard recognition programs and the coaching/mentoring of workers on field level hazard identification.
- (5) Assure personnel assigned to the project are competent and trained in the specific operation being performed.
- (6) Identify any unsafe acts or conditions and take necessary action to correct the unsafe act or condition.
- (7) Communicate to Health & Safety any unsafe acts, conditions, or incidents that occurs during the project.

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- (8) Ensure daily inspections of excavations, the adjacent areas, and protective systems are conducted by a competent person:
 - (a) An inspection shall be conducted by the competent person prior to the start of work and as needed throughout the shift;
 - (b) Inspections shall also be made after every rainstorm or other hazard increasing occurrence.

3.3 Employees

Employees shall:

- (1) Comply with the Excavating and Trenching Standard and all Customer, Federal, State, Provincial, Territorial and local regulatory requirements.
- (2) Allow only competent workers to carry out excavating and trenching.
- (3) Attend and complete assigned training courses, and if required, to carry proof of certification by local management, Federal, State, Provincial or Territorial legislation, or client requirements. Employees must possess appropriate proof of said certification.
- (4) Complete any additional training required (i.e., Golden Shovel Training Program, Ground Disturbance Level I & II, etc.).

3.4 Health & Safety

Health & Safety will review, approve, and distribute this Standard and all related Policies to all locations, sites and offices as applicable. Health & Safety will also coordinate revisions of all Standards and related Policies as required. Lastly, Health & Safety will directly support Policy and Standard implementation and report any exceptions and will provide support to all locations, sites and offices as necessary.

Ensure appropriate notifications are made to authorities in the case of a line strike (i.e., contact with electrical cables, etc.)

4.0 DEFINITIONS

Actual Slope:	The slope to which an excavation face is excavated.
Aluminum Hydraulic Shoring:	A pre-engineered shoring system comprised of aluminum hydraulic cylinders (cross-braces) used in conjunction with vertical rails (uprights) or horizontal rails (walers). Such a system is designed specifically to support the sidewalls of an excavation and prevent cave-ins.
Angle of Repose:	The greatest angle above the horizontal plane at which a material will lie without sliding. (Angle of repose is not a unique soil property but is affected by a wide variety of environmental effects and other factors).
Bank:	A mass of soil rising above a digging plane.
Benching (benching system):	Method of protecting employees from cave-ins by excavating the sides of an excavation to form one or

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	a series of horizontal levels or steps, usually with vertical or near vertical surfaces between levels.
Boiling:	Upward water flow into the bottom of an excavation.
Bulge:	The expansion or movement of the sides of an excavation inward into the excavation.
Cave-In:	Separation of a mass of soil or rock material from the side of an excavation or the loss of soil from under a trench shield or support system and its sudden movement into the excavation, either by falling or sliding, in sufficient quantity so that it could entrap, bury, or otherwise injure and immobilize a person.
Cemented Soil:	A soil in which the particles are held together by a chemical agent, such as calcium carbonate, such that a hand sized sample cannot be crushed into powder or individual soil particles by finger pressure.
Cohesive Soil:	Clay (fine grained soil) or soil with a high clay content, which has cohesive strength. Cohesive soil does not crumble, can be excavated with vertical side-slopes, and is plastic when moist. Cohesive soil is hard to break up when dry and exhibits significant cohesion when submerged. Cohesive soils include clayey silt, sandy clay, silty clay, clay and organic clay.
Competent Person:	One who can identify existing and predictable hazards in the surrounding or working conditions which are unsanitary, hazardous, or dangerous to employees, and who has authorization to take prompt corrective measures to eliminate them. Also, one who has field experience (as determined by the General Manager), are at least at a Technician II level OR qualified heavy equipment operator (or equivalent), and has attended and passed an approved Clean Harbors Excavation Safety/Competent Person training class.
Confined Space:	A space that: (1) Is large enough and so configured that an employee can bodily enter and perform assigned work; (2) Has limited or restricted means for entry or exit; (3) Is not designed for continuous employee occupancy.
Cross Braces:	The horizontal members of a shoring system

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installed perpendicular to the sides of the excavation, the ends that bear against either uprights or wales.

Deep Frost Action:

The bulging of soil and excessive loading of support systems caused by the freezing of moisture in the soil and the formation of ice lenses.

Distress:

That the soil is in a condition where a cave-in is imminent or is likely to occur. Distress is evidenced by such phenomena as in the development of fissures in the face of or adjacent to an open excavation; the subsidence of the edge of an excavation; the slumping of material from the face of the bulging or heaving of material from the bottom of the excavation; the spalling of material from the face of an excavation; and raveling (i.e. small amounts of material such as pebbles or little clumps of material suddenly separating from the face of an excavation and trickling or rolling down into the excavation).

Dry Soil:

Soil that does not exhibit visible signs of moisture content.

Excavation:

Any man-made cut, cavity, trench, or depression in an earth surface, formed by earth removal.

Faces or Sides:

The vertical or inclined earth surfaces formed as a result of excavation work.

Failure:

The breakage, displacement, or permanent deformation of a structural member or connection to reduce its structural integrity and supportive capabilities.

Fissured:

A soil material that has a tendency to break along definite planes of fracture with little resistance, or a material that exhibits open cracks, such as tension cracks, in an exposed surface.

Granular Soil:

Means gravel, sand, or silt, (coarse grained soil) with little or no clay content. Granular soil has no cohesive strength. Some moist granular soils exhibit apparent cohesion. Granular soil cannot be molded when moist and crumbles easily when dry

Hazardous Atmosphere

An atmosphere that contains an air contaminant or lack of oxygen that can result in injury, illness or death. Examples of hazardous atmospheres include: explosive, flammable, poisonous, oxygen deficient, and toxic.

Heave:

The lifting or upward bulging of the bottom of an

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Kick-Out:	excavation due to the weight of adjoining soil.
Layered System:	The accidental release or failure of a cross brace. Two or more distinctly different soil or rock types arranged in layers. Micaceous seams or weakened planes in rock or shale are considered layered.
Long Term Exposure:	Period that an excavation is open greater than 24 hours in length.
Maximum Allowable Slope:	The steepest incline of an excavation face that is acceptable for the most favorable site conditions as protection against cave-ins, and is expressed as the ratio of horizontal distance to vertical rise (H:V).
Moist Soil:	A condition in which a soil looks and feels damp. Moist cohesive soil can be easily shaped into a ball and rolled into sample diameter threads before crumbling. Moist granular soil that contains some cohesive material will exhibit signs of cohesion between particles
Pile or Piling:	Upright shoring members which are driven below the bottom of an excavation to restrain its lower end.
Plastic:	Property of a soil that allows the soil to be deformed or molded without cracking, or appreciable volume change.
Protective System:	Method of protecting employees from cave-ins, from material that could fall or roll from an excavation face or into in excavation, or from the collapse of adjacent structures. Protective systems include support systems, sloping, and benching systems, shield systems, and other systems that provide the necessary protection.
Ramp:	An inclined walking or working surface that is used to gain access to one point from another and is constructed from earth or from structural materials such as steel or wood.
Registered Professional Engineer:	Person who is registered as a professional engineer in the state where the work is to be performed. However, a professional engineer, registered in any state is deemed to be a "registered professional engineer" within the meaning of this Standard when approving designs for "manufactured protective systems" or "tabulated data" to be used in interstate commerce.
Saturated Soil:	A soil in which the voids are filled with water. Saturation does not require flow. Saturation, or

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near saturation, is necessary for the proper use of instruments such as a pocket penetrometer or shear vane.

Sheeting:

The members of a shoring system that retain the earth in position and in turn are supported by other members of the shoring system.

Shield (shield system):

A structure that can withstand the forces imposed on it by a cave-in and thereby protects employees within the structure. Shields can be permanent structures or can be designed to be portable and moved along as work progresses. Shields used in trenches are usually referred to as "trench boxes" or "trench shields."

Shoring (shoring system):

A structure such as a metal hydraulic, mechanical or timber shoring system that supports the sides of an excavation and which is designed to prevent cave-ins.

Short Term Exposure:

Period less than or equal to 24 hours that an excavation is open.

Slide Planes:

Evidence of collapse of an excavation wall by sheering (often along a weak plane in layered soil).

Sloping (sloping system):

A method of protecting employees from cave-ins by excavating to form sides of an excavation that are inclined away from the excavation so as to prevent cave-ins. The angle on incline required to prevent a cave-in varies with differences in such factors as the soil type, environmental conditions of exposure, and application of surcharge loads.

Slope (noun):

The acute angle formed by the side of an excavation and horizontal plane; also, the inclined side of an excavation.

Spalling:

Flaking and/or falling of soil or rock from an unsupported excavation wall.

Spoil:

Material which is taken from an excavation.

Stable Rock:

Natural solid mineral material that can be excavated with vertical sides and will remain intact while exposed. Unstable rock is considered to be stable when the rock material on the side or sides of the excavation is secured against caving-in or movement by rock bolts or by another protective system that has been designed by a registered engineer.

Structural Ramp:

A ramp built of steel or wood, usually used for

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	vehicle access. Ramps made of soil or rock are not considered structural ramps.
Submerged Soil:	Soil, which is underwater or free seeping.
Subsidence:	Settling of the ground surfaces near and around an excavation.
Support System:	A structure such as underpinning, bracing, or shoring, which provides support to an adjacent structure, underground installation, or the sides of an excavation.
Surcharge:	Added load or weight along or near the edge of an excavation, such as equipment, excavated material, or other stored material.
Tabulated Data:	Tables and charts approved by a registered professional engineer and used to design and construct a protective system.
Tension Cracks:	Cracks initiated in the soil surface along the edge of an excavation.
Toe:	Distance that sheeting or piles are driven below the bottom of an excavation.
Toe of Slope:	The point at which the side of an excavation intersects the lowest point of the excavation.
Trench (trench excavation):	A narrow excavation (in relation to its length) made below the surface of the ground. In general, the depth is greater than the width, but the width of a trench (measured at the bottom) is not greater than 15 feet. If forms or structure are installed or constructed in an excavation to reduce the dimension measured from the forms or structure to the side of the excavation 15 feet or less (measured at the bottom of the excavation), the excavation is also considered to be a trench.
Unconfined Compression Strength:	The load per unit area at which a soil will fail in compression.
Unstable Soil:	Earth material, other than running, that because of its nature or the influence of related conditions, cannot be depended upon to remain in place without extra support, such as would be furnished by a system of shoring.
Uprights:	The vertical members of a trench shoring system placed in contact with the earth and usually positioned so that individual members do not contact each other. Uprights placed so that individual members are closely spaced, in contact with or

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interconnected to each other, are often called sheeting.

Wales:

The horizontal members of a shoring system placed parallel to the excavation face whose sides bear against the vertical members of the shoring system or earth.

Wet Soil:

Soil that contains significantly more moisture than moist soil, but in such a range of values that cohesive material will slump or begin to flow when vibrated. Granular soil that would exhibit cohesive properties when moist will lose those cohesive properties when wet.

5.0 TRAINING PROGRAMS

Prior to the commencement of excavation operations, the Project Manager shall be responsible for assuring all employees are trained on the hazards associated with excavation and trenching. This training shall include, but not be limited to the following:

- (1) The specific nature of the operations involving the excavation and trenching activities.
- (2) Golden Shovel Training Program or awareness equivalent.
- (3) Certifications in the courses required, as defined by Clean Harbors, Client, and/or Federal, State, Provincial, Territorial or local legislation (i.e., Ground disturbance training, Equipotential training, Hydro-excavation training, Excavation Competent Person, etc.).
- (4) The engineering controls and safe work practices associated with the employee's job assignment.

6.0 HAZARDS

Hazards that could cause potential accidents and/or injuries in/and around excavations and trenches can be broken up into the following categories:

- (1) Utilities;
- (2) Vibrations;
- (3) Weight;
- (4) Water;
- (5) Temperature;
- (6) Time.

All the following issues shall be addressed prior to beginning and during all phases of excavation and trench work.

6.1 Utilities

- (1) The presence of underground and/or overhead utilities in and around an excavation site could potentially cause various problems such as:
 - (a) Electrocution as a result of contacting with an electrical line;
 - (b) An explosion as a result of rupturing a natural gas line or petroleum product pipeline;

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- (c) Flooding as a result of rupturing a water line;
- (d) A cave-in of previously excavated unstable soil.
- (2) To eliminate the threat of these accidents occurring, the following should be done:
 - (a) When excavating in and around underground utilities, Clean Harbors will follow applicable Gold Shovel Standards and training requirements.
 - (b) All underground utilities in the area of the excavation shall be marked prior to beginning any excavation (i.e., DigSafe, One Call, etc.);
 - (c) Attempts shall be made to de-energize, insulate, or relocate both overhead and underground lines that may cause a problem;
 - (d) When hydro-excavating, bonding mats must be used when exposing live or potentially live electrical cables;
 - (e) Equipment shall be located as far as possible from overhead power lines. Distances shall not exceed the following:

Voltage	Minimum Distance	Alternative
< 300 volts	3 feet	
300 v to 50 kv	10 feet	
> 50 kv	10 feet plus 4 inches/1 kv over 50 kv	2 times the length of the line insulator but never less than 10 feet.

- (f) That all exposed underground utility lines be properly supported;
- (g) Properly evaluate previously disturbed soil, such as would be found around underground utilities.

6.2 Vibrations

- (1) Vibrations can cause relatively stable soil to dislodge and cave-in. Potential sources of vibrations may be:
 - (a) Street traffic;
 - (b) Railways;
 - (c) Heavy equipment operation (i.e. excavators, cranes, pile drivers);
 - (d) Pumping systems;
 - (e) Compressors;
 - (f) Jackhammers.
- (2) To eliminate the threat imposed by these sources the following should be done:
 - (a) Locate the vibratory equipment as far away from the excavation or trench as possible.
 - (b) Divert traffic away from the excavation.

6.3 Weight

- (1) Weight may impose dangerous overload and excessive pressure onto the excavation and trench walls causing them to cave-in:
 - (a) Heavy equipment (i.e., excavators, cranes, loaders, vacuum trucks);
 - (b) Frac tanks;

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- (c) Stockpiled backfill material;
- (d) Stockpiled excavated material;
- (e) New tank awaiting to be installed.
- (2) To eliminate the threat imposed by these sources, the following should be done:
 - (a) Locate all equipment as far away from the excavation or trench as possible.
 - (b) Spoils piles shall be stored at least three (3) feet (1 meter) or more from the edge of the excavation or trench.

6.4 Water

- (1) The presence of and the removal of water can undermine excavation and trench walls and reduce the cohesiveness of soil. Potential sources of water may be:
 - (a) Surface run-off;
 - (b) Rain run-off;
 - (c) Water table;
 - (d) Soil moisture content.
- (2) To eliminate the threat imposed by these sources, the following should be done:
 - (a) Construct diversion ditches and/or dikes to prevent water from accumulating in an excavation or trench.
 - (b) Water accumulation in the bottom of the trench or excavation is to be monitored and inspected utilizing the daily excavation inspection. Any changes in water level must be continuously monitored and recorded.
 - (c) Excavation safety daily checklist must be reassessed after every rain event.
 - (d) Pumps should be used to keep rain and/or ground water from collecting at the bottom of an excavation or trench.

6.5 Temperature

Changes in temperature can affect the cohesiveness of soil in the following ways:

- (1) Frozen soil may appear to be stable, but the consistency of the unfrozen soil below the frost line will be less cohesive.
- (2) Freezing will expand the soil particles and cause added pressure on the excavation and trench walls.
- (3) Thawing can cause seemingly stable soil to become less stable, potentially resulting in mudslides or cave-ins.

6.6 Time

The amount of time that an excavation or trench is open and exposed to natural weathering will affect the cohesiveness of soil in the following manner:

- (1) Exposure to air will tend to cause the soil to dry and result in tension cracks that could potentially result in a cave-in.

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7.0 REQUIREMENTS

7.1 Outline and Overview

7.1.1 General Requirements-Surface Encumbrances

All surface encumbrances that are located and pose a hazard to employees shall be removed or supported.

7.1.2 Underground Installations

- (1) The estimated location of utility installation or any other underground installation shall be determined prior to opening an excavation.
- (2) Utility companies or owners shall be contacted within established response times and asked to establish the location of underground installations.
- (3) When utility companies or owners cannot respond to a request to locate underground installations, the employer may proceed, provided detection equipment to locate the underground installations is used.
- (4) While the excavation is open, underground installations shall be protected, supported, or removed.

7.1.3 Confined Space

When confined spaces are encountered in an excavation, the Competent Person shall ensure that prior to entering the excavation, hazards have been identified, controlled, and the crew has implemented the requirements as per Clean Harbors' Confined Space Entry Standard (HS.00030.T2S-10HS). When an excavation contains or has the potential to contain a hazardous atmosphere as defined in this Standard, a hazard control plan must be reviewed and approved by Health & Safety.

7.1.4 Access and Egress

- (1) Structural ramps that are used solely by employees as a means of access or egress from excavations shall be designed by a competent person.
- (2) A stairway, ladder, ramp, or other safe means of egress shall be in place in trench excavations as required by regulatory agencies.

7.1.5 Exposure to Vehicular Traffic

Employees exposed to vehicular traffic shall wear warning vests made of highly-visible reflective material.

7.1.6 Exposure to Falling Loads

No employee shall be permitted underneath loads handled by lifting or digging equipment.

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7.1.7 Warning System for Mobile Equipment

When mobile equipment is operated adjacent to an excavation, a warning system shall be utilized such as barricades, hand or mechanical signals, or stop logs.

7.1.8 Hazardous Atmospheres

- (1) Where oxygen deficiency or a hazardous atmosphere exists or could reasonably be expected to exist, the atmosphere in the excavation shall be tested before employees enter.
- (2) Adequate precautions shall be taken to prevent employee exposure to hazardous atmospheres. These precautions include providing proper respiratory protection or ventilation.
- (3) Adequate precautions shall be taken to prevent employee exposure to an atmosphere containing a concentration of a flammable gas in excess of 10 percent of the lower flammable limit of the gas.
- (4) Emergency rescue equipment shall be readily available where hazardous atmospheric conditions exist or may reasonably be expected to develop during work in an excavation.

7.1.9 Protection from Hazards Associated with Water Accumulations

- (1) Employees shall not work in excavations in which there is accumulated water, unless adequate precautions have been taken. Precautions could include:
 - (a) Special support or shield systems to prevent cave-ins;
 - (b) Water removal to control the level of accumulating water;
 - (c) Use of a safety harness and lifeline.
- (2) Water removal equipment shall be monitored by a competent person to ensure proper operation.
- (3) If excavation work interrupts the natural drainage of surface water, diversion ditches shall be used to prevent surface water from entering the excavation.

7.1.10 Stability of Adjacent Structures

- (1) Where the stability of adjoining buildings, walls, or other structures is endangered, support systems shall be provided to ensure the stability of such structures.
- (2) Excavation below the level of the footing of any foundation that could be expected to pose a hazard shall not be permitted except when:
 - (a) A support system is provided to ensure the safety of employees and the stability of the structure;
 - (b) The excavation is in stable rock;
 - (c) A registered professional engineer has approved that the structure is sufficiently removed from the excavation;

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- (d) A registered professional engineer has approved that such excavation work will not pose a hazard to employees.
- (3) Sidewalks, pavements, and other structures shall not be undermined unless a support system is provided to protect employees.

7.1.11 Protection of Employees from Loose Rock or Soil

- (1) Protection shall be provided to protect employees from loose rock or soil that could pose a hazard by falling or rolling from an excavation face.
- (2) Employees shall be protected from excavated or other materials or equipment by placing and/or keeping such materials or equipment away from the edge of the excavation.

7.1.12 Inspection

- (1) A competent person shall make daily inspections of excavations, the adjacent areas, and protective systems.
- (2) When the competent person finds evidence of a situation that could result in a possible cave-in, employees shall be removed for the hazardous area until corrective actions have been taken.

7.1.13 Fall Protection

- (1) Where employees or equipment are required or permitted to cross over excavations, walkways or bridges with standard guardrails shall be provided.
- (2) Adequate barrier physical protection shall be provided at all remotely located excavations.

7.1.14 Requirements for Protective Systems-Protection of Employees in Excavations

Each employee in an excavation shall be protected from cave-ins by an adequate protective system; except when:

- (1) Excavations are made entirely in stable rock.

7.1.15 Design of Sloping and Benching Systems

The slopes and configurations of sloping and benching systems shall be selected using one of the following options:

7.1.15.1 Allowable Configurations and Slopes

Excavations shall be sloped at an angle not steeper than one and one-half horizontal to one vertical (1 1/2H:1V), unless the employer uses one of the other options listed.

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7.1.15.2 Determination of Slopes and Configurations Using Appendices A and B

Maximum allowable slopes shall be determined in accordance with the conditions and requirements set forth in appendices A and B (See Sections 6.3 and 6.4, Soil Classification and Basis of Classification, of this document).

7.1.15.3 Designs Using Other Tabulated Data

Designs of sloping or benching systems shall be selected from tabulated data, such as tables and charts, and approved by a registered professional engineer.

7.1.15.4 Design by a Registered Professional Engineer

A registered professional engineer shall design sloping and benching systems.

7.2 Soil Mechanics

Soil is the heterogeneous accumulation of un-cemented or loosely cemented mineral grains enclosing voids of varying sizes. The voids may contain any of the following: air, water, organic material, different combinations of these materials in varying amounts.

7.2.1 Geological Origin

Soil classes can be broken up into many different categories. The classes that will be most frequently encountered will be the following:

- (1) Residual;
- (2) Alluvial;
- (3) Glacial;
- (4) Loessial;
- (5) Organic;
- (6) Ash and/or pumice.

7.2.1.1 Residual

Residual soil is created by the weathering in place of parent rock. The weathered material (or residual soil) is subject to little or no alteration by transport.

7.2.1.2 Alluvial

Alluvial soil is created by various materials being transported and re-deposited by the actions of water.

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7.2.1.3 Glacial

Glacial soil is created by various materials being transported and re-deposited by the movement of glacial ice or by melted waters from glaciers.

7.2.1.4 Loessial

Loessial soil is created by various materials being transported by wind and without subsequent re-deposition.

7.2.1.5 Organic

Organic soil is created by the growth and decay of plants and animal.

7.2.1.6 Ash and/or Pumice

Ash and/or pumice is created by deposits of volcanic material.

7.2.2 Physical Properties

The physical properties of a soil are the basis of classification and the identification of soil types and are divided into the following areas:

- (1) Particle size;
- (2) Particle shape;
- (3) Soil gradation;
- (4) Compactness;
- (5) Soil moisture.

7.2.2.1 Particle Size

Soils are divided into groups based on the size of the particle grains in the soil.

Group	Particle Size
Cobbles	greater than 3 mm - no maximum size
Gravels	greater than 2 mm - less than 3 mm
Sands	2 mm
Fines (silts/clays)	less than 2 mm

7.2.2.2 Particle Shape

- (1) The shape of the particles will influence the strength and stability of the soil by how well they cling together.
- (2) Bulky - particles equal in all three (3) dimensions. They are subdivided depending on the amount of weathering acted upon them (i.e. rounded, angular). Rounded particles will not cling to each other as angular particles will.
- (3) Platy - particles have one dimension, which is relatively small compared to the other two dimensions.

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7.2.2.3 Soil Gradation

Gradation describes the distribution of the different grain size groups within a soil sample. These groups are divided into the following:

- Well graded: a uniform increase in particle sizes between largest and smallest;
- Poorly graded: narrow range of particle sizes;
- Uniformly graded: limited range of particle sizes;
- Gap graded: some sizes are missing.

7.2.2.4 Compactness

Compactness refers to the closeness of the packing of the soil particles. The closer the packing the greater the compactness and the larger the weight of soil per unit of volume.

7.2.2.5 Soil Moisture

- (1) Refers to the amount of water present between the soil particles. It may be the most important factor affecting the characteristics of the soil.
- (2) Moisture content influences various soil differently and greatly depends upon grain size.
 - (a) Coarse grain soils with larger voids between the individual particles will permit easier drainage of water.
 - (b) Fine grains with small voids retard the movement of water and also tend to hold the water by surface tension.
- (3) Too much or too little water in the voids of the soil particles will result in a reduction of cohesion.

7.3 Soil Classification

Refer to the applicable Federal, State, Provincial or Territorial Legislation to determine appropriate Soil Classification for the area in which the work is being performed.

For the purpose of this subpart, soils shall be categorized in a hierarchy, in decreasing order of stability as follows: Stable Rock, Type A, Type B, Type C.

7.3.1 Stable Rock

Natural solid mineral matter that can be excavated with vertical sides and remain intact while exposed.

7.3.2 Type A

- (1) Are cohesive soils with an unconfined compressive strength of 1.5 ton per square foot or greater.

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- (2) Examples of type A soil are:
 - Clay
 - Silty Clay
 - Sandy Clay
 - Clay Loam
 - Silty Clay Loam
 - Sandy Clay Loam
 - Cemented Soils
 - Caliche
 - Hardpan
- (3) No soil, however, can be considered type A if:
 - (a) The soil is fissured;
 - (b) The soil is subject to vibrations from heavy traffic, pile driving, or similar effects;
 - (c) The soil has been previously disturbed;
 - (d) The soil is part of a sloped, layered system where the layers dip into the excavation on a slope of 4 horizontal to 1 vertical (4H:1V) or greater;
 - (e) The material is subject to other factors that would require it to be classified as a less stable material.

7.3.3 Type B

- (1) Are cohesive soils with an unconfined compressive strength greater than 0.5 ton per square foot but less than 1.5 ton per square foot.
- (2) Examples of type B soil are:
 - Angular Gravel (similar to crushed rock)
 - Silt
 - Silty Loam
 - Sandy Loam
 - Silty Clay Loam
 - Sandy Clay Loam
 - Previously disturbed soils except those which would otherwise be classified as type C soil
 - Soil that meets the unconfined compressive strength or cementation requirements for type A, but is fissured or subject to vibrations
 - Dry rock that is not stable
 - Material that is part of a sloped, layered system where the layers dip into the excavation on a slope less steep than 4 horizontal to 1 vertical (4H:1V), but only if the material would otherwise be classified as type B

7.3.4 Type C

- (1) Are cohesive soils with an unconfined compressive strength of 0.5 tons per square foot or less.
- (2) Examples of type C soil are:

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- Gravel
- Sand
- Loamy Sand
- Submerged soil or soil from which water is freely seeping
- Submerged rock that is not stable
- Material in a sloped, layered system where the layers dip into the excavation on a slope of 4 horizontal to 1 vertical (4H:1V) or steeper

7.3.5 Maximum Allowable Slope

Based on the result of the soil classification the maximum allowable slopes shall be as follows:

Maximum Allowable Slopes (H:V)(1) For Excavations Less Than 20 Feet (6.1 meters) in Depth (3)		
Soil Or Rock Type:		
Stable Rock	Vertical	(90)
Type A (2)	3/4: 1	(53)
Type B	1:1	(45)
Type C	1 1/2: 1	(34)

Notes:

- (1) Numbers shown in parentheses in the chart above are maximum allowable slope angles expressed in degrees from the horizontal.
- (2) A short-term allowable slope of 1/2H:1V (63) is allowed in excavations in type A soil that are 12 feet or less in depth. Short term maximum allowable slopes for excavations greater than 12 feet in depth shall be 3/4H:1V (53).
- (3) Sloping or benching for excavations greater than 20 feet deep shall be designed by a registered professional engineer.

7.4 Basis of Classification

Classification of soil deposits shall be made based on the results of at least one (1) visual and at least one (1) manual analysis. These analyses shall be conducted or performed by a competent person.

Tests that are acceptable to be used for the purpose of soil classification are:

- (1) Visual
 - (a) Particle Size;
 - (b) Clumping;
 - (c) Fissured;
 - (d) Previously Disturbed Soil;
 - (e) Layering;
 - (f) Water Presence;
 - (g) Vibrations.

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- (2) Manual
 - (a) Plasticity;
 - (b) Dry Strength;
 - (c) Thumb Penetration;
 - (d) Pocket Penetrometer/Shear vane;
 - (e) Drying Test.

7.4.1 Visual Tests

Visual analysis is conducted to determine qualitative information regarding the excavation site in general, the soil adjacent to the excavation, the soil forming the sides of the open excavation, and the soil taken as samples from excavated material.

7.4.1.1 Particle Size

- (1) The following observations shall be made to correctly determine particle size:
 - (a) Observe samples of soil that is being excavated and soil on the sides of the excavation.
 - (b) Estimate the range of particle size and the relevant amounts of the of the particle sizes.
- (2) Based upon the observations that are made in regard to particle size the following conclusions can be made:
 - (a) Soil that is primarily composed of fined grained material is cohesive soil.
 - (b) Soil composed primarily of coarse-grained sand or gravel is granular soil.

7.4.1.2 Clumping

The following observations shall be made to correctly determine clumping:

- (1) Observe the soil as it is being excavated.
- (2) Soil that remains in clumps when excavated is cohesive.
- (3) Soil that breaks up easily and does not stay in clumps is granular.

7.4.1.3 Fissures

The following observations shall be made to correctly determine if fissures are present:

- (1) Observe the sides of the open excavation and the surface area adjacent to the excavation for the presence of the following:
 - (a) Crack like openings, such as tension cracks;

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- (b) The presence of tension cracks could indicate fissured material;
- (c) Chunks of soil spalling off of a vertical side or sides;
- (d) The presence of spalling material could indicate moving ground and the potential for a hazardous situation.

7.4.1.4 Previously Disturbed Soil

The following observations shall be made to correctly determine if the soil has been previously disturbed:

- (1) Observe the area adjacent to the excavation and the excavation itself for the evidence of existing utility and other underground structures.
- (2) The presence of existing utility and other underground structures could indicate previously disturbed soil.

7.4.1.5 Layering

The following observations shall be made to correctly determine if layering is present:

- (1) Observe the opened sides of the excavation to identify layered systems.
- (2) Examine the layered systems to identify if the layers slope towards the excavation.
- (3) Estimate the degree of slope of the layers.

7.4.1.6 Water Presence

The following observations shall be made to correctly determine if water is present:

- (1) Observe the area adjacent to the excavation and the sides of the opened excavation for evidence of the following:
 - (a) Surface water;
 - (b) Water seeping from the sides of the excavation;
 - (c) Location of the level of the water table.

7.4.1.7 Vibrations

The following observation shall be made to correctly determine if vibrations are present:

- (1) Observe the area adjacent to the excavation and the area within the excavation for sources of vibration that may affect the stability of the excavation face.

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7.4.2 Manual Tests

Manual analysis of soil samples is conducted to determine quantitative as well as qualitative properties of soil and to provide more information in order to classify soil properly.

7.4.2.1 *Plasticity*

The following tests shall be performed to correctly determine the plasticity of the soil:

- (1) Mold a moist or wet sample of soil into a ball and attempt to roll it into threads as thin as 1/8 inch (.32 cm) in diameter.
- (2) Cohesive material can be successfully rolled into threads without crumbling.
- (3) If at least a two (2) inch (5.08 cm) length of 1/8-inch (.32 cm) thread can be held on one end without tearing, the soil is cohesive.

7.4.2.2 *Dry Strength*

The following tests shall be performed to correctly determine the dry strength of the soil:

- (1) If the soil is dry and crumbles on its own or with moderate pressure into individual grains or fine powder, it is granular (any combination of gravel, sand, or silt).
- (2) If the soil is dry and falls into clumps that break up into smaller clumps, but the smaller clumps can only be broken up with difficulty, it may be clay in any combination with gravel, sand, or silt.
- (3) If the dry soil breaks into clumps that do not break into smaller clumps and which can only be broken with difficulty, and there is no visual indication the soil is fissured, the soil may be considered un-fissured.

7.4.2.3 *Thumb Penetration*

- (1) The following tests shall be performed to correctly determine the unconfined compressive strength of the soil:
 - (a) Type A soil with an unconfined compressive strength of 1.5 tons per square foot can be readily indented by the thumb; however, they can be penetrated by the thumb only with very great effort.
 - (b) Type C soils with an unconfined compressive strength of 0.5 tons per square foot can be easily penetrated several inches by the thumb and can molded by light finger pressure.
- (2) This test should be conducted on an undisturbed soil sample, such as a large clump of spoil, as soon as

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practicable after excavation to keep to a minimum the effects of exposure to drying influences. If the excavation is later exposed to wetting influences (rain, flooding), the classification of the soil must be changed accordingly.

- (3) Estimates of the unconfined compressive strength of soils can also be obtained by using a pocket penetrometer or by using a hand operated shear vane.

7.4.2.4 Drying Test

- (1) The purpose of performing the drying test is to differentiate between the following:
 - (a) Cohesive material with fissures;
 - (b) Un-fissured cohesive material;
 - (c) Granular material.
- (2) The following test shall be performed to correctly determine the drying strength of the soil:
 - (a) Dry a soil sample that is approximately 1 inch thick by 6 inches in diameter until it is thoroughly dry.
 - (b) If the sample cracks as it dries, it is fissured.
 - (c) Samples that dry without cracking are to be broken by hand.
 - (d) If considerable force is necessary to break a sample, the soil has significant cohesive material content and the soil can be classified as un-fissured cohesive material and the unconfined compressive strength should be determined.
 - (e) If the sample breaks easily by hand, it is either a fissured cohesive material or a granular material.
 - (f) To distinguish between the two, pulverize the dried clumps of the sample by hand or by stepping on them.
 - (g) If the clumps do not pulverize easily, the material is cohesive with fissures.
 - (h) If they pulverize easily into very small fragments, the material is granular.

8.0 RELATED SUPPORT DOCUMENTS

8.1 Policies

(Applicable to all employees)

- 1-A: Management Commitment (HS.00001.PLC-10HS)
- 1-B: Planning and Resources (HS.00002.PLC-10HS)
- 1-D: Authority, Responsibilities and Line Accountability (HS.00004.PLC-10HS)
- 1-E: Contractors and Contract Employees (HS.00005.PLC-10HS)

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- 1-I: Legislative Compliance and Health & Safety Rules (HS.00009.PLC-10HS)
- 2-A: Baseline Hazard Analysis; Hazard Analysis of Significant Changes and Routine Activities; and Hazard Prevention and Control (HS.00010.PLC-10HS)
- 2-B: Routine Inspections (HS.00011.PLC-10HS)
- 2-C: Hazard Reporting and Correction Tracking (HS.00013.PLC-10HS)
- 2-D: Incident Reporting and Investigations (HS.00014.PLC-10HS)
- 3-A: Disciplinary Action (HS.00016.PLC-10HS)
- 3-B: Predictive/ Preventative Maintenance (HS.00017.PLC-10HS)
- 3-C: Emergency/ Security Procedures (HS.00018.PLC-10HS)
- 3-D: Personal Protective Equipment (PPE) (HS.00019.PLC-10HS)
- 3-E: Process Safety Management (HS.00020.PLC-10HS)
- 3-F: Injury Illness Prevention (IIPP) (HS.00021.PLC-10HS)
- 3-G: Occupational Health Care Program (HS.00022.PLC-10HS)
- 3-H: Recordkeeping (HS.00023.PLC-10HS)
- 3-I: Document Control (HS.00024.PLC-10HS)
- 4-A: Health & Safety Training and Recordkeeping (HS.00025.PLC-10HS)

8.2 Standards

(Applicable to all employees)

- Confined Space Entry (CSE) Standard (HS.00030.T2S-10HS)
- Employee Health & Safety Rules Standard (HS.00084.T2S-10HS)
- Employee Safety Meetings Standard (HS.00024.T2S-10HS)
- Ladders - Step, Fixed, Extension Standard (HS.00067.T2S-10HS)
- Mobile Equipment Standard (HS.00043.T2S-10HS)
- Project Site-Specific Health & Safety Plan Standard (HS.00063.T2S-10HS)
- Site Control Standard (HS.00065.T2S-10HS)

8.3 Standard Operating Procedures & Safe Work Practices

(Tier 3 Local SOP/SWP)

- Excavating, Trenching and Tunneling Safe Work Practice (SSL.00015.SWP-98WU) (CDN)
- Exposing Electrical Fiber Optic and Telephone Cables (SSL.00019.SOP-98U4) (CDN)
- Exposing High Voltage Electrical Cables using Bonding Mats (SSL.00020.SOP-98U4) (CDN)
- Exposing Pipelines (SSL.00017.SOP-98U4) (CDN)
- Ground Disturbance of Buried Facilities (ARE.00045.SOP-98U4) (CDN)
- Trenching and Bellhole Digging (SSL.00018.SOP-98U4) (CDN)

8.4 Additional Support Documents

N/A

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APPENDIX 1: DAILY TRENCHING/EXCAVATION INSPECTION CHECKLIST (CHES.0024.FM-10HS)

LOCATION:		DATE/TIME: am/pm		WEATHER:		SOIL TYPE:	
COMPETENT PERSON:		SIGNATURE:		DIGSAFE NUMBER:		JOB NUMBER:	
A – Acceptable; D-Deficient; C-Corrected; FA-Further Action Required				A	D	C	FA
				N/A			
Competent Person							
1.	Will CHES employees or others enter the excavation?						
2.	If the depth is >20 ft (6.1m), did a PE design the protective system?						
3.	Have underground utilities been located and marked?						
4.	Have underground and/or overhead utilities been: ☐ De-energized ☐ Insulated ☐ Redirected ☐ Removed or ☐ Supported?						
5.	Are there buildings or structures located near the excavation?						
6.	Is there a danger to undermine the foundation and/or stability of adjoining structures?						
Ladders/Egress							
7.	Are ladders in place if the trench is >4 ft (0.3m)?						
8.	Are all workers within 25 ft (7.62M) of a means of access and exit?						
9.	Do ladders extend 3 ft (0.91m) above the edge of the excavation?						
Protective Systems							
10.	Have field tests been conducted to determine the type of soil?						
11.	Is the trench >5 ft (1.52M) and requires a protective system?						
12.	Is a protective system in place, based on soil type, depth, and loads?						
13.	Are protective systems installed without exposing workers to hazards associated with cave-ins, collapse, or being struck by materials or equipment?						
14.	Are support systems in place to ensure stability of nearby structures?						
Atmospheric Hazards							
15.	Has air monitoring been conducted in the excavation and documented in the Hazardous Work Permit?						
16.	Is there emergency equipment available should a hazardous atmosphere exist?						
17.	Are workers trained for hazardous atmospheres?						
Other							
18.	Are workers protected from falling objects/items?						
19.	Do barriers protect all openings, trenches, pits, excavations?						
20.	Are spoil piles and equipment greater than 2 ft (0.61m) from the edge of the excavation?						
21.	Are employees working near heavy equipment wearing highly visible work vests or similar?						
22.	If water is accumulating, are pumps/ barricades/ or other means being utilized to control the infiltration of water?						
23.	Are workers protected from suspended loads?						

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TABLE V: 2-1. ALLOWABLE SLOPES		
Soil Type	Height/Depth Ratio	Slope Angle
Stable Rock	Vertical	90°
Type A	¾:1	53°
Type B	1:1	45°
Type C	1 ½:1	34°
Type A (short-term)	½:1	63°
For a maximum excavation depth of 12 ft (3.66m)		

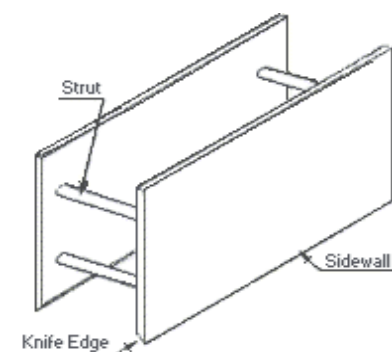
Soil: 110 – 140 lbs/ft³
A → clay, no thumb indent
B → thumb < nail width
C → sand, thumb easily in

INSPECTIONS

Inspections shall be made by a competent person and should be documented. The following guide specifies the frequency and conditions requiring inspection.

1. Daily and before the start of each shift;
2. As dictated by the work being done in the trench;
3. After every rainstorm;
4. After other events that could increase hazards (e.g., snowstorm, windstorm, thaw, earthquake, etc.);
5. When fissures, tension cracks, sloughing, undercutting, water seepage, bulging at the bottom, or other similar conditions occur;
6. When there is a change in the size, location, or placement of the spoil pile; and
7. When there is any indication of change or movement in adjacent structures.

TRENCH BOXES



- The excavated area between the outside of the trench box and the face of the trench should be as small as possible.
- The space between the trench boxes and the excavation side are backfilled to prevent lateral movement of the box.
- Shields may not be subjected to loads exceeding those which the system was designed to withstand.
- The box should extend at least 18 in (0.45m) above the surrounding area if there is sloping toward the excavation. This can be accomplished by providing a benched area adjacent to the box.
- Earth excavation to a depth of 2 ft (0.61m) below the shield is permitted, but only if the shield is designed to resist the forces calculated for the full depth of the trench and conditions are acceptable.

Notes:

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Heat Stress Standard

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Revision Summary

Section	Revision Detail (Please provide rationale)	Approved By (Name & Title)	Date Approved
All	Harmonization of all Clean Harbors programs	Steve Raab, SVP Health & Safety	01-Jan-2011
3.2	Modified (8) to include Planning and scheduling. And a sentence that addresses if work must proceed to provide appropriate remedies to the heat	H&S Leadership Team	11-Jun-2012
3.2, 3.3, 6.6	Annual Review: Sections 3.2, 3.3, 6.6: Clarification that Energy Drinks are not an acceptable substitute to water or drinks containing electrolytes.	John Chappell, H&S Mgr; Bev Rancier, H&S Mgr	24-Jul-2015
APP 1 & 2	Added either °F or °C to both Appendices	Jerry Huber, Sr. Director H&S; Bev Rancier, H&S Mgr	18-Jul-2016
4.0	Reworded 1 st Paragraph from "Heat stress training should cover..." to " <i>Heat stress training will be provided to employees and will cover...</i> ". And added addition training requirements for supervisors.	Bev Rancier, H&S Mgr; John	08-Sept-2017
6.4.3	(7): Added new point to ensure employees are provided with shaded areas and examples of types of areas that may be used.		
6.0	Replaced "Requirements" title with " <i>Assessing Heat Stress Risk</i> ".	Troy Timothy, Corp. Industrial Hygienist	26-Nov-2018
6.2	Changed Title from "Measures for Evaluating Heat Stress Risk" to " <i>Using WBGT Index to Evaluate Heat Stress Risk</i> "		
6.23	Added WBGT index for Tyvek and Chemical Protective Suits in TABLE 1 and in Note : removed "or clothing impermeable or highly resistant to water vapor or air movement. Special garments such as these, and multiple layers of clothing, severely restrict perspiration evaporation and heat removal" from end of first sentence.		
6.2.4	Added new Section 6.2.4 WBGT TLV and Action Levels		
6.3	Removed Humidex and Comfort Level Table and put in a reference to Appendix 2.		
6.4	Removed 6.4: Heat Stress Controls to Section 9.0 of this Standard.		

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6.7, 6.8, 7.0, 7.1	Section 6.7 has become Section 7.0 Heat Stress Monitoring and Section 6.8 has become Section 7.1 Heart Rate Monitoring.		
7.1	Changed 1 st paragraph by replacing “estimated” with “ <i>measured by either using digital heart rate monitors, or...</i> ”;		
7.1.1, 7.1.2	Section 7.1.1 title change to “ <i>Heart Rate Monitor Method</i> ”; added new point (1);and Moved points to new Section 7.1.2: Carotid Pulse Method. Point (1): “count the pulse during a 30-second period as early as possible in the rest period. Measure pulse again 5 minutes into the rest period, to measure recovery rate.”		
7.1.3	Replaced points (1): Heart rate should decrease at least 10 beats per minute during the first 5 minutes of the rest period. If not, the heat and work intensity is too high for the individual and corrective actions should be implemented.” & (2): Heart rate should recover to 90 beats per minute before resuming work.” with (1): “ <i>Heart rate should remain below 110 bpm.</i> ”		
7.1.4	(1): Removed “first” heart rate measurement...		
8.0	Added new Section 8.0 Action Levels		
9.0, 9.1.1, 9.1.2, 9.1.3, 9.1.4, 9.2, 9.3	Moved Heat Stress Controls from Section 6.7 to Section 9.0 and added new Sub-Sections 9.1.1 to 9.1.4; Added new Sections 9.2 and 9.3		
12.4	Updated supporting documentation list		
App 2	Added Humidex tables		
App 4	Added dehydration urine color chart		
7.1.3 7.1.4 8.0	Added Ceiling Limit using 180-age Change 110 bpm from action required to Action Level, and remove recovery rate of 90 bpm Changed action level table to reflect changes above	Troy Timothy, Corp. Industrial Hygienist	23-Sept-2020
4.1 9.1.5 6.3 App 2 App 2	Added a Definitions section Added Access to Shade section Added heat index with humidex Added Heat Index column to work/rest tables Added Heat Index and Humidex charts	Troy Timothy, Sr Program Manager – Industrial Hygiene, Will Barnett, H&S Manager, Dillon May, H&S Manager	14-Mar-2022

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1.0 PURPOSE

The purpose of this program is to define guidelines and recommendations regarding the prevention of heat stress related injuries and illnesses. This program applies to routine work, enclosed/confined space entry work, and work in semi-impermeable or impermeable personal protective clothing.

2.0 SCOPE

Clean Harbors' Heat Stress Standard should be implemented when ambient air temperatures exceed 80°F/27°C. This Standard applies to all Clean Harbors' employees, contractors, and subcontractors.

3.0 RESPONSIBILITIES

3.1 Executive Management

Executive Management shall ensure all Policies and Procedures associated with the Company's Heat Stress Standard are in place, monitored, updated as necessary and followed by all employees in the organization.

3.2 Facility and Field Management

Management is responsible for:

- (1) Adjusting work practices as necessary when workers identify heat stress conditions.
- (2) Encouraging heat stress prevention.
- (3) Ensuring ample supply of drinking water, Gatorade (or other similar drinks containing electrolytes), fruit drinks, etc. is readily available at the work area. Energy drinks (i.e., Red Bull, Monster, etc.) with caffeine are not recommended.
- (4) Evaluating and determining the suitable frequency and length of rest breaks.
- (5) Ensuring physiological monitoring for heart rate and body temperature is conducted if needed.
- (6) Implementing work/rest cycles according to work intensity and ambient air temperature.
- (7) Reassigning employees when their heart rate or body temperature exceeds action levels.
- (8) Planning and rescheduling work when Action Levels are exceeded.
- (9) ensure the appropriate cooling areas, fluids and work/rest schedules are implemented accordingly.

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- (10) Observing employees for signs of heat stress. Takes rapid action to control heat exposure and minimize heat strain.
- (11) Considering the use of cooling vests containing ice packs or ice water to help remove excess heat from workers' bodies.
- (12) Encouraging workers to avoid direct sunlight.
Allow employees to adequately acclimate themselves to the heat. Introduce new personnel, or personnel who have not been accustomed to wearing fire retardant or impermeable clothing, to heat exposure gradually.
- (13) Ensure personnel receive Heat Stress Prevention training. Provide periodic training (tailgate safety meetings) on the recognition and prevention of heat stress for day-to-day tasks. Training workers to recognize the signs and symptoms of heat stress and start a "buddy system" since people are not likely to notice their own symptoms.
- (14) Ensuring First Aid responders and an emergency response plan are in place in the event of a heat-related illness.
- (15) Participating in the investigation of any heat-related incidents.
- (16) They should understand their role in heat stress management and the principles for preventing heat illness in their area of responsibility.
- (17) For some activities, such as enclosed/confined space work, the use of conditioned air should be considered.
- (18) Supervisors must ensure personal factors that contribute to heat related illness are taken into consideration before assigning a task where there is the possibility of a heat-related illness occurring. The most common personal factors that can contribute to heat related illness are age, weight/fitness, drug/alcohol use, prior heat-related illness, etc.

3.3 Employees

Use heat stress prevention techniques:

- (1) Wear light, loose clothing that permits the evaporation of perspiration (within the job restrictions).
- (2) Consume ample liquids throughout the day. Drink small amounts of water (8 ounces (250ml)) every half hour or so. Don't wait until you're thirsty.
- (3) Avoid beverages such as tea, coffee or energy drinks (i.e., Red Bull, Monster, etc.) that increase dehydration.
- (4) Where PPE must be worn:
 - (a) Use the lightest weight approved clothing and respirators;
 - (b) Use PPE that allows perspiration to evaporate.
- (5) Monitor heart rate and body temperature as needed.
- (6) Personnel should understand the principles of heat stress prevention and manage

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their work accordingly. Recognize early warning signs both for yourself and co-workers, and take appropriate actions.

- (7) Avoid eating hot, heavy meals. They tend to increase internal body temperature by redirecting blood flow away from the skin to the digestive system.
- (8) Don't take salt tablets unless a physician prescribes them. Natural body salts lost through perspiring are easily replaced by a normal diet.
- (9) Prescription and non-prescription medication can affect the ability of the body to tolerate heat. Personnel should understand the side effects of medications and notify their supervisor of potential heat tolerance issues.

Note: Pregnant workers and workers with a medical condition should discuss working in the heat with their doctor.

3.4 Health & Safety

- (1) Provides heat stress training.
- (2) Encourages heat stress prevention.
- (3) Health & Safety will review, approve and distribute this Standard and all related Policies to all locations, sites and offices as applicable. Health & Safety will also coordinate revisions of all Standards and related Policies as required. Lastly, Health & Safety will directly support Policy and Standard implementation and report any exceptions and will provide support to all locations, sites and offices as necessary.

4.0 TRAINING

Heat stress training will be provided to employees and will cover the following components:

- (1) Knowledge of heat stress hazards;
- (2) Recognition of risk factors, danger signs, and symptoms;
- (3) Awareness of first aid procedures for, and potential health effects of, heat related illnesses;
- (4) Employee responsibilities in avoiding heat related illnesses;
- (5) Dangers of using prescription medications in hot work environments.

Additional training will be provided to supervisors prior to supervising employees at risk and will cover the following components:

- (1) Planning for and response to heat related emergencies;
- (2) Preventing heat stress and avoiding heat related illnesses including:
 - (a) Engineered controls; (b)
 - Administrative controls; and
 - (c) Work/Rest cycles.

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4.1 DEFINITIONS

Acclimatization

Temporary adaptation of the body to work in the heat that occurs gradually when a person is exposed to heat. Acclimatization peaks in most people within four to fourteen days of regular work for at least two hours per day in the heat.

Ambient Temperature

The temperature of the surrounding environment without consideration to humidity, wind or other factors.

Conduction

Transfer of heat from particles that are touching each other in a stationary situation such as in the transfer of heat from the skin to air. The air temperature must be cooler than skin temperature for this to occur.

Convection

Circulation of that air next to the skin which results in an increased cooling action.

Dry Bulb Temperature

Means the temperature in degrees Fahrenheit obtainable by using a thermometer to measure the outdoor temperature in an area where there is no shade. While the temperature measurement must be taken in an area with full sunlight, the bulb or sensor of the thermometer should be shielded while taking the measurement, e.g., with the hand or some other object, from direct contact by sunlight.

Evaporation

Cooling of the body that takes place when sweat evaporates on skin surface

Globe Temperature

Temperature inside a blackened, hollow, thin copper globe

Heat

Measure of energy in terms of quantity (degrees)

Heat Index

A temperature gauge that accounts for both ambient temperature and humidity in the air

Heat Stress

The American Conference of Governmental Industrial Hygienists (ACGIH) defines heat stress as "the total net heat load on the body" that results from exposure to external sources and from internal metabolic heat production.

Heat Stress Watch

Individual assigned the task of monitoring the Heat Stress Prevention Program while on a jobsite. Responsibilities include assisting the onsite supervisor in the filling out of the Heat Stress Plan and communicating the plan requirements to the employee's onsite, utilizing the temperature monitoring matrix to document temperatures throughout the duration of the project and notifying the onsite supervisor of break schedules as noted on the heat index matrix.

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Metabolic Heat

A by-product of the body's activity

NIOSH (National Institute for Occupational Safety and Health)

Federal agency responsible for conducting research and making recommendations for the prevention of work related injury and illnesses.

Preventive Recovery Period

A period of time to recover from the heat in order to prevent illness

Radiation

Transfer of heat energy through space. For example, the heat from a boiler or from the sun will transfer to (or heat) objects in their surrounding areas.

Shading

Blockage of direct sunlight. One indicator that blockage is sufficient is when objects do not cast a shadow in the area of blocked sunlight. Shade is not adequate when heat in the area of shade defeats the purpose of shade, which is to allow the body to cool. For example, a car sitting in the sun does not provide acceptable shade to a person inside it, unless the car is running with air conditioning. Shade may be provided by any natural or artificial means that does not expose employees to unsafe or unhealthy conditions.

5.0 HAZARDS

Operations involving heavy physical work in hot, humid environments can put considerable heat stress on workers. Hot and humid conditions can occur either indoors or outdoors.

For example, high-pressure water blasting, industrial vacuuming, work with hazardous wastes, and other operations that require workers to wear semi-permeable or impermeable protective clothing can contribute significantly to heat stress. Heat stress causes the body's core temperature to rise.

5.1 Rising Body Core Temperatures

As mentioned above, the human body functions best within a narrow internal temperature range. This "core" temperature varies from 96.8°F/36°C to 100.4°F/38°C. A worker performing heavy work in a hot environment builds up body heat.

- (1) Excess heat is removed from the body in two ways:
 - (a) The heart rate increases to move blood and heat from heart, lungs, and other vital organs to the skin. The expansion of blood vessels near the skin surface promotes heat exchange;
 - (b) Perspiring increases to help cool blood and body. Evaporation of perspiration is the most important way the body gets rid of excess heat. When the body's cooling mechanisms work well, core temperature drops or stabilizes at a safe level (around 98.6°F/37°C).

Impermeable chemical protective clothing blocks air from passing across the skin surface, preventing these two cooling mechanisms from working correctly.

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- (2) When too much perspiration is lost through heavy labor or working under hot, humid conditions, the body does not have enough water left to cool itself and the body's cooling capability becomes overloaded. This will result in dehydration and the core body temperature can rise above its normal 98.6°F/37°C. When core temperature exceeds 100°F/38°C, heat stress illnesses can occur. A series of heat-related illnesses, or heat stress disorders, can then develop.
- (3) The medical consequences of working in a hot environment can be serious. Individuals responsible for the health & safety of those working in hot environments must be able to quickly and effectively recognize the signs and symptoms of the onset of heat related illnesses.

5.2 Factors Influencing Responses to Heat

Individuals vary in their response to heat. Factors, which may predispose workers to heat stress, include:

- (1) Personal Protective Equipment: Chemical protective suits, gloves, and other PPE add weight and restrict the body's cooling ability. Sweating inside impermeable suits will not cool the body since air movement across the skin is prevented. Excessive sweating inside a suit is a disadvantage since it represents water loss without any gain in cooling capacity.
- (2) Physical Fitness: A fit person will have less physiological strain, a lower heart rate, lower body temperature, more efficient sweating mechanism and more efficient use of oxygen.
- (3) Weight: Overweight workers are more susceptible to heat stress.
- (4) Acclimatization: It takes approximately 3-6 days working in elevated temperatures to become adjusted to working under hot conditions. Acclimated workers can maintain their body temperatures within acceptable ranges more easily than non-acclimated workers. Acclimated workers sweat sooner and more profusely but lose less salt while sweating. Acclimatization can be lost within 2 days of removal from a hot environment (i.e., over the weekend).

5.3 Recognition of Heat Stress Disorders

Heat stress disorders range from minor discomforts to life threatening conditions and include, but are not limited to:

- heat rash;
- heat cramps;
- heat exhaustion;
- heat stroke.

Types of heat stress and their contributing factors are described below. Refer to the APPENDIX 3: "Heat Stress Hazards" for a comprehensive summary, which can be posted at the job site.

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Category	Predisposing Factors
Heat Fatigue: Reduced performance capacity. Impaired ability to perform sensorimotor, mental, or vigilance tasks.	Workers who are un-acclimatized.
Heat Rash: Symptoms include: • Red blotches and extreme itchiness in areas persistently damp with perspiration; • Pricking sensation on the skin where perspiring occurs.	Also known as prickly heat is the most common problem in hot work environments.
Category	Predisposing Factors
Heat Cramps: Painful spasms of muscles in arms, legs, and abdomen. Cramps may occur several hours after activity. Spasms usually occur in large muscles – back, legs, arms. Cramping creates hard painful lumps within the muscles.	Heavy sweating and drinking large amounts of water without adequate salt replacement.
Fainting: An un-acclimated worker may faint while standing still. Not caused by heat imbalance.	Brain does not get enough oxygen due to excessive pooling of blood in the extremities.
Heat Exhaustion: • Extreme weakness or fatigue. • Difficulty continuing work. • Weak, rapid pulse. • Cold, clammy, moist skin. • Pale or flushed complexion. • Excessive sweating. • Headache and nausea. • Breathlessness. • Fainting may occur while standing. Note: Body temperature may not be elevated.	Occurs when the body can no longer keep blood flowing to supply vital organs and send blood to the skin to reduce body temperature at the same time.

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Heat Stroke:

The primary signs & symptoms of heat stroke:

- Confusion;
- Irrational behavior;
- Loss of consciousness;
- Convulsions;
- Lack of perspiration;
- Hot dry flushed skin;
- Deep, rapid breathing; • Weak, rapid pulse;
- Dizziness, nausea.
- Body temperature is usually abnormally elevated.

Heat stroke requires immediate medical attention!

Sustained exertion in heat by unacclimatized workers. Lack of physical fitness, or obesity. Recent alcohol intake.

WARNING:

- (1) Heat stroke can be fatal even after first aid is administered. Anyone suspected of suffering from heat stroke should not be sent home or left unattended unless that action has been approved by a physician.
- (2) If in doubt as to what type of heat-related disorder the worker is suffering from call for medical assistance.

6.0 ASSESSING HEAT STRESS RISK

6.1 Factors used to Assess Heat Stress Risk

Factors that should be considered in assessing heat stress include:

- personal risk factors;
- environmental factors;
- job factors.

6.1.1 Personal Risk Factors

It is difficult to predict just who will be affected by heat stress and when, because individual susceptibility varies. There are, however, certain physical conditions that can reduce the body's natural ability to withstand high temperatures.

Weight: Workers who are overweight are less efficient at losing heat.

Poor physical condition: Being physically fit aids your ability to cope with the increased demands that heat places on your body.

Previous heat illnesses: Workers are more sensitive to heat if they have experienced a previous heat-related illness

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Age: As the body ages, its sweat glands become less efficient. Workers over the age of 40 may therefore have trouble with hot environments. Acclimatization to the heat and physical fitness can offset some age related problems.

Heart disease or high blood pressure: In order to pump blood to the skin and cool the body, the heart rate increases. This can cause stress on the heart.

Recent illness: Workers with recent illnesses involving diarrhea, vomiting, or fever have an increased risk of dehydration and heat stress because their bodies have lost salt and water.

Alcohol consumption: Alcohol consumption during the previous 24 hours leads to dehydration and increased risk of heat stress.

Medication: Certain drugs may cause heat intolerance by reducing perspiration or increasing urination. People who work in a hot environment should consult their physician or pharmacist before taking medications.

Lack of acclimatization: When exposed to heat for a few days, the body will adapt and become more efficient in dealing with raised environmental temperatures. This process is called acclimatization. Acclimatization usually takes 6 to 7 days.

Benefits include:

- lower pulse rate and more stable blood pressure;
- more efficient perspiration (causing better evaporative cooling);
- improved ability to maintain normal body temperatures.

Acclimatization may be lost in as little as three days away from work. People returning to work after a holiday or long weekend—and their supervisors—should understand this. Workers should be allowed to gradually re-acclimatize to work conditions.

6.1.2 Environmental Factors

Environmental factors such as ambient air temperature, air movement, and relative humidity can all affect an individual's response to heat. The body exchanges heat with its surroundings mainly through radiant heat transfer and perspiration evaporation. The rate of evaporation is influenced by humidity and air movement.

Radiant Heat: Radiation is the transfer of heat from hot objects through air to the body. Working around heat sources such as kilns or

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furnaces will increase heat stress. Additionally, working in direct sunlight can substantially increase heat stress.

Humidity: Humidity is the amount of moisture in the air. Heat loss by evaporation is reduced by high humidity and increased by low humidity. As humidity rises, perspiration tends to evaporate less causing the body temperature to increase.

Air Movement: Air movement affects the exchange of heat between the body and the environment. As long as the air temperature is less than the worker's skin temperature, increasing air speed can help workers stay cooler by increasing both the rate of evaporation and the heat exchange between the skin surface and the surrounding air.

6.1.3 Job Factors

- (1) Clothing and Personal Protective Equipment (PPE):
 - (a) Heat stress can be caused or aggravated by wearing PPE such as fire or chemical retardant clothing. Coated and non-woven materials used in protective garments block the evaporation of perspiration and can lead to substantial heat stress. The more clothing worn or the heavier the clothing, the longer it takes evaporation to cool the skin. Remember too that darker colored clothing absorbs more radiant heat than lighter colored clothing.
- (2) Workload:
 - (a) The body generates more heat during heavy physical work. For example, workers shoveling material or rigging pipe in hot weather generate a tremendous amount of heat and are at risk of developing heat stress without proper precautions. Heavy physical work requires careful evaluation even at temperatures as low as 73.4°F/23°C to prevent heat disorders. This is especially true for workers who are not acclimatized to the heat.

Ensure the above items are considered during your hazard identification and risk assessment processes.

6.2 Using WBGT Index to Evaluate Heat Stress Risk

A method of assessing heat stress risk based on a WBGT (Wet Bulb Globe Temperature) (WBGT) threshold is described below. This method of assessment involves the three main components of the heat burden experienced by workers:

- (1) Thermal environment;
- (2) Type of work;
- (3) Type of clothing.

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6.2.1 Thermal Environment

- (1) The first factor in assessing heat stress is the thermal environment as measured by WBGT index. WBGT is calculated in degrees Celsius using a formula which incorporates the following three environmental factors:
 - (a) air temperature;
 - (b) radiant heat (heat transmitted to the body through the air from hot objects such as boilers or shingles heated by the sun);
 - (c) cooling effects of evaporation caused by air movement (humidity).
- (2) To measure WBGT, a heat stress monitor consisting of three types of thermometers is required:
 - (a) A normal thermometer called a Dry Bulb Thermometer is used to measure air temperature.
 - (b) Radiant heat is measured by a Black Bulb Globe Thermometer. This consists of a hollow, 6-inch diameter copper ball painted flat black and placed over the bulb of a normal thermometer.
 - (c) A Wet Bulb Thermometer measures the cooling effect of evaporation caused by air movement (wind or fan). It consists of a normal thermometer wrapped in a wick kept moist at all times. As air moves through the wet wick, water evaporates and cools the thermometer in much the same way that perspiration evaporates and cools the body.

Heat stress monitors currently available calculate WBGT automatically. Calculation depends on whether sunlight is direct (outdoors) or not (indoors).

6.2.2 Type of Work

The second factor in assessing heat stress is the type of work being performed. Following are the four categories, with some examples of each:

Light work:	✦ Office Duties; ✦ Some walking about; ✦ Operating a truck, or other vehicle; ✦ Sweeping the floor.
Moderate work:	✦ Rigging pipe and/or hoses; ✦ Walking with moderate lifting or pushing; ✦ Pressure washing equipment; ✦ Climbing ladders.
Heavy work:	✦ Shoveling dry product; ✦ Carrying Victaulic piping; ✦ High-pressure water blasting; ✦ Industrial vacuuming;

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✦ Hydro-vac excavating.

Very Heavy Work:

- ✦ Shoveling heavy, wet material;
- ✦ Lifting heavy objects;
- ✦ Manually hoisting vertical standpipes.

6.2.3 Type of Clothing

Free movement of cool, dry air over the skin maximizes heat removal. Evaporation of perspiration from the skin is usually the major method of heat removal. WBGT-based heat exposure assessments are based on a traditional summer work uniform of long-sleeved shirt and long pants. With regard to clothing, the measured WBGT value can be adjusted according to Table 1.

TABLE 1: Additions to measured WBGT values for some types of clothing

Clothing Type	Addition to WBGT
Summer work uniform	0
Cloth (woven material) overalls (i.e., Nomex)	0
Double-cloth overalls (i.e., Nomex and Kevlar Cut Suit)	+ 3
Tyvek (polyolefin/SMS polypropylene) coveralls	+1
Chemical Protective Suits (limited use)	+11

Note: These additions do not apply to encapsulating suits or thermal-insulated clothing. As a result, body heat may produce life-threatening heat stress even when environmental conditions are considered cool.

6.2.4 WBGT TLV and Action Levels

Allocation of Work in a Cycle of Work and Recovery	TLV [®] (WBGT values in °C)				Action Limit (WBGT values in °C)			
	Light	Moderate	Heavy	Very Heavy	Light	Moderate	Heavy	Very Heavy
75 to 100%	31.0	28.0	—	—	28.0	25.0	—	—
50 to 75%	31.0	29.0	27.5	—	28.5	26.0	24.0	—
25 to 50%	32.0	30.0	29.0	28.0	29.5	27.0	25.5	24.5
0 to 25%	32.5	31.5	30.5	30.0	30.0	29.0	28.0	27.0

Note: °F = °C multiplied by 9, divided by 5, plus 32

°C = °F minus 32, multiplied by 5, divided by 9

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6.3 Using the Heat Index or Humidex to Evaluate Heat Stress Risk

The heat index and humidex are a measure of discomfort based on the combined effect of excessive humidity and high temperature. As noted already, heat-related disorders involve more than air temperature and humidity. Other factors such as air movement, workload, radiant heat sources, acclimatization, must also be considered in assessing heat stress. readings can signal the need to implement procedures for controlling heat stress in the workplace.

Heat Index and Humidex Charts can be found in Appendix 2 of this Standard.

7.0 HEAT STRESS MONITORING

In an effort to anticipate and avoid conditions resulting in heat stress disorders, Clean Harbors has developed Standards for physiological monitoring. Because individuals vary in their ability to handle heat, each person's physical condition should be monitored. Two reliable measures of physical strain resulting from heat exposure are heart rate and oral temperature. Physiological heat stress monitoring of both heart rate and temperature should be conducted whenever ambient air temperatures reach 80°F/26.6°C.

7.1 Heart Rate Monitoring

Heart rate is measured by either using digital heart rate monitors, or by determining a worker's carotid pulse (at the neck).

7.1.1 Heart Rate Monitor Method

- (1) Digital Heart Rate Monitors can be worn either around the workers chest or wrist. Follow manufacturers operating procedures.

7.1.2 Carotid Pulse Method

- (1) Locating the pulse: To check the carotid pulse in an adult, feel at the front of the neck for the Adam's apple and slide your fingers into the groove next to it in the side of the neck. Use your index and middle fingers, since the thumb has its own pulse and may interfere with measurements.
- (2) Using a stopwatch, determine the number of pulse beats in a 30-second period. Multiply the result by two (2) to determine the pulse rate for a one-minute period.

7.1.3 Ceiling Limit

- (1) Clean Harbors has established a Ceiling Limit of 180 minus (–) workers age. If the workers heart rate exceeds this limit, the worker must stop work immediately. Once the workers heart rate drops below the Ceiling Limit, the worker may continue working. If the workers heart rate remains above the Ceiling Limit for more than a minute, the worker needs to be monitored for signs and symptoms of heat stress.

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7.1.4 Action Level

- (1) Work Reduction - Work load should be reduced if the workers heart rate measurement exceeds 110 beats per minute.
- (2) Monitoring - If the workers heart rate exceeds 110 beats per minute, the worker must be monitored for signs and symptoms of heat stress.

7.2 Oral Body Temperature

Oral body temperature is used to estimate the effects of environmental heat and work intensity on the body's core temperature. Heat stress illness should be prevented if body temperature is maintained within acceptable limits.

7.2.1 Method

Using a clinical thermometer (if feasible to do so), measure oral body temperature at the end of the work period by placing the thermometer bulb under the tongue for 1 minute (before consuming liquids). In most field settings this may not be practical so an ear thermometer (requires supply of disposable protective covers) should be made available. A digital temporal scan thermometer is also another option as it is non-invasive and easy to use in a field environment.

7.2.2 Acceptable Level

Body temperature should be maintained below 100.6 °F/38°C at all times.

7.2.3 Action Required

- (1) Work Reduction - 99.6 °F/37.5°C: Work period should be reduced if body temperature exceeds 99.6 °F/37.5°C. Shorten the next work cycle by one-third and keep the rest period the same. If body temperature still exceeds 99.6 °F/37.5°C at the beginning of the next rest period, shorten the following work cycle again by one-third (i.e. 120 min to 80 min to 50 min).
- (2) Work Restriction - 100.6 °F/38°C: Any worker whose oral body temperature is above 100.6 °F/38°C should not be allowed to wear semipermeable or impermeable clothing. This employee should be assigned to a task, which does not require donning PPE.

8.0 ACTION LEVELS

Rest is required until heart rate and oral body temperature is within the action levels listed below:

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HEAT STRESS MONITORING: ACTION LEVELS		
PHYSIOLOGICAL MONITORING	ACTION LEVEL	ACTION REQUIRED
Heart Rate	>110 beats/minutes	Reduce Workload; Monitor for signs & symptoms
Heart Rate	180 minus (–) workers age	Stop working and rest
Body Temperature	>99.6 °F/37.5°C	Reduce Workload; Monitor for signs & symptoms
Body Temperature	>100.6°F/38°C	Stop work; Remove impermeable clothing.
Evaluate Condition (Headache, cramps, dizziness, etc.)	None Acceptable	Stop Work Activity; Provide First Aid or Medical Attention.

9.0 HEAT STRESS CONTROLS

Heat stress can be controlled through education, engineering, and work procedures.

Protective clothing worn in the field inhibits evaporative cooling of the skin. Work practice and engineering or administrative controls therefore become a critical method of maintaining heat stress within acceptable limits.

Controls will:

- (1) Protect Health – Illness can be prevented or treated while symptoms are still mild.
- (2) Improve Safety – Workers are less liable to develop a heat-related illness and have an incident. Heat stress often creeps up without warning. Many heat-induced incidents are caused by sudden loss of consciousness.
- (3) Increase Productivity – Workers feel more comfortable and are likely to be more productive as a result.

9.1.1 Engineering Controls

Engineering controls are the most effective means of preventing heat stress disorders and should be the first method of control. Engineering controls seek to provide a more comfortable workplace by using:

- reflective shields to reduce radiant heat;
- fans and other means to increase airflow in work areas;
- mechanical devices to reduce the amount of physical work.

Given the constantly changing nature of Client sites, engineering controls are not always feasible. Proper work procedures are therefore required to prevent heat stress disorders.

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9.1.2 Work Procedures

Standard Operating Procedures and/or Safe Work Practices should be developed with consideration to activities in hot environments. Other considerations should include situations where workers are required to wear heat transfer restrictive clothing.

9.1.3 Adjust Work Activity

- (1) Select work/rest cycles and monitoring schedule according to ambient air temperatures as shown on the attached chart.
- (2) Adjust work schedules to perform physically demanding tasks during cooler hours of the day. Other methods include modifying work/rest schedules and rotating personnel to minimize overexertion.
- (3) Reduce the physical demands of the job by increasing mechanization. Utilize tools and equipment to make the job easier.
- (4) Add extra personnel to divide up the workload, and permit rotation of personnel to reduce exposure time for each member of the crew.
- (5) Restrict overtime work.
- (6) Provide field showers or hose-down areas to reduce body temperature and/or cool off protective clothing.
- (7) Provide shaded areas for employees where applicable. This may be in the form of natural shade, awnings, air-conditioned vehicles, etc.

9.1.4 Clothing

Where uniforms are required to be worn, transition to lighter colored (dark blue to light blue) shirts in warmer climates and/or hotter months. Lighter colors reduce the amount of absorption, reflection of sunlight, etc.

9.1.5 Access to Shade Guidelines

1. Shade is required to be *present* when the heat index is at or above 80 degrees F. When the heat index in the work area exceeds 80 degrees Fahrenheit, the employer shall have and maintain one or more areas with shade at all times while employees are present that are either open to the air or provided with ventilation or cooling. The amount of shade present shall be at least enough to accommodate 25% of the employees on the shift at any time, so that they can sit in a normal posture fully in the shade without having to be in physical contact with each other. The shaded area shall be located as close as practicable to the areas where employees are working.

Note: Many states have specific statutes related to shade, amount of water and specific temperatures at which action is required.

2. Shade is required to be available when the heat index does not exceed 80

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degrees Fahrenheit. When the outdoor temperature in the work area does not exceed 80 degrees Fahrenheit employers shall provide timely access to shade upon an employee's request.

3. Employees shall be allowed and encouraged to take a cool-down rest in the shade for a period of at least five minutes at a time when they feel the need to do so to protect themselves from overheating. Such access to shade shall be permitted at all times.
4. Where the employer can demonstrate that it is infeasible or unsafe to have a shade structure, or otherwise to have shade present on a continuous basis, the employer may utilize alternative procedures for providing access to shade if the alternative procedures provide equivalent protection.
5. Except for employers in the agricultural industry, cooling measures other than shade (e.g., use of misting machines) may be provided in lieu of shade if the employer can demonstrate that these measures are at least as effective as shade in allowing employees to cool.

9.2 Recognizing Symptoms

- (1) Train workers to recognize and treat heat stress. Encourage workers to watch each other for signs of heat-related illness, especially during heat waves when temperatures are above normal.
- (2) Exercise additional care on the first day of a project because workers may have lost some of their acclimatization over the weekend and during days off.
- (3) Send workers who show signs of a heat-disorder for medical evaluation.
- (4) Implement a buddy system in which workers are responsible for observing fellow workers for heat stress symptoms.
- (5) Include contingency plans for treatment during safety meeting (e.g. cool rest areas, transportation to nearest hospital).

9.3 Prevent Dehydration

- (1) Drink at least 16 oz. water or electrolyte-replacing fluids before starting shift (Gatorade, sqwincher, fruit drinks, etc.). Coffee, tea and Energy drinks such as Red Bull or Monster, are not to be used as a substitute.
- (2) Consume adequate liquids throughout the day at frequent intervals to total at least 1 gallon per day:
 - (a) 5-7 oz. every 20 minutes; or
 - (b) 16 oz. every hour.

NOTE: Thirst is not a sufficient warning property of sweat loss. Drink liquids even when you are not thirsty.

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- (c) Provide plenty of drinking water for entire crew. Water temperature should be between 50°F/10°C - 60°F/15.5°C to encourage consumption of adequate amounts.
- (d) Provide disposable cups.
- (e) Avoid alcohol after hours (absolutely no alcohol during work hours!).
- (f) Avoid caffeine throughout the day, especially morning coffee.
- (g) Provide cool shelter to protect workers during breaks.
- (h) Encourage workers to maintain an optimal level of fitness, but to eat regularly to prevent an imbalance in their body's electrolytes. A normal diet including fruits and vegetables to maintain an adequate amount of sodium, calcium and potassium is sufficient. Eating salt tablets is not recommended.

10.0 SELECTING WORK/REST CYCLES

Refer to Appendix 2 for established guidelines and recommendations on Work/Rest cycle regimens.

10.1 Monitoring Schedule

Monitor heart rate and body temperature after these work periods. Reduce length of next work period by one-third if 110 beats per minute or 99.6 °F/37.5°C are exceeded.

10.2 Rest Period

Workers should rest in a cool, shady area until heart rate recovers to 90 beats per minute with a body temperature less than 100.6 °F/38°C.

10.3 Stop Work Levels

- (1) Workers should not wear impermeable suits if body temp exceeds 100.6 °F/38°C.
- (2) THE CORRECTED TEMPERATURE EXCEEDS 95°F/35°C CEILING LIMIT.
(92°F/33.3°C ceiling for heavy work.) Work is not recommended under these conditions.
- (3) Refer to Section 11.4 (2) of this Standard for reference documentation.

11.0 PERSONNEL PROTECTIVE COOLING EQUIPMENT

When unacceptable levels of heat stress are encountered in the field, it may be necessary to consider auxiliary body cooling equipment to protect workers. The protective equipment necessary for the job may range from a simple wetted over garment to air or water-cooled garments.

11.1 Wetted Over-Garments

A wetted cotton terry cloth coverall or a two-piece cotton cover, which extends over the torso, can be a simple and effective cooling garment when impermeable protective clothing

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is worn. This is a very effective, relatively simple and inexpensive means of controlling heat stress.

11.2 Ice Packed Vests

- (1) Ice-packed vests contain numerous ice packets, which will cover a large surface area of the body. These vests are available through the following vendor: MSA (Ice Chest Cooling Vest-Part No.695803, Ice pack set-Part No.695805). Telephone number 1-800-MSA-2222. Cost: \$182.00 Vest, Ice packets: \$71.10.
- (2) Disadvantage: Cooling provided may be negligible due to increased metabolic heat produced by the weight of the ice.

11.3 Water-Cooled Garments

Core control cooling jackets utilize a pre-frozen ice container through which tap water is circulated. These units are fairly expensive and provide approximately 30 minutes of cooling capacity. These units are available through the following vendor: MSA (Cooling jacket-Part No.696495) 1-800-MSA-2222.

11.4 Air-Cooled Garments

- (1) Air-cooled garments utilize a vortex tube to supply cooled air to the employee. The vortex tube is attached to the worker and requires a constant source of compressed air supplied through an airline. This type of garment is highly effective in controlling heat stress. These units are available through the following vendor: Vortec Corporation 1-800-441-7475.
- (2) Disadvantage: The airline, which connects the vortex tube and the compressed air source, limits worker mobility. The suits are relatively expensive. The air is not breathable.

11.5 Medical Treatment

The following steps are recommended to promote recovery from heat stress illnesses. While rest in a cool area may be sufficient for mild heat fatigue and heat cramps, immediate medical attention is required for heat stroke.

- (1) Heat Fatigue:
 - (a) Rest in a cool, shady area.
 - (b) Drink water and fluids.
- (2) Heat Rash:
 - (a) Cool environment, cool shower, thorough drying (If the skin is not cleaned frequently enough the rash may become infected).
 - (b) In most cases, heat rashes disappear a few days after heat exposure ceases.
- (3) Heat Cramps:
 - (a) Stretch and massage muscles.

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- (b) Replace salt by drinking commercially available carbohydrate/electrolyte replacement fluids.
- (c) Prompt relief by I-V infusion.
- (4) Heat Exhaustion:
 - (a) Heat exhaustion casualties respond quickly to prompt first aid. If not treated promptly heat exhaustion can lead to heat stroke which is a medical emergency.
 - (b) Help the casualty to cool off by resting in a cool place.
 - (c) Consume liquids to replace electrolytes.
 - (d) Rest with feet elevated.
 - (e) Remove unnecessary clothing or loosen clothing (as required).
 - (f) Shower or sponge with cool water.
 - (g) Call 911.

It takes 30 minutes at least to cool the body down once a worker overheats and suffers heat exhaustion. Heat stroke occurs when the body can no longer cool itself and body temperature rises to critical levels.
- (5) Fainting:
 - (a) Remove to cool area.
 - (b) Rest with feet elevated.
 - (c) Drink water and fluids.
- (6) Heat Stroke:
 - (a) Call 911.
 - (b) Provide immediate, aggressive, general cooling:
 - (i) immerse casualty in tub of cool water;
 - (ii) place in cool shower;
 - (iii) spray with cool water from a hose; or
 - (iv) Wrap casualty in cool, wet sheets and fan rapidly.
 - (c) Treat for shock if present.
 - (d) Ensure casualty is taken to a Medical Treatment Facility.
 - (e) Do not give anything by mouth to an unconscious casualty.

12.0 RELATED SUPPORT DOCUMENTS

12.1 Policies

- 1-A: Management Commitment and Leadership Policy (HS.00001.PLC-10HS)
- 1-B: Planning and Resources (HS.00002.PLC-10HS)
- 1-C: Health & Safety Policies (HS.00003.PLC-10HS)

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- 1-D: Authority, Responsibilities and Line Accountability (HS.00004.PLC-10HS)
- 1-E: Contractors and Contract Employees (HS.00005.PLC-10HS)
- 1-F: Employee Involvement (HS.00006.PLC-10HS)
- 1-G: Health & Safety System Goals and Objectives (HS.00007.PLC-10HS)
- 1-I: Legislative Compliance and Health & Safety Rules (HS.00009.PLC-10HS)
- 2-A: Baseline Hazard Analysis; Hazard Analysis of Significant Changes & Routine Activities; and Hazard Prevention and Control (HS.00010.PLC-10HS)
- 2-C: Hazard Reporting and Correction Tracking (HS.00013.PLC-10HS)
- 2-D: Incident Reporting and Investigations (HS.00014.PLC-10HS)
- 3-D: Personal Protective Equipment (PPE) (HS.00019.PLC-10HS)
- 3-F: Injury Illness Prevention (IIPP) (HS.00021.PLC-10HS)
- 3-G: Occupational Health Care Program (HS.00022.PLC-10HS)
- 4-A: Health & Safety Training and Recordkeeping (HS.00025.PLC-10HS)

12.2 Standards

- Abrasive Blasting (HS.00011.T2S-10HS)
- Behavioral Based Safety (HS.00082.T2S-10HS)
- Confined Space Entry (HS.00030.T2S-10HS)
- Drum and Container Handling Standard (HS.00022.T2S-10HS)
- Emergency Response (HS.00070.T2S-10HS)
- Employee Health & Safety Rules (HS.00084.T2S-10HS)
- Excavation and Trenching Standard (HS.00026.T2S-10HS)
- Explosives Handling, Storage and Disposal (HS.00092.T2S-10HS)
- Fire Protection (HS.00058.T2S-10HS)
- Heavy Equipment Operator (HS.00079.T2S-10HS)
- Hot Work Permit (HS.00035.T2S-10HS)
- Household Hazardous Waste Collections (HS.00036.T2S-10HS)
- High-Pressure Water Jetting (HPWJ) (HS.00031.T2S-10HS)
- Job Hazard Analysis (HS.00086.T2S-10HS)
- New Employee/Short Service (HS.00032.T2S-10HS)
- Personal Protective Equipment (PPE) (HS.00072.T2S-10HS)
- Pressure Washing (HS.00066.T2S-10HS)
- Preventative Maintenance (HS.00038.T2S-10HS)
- Site Characterization and Analysis (HS.00062.T2S-10HS)
- Working Alone or in Isolation (HS.00002.T2S-10HS)
- Working Safely on Petroleum Storage Tank Floating Roofs (HS.00034.T2S-10HS)

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12.3 Standard Operating Procedures & Safe Work Practices

Clean Harbors locations must develop site specific Standard Operating Procedures and/or Safe Work Practices to ensure compliance to corporate Health & Safety Standards. These SOPs/SWPs must, at a minimum, be as stringent as Corporate Standards, while maintaining compliance with all applicable legislative bodies for the area that you work in.

12.4 Additional Supporting Documents

- (1) Canada's National Occupational Health & Safety Resource (On-line Service).
- (2) Environment Canada (On-line Service).
- (3) Sarnia Regional Labour-Management Health and Safety Committee (On-line Service).
- (4) The Construction Safety Association of Ontario.
- (5) American Conference of Governmental Industrial Hygienists, 2018 Threshold Limit Values for Chemical Substances and Physical Agents.
- (6) U.S. Department of Health and Human Services, Criteria of a Recommended Standard: Occupational Exposure to Heat and Hot Environments, 2016, DHHS (NIOSH) Publication No. 2016-106.

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APPENDIX 1: Heat Stress Monitoring Worksheet

Click on the hyperlink below to access the form:

[Heat Stress Monitoring Worksheet – CHES.00110.FM-10HS](#)

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APPENDIX 2: Work/Rest Cycle Regimens based on Humidex

Table 1: Work/Rest Cycle and Monitoring for Workers wearing Chemical Protective Suits

Guidelines for Work/Rest Regimen for Level B/C PPE											
H E A T I N D E X °F	H U M I D E X °C	LIGHT WORK			MODERATE WORK			HEAVY WORK			WATER
		Full Sun	Partly Cloudy	Shade or no Shadow	Full Sun	Partly Cloudy	Shade or no Shadow	Full Sun	Partly Cloudy	Shade or no shadow	
80	26	C	C	C	C	C	C	15	C	C	16 oz. every 30 minutes
82	27	C	C	C	10	C	C	30	15	C	
84	28	C	C	C	15	10	C	40	30	10	
87	30	10	C	C	20	15	10	45	40	20	
91	32	15	10	C	30	20	15	A	45	30	
94	34	20	15	10	40	30	20	A	A	45	16 oz. every 15 minutes
96	36	30	20	15	45	40	30	A	A	A	
98	37	40	30	20	50	45	40	A	A	A	
100	38	45	40	30	A	50	45	A	A	A	
102	39	50	45	40	A	A	50	A	A	A	
104	40	A	50	45	A	A	A	A	A	A	16 oz. every 10 minutes
106	41	A	A	50	A	A	A	A	A	A	
108	42	A	A	A	A	A	A	A	A	A	
110	43	A	A	A	A	A	A	A	A	A	
112	44	A	A	A	A	A	A	A	A	A	

C = Continuous Work Permitted

Light Work = Sitting, standing, walking, operating equipment (forklift, HEO), inspection work, light hand tools, etc.

10 – 45 Minutes of rest per hour (including rests)

Moderate Work = Carrying loads (20 – 40 lbs.), using heavier = pauses, and operational waiting periods hand tools for short periods of time. during work, or equivalent slowing of pace of work).

A = Adjust the work (e.g., delay work until

Heavy Work = Climbing, carrying loads over 40 lbs., cooler or implement other controls). installing utilities, using heavier hand tools for extended periods of time.

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Guidelines for Work/Rest Regimen for Level D PPE											
H E A T I N D E X °F	H U M I D I T Y °C	LIGHT WORK			MODERATE WORK			HEAVY WORK			WATER
		Full Sun	Partly Cloudy	Shade or no Shadow	Full Sun	Partly Cloudy	Shade or no Shadow	Full Sun	Partly Cloudy	Shade or no shadow	
82	27	C	C	C	C	C	C	10	C	C	16 oz. every 30 minutes
84	28	C	C	C	C	C	C	15	C	C	
87	30	C	C	C	10	C	C	20	10	C	
90	32	C	C	C	15	C	C	30	15	C	
94	34	10	C	C	20	10	C	40	20	10	16 oz. every 15 minutes
96	36	15	C	C	30	15	C	45	30	15	
98	37	15	10	C	40	20	C	A	40	30	
100	38	30	15	C	45	30	15	A	45	40	
102	39	30	15	10	A	40	20	A	A	45	
104	40	45	30	15	A	45	30	A	A	A	16 oz. every 10 minutes
106	41	A	30	15	A	A	40	A	A	A	
108	42	A	45	30	A	A	45	A	A	A	
110	43	A	A	30	A	A	A	A	A	A	
112	44	A	A	45	A	A	A	A	A	A	
114	46	A	A	A	A	A	A	A	A	A	
118	48	A	A	A	A	A	A	A	A	A	

C = Continuous Work Permitted

Light Work = Sitting, standing, walking, operating equipment (forklift, HEO), inspection work, light hand tools, etc.

10 – 45 Minutes of rest per hour (including rests)

Moderate Work = Carrying loads (20 – 40 lbs.), using heavier = pauses, and operational waiting periods hand tools for short periods of time. during work, or equivalent slowing of pace of work).

A = Adjust the work (e.g., delay work until

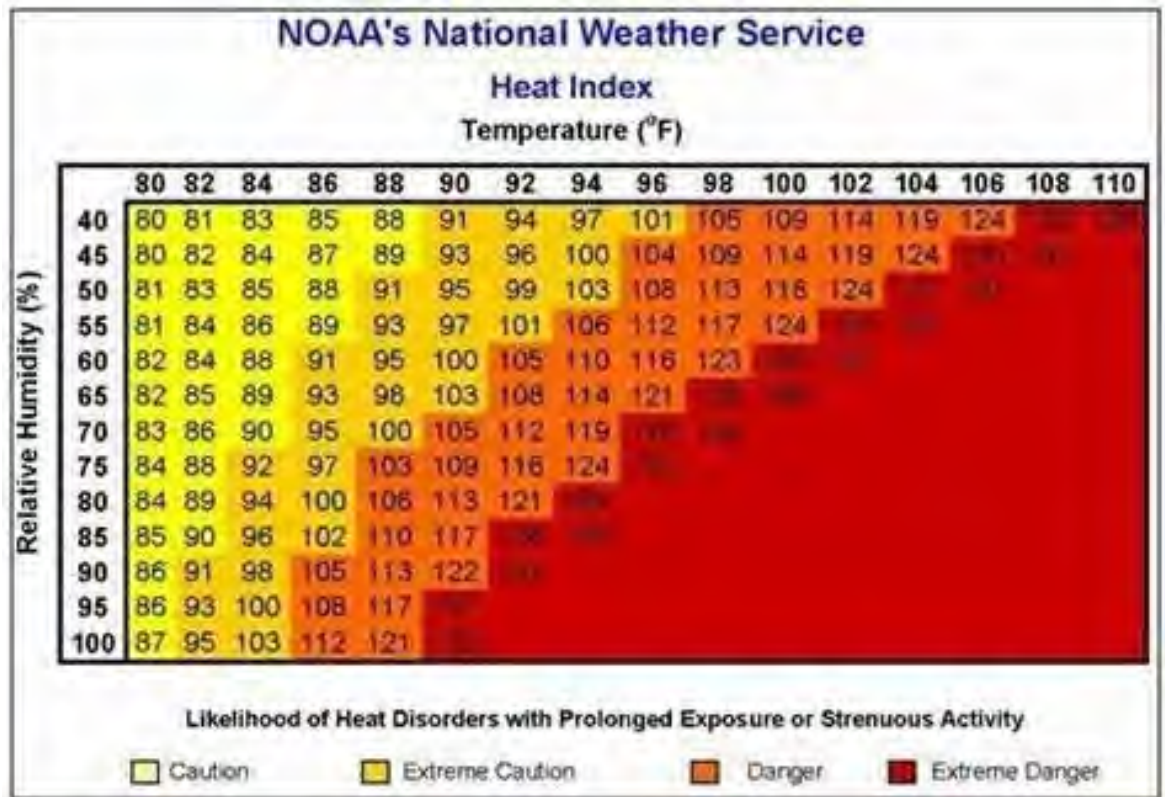
Heavy Work = Climbing, carrying loads over 40 lbs., cooler or implement other controls). installing utilities, using heavier hand tools for extended periods of time.

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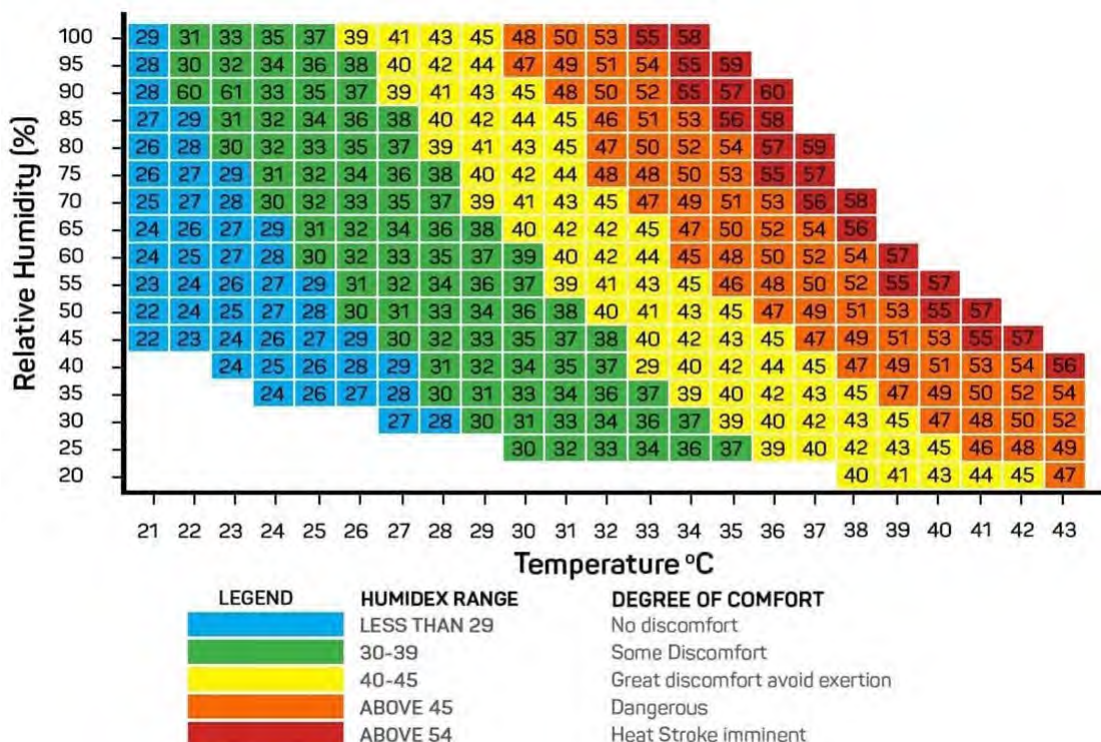
HEAT INDEX



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HUMIDEX



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APPENDIX 3: Heat Stress Hazards

	Cause	Symptoms	Treatment	Prevention
Heat Rash	Hot humid environment; plugged sweat glands.	Red bumpy rash with severe itching.	Change into dry clothes and avoid hot environments. Rinse skin with cool water.	Wash regularly to keep skin clean and dry.
Sunburn	Too much exposure to the sun.	Red, painful, or blistering and peeling skin.	If the skin blisters, seek medical aid. Use skin lotions (avoid topical anesthetics) and work in the shade.	Work in the shade; cover skin with clothing; apply skin lotions with a sun protection factor of at least 15. People with fair skin should be especially cautious.
Heat Cramps	Heavy sweating drains a person's body of salt, which cannot be replaced just by drinking water.	Painful cramps in arms, legs or stomach which occur suddenly at work or later at home. Heat cramps are serious because they can be a warning of other more dangerous heat-induced illnesses.	Move to a cool area; loosen clothing and drink cool salted water (1 tsp. salt per gallon of water) or commercial fluid replacement beverage. If the cramps are severe or don't go away, seek medical aid.	Reduce activity levels and/or heat exposure. Drink fluids regularly. Workers should check on each other to help spot the symptoms that often precede heat stroke.
Fainting	Fluid loss and inadequate water intake.	Sudden fainting after at least two hours of work; cool moist skin; weak pulse.	GET MEDICAL ATTENTION. Assess need for CPR. Move to a cool area; loosen clothing; make person lie down; and if the person is conscious, offer sips of cool water. Fainting may also be due to other illnesses.	Reduce activity levels and/or heat exposure. Drink fluids regularly. Workers should check on each other to help spot the symptoms that often precede heat stroke.
Heat Exhaustion	Fluid loss and inadequate salt and water intake causes a person's body's cooling system to start to break down.	Heavy sweating; cool moist skin; body temperature over 100.4°F/ 38°C; weak pulse; normal or low blood pressure; person is tired and weak, and has nausea and vomiting; is very thirsty; or is panting or breathing rapidly; vision may be blurred.	GET MEDICAL AID. This condition can lead to heat stroke, which can kill. Move the person to a cool shaded area; loosen or remove excess clothing; provide cool water to drink; fan and spray with cool water.	Reduce activity levels and/or heat exposure. Drink fluids regularly. Workers should check on each other to help spot the symptoms that often precede heat stroke.
Heat Stroke	If a person's body has used up all its water and salt reserves, it will stop sweating. This can cause body temperature to rise. Heat stroke may develop suddenly or may follow from heat exhaustion.	High body temperature (over 105.8°F/41°C) and any one of the following: the person is weak, confused, upset or acting strangely; has hot, dry, red skin; a fast pulse; headache or dizziness. In later stages, a person may pass out and have convulsions.	CALL AMBULANCE. This condition can kill a person quickly. Remove excess clothing; fan and spray the person with cool water; offer sips of cool water if the person is conscious.	Reduce activity levels and/or heat exposure. Drink fluids regularly. Workers should check on each other to help spot the symptoms that often precede heat stroke.

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- (1) North American diets are normally high in salt, sufficient to aid acclimatization. However, during the early part of the heat season (May, June) one extra shake of salt during one to two meals per day may help, so long as this is permitted by your physician. Check with your personal physician.
 - (2) ACCLIMATIZATION - The process of adapting to heat is indicated by worker's ability to perform hot jobs with less fluid loss, lower concentrations of salt loss in sweat, and a reduced core (body) temperature and heart rate.
 - (3) Method To Achieve Acclimatization - Moderate work or exercise in hot temperatures during early part of heat season. Adequate salt (mineral) and water intake. Gradually increasing work-time in hot temperatures. Avoid alcohol. Normally takes 8-14 days to achieve acclimatization. Lost rapidly, if removed from strenuous work (or exercise) in hot temperature for more than approximately five days.
 - (4) Caffeine - promotes rapid water loss and may inhibit a workers ability to tolerate heat. Caffeine containing beverages (Coke, Pepsi, other soft drinks, coffee, tea, etc.) should be avoided throughout the work week but particularly while working.
- FOR MORE INFORMATION CONTACT HEALTH & SAFETY.

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APPENDIX 4: Urine Dehydration Chart

Dehydration Urine Color Chart

The following Dehydration Urine Color Chart will help you use your urine color as an indicator of your level of dehydration and what actions you should take to help return your body back to a normal level of hydration.



Doing ok. You're probably well hydrated. Drink water as normal.



You're just fine. You could stand to drink a little water now, maybe a small glass of water.



Drink about 1/2 bottle of water (1/4 liter) within the hour, or drink a whole bottle (1/2 liter) of water if you're outside and/or sweating.



Drink about 1/2 bottle of water (1/4 liter) right now, or drink a whole bottle (1/2 liter) of water if you're outside and/or sweating.



Drink 2 bottles of water right now (1 liter). If your urine is darker than this and/or red or brown, then dehydration may not be your problem. See a doctor.

For more information visit www.urinecolors.com



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Severe Weather Action Plan

Tier 3 Standard



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Revision Summary

Section	Revision Detail (Please provide rationale)	Approved By (Name & Title)	Date Revised
New	Development of New Guideline	Bev Rancier, H&S	18-Jul-2012
Copyright	Updated Copyright to 2014	Bev Rancier, H&S Mgr	18-Sept-2014
All	Converted to Tier 3 Standard and Updated formatting	Bev Rancier, H&S Mgr	10-May-2016

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1.0 PURPOSE

Every year people are fatally injured by severe storms despite advance warning. While some did not hear the warning, others heard the warning and did not pay attention to it.

As there is no place in the Clean Harbors' world that is safe from severe weather conditions, the Company is providing this recommended guideline, with some easy to follow instructions, which will decrease the risk of an incident due to severe weather conditions.

2.0 SCOPE

The scope of this Guideline is to ensure the proper protocol is followed in the case of any severe weather, which may include, but is not limited to Lightning Storms, Tornadoes, Hurricanes and Flash Flooding, while performing any business activities for Clean Harbors.

3.0 RESPONSIBILITIES

- (1) It is the responsibility of supervisors to notify and evacuate workers, who are working either on or in towers or tanks and in large open areas such as wash pads and tank farms and instruct them to go to a lunch room trailer or other safe location when they are at risk from a severe weather threat.
- (2) The Severe Weather Action Plan/Protocol will be reviewed by supervision with field personnel and will be posted in the lunch trailers.
- (3) The call for the severe weather evacuation will be made either verbally or by way of radio.
- (4) An "All Clear" signal will be communicated via the aforementioned process (verbally or via radio) when the event no longer creates a hazard to our workforce.

4.0 SEVERE WEATHER PLANS/PROTOCOLS

Severe weather conditions often create personal safety issues. Because weather conditions can change with little, if any warning – minutes and even seconds can mean lives. It is important that the appropriate plans are in place when severe weather is most likely to occur, such as areas where high temperatures & moist air collide with eastward moving cooling fronts particularly during summer months or during the winter where snow storms are common.

During any storm, listen to local news or a NOAA Weather Radio to stay informed about watches and warnings.

- (1) Know your local community's warning system. Communities have different ways of warning residents about severe weather, with many having sirens intended for outdoor warning purposes.
- (2) Ensure a muster location has been designated and all employees are aware of the procedures that must be followed in the case of a severe weather warning.
- (3) Practice periodic drills so that everyone knows what to do if severe weather warnings have been issued.
- (4) Watch for weather danger signs as outlined below.

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4.1 Lightning Storms



Lightning is most often produced during thunderstorms and does not necessarily accompany rain. Lightning can strike 10 to 15 miles away from the rain portion of a storm and generally come out of the upper portion of a thunderstorm cloud which can easily extend 5 to 10 miles into the atmosphere.

In general, lightning will travel the easiest route from the cloud to the ground which means that it often strikes the highest object. Therefore, a simple rule is **do not make yourself the tallest object or stand near the tallest object in your immediate surroundings.**

4.1.1 Overview

At the first sign of an impending storm, towering thunderheads, darkening skies and/or increasing wind, the responsible person(s), for workers on tanks, vessels, or in large open area, must follow the 40/30 Guideline to determine when to execute the Lightning Action Plan/Protocol. If they:

- (1) see a dark cloud developing an anvil shaped top;
- (2) see lightning; or
- (3) hear thunder;

There may be a potential danger of a strike and the Lightning Action Plan/Protocol must be implemented immediately.

4.1.2 Advanced Warning of Lightning

- (1) *When thunder roars, go indoors!* If you hear thunder, even a distant rumble, get to a safe place immediately. Thunderstorms always include lightning. Any thunder you hear is caused by lightning!
- (2) Review the day's weather forecast during the morning tailgate safety briefing.
- (3) Download a weather phone app on a smart phone. Make sure the app includes a lightening warning component.
- (4) Subscribe to the NOAA weather warning system for your smart phone to warn when storms are approaching.
- (5) Wait at least 30 minutes after the last flash before leaving the sheltered area. Research indicates that 50 percent of lightning related deaths

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occur after the storm has passed and most people think the storm is over.

4.1.3 Lightening Storm Warning in Effect

If Thunder is Heard...	The Lightning is...
5 seconds after a flash	1 mile away
10 seconds after a flash	2 miles away
15 seconds after a flash	3 miles away
20 seconds after a flash	4 miles away
25 seconds after a flash	5 miles away
30 seconds after a flash	6 miles away
35 seconds after a flash	7 miles away
40 seconds after a flash	8 miles away

- (1) Have workers on towers, tanks and in large open areas stop work and move to a safer location such as a lunch trailer, inside a vehicle, or a building.
- (2) Although no place is absolutely safe from the lightning threat, some places are safer than others are:
 - (a) Large enclosed structures (substantially constructed buildings) tend to be much safer than smaller or open structures. The risk of lightning injury depends on whether the structure incorporates lightning protection, construction materials used, and the size of the structure.
 - (b) In general, fully enclosed metal vehicles such as cars, trucks, buses, vans, etc. with the windows rolled up provide good shelter from lightning. Avoid contact with metal or conducting surfaces outside or inside the vehicle.
 - (c) AVOID being in or near high places and open fields, isolated structures, communications towers, flagpoles, light poles, metal fences, trees, and water. Stop work when there is a concern.
 - (d) Never hold or have a metallic object (i.e. wash wand, metal bar) in ones hand or near ones' body during a lightning storm.
 - (e) When inside a building AVOID use of the telephone (corded), washing your hands, restrooms, electrical appliances/wiring, (cable TV wiring, computers, light switches, electrical outlets, etc.) or any contact with conductive surfaces with exposure to the outside such as metal door or window frames.
- (3) If caught outside and a lightning storm is approaching:
 - (a) Move to a building and stay away from doors and windows.
 - (b) If a building is unavailable, get inside a vehicle and keep the windows rolled up.

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- (c) If there are no vehicles or buildings:
 - (i) in a wooded area, look for a low area under thick growth of small trees;
 - (ii) in an open area, go to a low place (preferably a ravine or valley that would not be subject to flooding).
- (d) If in a group of people, spread out, keeping several yards apart from each other.
- (e) If you feel your hair stand on end, you are in immediately danger of being struck.

4.1.4 Lightning Safe Crouch



This is a suggested position to increase the survivability of receiving a lightning strike. When you are hopelessly isolated from protection and you feel the hair on your arms or head stand on end, or you feel a tingling sensation, this indicates lightning is about to strike. This position will enhance the survivability of taking a lightning strike by encouraging lightning to strike your back (avoiding the head and heart) and travel to the ground via the balls of your feet.

- (1) Drop to the kneeling position.
- (2) Bend forward keeping your head very low.
- (3) Place your hands over your ears and close your eyes.
- (4) Rest your body weight mostly on the balls of your feet.
- (5) Touch your feet together.
- (6) Do not allow any other body parts to touch the ground.
- (7) Never lie flat on the ground.

Lightning kills over 100 people in Canada and the United States alone each year. When lightning threatens, get out of the way.

4.1.5 First Aid

Lightning often has a paralyzing effect that is temporary. Even though a person appears dead, they may be resuscitated. Victims may experience temporary paralysis of legs, be stunned and disorientated, or have burns on their bodies.

- (1) If a person is struck by lightning, check to see if the person is breathing.
- (2) If not, begin mouth-to-mouth resuscitation.
- (3) If no pulse is present, begin CPR (Cardiopulmonary resuscitation).
- (4) Give first aid for shock and stay with the victim until help arrives.

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4.2 Tornadoes



Severe tornadoes are the most violent storms on earth. The most violent tornadoes are capable of tremendous destruction with wind speeds of 250 mph (402 k/hr) or more and damage paths can be in excess of 1 mile (1.6 km) wide and 50 miles (80.4 km) long. Tornadoes destroy property and have caused more than 12,000 deaths in North America. In the United States as many as 800 tornados are reported each year, and in Canada an average of 80 tornadoes are reported. The total number of tornadoes is probably higher than indicated particularly where sparse populations exist.

Some tornadoes may form during the early stages of rapidly developing thunderstorms and may appear nearly transparent until dust and debris are picked up. Thunderstorms develop in warm, moist air in advance of eastward-moving cold fronts. These thunderstorms often produce large hail, strong winds, and tornadoes. Tornadoes occasionally accompany tropical storms and hurricanes that move over land. Tornadoes are most common to the right and ahead of the path of the storm center as it comes onshore.

In the southern regions of North America, peak tornado occurrence is in March through May, while peak months in the northern regions are during the summer. An odd fact is that most tornadoes are most likely to occur between 3 and 9 pm however as we all know, many have occurred at all hours of the day or night.

Two of the greatest dangers during a tornado are from flying debris (airborne missiles) and the collapse of a building's roof and/or wall structure. Another significant hazard is from the high velocity with which large hail can impact a surface. Hailstones can go through a vehicle's windshield and will shatter windows easily.

4.2.1 Overview

Know the signs of a tornado:

- (1) Strong, persistent rotation in the cloud base.
- (2) Dark, often greenish sky (generally associated with hail), with a wall cloud.
- (3) Whirling dust or debris on the ground under a cloud base (tornadoes sometimes have no funnel).

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- (4) Hail or heavy rain followed by either dead calm or a fast, intense wind shift. Many tornadoes are wrapped in heavy precipitation and can't be seen.
- (5) Day or night – loud, continuous roar or rumble, which doesn't fade in a few seconds like thunder (sounds similar to a freight train).
- (6) Night – small, bright, blue-green to white flashes at ground level near a thunderstorm (as opposed to silvery lightning up in the clouds. These mean power lines are being snapped by very strong wind, maybe a tornado.
- (7) Night – *Persistent* lowering from the cloud base, illuminated or silhouetted by lightning – especially if it is on the ground; or there is a blue-green-white power flash underneath.

4.2.2 Tornado Warning in Effect

When a Tornado Warning has been activated:

- (1) If available, have workers move to an underground shelter. The safest place during a tornado is an underground shelter, basement or safe room however, in a workplace setting, that option may not be available, particularly in areas where tornadoes are not common.
- (2) If an underground shelter is not available, have workers move into a well constructed permanent building and go directly to:
 - (a) the lowest floor (below ground), small center room, under a stairwell, or in an interior hallway with no windows or if a below ground area is not available;
 - (b) an enclosed, windowless area in the center of the building.
 - (c) Crouch down and cover your head.



Note: Trailers (including tied-down trailers) are useless against a tornado and should not be considered as an option for protection.

- (3) Large buildings with poorly supported roofs are not safe areas in tornadoes (i.e. warehouse). Move to a smaller, permanent structure if safe to do so. Concrete buildings are usually not heavily damaged from tornadoes and tend to be the safest as long as individuals stay in a central, enclosed area of the building, away from windows and entrances.
- (4) Vehicles are extremely risky in a tornado. There is no safe option when caught in a vehicle, just slightly less-dangerous one:
 - (a) If the tornado is visible, far away, and the traffic is light, you may be able to drive out of its path by moving at right angles to the tornado.
 - (b) Seek shelter in a sturdy building or underground if possible.
 - (c) If you are caught by extreme winds or flying debris, park the vehicle as quickly and safely as possible. Stay in the vehicle with the seat belt on and put your head down below the windows, cover

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your head with your hands, blanket, coat, or other material if possible.

- (d) If you can get noticeably lower than the level of the roadway safely, leave the vehicle and lie in that area, covering your head with your hands.
 - (e) Avoid seeking shelter under bridges, which can create deadly traffic hazards while offering little protection against flying debris.
- (5) If caught outside in the open and there is no shelter, find the lowest spot available in the immediate vicinity, lie face-down on the ground and protect the back your head with your arms. Get as far away from trees or other objects that may be blown onto you in a tornado.

4.3 Hurricanes



A hurricane is a type of tropical cyclone or severe tropical storm that forms in the southern Atlantic Ocean, Caribbean Sea, Gulf of Mexico and in the eastern Pacific Ocean. Parts of Southwest United States and the Pacific Coast also experience heavy rains and floods each year from hurricanes spawned off Mexico. Hurricanes can be deadly forces, with high winds, tornadoes and massive flooding.

The Atlantic hurricane season lasts from June to November, with the peak season from mid-August to late October. The Eastern Pacific hurricane season begins the middle of May and ends in November.

Hurricanes can cause catastrophic damage to coastlines and several hundred miles inland. Hurricanes can produce winds exceeding 155 m/hr (249.4 km/hr), as well as tornadoes and microbursts. Additional, hurricanes can create storm surges along the coast and cause extensive damage from heavy rainfall. Floods and flying debris from the excessive winds are often the deadly and destructive results of these weather events. Slow moving hurricanes traveling into mountainous regions tend to produce especially heavy rain. Excessive rain can trigger landslides or mud slides. Flash flooding will can also occur due to intense rainfall.

Advanced preparation and planning is key in maintaining safety during the storm. If you live or work in an area that is affected by hurricanes, it is important that a plan for what to do in case of a hurricane is in place.

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4.3.1 Overview

A tropical cyclone is a rotating, organized system of clouds and thunderstorms that originate over tropical or subtropical waters and has a closed low-level circulation. They are classified as follows:

- (1) *Tropical Depression*: A tropical cyclone with maximum sustained winds of 38 m/hr (53 km/hr) or less;
- (2) *Tropical Storm*: A tropical cyclone with maximum sustained winds of 39 to 73 m/hr (63 to 117 km/hr);
- (3) *Hurricane*: A tropical cyclone with maximum sustained winds of 74 m/hr (119 km/hr) or higher. In the western North Pacific, hurricanes are called typhoons; similar storms in the Indian Ocean and South Pacific Ocean are called cyclones;
- (4) *Major Hurricane*: A tropical cyclone with maximum sustained winds of 111 m/hr (179 km/hr) or higher.

4.3.2 Hurricane Warning in Effect

When a notification has been made that a hurricane is approaching:

In an office setting:

- (1) Clear desk tops completely of paper and other articles, and place these items in drawers or file cabinets.
- (2) Back up critical computer files and store them in an off-site location (preferably in another region).
- (3) Unplug all computers and other electronic equipment, cover with plastic, and tape down.
- (4) Move desks, file cabinets, computer systems, and irreplaceable materials away from windows and off the floor (preferably into interior room with no windows).
- (5) If flooding is possible, to the extent practical, relocate critical equipment from the ground floor to a higher floor or a higher off-site location.
- (6) Lock file cabinets and desk drawers.
- (7) Board up windows and large exterior glass doors before any major hurricane.
- (8) Close and lock windows and lower blinds.
- (9) Lock and secure all doors.

General:

- (1) Remove all loose items, (garbage cans, chairs, tables, plants, etc) from outside the buildings.
- (2) Shut off electrical and gas services as required.
- (3) Leave hazardous areas early because road to safe locations may become impassable several hours prior to the arrival of hurricane conditions:
 - (a) Stay away from low-lying locations which may be swept by high tides or storm waves.

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- (4) Do not return to the workplace until the “all clear” is given.

4.4 Flash Flooding



A flash flood is a rapid rise of water in low-lying areas – washes, rivers, dry lakes and basins or urban areas. It may be caused by heavy rain associated with a storm, hurricane, tropical storm, or meltwater from ice or snow flowing over ice sheets or snowfields. Flash flooding occurs when precipitation falls too quickly on saturated soil or dry soil that has poor absorption ability. The runoff collects in low-lying areas and rapidly flows downhill. Densely populated urban areas are at particular risk of flash floods because most surfaces are paved and impermeable.

Flash floods most often occur in normally dry areas that have recently received precipitation, but may be seen anywhere downstream from the source of the precipitation, even many miles from the source.

Floods are among the most frequent and costly natural disasters in terms of human hardship and economic loss. As much as 90 percent of the damage related to all natural disasters (excluding droughts), is caused by floods and associated debris. More people die yearly in floods than by lightning, tornadoes or hurricanes.

4.4.1 Overview

- (1) Know whether the area in which you work is subject to flooding and whether the area is above or below flood level. If unsure, call your local Red Cross chapter, emergency management office, or planning and zoning department.
- (2) Be aware of the local warning system for flooding.
- (3) If the area is prone to flooding, stockpile emergency building materials, including plywood, plastic sheeting, lumber nails, hammer and saw, pry bar, shovels and sandbags.
- (4) Have check valves installed on building sewer traps to prevent flood waters from backing up in sewer drains.
- (5) Have an evacuation plan and route and be sure that employees have had been trained on the procedures at least annually. Find out what the local community evacuation plan is from the local emergency management agency. It should contain the safety routes to shelters.

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Make sure there are several route planned, in case in the first and/or second choices are flooded out.

- (6) If it has been raining hard for several hours, or steadily raining for several days, or a Hurricane or Tropical storm warning has been activated, be alert to the possibility of a flood.
- (7) Listen to local radio or TV stations for flood information.

4.4.2 Flood Warning in Effect

- (1) If indoors:
 - (a) Turn on battery-operating radio to get the latest emergency information.
 - (b) If told to leave, do so immediately following the Emergency Evacuation plan for your area.
 - (c) If unable to leave, ensure emergency supplies are in place and procedures are followed.
 - (d) Turn off gas, electrical sources as required.
- (2) If outdoors:
 - (a) Move to high ground and stay there.
 - (b) Avoid walking through any floodwaters. If it is moving swiftly, even water 6 inches deep can sweep you off your feet.
- (3) If in a vehicle:
 - (a) If you come to a flooded area, turn around and go another way.
 - (b) If the vehicle you are in stalls, abandon it immediately and climb to higher ground.

Note: More deaths occur to people who have stayed in vehicles or attempting to move stalled vehicles.
- (4) During an evacuation:
 - (a) If advised to evacuate, do so immediately.
 - (b) Remember that evacuation will be simpler and safer if you do so when you are advised.
 - (c) Have a battery operated radio available to listen to further evacuation instructions.
 - (d) Do not try to take short cuts. They may be blocked, so stick to designated evacuation routes.
 - (e) Leave early enough to avoid being marooned by flooded roads.

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4.5 Winter Storms



While the danger of winter weather varies across North America, nearly all employees will likely face some type of severe winter weather. Winter storms can range from a moderate snow over a few hours to a blizzard with blinding, wind-driven snow that lasts for several days. Many winter storms are accompanied by dangerously low temperature and sometimes by strong winds, icing, sleet and freezing rain.

One of the primary concerns during a winter storm is the weather's ability to knock out heat, power, and communications. Other major concerns come when highways are shut down and travel becomes extremely dangerous due to ice, sleet and freezing rain. Heavy snowfall and extreme cold can immobilize an entire region.

Large winter storms can be quite dangerous. A half-foot of snow can make unplowed roads impassable, and even a few inches of dry snow can form drifts many feet high under windy conditions, burying buildings and making roads impassable. Trees can be brought down by the weight of dense wet snow, snapping power lines and damaging property as they fall. Hurricane-like storm surges also occur along the coast from winter storms with high sustained winds. Heavy wet snow falls, have also been cited as the reason for collapsed roofs on large structures (e.g., shopping malls).

Deaths can occur from hypothermia, infections brought on by frostbite, vehicle accidents due to slippery roads, fires, carbon monoxide poisoning from faulty heating methods, or heart attacks caused by overexertion while shoveling. Warm temperatures immediately following a heavy snowstorm can lead to ice jams and flooding from excessive snow melt.

People who travel in winter storms however, are at the most risk. 70% of winter storm-related deaths occur in cars.

4.5.1 Overview

There are three kinds of major winter storms:

- (1) *Blizzards* – are severe winter storms with 35 m/hr winds, considerable amounts of snow, and reduced visibility for ¼ mile or less, lasting for 3 hours or longer. Extreme cold and whiteout conditions are often present with blizzards as well.
- (2) *Ice Storms* – are winter storms with freezing rain or sleet instead of snow. Ice storms are one of the most dangerous types of winter storm

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as they create a coating of ice which snaps tree branches, downs power lines, and makes driving extremely hazardous. These storms tend to cause widespread power outages from snapping power lines (sometimes lasting for days) and/or falling trees.

- (3) *Nor-easters* – are large storm systems whose winds generally come from the northeast. Nor-easters can also cause coastal flooding, coastal erosion and gale force winds.

4.5.2 Winter Storm Warning in Effect

- (1) If indoors:
- (a) Listen to the local radio or TV station for winter weather reports, watches, warnings or other emergency information.
 - (b) Keep in mind that during a severe winter storm it could be hours, or even days, before emergency personnel may be able to respond to your location. Plan to stay inside and ensure appropriate emergency supplies are on hand.
 - (c) Conserve fuel if necessary by keeping the building cooler than normal. Close doors to unused offices or rooms and if more than one thermostat, move all employees into a common area and turn thermostats down for areas not being occupied.
 - (d) If using a space heater be aware of the following:
 - (i) The heater may cause nearby combustible material to ignite;
 - (ii) Inadequate power or ground wiring may result in overheated wiring.
 - (iii) The heater may not have the required tip-over or overheat safety switches.
 - (iv) Even if certified by an accredited certification body, the heater may be unsafe to use in the workplace.
 - (v) The heater's location may contain unrecognized hazards.
 - (vi) Lack of space or the use of an extension cord may be a tripping and fire hazard.
 - (vii) If the space heater is operated by fuel – carbon monoxide is the most ensure:
 - The heater is rated for the dimensions of the room where it will be used;
 - Ensure proper ventilation is in place;
 - Carbon monoxide detectors and smoke detectors are installed;
 - A proper maintenance plan is in place. Maintenance should be performed in accordance with the owner's manual and/or manufacturer's specifications by a qualified employee.
 - (viii) If using kerosene-fueled space heaters the major hazard is fire that could result from the use of gasoline instead of

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kerosene in the heater. Carelessness while refueling and improper storage of combustible liquids:

- Never use gasoline in a kerosene heater. Even very small quantities of gasoline in the heater tank can cause a fire. Kerosene should never be stored or carried in a container that has had gasoline because the residual gasoline is enough to increase the flammability of the kerosene.

- (ix) An improperly operating heater can result in a fire or can generate an excessive amount of by-products of combustion: soot, carbon monoxide and sulfur dioxide.
- (x) If in an energy efficient atmosphere, additional air intake may be required.
- (xi) Appropriate ventilation is required when using a fuel-burning space heater. Ventilation must be provided to replace oxygen as well as to remove gases in order to prevent asphyxiation or respiratory problems.
- (xii) Keep, at minimum, an ABC fire extinguisher available.

(2) If outdoors:

- (a) Dress warmly in dry clothing. It is better to wear several lays of loose fitting, lightweight, warm clothing rather than one layer of heavy clothing. Trapped air between layers of clothing insulates best. Layers can also be removed to avoid perspiration and subsequent chill. Outermost garments should be tightly woven and water repellent. Wear winter gloves, and appropriate head gear.
- (b) Keep dry. Change wet clothing frequently to prevent a loss of body heat. Wet clothing loses its ability to keep a person warm and increases the changes of hypothermia.
- (c) Eat regularly and drink ample fluids. Food provides the body with energy for producing its own heat. Keep the body replenished with fluids to prevent dehydration while working outside.
- (d) Avoid overexertion. If working outdoors (i.e., shoveling), stretch before going outside, take it easy, and take frequent breaks.
- (e) If the air is extremely cold outside, ensure your lungs are protected by covering your mouth with a balaclava.
- (f) Watch for signs of frostbite and/or hypothermia.

Refer to the Cold Stress Standard (HS.00018.T2S-10HS) for further information.

(3) If caught in a vehicle during a winter storm:

- (a) Unless it is absolutely necessary, refrain from traveling and if a winter storm overtakes you look for the closest secure location to stop if necessary:
 - (i) Pull off the road if safe to do so and turn on hazard lights and hang a distress flag on the radio antenna;
 - (ii) Stay in the vehicle during the storm;

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- (iii) ONLY set out on foot if you can see a building close by where you know you can take shelter. Be careful, as distances can be distorted by blowing snow. A building may look close, but it can be too far to walk in deep snow. If you must leave your vehicle, only do so once the storm passes.
- (iv) Run the engine and heater about 10 minutes each hour to keep warm. When the engine is running, partially open a downwind window for ventilation and periodically clear snow from the exhaust pipe. This will help to protect you from carbon monoxide poisoning.
- (v) Exercise from time to time by vigorously moving arms, legs, fingers and toes to keep blood circulating and to keep warm.
- (vi) In extreme cold, use seat covers, and floor mats for insulation from the wind and cold. Huddle with other passengers and use a coat for a blanket if one is not available.
- (vii) Watch for signs of frostbite and hypothermia.
- (viii) If travelling with other employees, take turns sleeping. One person should be awake at all times to look for rescue crews.
- (ix) Drink fluids to avoid dehydration, and avoid caffeine.
- (x) Be careful not to waste battery power on the vehicle. Be conservative with the use of lights and radio, and run fans and heaters with the engine on. If the battery starts to die out, run the vehicle to recharge it following (iv) above.
- (xi) At night, turn on the inside dome light when the engine is running so that work crews or rescuers can see you.
- (xii) If stranded in a remote area, stomp large block letters in an open area spelling out HELP or SOS and line with rocks or tree limbs to attract the attention of rescue personnel who may be surveying the area by airplane.
- (4) Ensure a route is planned prior to travel and an appropriate communication system is established (i.e., call-in intervals, emergency procedures, timetable, primary & alternate routes).
- (5) Keep the gas tank full to avoid ice in the tank and fuel lines. The vehicle may be the main source of heat should a vehicle become immobile.
- (6) Stay on well-plowed main roads and avoid back road shortcuts.

5.0 GENERAL REQUIREMENTS

- (1) Take a critical look at the heating, ventilation and air conditioning systems to determine if it is secure or if it could feasibly be upgraded to better filter potential contaminants, and be sure someone knows how to turn off the systems if required.
- (2) Ensure windows and doors are equipped with storm shutters (as required and if practicable), or if not possible, have material in place that may be used to barricade the glass from being damaged, causing flying shrapnel.

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- (3) If the area in which work is being performed is susceptible to severe weather patterns, ensure an appropriate Emergency Kit is in place and has been inspected annually.
- (4) Ensure appropriate emergency equipment is available (i.e., First Aid Kits, Fire Extinguishers, etc), and have been inspected as required and are in good working order.
- (5) The plan and procedures should be practiced, at minimum, yearly by all employees and reviewed accordingly.

6.0 ACTION PLANS

If you work in an area that is subject to any type of severe weather, an action plan must be prepared, in writing, kept in the workplace and available to all employees for review. Clean Harbors is also required by legislation to ensure that employees have been designated and trained to assist in a safe and orderly evacuation of other employees. This plan should be updated at least annually and revisions should be communicated to all employees.

In most cases, Clean Harbors sites that may be subject to severe weather have a Contingency Plan / Emergency Response plan that includes procedures to follow, subject to the type of weather they may most likely encounter.

If a severe weather plan is not written into the Site Emergency plan, the following is a guideline to follow should one need to be written.

- (1) The written Action Plan should include the following sections (at minimum):
 - (a) *Objective:* Provide a brief description of the reason for the plan, for example:

"The objective of the Emergency Action Plan is to comply with Federal, State, Provincial or local legislative requirements (i.e., OSHA, OH&S, etc) and to prepare employees for dealing with emergency situations. This plan is designed to minimize injury and loss of human life and company resources by training employees, procuring and maintaining necessary equipment and assigning responsibilities. This plan applies to all emergencies that may reasonably be expected to occur at Company Name/Location."
 - (b) *Responsibilities:* List all individual crisis management roles and responsibilities. In a summary (e.g., table), include the Primary contact name, location of the individual, primary phone number, Alternate contact name and their phone number.
 - (i) Include names and regular job titles of persons or departments who can be contacted for further information or explanation of plan duties.
 - (c) *Plan Implementation:* List all steps to be followed including, but not limited to, the following:
 - (i) Notification, warning and communications procedures (i.e. emergency reporting requirements - who reports, how, and to whom);
 - (ii) Emergency phone numbers (i.e., Fire, Police, Emergency Services, etc.);
 - (iii) Outline the procedures to be followed in detail including:
 - Muster points;
 - Evacuation plan (practice regularly) – include evacuation and exit routes and responsible person assignments;
 - Procedures to follow for emergency operation and shut down of critical equipment before evacuation (i.e., securing property and equipment,

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including shutting off power or gas services as required and who is responsible);

- Procedures to follow for rescue and medical duties;
 - Location and use of common emergency equipment;
 - Location of emergency shelters (if required);
 - What will happen if employees are unable to leave;
 - What supplies are available to accommodate employees (i.e., water, food, first aid supplies, blankets, etc.);
 - Accounting for employees/Visitors after evacuation;
 - Means of locating family members in an emergency;
 - Re-entry.
- (a) *Training Requirements:* Instructor-led retaining for life-threatening emergencies should occur at least annually. Retraining for non-life-threatening response should occur periodically. Some legislation encourages skills review and practice sessions at least every 6 months.
- (b) *Plan Evaluation:* document how often the plan will be reviewed and who is responsible for the review and update. Include the need for evaluation after each emergency drill for effectiveness and weaknesses of the plan and confirm that changes will be made to improve it. Include how this plan will be communicated with the employees.
- (c) *Appendix:* Emergency Action Plan Checklist. See Appendix A of this document for a sample checklist that may be modified to suit your needs.

Note: Ensure the plan is written in such a way that it will comply with all legislative requirements for the area in which you are working.

7.0 SEVERE WEATHER EMERGENCY KIT

When a natural disaster from a severe weather event occurs, it can take first responders as much as 72 hours to reach those in non-critical situations.

7.1 Summer Severe Weather Emergency Kit

The following is a recommendation of items that should be included in a Severe Weather Emergency Kit in the case of hurricanes, tornadoes, flash flooding, etc.

- Water: 2 Liters of water per person per day (small bottles are easier to carry in case of an evacuation order);
- Food: Canned food, energy bars and other non-perishables. Minimum three day supply that requires no refrigeration or preparation and little water (e.g., dry cereal, peanut butter, canned fruits, canned vegetables, canned juice, ready-to-eat canned meat; ready-to-eat soups (not concentrated); quick energy snacks, graham crackers);
- Manual can opener;
- First aid kit;
- Battery-powered or wind-up radio and extra batteries;
- Extra keys for vehicles and buildings;

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- Whistle;
- Special needs items: prescription medication and equipment for people with disabilities;
- Signal flare(s);
- Flashlight and batteries;
- Tools: crowbar, assorted nails, wood screws, plastic sheeting, shut-off wrench (to turn off gas & water), pliers, screwdriver, hammer; Paper cups, plates, and plastic utensils;
- Matches in a waterproof container;
- Cash: Include smaller bills and change for pay phones;
- Emergency plan: Include a copy of the facility/area plan and ensure it contains in-town and out-of-town contacts.

Remember to check the expiry date of applicable items on an annual basis and replace items as necessary.

7.2 Winter Survival Emergency Kit

Every vehicle that is being driven in winter weather should be equipped with a winter survival kit to provide some comfort and safety for you and your passengers if you become stranded in the snow. Always keep the Winter Survival Emergency Kit in an easily accessible area and safe from adverse weather conditions. Prior to travelling, ensure your safety communication device(s) (i.e., cell phone, radio, battery charger) is/are working and in place.

Here are some recommended items:

▪ Ice scraper/snowbrush	▪ Small tool kit
▪ Gas line antifreeze	▪ Blanket(s)
▪ Flashlight and batteries	▪ Cell phone
▪ Shovel	▪ Candle and small tin can
▪ Tow rope or chain	▪ Wooden matches
▪ First aid kit	▪ Non-perishable energy foods
▪ Booster cables	▪ Water – Drinking water may be obtained by melting snow but do not eat snow! This uses up body heat and lowers your body temperature. Eating snow also dehydrates your body resulting in a net water loss.
▪ Fire extinguisher	
▪ Reflective triangles	
▪ Extra clothing and footwear	

Review of Tier 3 Standard completed by:

Jeff Ward
Lead Editor (Name & Signature)

18-Jul-2012
Date

Jerry Huber
Associate Editor (Name & Signature)

18-Jul-2012
Date



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Severe Weather Action Plan Guideline

APPENDIX A: Emergency Action Plan Checklist

General Issues		
☐	Does the plan consider all natural or man-made emergencies that could disrupt your workplace?	Common sources of emergencies identified in emergency action plans include - fires, explosions, floods, hurricanes, tornadoes, toxic material releases, radiological and biological accidents, civil disturbances, and workplace violence.
☐	Does the plan consider all potential internal sources of emergencies that could disrupt your workplace?	Conduct a hazard assessment of the workplace to identify any physical or chemical hazards that may exist and could cause an emergency.
☐	Does the plan consider the impact of these internal and external emergencies on the workplace's operations and is the response tailored to the workplace?	Brainstorm worst-case scenarios asking yourself what you would do and what would be the likely impact on your operation and device appropriate responses.
☐	Does the plan contain a list of key personnel with contact information as well as contact information for local emergency responders, agencies and contractors?	Keep your list of key contacts current and make provisions for an emergency communications system such as a cellular phone, a portable radio unit, or other means so that contact with local law enforcement, the fire department, and others can be swift.
☐	Does the plan contain the names, titles, departments, and telephone numbers of individuals to contact for additional information or an explanation of duties and responsibilities under the plan?	List names and contact information for individuals responsible for implementation of the plan.
☐	Does the plan address how rescue operations will be performed?	Unless you are a large employer handling hazardous materials and processes or have employees regularly working in hazardous situations, you will probably choose to rely on local public resources, such as the fire department, who are trained, equipped, and certified to conduct rescues. Make sure any external department or agency identified in your plan is prepared to respond as outlined in your plan. Untrained individuals may endanger themselves and those they are trying to rescue.



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☐	Does the plan address how medical assistance will be provided?	Most small employers do not have a formal internal medical program and make arrangements with medical clinics or facilities close by to handle emergency. If an infirmary, clinic, or hospital is not close to your workplace, ensure that onsite person(s) have adequate training in first aid. The American Red Cross, some insurance providers, local safety councils, fire departments, or other resources may be able to provide this training. Treatment of a serious injury should begin within 3 to 4 minutes of the accident. Consult with a physician to order appropriate first-aid supplies for emergencies. Establish a relationship with a local ambulance service so transportation is readily available for emergencies.
☐	Does the plan identify how or where personal information on employees can be obtained in an emergency?	In the event of an emergency, it could be important to have ready access to important personal information about your employees. This includes their home telephone numbers, the names and telephone numbers of their next of kin, and medical information.
Evacuation Policy and Procedure		
☐	Does the plan identify the conditions under which an evacuation would be necessary?	The plan should identify the different types of situations that will require an evacuation of the workplace. This might include a fire, earthquake, or chemical spill. The extent of evacuation may be different for different types of hazards.
☐	Does the plan identify a clear chain of command and designate a person authorized to order an evacuation or shutdown of operations?	It is common practice to select a responsible individual to lead and coordinate your emergency plan and evacuation. It is critical that employees know who the coordinator is and understand that this person has the authority to make decisions during emergencies. The coordinator should be responsible for assessing the situation to determine whether an emergency exists requiring activation of the emergency procedures, overseeing emergency procedures, notifying and coordinating with outside emergency services, and directing shutdown of utilities or plant operations if necessary.
☐	Does the plan address the types of actions expected of different employees for the various types of potential emergencies?	The plan may specify different actions for employees depending on the emergency. For example, employers may want to have employees assemble in one area of the workplace if it is threatened by a tornado or earthquake but evacuate to an exterior location during a fire.
☐	Does the plan designate who, if anyone will stay to shut down critical operations during an evacuation?	You may want to include in your plan locations where utilities (such as electrical and gas utilities) can be shut down for all or part of the facility. All individuals remaining behind to shut down critical systems or utilities must be capable of recognizing when to abandon the operation or task and evacuate themselves.
☐	Does the plan outline specific	Most employers create maps from floor diagrams with arrows that designate the exit route



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	evacuation routes and exits and are these posted in the workplace where they are easily accessible to all employees?	assignments. These maps should include locations of exits, assembly points and equipment (such as fire extinguishers, first aid kits, spill kits) that may be needed in an emergency. Exit routes should be clearly marked and well lit, wide enough to accommodate the number of evacuating personnel, unobstructed and clear of debris at all times, and unlikely to expose evacuating personnel to additional hazards.
☐	Does the plan address procedures for assisting people during evacuations, particularly those with disabilities or who do not speak English?	Many employers designate individuals as evacuation wardens to help move employees from danger to safe areas during an emergency. Generally, one warden for every 20 employees should be adequate, and the appropriate number of wardens should be available at all times during working hours. Wardens may be responsible for checking offices and bathrooms before being the last person to exit an area as well as ensuring that fire doors are closed when exiting. Employees designated to assist in emergency evacuation procedures should be trained in the complete workplace layout and various alternative escape routes. Employees designated to assist in emergencies should be made aware of employees with special needs (who may require extra assistance during an evacuation), how to use the buddy system, and any hazardous areas to avoid during an emergency evacuation.
☐	Does the plan identify one or more assembly areas (as necessary for different types of emergencies) where employees will gather and a method for accounting for all employees?	Accounting for all employees following an evacuation is critical. Confusion in the assembly areas can lead to delays in rescuing anyone trapped in the building, or unnecessary and dangerous search-and-rescue operations. To ensure the fastest, most accurate accounting of your employees, consider taking a head count after the evacuation. The names and last known locations of anyone not accounted for should be passed on to the official in charge.
☐	Does the plan address how visitors will be assisted in evacuation and accounted for?	Some employers have all visitors and contractors sign in when entering the workplace. The hosts and/or wardens, if established, are often tasked with assisting these individuals evacuate safely.

APPENDIX D: Safety Data Sheets

Company Confidential

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

Revision: 07.17.2015

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

- **1.1 Product identifier**
- **Trade name:** WOLF'S HEAD SUPER DUTY 10W-30
- **Application of the substance / the preparation** Lubricating Oils
- **1.3 Details of the supplier of the Safety Data Sheet**
- **Manufacturer/Supplier:**
WOLF'S HEAD LUBRICANTS
1601 McCloskey Boulevard
Tampa, FL 33605 U.S.A.
Phone: 813-569-8106
- **1.4 Emergency telephone number:**
ChemTel Inc.
(800)255-3924, +1 (813)248-0585

2 Hazards identification

- **2.1 Classification of the substance or mixture**
- **Classification according to Regulation (EC) No 1272/2008**
The product is not classified according to the CLP regulation.
- **Classification according to Directive 67/548/EEC or Directive 1999/45/EC** Not applicable.
- **Information concerning particular hazards for human and environment:**
The product does not have to be labeled due to the calculation procedure of the "General Classification guideline for preparations of the EU" in the latest valid version.
- **Classification system:**
The classification is according to the latest editions of the EU-lists, and extended by company and literature data.
The classification is in accordance with the latest editions of international substances lists, and is supplemented by information from technical literature and by information provided by the company.
- **2.2 Label elements**
- **Labeling according to Regulation (EC) No 1272/2008** N/A
- **Hazard pictograms** N/A
- **Signal word** N/A
- **Hazard statements** N/A
- **Hazard description:**
- **WHMIS-symbols:** Not hazardous under WHMIS.

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Safety data sheet

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

Trade name: WOLF'S HEAD SUPER DUTY 10W-30

(Contd. of page 1)

· **HMIS Long Term Health Hazard Substances**

None of the ingredients is listed.

· **2.3 Other hazards**

· **Results of PBT and vPvB assessment**

- **PBT:** Not applicable.
- **vPvB:** Not applicable.

3 Composition/information on ingredients

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

· **Dangerous components:**

CAS: 64742-54-7 EINECS: 265-157-1 Index number: 649-467-00-8	Distillates (petroleum), hydrotreated heavy paraffinic substance with a Community workplace exposure limit Carc. Cat. 2	72%
CAS: 64742-65-0 EINECS: 265-169-7 Index number: 649-474-00-6	Distillates (petroleum), solvent-dewaxed heavy paraffinic Carc. Cat. 2	15%

· **Additional information:**

Note L: The classification as a carcinogen need not apply if it can be shown that the substance contains less than 3 % DMSO extract as measured by IP 346 'Determination of polycyclic aromatics in unused lubricating base oils and asphaltene free petroleum fractions - Dimethyl sulphoxide extraction refractive index method', Institute of Petroleum, London. This product meets these requirements.

For the wording of the listed risk phrases refer to section 16.

4 First aid measures

· **4.1 Description of first aid measures**

- **General information:** No special measures required.
- **After inhalation:** Supply fresh air; consult doctor in case of complaints.

· **After skin contact:**

Immediately wash with water and soap and rinse thoroughly.

If skin irritation continues, consult a doctor.

· **After eye contact:**

Remove contact lenses if worn.

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

· **After swallowing:**

Rinse out mouth and then drink plenty of water.

Do not induce vomiting; call for medical help immediately.

· **4.2 Most important symptoms and effects, both acute and delayed**

No further relevant information available.

· **4.3 Indication of any immediate medical attention and special treatment needed**

No further relevant information available.

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Trade name: WOLF'S HEAD SUPER DUTY 10W-30

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5 Firefighting measures

- **5.1 Extinguishing media**
- **Suitable extinguishing agents:**
 - Water haze or fog
 - Foam
 - Fire-extinguishing powder
 - Carbon dioxide
- **For safety reasons unsuitable extinguishing agents:** Water with full jet
- **5.2 Special hazards arising from the substance or mixture**
 - In case of fire, the following can be released:
 - Carbon monoxide (CO)
 - Under certain fire conditions, traces of other toxic gases cannot be excluded.
- **5.3 Advice for firefighters**
- **Protective equipment:**
 - Wear self-contained respiratory protective device.
 - Wear fully protective suit.

6 Accidental release measures

- **6.1 Personal precautions, protective equipment and emergency procedures**
 - Ensure adequate ventilation
 - Wear protective equipment. Keep unprotected persons away.
- **6.2 Environmental precautions:**
 - Do not allow to enter sewers/ surface or ground water.
 - Prevent from spreading (e.g. by damming-in or oil barriers).
- **6.3 Methods and material for containment and cleaning up:**
 - Absorb with liquid-binding material (sand, diatomite, acid binders, universal binders, sawdust).
 - Send for recovery or disposal in suitable receptacles.
 - Do not flush with water or aqueous cleansing agents
- **6.4 Reference to other sections**
 - See Section 7 for information on safe handling.
 - See Section 8 for information on personal protection equipment.
 - See Section 13 for disposal information.

7 Handling and storage

- **7.1 Precautions for safe handling** Avoid the formation of oil haze.
- **Information about fire - and explosion protection:** No special measures required.
- **7.2 Conditions for safe storage, including any incompatibilities**
- **Storage:**
- **Requirements to be met by storerooms and receptacles:** No special requirements.
- **Information about storage in one common storage facility:**
 - Store away from foodstuffs.
 - Store away from oxidizing agents.

(Contd. on page 4)

Safety data sheet

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

Trade name WOLF'S HEAD SUPER DUTY 10W-30

(Contd. of page 3)

- **Further information about storage conditions:** Store in cool, dry conditions in well sealed receptacles.
- **7.3 Specific end use(s)** No further relevant information available.

8 Exposure controls/personal protection

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

8.1 Control parameters

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

64742-54-7 Distillates (petroleum), hydrotreated heavy paraffinic

PEL (USA)	5 mg/m ³
TLV (USA)	Short-term value: 10 mg/m ³ Long-term value: 5 mg/m ³

- **Additional information:** The lists valid during the making were used as basis.

8.2 Exposure controls

· Personal protective equipment:

· General protective and hygienic measures:

The usual precautionary measures are to be adhered to when handling chemicals.

Keep away from foodstuffs, beverages and feed.

Avoid contact with the eyes.

· Respiratory protection:

Not necessary if room is well-ventilated.

Use suitable respiratory protective device in case of insufficient ventilation.

· Protection of hands:



Protective gloves

Oil resistant gloves

· Material of gloves

The selection of the suitable gloves does not only depend on the material, but also on further marks of quality and varies from manufacturer to manufacturer.

· Eye protection:



Safety glasses

Goggles recommended during refilling

(Contd. on page 5)

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

Trade name: WOLF'S HEAD SUPER DUTY 10W-30

(Contd. of page 4)

9 Physical and chemical properties

· 9.1 Information on basic physical and chemical properties

· General Information

· Appearance:

Form:	Oily
Colour:	Amber coloured
Odour:	Characteristic
Odour threshold:	Not determined.

· pH-value: Not determined.

· Change in condition

Melting point/Melting range:	Undetermined.
Boiling point/Boiling range:	Undetermined.

· Flash point: 210°C (410 °F)

· Flammability (solid, gaseous): Not applicable.

· Ignition temperature:

Decomposition temperature: Not determined.

· Self-igniting: Product is not self-igniting.

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

· Explosion limits:

Lower:	Not determined.
Upper:	Not determined.

· Vapour pressure: Not determined.

· Density at 20°C:	0,88 g/cm ³
· Relative density	Not determined.
· Vapour density	Not determined.
· Evaporation rate	Not determined.

· Solubility in / Miscibility with water: Not miscible or difficult to mix.

· Partition coefficient (n-octanol/water) at 20°C: > 2,0 log POW (Estimate)

· Viscosity:

Viscosity Index:	140
Kinematic at 40°C:	70 cSt (10,5 cSt @ 100°C)
· 9.2 Other information	No further relevant information available.

(Contd. on page 6)

Safety data sheet

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

Trade name: WOLF'S HEAD SUPER DUTY 10W-30

(Contd. of page 5)

10 Stability and reactivity

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

11 Toxicological information

- **11.1 Information on toxicological effects**
- **Acute toxicity:**
- **Primary irritant effect:**
- **on the skin:** Slight irritant effect on skin and mucous membranes.
- **on the eye:** Slight irritant effect on eyes.
- **Sensitization:** Sensitizing effect by skin contact is possible by prolonged exposure.
- **Additional toxicological information:**
The product is not subject to classification according to the calculation method of the General EU Classification Guidelines for Preparations as issued in the latest version.
When used and handled according to specifications, the product does not have any harmful effects to our experience and the information provided to us.

12 Ecological information

- **12.1 Toxicity**
- **Aquatic toxicity:** The material is harmful to the environment.
- **12.2 Persistence and degradability** Not easily biodegradable
- **12.3 Bioaccumulative potential** May be accumulated in organism
- **12.4 Mobility in soil** No further relevant information available.
- **Additional ecological information:**
- **General notes:**
Water hazard class 3 (German Regulation) (Self-assessment): extremely hazardous for water
Danger to drinking water if even extremely small quantities leak into the ground.
Do not allow undiluted product or large quantities of it to reach ground water, water course or sewage system.
- **12.5 Results of PBT and vPvB assessment**
- **PBT:** Not applicable.
- **vPvB:** Not applicable.

(Contd. on page 7)

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

Trade name: WOLF'S HEAD SUPER DUTY 10W-30

· **12.6 Other adverse effects** No further relevant information available.

(Contd. of page 6)

13 Disposal considerations

· **13.1 Waste treatment methods**

· **Recommendation**

Must not be disposed together with household garbage. Do not allow product to reach sewage system.

Can be reused after reprocessing.

Delivery of waste oil to officially authorized collectors only.

· **Uncleaned packaging:**

· **Recommendation:** Disposal must be made according to official regulations.

14 Transport information

· **14.1 UN-Number**

· DOT, ADN, IMDG, IATA N/A

· **14.2 UN proper shipping name**

· DOT, ADR, ADN, IMDG, IATA N/A

· **14.3 Transport hazard class(es)**

· DOT, ADR, ADN, IMDG, IATA

· Class N/A

· **14.4 Packing group**

· DOT, ADR, IMDG, IATA N/A

· **14.5 Environmental hazards:**

· Marine pollutant: No

· **14.6 Special precautions for user**

Not applicable.

· **14.7 Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code**

Not applicable.

· **UN "Model Regulation":**

-

15 Regulatory information

· **15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture**

· United States (USA)

· SARA

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

None of the ingredients is listed.

(Contd. on page 8)

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

Trade name: WOLF'S HEAD SUPER DUTY 10W-30

(Contd. of page 7)

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

None of the ingredients is listed.

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

All ingredients are listed.

· **Proposition 65 (California):**

· **Chemicals known to cause cancer:**

None of the ingredients is listed.

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

None of the ingredients is listed.

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

None of the ingredients is listed.

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

None of the ingredients is listed.

· **Carcinogenic Categories**

· **EPA (Environmental Protection Agency)**

None of the ingredients is listed.

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

None of the ingredients is listed.

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

None of the ingredients is listed.

· **MAK (German Maximum Workplace Concentration)**

None of the ingredients is listed.

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

None of the ingredients is listed.

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

None of the ingredients is listed.

· **Canada**

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

All ingredients are listed.

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

None of the ingredients is listed.

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

None of the ingredients is listed.

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

16 Other information

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

(Contd. on page 9)

Safety data sheet

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

Trade name: WOLF'S HEAD SUPER DUTY 10W-30

(Contd. of page 8)

· **Abbreviations and acronyms:**

ADR: Accord européen sur le transport des marchandises dangereuses par Route (European Agreement concerning the International Carriage of Dangerous Goods by Road)
 IMDG: International Maritime Code for Dangerous Goods
 DOT: US Department of Transportation
 IATA: International Air Transport Association
 GHS: Globally Harmonized System of Classification and Labeling of Chemicals
 ACGIH: American Conference of Governmental Industrial Hygienists
 EINECS: European Inventory of Existing Commercial Chemical Substances
 CAS: Chemical Abstracts Service (division of the American Chemical Society)
 NFPA: National Fire Protection Association (USA)
 HMIS: Hazardous Materials Identification System (USA)

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This document was authored and reviewed by the technical and scientific staff at ChemTel Inc. Descriptions, classifications and calculations are based upon data provided by manufacturer and augmented by published data in conjunction with expert analysis by degreed scientists.

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Safety Data Sheet

Material Name: Diesel Fuel, All Types

SDS No. 9909
US GHS

Synonyms: Ultra Low Sulfur Diesel; Low Sulfur Diesel; No. 2 Diesel; Motor Vehicle Diesel Fuel; Non-Road Diesel Fuel; Locomotive/Marine Diesel Fuel

*** Section 1 - Product and Company Identification ***

Manufacturer Information

Hess Corporation
1 Hess Plaza
Woodbridge, NJ 07095-0961

Phone: 732-750-6000 Corporate EHS
Emergency # 800-424-9300 CHEMTREC
www.hess.com (Environment, Health, Safety Internet Website)

*** Section 2 - Hazards Identification ***

GHS Classification:

Flammable Liquids - Category 3
Skin Corrosion/Irritation – Category 2
Germ Cell Mutagenicity – Category 2
Carcinogenicity - Category 2
Specific Target Organ Toxicity (Single Exposure) - Category 3 (respiratory irritation, narcosis)
Aspiration Hazard – Category 1
Hazardous to the Aquatic Environment, Acute Hazard – Category 3

GHS LABEL ELEMENTS

Symbol(s)



Signal Word

DANGER

Hazard Statements

Flammable liquid and vapor.
Causes skin irritation.
Suspected of causing genetic defects.
Suspected of causing cancer.
May cause respiratory irritation.
May cause drowsiness or dizziness.
May be fatal if swallowed and enters airways.
Harmful to aquatic life.

Precautionary Statements

Prevention

Keep away from heat/sparks/open flames/hot surfaces. No smoking
Keep container tightly closed.
Ground/bond container and receiving equipment.

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Use explosion-proof electrical/ventilating/lighting/equipment.
Use only non-sparking tools.
Take precautionary measures against static discharge.
Wear protective gloves/protective clothing/eye protection/face protection.
Wash hands and forearms thoroughly after handling.
Obtain special instructions before use.
Do not handle until all safety precautions have been read and understood.
Avoid breathing fume/mist/vapours/spray.

Response

In case of fire: Use water spray, fog or foam to extinguish.
IF ON SKIN (or hair): Wash with plenty of soap and water. Remove/Take off immediately all contaminated clothing and wash it before reuse. If skin irritation occurs: Get medical advice/attention.
IF INHALED: Remove person to fresh air and keep comfortable for breathing. Call a poison center/doctor if you feel unwell.
If swallowed: Immediately call a poison center or doctor. Do NOT induce vomiting.
IF exposed or concerned: Get medical advice/attention.

Storage

Store in a well-ventilated place. Keep cool.
Keep container tightly closed.
Store locked up.

Disposal

Dispose of contents/container in accordance with local/regional/national/international regulations.

* * * Section 3 - Composition / Information on Ingredients * * *

CAS #	Component	Percent
68476-34-6	Fuels, diesel, no. 2	100
91-20-3	Naphthalene	<0.1

A complex mixture of hydrocarbons with carbon numbers in the range C9 and higher.

* * * Section 4 - First Aid Measures * * *

First Aid: Eyes

In case of contact with eyes, immediately flush with clean, low-pressure water for at least 15 min. Hold eyelids open to ensure adequate flushing. Seek medical attention.

First Aid: Skin

Remove contaminated clothing. Wash contaminated areas thoroughly with soap and water or with waterless hand cleanser. Obtain medical attention if irritation or redness develops. Thermal burns require immediate medical attention depending on the severity and the area of the body burned.

First Aid: Ingestion

DO NOT INDUCE VOMITING. Do not give liquids. Obtain immediate medical attention. If spontaneous vomiting occurs, lean victim forward to reduce the risk of aspiration. Monitor for breathing difficulties. Small amounts of material which enter the mouth should be rinsed out until the taste is dissipated.

Safety Data Sheet

Material Name: Diesel Fuel, All Types

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First Aid: Inhalation

Remove person to fresh air. If person is not breathing, provide artificial respiration. If necessary, provide additional oxygen once breathing is restored if trained to do so. Seek medical attention immediately.

*** Section 5 - Fire Fighting Measures ***

General Fire Hazards

See Section 9 for Flammability Properties.

Vapors may be ignited rapidly when exposed to heat, spark, open flame or other source of ignition. When mixed with air and exposed to an ignition source, flammable vapors can burn in the open or explode in confined spaces. Being heavier than air, vapors may travel long distances to an ignition source and flash back. Runoff to sewer may cause fire or explosion hazard.

Hazardous Combustion Products

Carbon monoxide, carbon dioxide and non-combusted hydrocarbons (smoke).

Extinguishing Media

SMALL FIRES: Any extinguisher suitable for Class B fires, dry chemical, CO₂, water spray, fire fighting foam, and other gaseous agents.

LARGE FIRES: Water spray, fog or fire fighting foam. Water may be ineffective for fighting the fire, but may be used to cool fire-exposed containers.

Unsuitable Extinguishing Media

None

Fire Fighting Equipment/Instructions

Small fires in the incipient (beginning) stage may typically be extinguished using handheld portable fire extinguishers and other fire fighting equipment. Firefighting activities that may result in potential exposure to high heat, smoke or toxic by-products of combustion should require NIOSH/MSHA- approved pressure-demand self-contained breathing apparatus with full facepiece and full protective clothing. Isolate area around container involved in fire. Cool tanks, shells, and containers exposed to fire and excessive heat with water. For massive fires the use of unmanned hose holders or monitor nozzles may be advantageous to further minimize personnel exposure. Major fires may require withdrawal, allowing the tank to burn. Large storage tank fires typically require specially trained personnel and equipment to extinguish the fire, often including the need for properly applied fire fighting foam.

*** Section 6 - Accidental Release Measures ***

Recovery and Neutralization

Carefully contain and stop the source of the spill, if safe to do so.

Materials and Methods for Clean-Up

Take up with sand or other oil absorbing materials. Carefully shovel, scoop or sweep up into a waste container for reclamation or disposal. Caution, flammable vapors may accumulate in closed containers.

Emergency Measures

Evacuate nonessential personnel and remove or secure all ignition sources. Consider wind direction; stay upwind and uphill, if possible. Evaluate the direction of product travel, diking, sewers, etc. to confirm spill areas. Spills may infiltrate subsurface soil and groundwater; professional assistance may be necessary to determine the extent of subsurface impact.

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Personal Precautions and Protective Equipment

Response and clean-up crews must be properly trained and must utilize proper protective equipment (see Section 8).

Environmental Precautions

Protect bodies of water by diking, absorbents, or absorbent boom, if possible. Do not flush down sewer or drainage systems, unless system is designed and permitted to handle such material. The use of fire fighting foam may be useful in certain situations to reduce vapors. The proper use of water spray may effectively disperse product vapors or the liquid itself, preventing contact with ignition sources or areas/equipment that require protection.

Prevention of Secondary Hazards

None

* * * Section 7 - Handling and Storage * * *

Handling Procedures

Handle as a combustible liquid. Keep away from heat, sparks, excessive temperatures and open flame! No smoking or open flame in storage, use or handling areas. Bond and ground containers during product transfer to reduce the possibility of static-initiated fire or explosion.

Special slow load procedures for "switch loading" must be followed to avoid the static ignition hazard that can exist when higher flash point material (such as fuel oil) is loaded into tanks previously containing low flash point products (such as this product) - see API Publication 2003, "Protection Against Ignitions Arising Out Of Static, Lightning and Stray Currents."

Storage Procedures

Keep away from flame, sparks, excessive temperatures and open flame. Use approved vented containers. Keep containers closed and clearly labeled. Empty product containers or vessels may contain explosive vapors. Do not pressurize, cut, heat, weld or expose such containers to sources of ignition.

Store in a well-ventilated area. This storage area should comply with NFPA 30 "Flammable and Combustible Liquid Code". Avoid storage near incompatible materials. The cleaning of tanks previously containing this product should follow API Recommended Practice (RP) 2013 "Cleaning Mobile Tanks In Flammable and Combustible Liquid Service" and API RP 2015 "Cleaning Petroleum Storage Tanks."

Incompatibilities

Keep away from strong oxidizers.

* * * Section 8 - Exposure Controls / Personal Protection * * *

Component Exposure Limits

Fuels, diesel, no. 2 (68476-34-6)

ACGIH: 100 mg/m3 TWA (inhalable fraction and vapor, as total hydrocarbons, listed under Diesel fuel)
Skin - potential significant contribution to overall exposure by the cutaneous route (listed under Diesel fuel)

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Naphthalene (91-20-3)

ACGIH: 10 ppm TWA
15 ppm STEL
Skin - potential significant contribution to overall exposure by the cutaneous route
OSHA: 10 ppm TWA; 50 mg/m³ TWA
NIOSH: 10 ppm TWA; 50 mg/m³ TWA
15 ppm STEL; 75 mg/m³ STEL

Engineering Measures

Use adequate ventilation to keep vapor concentrations of this product below occupational exposure and flammability limits, particularly in confined spaces.

Personal Protective Equipment: Respiratory

A NIOSH/MSHA-approved air-purifying respirator with organic vapor cartridges or canister may be permissible under certain circumstances where airborne concentrations are or may be expected to exceed exposure limits or for odor or irritation. Protection provided by air-purifying respirators is limited.

Use a positive pressure, air-supplied respirator if there is a potential for uncontrolled release, exposure levels are not known, in oxygen-deficient atmospheres, or any other circumstance where an air-purifying respirator may not provide adequate protection.

Personal Protective Equipment: Hands

Gloves constructed of nitrile, neoprene, or PVC are recommended.

Personal Protective Equipment: Eyes

Safety glasses or goggles are recommended where there is a possibility of splashing or spraying.

Personal Protective Equipment: Skin and Body

Chemical protective clothing such as of E.I. DuPont TyChem®, Saranex® or equivalent recommended based on degree of exposure. Note: The resistance of specific material may vary from product to product as well as with degree of exposure. Consult manufacturer specifications for further information.

*** Section 9 - Physical & Chemical Properties ***

Appearance:	Clear, straw-yellow.	Odor:	Mild, petroleum distillate odor
Physical State:	Liquid	pH:	ND
Vapor Pressure:	0.009 psia @ 70 °F (21 °C)	Vapor Density:	>1.0
Boiling Point:	320 to 690 °F (160 to 366 °C)	Melting Point:	ND
Solubility (H₂O):	Negligible	Specific Gravity:	0.83-0.876 @ 60°F (16°C)
Evaporation Rate:	Slow; varies with conditions	VOC:	ND
Percent Volatile:	100%	Octanol/H₂O Coeff.:	ND
Flash Point:	>125 °F (>52 °C) minimum	Flash Point Method:	PMCC
Upper Flammability Limit (UFL):	7.5	Lower Flammability Limit (LFL):	0.6
Burning Rate:	ND	Auto Ignition:	494°F (257°C)

*** Section 10 - Chemical Stability & Reactivity Information ***

Chemical Stability

This is a stable material.

Hazardous Reaction Potential

Will not occur.

Safety Data Sheet

Material Name: Diesel Fuel, All Types

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Conditions to Avoid

Avoid high temperatures, open flames, sparks, welding, smoking and other ignition sources.

Incompatible Products

Keep away from strong oxidizers.

Hazardous Decomposition Products

Carbon monoxide, carbon dioxide and non-combusted hydrocarbons (smoke).

* * * Section 11 - Toxicological Information * * *

Acute Toxicity

A: General Product Information

Harmful if swallowed.

B: Component Analysis - LD50/LC50

Naphthalene (91-20-3)

Inhalation LC50 Rat >340 mg/m³ 1 h; Oral LD50 Rat 490 mg/kg; Dermal LD50 Rat >2500 mg/kg; Dermal LD50 Rabbit >20 g/kg

Potential Health Effects: Skin Corrosion Property/Stimulativeness

Practically non-toxic if absorbed following acute (single) exposure. May cause skin irritation with prolonged or repeated contact. Liquid may be absorbed through the skin in toxic amounts if large areas of skin are repeatedly exposed.

Potential Health Effects: Eye Critical Damage/ Stimulativeness

Contact with eyes may cause mild irritation.

Potential Health Effects: Ingestion

Ingestion may cause gastrointestinal disturbances, including irritation, nausea, vomiting and diarrhea, and central nervous system (brain) effects similar to alcohol intoxication. In severe cases, tremors, convulsions, loss of consciousness, coma, respiratory arrest, and death may occur.

Potential Health Effects: Inhalation

Excessive exposure may cause irritations to the nose, throat, lungs and respiratory tract. Central nervous system (brain) effects may include headache, dizziness, loss of balance and coordination, unconsciousness, coma, respiratory failure, and death.

WARNING: the burning of any hydrocarbon as a fuel in an area without adequate ventilation may result in hazardous levels of combustion products, including carbon monoxide, and inadequate oxygen levels, which may cause unconsciousness, suffocation, and death.

Respiratory Organs Sensitization/Skin Sensitization

This product is not reported to have any skin sensitization effects.

Generative Cell Mutagenicity

This material has been positive in a mutagenicity study.

Carcinogenicity

A: General Product Information

Suspected of causing cancer.

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Studies have shown that similar products produce skin tumors in laboratory animals following repeated applications without washing or removal. The significance of this finding to human exposure has not been determined. Other studies with active skin carcinogens have shown that washing the animal's skin with soap and water between applications reduced tumor formation.

B: Component Carcinogenicity

Fuels, diesel, no. 2 (68476-34-6)

ACGIH: A3 - Confirmed Animal Carcinogen with Unknown Relevance to Humans (listed under Diesel fuel)

Naphthalene (91-20-3)

ACGIH: A4 - Not Classifiable as a Human Carcinogen

NTP: Reasonably Anticipated To Be A Human Carcinogen (Possible Select Carcinogen)

IARC: Monograph 82 [2002] (Group 2B (possibly carcinogenic to humans))

Reproductive Toxicity

This product is not reported to have any reproductive toxicity effects.

Specified Target Organ General Toxicity: Single Exposure

This product is not reported to have any specific target organ general toxicity single exposure effects.

Specified Target Organ General Toxicity: Repeated Exposure

This product is not reported to have any specific target organ general toxicity repeat exposure effects.

Aspiration Respiratory Organs Hazard

The major health threat of ingestion occurs from the danger of aspiration (breathing) of liquid drops into the lungs, particularly from vomiting. Aspiration may result in chemical pneumonia (fluid in the lungs), severe lung damage, respiratory failure and even death.

* * * Section 12 - Ecological Information * * *

Ecotoxicity

A: General Product Information

Keep out of sewers, drainage areas and waterways. Report spills and releases, as applicable, under Federal and State regulations.

B: Component Analysis - Ecotoxicity - Aquatic Toxicity

Fuels, diesel, no. 2 (68476-34-6)

Test & Species

96 Hr LC50 Pimephales promelas

35 mg/L [flow-through]

Conditions

Naphthalene (91-20-3)

Test & Species

96 Hr LC50 Pimephales promelas

5.74-6.44 mg/L [flow-through]

Conditions

96 Hr LC50 Oncorhynchus mykiss

1.6 mg/L [flow-through]

96 Hr LC50 Oncorhynchus mykiss

0.91-2.82 mg/L [static]

96 Hr LC50 Pimephales promelas

1.99 mg/L [static]

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96 Hr LC50 Lepomis macrochirus	31.0265 mg/L [static]
72 Hr EC50 Skeletonema costatum	0.4 mg/L
48 Hr LC50 Daphnia magna	2.16 mg/L
48 Hr EC50 Daphnia magna	1.96 mg/L [Flow through]
48 Hr EC50 Daphnia magna	1.09 - 3.4 mg/L [Static]

Persistence/Degradability

No information available.

Bioaccumulation

No information available.

Mobility in Soil

No information available.

*** Section 13 - Disposal Considerations ***

Waste Disposal Instructions

See Section 7 for Handling Procedures. See Section 8 for Personal Protective Equipment recommendations.

Disposal of Contaminated Containers or Packaging

Dispose of contents/container in accordance with local/regional/national/international regulations.

*** Section 14 - Transportation Information ***

DOT Information

Shipping Name: Diesel Fuel

NA #: 1993 **Hazard Class:** 3 **Packing Group:** III

Placard:



*** Section 15 - Regulatory Information ***

Regulatory Information

Component Analysis

This material contains one or more of the following chemicals required to be identified under SARA Section 302 (40 CFR 355 Appendix A), SARA Section 313 (40 CFR 372.65) and/or CERCLA (40 CFR 302.4).

Naphthalene (91-20-3)

CERCLA: 100 lb final RQ; 45.4 kg final RQ

SARA Section 311/312 – Hazard Classes

Acute Health
X

Chronic Health
X

Fire
X

Sudden Release of Pressure
--

Reactive
--

Safety Data Sheet

Material Name: Diesel Fuel, All Types

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SARA SECTION 313 - SUPPLIER NOTIFICATION

This product may contain listed chemicals below the de minimis levels which therefore are not subject to the supplier notification requirements of Section 313 of the Emergency Planning and Community Right-To-Know Act (EPCRA) of 1986 and of 40 CFR 372. If you may be required to report releases of chemicals listed in 40 CFR 372.28, you may contact Hess Corporate Safety if you require additional information regarding this product.

State Regulations

Component Analysis - State

The following components appear on one or more of the following state hazardous substances lists:

Component	CAS	CA	MA	MN	NJ	PA	RI
Fuels, diesel, no. 2	68476-34-6	No	No	No	Yes	No	No
Naphthalene	91-20-3	Yes	Yes	Yes	Yes	Yes	No

The following statement(s) are provided under the California Safe Drinking Water and Toxic Enforcement Act of 1986 (Proposition 65):

WARNING! This product contains a chemical known to the state of California to cause cancer.

Component Analysis - WHMIS IDL

No components are listed in the WHMIS IDL.

Additional Regulatory Information

Component Analysis - Inventory

Component	CAS #	TSCA	CAN	EEC
Fuels, diesel, no. 2	68476-34-6	Yes	DSL	EINECS
Naphthalene	91-20-3	Yes	DSL	EINECS

*** Section 16 - Other Information ***

NFPA® Hazard Rating

Health 1
Fire 2
Reactivity 0



HMIS® Hazard Rating

Health 1* Slight
Fire 2 Moderate
Physical 0 Minimal
*Chronic

Safety Data Sheet

Material Name: Diesel Fuel, All Types

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Key/Legend

ACGIH = American Conference of Governmental Industrial Hygienists; ADG = Australian Code for the Transport of Dangerous Goods by Road and Rail; ADR/RID = European Agreement of Dangerous Goods by Road/Rail; AS = Standards Australia; DFG = Deutsche Forschungsgemeinschaft; DOT = Department of Transportation; DSL = Domestic Substances List; EEC = European Economic Community; EINECS = European Inventory of Existing Commercial Chemical Substances; ELINCS = European List of Notified Chemical Substances; EU = European Union; HMIS = Hazardous Materials Identification System; IARC = International Agency for Research on Cancer; IMO = International Maritime Organization; IATA = International Air Transport Association; MAK = Maximum Concentration Value in the Workplace; NDSL = Non-Domestic Substances List; NFPA = National Fire Protection Association; NOHSC = National Occupational Health & Safety Commission; NTP = National Toxicology Program; STEL = Short-term Exposure Limit; TDG = Transportation of Dangerous Goods; TLV = Threshold Limit Value; TSCA = Toxic Substances Control Act; TWA = Time Weighted Average

Literature References

None

Other Information

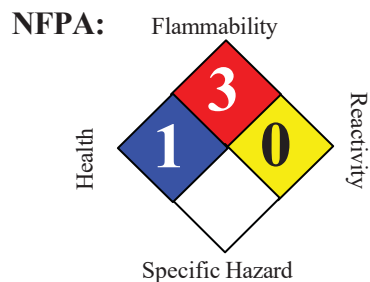
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Vendor assumes no responsibility for injury to vendee or third persons proximately caused by the material if reasonable safety procedures are not adhered to as stipulated in the data sheet. Additionally, vendor assumes no responsibility for injury to vendee or third persons proximately caused by abnormal use of the material, even if reasonable safety procedures are followed. Furthermore, vendee assumes the risk in their use of the material.

End of Sheet

Safety Data Sheet

Gasoline, Unleaded



SECTION 1. PRODUCT AND COMPANY IDENTIFICATION

Product name	:	Gasoline, Unleaded			
Synonyms	:	Blend of Highly Flammable Petroleum Distillates, Regular, Mid-Grade, Premium, 888100008809			
SDS Number	:	888100008809	Version	:	1.1
Product Use Description	:	Fuel			
Company	:	For: Tesoro Refining & Marketing Co. 19100 Ridgewood Parkway, San Antonio, TX 78259			
Tesoro Call Center	:	(877) 783-7676	Chemtrec (Emergency Contact)	:	(800) 424-9300

SECTION 2. HAZARDS IDENTIFICATION

Classifications	: Flammable Liquid – Category 1 or 2 depending on formulation. Aspiration Hazard – Category 1 Carcinogenicity – Category 2 Specific Target Organ Toxicity (Repeated Exposure) – Category 2 Specific Target Organ Toxicity (Single Exposure) – Category 3 Skin Irritation – Category 2 Eye Irritation – Category 2B Chronic Aquatic Toxicity – Category 2

Pictograms	:

Signal Word	: Danger

Hazard Statements	Extremely flammable liquid and vapor. May be fatal if swallowed and enters airways – do not siphon gasoline by mouth. Suspected of causing blood cancer if repeated over-exposure by inhalation and/or skin contact occurs. May cause damage to liver, kidneys and nervous system by repeated and prolonged inhalation or skin contact. Causes eye irritation. Can be absorbed through skin. May cause drowsiness or dizziness. Extreme exposure such as intentional inhalation may cause unconsciousness, asphyxiation and death. Repeated or prolonged skin contact can cause irritation and dermatitis.

Harmful to aquatic life.

Precautionary statements

Prevention

- : Obtain special instructions before use.
- Do not handle until all safety precautions have been read and understood.
- Keep away from heat, sparks, open flames, welding and hot surfaces.
- No smoking.
- Keep container tightly closed.
- Ground and/or bond container and receiving equipment.
- Use explosion-proof electrical equipment.
- Use only non-sparking tools (if tools are used in flammable atmosphere).
- Take precautionary measures against static discharge.
- Wear gloves, eye protection and face protection (as needed to prevent skin and eye contact with liquid).
- Wash hands or liquid-contacted skin thoroughly after handling.
- Do not eat, drink or smoke when using this product.
- Do not breathe vapors.
- Use only outdoors or in a well-ventilated area.

Response

- : In case of fire: Use dry chemical, CO₂, water spray or fire fighting foam to extinguish.
- If swallowed: Immediately call a poison center, doctor, hospital emergency room, medical clinic or 911. Do NOT induce vomiting. Rinse mouth.
- If on skin (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower.
- If in eye: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
- If skin or eye irritation persists, get medical attention.
- If inhaled: Remove person to fresh air and keep comfortable for breathing.
- Get medical attention if you feel unwell.

Storage

- : Store in a well ventilated place. Keep cool. Store locked up. Keep container tightly closed. Use only approved containers. Some containers not approved for gasoline may dissolve and release flammable gasoline liquid and vapors.

Disposal

- : Dispose of contents/containers to approved disposal site in accordance with local, regional, national, and/or international regulations.

SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

Component	CAS-No.	Weight %
Gasoline, natural; Low boiling point naphtha	8006-61-9	10 - 30%
Toluene	108-88-3	10 - 30%
Xylene	1330-20-7	10 - 30%
Ethanol; ethyl alcohol	64-17-5	0-8.2%
Trimethylbenzene	25551-13-7	1 - 5%
Isopentane; 2-methylbutane	78-78-4	1 - 5%

Naphthalene	91-20-3	1 - 5%
Benzene	71-43-2	Less than 1.3%
Pentane	109-66-0	1 - 5%
Cyclohexane	110-82-7	1 - 5%
Ethylbenzene	100-41-4	1 - 5%
Butane	106-97-8	1 - 20%
Heptane [and isomers]	142-82-5	0.5 - 0.75%
N-hexane	110-54-3	0.5 - 0.75%

SECTION 4. FIRST AID MEASURES

Inhalation	: If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Seek medical attention immediately.
Skin contact	: In case of contact, immediately flush skin with plenty of water. Take off contaminated clothing and shoes immediately. Wash contaminated clothing before re-use. Contaminated leather, particularly footwear, must be discarded. Note that contaminated clothing may be a fire hazard. Seek medical advice if symptoms persist or develop.
Eye contact	: Remove contact lenses. Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. Seek medical advice if symptoms persist or develop.
Ingestion	: Do NOT induce vomiting. Never give anything by mouth to an unconscious person. Obtain medical attention.
Notes to physician	: Symptoms: Dizziness, Discomfort, Headache, Nausea, Kidney disorders, Liver disorders. Aspiration may cause pulmonary edema and pneumonitis. Swallowing gasoline is more likely to be fatal for small children than adults, even if aspiration does not occur.

SECTION 5. FIRE-FIGHTING MEASURES

Suitable extinguishing media	: SMALL FIRES: Any extinguisher suitable for Class B fires, dry chemical, CO ₂ , water spray or fire fighting foam. LARGE FIRES: Water spray, fog or fire fighting foam. Water may be ineffective for fighting the fire, but may be used to cool fire-exposed containers. Keep containers and surroundings cool with water spray.
Specific hazards during fire fighting	: Extremely flammable liquid and vapor. This material is combustible/flammable and is sensitive to fire, heat, and static discharge.
Special protective equipment for fire-fighters	: Firefighting activities that may result in potential exposure to high heat, smoke or toxic by-products of combustion should require NIOSH/MSHA- approved pressure-demand self-contained breathing apparatus with full facepiece and full protective clothing.

Further information	: Isolate area around container involved in fire. Cool tanks, shells, and containers exposed to fire and excessive heat with water. For massive fires the use of unmanned hose holders or monitor nozzles may be advantageous to further minimize personnel exposure. Major fires may require withdrawal, allowing the tank to burn. Large storage tank fires typically require specially trained personnel and equipment to extinguish the fire, often including the need for properly applied fire fighting foam. Exposure to decomposition products may be a hazard to health. Use extinguishing measures that are appropriate to local circumstances and the surrounding environment. Use water spray to cool unopened containers. Fire residues and contaminated fire extinguishing water must be disposed of in accordance with local regulations.

SECTION 6. ACCIDENTAL RELEASE MEASURES

Personal precautions	: Evacuate personnel to safe areas. Ventilate the area. Remove all sources of ignition. Response and clean-up crews must be properly trained and must utilize proper protective equipment (see Section 8).
Environmental precautions	: Discharge into the environment must be avoided. If the product contaminates rivers and lakes or drains inform respective authorities.
Methods for cleaning up	: Contain and collect spillage with non-combustible absorbent material, (e.g. sand, earth, diatomaceous earth, vermiculite) and place in container for disposal according to local / national regulations.

SECTION 7. HANDLING AND STORAGE

Precautions for safe handling	: Keep away from fire, sparks and heated surfaces. No smoking near areas where material is stored or handled. The product should only be stored and handled in areas with intrinsically safe electrical classification. Hydrocarbon liquids including this product can act as a non-conductive flammable liquid (or static accumulators), and may form ignitable vapor-air mixtures in storage tanks or other containers. Precautions to prevent static-initiated fire or explosion during transfer, storage or handling, include but are not limited to these examples: (1) Ground and bond containers during product transfers. Grounding and bonding may not be adequate protection to prevent ignition or explosion of hydrocarbon liquids and vapors that are static accumulators. (2) Special slow load procedures for "switch loading" must be followed to avoid the static ignition hazard that can exist when higher flash point material (such as fuel oil or diesel) is loaded into tanks previously containing low flash point products (such as gasoline or naphtha). (3) Storage tank level floats must be effectively bonded. For more information on precautions to prevent static-initiated fire or explosion, see NFPA 77, Recommended Practice on Static Electricity (2007), and API Recommended Practice 2003, Protection Against Ignitions Arising Out of Static, Lightning, and Stray Currents (2008).
Conditions for safe storage, including incompatibilities	: Keep away from flame, sparks, excessive temperatures and open flame. Use approved containers. Keep containers closed and clearly labeled. Empty or partially full product containers or vessels may contain explosive vapors. Do not pressurize, cut, heat, weld or expose containers to sources of ignition. Store in a well-ventilated area. The storage area should comply with NFPA 30 "Flammable and Combustible Liquid Code". The cleaning of tanks previously containing this product should follow API Recommended Practice (RP) 2013 "Cleaning Mobile Tanks In Flammable and Combustible Liquid Service" and API RP 2015 "Cleaning Petroleum Storage Tanks".

Reports suggest that government-mandated ethanol, if present, may not be compatible with fiberglass gasoline tanks. Ethanol may dissolve fiberglass resin, causing engine damage and possibly allow leakage of explosive gasoline.

Keep away from food, drink and animal feed. Incompatible with oxidizing agents. Incompatible with acids.

No decomposition if stored and applied as directed. Emergency eye wash capability should be available in the near proximity to operations presenting a potential splash exposure. Store only in containers approved and labeled for gasoline.

SECTION 8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Exposure Guidelines

List	Components	CAS-No.	Type:	Value
OSHA	Benzene	71-43-2	TWA	1 ppm
		71-43-2	STEL	5 ppm
		71-43-2	OSHA_ACT	0.5 ppm
OSHA Z1	Xylene	1330-20-7	PEL	100 ppm 435 mg/m3
	Ethanol; Ethyl alcohol	64-17-5	PEL	1,000 ppm 1,900 mg/m3
	Naphthalene	91-20-3	PEL	10 ppm 50 mg/m3
	Cyclohexane	110-82-7	PEL	300 ppm 1,050 mg/m3
	Ethylbenzene	100-41-4	PEL	100 ppm 435 mg/m3
	Heptane [and isomers]	142-82-5	PEL	500 ppm 2,000 mg/m3
	N-hexane	110-54-3	PEL	500 ppm 1,800 mg/m3
ACGIH	Toluene	108-88-3	TWA	50 ppm
	Xylene	1330-20-7	TWA	100 ppm
		1330-20-7	STEL	150 ppm
	Ethanol; Ethyl alcohol	64-17-5	TWA	1,000 ppm
	Trimethylbenzene	25551-13-7	TWA	25 ppm
	Isopentane; 2-Methylbutane	78-78-4	TWA	600 ppm
	Naphthalene	91-20-3	TWA	10 ppm
		91-20-3	STEL	15 ppm
	Benzene	71-43-2	TWA	0.5 ppm
		71-43-2	STEL	2.5 ppm
	Pentane	109-66-0	TWA	600 ppm
	Cyclohexane	110-82-7	TWA	100 ppm
	Ethylbenzene	100-41-4	TWA	100 ppm
		100-41-4	STEL	125 ppm
	Heptane [and isomers]	142-82-5	TWA	400 ppm
		142-82-5	STEL	500 ppm

	N-hexane	110-54-3	TWA	50 ppm
Engineering measures	: Use adequate ventilation to keep gas and vapor concentrations of this product below occupational exposure and flammability limits, particularly in confined spaces. Use only intrinsically safe electrical equipment approved for use in classified areas.			
Eye protection	: Safety glasses or goggles are recommended where there is a possibility of splashing or spraying. Ensure that eyewash stations and safety showers are close to the workstation location.			
Hand protection	: Gloves constructed of nitrile or neoprene are recommended. Consult manufacturer specifications for further information.			
Skin and body protection	: If needed to prevent skin contact, chemical protective clothing such as of DuPont TyChem®, Saranex or equivalent recommended based on degree of exposure. Flame resistant clothing such as Nomex ® is recommended in areas where material is stored or handled.			
Respiratory protection	: A NIOSH/ MSHA-approved air-purifying respirator with organic vapor cartridges or canister may be permissible under certain circumstances where airborne concentrations are or may be expected to exceed exposure limits or for odor or irritation. Protection provided by air-purifying respirators is limited. Refer to OSHA 29 CFR 1910.134, ANSI Z88.2-1992, NIOSH Respirator Decision Logic, and the manufacturer for additional guidance on respiratory protection selection. Use a NIOSH/ MSHA-approved positive-pressure supplied-air respirator if there is a potential for uncontrolled release, exposure levels are not known, in oxygen-deficient atmospheres, or any other circumstance where an air-purifying respirator may not provide adequate protection.			
Work / Hygiene practices	: Emergency eye wash capability should be available in the near proximity to operations presenting a potential splash exposure. Use good personal hygiene practices. Avoid repeated and/or prolonged skin exposure. Wash hands before eating, drinking, smoking, or using toilet facilities. Do not use as a cleaning solvent on the skin. Do not use solvents or harsh abrasive skin cleaners for washing this product from exposed skin areas. Waterless hand cleaners are effective. Promptly remove contaminated clothing and launder before reuse. Use care when laundering to prevent the formation of flammable vapors which could ignite via washer or dryer. Consider the need to discard contaminated leather shoes and gloves.			

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance	: Clear to straw colored liquid
Odor	: Characteristic hydrocarbon-like
Odor threshold	0.5 - 1.1 ppm
pH	: Not applicable
Melting point/freezing point	About -101°C (-150°F)
Initial boiling point & range	Boiling point varies: 30 – 200°C (85 – 392°F)
Flash point	< -21°C (-5.8°F)
Evaporation rate	: Higher initially and declining as lighter components evaporate
Flammability (solid, gas)	: Flammable vapor released by liquid

Upper explosive limit	7.6 %(V)
Lower explosive limit	1.3 %(V)
Vapor pressure	345 - 1,034 hPa at 37.8 °C (100.0 °F)
Vapor density (air = 1)	Approximately 3 to 4
Relative density (water = 1)	0.8 g/mL
Solubility (in water)	Negligible
Partition coefficient (n-octanol/water)	2 – 7 as log Pow
Auto-ignition temperature	Approximately 250°C (480°F)
Decomposition temperature	Will evaporate or boil and possibly ignite before decomposition occurs.
Kinematic viscosity	0.64 to 0.88 mm ² /s range reported for gasoline
Conductivity (conductivity can be reduced by environmental factors such as a decrease in temperature)	: Hydrocarbon liquids without static dissipater additive may have conductivity below 1 picoSiemens per meter (pS/m). The highest electro-static ignition risks are associated with "ultra-low conductivities" below 5 pS/m. See Section 7 for sources of information on defining safe loading and handling procedures for low conductivity products.

SECTION 10. STABILITY AND REACTIVITY

Reactivity	: Vapors may form explosive mixture with air. Hazardous polymerization does not occur.
Chemical stability	: Stable under normal conditions.
Possibility of hazardous reactions	Can react with strong oxidizing agents, peroxides, alkaline products and strong acids. Contact with nitric and sulfuric acids will form nitrocresols that can decompose violently.
Conditions to avoid	: Avoid high temperatures, open flames, sparks, welding, smoking and other ignition sources. Avoid static charge accumulation and discharge (see Section 7).
Hazardous decomposition products	: Ignition and burning can release carbon monoxide, carbon dioxide and non-combusted hydrocarbons (smoke).

SECTION 11. TOXICOLOGICAL INFORMATION

Skin contact	: Irritating to skin. Can be partially absorbed through skin.
Eye contact	: Irritating to eyes.
Ingestion	: Aspiration hazard if liquid is inhaled into lungs, particularly from vomiting after ingestion. Aspiration may result in chemical pneumonia, severe lung damage, respiratory failure and even death. Ingestion may cause gastrointestinal disturbances, including irritation, nausea, vomiting and diarrhea, and central nervous (brain) effects similar to alcohol intoxication. In severe cases, tremors, convulsions, loss of consciousness, coma, respiratory arrest and death may occur.

Inhalation and further information

Acute toxicity of benzene results primarily from depression of the central nervous system (CNS). Inhalation of concentrations over 50 ppm can produce headache, lassitude, weariness, dizziness, drowsiness, over excitation. Exposure to very high levels can result in unconsciousness and death.

Repeated over-exposure may cause liver and kidney injuries.
Components of the product may affect the nervous system.

IARC has determined that gasoline and gasoline exhaust are possibly carcinogenic in humans. Inhalation exposure to completely vaporized unleaded gasoline caused kidney cancers in male rats and liver tumors in female mice. The U.S. EPA has determined that the male kidney tumors are species-specific and are irrelevant for human health risk assessment. The significance of the tumors seen in female mice is not known. Exposure to light hydrocarbons in the same boiling range as this product has been associated in animal studies with effects to the central and peripheral nervous systems, liver, and kidneys. The significance of these animal models to predict similar human response to gasoline is uncertain.

This product contains benzene. Human health studies indicate that prolonged and/or repeated overexposure to benzene may cause damage to the blood-forming system (particularly bone marrow), and serious blood disorders such as aplastic anemia and leukemia. Benzene is listed as a human carcinogen by the NTP, IARC, OSHA and ACGIH.

Component:

Gasoline, natural; Low boiling point naphtha 8006-61-9

Acute oral toxicity: LD50 rat
Dose: 18.8 mg/kg

Acute inhalation toxicity: LC50 rat
Dose: 20.7 mg/l
Exposure time: 4 h

Skin irritation: Classification: Irritating to skin.
Result: Mild skin irritation

Eye irritation: Classification: Irritating to eyes.
Result: Moderate eye irritation

Toluene

108-88-3

Acute oral toxicity: LD50 rat
Dose: 636 mg/kg

Acute dermal toxicity: LD50 rabbit
Dose: 12,124 mg/kg

Acute inhalation toxicity: LC50 rat
Dose: 49 mg/l
Exposure time: 4 h

Skin irritation: Classification: Irritating to skin.
Result: Mild skin irritation
Prolonged skin contact may defat the skin and produce dermatitis.
Eye irritation: Classification: Irritating to eyes.
Result: Mild eye irritation

Xylene

1330-20-7

Acute oral toxicity: LD50 rat
Dose: 2,840 mg/kg

Acute dermal toxicity: LD50 rabbit
Dose: ca. 4,500 mg/kg

Acute inhalation toxicity: LC50 rat
Dose: 6,350 mg/l
Exposure time: 4 h

Skin irritation: Classification: Irritating to skin.
Result: Mild skin irritation

Repeated or prolonged exposure may cause skin irritation and dermatitis, due to degreasing properties of the product.

Eye irritation: Classification: Irritating to eyes.

Result: Mild eye irritation

Ethanol; Ethyl alcohol

64-17-5

Acute oral toxicity: LD50 rat

Dose: 6,200 mg/kg

Acute dermal toxicity: LD50 rabbit

Dose: 19,999 mg/kg

Acute inhalation toxicity: LC50 rat

Dose: 8,001 mg/l

Exposure time: 4 h

Skin irritation: Classification: Irritating to skin.

Result: Mild skin irritation

Prolonged skin contact may cause skin irritation and/or dermatitis.

Eye irritation: Classification: Irritating to eyes.

Result: Mild eye irritation

Mild eye irritation

Naphthalene

91-20-3

Acute oral toxicity: LD50 rat

Dose: 2,001 mg/kg

Acute dermal toxicity: LD50 rat

Dose: 2,501 mg/kg

Acute inhalation toxicity: LC50 rat

Dose: 101 mg/l

Exposure time: 4 h

Skin irritation: Classification: Irritating to skin.

Result: Mild skin irritation

Eye irritation: Classification: Irritating to eyes.

Result: Mild eye irritation

Carcinogenicity: N11.00422130

Benzene

71-43-2

Acute oral toxicity: LD50 rat

Dose: 930 mg/kg

Acute inhalation toxicity: LC50 rat

Dose: 44 mg/l

Exposure time: 4 h

Skin irritation: Classification: Irritating to skin.

Result: Mild skin irritation

Repeated or prolonged exposure may cause skin irritation and dermatitis, due to degreasing properties of the product.

Eye irritation: Classification: Irritating to eyes.

Result: Risk of serious damage to eyes.

Pentane

109-66-0

Acute oral toxicity: LD50 rat

Dose: 2,001 mg/kg

Acute inhalation toxicity: LC50 rat

Dose: 364 mg/l

Exposure time: 4 h

Skin irritation: Repeated or prolonged exposure may cause skin irritation and dermatitis, due to degreasing properties of the product.

Eye irritation: Classification: Irritating to eyes.

Result: Mild eye irritation

Cyclohexane

110-82-7

Acute dermal toxicity: LD50 rabbit

Dose: 2,001 mg/kg

Acute inhalation toxicity: LC50 rat

Dose: 14 mg/l

Exposure time: 4 h

Ethylbenzene	100-41-4	<u>Skin irritation:</u> Classification: Irritating to skin. Result: Skin irritation
		<u>Eye irritation:</u> Classification: Irritating to eyes. Result: Mild eye irritation
		<u>Acute oral toxicity:</u> LD50 rat Dose: 3,500 mg/kg
Heptane [and isomers]	142-82-5	<u>Acute dermal toxicity:</u> LD50 rabbit Dose: 15,500 mg/kg
		<u>Acute inhalation toxicity:</u> LC50 rat Dose: 18 mg/l Exposure time: 4 h
		<u>Skin irritation:</u> Classification: Irritating to skin. Result: Mild skin irritation
N-hexane	110-54-3	<u>Eye irritation:</u> Classification: Irritating to eyes. Result: Risk of serious damage to eyes.
		<u>Acute oral toxicity:</u> LD50 rat Dose: 15,001 mg/kg
		<u>Acute inhalation toxicity:</u> LC50 rat Dose: 103 g/m3 Exposure time: 4 h
		<u>Skin irritation:</u> Classification: Irritating to skin. Result: Skin irritation Repeated or prolonged exposure may cause skin irritation and dermatitis, due to degreasing properties of the product.
		<u>Eye irritation:</u> Classification: Irritating to eyes. Result: Mild eye irritation
		<u>Acute oral toxicity:</u> LD50 rat Dose: 25,000 mg/kg
		<u>Acute dermal toxicity:</u> LD50 rabbit Dose: 2,001 mg/kg
		<u>Acute inhalation toxicity:</u> LC50 rat Dose: 171.6 mg/l Exposure time: 4 h
		<u>Skin irritation:</u> Classification: Irritating to skin. Result: Skin irritation
		<u>Eye irritation:</u> Classification: Irritating to eyes. Result: Mild eye irritation
		<u>Teratogenicity:</u> N11.00418960

Carcinogenicity

NTP	:	Naphthalene (CAS-No.: 91-20-3) Benzene (CAS-No.: 71-43-2)
IARC	:	Gasoline, natural; Low boiling point naphtha (CAS-No.: 8006-61-9) Naphthalene (CAS-No.: 91-20-3) Benzene (CAS-No.: 71-43-2) Ethylbenzene (CAS-No.: 100-41-4)
OSHA	:	Benzene (CAS-No.: 71-43-2)
CA Prop 65	:	WARNING! This product contains a chemical known to the State of California to cause birth defects or other reproductive harm. Toluene (CAS-No.: 108-88-3)

Benzene (CAS-No.: 71-43-2)

SECTION 12. ECOLOGICAL INFORMATION

Additional ecological information : Keep out of sewers, drainage areas, and waterways. Report spills and releases, as applicable, under Federal and State regulations.

Component:

Toluene	108-88-3	<u>Toxicity to fish:</u> LC50 Species: Carassius auratus (goldfish) Dose: 13 mg/l Exposure time: 96 h <u>Acute and prolonged toxicity for aquatic invertebrates:</u> EC50 Species: Daphnia magna (Water flea) Dose: 11.5 mg/l Exposure time: 48 h <u>Toxicity to algae:</u> IC50 Species: Selenastrum capricornutum (green algae) Dose: 12 mg/l Exposure time: 72 h
Ethanol; Ethyl alcohol	64-17-5	<u>Toxicity to fish:</u> LC50 Species: Leuciscus idus (Golden orfe) Dose: 8,140 mg/l Exposure time: 48 h <u>Acute and prolonged toxicity for aquatic invertebrates:</u> EC50 Species: Daphnia magna (Water flea) Dose: 9,268 - 14,221 mg/l Exposure time: 48 h
Isopentane; 2-Methylbutane	78-78-4	<u>Toxicity to fish:</u> LC50 Species: Oncorhynchus mykiss (rainbow trout) Dose: 3.1 mg/l Exposure time: 96 h <u>Acute and prolonged toxicity for aquatic invertebrates:</u> EC50 Species: Daphnia magna (Water flea) Dose: 2.3 mg/l Exposure time: 96 h
Naphthalene	91-20-3	<u>Toxicity to algae:</u> EC50 Species: Dose: 33 mg/l Exposure time: 24 h
Pentane	109-66-0	<u>Acute and prolonged toxicity for aquatic invertebrates:</u> EC50 Species: Daphnia magna (Water flea) Dose: 9.74 mg/l Exposure time: 48 h
Cyclohexane	110-82-7	<u>Acute and prolonged toxicity for aquatic invertebrates:</u> EC50 Species: Daphnia magna (Water flea) Dose: 3.78 mg/l Exposure time: 48 h

Heptane [and isomers] 142-82-5

Toxicity to fish:

LC50

Species: Carassius auratus (goldfish)

Dose: 4 mg/l

Exposure time: 24 h

Acute and prolonged toxicity for aquatic invertebrates:

EC50

Species: Daphnia magna (Water flea)

Dose: 1.5 mg/l

Exposure time: 48 h

N-hexane 110-54-3

Toxicity to fish:

LC50

Species: Pimephales promelas (fathead minnow)

Dose: 2.5 mg/l

Exposure time: 96 h

Acute and prolonged toxicity for aquatic invertebrates:

EC50

Species: Daphnia magna (Water flea)

Dose: 2.1 mg/l

Exposure time: 48 h

SECTION 13. DISPOSAL CONSIDERATIONS

Disposal : Dispose of container and unused contents in accordance with federal, state and local requirements.

SECTION 14. TRANSPORT INFORMATION**CFR**

Proper shipping name : Petrol

UN-No. : 1203

Class : 3

Packing group : II

TDG

Proper shipping name : Gasoline

UN-No. : UN1203

Class : 3

Packing group : II

IATA Cargo Transport

UN UN-No. : UN1203

Description of the goods : Gasoline

Class : 3

Packaging group : II

ICAO-Labels : 3

Packing instruction (cargo aircraft) : 364

Packing instruction (cargo aircraft) : Y341

IATA Passenger Transport

UN UN-No. : UN1203

Description of the goods : Gasoline

Class : 3

Packaging group : II
ICAO-Labels : 3
Packing instruction : 353
(passenger aircraft)
Packing instruction : Y341
(passenger aircraft)

IMDG-Code

UN-No. : UN 1203
Description of the goods : Gasoline
Class : 3
Packaging group : II
IMDG-Labels : 3
EmS Number : F-E S-E
Marine pollutant : No

SECTION 15. REGULATORY INFORMATION

OSHA Hazards : Flammable liquid
Highly toxic by ingestion
Moderate skin irritant
Severe eye irritant
Carcinogen

TSCA Status : On TSCA Inventory

DSL Status : . All components are on the Canadian DSL list.

SARA 311/312 Hazards : Fire Hazard
Acute Health Hazard
Chronic Health Hazard

CERCLA SECTION 103 and SARA SECTION 304 (RELEASE TO THE ENVIRONMENT)

The CERCLA definition of hazardous substances contains a "petroleum exclusion" clause which exempts crude oil. Fractions of crude oil, and products (both finished and intermediate) from the crude oil refining process and any indigenous components of such from the CERCLA Section 103 reporting requirements. However, other federal reporting requirements, including SARA Section 304, as well as the Clean Water Act may still apply.

California Prop. 65 : WARNING! This product contains a chemical known to the State of California to cause birth defects or other reproductive harm.

Toluene 108-88-3
Benzene 71-43-2

SECTION 16. OTHER INFORMATION**Further information**

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.

Revision Date : 08/09/2012

6, 8, 10, 12, 14, 16, 64, 68, 91, 112, 306, 1092, 1106, 1500, 1570, 1571, 1651, 1652, 1654, 1700, 1701, 1702, 1710, 1711, 1714, 1726, 1729, 1730, 1732, 1733, 1826, 1848, 1880, 1950

Safety Data Sheet

According to OSHA HCS 2012 (29 CFR 1910.1200)



SECTION 1: Identification

Product Identifier

Megaplex® XD5 Grease

Other means of identification

Phillips 66 Megaplex® XD5 Grease #0
Phillips 66 Megaplex® XD5 Grease #1
Phillips 66 Megaplex® XD5 Grease #1W
Phillips 66 Megaplex® XD5 Grease #2

SDS Number

LBPH778587

Relevant identified uses

Lubricating Grease

Uses advised against

All others

24 Hour Emergency Phone Number

CHEMTREC 1-800-424-9300

CHEMTREC Mexico 01-800-681-9531

Manufacturer/Supplier

Phillips 66 Lubricants
P.O. Box 4428
Houston, TX 77210

SDS Information

Phone: 800-762-0942
Email: SDS@P66.com
URL: www.Phillips66.com

Customer Service

U.S.: 800-368-7128 or International: 1-832-765-2500

Technical Information

1-877-445-9198

SECTION 2: Hazard identification

Classified Hazards

Hazards Not Otherwise Classified (HNOC)

This material is not hazardous under the criteria of the Federal OSHA Hazard Communication Standard 29CFR 1910.1200.

PHNOC: None known

HHNOC: None known

Label Elements

No classified hazards

SECTION 3: Composition/information on ingredients

Chemical Name	CASRN	Concentration ¹
Distillates, petroleum, solvent-dewaxed heavy paraffinic	64742-65-0	15 - 40

¹ All concentrations are percent by weight unless ingredient is a gas. Gas concentrations are in percent by volume.

SECTION 4: First aid measures

Eye Contact: If irritation or redness develops from exposure, flush eyes with clean water. If symptoms persist, seek medical attention.

Skin Contact: Remove contaminated shoes and clothing and cleanse affected area(s) thoroughly by washing with mild soap and water or a waterless hand cleaner. If irritation or redness develops and persists, seek medical attention. If product is injected into or under the skin, or into any part of the body, regardless of the appearance of the wound or its size, the individual should be evaluated immediately by a physician. (see Note to Physician)

Inhalation: First aid is not normally required. If breathing difficulties develop, move victim away from source of exposure and into fresh air in a position comfortable for breathing. Seek immediate medical attention.

Ingestion: First aid is not normally required; however, if swallowed and symptoms develop, seek medical attention.

Most important symptoms and effects, both acute and delayed: Inhalation of oil mists or vapors generated at elevated temperatures may cause respiratory irritation. Accidental ingestion can result in minor irritation of the digestive tract, nausea and diarrhea. Prolonged or repeated contact may dry skin and cause irritation.

Notes to Physician: When using high-pressure equipment, injection of product under the skin can occur. In this case, the casualty should be sent immediately to the hospital. Do not wait for symptoms to develop. High-pressure hydrocarbon injection injuries may produce substantial necrosis of underlying tissue despite an innocuous appearing external wound. These injuries often require extensive emergency surgical debridement and all injuries should be evaluated by a specialist in order to assess the extent of injury. Early surgical treatment within the first few hours may significantly reduce the ultimate extent of injury.

SECTION 5: Firefighting measures

NFPA 704 Hazard Class

Health: 0 Flammability: 1 Instability: 0



0 (Minimal)
1 (Slight)
2 (Moderate)
3 (Serious)
4 (Severe)

Extinguishing Media: Dry chemical, carbon dioxide, foam, or water spray is recommended. Water or foam may cause frothing of materials heated above 212°F / 100°C. Carbon dioxide can displace oxygen. Use caution when applying carbon dioxide in confined spaces. Simultaneous use of foam and water on the same surface is to be avoided as water destroys the foam.

Specific hazards arising from the chemical

Unusual Fire & Explosion Hazards: This material may burn, but will not ignite readily. If container is not properly cooled, it can rupture in the heat of a fire.

Hazardous Combustion Products: Combustion may yield smoke, carbon monoxide, and other products of incomplete combustion. Oxides of sulfur, nitrogen or phosphorus may also be formed.

Special protective actions for firefighters: For fires beyond the initial stage, emergency responders in the immediate hazard area should wear protective clothing. When the potential chemical hazard is unknown, in enclosed or confined spaces, a self contained breathing apparatus should be worn. In addition, wear other appropriate protective equipment as conditions warrant (see Section 8).

Isolate the hazard area and deny entry to unnecessary and unprotected personnel. Stop spill/release if it can be done safely. Move undamaged containers from immediate hazard area if it can be done safely. Water spray may be useful in minimizing or dispersing vapors and to protect personnel. Cool equipment exposed to fire with water, if it can be done safely. Avoid spreading burning liquid with water used for cooling purposes.

See Section 9 for Flammable Properties including Flash Point and Flammable (Explosive) Limits

SECTION 6: Accidental release measures

Personal precautions, protective equipment and emergency procedures: This material may burn, but will not ignite readily. Keep all sources of ignition away from spill/release. Stay upwind and away from spill/release. Avoid direct contact with material. For large spillages, notify persons down wind of the spill/release, isolate immediate hazard area and keep unauthorized personnel out. Wear appropriate protective equipment, including respiratory protection, as conditions warrant (see Section 8). See Sections 2 and 7 for additional information on hazards and precautionary measures.

Environmental Precautions: Stop and contain spill/release if it can be done safely. Prevent spilled material from entering sewers, storm drains, other unauthorized drainage systems, and natural waterways. Use water sparingly to minimize environmental contamination and reduce disposal requirements. If spill occurs on water notify appropriate authorities and advise shipping of any hazard. Spills into or upon navigable waters, the contiguous zone, or adjoining shorelines that cause a sheen or discoloration on

the surface of the water, may require notification of the National Response Center (phone number 800-424-8802).

Methods and material for containment and cleaning up: Notify relevant authorities in accordance with all applicable regulations. Immediate cleanup of any spill is recommended. Dike far ahead of spill for later recovery or disposal. Absorb spill with inert material such as sand or vermiculite, and place in suitable container for disposal. If spilled on water remove with appropriate methods (e.g. skimming, booms or absorbents). In case of soil contamination, remove contaminated soil for remediation or disposal, in accordance with local regulations.

Recommended measures are based on the most likely spillage scenarios for this material; however local conditions and regulations may influence or limit the choice of appropriate actions to be taken. See Section 13 for information on appropriate disposal.

SECTION 7: Handling and storage

Precautions for safe handling: Keep away from flames and hot surfaces. Wash thoroughly after handling. Use good personal hygiene practices and wear appropriate personal protective equipment (see section 8). Spills will produce very slippery surfaces. High pressure injection of hydrocarbon fuels, hydraulic oils or greases under the skin may have serious consequences even though no symptoms or injury may be apparent. This can happen accidentally when using high pressure equipment such as high pressure grease guns, fuel injection apparatus or from pinhole leaks in tubing of high pressure hydraulic oil equipment.

Do not enter confined spaces such as tanks or pits without following proper entry procedures such as ASTM D-4276 and 29CFR 1910.146. Do not wear contaminated clothing or shoes.

Conditions for safe storage: Keep container(s) tightly closed and properly labeled. Use and store this material in cool, dry, well-ventilated area away from heat and all sources of ignition. Store only in approved containers. Keep away from any incompatible material (see Section 10). Protect container(s) against physical damage.

"Empty" containers retain residue and may be dangerous. Do not pressurize, cut, weld, braze, solder, drill, grind, or expose such containers to heat, flame, sparks, or other sources of ignition. They may explode and cause injury or death. "Empty" drums should be completely drained, properly bunged, and promptly shipped to the supplier or a drum reconditioner. All containers should be disposed of in an environmentally safe manner and in accordance with governmental regulations. Before working on or in tanks which contain or have contained this material, refer to OSHA regulations, ANSI Z49.1, and other references pertaining to cleaning, repairing, welding, or other contemplated operations.

SECTION 8: Exposure controls/personal protection

Chemical Name	ACGIH	OSHA	Phillips 66
Distillates, petroleum, solvent-dewaxed heavy paraffinic	---	---	TWA: 5 mg/m ³ STEL: 10 mg/m ³ as Oil Mist, if Generated

Note: State, local or other agencies or advisory groups may have established more stringent limits. Consult an industrial hygienist or similar professional, or your local agencies, for further information.

Engineering controls: If current ventilation practices are not adequate to maintain airborne concentrations below the established exposure limits, additional engineering controls may be required.

Eye/Face Protection: The use of eye protection that meets or exceeds ANSI Z.87.1 is recommended to protect against potential eye contact, irritation, or injury. Depending on conditions of use, a face shield may be necessary.

Skin/Hand Protection: The use of gloves impervious to the specific material handled is advised to prevent skin contact. Users should check with manufacturers to confirm the breakthrough performance of their products. Suggested protective materials: Nitrile

Respiratory Protection: Respiratory protection is not normally required under intended conditions of use. Emergencies or conditions that could result in significant airborne exposures may require the use of NIOSH approved respiratory protection. An industrial hygienist or other appropriate health and safety professional should be consulted for specific guidance under these situations.

Suggestions provided in this section for exposure control and specific types of protective equipment are based on readily available information. Users should consult with the specific manufacturer to confirm the performance of their protective equipment. Specific situations may require consultation with industrial hygiene, safety, or engineering professionals.

SECTION 9: Physical and chemical properties

Note: Unless otherwise stated, values are determined at 20°C (68°F) and 760 mm Hg (1 atm). Data represent typical values and are not intended

to be specifications.

Appearance: Moly Gray
Physical Form: Semi-Solid

Odor: Petroleum

Odor Threshold: No data

pH: Not applicable

Vapor Density (air=1): > 5

Upper Explosive Limits (vol % in air): No data

Lower Explosive Limits (vol % in air): No data

Evaporation Rate (nBuAc=1): No data

Particle Size: Not applicable

Percent Volatile: No data

Flammability (solid, gas): Not applicable

Flash Point: 300 °F / 149 °C

Test Method: Cleveland Open Cup (COC), ASTM D92

Initial Boiling Point/Range: No data

Vapor Pressure: <1 mm Hg

Partition Coefficient (n-octanol/water) (Kow): No data

Melting/Freezing Point: No data

Auto-ignition Temperature: No data

Decomposition Temperature: No data

Specific Gravity (water=1): 0.95 @ 60°F (15.6°C)

Bulk Density: 7.96 lbs/gal

Viscosity: No data

Solubility in Water: Insoluble

SECTION 10: Stability and reactivity

Reactivity: Not chemically reactive.

Chemical stability: Stable under normal ambient and anticipated conditions of use.

Possibility of hazardous reactions: Hazardous reactions not anticipated.

Conditions to avoid: Extended exposure to high temperatures can cause decomposition. Avoid all possible sources of ignition.

Incompatible materials: Avoid contact with strong oxidizing agents and strong reducing agents.

Hazardous decomposition products: Not anticipated under normal conditions of use.

SECTION 11: Toxicological information

Information on Toxicological Effects

Substance / Mixture

Acute Toxicity	Hazard	Additional Information	LC50/LD50 Data
Inhalation	Unlikely to be harmful		>5 mg/L (mist, estimated)
Dermal	Unlikely to be harmful		> 2 g/kg (estimated)
Oral	Unlikely to be harmful		> 5 g/kg (estimated)

Aspiration Hazard: Not expected to be an aspiration hazard.

Skin Corrosion/Irritation: Causes mild skin irritation. Repeated exposure may cause skin dryness or cracking.

Serious Eye Damage/Irritation: Causes mild eye irritation.

Skin Sensitization: No information available on the mixture, however none of the components have been classified for skin sensitization (or are below the concentration threshold for classification).

Respiratory Sensitization: No information available.

Specific Target Organ Toxicity (Single Exposure): No information available on the mixture, however none of the components have been classified for target organ toxicity (or are below the concentration threshold for classification).

Specific Target Organ Toxicity (Repeated Exposure): No information available on the mixture, however none of the components have been classified for target organ toxicity (or are below the concentration threshold for classification).

Carcinogenicity: No information available on the mixture, however none of the components have been classified for carcinogenicity (or are below the concentration threshold for classification).

Germ Cell Mutagenicity: No information available on the mixture, however none of the components have been classified for germ cell mutagenicity (or are below the concentration threshold for classification).

Reproductive Toxicity: No information available on the mixture, however none of the components have been classified for reproductive toxicity (or are below the concentration threshold for classification).

Information on Toxicological Effects of Components

Distillates, petroleum, solvent-dewaxed heavy paraffinic

Carcinogenicity: This oil has been highly refined by a variety of processes to reduce aromatics and improve performance characteristics. It meets the IP-346 criteria of less than 3 percent PAH's and is not considered a carcinogen by the International Agency for Research on Cancer.

SECTION 12: Ecological information

GHS Classification:
No classified hazards

Toxicity: All acute aquatic toxicity studies on samples of lubricant base oils show acute toxicity values greater than 100 mg/L for invertebrates, algae and fish. These tests were carried out on water accommodated fractions and the results are consistent with the predicted aquatic toxicity of these substances based on their hydrocarbon compositions.

Persistence and Degradability: The hydrocarbons in this material are not readily biodegradable, but since they can be degraded by microorganisms, they are regarded as inherently biodegradable.

Bioaccumulative Potential: Log Kow values measured for the hydrocarbon components of this material are greater than 5.3, and therefore regarded as having the potential to bioaccumulate. In practice, metabolic processes may reduce bioconcentration.

Mobility in Soil: Volatilization to air is not expected to be a significant fate process due to the low vapor pressure of this material. In water, base oils will float and spread over the surface at a rate dependent upon viscosity. There will be significant removal of hydrocarbons from the water by sediment adsorption. In soil and sediment, hydrocarbon components will show low mobility with adsorption to sediments being the predominant physical process. The main fate process is expected to be slow biodegradation of the hydrocarbon constituents in soil and sediment.

Other adverse effects: None anticipated.

SECTION 13: Disposal considerations

The generator of a waste is always responsible for making proper hazardous waste determinations and needs to consider state and local requirements in addition to federal regulations. This material, if discarded as produced, would not be a federally regulated RCRA "listed" hazardous waste and is not believed to exhibit characteristics of hazardous waste. See Sections 7 and 8 for information on handling, storage and personal protection and Section 9 for physical/chemical properties. It is possible that the material as produced contains constituents which are not required to be listed in the SDS but could affect the hazardous waste determination. Additionally, use which results in chemical or physical change of this material could subject it to regulation as a hazardous waste. This material under most intended uses would become "Used Oil" due to contamination by physical or chemical impurities. Whenever possible, Recycle used oil in accordance with applicable federal and state or local regulations. Container contents should be completely used and containers should be emptied prior to discard.

SECTION 14: Transport information

U.S. Department of Transportation (DOT)

UN Number: Not regulated

UN proper shipping name: None

Transport hazard class(es): None

Packing Group: None

Environmental Hazards: This product does not meet the DOT/UN/IMDG/IMO criteria of a marine pollutant

Special precautions for user: If shipped by land in a packaging having a capacity of 3,500 gallons or more, the provisions of 49 CFR, Part 130 apply. (Contains oil)

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code: Not applicable

SECTION 15: Regulatory information

CERCLA/SARA - Section 302 Extremely Hazardous Substances and TPQs (in pounds):

This material does not contain any chemicals subject to the reporting requirements of SARA 302 and 40 CFR 372.

CERCLA/SARA - Section 311/312 (Title III Hazard Categories)

Acute Health Hazard: No
Chronic Health Hazard: No
Fire Hazard: No
Pressure Hazard: No
Reactive Hazard: No

CERCLA/SARA - Section 313 and 40 CFR 372:

This material contains the following chemicals subject to the reporting requirements of Section 313 of SARA Title III and 40 CFR 372:

Chemical Name	Concentration ¹	de minimis
Zinc Compound(s)	1 - 5	1.0%

¹ All concentrations are percent by weight unless ingredient is a gas. Gas concentrations are in percent by volume.

EPA (CERCLA) Reportable Quantity (in pounds):

This material does not contain any chemicals with CERCLA Reportable Quantities.

California Proposition 65:

This material does not contain any chemicals which are known to the State of California to cause cancer, birth defects or other reproductive harm at concentrations that trigger the warning requirements of California Proposition 65.

International Hazard Classification

Canada:

This product has been classified in accordance with the hazard criteria of the Hazardous Products Regulations (SOR/2015-17) and the SDS contains all the information required by the Regulations.

International Inventories

All components are either listed on the US TSCA Inventory, or are not regulated under TSCA.
All components are either on the DSL, or are exempt from DSL listing requirements.

U.S. Export Control Classification Number: EAR99

SECTION 16: Other information

Issue Date:	Previous Issue Date:	SDS Number	Status:
22-Jun-2016	16-Jun-2016	LBPH778587	FINAL

Revised Sections or Basis for Revision:

New SDS

Guide to Abbreviations:

ACGIH = American Conference of Governmental Industrial Hygienists; CASRN = Chemical Abstracts Service Registry Number; CEILING = Ceiling Limit (15 minutes); CERCLA = The Comprehensive Environmental Response, Compensation, and Liability Act; EPA = Environmental Protection Agency; GHS = Globally Harmonized System; IARC = International Agency for Research on Cancer; INSHT = National Institute for Health and Safety at Work; IOPC = International Oil Pollution Compensation; LEL = Lower Explosive Limit; NE = Not Established; NFPA = National Fire Protection Association; NTP = National Toxicology Program; OSHA = Occupational Safety and Health Administration; PEL = Permissible Exposure Limit (OSHA); SARA = Superfund Amendments and Reauthorization Act; STEL = Short Term Exposure Limit (15 minutes); TLV = Threshold Limit Value (ACGIH); TWA = Time Weighted Average (8 hours); UEL = Upper Explosive Limit; WHMIS = Worker Hazardous Materials Information System (Canada)

Disclaimer of Expressed and implied Warranties:

The information presented in this Safety Data Sheet is based on data believed to be accurate as of the date this Safety Data Sheet was prepared. HOWEVER, NO WARRANTY OF MERCHANTABILITY, FITNESS FOR ANY PARTICULAR PURPOSE, OR ANY OTHER WARRANTY IS EXPRESSED OR IS TO BE IMPLIED REGARDING THE ACCURACY OR COMPLETENESS OF THE INFORMATION PROVIDED ABOVE, THE RESULTS TO BE OBTAINED FROM THE USE OF THIS INFORMATION OR THE PRODUCT, THE SAFETY OF THIS PRODUCT, OR THE HAZARDS RELATED TO ITS USE. No responsibility is assumed for any damage or injury resulting from abnormal use or from any failure to

adhere to recommended practices. The information provided above, and the product, are furnished on the condition that the person receiving them shall make their own determination as to the suitability of the product for their particular purpose and on the condition that they assume the risk of their use. In addition, no authorization is given nor implied to practice any patented invention without a license.

Safety Data Sheet

According to OSHA HCS 2012 (29 CFR 1910.1200)



SECTION 1: Identification

Product Identifier **Megaflow® AW Hydraulic Oil**

Other means of identification Phillips 66 Megaflow® AW Hydraulic Oil 22
Phillips 66 Megaflow® AW Hydraulic Oil 32
Phillips 66 Megaflow® AW Hydraulic Oil 46
Phillips 66 Megaflow® AW Hydraulic Oil 68
Phillips 66 Megaflow® AW Hydraulic Oil 100
Phillips 66 Megaflow® AW Hydraulic Oil 150
Phillips 66 Megaflow® AW Hydraulic Oil 220
Phillips 66 Megaflow® AW Hydraulic Oil 320

SDS Number **LBPH814637**

Relevant identified uses Hydraulic Fluid

Uses advised against All others

24 Hour Emergency Phone Number CHEMTREC 1-800-424-9300
CHEMTREC Mexico 01-800-681-9531

Manufacturer/Supplier	SDS Information	Customer Service
Phillips 66 Lubricants	Phone: 800-762-0942	U.S.: 800-368-7128 or International: 1-832-765-2500
P.O. Box 4428	Email: SDS@P66.com	Technical Information
Houston, TX 77210	URL: www.Phillips66.com	1-877-445-9198

SECTION 2: Hazard identification

Classified Hazards	Hazards Not Otherwise Classified (HNOC)

This material is not hazardous under the criteria of the Federal OSHA Hazard Communication Standard 29CFR 1910.1200.

PHNOC: None known

HHNOC: None known

Label Elements

No classified hazards

SECTION 3: Composition/information on ingredients

Chemical Name	CASRN	Concentration ¹
Distillates, petroleum, hydrotreated heavy paraffinic	64742-54-7	>99

¹ All concentrations are percent by weight unless ingredient is a gas. Gas concentrations are in percent by volume.

SECTION 4: First aid measures

Eye Contact: If irritation or redness develops from exposure, flush eyes with clean water. If symptoms persist, seek medical attention.

Skin Contact: First aid is not normally required. However, it is good practice to wash any chemical from the skin. If product is

injected into or under the skin, or into any part of the body, regardless of the appearance of the wound or its size, the individual should be evaluated immediately by a physician. (see Note to Physician)

Inhalation: First aid is not normally required. If breathing difficulties develop, move victim away from source of exposure and into fresh air in a position comfortable for breathing. Seek immediate medical attention.

Ingestion: First aid is not normally required; however, if swallowed and symptoms develop, seek medical attention.

Most important symptoms and effects, both acute and delayed: Inhalation of oil mists or vapors generated at elevated temperatures may cause respiratory irritation. Accidental ingestion can result in minor irritation of the digestive tract, nausea and diarrhea.

Notes to Physician: Acute aspirations of large amounts of oil-laden material may produce a serious aspiration pneumonia. Patients who aspirate these oils should be followed for the development of long-term sequelae. Inhalation exposure to oil mists below current workplace exposure limits is unlikely to cause pulmonary abnormalities. When using high-pressure equipment, injection of product under the skin can occur. In this case, the casualty should be sent immediately to the hospital. Do not wait for symptoms to develop. High-pressure hydrocarbon injection injuries may produce substantial necrosis of underlying tissue despite an innocuous appearing external wound. These injuries often require extensive emergency surgical debridement and all injuries should be evaluated by a specialist in order to assess the extent of injury. Early surgical treatment within the first few hours may significantly reduce the ultimate extent of injury.

SECTION 5: Firefighting measures

NFPA 704 Hazard Class

Health: 0 Flammability: 1 Instability: 0



0 (Minimal)
1 (Slight)
2 (Moderate)
3 (Serious)
4 (Severe)

Extinguishing Media: Dry chemical, carbon dioxide, foam, or water spray is recommended. Water or foam may cause frothing of materials heated above 212°F / 100°C. Carbon dioxide can displace oxygen. Use caution when applying carbon dioxide in confined spaces. Simultaneous use of foam and water on the same surface is to be avoided as water destroys the foam.

Specific hazards arising from the chemical

Unusual Fire & Explosion Hazards: This material may burn, but will not ignite readily. If container is not properly cooled, it can rupture in the heat of a fire.

Hazardous Combustion Products: Combustion may yield smoke, carbon monoxide, and other products of incomplete combustion. Oxides of sulfur, nitrogen or phosphorus may also be formed.

Special protective actions for firefighters: For fires beyond the initial stage, emergency responders in the immediate hazard area should wear protective clothing. When the potential chemical hazard is unknown, in enclosed or confined spaces, a self contained breathing apparatus should be worn. In addition, wear other appropriate protective equipment as conditions warrant (see Section 8).

Isolate the hazard area and deny entry to unnecessary and unprotected personnel. Stop spill/release if it can be done safely. Move undamaged containers from immediate hazard area if it can be done safely. Water spray may be useful in minimizing or dispersing vapors and to protect personnel. Cool equipment exposed to fire with water, if it can be done safely. Avoid spreading burning liquid with water used for cooling purposes.

See Section 9 for Flammable Properties including Flash Point and Flammable (Explosive) Limits

SECTION 6: Accidental release measures

Personal precautions, protective equipment and emergency procedures: This material may burn, but will not ignite readily. Keep all sources of ignition away from spill/release. Stay upwind and away from spill/release. Avoid direct contact with material. For large spillages, notify persons down wind of the spill/release, isolate immediate hazard area and keep unauthorized personnel out. Wear appropriate protective equipment, including respiratory protection, as conditions warrant (see Section 8). See Sections 2 and 7 for additional information on hazards and precautionary measures.

Environmental Precautions: Stop and contain spill/release if it can be done safely. Prevent spilled material from entering sewers, storm drains, other unauthorized drainage systems, and natural waterways. Use water sparingly to minimize environmental contamination and reduce disposal requirements. If spill occurs on water notify appropriate authorities and advise shipping of any hazard. Spills into or upon navigable waters, the contiguous zone, or adjoining shorelines that cause a sheen or discoloration on the surface of the water, may require notification of the National Response Center (phone number 800-424-8802).

Methods and material for containment and cleaning up: Notify relevant authorities in accordance with all applicable regulations. Immediate cleanup of any spill is recommended. Dike far ahead of spill for later recovery or disposal. Absorb spill with inert material such as sand or vermiculite, and place in suitable container for disposal. If spilled on water remove with appropriate methods (e.g. skimming, booms or absorbents). In case of soil contamination, remove contaminated soil for remediation or disposal, in accordance with local regulations.

Recommended measures are based on the most likely spillage scenarios for this material; however local conditions and regulations may influence or limit the choice of appropriate actions to be taken. See Section 13 for information on appropriate disposal.

SECTION 7: Handling and storage

Precautions for safe handling: Keep away from flames and hot surfaces. Wash thoroughly after handling. Use good personal hygiene practices and wear appropriate personal protective equipment (see section 8). Spills will produce very slippery surfaces. High pressure injection of hydrocarbon fuels, hydraulic oils or greases under the skin may have serious consequences even though no symptoms or injury may be apparent. This can happen accidentally when using high pressure equipment such as high pressure grease guns, fuel injection apparatus or from pinhole leaks in tubing of high pressure hydraulic oil equipment.

Do not enter confined spaces such as tanks or pits without following proper entry procedures such as ASTM D-4276 and 29CFR 1910.146. Do not wear contaminated clothing or shoes.

Conditions for safe storage: Keep container(s) tightly closed and properly labeled. Use and store this material in cool, dry, well-ventilated area away from heat and all sources of ignition. Store only in approved containers. Keep away from any incompatible material (see Section 10). Protect container(s) against physical damage.

"Empty" containers retain residue and may be dangerous. Do not pressurize, cut, weld, braze, solder, drill, grind, or expose such containers to heat, flame, sparks, or other sources of ignition. They may explode and cause injury or death. "Empty" drums should be completely drained, properly bunged, and promptly shipped to the supplier or a drum reconditioner. All containers should be disposed of in an environmentally safe manner and in accordance with governmental regulations. Before working on or in tanks which contain or have contained this material, refer to OSHA regulations, ANSI Z49.1, and other references pertaining to cleaning, repairing, welding, or other contemplated operations.

SECTION 8: Exposure controls/personal protection

Chemical Name	ACGIH	OSHA	Phillips 66
Distillates, petroleum, hydrotreated heavy paraffinic	---	---	TWA: 5 mg/m ³ STEL: 10 mg/m ³ as Oil Mist, if Generated

Note: State, local or other agencies or advisory groups may have established more stringent limits. Consult an industrial hygienist or similar professional, or your local agencies, for further information.

Engineering controls: If current ventilation practices are not adequate to maintain airborne concentrations below the established exposure limits, additional engineering controls may be required.

Eye/Face Protection: The use of eye/face protection is not normally required; however, good industrial hygiene practice suggests the use of eye protection that meets or exceeds ANSI Z.87.1 whenever working with chemicals.

Skin/Hand Protection: The use of skin protection is not normally required; however, good industrial hygiene practice suggests the use of gloves or other appropriate skin protection whenever working with chemicals. Suggested protective materials: Nitrile

Respiratory Protection: Where there is potential for airborne exposure above the exposure limit a NIOSH certified air purifying respirator equipped with R or P95 filters may be used.

A respiratory protection program that meets or is equivalent to OSHA 29 CFR 1910.134 and ANSI Z88.2 should be followed whenever workplace conditions warrant a respirator's use. Air purifying respirators provide limited protection and cannot be used in atmospheres that exceed the maximum use concentration (as directed by regulation or the manufacturer's instructions), in oxygen deficient (less than 19.5 percent oxygen) situations, or under conditions that are immediately dangerous to life and health (IDLH).

Suggestions provided in this section for exposure control and specific types of protective equipment are based on readily available information. Users should consult with the specific manufacturer to confirm the performance of their protective equipment. Specific situations may require consultation with industrial hygiene, safety, or engineering professionals.

SECTION 9: Physical and chemical properties

Note: Unless otherwise stated, values are determined at 20°C (68°F) and 760 mm Hg (1 atm). Data represent typical values and are not intended to be specifications.

Appearance: Amber, Transparent

Physical Form: Liquid

Odor: Petroleum

Odor Threshold: No data

pH: Not applicable

Vapor Density (air=1): >1

Upper Explosive Limits (vol % in air): No data

Lower Explosive Limits (vol % in air): No data

Evaporation Rate (nBuAc=1): No data

Particle Size: Not applicable

Percent Volatile: No data

Flammability (solid, gas): Not applicable

Solubility in Water: Negligible

Flash Point: > 302 °F / > 150 °C (ASTM D93)

Test Method: Pensky-Martens Closed Cup (PMCC), ASTM D93, EPA 1010

Initial Boiling Point/Range: No data

Vapor Pressure: <1 mm Hg

Partition Coefficient (n-octanol/water) (Kow): No data

Melting/Freezing Point: No data

Auto-ignition Temperature: No data

Decomposition Temperature: No data

Specific Gravity (water=1): 0.85-0.89 @ 60°F (15.6°C)

Bulk Density: No data

Viscosity: 4.0 - 25 cSt @ 100°C; 21 - 345 cSt @ 40°C

Pour Point: < 10 °F / < -12 °C

SECTION 10: Stability and reactivity

Reactivity: Not chemically reactive.

Chemical stability: Stable under normal ambient and anticipated conditions of use.

Possibility of hazardous reactions: Hazardous reactions not anticipated.

Conditions to avoid: Extended exposure to high temperatures can cause decomposition. Avoid all possible sources of ignition.

Incompatible materials: Avoid contact with strong oxidizing agents and strong reducing agents.

Hazardous decomposition products: Not anticipated under normal conditions of use.

SECTION 11: Toxicological information

Information on Toxicological Effects

Substance / Mixture

Acute Toxicity	Hazard	Additional Information	LC50/LD50 Data
Inhalation	Unlikely to be harmful		>5 mg/L (mist, estimated)
Dermal	Unlikely to be harmful		> 2 g/kg (estimated)
Oral	Unlikely to be harmful		> 5 g/kg (estimated)

Aspiration Hazard: Not expected to be an aspiration hazard.

Skin Corrosion/Irritation: Not expected to be irritating.

Serious Eye Damage/Irritation: Not expected to be irritating.

Skin Sensitization: No information available on the mixture, however none of the components have been classified for skin sensitization (or are below the concentration threshold for classification).

Respiratory Sensitization: No information available.

Specific Target Organ Toxicity (Single Exposure): No information available on the mixture, however none of the components have been classified for target organ toxicity (or are below the concentration threshold for classification).

Specific Target Organ Toxicity (Repeated Exposure): No information available on the mixture, however none of the components have been classified for target organ toxicity (or are below the concentration threshold for classification).

Carcinogenicity: No information available on the mixture, however none of the components have been classified for carcinogenicity (or are below the concentration threshold for classification).

Germ Cell Mutagenicity: No information available on the mixture, however none of the components have been classified for germ cell mutagenicity (or are below the concentration threshold for classification).

Reproductive Toxicity: No information available on the mixture, however none of the components have been classified for reproductive toxicity (or are below the concentration threshold for classification).

Information on Toxicological Effects of Components

Distillates, petroleum, hydrotreated heavy paraffinic

Carcinogenicity: This oil has been highly refined by a variety of processes to reduce aromatics and improve performance characteristics. It meets the IP-346 criteria of less than 3 percent PAH's and is not considered a carcinogen by the International Agency for Research on Cancer.

SECTION 12: Ecological information

GHS Classification: No classified hazards

Toxicity: All acute aquatic toxicity studies on samples of lubricant base oils show acute toxicity values greater than 100 mg/L for invertebrates, algae and fish. These tests were carried out on water accommodated fractions and the results are consistent with the predicted aquatic toxicity of these substances based on their hydrocarbon compositions.

Persistence and Degradability: The hydrocarbons in this material are not readily biodegradable, but since they can be degraded by microorganisms, they are regarded as inherently biodegradable.

Bioaccumulative Potential: Log Kow values measured for the hydrocarbon components of this material are greater than 5.3, and therefore regarded as having the potential to bioaccumulate. In practice, metabolic processes may reduce bioconcentration.

Mobility in Soil: Volatilization to air is not expected to be a significant fate process due to the low vapor pressure of this material. In water, base oils will float and spread over the surface at a rate dependent upon viscosity. There will be significant removal of hydrocarbons from the water by sediment adsorption. In soil and sediment, hydrocarbon components will show low mobility with adsorption to sediments being the predominant physical process. The main fate process is expected to be slow biodegradation of the hydrocarbon constituents in soil and sediment.

Other adverse effects: None anticipated.

SECTION 13: Disposal considerations

The generator of a waste is always responsible for making proper hazardous waste determinations and needs to consider state and local requirements in addition to federal regulations. This material, if discarded as produced, would not be a federally regulated RCRA "listed" hazardous waste and is not believed to exhibit characteristics of hazardous waste. See Sections 7 and 8 for information on handling, storage and personal protection and Section 9 for physical/chemical properties. It is possible that the material as produced contains constituents which are not required to be listed in the SDS but could affect the hazardous waste determination. Additionally, use which results in chemical or physical change of this material could subject it to regulation as a hazardous waste. This material under most intended uses would become "Used Oil" due to contamination by physical or chemical impurities. Whenever possible, Recycle used oil in accordance with applicable federal and state or local regulations. Container contents should be completely used and containers should be emptied prior to discard.

SECTION 14: Transport information

U.S. Department of Transportation (DOT)

UN Number: Not regulated

UN proper shipping name: None

Transport hazard class(es): None

Packing Group: None

Environmental Hazards: This product does not meet the DOT/UN/IMDG/IMO criteria of a marine pollutant

Special precautions for user: If shipped by land in a packaging having a capacity of 3,500 gallons or more, the provisions of 49 CFR, Part 130 apply. (Contains oil)

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code: Not applicable

SECTION 15: Regulatory information

CERCLA/SARA - Section 302 Extremely Hazardous Substances and TPQs (in pounds):

This material does not contain any chemicals subject to the reporting requirements of SARA 302 and 40 CFR 372.

CERCLA/SARA - Section 311/312 (Title III Hazard Categories)

Acute Health Hazard:	No
Chronic Health Hazard:	No
Fire Hazard:	No
Pressure Hazard:	No
Reactive Hazard:	No

CERCLA/SARA - Section 313 and 40 CFR 372:

This material does not contain any chemicals subject to the reporting requirements of SARA 313 and 40 CFR 372.

EPA (CERCLA) Reportable Quantity (in pounds):

This material does not contain any chemicals with CERCLA Reportable Quantities.

California Proposition 65:

This material does not contain any chemicals which are known to the State of California to cause cancer, birth defects or other reproductive harm at concentrations that trigger the warning requirements of California Proposition 65.

International Hazard Classification

Canada:

This product has been classified in accordance with the hazard criteria of the Hazardous Products Regulations (SOR/2015-17) and the SDS contains all the information required by the Regulations.

International Inventories

All components are either listed on the US TSCA Inventory, or are not regulated under TSCA.
All components are either on the DSL, or are exempt from DSL listing requirements.

U.S. Export Control Classification Number: EAR99

SECTION 16: Other information

Issue Date:	Previous Issue Date:	SDS Number	Status:
28-Jun-2016	23-Jun-2016	LBPH814637	FINAL

Revised Sections or Basis for Revision:

New SDS

Guide to Abbreviations:

ACGIH = American Conference of Governmental Industrial Hygienists; CASRN = Chemical Abstracts Service Registry Number; CEILING = Ceiling Limit (15 minutes); CERCLA = The Comprehensive Environmental Response, Compensation, and Liability Act; EPA = Environmental Protection Agency; GHS = Globally Harmonized System; IARC = International Agency for Research on Cancer; INSHT = National Institute for Health and Safety at Work; IOPC = International Oil Pollution Compensation; LEL = Lower Explosive Limit; NE = Not Established; NFPA = National Fire Protection Association; NTP = National Toxicology Program; OSHA = Occupational Safety and Health Administration; PEL = Permissible Exposure Limit (OSHA); SARA = Superfund Amendments and Reauthorization Act; STEL = Short Term Exposure Limit (15 minutes); TLV = Threshold Limit Value (ACGIH); TWA = Time Weighted Average (8 hours); UEL = Upper Explosive Limit; WHMIS = Worker Hazardous Materials Information System (Canada)

Disclaimer of Expressed and implied Warranties:

The information presented in this Safety Data Sheet is based on data believed to be accurate as of the date this Safety Data Sheet was prepared. HOWEVER, NO WARRANTY OF MERCHANTABILITY, FITNESS FOR ANY PARTICULAR PURPOSE, OR ANY OTHER WARRANTY IS EXPRESSED OR IS TO BE IMPLIED REGARDING THE ACCURACY OR COMPLETENESS OF THE INFORMATION PROVIDED ABOVE, THE RESULTS TO BE OBTAINED FROM THE USE OF THIS INFORMATION OR THE PRODUCT, THE SAFETY OF THIS PRODUCT, OR THE HAZARDS RELATED TO ITS USE. No responsibility is assumed for any damage or injury resulting from abnormal use or from any failure to adhere to recommended practices. The information provided above, and the product, are furnished on the condition that the person receiving them shall make their own determination as to the suitability of the product for their particular purpose and on the condition that they assume the risk of their use. In addition, no authorization is given nor implied to practice any patented invention without a license.

Section 1: IDENTIFICATION**Product Name:** Simple Green® All-Purpose Cleaner**Additional Names:****Manufacturer's Part Number:** **Please refer to Section 16***Recommended Use:** Cleaner & Degreaser for water tolerant surfaces.**Restrictions on Use:** Do not use on non-rinsable surfaces.**Company:** Sunshine Makers, Inc.
15922 Pacific Coast Highway
Huntington Beach, CA 92649 USA**Telephone:** 800-228-0709 • 562-795-6000 *Mon – Fri, 8am – 5pm PST***Fax:** 562-592-3830**Email:** info@simplegreen.com**Emergency Phone:** Chem-Tel 24-Hour Emergency Service: 800-255-3924**Section 2: HAZARDS IDENTIFICATION****This product is not classified as hazardous under 2012 OSHA Hazard Communication Standards (29 CFR 1910.1200).**OSHA HCS 2012Label Elements**Signal Word:** None**Hazard Symbol(s)/Pictogram(s):** None required**Hazard Statements:** None**Precautionary Statements:** None**Hazards Not Otherwise Classified (HNOC):** None**Other Information:** None Known**Section 3: COMPOSITION/INFORMATION ON INGREDIENTS**

<u>Ingredient</u>	<u>CAS Number</u>	<u>Percent Range</u>
Water	7732-18-5	> 84.8%*
Ethoxylated Alcohol	68439-46-3	< 5%*
Sodium Citrate	68-04-2	< 5%*
Tetrasodium <i>N,N</i> -bis(carboxymethyl)-L-glutamate	51981-21-6	< 1%*
Sodium Carbonate	497-19-8	< 1%*
Citric Acid	77-92-9	< 1%*
Isothiazolinone mixture	55965-84-9	< 0.2%*
Fragrance	Proprietary Mixture	< 1%*
Colorant	Proprietary Mixture	< 1%*

specific percentages of composition are being withheld as a trade secret*Section 4: FIRST-AID MEASURES****Inhalation:** Not expected to cause respiratory irritation. If adverse effect occurs, move to fresh air.**Skin Contact:** Not expected to cause skin irritation. If adverse effect occurs, rinse skin with water.**Eye Contact:** Not expected to cause eye irritation. If adverse effect occurs, flush eyes with water.**Ingestion:** May cause upset stomach. Drink plenty of water to dilute. See section 11.**Most Important Symptoms/Effects, Acute and Delayed:** None known.**Indication of Immediate Medical Attention and Special Treatment Needed, if necessary:** Treat symptomatically

Section 5: FIRE-FIGHTING MEASURES

Suitable & Unsuitable Extinguishing Media: Use Dry chemical, CO₂, water spray or "alcohol" foam. Avoid high volume jet water.
Specific Hazards Arising from Chemical: In event of fire, fire created carbon oxides may be formed.
Special Protective Actions for Fire-Fighters: Wear positive pressure self-contained breathing apparatus; Wear full protective clothing.

This product is non-flammable. See Section 9 for Physical Properties.

Section 6: ACCIDENTAL RELEASE MEASURES

Personal Precautions, Protective Equipment and Emergency Procedures: *For non-emergency and emergency personnel:* See section 8 – personal protection. Avoid eye contact. Safety goggles suggested.

Environmental Precautions: Do not allow into open waterways and ground water systems.

Methods and Materials for Containment and Clean Up: Dike or soak up with inert absorbent material. See section 13 for disposal considerations.

Section 7: HANDLING AND STORAGE

Precautions for Safe Handling: Ensure adequate ventilation. Keep out of reach of children. Keep away from heat, sparks, open flame and direct sunlight. Do not pierce any part of the container. Do not mix or contaminate with any other chemical. Do not eat, drink or smoke while using this product.

Conditions for Safe Storage including Incompatibilities: Keep container tightly closed. Keep in cool dry area. Avoid prolonged exposure to sunlight. Do not store at temperatures above 109°F (42.7°C). If separation occurs, mix the product for reconstitution.

Section 8: EXPOSURE CONTROLS / PERSONAL PROTECTION

Exposure Limit Values: No components listed with TWA or STEL values under OSHA or ACGIH.

Appropriate Engineering Controls: Showers, eyewash stations, ventilation systems

Individual Protection Measures / Personal Protective Equipment (PPE)

Eye Contact: Use protective glasses or safety goggles if splashing or spray-back is likely.
Respiratory: Use in well ventilated areas or local exhaust ventilations when cleaning small spaces.
Skin Contact: Use protective gloves (any material) when used for prolonged periods or dermally sensitive.
General Hygiene Considerations: Wash thoroughly after handling and before eating or drinking.

Section 9: PHYSICAL AND CHEMICAL PROPERTIES

Appearance:	Green Liquid	Partition Coefficient: n-octanol/water:	Not determined
Odor:	Added sassafras odor	Autoignition Temperature:	Non-flammable
Odor Threshold:	Not determined	Decomposition Temperature:	109°F
pH ASTM D-1293:	8.5 – 9.5	Viscosity:	Like water
Freezing Point ASTM D-1177:	0-3.33°C (32-38°F)	Specific Gravity ASTM D-891:	1.01 – 1.03
Boiling Point & Range ASTM D-1120:	101°C (213.8°F)	VOCs:	<i>**Water & fragrance exemption in calculation</i>
Flash Point ASTM D-93:	> 212°F	SCAQMD 304-91 / EPA 24:	0 g/L 0 lb/gal 0%
Evaporation Rate ASTM D-1901:	½ Butyl Acetate @ 25°C	CARB Method 310**:	2.5 g/L 0.021 lb/gal 0.25%
Flammability (solid, gas):	Not applicable	SCAQMD Method 313:	Not tested
Upper/Lower Flammability or Explosive Limits:	Not applicable	VOC Composite Partial Pressure:	Not determined
Vapor Pressure ASTM D-323:	0.60 PSI @77°F, 2.05 PSI @100°F	Relative Density ASTM D-4017:	8.34 – 8.42 lb/gal
Vapor Density:	Not determined	Solubility:	100% in water

Section 10: STABILITY AND REACTIVITY

Reactivity:	Non-reactive.
Chemical Stability:	Stable under normal conditions 70°F (21°C) and 14.7 psig (760 mmHg).
Possibility of Hazardous Reactions:	None known.
Conditions to Avoid:	Excessive heat or cold.
Incompatible Materials:	Do not mix with oxidizers, acids, bathroom cleaners, or disinfecting agents.
Hazardous Decomposition Products:	Normal products of combustion - CO, CO ₂ .

Section 11: TOXICOLOGICAL INFORMATION

Likely Routes of Exposure:	Inhalation -	Overexposure may cause headache.
	Skin Contact -	Not expected to cause irritation, repeated contact may cause dry skin.
	Eye Contact -	Not expected to cause irritation.
	Ingestion -	May cause upset stomach.

Symptoms related to the physical, chemical and toxicological characteristics: no symptoms expected under typical use conditions.

Delayed and immediate effects and or chronic effects from short term exposure: no symptoms expected under typical use conditions.

Delayed and immediate effects and or chronic effects from long term exposure: headache, dry skin, or skin irritation may occur.

Interactive effects: Not known.

Numerical Measures of Toxicity

Acute Toxicity:	Oral LD ₅₀ (rat)	> 5 g/kg body weight
	Dermal LD ₅₀ (rabbit)	> 5 g/kg body weight

Calculated via OSHA HCS 2012 / Globally Harmonized System of Classification and Labelling of Chemicals

Skin Corrosion/Irritation:	Non-irritant per Dermal Irritation® assay modeling. No animal testing performed.
Eye Damage/Irritation:	Minimal irritant per Ocular Irritation® assay modeling. No animal testing performed.
Germ Cell Mutagenicity:	Mixture does not classify under this category.
Carcinogenicity:	Mixture does not classify under this category.
Reproductive Toxicity:	Mixture does not classify under this category.
STOT-Single Exposure:	Mixture does not classify under this category.
STOT-Repeated Exposure:	Mixture does not classify under this category.
Aspiration Hazard:	Mixture does not classify under this category.

Section 12: ECOLOGICAL INFORMATION

Ecotoxicity:	Volume of ingredients used does not trigger toxicity classifications under the Globally Harmonized System of Classification and Labelling of Chemicals.
Aquatic:	Aquatic Toxicity - Low, based on OECD 201, 202, 203 + Microtox: EC ₅₀ & IC ₅₀ ≥100 mg/L. Volume of ingredients used does not trigger toxicity classifications under the Globally Harmonized System of Classification and Labelling of Chemicals.
Terrestrial:	Not tested on finished formulation.
Persistence and Degradability:	Readily Biodegradable per OCED 301D, Closed Bottle Test
Bioaccumulative Potential:	No data available.
Mobility in Soil:	No data available.
Other Adverse Effects:	No data available.

Section 13: DISPOSAL CONSIDERATIONS

Unused or Used Liquid: May be considered hazardous in your area depending on usage and tonnage of disposal – check with local, regional, and or national regulations for appropriate methods of disposal.

Empty Containers: May be offered for recycling.

Never dispose of used degreasing rinsates into lakes, streams, and open bodies of water or storm drains.

Section 14: TRANSPORT INFORMATION

U.N. Number: Not applicable
Transport Hazard Class(es): Not applicable
Packing Group: Not applicable
Environmental Hazards: Marine Pollutant - NO
U.N. Proper Shipping Name: Cleaning Compound, Liquid NOI
NMFC Number: 48580-3
Class: 55
Transport in Bulk (according to Annex II of MARPOL 73/78 and IBC Code): Unknown.
Special precautions which user needs to be aware of/comply with, in connection with transport or conveyance either within or outside their premises: None known.

U.S. (DOT) / Canadian TDG: Not Regulated for shipping.
IMO / IDMG: Not classified as Hazardous
ICAO/ IATA: Not classified as Hazardous
ADR/RID: Not classified as Hazardous

Section 15: REGULATORY INFORMATION

All components are listed on: TSCA and DSL Inventory.

SARA Title III: Sections 311/312 Hazard Categories – Not applicable.
 Sections 313 Superfunds Amendments and Reauthorizations Act of 1986 – Not applicable.
 Sections 302 – Not applicable.

Clean Air Act (CAA): Not applicable

Clean Water Act (CWA): Not applicable

State Right To Know Lists: No ingredients listed

California Proposition 65: No ingredients listed

Texas ESL:

Ethoxylated Alcohol	68439-46-3	60 µg/m ³ long term	600 µg/m ³ short term
Sodium Citrate	68-04-2	5 µg/m ³ long term	50 µg/m ³ short term
Sodium Carbonate	497-19-8	5 µg/m ³ long term	50 µg/m ³ short term
Citric Acid	77-92-9	10 µg/m ³ long term	100 µg/m ³ short term

Section 16: OTHER INFORMATION

<u>Size</u>	<u>UPC</u>	<u>Size</u>	<u>UPC</u>
2 oz. Pump	043318130366	1 Gallon w/ Dilution Bottle	043318000669
2 oz. Pump	043318131035	1 Gallon	043318000799
4 oz. Pump	043318130014	1 Gallon w/ Dilution Bottle	043318001383
16 oz. Trigger	043318130021	1 Gallon w/ Dilution Bottle	043318002021
22 oz. Trigger	043318130229	1 Gallon	043318130052
24 oz. Trigger, 12 per case	043318000034	1 Gallon w/ Dilution Bottle, 112 per case	043318480140
24 oz. Trigger	043318000300	1 Gallon w/ Dilution Bottle, 4 per case	043318480416
24 oz. Trigger	043318130137	1 Gallon w/ Dilution Bottle, 24 per case	043318480492
32 oz. Trigger	043318000652	1 Gallon w/ laundry	043318002052
32 oz. Trigger	043318130335	1 Gallon w/ towel	043318001222
67.6 oz.	043318000393	140 oz.	043318001390
67.6 oz.	043318130144	140 oz., 168 per case	043318561405
1 Gallon w/ Dilution Bottle	043318000539	140 oz. w/ Dilution Bottle	043318001468
1 Gallon w/ Dilution Bottle	043318000645		

USA items listed only. Not all items listed. USA items may not be valid for international sale.

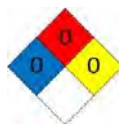
**Section 16: OTHER INFORMATION - continued****NFPA:**

Health – None

Flammability – Non-flammable

Stability – Stable

Special - None

**Acronyms**

NTP National Toxicology Program

OSHA Occupational Safety and Health Administration

TSCA Toxic Substances Control Act

IARC

CPSC

DSL

International Agency for Research on Cancer

Consumer Product Safety Commission

Domestic Substances List

Prepared / Revised By: Sunshine Makers, Inc., Regulatory Department.**This SDS has been revised in the following sections:** Revised SDS layout

DISCLAIMER: The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.

Safety Data Sheet

according to Hazard Communication Standard; 29 CFR 1910.1200



WINDEX® GLASS & MORE CLEANER

Version 1.1

Print Date 03/04/2015

Revision Date 02/25/2015

SDS Number 350000015793

1. PRODUCT AND COMPANY IDENTIFICATION

Product information

Product name : WINDEX® GLASS & MORE CLEANER

Recommended use : Hard Surface Cleaner

Manufacturer, importer, supplier : S.C. Johnson & Son, Inc.
1525 Howe Street
Racine WI 53403-2236

Telephone : +18005585252

Emergency telephone number : 24 Hour Medical Emergency Phone: (866)231-5406
24 Hour International Emergency Phone: (703)527-3887
24 Hour Transport Emergency Phone: (800)424-9300

2. HAZARDS IDENTIFICATION

Classification of the substance or mixture

Globally Harmonized System (GHS) Classification

Hazard classification	Hazard category	Hazards identification
Gases under pressure	Compressed gas	Contains gas under pressure; may explode if heated.

Labelling

Hazard symbols

Gas cylinder

Signal word

Warning

Hazard statements

Contains gas under pressure; may explode if heated.

Precautionary statements

Protect from sunlight. Store in a well-ventilated place.

Other hazards : None identified

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3. COMPOSITION/INFORMATION ON INGREDIENTS

Chemical Name	CAS-No.	Weight percent
Ethyl alcohol	64-17-5	1.00 - 5.00

The specific chemical identity and/or exact percentage (concentration) of this composition has been withheld as a trade secret.

For additional information on product ingredients, see www.whatsinsidescjohnson.com.

4. FIRST AID MEASURES

Eye contact	: No special requirements
Skin contact	: No special requirements
Inhalation	: No special requirements.
Ingestion	: No special requirements

5. FIREFIGHTING MEASURES

Suitable extinguishing media	: Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide.
Specific hazards during firefighting	: Aerosol Product - Containers may rocket or explode in heat of fire.
Further information	: Fight fire from maximum distance or protected area. Cool and use caution when approaching or handling fire-exposed containers. Wear full protective clothing and positive pressure self-contained breathing apparatus. In case of fire and/or explosion do not breathe fumes.
NFPA Classification	: NFPA Level 1 Aerosol

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6. ACCIDENTAL RELEASE MEASURES

- Personal precautions** : Remove all sources of ignition.
Wash thoroughly after handling.
- Environmental precautions** : Outside of normal use, avoid release to the environment.
- Methods and materials for containment and cleaning up** : Sweep up and shovel into suitable containers for disposal.
Clean residue from spill site.

7. HANDLING AND STORAGE

- Handling**
- Precautions for safe handling** : Avoid contact with skin, eyes and clothing.
For personal protection see section 8.
KEEP OUT OF REACH OF CHILDREN AND PETS.
- Advice on protection against fire and explosion** : Normal measures for preventive fire protection.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Occupational Exposure Limits

Components	CAS-No.	mg/m3	ppm	Non-standard units	Basis
Ethyl alcohol	64-17-5	1,900 mg/m3	1,000 ppm	-	OSHA TWA
Ethyl alcohol	64-17-5	-	1,000 ppm	-	ACGIH STEL

Personal protective equipment

- Respiratory protection** : No special requirements.
- Hand protection** : No special requirements.
- Eye protection** : No special requirements.

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Skin and body protection : No special requirements.

Hygiene measures : Handle in accordance with good industrial hygiene and safety practice. Wash thoroughly after handling.

9. PHYSICAL AND CHEMICAL PROPERTIES

Form : aerosol
Compressed gas

Color : clear

Odor : pleasant

Odour Threshold : No data available

pH : 6.0 - 7.0
at (20 °C)

Melting point/freezing point : No data available

Initial boiling point and boiling range : No data available

Flash point : does not flash

Evaporation rate : No data available

Flammability (solid, gas) : Does not sustain combustion.

Upper/lower flammability or explosive limits : No data available

Vapour pressure : similar to water

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Vapour density	: No data available	
Relative density	: 0.99 g/cm3 at 20 °C	
Solubility(ies)	: completely soluble	
Partition coefficient: n-octanol/water	: No data available	
Auto-ignition temperature	: No data available	
Decomposition temperature	: No data available	
Viscosity, dynamic	: similar to water	
Viscosity, kinematic	: similar to water	
Oxidizing properties	: No data available	
Volatile Organic Compounds Total VOC (wt. %)*	: 1.9 % - additional exemptions may apply *as defined by US Federal and State Consumer Product Regulations	
Other information	: None identified	:

10. STABILITY AND REACTIVITY

Possibility of hazardous reactions	: If accidental mixing occurs and toxic gas is formed, exit area immediately. Do not return until well ventilated.

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- Conditions to avoid** : Direct sources of heat.
- Incompatible materials** : Do not mix with bleach or any other household cleaners.
Strong bases
- Hazardous decomposition products** : Thermal decomposition can lead to release of irritating gases and vapours.

11. TOXICOLOGICAL INFORMATION

- Emergency Overview** : Warning
- Acute oral toxicity** : LD50
Calculated
> 5,000 mg/kg
- Acute inhalation toxicity** : No data available
- Acute dermal toxicity** : LD50
Calculated
> 5,000 mg/kg

GHS Properties	Classification	Routes of entry
Acute toxicity	No classification proposed	-
Skin corrosion/irritation	No classification proposed	-
Serious eye damage/eye irritation	No classification proposed	-
Skin sensitisation	No classification proposed	-
Respiratory sensitisation	No classification proposed	-
Germ cell mutagenicity	No classification proposed	-
Carcinogenicity	No classification proposed	-
Reproductive toxicity	No classification proposed	-

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Specific target organ toxicity - single exposure	No classification proposed	-
Specific target organ toxicity - repeated exposure	No classification proposed	-
Aspiration hazard	No classification proposed	-

Aggravated Medical Condition : None known.

12. ECOLOGICAL INFORMATION

Product : The product itself has not been tested.

Toxicity

The ingredients in this formula have been reviewed and no adverse impact to the environment is expected when used according to label directions.

Toxicity to fish

Components	End point	Species	Value	Exposure time
Ethyl alcohol	flow-through test LC50	Pimephales promelas (fathead minnow)	14,200 mg/l	96 h

Toxicity to aquatic invertebrates

Components	End point	Species	Value	Exposure time
Ethyl alcohol	static test EC50	Daphnia magna (Water flea)	2 mg/l	48 h

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	NOEC	Daphnia magna	9.6 mg/l	9 d

Toxicity to aquatic plants

Components	End point	Species	Value	Exposure time
Ethyl alcohol	Static EC50	Chlorella vulgaris (Fresh water algae)	275 mg/l	72 h

Persistence and degradability

Component	Biodegradation	Exposure time	Summary
Ethyl alcohol	97 %	28 d	Readily biodegradable

Bioaccumulative potential

Component	Bioconcentration factor (BCF)	Partition Coefficient n-Octanol/water (log)
Ethyl alcohol	3.2 estimated	-0.35 Measured

Mobility

Component	End point	Value
Ethyl alcohol	No data available	

PBT and vPvB assessment

Component	Results
Ethyl alcohol	Not fulfilling PBT and vPvB criteria

Other adverse effects : No data available**13. DISPOSAL CONSIDERATIONS**

Consumer may discard empty container in trash, or recycle

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where facilities exist.

14. TRANSPORT INFORMATION

Please refer to the Bill of Lading/receiving documents for up-to-date shipping information.

	Land transport	Sea transport	Air transport
UN number	1950	1950	1950
UN proper shipping name	UN 1950 AEROSOLS, non-flammable, 2.2	UN 1950 AEROSOLS, non-flammable, 2.2	UN 1950 AEROSOLS, non-flammable, 2.2
Transport hazard class(es)	2.2	2	2.2
Packing group	-	-	-
Environmental hazards	-	-	-
Special precautions for user	Limited quantities derogation may be applicable to this product, please check transport documents.	Limited quantities derogation may be applicable to this product, please check transport documents.	Limited quantities derogation may be applicable to this product, please check transport documents.

15. REGULATORY INFORMATION

- Notification status** : All ingredients of this product are listed or are excluded from listing on the U.S. Toxic Substances Control Act (TSCA) Chemical Substance Inventory.
- Notification status** : All ingredients of this product comply with the New Substances Notification requirements under the Canadian Environmental Protection Act (CEPA).
- California Prop. 65** : This product is not subject to the reporting requirements under California's Proposition 65.

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according to Hazard Communication Standard; 29 CFR 1910.1200



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16. OTHER INFORMATION

HMIS Ratings

Health	0
Flammability	2
Reactivity	0

NFPA Ratings

Health	0
Fire	1
Reactivity	0
Special	-

This information is being provided in accordance with the Occupational Safety and Health Administration (OSHA) regulation (29 CFR 1910.1200). The information supplied is designed for workplaces where product use and frequency of exposure exceeds that established for the labeled consumer use.

Further information

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Prepared by	SC Johnson Global Safety Assessment & Regulatory Affairs (GSARA)

APPENDIX E: Job Safety Analyses

Company Confidential

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JOB HAZARD ANALYSIS

Document Control ID:
HS.00023.FM-10HS

Revision Date:
18-May-2011

Revision #:
6

Owner:
Health & Safety

SECTION 1: JOB/TASK/PROCESS (Document General Information Below)

SCOPE OF WORK: Site Mobilization			DURATION OF PROJECT/TASK:
ANALYSIS LED BY (Print Name): Dave Woodruff	TITLE: Project Manager	ORIGINAL ANALYSIS DATE: June 2017	REVISION DATE: 07/18/24
REVIEWED BY (Print Name):: Greg Bird	TITLE: Sr. H&S Manager	APPROVED BY: Same	TITLE:

SECTION 2: Chemical/Physical/ Biological Hazards (Describe Job Hazard Agents Identified)

Chemical Agents (HAZCOM/ WHMIS MSDS Review)	Physical Agents	Biological Agents
None Anticipated for this task	Vehicles, Equipment, Overhead hazards, area topography.	Heat Stress, Insects, Snakes and Poisonous Plants.

SECTION 3: PPE HAZARD ASSESSMENT SUMMARY

Head	☒ Hard Hat ☐ Side Impact Hard Hat ☐ DOT Approved Helmet ☐ Lock-On-Life Support Helmet ☐ Other:
Eyes/Face/Neck	☒ Safety Glasses with Side Shields ☐ Goggles – Chemical ☐ Goggles – Dust ☐ Face Shield ☐ Welding Helmet ☐ Balaclava (F.R.) ☐ Other: _____
Respiratory	☐ Dust Mask ☐ Half Face Respirator/Cartridge Type: _____ ☒ Full Face AP Respirator/Cartridge Type: <u>GME-P100</u> ☐ PAPR/ Cartridge Type: _____ ☐ SABA ☐ SCBA ☐ Lock-On-Life Support Helmet ☐ Other: _____
Ears/Hearing	☒ Ear Plug ☒ Ear Muff ☐ Double (Combination Ear Plugs & Ear Muffs) ☐ Other:
Hands/Arms	☐ Cotton Gloves ☒ Leather Gloves ☐ Puncture/Cut Resistant ☒ PVC ☒ Nitrile ☐ Anti-vibration ☐ Impact Protection ☐ Thermal ☐ Sleeves ☐ Wristlets/Type: _____ ☐ Other: _____
Body	☐ Fire Retardant Coveralls/Uniform ☒ Chemical Protective Clothing/Type: <u>Coverall</u> ☒ Tyvek/Type: <u>QC-Tychem 2000</u> ☐ Apron ☐ Sleeves ☐ Life Jacket/Vest ☒ High Visibility Vest ☐ Heat Reflective Suit ☐ Foul Weather Gear ☐ Cool Vest ☐ Kevlar Cut Resistant Suits ☐ Other:
Feet	☒ Safety Boots – Leather or Rubber ☐ Metatarsals (Feet & Shin) ☐ Ice Cleats (Slip-Overs) ☐ Booties/ Type: ☐ Other: _____
Covid-19	☒ Face covering for all tasks at all times ☒ Refer to current Pandemic Management Plan



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SECTION 4: HAZARD ANALYSIS PROCESS *(Document Hazard Analysis and Controls Based on each Job Step/ Task Sequence)*

Sequence Of Job Steps/Tasks (Number)	Hazards/Potential Hazards & Effects (What could go wrong?)	Recommended Hazard Control Or Safe Job Procedures (How can harm be prevented?)	Required PPE (List PPE required for each Job Step)
1. For all activities in work area	a) Toxic Plants (poison ivy; poison oak; etc.), b) Exposure to Ticks, insects, snakes, spiders	a) Avoid direct skin contact with vegetation. Use "Ivy-X" or similar products to shield skin. b) Tuck pants into socks to prevent ticks from reaching skin. Check clothing and skin after leaving area for presence to Ticks. Apply insect repellent, such as Off, Cutter or other consumer product to lower extremities. Do not allow gloves on the ground as insects, spiders can enter them. Check any shaded areas for insects before reaching in with hands. Disturb vegetated areas with long handles tools, such as a rake or shovel, before entering to flush out any snakes that may be present. Listen for sounds of movement in vegetated areas before entering.	Level-D Safety Glasses with Side Shields Safety Boots Hard Hat
2. Pre-Trip/Post Trip Inspection	a) Strains/Sprains b) Pinch points / contact c) Slips/trips/falls d) Slip/Trips/Falls from vehicles/machines. Exposure to motor oil, hydraulic oil and various other vehicle maintenance fluids.	a) Use proper lifting procedures such as: - Do not lift more than 40 lbs. alone. - Use mechanical assist when available - Use two people for "Buddy Lift" for heavy items. - Keeping back straight, lifting with legs - Do not turn your back while handling a load, take a step to the side to turn. - "Build-a-Bridge" reduce strain on lower back by bracing one hand against a stationary object while lifting with the other to lift. b) Keep hands clear of pinch points when opening / closing engine compartment c) Follow proper housekeeping, Police area and mark or remove trip hazards d) Ensure area has adequate lighting, use appropriate steps and grab handles when climbing on units, maintain 3 points of contact, maintain proper body positioning when opening engine compartment. Wear PVC gloves to avoid skin contact with vehicle fluids.	Level-D Safety Glasses with Side Shields Safety Boots Hard Hat



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3. Entering/Exiting Vehicle	a) Slips/Trips/Falls	a) Ensure shoe soles are clear of debris, use appropriate steps and grab handles when climbing on units, maintain 3 points of contact.	Level-D Safety Glasses with Side Shields Safety Boots Hard Hat
4. Driving	a. Strains/Sprains b. Contact collusion c. Sun glare	a) Adjust seat to provide maximum back and leg support, inspect seats for defects prior to use b) Wear seat belt c) Utilize sun glasses as necessary to prevent sun glare	Steel toe boots, sunglasses as needed
5. Entering project site	a. Collisions with other vehicles, structures or obstacles.	a) Identify safe route to staging areas and work zones.	Steel toe boots, sunglasses as needed
6. Positioning / parking equipment	a. Collisions with other vehicles, structures or obstacles, overhead hazards b. Struck/crushed by vehicle or equipment c. Uncontrolled moving of parked vehicles	a) Keep access route clear. Identify and clear overhead hazards such as electrical wires, piping or structures. Erect high-visibility warning line 10 feet below power lines. Set up overhead hazard signs to warn drivers. b) utilize spotter for all vehicle movements, forward and reverse c) Stake out parking/staging spot with traffic cones chock all vehicle wheels	Level-D Safety Glasses with Side Shields, work Gloves, Safety Boots Hard Hat High visibility vest

SECTION 5: Atmospheric Monitoring Required: ☐ Yes ☐ No

[For assistance determining exposure action levels please refer to Clean Harbors' Respiratory Protection Standard - Appendix 9]

List Substance(s) or Material(s) of Concern Below:	Monitoring Instrument	Substance / Material Exposure Action Levels			
		Level A	Level B	Level C	Level D

SECTION 6: Training (Document the required Job Task Training)

40 Hour
Site specific, as needed



JOB HAZARD ANALYSIS

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SECTION 7: Emergency Procedures (*Document the Emergency Response Procedures - i.e. First Aid, Emergency Call #'s, etc.*)

See HASP for emergency information

SECTION 8: Decontamination Procedures (*Document the Decontamination Procedures –i.e. People and Equipment*)

SECTION 9: Additional Job Specific Considerations: ☐ Yes ☐ No

[illegible]

SECTION 1: JOB/TASK/PROCESS (Document General Information Below)

SCOPE OF WORK: Earthwork –Loading of impacted			DURATION OF PROJECT/TASK:
ANALYSIS LED BY (Print Name): Dave Woodruff	TITLE: Project Manager	ORIGINAL ANALYSIS DATE: June 2017	REVISION DATE: 07/02/24
REVIEWED BY (Print Name):: Greg Bird	TITLE: Sr. H&S Manager	APPROVED BY: Same	TITLE:

SECTION 2: Chemical/Physical/ Biological Hazards (Describe Job Hazard Agents Identified)

Chemical Agents (HAZCOM/ WHMIS MSDS Review)	Physical Agents	Biological Agents
EXPOSURE TO IMPACTED SOIL. See HASP for constituents of concern	Vehicles, Equipment, Subsurface and Overhead hazards, area topography, high noise levels, Slip-Trip-falls.	Heat Stress

SECTION 3: PPE HAZARD ASSESSMENT SUMMARY

Head	☒ Hard Hat ☐ Side Impact Hard Hat ☐ DOT Approved Helmet ☐ Lock-On-Life Support Helmet ☐ Other:				
Eyes/Face/Neck	☒ Safety Glasses with Side Shields ☐ Goggles – Chemical ☐ Goggles – Dust ☐ Face Shield ☐ Welding Helmet ☐ Balaclava (F.R.) ☐ Other:				
Respiratory	☐ Dust Mask ☐ Half Face Respirator/Cartridge Type: _____ ☐ Full Face AP Respirator/Cartridge Type: _____ ☐ PAPR/ Cartridge Type: _____ ☐ SABA ☐ SCBA ☐ Lock-On-Life Support Helmet ☐ Other:				
Ears/Hearing	☒ Ear Plug ☐ Ear Muff ☐ Double (Combination Ear Plugs & Ear Muffs) ☐ Other:				
Hands/Arms	☐ Cotton Gloves ☒ Leather Gloves ☐ Puncture/Cut Resistant ☐ PVC ☐ Nitrile ☐ Anti-vibration ☐ Impact Protection ☐ Thermal ☐ Sleeves ☐ Wristlets/Type: _____ ☐ Other:				
Body	☐ Fire Retardant Coveralls/Uniform ☐ Chemical Protective Clothing/Type: <u>Coverall</u> ☐ Tyvek/Type: _____ ☐ Apron ☐ Sleeves ☐ Life Jacket/Vest ☒ High Visibility Vest/shirt ☐ Heat Reflective Suit ☐ Foul Weather Gear ☐ Cool Vest ☐ Kevlar Cut Resistant Suits ☐ Other:				
Feet	☒ Safety Boots – Leather or Rubber ☐ Metatarsals (Feet & Shin) ☐ Ice Cleats (Slip-Overs) ☐ Booties/ Type: _____ ☐ Other:				
Covid	☒ Cloth Face Covering within 6ft of others ☒ Refer to HASP Appendix F Pandemic Management Plan				

SECTION 4: HAZARD ANALYSIS PROCESS (Document Hazard Analysis and Controls Based on each Job Step/ Task Sequence)

Sequence Of Job Steps/Tasks (Number)	Hazards/Potential Hazards & Effects (What could go wrong?)	Recommended Hazard Control Or Safe Job Procedures (How can harm be prevented?)	Required PPE (List PPE required for each Job Step)
1. Mobilize into area, Review area to be done and verify utilities and wells in area	a. Slips, trips and Falls b. Crushed by/struck by heavy equipment c. Climbing on and off equipment d. Heavy lifting e. Defective Equipment & tools appropriately sized equipment for area f. Equipment leaks - g.	a. Tour, inspect, police work areas to find STF hazards. Remove, protect or Mark all STF hazards. Create designated pedestrian paths separate from hazards and equipment. b. Wear appropriate safety vest. All personnel to stay 30 ft from operating equipment Pedestrians must signal to operators their intent to approach. Operators must place bucket safely on the ground that shut down hydraulics before allowing pedestrians to approach. c. Maintain 3 points of contact when climbing on and off vehicles. d. Use safe lifting techniques such as keeping the back straight and lifting with leg muscles; getting assistance from others; using available mechanical assist such as heavy equipment. e. Inspect all tools and equipment prior to use. Tag out & remove damaged equipment. Only properly trained personnel in equipment. Ensure that the correct size equipment is chosen specifically for being in a tight work zone. f. Operator to complete Pre-operational checklist via phone app, have spill kit easily accessible for quick response. - g.	<u>Level D:</u> Work Gloves Safety Shoes Safety Glasses w/side shield Hard Hat Hearing protection Work Uniform with long sleeve shirt Reflective traffic vest
2. Load Dump Truck /container for Disposal of material.	a. Dump truck roll-over b. Dump truck raises bed to dump and contacts over-head wires c. Dump truck over-filled spilling soil out of the rear of bed	a. Stay clear of equipment during load out. Never approach equipment unless the operator is aware of your approach, utilize two-way radios. b. When dumping that truck is sitting even enough to not cause a roll-over. Ensure dump body is not raised or driven while raised under over-head power lines. c. Operator to fill on ¾ of body to ensure no contaminated soil is spilled during transport to stockpile.	<u>Level D:</u> Work Gloves Safety Shoes Safety Glasses w/side shield Hard Hat Hearing protection Work Uniform with long sleeve shirt

	d. Overhead power lines	d. Determine voltage on overhead lines. Equipment shall maintain a minimum distance of 10' away from overhead power lines. An overhead high visibility marker line will be put in place when possible to identify 10-12' radius from powerlines. Clearance zone will increase as follows: <table><tr><td>Power Line Voltage</td><td>Minimum Approach Distance</td></tr><tr><td>0 to 50 kV</td><td>10 feet</td></tr><tr><td>Over 50kV to 200kV</td><td>15 feet</td></tr><tr><td>Over 200kV to 350kV</td><td>20 feet</td></tr><tr><td>Over 350kV to 500kV</td><td>25 feet</td></tr></table>	Power Line Voltage	Minimum Approach Distance	0 to 50 kV	10 feet	Over 50kV to 200kV	15 feet	Over 200kV to 350kV	20 feet	Over 350kV to 500kV	25 feet	Reflective traffic vest
Power Line Voltage	Minimum Approach Distance												
0 to 50 kV	10 feet												
Over 50kV to 200kV	15 feet												
Over 200kV to 350kV	20 feet												
Over 350kV to 500kV	25 feet												

SECTION 5: Atmospheric Monitoring Required:☐ Yes☐ No*[For assistance determining exposure action levels please refer to Clean Harbors' Respiratory Protection Standard - Appendix 9]*

List Substance(s) or Material(s) of Concern Below:	Monitoring Instrument	Substance / Material Exposure Action Levels			
		Level A	Level B	Level C	Level D

SECTION 6: Training *(Document the required Job Task Training)*

40Hr HAZWOPER, Site Specific (as needed)

SECTION 7: Emergency Procedures *(Document the Emergency Response Procedures - i.e. First Aid, Emergency Call #'s, etc.)*

REFER TO HASP APPENDIX B FOR EMERGENCY PROCEDURES

SECTION 8: Decontamination Procedures *(Document the Decontamination Procedures -i.e. People and Equipment)*

Equipment will be rinsed off then scrubbed with simple green.

SECTION 9: Additional Job Specific Considerations:☐ Yes☐ No**SECTION 10: Job Hazard Analysis Verification (Crew Supervisor Review and Sign Off)**

The Job Hazard Analysis Team has assessed the worksite conditions and confirms:

- The JHA addresses the significant Task Steps and applicable hazards and necessary controls.
- The Team has the appropriate resources (people and equipment) to do the job safely.
- Others that could be affected by the work have been informed.
- Energy isolation (if applicable) has been VERIFIED AND DEMONSTRATED.
- This document facilitates compliance of the PPE assessment and hazard analysis pursuant to company, legislative and client requirements.

CREW SUPERVISOR *(Please Print):*

POSITION:

SIGNATURE:

DATE:

SECTION 11: Job Hazard Analysis Review (Work Team Reviews and Sign-Off)

NAME (Print)	Signature	NAME (Print)	Signature	NAME (Print)	Signature

SECTION 1: JOB/TASK/PROCESS (Document General Information Below)

SCOPE OF WORK: Earthwork (Build Road, Swale, Excavate areas and other earth moving tasks)			DURATION OF PROJECT/TASK:
ANALYSIS LED BY (Print Name): Dave Woodruff	TITLE: Project Manager	ORIGINAL ANALYSIS DATE: June 2017	REVISION DATE: 07/23/2024
REVIEWED BY (Print Name):: Greg Bird	TITLE: Sr. H&S Manager	APPROVED BY: Same	TITLE: H&S MGR

SECTION 2: Chemical/Physical/ Biological Hazards (Describe Job Hazard Agents Identified)

Chemical Agents (HAZCOM/ WHMIS MSDS Review)	Physical Agents	Biological Agents
See HASP	Vehicles, Equipment, Overhead hazards, area topography	Heat Stress, Insects, Snakes and Poisonous Plants

SECTION 3: PPE HAZARD ASSESSMENT SUMMARY

Head	☒ Hard Hat ☐ Side Impact Hard Hat ☐ DOT Approved Helmet ☐ Lock-On-Life Support Helmet ☐ Other: _____
Eyes/Face/Neck	☒ Safety Glasses with Side Shields ☐ Goggles – Chemical ☐ Goggles – Dust ☐ Face Shield ☐ Welding Helmet ☐ Balaclava (F.R.) ☐ Other: _____
Respiratory	☐ Dust Mask ☐ Half Face Respirator/Cartridge Type: _____ ☐ Full Face AP Respirator/Cartridge Type: _____ ☐ PAPR/ Cartridge Type: _____ ☐ SABA ☐ SCBA ☐ Lock-On-Life Support Helmet ☐ Other: _____
Ears/Hearing	☐ Ear Plug ☐ Ear Muff ☐ Double (Combination Ear Plugs & Ear Muffs) ☐ Other: _____
Hands/Arms	☐ Cotton Gloves ☒ Leather Gloves ☐ Puncture/Cut Resistant ☐ PVC ☐ Nitrile ☐ Anti-vibration ☐ Impact Protection ☐ Thermal ☐ Sleeves ☐ Wristlets/Type: _____ ☐ Other: _____
Body	☐ Fire Retardant Coveralls/Uniform ☐ Chemical Protective Clothing/Type: _____ ☐ Tyvek/Type: _____ ☐ Apron ☐ Sleeves ☐ Life Jacket/Vest ☒ High Visibility Vest/Shirt ☐ Heat Reflective Suit ☐ Foul Weather Gear ☐ Cool Vest ☐ Kevlar Cut Resistant Suits ☐ Other: _____
Feet	☒ Safety Boots – Leather or Rubber ☐ Metatarsals (Feet & Shin) ☐ Ice Cleats (Slip-Over) ☐ Booties/ Type: _____ ☐ Other: _____
Covid	☒ Cloth Facemasks within 6ft of others ☒ Refer to Pandemic Mgt. Plan

SECTION 4: HAZARD ANALYSIS PROCESS (Document Hazard Analysis and Controls Based on each Job Step/ Task Sequence)

Sequence Of Job Steps/Tasks (Number)	Hazards/Potential Hazards & Effects (What could go wrong?)	Recommended Hazard Control Or Safe Job Procedures (How can harm be prevented?)	Required PPE (List PPE required for each Job Step)										
1. Soil Excavation	Slips, trips, falls Sharp objects Overhead and subsurface hazards: - Power lines - Underground utilities Exposures to site contaminants of concern Hazards from excavation cave-in	Always use 3-point mount/dismount procedures on heavy equipment. Awareness of surroundings. Practice good housekeeping Leather, or cut proof gloves pending task, consult supervisor. Verify surroundings. Make sure when working around personnel eye contact is made with operator. Check for overhead and subsurface utilities. Maintain 10ft clearance from all power lines. Clearance zone increases as follows: <table><tr><td>Power Line Voltage</td><td>OSHA Min. approach distance (OSHA 1926.1408 Table A)</td></tr><tr><td>0 to 50 kV</td><td>10 feet</td></tr><tr><td>Over 50kV to 200kV</td><td>15 feet</td></tr><tr><td>Over 200kV to 350kV</td><td>20 feet</td></tr><tr><td>Over 350kV to 500kV</td><td>25 feet</td></tr></table> Obtain USA Service Alert Ticket prior to commencing excavation activities. If visible dust is observed, stop work and apply water for dust suppression. If visible dust cannot be suppressed, monitor personal breathing zone with dust meter. If readings are greater than 1.0mg/m3, upgrade PPE to Modified Level C. To eliminate this hazard, do not allow personnel to enter the excavation. Use alternative means to obtain soil samples (such as sampling from a bucket load of soil) or to obtain surveying shots. If personnel exclusion is not possible, slope the walls of the excavation according to project design drawings. Assure that this sloping meets the requirements of OSHA 1926.650, 651 and 652.	Power Line Voltage	OSHA Min. approach distance (OSHA 1926.1408 Table A)	0 to 50 kV	10 feet	Over 50kV to 200kV	15 feet	Over 200kV to 350kV	20 feet	Over 350kV to 500kV	25 feet	<u>Level D:</u> Work Gloves Safety Shoes Safety Glasses w/side shield Hard Hat Hearing protection Work Uniform with long sleeve shirt Reflective traffic vest Upgrade PPE <u>Mod Level C:</u> Work Gloves Safety Shoes Hard Hat Hearing protection Work Uniform with long sleeve shirt Reflective traffic vest Full Face APR with GME-P100 cartridges
Power Line Voltage	OSHA Min. approach distance (OSHA 1926.1408 Table A)												
0 to 50 kV	10 feet												
Over 50kV to 200kV	15 feet												
Over 200kV to 350kV	20 feet												
Over 350kV to 500kV	25 feet												
2. Staging of soils for load out to disposal facility	Slips, trips, and falls Struck by equipment Back strain/injuries Operating Equipment	Awareness of surroundings. Practice good housekeeping. Review location of eye wash stations. Stay clear of equipment during load out. Never approach equipment unless the operator is aware of your approach. Use proper lifting techniques. Utilize proper body positioning knees bent, back straight and shoulders square. Verify surroundings. Make sure when working around personnel eye contact is made with operator. Check for overhead and subsurface utilities. Utilize safe operation of equipment. Don appropriate level of PPE. Utilize a spotter when moving equipment.	<u>Level D:</u> Work Gloves Safety Shoes Safety Glasses w/side shield Hard Hat Hearing protection Work Uniform with long sleeve shirt Reflective traffic vest										

	Exposures to site contaminants of concern (Metals, PCB, DRO, MOO)	If visible dust is observed, stop work and apply water for dust suppression. If visible dust cannot be suppressed, monitor personal breathing zone with dust meter. If readings are greater than 1.0mg/m3, upgrade PPE to Modified Level C	Upgrade PPE Mod Level C: Work Gloves Safety Shoes Hard Hat Hearing protection Work Uniform with long sleeve shirt Reflective traffic vest Full Face APR with GME-P100 cartridges
3. Fueling of Earth Moving Equipment	Slips, trips, and falls Struck by equipment Fueling of Equipment	Awareness of surroundings. Practice good housekeeping. Review location of eye wash stations. Stay clear of equipment during load out. Never approach equipment unless the operator is aware of your approach. Ensure spill kit is in close proximity. Move equipment to pre-determined fueling area. Shutoff equipment. Operator to stay with equipment while fueling.	Level D: Work Gloves Safety Shoes Safety Glasses w/side shield Hard Hat Hearing protection Work Uniform with long sleeve shirt Reflective traffic vest

SECTION 5: Atmospheric Monitoring Required:
☐ Yes ☐ No

[For assistance determining exposure action levels please refer to Clean Harbors' Respiratory Protection Standard - Appendix 9]

List Substance(s) or Material(s) of Concern Below:	Monitoring Instrument	Substance / Material Exposure Action Levels			
		Level A	Level B	Level C	Level D
Refer to HASP Section 13.0					

SECTION 6: Training (Document the required Job Task Training)

40Hr HAZWOPER, Site Specific (as needed),

SECTION 7: Emergency Procedures (Document the Emergency Response Procedures - i.e. First Aid, Emergency Call #'s, etc.)

^b
SEE HASP APPENDIX

SECTION 8: Decontamination Procedures (Document the Decontamination Procedures -i.e. People and Equipment)

Equipment will not enter contaminated zones.

SECTION 9: Additional Job Specific Considerations: ☐ Yes ☐ No

Heat Stress: Monitor temperature and humidity. Refer to attached Heat Index and Work/Rest and Water Consumption Table.

SECTION 10: Job Hazard Analysis Verification (Crew Supervisor Review and Sign Off)

The Job Hazard Analysis Team has assessed the worksite conditions and confirms:

- The JHA addresses the significant Task Steps and applicable hazards and necessary controls.
- The Team has the appropriate resources (people and equipment) to do the job safely.
- Others that could be affected by the work have been informed.
- Energy isolation (if applicable) has been VERIFIED AND DEMONSTRATED.
- This document facilitates compliance of the PPE assessment and hazard analysis pursuant to company, legislative and client requirements.

CREW SUPERVISOR (Please Print):

POSITION:

SIGNATURE:

DATE:

SECTION 11: Job Hazard Analysis Review (Work Team Reviews and Sign-Off)

NAME (Print)	Signature	NAME (Print)	Signature	NAME (Print)	Signature



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Owner:
Health & Safety

SECTION 1: JOB/TASK/PROCESS (Document General Information Below)

SCOPE OF WORK: Backfilling and Grading			DURATION OF PROJECT/TASK:
Original ANALYSIS LED BY (Print Name): Dave Woodruff	TITLE: Project Manager	ORIGINAL ANALYSIS DATE: 06/2017	REVISION DATE: 07/21/24
ANALYSIS TEAM MEMBER (Print Name): Greg Bird	TITLE: Senior Health & Safety Manager	REVIEWED BY: Greg Bird, CSP	TITLE: Senior Health & Safety Manager

SECTION 2: Chemical/Physical/ Biological Hazards (Describe Job Hazard Agents Identified)

Chemical Agents (HAZCOM/ WHMIS MSDS Review)	Physical Agents	Biological Agents
No chemical exposures anticipated	Vehicles, Equipment, Overhead hazards, area topography	Heat Stress, Insects, Snakes and Poisonous Plants

SECTION 3: PPE HAZARD ASSESSMENT SUMMARY

Head	☒ Hard Hat ☐ Side Impact Hard Hat ☐ DOT Approved Helmet ☐ Lock-On-Life Support Helmet ☐ Other: _____
Eyes/Face/Neck	☒ Safety Glasses with Side Shields ☐ Goggles – Chemical ☐ Goggles – Dust ☐ Face Shield ☐ Welding Helmet ☐ Balaclava (F.R.) ☐ Other: _____
Respiratory	☐ Dust Mask ☐ Half Face Respirator/Cartridge Type: _____ ☐ Full Face AP Respirator/Cartridge Type: _____ ☐ PAPR/ Cartridge Type: _____ ☐ SABA ☐ SCBA ☐ Lock-On-Life Support Helmet ☐ Other: _____
Ears/Hearing	☒ Ear Plug ☐ Ear Muff ☐ Double (Combination Ear Plugs & Ear Muffs) ☐ Other: _____
Hands/Arms	☐ Cotton Gloves ☒ Leather Gloves ☐ Puncture/Cut Resistant ☐ PVC ☐ Nitrile ☐ Anti-vibration ☐ Impact Protection ☐ Thermal ☐ Sleeves ☐ Wristlets/Type: _____ ☐ Other: _____
Body	☐ Fire Retardant Coveralls/Uniform ☐ Chemical Protective Clothing/Type: _____ ☐ Tyvek/Type: _____ ☐ Apron ☐ Sleeves ☐ Life Jacket/Vest ☒ High Visibility Vest ☐ Heat Reflective Suit ☐ Foul Weather Gear ☐ Cool Vest ☐ Kevlar Cut Resistant Suits ☐ Other: _____
Feet	☒ Safety Boots – Leather or Rubber ☐ Metatarsals (Feet & Shin) ☐ Ice Cleats (Slip-Over) ☐ Booties/ Type: _____ ☐ Other: _____
Covid	☒ Cloth Facemasks within 6ft of others ☒ Refer to Pandemic Mgt. Plan



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SECTION 4: HAZARD ANALYSIS PROCESS (Document Hazard Analysis and Controls Based on each Job Step/ Task Sequence)

Sequence Of Job Steps/Tasks (Number)	Hazards/Potential Hazards & Effects (What could go wrong?)	Recommended Hazard Control Or Safe Job Procedures (How can harm be prevented?)	Required PPE (List PPE required for each Job Step)
For all activities	a) Slips, trips, falls b) Struck by / crushed by vehicles or heavy equipment. c) Vehicle / Heavy Equipment Damage – Damage to property or assets. d) Cuts and lacerations from handling sharp-edged objects.	a) Tour and police the work area for slip, trip, fall hazards. Remove, relocate, protect, or make highly visible, all hazards. Locate equipment/material storage areas away from high traffic zones. Always use 3-points of contact when climbing into-out of heavy equipment. Awareness of surroundings. Practice good housekeeping. Grade walking paths if necessary, to remove ruts after rain events. b) Site speed limit is 10MPH unless otherwise noted. Drive in low or lower gear to avoid driving too fast. Have someone guide ("spot") you when backing up. If you're alone, get out of the vehicle and clear 360° before backing up. Pedestrians must keep 30ft clearance from heavy equipment when walking in work zones. Pedestrians have the right-of-way c) Keep vehicles 30 ft away from heavy equipment unless you are refueling that equipment. Never bring a piece of heavy equipment in contact with vehicles, property, or site infrastructure unless approved by your GM and H&S. d) Wear Leather, or cut proof gloves pending task, consult supervisor.	Level D: Work Gloves Safety Shoes Safety Glasses w/side shield Hard Hat Hearing protection Work Uniform Reflective traffic vest
Dump backfill into position.	a. Defective equipment b. Struck by heavy equipment	a. Complete daily equipment checklist. Defective equipment will be removed from service. b. Stay clear of equipment during operation(s). Use a spotter to guide delivery vehicle into position or use horn signals. Always wear a safety vest when working around heavy equipment. Never approach equipment unless the operator is aware of your approach.	<u>Level D:</u> Work Gloves Safety Shoes Safety Glasses w/side shield Hard Hat Hearing protection Work Uniform



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			Reflective traffic vest
Spread backfill to grade.	a. Defective equipment b. Struck by heavy equipment	c. Complete daily equipment checklist. Defective equipment will be removed from service. d. Stay clear of equipment during operation(s). Always wear a safety vest when working around heavy equipment. Never approach equipment unless the operator is aware of your approach.	<u>Level D:</u> Work Gloves Safety Shoes Safety Glasses w/side shield Hard Hat Hearing protection Work Uniform Reflective traffic vest
Add Unidentified Hazards and Controls Here			

SECTION 5: Atmospheric Monitoring Required: ☐ Yes ☐ No

[For assistance determining exposure action levels please refer to Clean Harbors' Respiratory Protection Standard - Appendix 9]

List Substance(s) or Material(s) of Concern Below:	Monitoring Instrument	Substance / Material Exposure Action Levels			
		Level A	Level B	Level C	Level D



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SECTION 6: Training (*Document the required Job Task Training*)

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OSHA "Competent Person" for excavation

SECTION 7: Emergency Procedures (*Document the Emergency Response Procedures - i.e. First Aid, Emergency Call #'s, etc.*)

Adequate number of properly stocked first aid kits on site (1 kit per 25 employees)

Adequate number of charged, currently inspected fire extinguishers on site

Verify availability of EMS and fire protection services and post phone number(s), including client contact numbers

Obtain and communicate client-specific emergency action plan if applicable, including primary and secondary evacuation routes

SECTION 8: Decontamination Procedures (*Document the Decontamination Procedures -i.e. People and Equipment*)

Equipment will be rinsed off then scrubbed with simple green.

SECTION 9: Additional Job Specific Considerations: ☐ Yes ☐ No

Appendix A: Table of Hazards and Controls *[This can be used as a tool to trigger situational awareness pertaining to potential Job Hazards]*

This Table of Hazards and Controls can assist the JHA work group to manage hazards for the proposed work. The table does not include all possible hazards and only acts as a guideline. Its intent is to aid in the JHA thought process to determine Job Task Hazards that may be present and identify implementation controls for consideration.

 Pressurized Equipment ☐ Perform isolation – LO/TO, blinding, or defeat ☐ Depressurize, drain, purge, and vent ☐ Relieve trapped pressure ☐ Avoid auto-refrigeration when depressurizing ☐ Anticipate residual pressure or fluids	 Poor Lighting or visibility ☐ Provide alternate lighting ☐ Wait or defer until visibility improves ☐ No work over water that could require rescue	 Personnel ☐ Provide induction or training for new workers ☐ Mentor, coach, or supervise ☐ Verify competencies, skills, and experience ☐ Address applicable limitations (fatigue, exhaustion, and restricted duty) ☐ Manage multiple languages	 Confined Space ☐ Discuss confined space entry safe work practice ☐ Monitor access or entry ☐ Protect surfaces from inadvertent contact ☐ Do not locate mobile engines near confined space ☐ Provide observer ☐ Develop rescue plan	 Simultaneous Operations (SIMOPS) ☐ Interface between groups ☐ Use barriers and signs to segregate activities ☐ Have permit counter signed by leader of affected groups	 Environment ☐ Implement controls for slippery surfaces ☐ High winds – goggles ☒ Heat – hydration, breaks ☐ Cold – PPE, heaters ☐ Lightning – tool selection, defer work ☒ Wildlife encounters	 Ignition Sources ☐ Remove, isolate, or contain combustible materials ☐ Provide fire-fighting equipment ☐ Construct a fire-safe habitat ☐ Provide a fire watch during and after hot work ☐ Conduct continuous gas testing ☐ Bond or earth for static electricity or cathodic protection ☐ Intrinsically safe tools, equipment, etc?
 Hazardous Substance ☐ Drain or purge equipment ☐ Follow MSDS controls ☐ Implement health hazards controls (Lead, Asbestos, H₂S, Iron Sulphide, Sulfur Dioxide, NORM) ☐ Test or analyze material	 Potential Spills ☐ Drain equipment ☐ Provide spill containment equipment ☐ Have spill clean up materials and equipment on hand ☐ Restrain and isolate hoses when not in use	 Equipment Hot or Cold ☐ Heat or cool equipment before work starts ☐ Install barriers ☐ Provide warning signs ☐ Implement cold temperature and brittle failure controls ☐ Wear thermal gloves	 High Noise ☒ Wear correct hearing PPE ☐ Manage exposure times ☐ Shutdown equipment ☐ Use "quiet" tools ☐ Sound barriers or curtains ☐ Provide or use suitable communication techniques	 Falling or Dropped Objects ☐ Use signs and barriers to restrict entry or access under work at elevation ☐ Use lifting equipment to raise tools to or from the work platform ☐ Secure tools (tie-off)	 Lifting Equipment ☐ Confirm lifting equipment condition and certification ☐ Obtain approval for lifts over processing equipment ☐ Have a documented and approved lift plan	 Work at Heights ☐ Discuss working at heights safe work practice ☐ Verify fall restraint and arrest equipment certification ☐ Apply abseiling safe work practice
 Portable Electrical Equipment ☐ Inspect equipment for condition and test date currency ☐ Implement continuous gas testing ☐ Protect electrical leads from impact or damage ☐ Use GFI's	 Radiation Hazard ☐ Use barriers and signs to restrict access ☐ Notify personnel who may be affected ☐ Implement NORM controls ☐ Conduct RAD testing	 Moving Objects or Equipment ☐ Confirm machinery guard integrity ☐ Provide protective barriers ☐ Observer to monitor proximity of people and equipment ☐ Shut down or lockout equipment	 Manual Handling ☐ Assess manual handling task ☐ Limit load size ☐ Manage posture ☐ Confirm stability of load and work platform ☐ Get assistance or mechanical aid to avoid pinch points	 Equipment and Tools ☐ Inspect equipment and tools ☐ No use of modified tools ☐ Use protective guards ☐ Use correct tools and equipment for task ☐ Protect or remove sharp edges	 Vibrating Equipment ☐ Manage exposure times ☐ Assess affect of vibration on equipment ☐ Use low vibration equipment ☐ Apply noise controls	 Slips, Trips, and Falls ☒ Identify and shield uneven surface or projections ☐ Secure or cover cables, cords, and tubing ☐ Clean up liquids ☒ Barricade or rope-off openings and holes
 High Energy or High Voltage ☐ Restrict access to authorized personnel only ☐ Discharge equipment and make electrically dead ☐ Observe safe work distances for live cables ☐ Use flash burn PPE suit ☐ Use insulated gloves, tools, and mats	 Excavations ☐ Have an excavation plan or safe work practice ☒ Locate underground pipes or cables by hand digging ☒ De-energize underground services ☐ Implement confined space entry controls ☒ Barricade/Flag open excavations	 Waste Clean Up and Disposal ☐ Apply environmental management practices ☐ Follow site waste management procedures ☐ Clean up equipment and materials at site ☐ Optimize task to minimize waste production	 Other Energy Sources ☐ Spring compression or expansion control ☐ Implement electromagnetic (radio) controls ☐ Manage pressure or vacuum ☐ Manage heat generating processes ☐ Use seismic activity safe work practice	 Mobile Equipment ☐ Assess equipment condition ☐ Implement controls on users or access ☐ Limit and monitor proximity to live equipment or cables ☒ Manage overhead hazards ☒ Adhere to road and site rules ☒ 3-point contact when entering/exiting mobile equip. ☐ Driver security	 Other Hazards ☐ Implement abrasive blasting controls (for equipment and practices) ☐ Establish a driver journey management plan ☐ Manage potential blocked or plugged equipment ☐ MOC required for temporary connections or modifications	 Emergency Response ☐ Keep egress route open ☐ Keep shower and eye wash stations accessible ☐ Have a rescue plan in place ☐ Keep emergency alarm, fire equipment, and shutdown locations unobstructed ☐ Plan for emergency first aid in place ☐ Remote Medi-vac plan in place

Heat Index Chart

		R	E	L	A	L	A	T	I	V	E		H	U	M	I	D	I	T	Y		%
		0	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90	95	100
T	140	125																				
E	135	120	128																			
M	130	117	122	131																		
P	125	111	116	123	131	141																
E	120	107	111	116	123	130	139	148														
R	115	103	107	111	115	120	127	135	143	151												
A	110	99	102	105	108	112	117	123	130	137	143	150										
T	105	95	97	100	102	105	109	113	118	123	129	135	142	149								
U	100	91	93	95	97	99	101	104	107	110	115	120	126	132	138	144						
R	95	87	88	90	91	93	94	96	98	101	104	107	110	114	119	124	130	136				
E	90	83	84	85	86	87	88	90	91	93	95	96	98	100	102	106	109	113	117	122		
	85	78	79	80	81	82	83	84	85	86	87	88	89	90	91	93	95	97	99	102	105	108
°F	80	73	74	75	76	77	77	78	79	79	80	81	81	82	83	85	86	86	87	88	89	91
	75	69	69	70	71	72	72	73	73	74	74	75	75	76	76	77	77	78	78	79	79	80
	70	64	64	65	65	66	66	67	67	68	68	69	69	70	70	70	71	71	71	71	71	72

Heat Category / Flag Color:
(See reverse side)

1
White Flag
Low Risk

2
Green Flag
Caution

3
Yellow Flag
Extreme Caution

4
Red Flag
Risk

5
Black Flag
High Risk

Work/Rest and Water Consumption Table

Applies to average size, heat acclimated person wearing long sleeved shirt and pants (or cloth overalls.)

Easy Work	Moderate Work	Hard Work
Walking/working on hard surface at 2.5 mph <30 lb load	- Walking/working on loose sand, water, reeds at 2.5 mph, minimal load - Walking hard surface at 3.5 mph < 40 lb load	- Walking/working on hard surface at 3.5 mph, ≥ 40 lb load - Walking/working on loose sand, at 2.5 mph with minimal load - Wearing protective coveralls (i.e. Tyvek) and/or respirator

Heat Category	Easy Work		Moderate Work		Hard Work	
	Work/Rest (min)	Water Intake (qt/hr)	Work/Rest (min)	Water Intake (qt/hr)	Work/Rest (min)	Water Intake (qt/hr)
1 White Flag	NL	1/2	NL	3/4	40/20 min	3/4
2 Green Flag	NL	1/2	50/10 min	3/4	30/30 min	1
3 Yellow Flag	NL	3/4	40/20 min	3/4	30/30 min	1
4 Red Flag	NL	3/4	30/30 min	3/4	20/40 min	1
5 Black Flag	50/10 min	1	20/40 min	1	10/50 min	1

- The work/rest times and fluid replacement volumes will sustain performance and hydration for at least 4 hours of work in the specified heat category. Fluid needs can vary based on individual differences ($\pm 1/4$ qt/hr)

- NL = no limit to work time per hour.
- Rest = minimal physical activity (sitting or standing) accomplished in shade.
- CAUTION:** Hourly fluid intake should not exceed 1-1/2 quarts.

Daily fluid intake should not exceed 12 quarts.

- Operational requirements should be considered in the application of this heat management tool. Contact site deputy branch director for clarification.

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		Owner: Health & Safety	

SECTION 1: JOB/TASK/PROCESS (Document General Information Below)			
SCOPE OF WORK:			DURATION OF PROJECT/TASK:
Site Restoration (grading, topsoil, planting vegetation)			
ANALYSIS LED BY (Print Name):	TITLE:	ORIGINAL ANALYSIS DATE:	REVISION DATE:
Hokanson	HSO	07/27/20	6/11/2024
ANALYSIS TEAM MEMBER (Print Name):	TITLE:	REVIEWED BY:	TITLE:
		G. Bird	Sr. H&S Mgr.

SECTION 2: Chemical- Biological/Physical/Atmospheric Hazards (Describe Job Hazard Agents Identified)		
Chemical or Biological Hazards (HAZCOM/ WHMIS MSDS Review)	Physical Hazards	Atmospheric Hazards
None anticipated	Struck-By, Crushed-By, collisions, underground hazards, lacerations, Sprains-Strains.	None anticipated

SECTION 3: PPE HAZARD ASSESSMENT SUMMARY	
Head	☒ Hard Hat ☐ Side Impact Hard Hat ☐ DOT Approved Helmet ☐ Lock-On-Life Support Helmet ☐ Other: _____
Eyes/Face/Neck	☒ Safety Glasses with Side Shields ☐ Goggles – Chemical ☐ Goggles – Dust ☐ Face Shield ☐ Welding Helmet ☐ Balaclava (F.R.) ☐ Other: _____
Respiratory	☐ Dust Mask ☐ Half Face Respirator/Cartridge Type: _____ ☐ Full Face AP Respirator/Cartridge Type: _____ ☐ PAPR/ Cartridge Type: _____ ☐ SABA ☐ SCBA ☐ Lock-On-Life Support Helmet ☐ Other: _____
Ears/Hearing	☒ Ear Plug ☒ Ear Muff ☐ Double (Combination Ear Plugs & Ear Muffs) ☐ Other: _____
Hands/Arms	☐ Cotton Gloves ☒ Leather Gloves ☒ Puncture/Cut Resistant ☐ PVC ☐ Nitrile ☐ Anti-vibration ☐ Impact Protection ☐ Thermal ☐ Sleeves ☐ Wristlets/Type: _____ ☐ Other: _____
Body	☐ Fire Retardant Coveralls/Uniform ☐ Chemical Protective Clothing/Type: _____ ☐ Tyvek/Type: _____ ☐ Apron ☐ Sleeves ☐ Life Jacket/Vest ☒ High Visibility Vest ☐ Heat Reflective Suit ☐ Foul Weather Gear ☐ Cool Vest ☐ Kevlar Cut Resistant Suits ☐ Other: Snake Chaps
Feet	☒ Safety Boots – Leather or Rubber ☐ Metatarsals (Feet & Shin) ☐ Ice Cleats (Slip-Over) ☐ Booties/ Type: _____ ☐ Other: _____
Covid-19	☒ Cloth Facemask at all times for all tasks ☒ Refer to HASP App F Pandemic Mgt. Plan



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SECTION 4: HAZARD ANALYSIS PROCESS *(Document Hazard Analysis and Controls Based on each Job Step/ Task Sequence)*

Sequence Of Job Steps/Tasks (Number)	Hazards/Potential Hazards & Effects (What could go wrong?)	Recommended Hazard Control Or Safe Job Procedures (How can harm be prevented?)	Required PPE (List PPE required for each Job Step)
For all activities	a) Slips, trips, falls b) Muscle Sprains and strain.	a) Tour and inspect work area to find all STF hazards; remove, protect, or mark all STF hazards; Create safe pedestrian paths; locate hoses, materials, equipment in vehicles away from pedestrian pathways. b) Use available mechanical equipment with appropriate attachments; use safe lifting techniques, such as keeping lower back straight, lifting with leg muscles, "build-a-bridge" by placing one hand on a stable object; get help with anything that weighs more than 50 pounds	Level D: Work Gloves Safety Shoes Safety Glasses w/side shield Hard Hat Hearing protection Work Uniform Reflective traffic vest
1. Spreading of Top Soil with Earth Moving Equipment	a) Operating Equipment b) Struck by Equipment c) Equipment/Property damage from machines.	a) Verify surroundings. Check for overhead and subsurface utilities. Utilize safe operation of equipment and excavating operation. Utilize a spotter when moving equipment. b) Stay clear of equipment during operations. Never approach equipment unless the operator is aware of your approach. Stay away from trucks as they are dumping topsoil on site. c) No machine will operate within 5ft of a person, structure, vehicle, other machine (unless loading), any surface encumbrance or any other object. An avoidance plan must be developed and approved by H&S before proceeding.	Level D: Work Gloves Safety Shoes Safety Glasses w/side shield Hard Hat Hearing protection Work Uniform Reflective traffic vest



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Health & Safety2. Hydro Seeding of
Disturbed Areas

- a) Struck by equipment
- b) Operating Equipment
- c) Pinch points

- a) Operators of equipment should never ride on the machine at speeds of greater than 5 MPH.
- b) Use steps on unit for mounting/dismounting. Keep 3 points of contact when mounting and dismounting. Never mount or dismount machine while moving. Stay clear of equipment during hydro seeding activities. Never approach equipment unless the operator is aware of your approach. Verify surroundings. Check for overhead and subsurface utilities. Utilize safe operation of equipment. Don appropriate level of PPE. Utilize a spotter when moving equipment.
- c) Make sure no one is working on or near the machine. Signal "all clear" before starting the engine. Do Not operate the machine without all guards in place.

Level D:
Work Gloves
Safety Shoes
Safety Glasses w/side
shield
Hard Hat
Hearing protection
Work Uniform
Reflective traffic vest

SECTION 5: Atmospheric Monitoring Required: ☐ Yes ☐ No*[For assistance determining exposure action levels please refer to Clean Harbors' Respiratory Protection Standard - Appendix]*

List Substance(s) or Material(s) of Concern Below:	Monitoring Instrument	Substance / Material Exposure Action Levels			
		Level A	Level B	Level C	Level D

No Air Sampling Required**SECTION 6: Training (Document the required Job Task Training)**

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SECTION 7: Emergency Procedures (Document the Emergency Response Procedures – i.e. First Aid, Emergency Call #'s, etc.)**SECTION 8: Decontamination Procedures (Document the Decontamination Procedures –i.e. People and Equipment)**

Refer to HASP Section 14.0 for Decontamination procedures.



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Health & Safety**SECTION 9: Additional Job Specific Considerations:** ☐ Yes ☐ No**SECTION 10: Job Hazard Analysis Verification (Crew Supervisor Review and Sign Off)**

The Job Hazard Analysis Team has assessed the worksite conditions and confirms:

- The JHA addresses the significant Task Steps and applicable hazards and necessary controls.
- The Team has the appropriate resources (people and equipment) to do the job safely.
- Others that could be affected by the work have been informed.
- Energy isolation (if applicable) has been VERIFIED AND DEMONSTRATED.
- This document facilitates compliance of the PPE assessment and hazard analysis pursuant to company, legislative and client requirements.

CREW SUPERVISOR (Please Print):

POSITION:

SIGNATURE:

DATE:

SECTION 11: Job Hazard Analysis Review (Work Team Reviews and Sign-Off)

NAME (Print)	Signature	NAME (Print)	Signature	NAME (Print)	Signature

APPENDIX F: Project Pandemic Management Plan

Company Confidential

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Project Services Group

Pandemic Management Plan for Field Project Sites.

Date: Revised 01/06/2022

Affected branches: 41EF / 41EJ / 41EO / 41EN / 41EO / 41GW / 41IPG / 864I / 86GX / 86O7 / 91EK

Affected personnel: All Project Services Field Personnel

Scope and Application:

This plan applies to all Project Services field project locations.

This plan does not apply to Clean Harbors staff working in office or shop environments (Norwell, MA; Kalkaska MI; Ithaca MI; Bridgeport NJ). Employees working in these locations should follow the most current Corporate policies found on the Clean Harbors Employee Portal.

Purpose

In response to the Covid-19 Pandemic, Clean Harbors Project Services has initiated the following measures to minimize the risk of infection to personnel supporting field projects throughout the USA and Canada.

It is Clean Harbors' policy to implement all recommendations published by the Centers for Disease Control, the World Health Organization, State/Provincial and Local public health agencies, and client requirements. Best practices from other credible sources may also be implemented.

Travel

1. International Travel.
 - a. All international travel outside the United State and Canada is strongly discouraged. International business travel must be approved by Executive Management.
 - b. If an employee chooses to travel internationally for personal reasons, they will be restricted from reporting to work for 14 days upon their return, regardless of the absence of symptoms.
2. Domestic Travel.
 - a. Employees who are re-locating to projects may choose to drive their personal vehicles as an alternative to air, train or bus travel.
 - b. Employees who choose to fly to their next project location are encouraged to take the following steps to protect themselves and reduce the risk of transmission.
 - i. Maintain 6ft of distance from other persons in air terminals.
 - ii. Wear a face covering such as surgical or dust mask, cloth mask, bandana or other face covering.
 - iii. Bring with them the following:
 1. Small TSA-permittable bottle of alcohol-based hand sanitizer
 2. A small supply of dis-infectant wet wipes such as Clorox or other disinfectant
 3. A plastic food storage bag for wet wipe disposal
 - iv. Take the following steps upon taking their seat on the airliner.

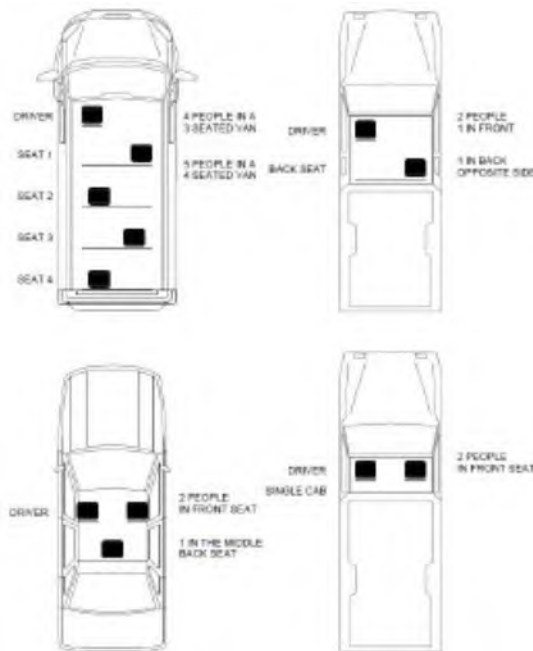


1. Wipe down all surfaces that you may come in contact with, such as the seat belt clip, back of the seat and tray in front, arm rests. If seated at a window, wipe down the shade visor and other interior surfaces that you may come in contact with.
2. Dispose of wet wipes in the plastic food storage bag.
3. Dis-infect your hands with an alcohol-based hand sanitizer.
4. Decline drinks or snacks offered by the Flight Attendants. Consume drinks or snacks purchased only at airport vendors instead.

c. Vehicles and Car Pooling

i. Clean Harbors employees shall travel to/from the job site under the following protocols:

1. Limit vehicle passengers to no more than two (2) if possible;
2. Wear cloth facemasks inside vehicles;
3. Seat personnel in vehicles according to the diagrams below.



Physical Distancing

Regardless of vaccination status, all field employees must adhere to Mask and Social Distancing guidelines at Project Services field project sites

1. All personnel (including visitors) are to maintain a minimum physical distance of at least six feet from others, except as strictly necessary to carry out a task associated with the project.
2. Cloth face coverings/masks must be worn in offices/trailers, vehicles, and whenever personnel must work within 6-feet of each other.
3. Stagger stop- and start-times, or split shifts to reduce the number of workers at the jobsite at any one time.
4. Stagger trade-specific work to minimize the quantity of workers at the jobsite at any one time.
5. Coordinate movements around the site to eliminate simultaneous operations.
6. Set up work zones with visual barriers for specific activities with transition areas in common spaces.



7. Identify “choke points” and “high-risk areas” where workers may stand together (i.e., such as hallways or break areas) and use controls and signage to maintain distancing.
8. Minimize interaction and maintain distancing with all site visitors, including delivery workers, design professionals, government agency representatives or inspectors.
9. Gatherings of any size are prohibited on the jobsite, except for safety meetings or as strictly necessary to carry out a task associated with the project.
10. Use equipment or tools to increase distance between personnel to greater than 6-feet (2m) or eliminate the need for a second person.
11. When physical distancing cannot be maintained:
 - a. Clean Harbors project personnel whose work tasks require them to breach the physical distancing requirements must wear a respirator or other face covering, such as a paper or cloth face mask.
12. The site PM will designate and identify with signs a safe drop-off location, for deliveries.
13. Post signs required by this plan.
 - a. Delivery locations and contact information for the delivery driver
 - b. Social distancing information
 - c. Field office entry notices
 - d. Other signs as required to support physical distancing, and hygiene
 - e. Develop procedures to wipe down packages and boxes delivered by courier or vendor.

General Hygiene Guidelines

All project personnel are required to follow the below practices:

1. Use proper respiratory etiquette by covering your nose and mouth with a tissue or inside of your elbow when sneezing or coughing.
2. Cloth face coverings/masks must be worn in offices/trailers, vehicles, and whenever personnel must work within 6-feet of each other.
3. Do not share clothing, make-up, or personal protective equipment (PPE).
4. Maintain and thoroughly clean clothing and PPE in accordance with manufacturer’s instructions.
5. Avoid sharing phones, offices, tools, and equipment. If sharing is necessary, clean and disinfect prior to use.
6. Avoid touching your eyes, nose, mouth, shaking hands or giving “high fives”.
7. Wash hands often with soap and water for at least 20 seconds. If soap and water are not readily available, use a hand sanitizer with at least 70% alcohol.
8. If hand sanitizer or soap & water are not available on site, procure additional handwashing facilities to accommodate hand washing.
9. Sanitizing Vehicles:

Contact Surfaces That Must Be Sanitized on Vehicles and Mobile Equipment		
Keys and Key FOBs Exterior Grab Handles Interior and Exterior Door Handles Steering Wheel Shifter Dashboard & Vent Coverings Turn Indicator Seatbelt & Seatbelt Buckles	Door Locks Door Controls (Locks & Windows) Console, Temperature & Radio Controls Inside Door Armrests/Console Armrests Touch Screens Seat Adjustment Controls	Hood Latches and Handles Manifest/Permit Boxes Side Compartment, Side boxes, Toolbox Latches Any Other Touch Points as Needed (Glove compartments, trunks, van door panels, pick-up tailgates, sleeping bunks, etc.)



Generic Procedure for Sanitizing Vehicles and Mobile Equipment

To perform precautionary sanitizing of vehicle and mobile surfaces, workers will:

1. Put on disposable gloves and safety glasses
2. The worker will follow the manufacturer's instructions for the disinfectant chemical or wipes that they are using, including following any additional PPE requirements.
3. The worker will wipe down the surface ensuring that they wipe off any chemicals that they put on. Chemicals should not be permitted to linger.
4. After performing the sanitization, workers are to throw the potentially contaminated material into a waste disposal bag along with their disposable gloves as per the doffing disposable glove communication. This bag of materials is to then be disposed of properly.

10. Sanitizing Offices

- a. Periodically clean "high-touch" surfaces
 - i. Wear nitrile surgical gloves
 - ii. Clean Tables, chairs, doorknobs, printers, radios, refrigerators, etc.
 - iii. Clean Truck interiors, door handles, dashboards, mirrors, window buttons, etc.
 - iv. Clean heavy equipment interiors, handles, dashboard, door handles, etc.
 - v. Clean radios before use. Do not share radios with others if possible.
 - vi. Clean handles on porta-potties.
- b. What to clean with.
 - i. Use any (undiluted) chlorine bleach product.
 1. Clorox or another brand
 2. Dilute to a 10:1 water/bleach solution. (Wear nitrile gloves when handling the bleach)
 3. Use disposable paper towels
 - ii. Disinfecting wipes with at least 70% alcohol.

11. Other Hygiene Tips

- a. Avoid eating buffets or any food served in an open container, such as a steam table.
- b. Avoid eating inside restaurants. Take-out only or use a delivery service.
- c. Avoid eating at the free hotel breakfast/evening snacks.
- d. After entering your room, wash hands before touching your face.
- e. Cook as much as possible while staying in a hotel room.

12. Meetings

- a. Web-based meeting platforms should be the primary forum.
- b. If an in-person meeting is required;
 - i. Attendance should be limited to two (2) Clean Harbors employees.
 - ii. Attendees must maintain physical distancing and use face masks or coverings to reduce the risk of exposure.
- c. Daily Tailgate Safety Meetings:
 - i. Have the person leading the tailgate meeting sign-in everyone.
 - ii. Do not pass around clipboards or mobile devices to collect information.
 - iii. If signature is required, everyone should have and use their own pen.

13. Field Office Protocols

- a. Post signs requesting all visitors to not enter and instead provide a telephone contact number.
- b. Prior to entering a trailer, knock and step 6 feet (2 m) away from door or at the bottom of the stairs.



- c. Plan seating arrangement so that personnel inside the trailer maintain social distancing, at least 6- feet (2 m) of separation.
- d. Use physical barriers to separate the field trailer from the public and/or site activities.

14. Site Visitors

- a. Ensure the number of visitors to the job site is limited to only those necessary for the work.
- b. All site visitors on site more than 2 hours will abide by the following:
 - i. Contractor's point of contact (POC) is required to escort all associated site visitors.
 - ii. Visitors will be verbally screened by POC using assessment questions once arriving on the job site.
 - iii. The visitor will not be permitted to access the jobsite if they do not meet the screening criteria.
 - iv. The POC is responsible for communicating all site requirements and ensure all protective measures are followed.

15. Delivery personnel

- a. Must remain in their vehicles to extent possible.
- b. Drop off or unload at a designated drop-off location.
- c. Follow the specific procedures at designated drop-off locations.

Personal Health Screening

1. Self-Monitoring for Symptoms

- a. All project personnel are required to self-monitor for symptoms indicative of COVID-19 prior to arriving at the job site. Symptoms may appear 2-14 days after exposure to the virus. Stay at home and self-isolate if you have any of the below symptoms:
 - i. Cough
 - ii. Shortness of breath or difficulty breathing
 - iii. Chills
 - iv. Fever
 - v. Repeated shaking with chills
 - vi. Muscle pain
 - vii. Headache
 - viii. Sore throat
 - ix. New loss of taste or smell
- b. Individuals observed with symptoms listed above while on-site may be considered suspected of being infected by COVID-19 and immediately directed to leave the site and either self-isolate or provide negative test results.

2. Screening Self-Assessment

- a. All project personnel are required to complete an individual COVID-19 health screening self- declaration form upon arrival at the site each day. Personnel are not required to share personal medical information. Personnel are also required to provide prompt notice of any changes to the responses given earlier that day.
- b. Sickness
 - i. If an employee begins to experience fevers, severe cough or shortness of breath, they should do the following:
 - ii. If at home/hotel, stay at home/hotel.



- iii. Notify their supervisor by phone, text or email of their status.
- iv. If at work, limit your contact with others and go home/hotel.
- v. Seek medical evaluation
- vi. Get tested for Covid-19

Positive and Close Contact Cases

- Employees who are COVID-positive:
 - Any employee who tests positive can return to work after five days if:
 - They have no symptoms or symptoms are resolving (without fever for 24 hours), and;
 - They wear a mask for their first five days at work.
- Employees who have been exposed to someone who is COVID-positive:
 - Vaccinated and symptom-free employees can immediately report to work but must wear a mask until they receive a negative test at least five days after exposure.
 - Alternatively, vaccinated and symptom-free employees can immediately report to work but must wear a mask at all times for 10 days (down from our previous standard of 14) following exposure without producing a negative test.
 - Unvaccinated employees must quarantine for at least five days (down from our previous standard of seven) and produce a negative test after the fifth day in order to return to work.
- Contact tracing:
 - The look-back period for contact tracing is two days.

As always, if an employee suspects or knows that they have COVID, they must alert their immediate supervisor and contact the Employee Care Team at 833-925-4357 or email them at ECT@cleanharbors.com.

If an employee is feeling sick in any way, for the safety of everyone, we continue to ask that they do not report for work.

APPENDIX B NYSDOH GENERIC CAMP

Appendix 1A

New York State Department of Health Generic Community Air Monitoring Plan

Overview

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

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

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

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 $150 \text{ mcg}/\text{m}^3$ 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 $150 \text{ mcg}/\text{m}^3$ above the upwind level, work must be stopped and a re-evaluation of activities initiated. Work can resume provided that dust suppression measures and other controls are successful in reducing the downwind PM-10 particulate concentration to within $150 \text{ mcg}/\text{m}^3$ of the upwind level and in preventing visible dust migration.

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

December 2009

Appendix 1B

Fugitive Dust and Particulate Monitoring

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

1. Reasonable fugitive dust suppression techniques must be employed during all site activities which may generate fugitive dust.
2. Particulate monitoring must be employed during the handling of waste or contaminated soil or when activities on site may generate fugitive dust from exposed waste or contaminated soil. Remedial activities may also include the excavation, grading, or placement of clean fill. These control measures should not be considered necessary for these activities.
3. Particulate monitoring must be performed using real-time particulate monitors and shall monitor particulate matter less than ten microns (PM₁₀) with the following minimum performance standards:
 - (a) Objects to be measured: Dust, mists or aerosols;
 - (b) Measurement Ranges: 0.001 to 400 mg/m³ (1 to 400,000 :ug/m³);
 - (c) Precision (2-sigma) at constant temperature: +/- 10 :g/m³ for one second averaging; and +/- 1.5 g/m³ for sixty second averaging;
 - (d) Accuracy: +/- 5% of reading +/- precision (Referred to gravimetric calibration with SAE fine test dust (mmd= 2 to 3 :m, g= 2.5, as aerosolized);
 - (e) Resolution: 0.1% of reading or 1g/m³, whichever is larger;
 - (f) Particle Size Range of Maximum Response: 0.1-10;
 - (g) Total Number of Data Points in Memory: 10,000;
 - (h) Logged Data: Each data point with average concentration, time/date and data point number
 - (i) Run Summary: overall average, maximum concentrations, time/date of maximum, total number of logged points, start time/date, total elapsed time (run duration), STEL concentration and time/date occurrence, averaging (logging) period, calibration factor, and tag number;
 - (j) Alarm Averaging Time (user selectable): real-time (1-60 seconds) or STEL (15 minutes), alarms required;
 - (k) Operating Time: 48 hours (fully charged NiCd battery); continuously with charger;
 - (l) Operating Temperature: -10 to 50° C (14 to 122° 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 C CAMP RESULTS (SEPARATE ELECTRONIC SUBMITTAL)

APPENDIX D PARSONS DAILY REPORTS

Field Activities Daily Report
Taconic Interim Remedial Measure (IRM) Building 1
Taconic Inc. NYSDEC Site No. 442047 – Petersburg, NY 12138

Date of Activities:	Monday 12 August 2024	Report #: 01
Date of Report:	Tuesday 13 August 2024	
Weather:	Cloudy, periodic light rain - Temperature ranged 61° to 66° F	
Parsons Field Rep.:	Josh Hawley	Time On-Site: 1000 Time Off-Site: 1600

I. PERSONNEL ON-SITE

The following personnel were on-Site for work related to the Taconic Phase 1 IRM work:

- Josh Hawley – Parsons (Project Engineer)
- Jeff Mirarchi – Taconic (Client PM)
- Clean Harbors
 - o Jeff Wickham (Contractor Superintendent)
 - o Tyler Shipley (Foreman)
 - o Danny Godbury
 - o Michael Benini

II. HEALTH AND SAFETY

- Taconic PM (Jeff) held site safety orientation meeting and set forth safety expectations and responsibilities. Attended by Clean Harbors crew and Parsons.

III. EQUIPMENT

<u>Equipment</u>	<u>Notes</u>
Skidsteer (Takeuchi TL8R-2)	Delivered; w/ Mower, Roller Brush, Trencher, Bucket, Forks Attachments
Excavator (CAT 315GC)	Delivered
Mini-Excavator (Takeuchi TB235-2)	Delivered
Dozer (CAT D3)	Delivered
Chipper (Bandit Intimidator 12XPC)	Delivered

IV. CAMP MONITORING

- No intrusive work performed today

V. WORK PERFORMED

1. Clean Harbors received material deliveries (below) and mobilized equipment to site (above)
2. Attempted clearing of access road with skidsteer w/ mower attachment, wet conditions prevented access. Clean Harbors anticipates excavating wet soils, installing culvert allow for drainage, placing geotextile fabric and stone to create access. Awaiting material deliveries

VI. MATERIALS RECEIVED

- 30mil Geomembrane liner for stockpile/containment
 - o (1 roll) Environmental Protection Inc. - 30LLDPE (22.3'x100')
- Bentonite Grout
 - o (3-50# bags) CETCO Granular Grout – High Solids Granular Bentonite Grout

Field Activities Daily Report
Taconic Interim Remedial Measure (IRM) Building 1
Taconic Inc. NYSDEC Site No. 442047 – Petersburg, NY 12138

VII. ATTACHMENTS

- Attachment 1 – Photos

Attachment 1 – Photographs



Photo 1: Clean Harbors spotting dozer delivery, unloading



Photo 2: Skidsteer with Forks, Trencher, Brush Roller Attachments

Attachment 1 – Photographs



Photo 3: Skidsteer with Mower Attachment, attempted clearing access road



Photo 4: View of excavation limits along swale area, looking southwest

Field Activities Daily Report
Taconic Interim Remedial Measure (IRM) Building 1
Taconic Inc. NYSDEC Site No. 442047 – Petersburg, NY 12138

Date of Activities:	Tuesday 13 August 2024	Report #: 02
Date of Report:	Wednesday 14 August 2024	
Weather:	Sunny - Temperature ranged 52° to 65° F	
Parsons	Field Rep: Hawley	Time On-Site: 0700
		Time Off-Site: 1715

I. PERSONNEL ON-SITE

The following personnel were on-Site for work related to the Taconic Phase 1 IRM work:

- Josh Hawley – Parsons (Project Engineer)
- Jeff Mirarchi – Taconic (Client PM)
- Clean Harbors
 - o Jeff Wickham (Contractor Superintendent)
 - o Tyler Shipley (Foreman)
 - o Danny Godbury
 - o Michael Benini
- NYSDEC
 - o Ian Beilby
 - o Chris Monaco

II. HEALTH AND SAFETY

- Clean Harbors crew and Parsons attended morning safety meeting. Discussed plans for the day. Specifically addressed hauling loading/offloading equipment and material deliveries. Discussed plans for back and spotting dump truck delivery of stone for access road.
- NYSDEC representatives visited site for site inspection. Parsons (Josh) and Taconic (Jeff) walked site with NYSDEC and discussed operations and work plans.

III. EQUIPMENT

<u>Equipment</u>	<u>Notes</u>
Skidsteer (Takeuchi TL8R-2)	On-site; w/ Mower, Roller Brush, Trencher, Bucket, Forks Attachments
Excavator (CAT 315GC)	On-site
Mini-Excavator (Takeuchi TB235-2)	On-site
Dozer (CAT D3)	On-site
Chipper (Bandit Intimidator 12XPC)	On-site

IV. CAMP MONITORING

- Continuous CAMP monitoring while intrusive work performed, see details below:
 - o Maximum difference between downwind and upwind dust reading: 0.105 mg/m³.
 - o Event caused by delivery of dry, crushed #2 stone. Event lasted < 1 minute before dust settled. This dust observation was not a result of ground intrusive work.

V. WORK PERFORMED

1. Clean Harbors received material deliveries (below)

**Field Activities Daily Report
Taconic Interim Remedial Measure (IRM) Building 1
Taconic Inc. NYSDEC Site No. 442047 – Petersburg, NY 12138**

2. Continued clearing access road with skidsteer w/ mower attachment. Clean Harbors used excavator to remove and stockpile wet soils. Geotextile separation fabric placed on excavated access road and backfilled with crushed #2 stone (approximately 10-12" thick), track with Dozer. A 15" dia. 20' (length) corrugated, double-walled, HDPE pipe was placed under the access road to provide drainage from a small runoff channel upslope from the access road. See photos.
3. 2 truckloads of crush #2 stone were delivered for use in access road installation

VI. MATERIALS RECEIVED

- Nonwoven Geotextile separation fabric for access road
 - o (1 roll) Carthage Mills FX-60HS nonwoven geotextile (12.5'x360')
- Straw Blanket rolled erosion control product for restoration
 - o (10 rolls) Western Green SS-2 Straw Double Net Blanket
- Silt Fence
 - o (300lf) Carthage Mills CM10C-3608-EE48 silt fence
- Polysheeting
 - o (6 boxes – 20'x100') Carthage Mills PX06-B20100 poly sheeting, 6 mil
- Orange hazard fencing
 - o (3 rolls)
- #2 stone
 - o 2 truckloads (42.6T)

VII. ATTACHMENTS

- Attachment 1 – Photos

Attachment 1 – Photographs



Photo 1: Clean Harbors unloading geotextile roll using skidsteer



Photo 2: Excavator grading access road north of excavation area

Attachment 1 – Photographs



Photo 3: Unloading, spotting delivery of #2 crushed stone



Photo 4: Placement of 15" dia. corrugated HDPE culvert under access road to allow for drainage

Attachment 1 – Photographs



Photo 5: #2 crushed stone placement at HDPE Culvert inlet



Photo 6: Geotextile fabric placed as separation layer on access road before placing #2 crushed stone

Field Activities Daily Report
Taconic Interim Remedial Measure (IRM) Building 1
Taconic Inc. NYSDEC Site No. 442047 – Petersburg, NY 12138

Date of Activities:	Wednesday 14 August 2024	Report #: 03
Date of Report:	Thursday 15 August 2024	
Weather:	Sunny - Temperature ranged 55 ° to 77 ° F	
Parsons Field Rep.:	Josh Hawley	Time On-Site: 0700 Time Off-Site: 1730

I. PERSONNEL ON-SITE

The following personnel were on-Site for work related to the Taconic Phase 1 IRM work:

- Josh Hawley – Parsons (Project Engineer)
- Jeff Mirarchi – Taconic (Client PM)
- Clean Harbors
 - o Jeff Wickham (Contractor Superintendent)
 - o Tyler Shipley (Foreman)
 - o Danny Godbury
 - o Michael Benini

II. HEALTH AND SAFETY

- Clean Harbors crew, Parsons, and Taconic PM attended morning safety meeting. Discussed plans for the day. Specifically addressed silt fence placement, grubbing/clearing and use of chainsaw and chipper.

III. EQUIPMENT

<u>Equipment</u>	<u>Notes</u>
Skidsteer (Takeuchi TL8R-2)	On-site; w/ Mower, Roller Brush, Trencher, Bucket, Forks Attachments
Excavator (CAT 315GC)	On-site
Mini-Excavator (Takeuchi TB235-2)	On-site
Dozer (CAT D3)	On-site
Chipper (Bandit Intimidator 12XPC)	On-site

IV. CAMP MONITORING

- Continuous CAMP monitoring while intrusive work performed, see details below:
 - o Maximum 15-min Upwind Dust Reading: 0.064 mg/m³
 - o Maximum 15-min Downwind Dust Reading: 0.057 mg/m³

V. WORK PERFORMED

1. Continued clearing access road with skidsteer w/ mower attachment and chainsaw. Cuttings and downed trees have been staged in anticipation of mulching using chipper.
2. Clean Harbors used excavator and dozer to place and grade #2 stone on access road. Continued placement of geotextile separation fabric under #2 stone.
3. Silt fence placement along north side of access road.

VI. MATERIALS RECEIVED

Field Activities Daily Report
Taconic Interim Remedial Measure (IRM) Building 1
Taconic Inc. NYSDEC Site No. 442047 – Petersburg, NY 12138

- N/A

VII. **ATTACHMENTS**

- Attachment 1 – Photos

Attachment 1 – Photographs



Photo 1: Access road clearing and silt fence installation at northwestern side of excavation limits



Photo 2: Cleared brush along access road, staged for chipping/mulching.

Attachment 1 – Photographs



Photo 3: Access road cleared and grubbed, view looking east along north side of Building 1

Field Activities Daily Report
Taconic Interim Remedial Measure (IRM) Building 1
Taconic Inc. NYSDEC Site No. 442047 – Petersburg, NY 12138

Date of Activities:	Thursday 15 August 2024	Report #: 04
Date of Report:	Friday 16 August 2024	
Weather:	Sunny - Temperature ranged 55° to 80° F	
Parsons Field Rep.:	Josh Hawley	Time On-Site: 0700 Time Off-Site: 1730

I. PERSONNEL ON-SITE

The following personnel were on-Site for work related to the Taconic Phase 1 IRM work:

- Josh Hawley – Parsons (Project Engineer)
- Jeff Mirarchi – Taconic (Client PM)
- Clean Harbors
 - o Jeff Wickham (Contractor Superintendent)
 - o Tyler Shipley (Foreman)
 - o Danny Godbury
 - o Michael Benini

II. HEALTH AND SAFETY

- Clean Harbors crew and Parsons attended morning safety meeting. Discussed plans for the day. Dedicated training to using the chipper was covered by all personnel involved in chipping/mulching. Crew mentioned importance of being aware of unexpected events and remaining vigilant and not making hasty decision. Conversation was initiated after two dump trucks delivering crushed stone arrived earlier than expected during the safety meeting.

III. EQUIPMENT

<u>Equipment</u>	<u>Notes</u>
Skidsteer (Takeuchi TL8R-2)	On-site; w/ Mower, Roller Brush, Trencher, Bucket, Forks Attachments
Excavator (CAT 315GC)	On-site
Mini-Excavator (Takeuchi TB235-2)	On-site
Dozer (CAT D3)	On-site
Chipper (Bandit Intimidator 12XPC)	On-site

IV. CAMP MONITORING

- No intrusive work performed

V. WORK PERFORMED

1. Began using chipper to mulch down trees and cleared vegetation. Chipper stopped work shortly after starting mulching operations. Vendor was called and a technician is expected to assess the chipper malfunction tomorrow.
2. Clean Harbors used mini-excavator and skidsteer to place and grade stone on access road. Continued placement of geotextile separation fabric under stone placement.
3. Received two (2) truckloads of #3 crushed stone. Clean Harbors opted to order #3 stone as the #2 stone previously delivered was deemed finer than anticipated. See photos below for comparison.

**Field Activities Daily Report
Taconic Interim Remedial Measure (IRM) Building 1
Taconic Inc. NYSDEC Site No. 442047 – Petersburg, NY 12138**

4. Received delivery of Power Pellet supersacks (to be utilized as drying agent in swale excavation), unloaded and staged using skidsteer.

VI. MATERIALS RECEIVED

- 2 truckloads of #3 Stone (45.6T)
- 22 Supersacks of Power Pellets (2000lb bags, provided by Martlin Distribution)

VII. ATTACHMENTS

- Attachment 1 – Photos

Attachment 1 – Photographs



Photo 1: Dump truck unloading #3 crushed stone



Photo 2: Showing comparison of #2 stone vs #3 stone placed at access road entrance
(hard hat provided for scale)

Attachment 1 – Photographs



Photo 3: Unloading and staging Power Pellet supersacks using skidsteer



Photo 4: Skidsteer grading #3 stone over geotextile separation fabric along access road

Field Activities Daily Report
Taconic Interim Remedial Measure (IRM) Building 1
Taconic Inc. NYSDEC Site No. 442047 – Petersburg, NY 12138

Date of Activities:	Friday 16 August 2024	Report #: 05
Date of Report:	Friday 16 August 2024	
Weather:	Sunny - Temperature ranged 62° to 80° F	
Parsons Field Rep.:	Josh Hawley	Time On-Site: 0700 Time Off-Site: 1700

I. PERSONNEL ON-SITE

The following personnel were on-Site for work related to the Taconic Phase 1 IRM work:

- Josh Hawley – Parsons (Project Engineer)
- Jeff Mirarchi – Taconic (Client PM)
- Clean Harbors
 - o Jeff Wickham (Contractor Superintendent)
 - o Tyler Shipley (Foreman)
 - o Danny Godbury
 - o Michael Benini

II. HEALTH AND SAFETY

- Clean Harbors crew and Parsons attended morning safety meeting. Discussed plans for the day. Reviewed emergency response protocol, muster locations, and nearest hospital routes.

III. EQUIPMENT

<u>Equipment</u>	<u>Notes</u>
Skidsteer (Takeuchi TL8R-2)	On-site; w/ Mower, Roller Brush, Trencher, Bucket, Forks Attachments
Excavator (CAT 315GC)	On-site
Mini-Excavator (Takeuchi TB235-2)	On-site
Dozer (CAT D3)	On-site
Chipper (Bandit Intimidator 12XPC)	On-site

IV. CAMP MONITORING

- No intrusive work performed

V. WORK PERFORMED

1. Chipper vendor onsite to repair equipment, successful. Continued using chipper to mulch down trees and cleared vegetation. Crew has completed clearing and grubbing activities.
2. Laid geotextile fabric and geomembrane liner to construct stockpile containment/decontamination pad. Crew will use strawbales and sandbags to berm up the perimeter of the stockpile containment area to ensure liquids are contained. Planning to finish the containment area Monday prior to starting excavations.

VI. MATERIALS RECEIVED

- N/A

Field Activities Daily Report
Taconic Interim Remedial Measure (IRM) Building 1
Taconic Inc. NYSDEC Site No. 442047 – Petersburg, NY 12138

VII. ATTACHMENTS

Attachment 1 – Photos

Attachment 1 – Photographs



Photo 1: Crew using chipper to mulch cleared trees and vegetation



Photo 2: Access road established and cleared of vegetation, looking northwest

Attachment 1 – Photographs



Photo 3: North side of building 1, vegetation cleared, prepped for excavation



Photo 4: Geotextile fabric laid down to prep for stockpile containment area

Field Activities Daily Report
Taconic Interim Remedial Measure (IRM) Building 1
Taconic Inc. NYSDEC Site No. 442047 – Petersburg, NY 12138

Date of Activities:	Monday 19 August 2024	Report #: 06
Date of Report:	Tuesday 20 August 2024	
Weather:	Mostly sunny, heavy afternoon rain - Temperature ranged 55° to 65° F	
Parsons Field Rep.:	Josh Hawley	Time On-Site: 0645 Time Off-Site: 1630

I. PERSONNEL ON-SITE

The following personnel were on-Site for work related to the Taconic Phase 1 IRM work:

- Josh Hawley – Parsons (Project Engineer)
- Jeff Mirarchi – Taconic (Client PM)
- Clean Harbors
 - o Jeff Wickham (Contractor Superintendent)
 - o Tyler Shipley (Foreman)
 - o Danny Godbury
 - o Michael Benini

II. HEALTH AND SAFETY

- Clean Harbors crew and Parsons attended morning safety meeting, discussed plans for the day, excavation details, depths, and limits. Confirmed excavation approach and safety regarding excavation perimeter security, equipment operation in proximity of nearby utilities (active gas line).
- At northwest end of excavation, excavated depths were exceeding anticipated bedrock depths. Stopped work to discuss plan to continue excavation while ensuring sidewall stability and protection of building foundation. Planning to use soil boring sample depths as rough guideline for excavation depth while also confirming 'refusal' with excavator bucket during excavation, to be approved by Parsons and Taconic onsite representatives.

III. EQUIPMENT

<u>Equipment</u>	<u>Notes</u>
Skidsteer (Takeuchi TL8R-2)	On-site; w/ Mower, Roller Brush, Trencher, Bucket, Forks Attachments
Excavator (CAT 315GC)	On-site
Mini-Excavator (Takeuchi TB235-2)	On-site
Dozer (CAT D3)	On-site
Chipper (Bandit Intimidator 12XPC)	Demobbed

IV. CAMP MONITORING

- Continuous CAMP monitoring while intrusive work performed, see details below:
 - o Maximum 15-min Upwind Dust Reading: 0.023 mg/m³
 - o Maximum 15-min Downwind Dust Reading: 0.026 mg/m³ (need to verify after downloading data, CAMP was taken down during heavy rainstorm and was still running/logging data after excavation activities had stopped)

V. WORK PERFORMED

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1. Received, unloaded, and staged Geosynthetic Clay Liner rolls (details below).
2. Crew bolstered the containment stockpile area perimeter with haybales and secured the geomembrane containment liner with sandbags.
3. Verified and marked excavation limits. Began excavation at northwestern end of swale. Taconic, Parsons, and Clean Harbors observed excavation to verify depths and soil properties. Excavation tailings stockpiled in swale, to be transferred to containment stockpile area.
4. Laid poly-sheeting over excavated areas to separate accumulation of anticipated stormwater with the expectation of pumping non-contact stormwater. Any stormwater accumulation within excavated/disturbed areas will be soaked up using Power Pellets and disposed of with excavated soils.

VI. MATERIALS RECEIVED

- 2 rolls GCL (Cetco Bentomat-ST – 15'x150')

VII. ATTACHMENTS

Attachment 1 – Photos

Attachment 1 – Photographs



Photo 1: Unloading, staging GCL rolls



Photo 2: Excavation at northwest end of swale, looking northeast

Attachment 1 – Photographs



Photo 3: Swale excavation along north side of Building I, looking south

Field Activities Daily Report
Taconic Interim Remedial Measure (IRM) Building 1
Taconic Inc. NYSDEC Site No. 442047 – Petersburg, NY 12138

Date of Activities:	Tuesday 20 August 2024	Report #: 07
Date of Report:	Wednesday 21 August 2024	
Weather:	Mostly cloudy, periods of light drizzle, and periods of sun - Temperature ranged 52° to 63° F	
Parsons	Field Rep: Hawley	Time On-Site: 0645 Time Off-Site: 1930

I. PERSONNEL ON-SITE

The following personnel were on-Site for work related to the Taconic Phase 1 IRM work:

- Josh Hawley – Parsons (Project Engineer)
- Jeff Mirarchi – Taconic (Client PM)
- Clean Harbors
 - o Jeff Wickham (Contractor Superintendent)
 - o Tyler Shipley (Foreman)
 - o Danny Godbury
 - o Michael Benini

II. HEALTH AND SAFETY

- Clean Harbors crew and Parsons attended morning safety meeting, discussed plans for the day. Daily safety talk topics included awareness of moving equipment, boom swing radius, eye contact and communication with operators.
- Inspected site after heavy rainfall. Water in the northwest end of the excavated swale was contained on poly sheeting and will be held until it can be pumped out the downstream culvert. No indications of runoff leaving excavation area or site perimeter. Silt fence is functioning as necessary. Gravel access road is free from sediment accumulation.

III. EQUIPMENT

<u>Equipment</u>	<u>Notes</u>
Skidsteer (Takeuchi TL8R-2)	On-site; w/ Mower, Roller Brush, Trencher, Bucket, Forks Attachments
Excavator (CAT 315GC)	On-site
Mini-Excavator (Takeuchi TB235-2)	On-site
Dozer (CAT D3)	On-site

IV. CAMP MONITORING

- Continuous CAMP monitoring while intrusive work performed, see details below:
 - o Maximum 15-min Upwind Dust Reading: 0.013 mg/m³
 - o Maximum 15-min Downwind Dust Reading: 0.026 mg/m³

V. WORK PERFORMED

1. Continued excavation at northwestern end of swale. Taconic, Parsons, and Clean Harbors observed excavation to verify depths and soil properties. Excavation tailings pushed down the swale and stockpiled into the containment area. Anticipating haul trucks tomorrow to load out excavation stockpile. Approximately half of the excavation has been completed to-date.

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2. Removed and decommissioned three monitoring wells (MW-4, MW-25, MW-26) along north side of Building I.
3. Clean Harbors crew prepared the stockpile containment area for soil loadout to begin first thing tomorrow morning.

VI. MATERIALS RECEIVED

- N/A

VII. ATTACHMENTS

Attachment 1 – Photos

Attachment 1 – Photographs



Photo 1: Northwestern end of swale excavation after heavy rainfall event



Photo 2: Excavating soils along the north side of Building I, looking southeast

Attachment 1 – Photographs



Photo 3: Swale excavation along north side of Building I, looking northwest



Photo 4: Stockpiled excavation soils in the containment area

Attachment 1 – Photographs



Photo 5: Monitoring wells removed from swale excavations along north side of Building I

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Taconic Inc. NYSDEC Site No. 442047 – Petersburg, NY 12138

Date of Activities:	Wednesday 21 August 2024	Report #: 08
Date of Report:	Thursday 22 August 2024	
Weather:	Partly cloudy, some sun - Temperature ranged 55° to 65° F	
Parsons Field Rep.:	Josh Hawley	Time On-Site: 0645 Time Off-Site: 1700

I. PERSONNEL ON-SITE

The following personnel were on-Site for work related to the Taconic Phase 1 IRM work:

- Josh Hawley – Parsons (Project Engineer)
- Jeff Mirarchi – Taconic (Client PM)
- Clean Harbors
 - o Jeff Wickham (Contractor Superintendent)
 - o Tyler Shipley (Foreman)
 - o Danny Godbury
 - o Michael Benini

II. HEALTH AND SAFETY

- Clean Harbors crew and Parsons attended morning safety meeting, discussed plans for the day. Daily safety talk topics included potential hazards during loading of excavated soil stockpile, backing and spotting trucks during loading operations, vehicle/equipment traffic.

III. EQUIPMENT

<u>Equipment</u>	<u>Notes</u>
Skidsteer (Takeuchi TL8R-2)	On-site; w/ Mower, Roller Brush, Trencher, Bucket, Forks Attachments
Excavator (CAT 315GC)	On-site
Mini-Excavator (Takeuchi TB235-2)	On-site
Dozer (CAT D3)	On-site

IV. CAMP MONITORING

- Continuous CAMP monitoring while intrusive work performed, see details below:
 - o Maximum 15-min Upwind Dust Reading: 0.005 mg/m³ (Upwind CAMP malfunctioned during the first portion of the day during excavation/loadout activities, downwind CAMP did not exhibit any maximum 15-min readings above 0.038 mg/m³)
 - o Maximum 15-min Downwind Dust Reading: 0.038 mg/m³

V. WORK PERFORMED

1. Four lined end-dump trucks arrived on-site to receive soil excavations for disposal. Stockpiled soils were loaded into the trucks via the excavator. Trucks were lined and soils were free from excess water. Each truck was loaded with approximately 30tons of soil each, but final haul weights will be determined when the trucks are weighed at the disposal facility. Copies of the waste manifests were distributed to all parties.
2. Continued excavation of the swale along the northeastern corner of building I. Taconic, Parsons, and Clean Harbors observed excavation to verify depths and limits. Excavation tailings

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continued to be loaded and transferred to the stockpile containment area via skidsteer. Approximately two-thirds of the excavation has been completed to-date.

3. Clean Harbors crew prepared the stockpile containment area for soil loadout to continue tomorrow. Expecting two additional end-dump trucks tomorrow.

VI. MATERIALS RECEIVED

- N/A

VII. EXCAVATED SOIL DISPOSAL

- 4 truckloads (~approximately 30T each, 120T total)

VIII. ATTACHMENTS

Attachment 1 – Photos

Attachment 1 – Photographs



Photo 1: Excavator loading stockpiled soils into lined end-dump for hauling to disposal facility



Photo 2: Hand-digging around existing water valve withing excavation limits

Attachment 1 – Photographs



Photo 3: Swale excavation along northeast corner of Building I, water valve exposed



Photo 4: Completed excavation along northside of Building I, looking northwest

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Date of Activities:	Thursday 22 August 2024	Report #: 09
Date of Report:	Wednesday 23 August 2024	
Weather:	Partly cloudy, some sun, cool - Temperature ranged 52° to 70° F	
Parsons Field Rep.:	Josh Hawley	Time On-Site: 0645 Time Off-Site: 1700

I. PERSONNEL ON-SITE

The following personnel were on-Site for work related to the Taconic Phase 1 IRM work:

- Josh Hawley – Parsons (Project Engineer)
- Jeff Mirarchi – Taconic (Client PM)
- Clean Harbors
 - o Jeff Wickham (Contractor Superintendent)
 - o Tyler Shipley (Foreman)
 - o Danny Godbury
 - o Michael Benini
 - o Scott Thayer (GM)
 - o Greg Bird (Division Safety)
- New York State DEC
 - o Ian Beilby
 - o Chris Monaco

II. HEALTH AND SAFETY

- Clean Harbors crew and Parsons attended morning safety meeting, discussed plans for the day. Daily safety talk topics included safe spotting and loading of haul trucks. Watching your steps as you walk while spotting vehicles, watch for uneven ground, rocks, vegetation, etc, be aware of potential hazards that may cause slips, trips, or falls.

III. EQUIPMENT

<u>Equipment</u>	<u>Notes</u>
Skidsteer (Takeuchi TL8R-2)	On-site; w/ Mower, Roller Brush, Trencher, Bucket, Forks Attachments
Excavator (CAT 315GC)	On-site
Mini-Excavator (Takeuchi TB235-2)	On-site
Dozer (CAT D3)	On-site

IV. CAMP MONITORING

- Continuous CAMP monitoring while intrusive work performed, see details below:
 - o Maximum 15-min Upwind Dust Reading: 0.012 mg/m³
 - o Maximum 15-min Downwind Dust Reading: 0.019 mg/m³

V. WORK PERFORMED

1. Two lined end-dump trucks arrived on-site to receive soil excavations for disposal. Stockpiled soils were loaded into the trucks via the excavator. Trucks were lined and soils were free from excess water. Each truck was loaded with approximately 30tons of soil each, but final haul

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weights will be determined when the trucks are weighed at the disposal facility. Copies of the waste manifests were distributed to all parties. See Attachment 2 for waste shipment log.

2. Continued excavation of the swale along the eastern limit of the excavation. Taconic, Parsons, and Clean Harbors observed excavation to verify depths and limits.
3. Clean Harbors crew prepared the stockpile containment area for soil loadout to continue tomorrow. Expecting two additional end-dump trucks tomorrow.
4. Taconic and Parsons collected 5 soil samples from the base of the excavation (PEB-01 through PEB-05) to be analyzed for remaining PFAS concentrations within the base of the excavation.

VI. MATERIALS RECEIVED

- N/A

VII. EXCAVATED SOIL DISPOSAL

- 2 truckloads (~approximately 30T each, 60T total, see Waste Shipment Log below)

VIII. ATTACHMENTS

Attachment 1 – Photos

Attachment 2 – Waste Shipment Log

Attachment 1- Photographs



Photo 1: Excavator loading stockpiled soils into lined end-dump for hauling to disposal facility



Photo 2: Haul truck lined with poly sheeting prior to loading

Attachment 2– Waste Shipment Log

Waste Shipment Tracking Log

Load Number	Manifest Number	Shipment Date	Weigh Ticket #	Canadian Manifest #	Facility Weight (Ton)	Truck/Trailer Number
1	001	8/21/2024	NONHAZ001	208504	36.49	2438 / T-189
2	002	8/21/2024	NONHAZ002	208502	35.09	20-19 / T-142
3	003	8/21/2024	NONHAZ003	NONHAZ003	32.20	2420 / T-97
4	004	8/21/2024	NONHAZ004	CBA208503	33.66	2331 / T-195
5	005	8/22/2024	NONHAZ005			T-168
6	006	8/22/2024	NONHAZ006			T-193
7	007	8/23/2024	NONHAZ007			
8	008	8/23/2024	NONHAZ008			
					137.44	

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Date of Activities:	Friday 23 August 2024	Report #: 10
Date of Report:	Monday 24 August 2024	
Weather:	Sunny, dry, warm - Temperature ranged 65 ° to 80 ° F	
Parsons Field Rep.:	Josh Hawley	Time On-Site: 0645 Time Off-Site: 1500

I. PERSONNEL ON-SITE

The following personnel were on-Site for work related to the Taconic Phase 1 IRM work:

- Josh Hawley – Parsons (Project Engineer)
- Jeff Mirarchi – Taconic (Client PM)
- Clean Harbors
 - o Tyler Shipley (Foreman)
 - o Danny Godbury
 - o Michael Benini

II. HEALTH AND SAFETY

- Clean Harbors crew and Parsons attended morning safety meeting, discussed plans for the day. Daily safety talk topics included safe spotting and loading of haul trucks. Watching your steps as you walk while spotting vehicles, watch for uneven ground, rocks, vegetation, etc, be aware of potential hazards that may cause slips, trips, or falls.

III. EQUIPMENT

<u>Equipment</u>	<u>Notes</u>
Skidsteer (Takeuchi TL8R-2)	On-site; w/ Mower, Roller Brush, Trencher, Bucket, Forks Attachments
Excavator (CAT 315GC)	On-site
Mini-Excavator (Takeuchi TB235-2)	On-site
Dozer (CAT D3)	On-site

IV. CAMP MONITORING

- Continuous CAMP monitoring while intrusive work performed, see details below:
 - o Maximum 15-min Upwind Dust Reading: 0.020 mg/m³
 - o Maximum 15-min Downwind Dust Reading: 0.043 mg/m³

V. WORK PERFORMED

1. Three lined end-dump trucks arrived on-site to receive soil excavations for disposal. Stockpiled soils were loaded into the trucks via the excavator. Trucks were lined and soils were free from excess water. Each truck was loaded with approximately 30tons of soil each, but final haul weights will be determined when the trucks are weighed at the disposal facility. Copies of the waste manifests were distributed to all parties. Final weight tickets from the receiving facility have not been received yet. See Attachment 2 for waste shipment log. Waste soil loadout was completed, containment area liner was removed and disposed of with the last load of soil.
2. The swale excavation final grade was surveyed, and grade stakes were set with elevations marked for backfill to 1-foot below final finish surface elevation.

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3.

VI. **MATERIALS RECEIVED**

- N/A

VII. **EXCAVATED SOIL DISPOSAL**

- 3 truckloads (~approximately 30T each, 90T total, see Waste Shipment Log below)

VIII. **ATTACHMENTS**

Attachment 1 – Photos

Attachment 2 – Waste Shipment Log

Attachment 2- Photo Log



Photo 1: Excavator loading stockpiled soils into lined end-dump for hauling to disposal facility



Photo 2: Eastern end of swale excavation completed

Attachment 2- Photo Log



Photo 3: CAMP equipment setup to monitoring dust/particulate downwind from soil loadout area

Attachment 3– Waste Shipment Log

Waste Shipment Tracking Log				updated: 8/30/2024			
Load Number	Manifest Number	Shipment Date	Weigh Ticket #	Canadian Manifest #	Facility Weight (Ton)	Truck/Trailer Number	
1	001	8/21/2024	NONHAZ001	CBA208504	36.49	2438 / T-189	
2	002	8/21/2024	NONHAZ002	CBA208502	35.09	20-19 / T-142	
3	003	8/21/2024	NONHAZ003	CBA208505	32.20	2420 / T-97	
4	004	8/21/2024	NONHAZ004	CBA208503	33.66	2331 / T-195	
5	005	8/22/2024	NONHAZ005	CBA208507	33.63	20-15 / T-168	
6	006	8/22/2024	NONHAZ006	CBA208506	29.94	21-22 / T-193	
7	007	8/23/2024	NONHAZ007	CBA208508	33.07	???	
8	008	8/23/2024	NONHAZ008	CBA208510	33.66	2324 / T-139	
9	009	8/23/2024	NONHAZ009	CBA20509	33.95	2435 / T-200	
					301.69	tons	

Field Activities Daily Report
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Date of Activities:	Monday 26 August 2024	Report #: 09
Date of Report:	Tuesday 27 August 2024	
Weather:	Partly cloudy, sunny, low wind - Temperature ranged 65° to 82° F	
Parsons Field Rep.:	Juliette Torres	Time On-Site: 1000 Time Off-Site: 1700

I. PERSONNEL ON-SITE

The following personnel were on-Site for work related to the Taconic Phase 1 IRM work:

- Juliette Torres – Parsons (Temporary replacement for Project Engineer)
- Jeff Mirarchi – Taconic (Client PM)
- Clean Harbors
 - o Tyler Shipley (Foreman)
 - o Keith Watson
 - o Danny Godbury
 - o Michael Benini

II. HEALTH AND SAFETY

- Clean Harbors attended morning safety meeting and discussed plans for the day, which was later repeated once Parsons arrived on site. Daily safety talk topics included traffic hazards from pedestrians, public vehicles, plant vehicles, and delivery and haul trucks. Watching your steps as you walk while spotting vehicles, watch for uneven ground, rocks, vegetation, etc, be aware of potential hazards that may cause slips, trips, or falls. Proper lifting techniques. Be aware of heat, stay hydrated and use vehicle/shade as shelter when needed.

III. EQUIPMENT

<u>Equipment</u>	<u>Notes</u>
Skidsteer (Takeuchi TL8R-2)	On-site; w/ Mower, Roller Brush, Trencher, Bucket, Forks Attachments
Excavator (CAT 315GC)	On-site
Mini-Excavator (Takeuchi TB235-2)	On-site
Dozer (CAT D3)	On-site
Plate Compactor	On-site

IV. CAMP MONITORING

- No CAMP monitoring since no intrusive work was performed.

V. WORK PERFORMED

1. Six end-dump trucks on-site to deliver Run of Bank (ROB) for backfill (approximately 120 cubic yards total). Unloaded where stockpiled soils were.
2. Flatbed tractor truck from Martlin Distributing on-site to pick up the 19 leftover Power Pellets pallets. Pallets loaded using Skidsteer with fork attachment, then covered with tarp and secured with ratchet straps.
3. Started backfilling and compacting ROB along the swale's eastern limit. Taconic, Parsons, and Clean Harbors observed backfilling and compacting to verify depths and limits. Went as far as water valve on eastern edge of building.

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4. Taconic, Parsons, and Clean Harbors discuss plan to maintain integrity of concave backfill design: backfill and compact to grade, then excavate backfill one foot below grade down center of swale. Laser level will be brought on-site tomorrow to level grade measurements. Concerns about anchor trench on side closest to building raised, to be discussed.

VI. MATERIALS RECEIVED

- 6 truckloads of ROB (approximately 120 cubic yards)

VII. EXCAVATED SOIL DISPOSAL

- N/A

VIII. ATTACHMENTS

Attachment 1 – Photos



Photo 1: Skidsteer with bucket attachment brings ROB towards Mini-Excavator for backfilling



Photo 2: Using level to mark one foot below grade with orange spray can



Photo 3: 19 Power Pellet pallets loaded onto flatbed tractor truck and covered with tarp (ratchet straps not pictured)



Photo 4: Compacting first layer of ROB with Compactor

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Date of Activities:	Tuesday 27 August 2024	Report #: 12
Date of Report:	Wednesday 28 August 2024	
Weather:	Partly cloudy, sunny, low wind - Temperature ranged 59° to 81° F	
Parsons Field Rep.:	Juliette Torres	Time On-Site: 0705 Time Off-Site: 1705

I. PERSONNEL ON-SITE

The following personnel were on-Site for work related to the Taconic Phase 1 IRM work:

- Juliette Torres – Parsons (Temporary replacement for Project Engineer)
- Jeff Mirarchi – Taconic (Client PM)
- Clean Harbors
 - o Tyler Shipley (Contractor Superintendent)
 - o Keith Watson
 - o Danny Godbury
 - o Michael Benini

II. HEALTH AND SAFETY

- Clean Harbors crew and Parsons attended morning safety meeting and discussed plans for the day. Daily safety talk topics included awareness of moving equipment and vehicles, good communication and spotting. Watching your steps as you walk, be aware of potential hazards that may cause slips, trips, or falls. Went over muster points on-site.
- Tyler Shipley (Clean Harbors) went over HASP with Juliette Torres (Parsons) and Keith Watson (Clean Harbors).

III. EQUIPMENT

<u>Equipment</u>	<u>Notes</u>
Skidsteer (Takeuchi TL8R-2)	On-site; w/ Mower, Roller Brush, Trencher, Bucket, Forks Attachments
Excavator (CAT 315GC)	On-site, demobbed.
Mini-Excavator (Takeuchi TB235-2)	On-site
Dozer (CAT D3)	On-site
Plate Compactor	On-site
Rotary Laser Level Kit (Milwaukee M18)	On-Site

IV. CAMP MONITORING

- No CAMP monitoring since no intrusive work was performed.

V. WORK PERFORMED

1. Continued backfilling ROB along swale using Skidsteer with bucket attachment. Taconic, Parsons, and Clean Harbors observed backfilling to verify depths and limits. Attempted compacting initially using bucket of Mini-Excavator, then Compactor. Accumulated water in swale saturated backfill which made it difficult to compact. Proposed plan is to combine with more backfill and let dry overnight before compacting the next day. Slumping soil off the

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westernmost building foundation wall was knocked into swale, before being covered with backfill.

2. Taconic, Parsons, and Clean Harbors discussed plan for anchor trenches: will be excavated out of backfill as deep as possible without risking reaching potentially contaminated soil in the sideslope areas. GCL will be extended up along the edges of the swale, until grade. Clean Harbors will bring 18" bucket for Mini-Excavator tomorrow to build trenches.
3. Four end-dump trucks on-site to deliver Run of Bank (ROB) for backfill (approximately 80 cubic yards total). Unloaded where stockpiled soils were. Two of the loads had little subrounded to rounded cobble (on average less than five inches), so it was decided that these loads would backfill the bottom of the swale to prevent puncturing of GCL.
4. Flatbed tractor truck on-site to pick up Excavator.
5. Rotary Laser Level was set up on Tripod at western limit of swale. Measurements of grade were taken, and the Tripod was left in-place.

VI. MATERIALS RECEIVED

- 4 truckloads of ROB (approximately 80 cubic yards)

VII. EXCAVATED SOIL DISPOSAL

- N/A

VIII. ATTACHMENTS

Attachment 1 – Photos



Photo 1: Mini-Excavator blocking entrance to road along swale overnight



Photo 2: Ramp built with backfill along corner so that Skidsteer can easily bring backfill along swale



Photo 3: Spotting while receiving last load of ROB fill



Photo 4: Setting up Rotary Laser Level at western limit of swale

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Date of Activities:	Wednesday 28 August 2024	Report #: 13
Date of Report:	Thursday 29 August 2024	
Weather:	Partly cloudy, sunny, low wind, multiple small rain events - Temperature ranged 67° to 77° F	
Parsons Field Rep.:	Juliette Torres	Time On-Site: 0700 Time Off-Site: 1600

I. PERSONNEL ON-SITE

The following personnel were on-Site for work related to the Taconic Phase 1 IRM work:

- Juliette Torres – Parsons (Temporary replacement for Project Engineer)
- Jeff Mirarchi – Taconic (Client PM)
- Clean Harbors
 - o Tyler Shipley (Contractor Superintendent)
 - o Keith Watson
 - o Danny Godbury
 - o Michael Benini

II. HEALTH AND SAFETY

- Clean Harbors crew and Parsons attended morning safety meeting and discussed plans for the day. Daily safety talk topics included awareness of and communication about moving equipment and vehicles, e.g. excavator boom swing. Watching your steps as you walk, especially when spotting. Be aware of potential hazards that may cause slips, trips, or falls.

III. EQUIPMENT

<u>Equipment</u>	<u>Notes</u>
Skidsteer (Takeuchi TL8R-2)	On-site; w/ Mower, Roller Brush, Trencher, Bucket, Forks Attachments
Mini-Excavator (Takeuchi TB235-2)	On-site
Plate Compactor	On-site
Rotary Laser Level Kit (Milwaukee M18)	On-Site

IV. CAMP MONITORING

- No CAMP monitoring since no intrusive work was performed.

V. WORK PERFORMED

1. Continued backfilling ROB along swale using Skidsteer with bucket attachment and Mini-Excavator. Taconic, Parsons, and Clean Harbors observed backfilling to verify depths and limits. Attempted compacting initially using Compactor, but vibrations brought out water. Observed that Skidsteer and Mini-Excavator tracks have compacted backfill except along swale center line, which will be excavated anyway to form concave design.
2. One end-dump trucks on-site to deliver Run of Bank (ROB) for backfill (approximately 20 cubic yards total). Unloaded where stockpiled soils were.
3. Another load of ROB was ordered for the next day. The plan for tomorrow is to keep backfilling, and then excavate the anchor trenches and center line. The 18" bucket for the Mini-Excavator will not be used so was not picked up today.

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VI. MATERIALS RECEIVED

- 1 truckloads of ROB (approximately 20 cubic yards)

VII. EXCAVATED SOIL DISPOSAL

- N/A

VIII. ATTACHMENTS

Attachment 1 – Photos



Photo 1: Skidsteer bringing backfill towards Mini-Excavator



Photo 2: Visible water on top of backfill post using Compactor along center line



Photo 3: Measuring grade using tape measurer and level



Photo 4: Digging out ramp made of backfill using rake, shovel, and Mini-Excavator

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Taconic Inc. NYSDEC Site No. 442047 – Petersburg, NY 12138

Date of Activities:	Thursday 29 August 2024	Report #: 14
Date of Report:	Friday 30 August 2024	
Weather:	Partly cloudy, sunny, low wind - Temperature ranged 62° to 73° F	
Parsons Field Rep.:	Josh Hawley	Time On-Site: 1000 Time Off-Site: 1630

I. PERSONNEL ON-SITE

The following personnel were on-Site for work related to the Taconic Phase 1 IRM work:

- Josh Hawley – Parsons
- Jeff Mirarchi – Taconic (Client PM)
- Clean Harbors
 - o Tyler Shipley (Contractor Superintendent)
 - o Keith Watson
 - o Danny Godbury
 - o Michael Benini

II. HEALTH AND SAFETY

- Clean Harbors crew and Parsons attended morning safety meeting and discussed plans for the day. Daily safety talk topics included working around operating equipment, hand digging, and hydration.

III. EQUIPMENT

<u>Equipment</u>	<u>Notes</u>
Skidsteer (Takeuchi TL8R-2)	On-site; w/ Roller Brush, Bucket, Forks Attachments
Mini-Excavator (Takeuchi TB235-2)	On-site
Plate Compactor	On-site
Rotary Laser Level Kit (Milwaukee M18)	On-Site

IV. CAMP MONITORING

- No CAMP monitoring since no intrusive work was performed.

V. WORK PERFORMED

1. Continued backfilling ROB along swale using Skidsteer with bucket attachment and Mini-Excavator. Taconic, Parsons, and Clean Harbors observed backfilling to verify depths and limits. Discussion between all parties to ensure backfill is compacted adequately to ensure final grade does not settle unevenly.
2. One truckload of Run of Bank (ROB) material for backfill delivered to the site (approximately 20 cubic yards).
3. The plan for tomorrow is to continue backfilling, compacting, and grading the swale. Anchor trenches will be excavated as work progresses from western side of swale to the eastern end.

Field Activities Daily Report
Taconic Interim Remedial Measure (IRM) Building 1
Taconic Inc. NYSDEC Site No. 442047 – Petersburg, NY 12138

VI. MATERIALS RECEIVED

- 1 truckload of ROB (approximately 20 cubic yards)

VII. ATTACHMENTS

Attachment 1 – Photos



Photo 1: Hand-grading backfill surface at western end of swale



Photo 2: Using plate compactor to compact backfill surface



Photo 3: Skidsteer placing backfill and grading backfill surface

Field Activities Daily Report
Taconic Interim Remedial Measure (IRM) Building 1
Taconic Inc. NYSDEC Site No. 442047 – Petersburg, NY 12138

Date of Activities:	Friday 30 August 2024	Report #: 15
Date of Report:	Monday 2 September 2024	
Weather:	Partly cloudy to sunny, calm - Temperature ranged 60° to 70° F	
Parsons Field Rep.:	Josh Hawley	Time On-Site: 700 Time Off-Site: 1630

I. PERSONNEL ON-SITE

The following personnel were on-Site for work related to the Taconic Phase 1 IRM work:

- Josh Hawley – Parsons
- Jeff Mirarchi – Taconic (Client PM)
- Clean Harbors
 - o Tyler Shipley (Contractor Superintendent)
 - o Keith Watson
 - o Danny Godbury

II. HEALTH AND SAFETY

- Clean Harbors crew and Parsons attended morning safety meeting and discussed plans for the day. Daily safety talk topics included working around equipment operation,

III. EQUIPMENT

<u>Equipment</u>	<u>Notes</u>
Skidsteer (Takeuchi TL8R-2)	On-site; w/ Roller Brush, Bucket, Forks Attachments
Mini-Excavator (Takeuchi TB235-2)	On-site
Plate Compactor	On-site
Rotary Laser Level Kit (Milwaukee M18)	On-Site

IV. CAMP MONITORING

- No CAMP monitoring since no intrusive work was performed.

V. WORK PERFORMED

1. Continued backfilling ROB along swale using Skidsteer with bucket attachment and Mini-Excavator. Taconic, Parsons, and Clean Harbors observed backfilling to verify depths and limits. Clean Harbors checking grade and slope using laser level. ROB backfill is being placed above final planned elevation, compacted, and then dug out and down to achieve final grade and ensure proper drainage out culvert at the east end of swale.
2. The Clean Harbors crew plans to work Monday and will continue backfilling, compacting, and grading the swale. Anchor trenches will be excavated as work progresses from western side of swale to the eastern end.

VI. MATERIALS RECEIVED

- N/A

Field Activities Daily Report
Taconic Interim Remedial Measure (IRM) Building 1
Taconic Inc. NYSDEC Site No. 442047 – Petersburg, NY 12138

VII. ATTACHMENTS

Attachment 1 – Photos



Photo 1: Skidsteer loading ROB backfill into bucket for placement into swale



Photo 2: Skidsteer placing ROB backfill into swale



Photo 3: Using plate compactor to compact ROB backfill in swale

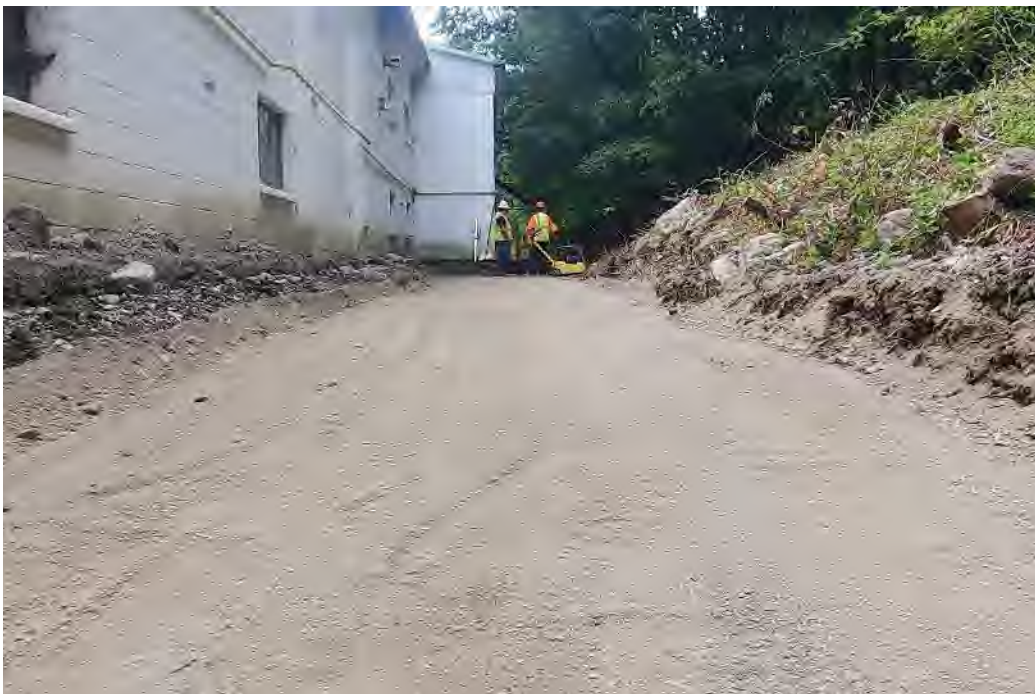


Photo 4: Compacted swale subgrade looking west

Field Activities Daily Report
Taconic Interim Remedial Measure (IRM) Building 1
Taconic Inc. NYSDEC Site No. 442047 – Petersburg, NY 12138

Date of Activities:	Monday 2 August 2024	Report #: 16
Date of Report:	Tuesday 3 September 2024	
Weather:	Partly cloudy to sunny, calm - Temperature ranged 60° to 70° F	
Parsons Field Rep.:	Josh Hawley	Time On-Site: 700 Time Off-Site: 1330

I. PERSONNEL ON-SITE

The following personnel were on-Site for work related to the Taconic Phase 1 IRM work:

- Josh Hawley – Parsons
- Clean Harbors
 - o Tyler Shipley (Contractor Superintendent)
 - o Keith Watson
 - o Danny Godbury

II. HEALTH AND SAFETY

- Clean Harbors crew and Parsons attended morning safety meeting and discussed plans for the day. Daily safety talk topics included working around equipment operation,

III. EQUIPMENT

<u>Equipment</u>	<u>Notes</u>
Skidsteer (Takeuchi TL8R-2)	On-site; w/ Roller Brush, Bucket, Forks Attachments
Mini-Excavator (Takeuchi TB235-2)	On-site
Plate Compactor	On-site
Rotary Laser Level Kit (Milwaukee M18)	On-Site

IV. CAMP MONITORING

- No CAMP monitoring since no intrusive work was performed.

V. WORK PERFORMED

1. Clean Harbors continued grading the subgrade in the swale. ROB placement and compaction has been completed, crew is finalizing swale slope and grade using Mini-Excavator. Clean Harbors continues to check grade and slope using laser level.
2. GCL rolls were moved and staged along access road in preparation for placement in areas where swale backfill grading is complete. Anticipating GCL placement Tuesday or Wednesday this week,

VI. MATERIALS RECEIVED

- N/A

VII. ATTACHMENTS

Attachment 1 – Photos

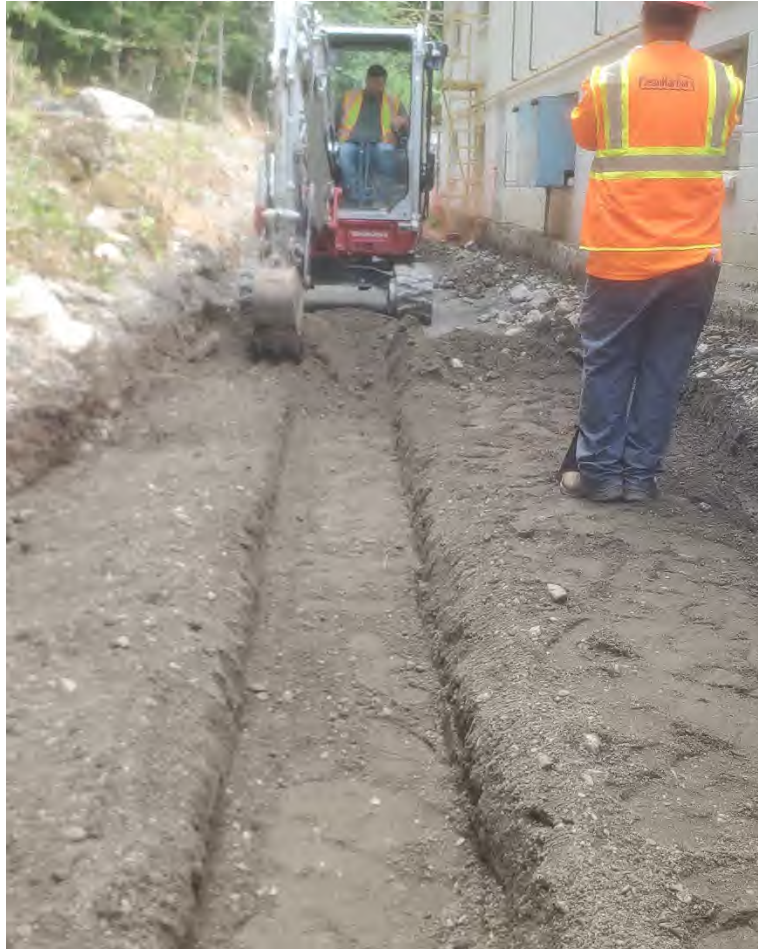


Photo 1: Mini-excavator digging channel in swale to finalize grade for proper drainage



Photo 2: Moving and staging GCL rolls in preparation for placement

Field Activities Daily Report
Taconic Interim Remedial Measure (IRM) Building 1
Taconic Inc. NYSDEC Site No. 442047 – Petersburg, NY 12138

Date of Activities:	Tuesday 3 August 2024	Report #: 17
Date of Report:	Wednesday 4 September 2024	
Weather:	Sunny, calm, settled - Temperature ranged 50° to 70° F	
Parsons Field Rep.:	Josh Hawley	Time On-Site: 700 Time Off-Site: 1700

I. PERSONNEL ON-SITE

The following personnel were on-Site for work related to the Taconic Phase 1 IRM work:

- Josh Hawley – Parsons
- Jeff Mirarchi – Taconic (Client PM)
- Clean Harbors
 - o Tyler Shipley (Contractor Superintendent)
 - o Keith Watson
 - o Danny Godbury

II. HEALTH AND SAFETY

- Clean Harbors crew and Parsons attended morning safety meeting and discussed plans for the day. Daily safety talk topics driving safety, school is back in session, watch for added traffic and pedestrians, also added awareness for potential animal strikes with increased deer activity.

III. EQUIPMENT

<u>Equipment</u>	<u>Notes</u>
Skidsteer (Takeuchi TL8R-2)	On-site; w/ Roller Brush, Bucket, Forks Attachments
Mini-Excavator (Takeuchi TB235-2)	On-site
Rotary Laser Level Kit (Milwaukee M18)	On-Site

IV. CAMP MONITORING

- No CAMP monitoring since no intrusive work was performed.

V. WORK PERFORMED

1. Clean Harbors continued grading the subgrade in the swale. ROB placement and compaction has been completed, crew is finalizing swale slope and grade using Mini-Excavator. Clean Harbors continues to check slope and grade using laser level.
2. Additional discussion between Taconic, Parsons, and Clean Harbors regarding GCL placement in swale, planning for finish grade and maintaining access to facility rear door along swale perimeter.

VI. MATERIALS RECEIVED

- 4 truckloads of #1 Stone (~80T)

VII. ATTACHMENTS

Attachment 1 – Photos



Photo 1: Spotting delivery and dumping of #1 stone, for cover placement in swale



Photo 2: Mini-excavator digging swale grade and slope in preparation of GCL placement, looking east



Photo 3: Mini-excavator digging swale grade and slope in ROB backfill, looking west

Field Activities Daily Report
Taconic Interim Remedial Measure (IRM) Building 1
Taconic Inc. NYSDEC Site No. 442047 – Petersburg, NY 12138

Date of Activities:	Wednesday 4 August 2024	Report #: 18
Date of Report:	Thursday 5 September 2024	
Weather:	Sunny, calm, settled - Temperature ranged 45° to 75° F	
Parsons Field Rep.:	Josh Hawley	Time On-Site: 700 Time Off-Site: 1700

I. PERSONNEL ON-SITE

The following personnel were on-Site for work related to the Taconic Phase 1 IRM work:

- Josh Hawley – Parsons
- Jeff Mirarchi – Taconic (Client PM)
- Clean Harbors
 - o Tyler Shipley (Contractor Superintendent)
 - o Keith Watson
 - o Danny Godbury

II. HEALTH AND SAFETY

- Clean Harbors crew and Parsons attended morning safety meeting and discussed plans for the day. Daily safety talk topics included working around open trench excavation Watch for debris, slopes, and uneven ground which may create hazards leading to slips, trips, or falls. Continue good awareness and communication when working around operating equipment.

III. EQUIPMENT

<u>Equipment</u>	<u>Notes</u>
Skidsteer (Takeuchi TL8R-2)	On-site; w/ Roller Brush, Bucket, Forks Attachments
Mini-Excavator (Takeuchi TB235-2)	On-site
Rotary Laser Level Kit (Milwaukee M18)	On-Site

IV. CAMP MONITORING

- No CAMP monitoring since no intrusive work was performed.

V. WORK PERFORMED

1. Clean Harbors continued grading the subgrade in the swale. ROB placement and compaction has been completed, crew is finalizing swale slope and grade using Mini-Excavator. Clean Harbors continues to check slope and grade using laser level.
2. Clean Harbors began GCL placement in western end of swale. Crew cut GCL section to ease handling material, all parties discussed approach to lining swale with GCL. Though crew will cut GCL into manageable sections to aid for install and placement within the swale, they will maximize liner segment lengths in straight sections to prevent excessive seaming between liner segment pieces. Parsons and Taconic emphasized maintaining GCL integrity while handling and placing, avoiding excessive handling or dragging over rough or sharp surfaces, and preventing GCL from contacting water. All parties walked the backfill subgrade to inspect the finished surface for sharp and protruding debris, rocks and sticks larger than 1" were removed from the finished surface prior to placing GCL. Clean Harbors is mobilizing two additional crew members to aid with GCL placement tomorrow.

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VI. MATERIALS RECEIVED

- N/A

VII. ATTACHMENTS

Attachment 1 – Photos



Photo 1: Using mini-excavator to grade swale at eastern end



Photo 2: Western half of swale, backfill subgrade finished prior to GCL placement, looking west



Photo 3: Eastern end of swale, backfill subgrade finished prior to GCL placement, looking east

Field Activities Daily Report
Taconic Interim Remedial Measure (IRM) Building 1
Taconic Inc. NYSDEC Site No. 442047 – Petersburg, NY 12138

Date of Activities:	Thursday 5 August 2024	Report #: 19
Date of Report:	Friday 6 September 2024	
Weather:	Sunny, calm, settled - Temperature ranged 47 ° to 77 ° F	
Parsons Field Rep.:	Josh Hawley	Time On-Site: 700 Time Off-Site: 1700

I. PERSONNEL ON-SITE

The following personnel were on-Site for work related to the Taconic Phase 1 IRM work:

- Josh Hawley – Parsons
- Jeff Mirarchi – Taconic (Client PM)
- Clean Harbors
 - o Tyler Shipley (Contractor Superintendent)
 - o Keith Watson
 - o Danny Godbury
 - o Greg Bailey
 - o Nick Pierce

II. HEALTH AND SAFETY

- Clean Harbors crew and Parsons attended morning safety meeting and discussed plans for the day. Daily safety talk topics included planning for handling and moving geosynthetic clay liner (GCL) into the open swale excavation. Using equipment to safely move the liner reduces need for excessive strain and labor when rolling, lifting, or dragging the GCL liner into place. Be mindful of footing in and around swale trench, especially when lifting, moving, or placing GCL.

III. EQUIPMENT

<u>Equipment</u>	<u>Notes</u>
Skidsteer (Takeuchi TL8R-2)	On-site; w/ Roller Brush, Bucket, Forks Attachments
Mini-Excavator (Takeuchi TB235-2)	On-site
Rotary Laser Level Kit (Milwaukee M18)	On-Site

IV. CAMP MONITORING

- No CAMP monitoring since no intrusive work was performed.

V. WORK PERFORMED

1. Clean Harbors completed grading the subgrade in the swale in preparation of GCL placement.
2. Clean Harbors continued GCL placement working from the west end of the swale and installing manageable segments of liner working their way to the east, from high to low. The crew unrolled sections of GCL on the access road, cut segments ranging from 30-50ft in length, then folded the GCL segments into bundles to be picked with straps using the mini-excavator. GCL bundles were hoisted into the swale then unfolded and carefully maneuvered and to ensure full coverage of the swale extending into the anchor trenches. GCL segments were continuously observed by Parsons during loading and placement activities for cuts, tears, and areas of unbonded geotextile fabric, as well as ensuring any excessive moisture in the subgrade was not being absorbed into the GCL prior to installing the stone cover. Minimal damage or defects of

**Field Activities Daily Report
Taconic Interim Remedial Measure (IRM) Building 1
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the GCL was noted during installation and any areas exhibiting compromised condition were cut off and discarded. GCL seams were overlapped according to manufacturer recommendations and bentonite powder was placed in between the seams to ensure proper sealing between liner segments.

3. Clean Harbors began placing stone cover over the GCL to 1ft thick in the eastern end of the swale.

VI. MATERIALS RECEIVED

- N/A

VII. ATTACHMENTS

Attachment 1 – Photos



Photo 1: Crew unrolling GCL along road to cut into segment for placement



Photo 2: Using straps and mini-excavator to lower bundled GCL into swale for placement



Photo 3: Unfolding GCL within swale and positioning for final placement, looking west

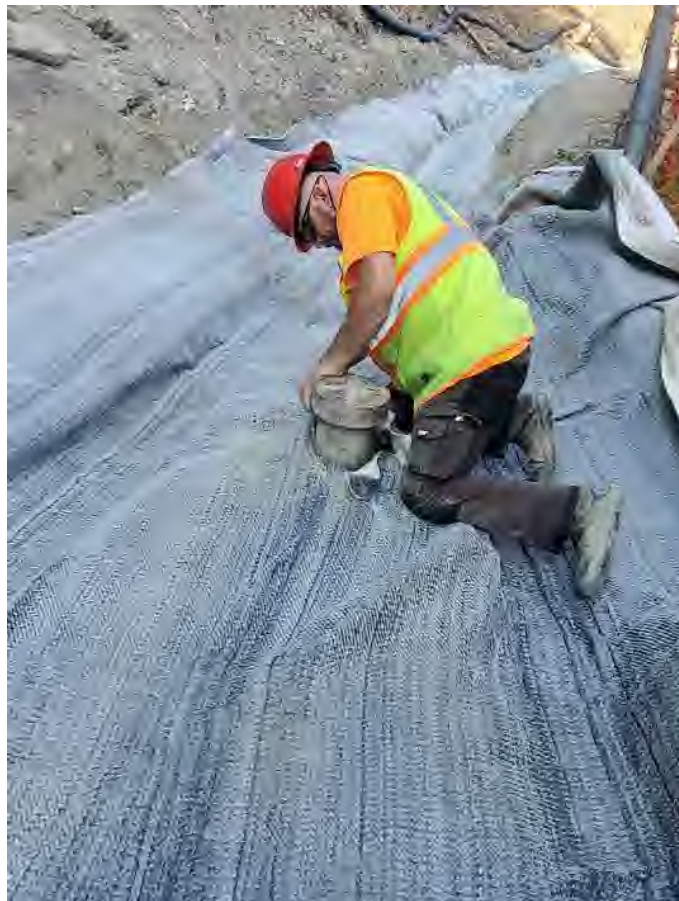


Photo 4: Detailing GCL around existing water valve riser within swale



Photo 5: GCL placed in eastern end of swale, prior to cutting excess edges, view looking northwest



Photo 6: Placing stone cover over GCL in eastern end of swale, looking east

Field Activities Daily Report
Taconic Interim Remedial Measure (IRM) Building 1
Taconic Inc. NYSDEC Site No. 442047 – Petersburg, NY 12138

Date of Activities:	Friday 6 August 2024	Report #: 20
Date of Report:	Monday 9 September 2024	
Weather:	Mostly Cloudy - Temperature ranged 52° to 78° F	
Parsons Field Rep.:	Josh Hawley	Time On-Site: 700 Time Off-Site: 1700

I. PERSONNEL ON-SITE

The following personnel were on-Site for work related to the Taconic Phase 1 IRM work:

- Josh Hawley – Parsons
- Jeff Mirarchi – Taconic (Client PM)
- Clean Harbors
 - o Tyler Shipley (Contractor Superintendent)
 - o Keith Watson
 - o Danny Godbury

II. HEALTH AND SAFETY

- Clean Harbors crew and Parsons attended morning safety meeting and discussed plans for the day. Daily safety talk topics included awareness of traffic on roadway around the site, increased use of roadway while transporting stone from access road to swale increases chances for vehicle conflict along road.

III. EQUIPMENT

<u>Equipment</u>	<u>Notes</u>
Skidsteer (Takeuchi TL8R-2)	On-site; w/ Roller Brush, Bucket, Forks Attachments
Mini-Excavator (Takeuchi TB235-2)	On-site

IV. CAMP MONITORING

- No CAMP monitoring since no intrusive work was performed.

V. WORK PERFORMED

1. With the GCL installation complete, Clean Harbors continued placing stone cover over the GCL to 1ft thick. Stone cover was placed using the skidsteer; buckets of stone were dumped onto the GCL until the 1ft cover thickness requirement was met. Stone cover placement was completed throughout the swale and all GCL was covered.
2. The Clean Harbors crew removed excess stone cover on the temporary access road to be used in the swale cover. Stone from the access road was observed for excessive accumulation of silt or sediment before placement within the swale. The corrugated HDPE culvert across the access road was left in place and the upstream runoff channel was lined with stone removed from the access road. Underlying geotextile fabric used in the temporary access road construction was pulled up and discarded.
3. Clean Harbors and Parsons walked the site and developed a preliminary punch list of items to be addressed prior to demobilization. The following punch list was generated:
 - Clean up and shape stone cover along swale edges
 - Grade and smooth all soil along access road, seed and straw covering for all exposed soil

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Taconic Interim Remedial Measure (IRM) Building 1
Taconic Inc. NYSDEC Site No. 442047 – Petersburg, NY 12138**

- Smooth and grade staging/parking areas, spread gravel cover (using excess leftover stone from swale cover)
 - Place fresh stone along roadway shoulders (using excess leftover stone from swale cover)
 - Remove all debris (stumps, cut vegetation, flex drain pipe, construction debris, etc), dispose in rolloff dumpster
4. Clean Harbors anticipates addressing punch list items tomorrow (Saturday 9/7) and conducting site restoration activities by Monday 9/9.

VI. MATERIALS RECEIVED

- N/A

VII. ATTACHMENTS

Attachment 1 – Photos



Photo 1: GCL placed in western half of swale, looking west



Photo 2: Using mini-excavator and skid steer to remove excess stone from temporary access road for placement within swale as stone cover



Photo 3: Placing stone cover over GCL using skidsteer



Photo 4: Temporary access road prior to grading and smoothing, looking east

APPENDIX E CONTRACTOR CONSTRUCTION WORK PLAN



Clean Harbors
42 Longwater Drive
Norwell, MA 02061-9149
781.792.5000
800.282.0058
www.cleanharbors.com

Construction Work Plan

Taconic, Inc.
136 Coon Brook Road
Petersburgh, NY 12138

Interim Remedial Measure-
Building 1 Area, Soil Excavation, Off-Site Transportation/Disposal of
Excavated Soil, and Construction of Lined Drainage Swale



Project #2403977934
July 23, 2024



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Appendix 1- Schedule

Appendix 2- Waste Disposal Facility



1.0 INTRODUCTION

This Construction Work Plan (CWP) has been prepared to outline the primary means and methods proposed to successfully complete the Taconic, Inc, Interim Remedial Measure (IRM), Building 1 Area remediation. This CWP has been developed based on the requirements presented in the Request for Quote- Building 1 IRM, provided by Taconic, dated March 2024 and associated figures and documents.

Taconic, Inc. Petersburg, New York facility manufactures polytetrafluoroethylene (PTFE) coated fabrics. The Site is in a rural area, at the northernmost intersection of Coon Brook Road and State Route 22. The Site is a 23.54-acre area that features nine structures related to manufacturing and three parking lots. There is an unnamed stream that runs through the Site and another running south of the Site. The site is currently an operating manufacturing facility. The surrounding parcels (some of which are owned by Taconic) are residential or undeveloped. The Little Hoosic River runs south to north on the opposite side of Route 22 from the Site.

The drainage swale behind Building 1 receives surface water runoff from upslope areas. The foundation of Building seems to be completed near the top of bedrock and may be causing ponding within the swale by blocking infiltration and downslope runoff. Elevated concentrations of Per- and Polyfluoroalkyl Substances (PFAS) have been observed in the surface water, sediment, and subsurface soil in the drainage swale behind Building 1.

Clean Harbors is prepared to perform the following project activities including, but not limited to:

- Establishment of a safe worksite
- Site preparation
 - Tree & brush clearing to be chipped and remain onsite
 - Installation of access road
 - Installation of silt fence
 - Installation of orange caution fence for security
 - Removal of four (4) GW monitoring wells
 - Contaminated soil stockpile setup
- Soil excavation, stockpiling, & loading
- Soil stabilization
- Backfill
- Installation of geosynthetic clay liner & crushed stone cover
- Site restoration (if accepted)

The main scope of work is described in more detail in the remainder of this CWP. All work will be performed in accordance with all applicable USEPA, OSHA, State & local regulations and requirements.



2.0 PRECONSTRUCTION ACTIVITIES

Clean Harbors will commence preconstruction activities after the Notice of Award. These activities will include but are not limited to:

- Construction Work Plan (CWP) development
- Site Specific Health and Safety Plan development
- Construction Baseline Progress Schedule
- Participating in a Project Safety Analysis conference call

3. 0 MOBILIZATION

Clean Harbors will mobilize appropriate personnel and equipment to complete activities within the scheduled timeframe. Clean Harbors personnel will have appropriate 40-hour Occupational Safety and Health Administration (OSHA) training and participate in a medical surveillance program. In addition, all personnel working on the site will undergo any necessary site-specific facility training, as well as Clean Harbors site orientation.

Project Team

Quantity	Description
One	Project Supervisor
Two	Equipment Operators
One	Field Inspector

Clean Harbors project superintendent will be designated as the Site Health and Safety Officer (HSO). The project superintendent will hold relevant certifications and necessary training, which include OSHA 40-hour HAZWOPER training, 8-hour Refresher, and Supervisor training. Equipment will be mobilized to the site on an as-needed basis throughout project duration and may include the following (subject to revision as needed):

Equipment

Quantity	Description
One	35,000# Zero Swing Excavator
One	7,000# Zero Swing Mini Excavator
One	Skid Steer (with bucket / forks / broom attachments)
One	Brush Hog Attachment for skid steer (For Site Prep)
One	Trencher Attachment for skid steer (For Site Prep)
One	Wood Chipper (For Site Prep)
One	Plate Compactor (Backfill & Compaction)
One	6K Lull (Installation of GCL)
One	90HP Dozer (Roadway Installation)
Two	Company Trucks



4.0 SITE PREPARATION

During the Site preparation phase, Clean Harbors will complete the following activities:

- Installation of silt fence
- Installation of orange caution fence for security
- Tree & brush clearing
- Installation of access road
- Removal of three (3) GW monitoring wells
- Contaminated soil stockpile setup

4.1 Installation of Silt Fence & Caution Fence

Prior to tree clearing and installation of an access road, silt fence will be installed in the relative locations indicated in the site plans which is above the area of excavation. In total, approximately 300 LF will be installed. It should be noted some trees or vegetation may need to be removed prior to silt fence installation to allow for installation of the silt fence. Clean Harbors will utilize orange caution fence as a barrier to prevent non-essential personnel from entering the work zone.

All soil erosion and sediment controls will be monitored to ensure they are functioning properly and positioned adequately to be effective during use. Clean Harbors personnel will perform routine weekly maintenance inspections and within 24 hours of a rain event and record observations. The inspection records will be maintained throughout the duration of the project. Deficiencies will be corrected as soon as they are noted.

4.2 Tree & Brush Clearing

With the silt fence in-place, Clear Harbors will clear the trees along the bank of the excavation area limits as well as the trees and brush above the excavation area to create an access road and stockpile areas for the soil excavation and loading activities. The trees will be downed and sized utilizing a combination of the 35,000# excavator and a chainsaw. To complete the clearing of the brush, a skid steer with a brush hog attachment will be utilized. Trees will be chipped with a chipper and stockpiled on site for use by Taconic.

4.3 Access Road Installation

With the trees and brush cleared from the excavation area and the location of the access road, Clean Harbors will utilize a combination of a 90HP dozer and skid steer to rough grade the soil starting from the edge of Russel Road to the southern-most point of the end of the excavation. Clean Harbors assumes the pond upgradient of the work site will be shut down for the project duration of 4 weeks to prevent drainage into the northeast portion of the site where the access road will be installed. Based on the Site Walk, there is an approximate 20-foot section of the planned access road route that is saturated with water.

If required, Clean Harbors will remove approximately 1-foot of saturated soil (to be left onsite) from this area prior to placing geotextile fabric and stone down for the access road construction. One load (20-tons) of stone dust will be placed on top of the geotextile within this excavated area to build up



the access road. Clean Harbors will install a culvert pipe (12"x20' ADS, corrugated) under the access road in the saturated area to allow for drainage of water. Geotextile (6 oz) will be rolled out and placed the length of the access road and one (1) foot of #2 stone will be placed and spread over top and tracked over with the dozer.

4.4 Groundwater Monitoring Well Removal

Clean Harbors, with the oversight of Taconic, will remove the four (4) existing monitoring wells, ranging between 4 to 6-feet below ground surface (bgs) within the excavation area and backfilled with bentonite as needed. Clean Harbors is not a licensed well driller and will require Taconic to oversee the removal activities. The well closures will be documented by Taconic.

4.5 Contaminated Stockpile Installation

A temporary stockpile of excavated soil will be generated on top of the access road at the time of excavation activities. The stockpile will be constructed with a 30-mil LLDPE liner on the bottom and hay bales (or equivalent) placed around the perimeter to act as a berm. Upon completion excavation and stockpiling activities, stockpiles will be covered with 6-mil poly and secured with sandbags (or equivalent) as an anchor. The impacted soils stockpile will be covered with 6-mil poly sheeting when not being added to or removed during site activities.

5.0 SOIL EXCAVATION

Based on the size of the Site, the excavation, stockpiling, and loading out of soils will be completed in sequence.

Starting at the southern end of the excavation, working east, Clean Harbors will utilize a combination of the 35,000# excavator and the 7,000# Excavator to excavate approximately 200 CY of soil within the excavation area. Prior to loadout of the soil, the 35,000# excavator will transfer soils from the stockpile within the excavation area, into the temporary stockpile location located on the access road, which will aid in loadout. Triaxle trucks will back down the access road and the 35,000# Excavator will complete the loadout. The loaded truck will be visually inspected after loading to ensure overfill materials are not present on exterior surfaces, ledges, or tires prior to leaving the site. Clean Harbors assumes that 2 – 4 trucks will be loaded out per day. It is estimated to take 3 days to complete the loadout of the 200 CY of soil from the southern end of the excavation area.

With the stockpiled soils removed, Clean Harbors will continue excavation of the trench from eastern end of the trench to the middle and complete the same sequence of stockpiling the soil within the footprint of the excavation area, placing truckloads of soil in the temporary stockpile area and loading out. Based on the remaining 250 CY to be excavated and loaded out, loadout will be completed in an additional 4 days. In total, excavation and loadout is assumed to be completed in 8 days.

As necessary during work activities and upon completion of the Work, Clean Harbors will decontaminate all tools, equipment, vehicles, and other items used at the Site to perform excavation



activities. All construction equipment potentially coming into contact with impacted soil, debris or water, will be decontaminated. Decontamination will occur prior to relocating equipment, vehicles, or other items from an impacted area to a “clean” area of the Site.

Decontamination of equipment will be conducted by manually removing gross surficial contamination and debris using hand tools and brushes. If necessary, equipment will be wiped down with moist disposable towels to minimize the generation of impacted water. Decontamination will occur between when equipment has contacted impacted material being removed and to when equipment will handle clean backfill materials.

6.0 SOIL STABILIZATION

If excavated soils are not deemed fit to be loaded due to saturation, Clean Harbors will utilize super pellets to absorb the water within the soil to render it acceptable for offsite transportation and disposal. Super pellets absorb the water within the soil as opposed to producing an exothermic reaction.

The super pellets work within hours when mixed. The Super Pellets will be delivered in super sacks, which will make it easier to store, handle, and properly mix the appropriate amount of pellets to soil.

7.0 TRANSPORTATION AND DISPOSAL

Clean Harbors intends on utilizing both Bruce Oakley and Goulet Trucking to transport the estimated 525 tons of PFAS Contaminated Soil to Clean Harbors Lambton Landfill Facility. Please refer to Attachment 1- Lambton Landfill Facility Fact Sheet. Trucks being loaded will be lined with 6-mil polyethylene liners and tarped during transport of materials to the landfill. Each truck will be visually inspected prior to departure from site to ensure overfill materials are not present on truck surfaces, ledges, or tires prior to leaving the site. Each truck load will be securely tarped prior to leaving the site. Clean Harbors will ensure all trucks have the proper documentation and signed manifests prior to leaving the site. Documentation for each load leaving the site and manifest numbers will be recorded on daily reports.

The per load rate provided is based on 24-tons per truck and it is estimated that Clean Harbors will loadout 2-4 trucks per day. Disposal to Clean Harbors landfill is based on the profile submitted by Taconic and approved by Clean Harbors.

8.0 BACKFILL

Upon excavation and loadout of the soil, Clean Harbors will backfill the excavation subgrade up to 1-foot below final grade with ROB gravel. The gravel will be placed within the excavation and compacted with a plate compactor. Once the subgrade elevation has been met and confirmed by Taconic’s engineer, Clean Harbors will then install the Geosynthetic Clay Liner (GCL) and stone.



9.0 GEOSYNTHETIC CLAY LINER (GCL) & STONE

Upon completion of the backfilled subgrade, Clean Harbors will install the GCL and crushed stone top layer. Two-foot-deep anchor trenches will be excavated by the 7,000# Mini Excavator and a 6k Lull will be utilized to transport the liner into place. Based on the large stone and boulders along the edge of the trench, Clean Harbors will do its best to generate these anchor trenches. If these boulders or rock are encountered, the GCL will be placed over top. Based on the 2,500 SF area, two rolls of GCL will be installed. The rolls will be overlapped by one (1) foot and bentonite will be utilized to between the overlap.

With the GCL in-place, Clean Harbors will place #2 stone within the anchor trench and continue to place the #2 stone on top of the GCL for the 1-foot backfill over top. Clean Harbors will utilize the access road stone to backfill a portion of the GCL, while the remaining area will be backfilled with additional imported #2 stone. The stone will be placed over top utilizing the 35,000# excavator. To deter puncturing the GCL, no equipment will be allowed over the liner. If needed, stone will be placed on the GCL and spread with the bucket.

10.0 SITE RESTORATION

Areas of the site that have been utilized for the completion of the site work will be restored to conditions before the project start. Soil areas will be seeded and straw covered. Any residual trash or debris generated during the project will be removed, along with the silt fence. Any accumulated non-impacted soil or mud on asphalt surfaces will be removed by sweeping. All access roads will be clear and free of debris.

11.0 DEMOBILIZATION

A “Punch List” will be developed jointly between Clean Harbors and Taconic. Clean Harbors will ensure that all work is completed to the satisfaction of the Taconic and punch list items completed. Upon completion of work and after decontamination activities, all equipment will be demobilized from site. A final site inspection will then be performed with the Taconic to ensure all tasks have been completed to their satisfaction.



Attachment 1 – Project Schedule

Attachment 2 – Waste Disposal Facility

WASTE DISPOSAL SERVICES

Lambton, Ontario Landfill Facility

The Lambton Landfill is located in southwestern Ontario approximately 15km southeast of the city of Sarnia. This facility is positioned to service customers in the Great Lakes Basin located in Canada and the United States.

The facility is permitted to manage a wide variety of hazardous waste, including RCRA Waste, Naturally Occurring Radioactive Waste and Debris for Encapsulation. Waste is accepted at this facility directly from customers or from the Clean Harbors extensive network of service centers.

In October 2015, the facility received permit approval to allow a vertical landfill expansion that would provide more than 25 years of landfill capacity.

Since March 2020, Lambton has been licensed to receive and dispose of Naturally Occurring Radioactive Material (NORM) and Technically Enhanced Radioactive Material (TENORM) wastes. Lambton can accept NORM and TENORM wastes containing radionuclides (in the decay series of U-238, U-235 and Th-232) up to 70 Bq/g.

Permit

- Ontario of Ministry of the Environment Certificate of Approval #A031806

Waste Acceptance Criteria

- PCBs < 50 ppm
- NORM waste
- No pathological/biological waste
- No compressed gases
- No reactive (except Spent Pot Liner) or ignitable waste
- Total mercury < 260 mg/kg
- Total volatile organics < 2%
- Waste must exceed 15 psi compressive strength



FACILITY
DESCRIPTION

1969

START-UP DATE



300 AC.

FACILITY SIZE (ACRES)



ON

STATE/PROVINCE



Services Provided:

- Secure Chemical Landfill Disposal
- Flexible Container Handling
- On-site Laboratory
- State-of-the-Art Treatment Process for Inorganic Waste and Organic Wastes
- Stabilization
- Direct Landfill
- Solidification
- Micro Encapsulation
- Macro Encapsulation

Typical Customers: Manufacturers, remediation sites, chemical, petro-chemical and brokers

Typical Waste Streams: PCB Contaminated Solids (less than 50ppm), Hazardous and Non Haz Soils and Solids, Asbestos Waste, Hazardous Metal Bearing Filter Cakes, Plating Waste, Spent Carbon, Spent Pot Liners, NORM/TENORM Waste, Hydrovac Waste, Hazardous Industrial Solids and debris

Treatment, Storage and Disposal Capabilities

- Total Capacity 3.6 million cubic meters



APPENDIX F WASTE DISPOSAL DOCUMENTATION

Manifest Document Number	Canadian BOL Number	Weight Ticket #	Date Shipped	Date Received at Designated Facility	Quantity received at Designated Facility (kg)	Quantity received at Designated Facility (lb)	Quantity received at Designated Facility (tons)
001	CBA208504	NONHAZ001	8/21/2024	8/22/2024	33100	72972	36.49
002	CBA208502	NONHAZ002	8/21/2024	8/22/2024	31830	70172	35.09
003	CBA208505	NONHAZ003	8/21/2024	8/22/2024	29210	64396	32.20
004	CBA208503	NONHAZ004	8/21/2024	8/22/2024	30540	67328	33.66
005	CBA208507	NONHAZ005	8/22/2024	8/23/2024	30510	67262	33.63
006	CBA208506	NONHAZ006	8/22/2024	8/23/2024	27160	59877	29.94
007	CBA208508	NONHAZ007	8/23/2024	8/26/2024	27410	60428	30.21
008	CBA208510	NONHAZ008	8/23/2024	8/26/2024	30170	66513	33.26
009	CBA208509	NONHAZ009	8/23/2024	8/26/2024	30800	67902	33.95
Total					270730	596851	298.43

NON-HAZARDOUS WASTE MANIFEST

Please print or type: (Form designed for use on elite (12 pitch) typewriter)

EM 2403977934 003

NON-HAZARDOUS WASTE MANIFEST		1. Generator's US EPA ID No. NYD982793937		Manifest Document No. 001		2. Page 1 of 1	
3. Generator's Name and Mailing Address Taconic 136 Coonbrook Road Petersburgh NY 12138				Site Address SAME			
4. Generator's Phone (518) 559-3202				ATTN: Rachel Farnum			
5. Transporter 1 Company Name Soudet Trucking Inc		6. US EPA ID Number MAC300006038		A. State Transporter's ID			
7. Transporter 2 Company Name		8. US EPA ID Number		B. Transporter 1 Phone (413) 665-1923			
				C. State Transporter's ID			
				D. Transporter 2 Phone			
9. Designated Facility Name and Site Address Clean Harbors Canada, Inc. 4090 Telfer Road Corunna, ON N0N 1G0		10. US EPA ID Number MIR000035204		E. State Facility's ID A031813			
				F. Facility's Phone (519) 864-1021			
11. WASTE DESCRIPTION				Containers		13. Total Quantity	
				No.	Type	Wt./Vol.	
a. NON D.O.T. REGULATED				1	CM	30 Test	
b.							
c.							
d.							
G. Additional Descriptions for Materials Listed Above 11a CH2785856				H. Handling Codes for Wastes Listed Above			
15. Special Handling Instructions and Additional Information 2438 T-189 389105				SKS EPA ID# NYD980593842 IS ACTING AS PRIMARY EXPORTER ON BEHALF OF GENERATOR. EMERGENCY PHONE #: (800) 483-0718 GENERATOR: Taconic			
16. GENERATOR'S CERTIFICATION: I hereby certify that the contents of this shipment are fully and accurately described and are in all respects in proper condition for transport. The materials described on this manifest are not subject to federal hazardous waste regulations.							
Printed/Typed Name A. Jeff Marchi				Signature <i>[Signature]</i>		Date 8/2/12	
17. Transporter 1 Acknowledgement of Receipt of Materials Printed/Typed Name Jim Emmens				Signature <i>[Signature]</i>		Date 8/2/12	
18. Transporter 2 Acknowledgement of Receipt of Materials Printed/Typed Name				Signature		Date	
19. Discrepancy Indication Space							
20. Facility Owner or Operator: Certification of receipt of the waste materials covered by this manifest, except as noted in item 19.							
Printed/Typed Name Morgan Davis				Signature <i>[Signature]</i>		Date 8/2/12	

NON-HAZARDOUS WASTE

GENERATOR

TRANSPORTER

FACILITY

Canada Bill of Lading
Bon de connaissance Canada

Generator's Provincial ID No. (If Applicable)
No. d'identification provincial generateur (Si requis)

Document No. /
Document No.

Page 1 of /
Page 1 de

CBA 20850

EN 2403977834-003

Consignor's Name and Mailing Address / Nom de l'expéditeur et adresse

Safety-Kleen Systems, Inc.
60 Katherine Street
Buffalo, NY 14210

Consignor's Phone /

Téléphone de l'expéditeur (716) 855-2212

Carrier Company Name / Nom de la compagnie de transport

Goulet Trucking Inc

Provincial ID Number / Numéro d'identification provincial

Carrier's Phone / Téléphone du transporteur

(413) 665-1322

Receiver's Name and Address / Nom du consignataire et adresse

Clean Harbors Canada, Inc.
4050 Telfer Road
Corunna, ON N0H 1G0

Provincial ID Number / Numéro d'identification provincial

AD31813

Receiver's Phone / Téléphone du consignataire

(519) 864-1021

Description in order / Description dans l'ordre

Containers /
Conteneurs

Total Quantity /
Quantité Totale

Unit
Unité / Vol /
Moids /
Volume

DG/MD

(UN Number, Shipping Name, Class, Sub Class, Packing Group)
(Numéro UN, l'appellation réglementaire, Classe, Sub Classe, Group d'emballage)

No. / No.

Type /
Genre

a. N/A, NOT REGULATED BY TDG N/A

X

01

06

27,272

K

Special Handling and Additional Information / Information additionnelle et manutention spéciale

24-Hour Number (800) 463-3115
Numero 24-heures

CH2785856 (ONEZ/D. 0/5)

Shipper's Certification: I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, are properly classified and packaged, have dangerous goods safety marks properly affixed or displayed on them, and are in all respects in proper condition for transport according to the Transportation of Dangerous Goods Regulations.
Certificat de l'expéditeur: Je déclare que le contenu de ce chargement est décrit ci-dessus de façon complète et exacte par l'appellation réglementaire adéquate et qu'il est convenablement emballé, emballé et muni d'indications de danger, marchandises dangereuses et à tous égards bien conditionné pour être transporté conformément au Règlement sur le transport des marchandises dangereuses.

Printed/Typed Name / Nom en caractères (lettres)

Signature / Signature

Month / Day / Year /
Mois Jour Année

Christopher LeBaron



08 21 24

TRANSPORTER / TRANSPORTEUR

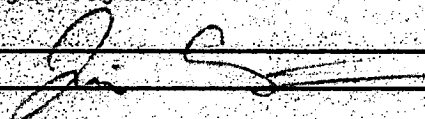
Carrier Acknowledgement of Receipt of Materials / Validation du transporteur de la réception des matériaux

Printed/Typed Name / Nom en caractères (lettres)

Signature / Signature

Month / Day / Year /
Mois Jour Année

James



08 21 24

CONSIGNEE / CONSIGNATAIRE

Discrepancy Indication Space / Case appropriée pour non-conformité

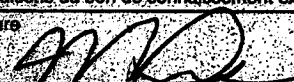
Facility Owner or Operator: Certification of receipt of materials covered by this form except as noted in the Discrepancy Indication Space
Propriétaire du site ou opérateur: Certificat de réception des matériaux conforme aux conditions du bon de connaissance excepté les déviations notées à l'espace approprié.

Printed/Typed Name / Nom en caractères (lettres)

Signature

Month / Day / Year /
Mois Jour Année

Morgan Davis



08 22 24

IN THE EVENT OF EMERGENCY CALL - 24-HOUR NUMBER 1-800-463-1760 or 1-800-463-3115

En cas de situation d'urgence, appelez Numéro 24 heures au 1-800-463-1760 ou 1-800-463-3115

Clean Harbors

ENVIRONMENTAL SERVICES®

Work Order # EN2403977934003

Canadian Manifest # 208504

Tare - 37500

Truck #

2438

Trailer #

T-189

Loaded Container # 1

2

3

4

Driver (print):

Jim Emmons

Date:

8/22/24

ENTER SCALE WEIGHTS HERE	
Gross Weight:	50110 kg
Tare Weight:	17010 kg PT
Net Weight:	33100 kg
22/Aug/2024	07:01:48

(Enter Date if not on scale stamped information)

NON-HAZARDOUS WASTE MANIFEST

388934

Please print or type (Form designed for use on elite (12 pitch) typewriter)

EN 2403077934.000

NON-HAZARDOUS WASTE MANIFEST		1. Generator's US EPA ID No. NYD982793337		Manifest Document No. 002		2. Page of	
3. Generator's Name and Mailing Address Taconic 136 Coonbrook Road Piersebury NY 12138				4. Generator's Phone (518) 350-2000			
5. Transporter 1 Company Name Gardner Trucking Inc.		6. US EPA ID Number MA0300000034		A. State Transporter's ID		B. Transporter 1 Phone (415) 685-1221	
7. Transporter 2 Company Name		8. US EPA ID Number		C. State Transporter's ID		D. Transporter 2 Phone	
9. Designated Facility Name and Site Address Clean Harbors Canada, Inc. 4050 Teller Road Columbia, ON N0W 1G0		10. US EPA ID Number MIR000035204		E. State Facility's ID A031912		F. Facility's Phone (519) 864-1071	
11. WASTE DESCRIPTION				Containers No. Type		13. Total Quantity	
a. NON-HAZARDOUS REGULATED				1 CM		30.05L	
b.							
c.							
d.							
G. Additional Descriptions for Materials Listed Above 12a CH278584				H. Handling Codes for Wastes Listed Above			
15. Special Handling Instructions and Additional Information 8181 EPA ID# NYD980593842 IS ACTING AS PRIMARY EXPORTER ON BEHALF OF GENERATOR.				EMERGENCY PHONE # (800) 452-3732 GENERATOR: Taconic			
16. GENERATOR'S CERTIFICATION: I hereby certify that the contents of this shipment are fully and accurately described and are in all respects in proper condition for transport. The materials described on this manifest are not subject to federal hazardous waste regulations.							
Printed/Typed Name				Signature		Date	
17. Transporter 1 Acknowledgement of Receipt of Materials				Signature		Date	
Printed/Typed Name				Signature		Date	
18. Transporter 2 Acknowledgement of Receipt of Materials				Signature		Date	
Printed/Typed Name				Signature		Date	
19. Discrepancy Indication Space							
20. Facility Owner or Operator: Certification of receipt of the waste materials covered by this manifest, except as noted in item 19.							
Printed/Typed Name				Signature		Date	

Canada Bill of Lading
Bon de connaissance Canada

Generator's Provincial ID No. (If Applicable) /
No. d'identification provincial generateur (Si requis.)

Document No. /
Document No.

Page 1 of /
Page 1 de

CBA 208502

Consignor's Name and Mailing Address / Nom de l'expéditeur et adresse

Safety-Kleen Systems, Inc.
50 Katherine Street
Buffalo, NY 14210

Consignor's Phone /

Téléphone de l'expéditeur (716) 855-2212

Carrier Company Name / Nom de la compagnie de transport

Conduct Transporting Inc

Provincial ID Number / Numéro d'identification provincial

Carrier's Phone / Téléphone du transporteur

Receiver's Name and Address / Nom du consignataire et adresse

Clean Harbors Canada, Inc.
6030 Talfer Road
Columbus, OH 43015

Provincial ID Number / Numéro d'identification provincial

4001810

Receiver's Phone / Téléphone du consignataire

(519) 864-1021

Description in order / Description dans l'ordre:

DG/MD	(UN Number, Shipping Name, Class, Sub Class, Packing Group) (Numéro UN, l'appellation réglementaire, Classe, Sub Classe, Group d'emballage)	Containers / Contenants		Total Quantity / Quantité Totale	Unit Vol / Poids / Volume
		No. / No.	Type / Genre		
a.	N/A, NOT REGULATED BY TDG N/A	01	05	27,272	kg
b.					
c.					
d.					

Special Handling and Additional Information / Information additionnelle et manutention spéciale

24-Hour Number : (800) 483-3716
Numéro 24-heures :

1. 27255556 (UN23.0 D/B)

Shipper's Certification: I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, are properly classified and packaged, have dangerous goods safety marks properly affixed or displayed on them, and are in all respects in proper condition for transport according to the Transportation of Dangerous Goods Regulations.

Certificat de l'expéditeur: Je déclare que le contenu de ce chargement est décrit ci-dessus de façon complète et exacte par l'appellation réglementaire adéquate et qu'il est convenablement classifié, emballé et muni d'indications de danger -- marchandises dangereuses et à tous égards bien conditionné pour être transporté conformément au Règlement sur le transport des marchandises dangereuses.

Printed/Typed Name / Nom en caractères (lettres)

Christopher LeBaron

Signature / Signature

Month / Day / Year /
Mois / Jour / Année

08 / 21 / 2011

TRANSPORTER / TRANSPORTEUR

Carrier Acknowledgement of Receipt of Materials / Validation du transporteur de la réception des matériaux

Printed/Typed Name / Nom en caractères (lettres)

Deloris Lapp

Signature / Signature

Month / Day / Year /
Mois / Jour / Année

08 / 21 / 2011

CONSIGNEE / CONSIGNATAIRE

Discrepancy Indication Space / Case appropriée pour non-conformité

Facility Owner or Operator: Certification of receipt of materials covered by this form except as noted in the Discrepancy Indication Space

Propriétaire du site ou opérateur: Certificat de réception des matériaux conforme aux conditions du bon de connaissance excepté les déviations notées à l'espace approprié

Printed/Typed Name / Nom en caractères (lettres)

Morgan Davis

Signature

Month / Day / Year /
Mois / Jour / Année

8 / 22 / 2011

IN THE EVENT OF EMERGENCY CALL - 24-HOUR NUMBER 1-800-458-1760 or 1-800-483-3716

En cas de situation d'urgence, appelez Numéro 24 heures au 1-800-458-1760 ou 1-800-483-3716

(24-1309 R 04/)

Clean Harbors

ENVIRONMENTAL SERVICES®

Work Order # EN 2403977934-603

Canadian Manifest # 208502

Tare - 37,500

Truck #

20-19

Trailer #

T-142

Loaded Container # 1

2

3

4

Driver (print):

Dennis Lapp

Date:

8/22/24

(Enter Date if not on scale stamped information)

ENTER SCALE WEIGHTS HERE

Gross Weight:	48840 kg
Tare Weight:	17010 kg PT
Net Weight:	31830 kg
22/Aug/2024	07:16:58

NON-HAZARDOUS WASTE MANIFEST

389106
T-12 2420

Please print or type (Form designed for use on elite (12 pitch) typewriter)

EN 2403977934 003

NON-HAZARDOUS WASTE MANIFEST		1. Generator's US EPA ID No. NYD982793937		Manifest Document No. 003		2. Page 1 of 1	
3. Generator's Name and Mailing Address Taconic 136 Conbrook Road Petersburgh NY 12138				Site Address SAME			
4. Generator's Phone (519) 659 3202				ATTN: Rachel Farnum			
5. Transporter 1 Company Name Souder Trucking Inc		6. US EPA ID Number MAC300006038		A. State Transporter's ID		B. Transporter 1 Phone (413) 655-1923	
7. Transporter 2 Company Name		8. US EPA ID Number		C. State Transporter's ID		D. Transporter 2 Phone	
9. Designated Facility Name and Site Address Clean Harbors Canada, Inc. 4050 Telfer Road Corunna, ON N0N 1G0				10. US EPA ID Number MIR000035204		E. State Facility's ID A031813	
				F. Facility's Phone (519) 864-1021			
11. WASTE DESCRIPTION				Containers		13. Total Quantity	
				No. Type		14. Unit Wt/Vol	
a. NON D.O.T. REGULATED				1 CM		30 gT T	
b.							
c.							
d.							
G. Additional Descriptions for Materials Listed Above 11a.CH2785856				H. Handling Codes for Wastes Listed Above			
15. Special Handling Instructions and Additional Information SKSI EPA ID#NYD980593842 IS ACTING AS PRIMARY EXPORTER ON BEHALF OF GENERATOR.				EMERGENCY PHONE # (800) 483-3711 GENERATOR: Taconic			
16. GENERATOR'S CERTIFICATION: I hereby certify that the contents of this shipment are fully and accurately described and are in all respects in proper condition for transport. The materials described on this manifest are not subject to federal hazardous waste regulations.							
Printed/Typed Name A. Jeff Marchi				Signature <i>[Signature]</i>		Date 8/21/24	
17. Transporter 1 Acknowledgement of Receipt of Materials				Signature <i>[Signature]</i>		Date 8/21/24	
18. Transporter 2 Acknowledgement of Receipt of Materials				Signature		Date	
Printed/Typed Name				Signature		Date	
19. Discrepancy Indication Space							
20. Facility Owner or Operator: Certification of receipt of the waste materials covered by this manifest, except as noted in item 19.							
Printed/Typed Name Morgan Davis				Signature <i>[Signature]</i>		Date 8/22/24	

NON-HAZARDOUS WASTE

GENERATOR

TRANSPORTER

FACILITY

Canada Bill of Lading
Bon de connaissance Canada

Generator's Provincial ID No. (if Applicable)
No. d'identification provincial generateur (Si requis.)

Document No. /
Document No.

Page 1 of /
Page 1 de

CBA 208505

EN 2401472534-003

Consignor's Name and Mailing Address / Nom de l'expéditeur et adresse

Safety-Kleen Systems, Inc.
60 Katherine Street
Buffalo, NY 14210

Consignor's Phone /

Téléphone de l'expéditeur (716) 855-2212

Carrier Company Name / Nom de la compagnie de transport

Goulet Trucking, Inc.

Provincial ID Number / Numéro d'identification provincial

Carrier's Phone / Téléphone du transporteur

(413) 655-1023

Receiver's Name and Address / Nom du consignataire et adresse

Clean Harbour Canada, Inc.
14090 Telfer Road
Columbia, OH 43001

Provincial ID Number / Numéro d'identification provincial

A031813

Receiver's Phone / Téléphone du consignataire

(519) 864-1021

Description in order / Description dans l'ordre:

Containers /
Contenants:

Total Quantity /

Unit /

Quantité Totale

Vol /

Pods /

Volume

DG/MD

(UN Number, Shipping Name, Class, Sub Class, Packing Group)
(Numéro UN, l'appellation réglementaire, Classe, Sub Classe, Group d'emballage)

No. / No.

Type /

Genre

a. **N/A. NOT REGULATED BY TDG N/A**

01

06

27,272

Kg

b.					
c.					
d.					

Special Handling and Additional Information / Information additionnelle et manutention spéciale

24-Hour Number (800) 483-3718
Numero 24-heures

5 CHL785856 (ONE) / 0 0/5

Shipper's Certification: I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, are properly classified and packaged, have dangerous goods safety marks properly affixed or displayed on them, and are in all respects in proper condition for transport according to the Transportation of Dangerous Goods Regulations.

Certificat de l'expéditeur: Je déclare que le contenu de ce chargement est décrit ci-dessus de façon complète et exacte, par l'appellation réglementaire adéquate et qu'il est convenablement classifié, emballé et muni d'indications de danger - marchandises dangereuses et à tous égards bien conditionné pour être transporté conformément au Règlement sur le transport des marchandises dangereuses.

Printed/Typed Name / Nom en caractères (lettres)

Signature / Signature

Month / Day / Year /

Mois / Jour / Année

Christopher LeBaron

[Signature]

08 21 21

TRANSPORTER / TRANSPORTEUR

Carrier Acknowledgement of Receipt of Materials / Validation du transporteur de la réception des matériaux

Printed/Typed Name / Nom en caractères (lettres)

Signature / Signature

Month / Day / Year /

Mois / Jour / Année

Shane

Joseph

[Signature]

08 21 21

CONSIGNEE / CONSIGNATAIRE

Discrepancy Indication Space / Case appropriée pour non-conformité

Facility Owner or Operator: Certification of receipt of materials covered by this form except as noted in the Discrepancy Indication Space.

Propriétaire du site ou opérateur: Certificat de réception des matériaux conforme aux conditions du bon de connaissance excepté les déviations notées à l'espace approprié.

Printed/Typed Name / Nom en caractères (lettres)

Signature

Month / Day / Year /

Mois / Jour / Année

Morgan Davis

[Signature]

8 22 20

IN THE EVENT OF EMERGENCY CALL - 24-HOUR NUMBER 1-800-468-1760 or 1-800-483-3718 /

En cas de situation d'urgence, appelez Numéro 24 heures au 1-800-468-1760 ou 1-800-483-3718

TRANSPORTED COPY / COPIE DU TRANSPORTÉ

(24-1309 Rev. 04/1)



(Enter Date if not on scale stamped information)

Gross Weight: 46220 kg
Tare Weight: 17010 kg-PT
Net Weight: 29210 kg
22/Aug/2024 07:22:08

NON-HAZARDOUS WASTE MANIFEST

389104

Please print or type (Form designed for use on elite (12 pitch) typewriter)

ENV 24020017-011 002

NON-HAZARDOUS WASTE MANIFEST		1. Generator's US EPA ID No. NYD980593842		Manifest Document No. 004		2. Page 1 of 1	
3. Generator's Name and Mailing Address Taconic 135 Conbrook Road Petersburgh NY 12138				4. Generator's Phone (518) 658-3202			
5. Transporter 1 Company Name Waste Linking Inc.		6. US EPA ID Number MAC300000038		A. State Transporter's ID		B. Transporter 1 Phone (315) 465-1328	
7. Transporter 2 Company Name		8. US EPA ID Number		C. State Transporter's ID		D. Transporter 2 Phone	
9. Designated Facility Name and Site Address Chambers Canada, Inc. 4500 Taylor Road Toronto, ON M0H 1G0		10. US EPA ID Number MIR0000785004		E. State Facility's ID A031811		F. Facility's Phone (416) 964-1001	
11. WASTE DESCRIPTION				Containers		13. Total Quantity	
				No. Type		14. Unit Wt./Vol.	
a. NON DOT REGULATED				1 CM		300L T	
b.							
c.							
d.							
G. Additional Descriptions for Materials Listed Above 11 CM 2700L				H. Handling Codes for Wastes Listed Above			
15. Special Handling Instructions and Additional Information SKSI EPA ID#NYD980593842 IS ACTING AS PRIMARY EXPORTER ON BEHALF OF GENERATOR.				EMERGENCY PHONE (416) 964-1001 GENERATOR Taconic			
16. GENERATOR'S CERTIFICATION: I hereby certify that the contents of this shipment are fully and accurately described and are in all respects in proper condition for transport. The materials described on this manifest are not subject to federal hazardous waste regulations.							
Printed/Typed Name Jeff Marchi		Signature <i>[Signature]</i>		Date Month Day Year 9 21 04			
17. Transporter 1 Acknowledgement of Receipt of Materials		Signature <i>[Signature]</i>		Date Month Day Year 10 21 04			
18. Transporter 2 Acknowledgement of Receipt of Materials		Signature <i>[Signature]</i>		Date Month Day Year 10 21 04			
19. Discrepancy Indication Space							
20. Facility Owner or Operator: Certification of receipt of the waste materials covered by this manifest, except as noted in item 19.							
Printed/Typed Name Em THL		Signature <i>[Signature]</i>		Date Month Day Year 8 22 04			

NON-HAZARDOUS WASTE

Canada Bill of Lading
Bon de connaissance Canada

Generator's Provincial ID No. (If Applicable) /
No. d'identification provincial generateur (Si requis.)

Document No. /
Document No.

Page 1 of /
Page 1 de

CBA 208503

Consignor's Name and Mailing Address / Nom de l'expéditeur et adresse

Safety-Kleen Systems, Inc.
50 Katherine Street
Buffalo, NY 14210

Consignor's Phone /

Téléphone de l'expéditeur (716) 658-0212

Carrier Company Name / Nom de la compagnie de transport

Provincial ID Number / Numéro d'identification provincial

Carrier's Phone / Téléphone du transporteur

Receiver's Name and Address / Nom du consignataire et adresse

Provincial ID Number / Numéro d'identification provincial

Receiver's Phone / Téléphone du consignataire

Circle K Canada, Inc.
1000 Gifford Road
Columbus, OH 43061

1501319

(310) 658-1521

Description in order / Description dans l'ordre:

DG/MD	(UN Number, Shipping Name, Class, Sub Class, Packing Group) (Numéro UN, l'appellation réglementaire, Classe, Sub Classe, Group d'emballage)	Containers / Contenants		Total Quantity / Quantité Totale	Unit Wt/Vol / Poids/ Volume
		No. / No.	Type / Genre		
a.	H/A. NOT REGULATED BY TDG H/A		115		
b.					
c.					
d.					

Special Handling and Additional Information / Information additionnelle et manutention spéciale

24-Hour Number (300) 483-3718
Numéro 24-heures :

Shipper's Certification: I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, are properly classified and packaged, have dangerous goods safety marks properly affixed or displayed on them, and are in all respects in proper condition for transport according to the Transportation of Dangerous Goods Regulations.

Certificat de l'expéditeur: Je déclare que le contenu de ce chargement est décrit ci-dessus de façon complète et exacte par l'appellation réglementaire adéquate et qu'il est convenablement classifié, emballé et muni d'indications de danger - marchandises dangereuses et à tous égards bien conditionné pour être transporté conformément au Règlement sur le transport des marchandises dangereuses.

Printed/Typed Name / Nom en caractères (lettres)

Signature / Signature

Month / Day / Year /
Mois / Jour / Année

TRANSPORTER / TRANPOSITEUR

Carrier Acknowledgement of Receipt of Materials / Validation du transporteur de la réception des matériaux

Printed/Typed Name / Nom en caractères (lettres)

Signature / Signature

Month / Day / Year /
Mois / Jour / Année

CONSIGNEE / CONSIGNATAIRE

Discrepancy Indication Space / Case appropriée pour non-conformité

Facility Owner or Operator: Certification of receipt of materials covered by this form except as noted in the Discrepancy Indication Space

Propriétaire du site ou opérateur: Certificat de réception des matériaux conforme aux conditions du bon de connaissance excepté les déviations notées à l'espace approprié.

Printed/Typed Name / Nom en caractères (lettres)

Signature

Month / Day / Year /
Mois / Jour / Année

IN THE EVENT OF EMERGENCY CALL - 24-HOUR NUMBER 1-800-468-1760 or 1-800-483-3718 /

En cas de situation d'urgence, appelez Numéro 24 heures au 1-800-468-1760 ou 1-800-483-3718

TRANSPORTER COPY / COPIE DU TRANSPORTEUR

(24-1309 Rev. 04/

Clean Harbors®

ENVIRONMENTAL SERVICES®

Work Order # MYD 982793937

Canadian Manifest # CBA 208503

Truck #

2331

Trailer #

T-195

Loaded Container #1

2

3

4

Driver (print):

James Serwings

Date:

8/22/24

Gross Weight:	47410 kg
Tare Weight:	16870 kg PT
Net Weight:	30540 kg
22/Aug/2024	10:01:52

ENTER SCALE WEIGHTS HERE

(Enter Date if not on scale stamped information)

NON-HAZARDOUS WASTE MANIFEST

EN 2403977934-003

Please print or type (Form designed for use on elite (12 pitch) typewriter)

NON-HAZARDOUS WASTE MANIFEST		1. Generator's US EPA ID No. NYD982793937		Manifest Document No. 005		2. Page of	
3. Generator's Name and Mailing Address Taconic 136 Coonbrook Road Petersburgh NY 12138				Site Address SAME			
4. Generator's Phone (518) 658-3202 ATTN: Rachel Farnum							
5. Transporter 1 Company Name Goulet Trucking Inc		6. US EPA ID Number MAC300006038		A. State Transporter's ID			
7. Transporter 2 Company Name		8. US EPA ID Number		B. Transporter 1 Phone (419) 665-1322			
				C. State Transporter's ID			
				D. Transporter 2 Phone			
9. Designated Facility Name and Site Address Clean Harbors Canada, Inc. 4030 Teller Road Corvina, ON N0N 1G0		10. US EPA ID Number MIN000035204		E. State Facility's ID A031812			
				F. Facility's Phone (519) 864-1021			
11. WASTE DESCRIPTION				Containers		13. Total Quantity	
				No.	Type		
a. NON D.O.T. REGULATED				1	CM	30057	
b.							
c.							
d.							
G. Additional Descriptions for Materials Listed Above 113 CH2785856				H. Handling Codes for Wastes Listed Above			
15. Special Handling Instructions and Additional Information				EMERGENCY PHONE #: (800) 483-3112 GENERATOR: Taconic			
SKSI EPA ID#NYD980593842 IS ACTING AS PRIMARY EXPORTER ON BEHALF OF GENERATOR.				SKSI EPA ID#NYD980593842 IS ACTING AS PRIMARY EXPORTER ON BEHALF OF GENERATOR.			
16. GENERATOR'S CERTIFICATION: I hereby certify that the contents of this shipment are fully and accurately described and are in all respects in proper condition for transport. The materials described on this manifest are not subject to federal hazardous waste regulations.							
Printed/Typed Name A. Jeff Mirarchi				Signature <i>[Signature]</i>		Date 8/22/04	
17. Transporter 1 Acknowledgement of Receipt of Materials				Signature <i>[Signature]</i>		Date 8/22/04	
Printed/Typed Name Wayne K. Pegg				Signature <i>[Signature]</i>		Date 8/22/04	
18. Transporter 2 Acknowledgement of Receipt of Materials				Signature		Date	
Printed/Typed Name				Signature		Date	
19. Discrepancy Indication Space							
20. Facility Owner or Operator: Certification of receipt of the waste materials covered by this manifest, except as noted in item 19.							
Printed/Typed Name Morgan Davis				Signature <i>[Signature]</i>		Date 8/23/04	

NON-HAZARDOUS WASTE

GENERATOR

TRANSPORTER

FACILITY

Canada Bill of Lading
Bon de connaissance Canada

Generator's Provincial ID No. (If Applicable) /
No. d'identification provincial générateur (Si requis)

Document No. /
Document No.

Page 1 of /
Page 1 de

CBA 208507

EN 2403977834-001

Consignor's Name and Mailing Address / Nom de l'expéditeur et adresse

Taconic
136 Coombs Road
Petersburgh, NY 12138

Consignor's Phone /

Téléphone de l'expéditeur : (518) 658-3202

Carrier Company Name / Nom de la compagnie de transport

Goulet Trucking Inc.

Provincial ID Number / Numéro d'identification provincial

Carrier's Phone / Téléphone du transporteur

(412) 665-1323

Receiver's Name and Address / Nom du consignataire et adresse

Fleming Barbers Canada, Inc.
4090 Telfer Road
Coburn, ON N0H 1G0

Provincial ID Number / Numéro d'identification provincial

4031813

Receiver's Phone / Téléphone du consignataire

(519) 264-1021

Description in order / Description dans l'ordre

Containers /
Conteneurs

Total Quantity /
Quantité Totale

Unit
Wt/Vol /
Poids/
Volume

DG/MD

(UN Number, Shipping Name, Class, Sub Class, Packing Group)
(Numéro UN, l'appellation réglementaire, Classe, Sub Classe, Group d'emballage)

No. / No.

Type /
Genre

N/A, NOT REGULATED BY TDG N/A

03

R

Special Handling and Additional Information / Information additionnelle et manutention spéciale

24-Hour Number : (800) 483-3718
Numéro 24-heures :

1 CH2755255/ONEX/O 0/3

Shipper's Certification: I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, are properly classified and packaged, have dangerous goods safety marks properly affixed or displayed on them, and are in all respects in proper condition for transport according to the Transportation of Dangerous Goods Regulations.

Certificat de l'expéditeur: Je déclare que le contenu de ce chargement est décrit ci-dessus de façon complète et exacte par l'appellation réglementaire adéquate et qu'il est convenablement classifié, emballé et muni d'indications de danger - marchandises dangereuses et à tous égards bien conditionné pour être transporté conformément au Règlement sur le transport des marchandises dangereuses.

Printed/Typed Name / Nom en caractères (lettres)

Signature / Signature

Month / Day / Year /
Mois / Jour / Année

Christopher LeBarron



6 8 / 2 2 / 2 4

TRANSPORTER / TRANSPORTEUR

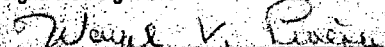
Carrier Acknowledgement of Receipt of Materials / Validation du transporteur de la réception des matériaux

Printed/Typed Name / Nom en caractères (lettres)

Signature / Signature

Month / Day / Year /
Mois / Jour / Année

Wayne V. Pigg



8 / 2 2 / 2 4

CO-SIGNEE / CONSIGNATAIRE

Discrepancy Indication Space / Case appropriée pour non-conformité

Facility Owner or Operator: Certification of receipt of materials covered by this form except as noted in the Discrepancy Indication Space

Propriétaire du site ou opérateur. Certificat de réception des matériaux conforme aux conditions du bon de connaissance excepté les déviations notées à l'espace approprié.

Printed/Typed Name / Nom en caractères (lettres)

Signature

Month / Day / Year /
Mois / Jour / Année

Morgan Davis



8 / 2 3 / 2 4

IN THE EVENT OF EMERGENCY / CALL - 24-HOUR NUMBER 1-800-468-1760 or 1-800-483-3718 /

En cas de situation d'urgence, appelez Numéro 24 heures au 1-800-468-1760 ou 1-800-483-3718

TRANSPORTER COPY / COPIE DU TRANSPORTEUR

(24-1309 Rev. 04/16)

Clean Harbors[®]

ENVIRONMENTAL SERVICES

Work Order # _____

Canadian Manifest # _____

Truck #

20-15

Trailer #

T-168

Loaded Container # 1

2

3

4

Driver (print):

Wayne V Pinaqi

Date:

23 Aug 24

(Enter Date if not on scale stamped information)

Gross Weight: 47520 kg
Tare Weight: 17010 kg PT
Net Weight: 30510 kg
23/Aug/2024 07:39:44
ENTER SCALE WEIGHTS HERE

NON-HAZARDOUS WASTE MANIFEST

Please print or type

(Form designed for use on elite (12 pitch) typewriter)

FM 2402977634-010

NON-HAZARDOUS WASTE MANIFEST		1. Generator's US EPA ID No. NYD882792937		Manifest Document No. 026		2. Page of	
3. Generator's Name and Mailing Address TERRA 135 Combrook Road Schenectady NY 12138				State Agency Name			
4. Generator's Phone (518) 338-2707				ATTN: Rachel Farnham			
5. Transporter 1 Company Name Gardner Trucking Inc.		6. US EPA ID Number MAC300008038		A. State Transporter's ID		B. Transporter 1 Phone (518) 651-1000	
7. Transporter 2 Company Name		8. US EPA ID Number		C. State Transporter's ID		D. Transporter 2 Phone	
9. Designated Facility Name and Site Address Clean Harbors Canada, Inc. 4050 Tenth Road Lambton ON N0N 1G0		10. US EPA ID Number MIN0000036104		E. State Facility's ID A031812		F. Facility's Phone (519) 564-1000	
11. WASTE DESCRIPTION				Containers		13. Total Quantity	
				No. Type		Wt. (Lb.)	
a. THERMALLY REGULATED				1 CM		30 est.	
b.							
c.							
d.							
G. Additional Descriptions for Materials Listed Above 21-0127-88050				H. Handling Codes for Wastes Listed Above			
15. Special Handling Instructions and Additional Information				EMERGENCY PHONE # (800) 493-3333 GENERATOR: T. Farnham			
16. GENERATOR'S CERTIFICATION: I hereby certify that the contents of this shipment are fully and accurately described and are in all respects in proper condition for transport. The materials described on this manifest are not subject to federal hazardous waste regulations.							
Printed/Typed Name: A. J. March				Signature: [Signature]		Date: 8/20/02	
17. Transporter 1 Acknowledgement of Receipt of Materials				Signature: [Signature]		Date: 8/20/02	
18. Transporter 2 Acknowledgement of Receipt of Materials				Signature: [Signature]		Date: 8/20/02	
19. Discrepancy Indication Space							
20. Facility Owner or Operator: Certification of receipt of the waste materials covered by this manifest, except as noted in item 19.				Signature: [Signature]		Date: 8/23/02	

NON-HAZARDOUS WASTE

GENERATOR

TRANSPORTER

FACILITY

**Canada Bill of Lading
Bon de connaissance Canada**

Generator's Provincial ID No. (If Applicable) /
No. d'identification provincial generateur (Si requis.)

Document No. /
Document No.

Page 1 of /
Page 1 de

CBA 200508

Consignor's Name and Mailing Address / Nom de l'expéditeur et adresse

Technique
105 Cornbrook Road
Hawthornhurst, NY 12138

Consignor's Phone /
Téléphone de l'expéditeur : (518) 538-3832

Carrier Company Name / Nom de la compagnie de transport

Provincial ID Number / Numéro d'identification provincial

Carrier's Phone / Téléphone du transporteur

Receiver's Name and Address / Nom du consignataire et adresse

Provincial ID Number / Numéro d'identification provincial

Receiver's Phone / Téléphone du consignataire

Clear Harbor Canada, Inc.
4000 Talfer Road
Columbus, OH 43081-1550

4001015

(614) 864-1021

Description in order / Description dans l'ordre:

DG/MD	(UN Number, Shipping Name, Class, Sub Class, Packing Group) (Numéro UN, l'appellation réglementaire, Classe, Sub Classe, Group d'emballage)	Containers / Contenants		Total Quantity / Quantité Totale	Unit Vol / Poids / Volume
		No. / No.	Type / Genre		
a.	2001 UN 2800/2800 BY BORG WERNER	01	27072		
b.					
c.					
d.					

Special Handling and Additional Information / Information additionnelle et manutention spéciale

24-Hour Number : (700) 403-3718
Numero 24-heures :

35356 (OVER) (3)

Shipper's Certification: I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, are properly classified and packaged, have dangerous goods safety marks properly affixed or displayed on them, and are in all respects in proper condition for transport according to the Transportation of Dangerous Goods Regulations.
Certificat de l'expéditeur: Je déclare que le contenu de ce chargement est décrit ci-dessus de façon complète et exacte par l'appellation réglementaire adéquate et qu'il est convenablement classifié, emballé et muni d'indications de danger - marchandises dangereuses et à tous égards bien conditionné pour être transporté conformément au Règlement sur le transport des marchandises dangereuses.

Printed/Typed Name / Nom en caractères (lettres)

Signature / Signature

Month / Day / Year
Mois / Jour / Année
12 / 13 / 2005

TRANSPORTER / TRANSPORTEUR

Carrier Acknowledgement of Receipt of Materials / Validation du transporteur de la réception des matériaux

Printed/Typed Name / Nom en caractères (lettres)

Signature / Signature

Month / Day / Year
Mois / Jour / Année
08 / 22 / 2005

CONSIGNEE / CONSIGNATAIRE

Discrepancy Indication Space / Case appropriée pour non-conformité

Facility Owner or Operator: Certification of receipt of materials covered by this form except as noted in the Discrepancy Indication Space

Propriétaire du site ou opérateur: Certificat de réception des matériaux conforme aux conditions du bon de connaissance excepté les déviations notées à l'espace approprié

Printed/Typed Name / Nom en caractères (lettres)

Signature

Month / Day / Year
Mois / Jour / Année
08 / 23 / 2005

IN THE EVENT OF EMERGENCY CALL - 24-HOUR NUMBER 1-800-468-1760 or 1-800-483-3718
En cas de situation d'urgence, appelez Numéro 24 heures au 1-800-468-1760 ou 1-800-483-3718

TRANSPORTER COPY / COPIE DU TRANSPORTEUR

(24-1309 Rev 4/1)

Clean Harbors

ENVIRONMENTAL SERVICES®

Work Order # EN 2403977934-003

Canadian Manifest # CBA 208506

Truck #

21-22

Trailer #

T-193

Loaded Container # 1

2

3

4

Driver (print):

Vincent Perrone

Date:

8/23/24

3750016

ENTER SCALE
WEIGHTS HERE

Gross Weight:	44170 kg
Tare Weight:	17010 kg PT
Net Weight:	27160 kg
23/Aug/2024	08:43:02

(Enter Date if not on scale stamped information)

NON-HAZARDOUS WASTE MANIFEST

374029

Please print or type

(Form designed for use on elite (12 pitch) typewriter)

EN 2403977934 003

NON-HAZARDOUS WASTE MANIFEST		1. Generator's US EPA ID No. NYD982793937		Manifest Document No. 007		2. Page 1 of 1	
3. Generator's Name and Mailing Address Taconic 136 Coonbrook Road Petersburgh NY 12138				Site Address SAME			
4. Generator's Phone (518) 658-3202				ATTN: Rachel Earnum			
5. Transporter 1 Company Name Gardner Trucking Inc.		6. US EPA ID Number MAC300006038		A. State Transporter's ID		B. Transporter 1 Phone (418) 665-1523	
7. Transporter 2 Company Name		8. US EPA ID Number		C. State Transporter's ID		D. Transporter 2 Phone	
9. Designated Facility Name and Site Address Clean Harbors Canada, Inc. 4090 Telfer Road Concord, ON N9N 1G0		10. US EPA ID Number MIR000035204		E. State Facility's ID A031813		F. Facility's Phone (519) 864-1021	
11. WASTE DESCRIPTION				Containers		13. Total Quantity	
				No. Type		14. Unit Wt./Vol.	
a. NON D.O.T. REGULATED				1 CM		30 PK T	
b.							
c.							
d.							
G. Additional Descriptions for Materials Listed Above 11a CH2785856				H. Handling Codes for Wastes Listed Above			
15. Special Handling Instructions and Additional Information SEE EPA ID# NYD980593842 IS ACTING AS PRIMARY EXPORTER ON BEHALF OF GENERATOR				EMERGENCY PHONE # (800) 483-3718 GENERATOR: Taconic			
16. GENERATOR'S CERTIFICATION: I hereby certify that the contents of this shipment are fully and accurately described and are in all respects in proper condition for transport. The materials described on this manifest are not subject to federal hazardous waste regulations.							
Printed/Typed Name A. J. Marchi				Signature <i>[Signature]</i>		Date 8/23/24	
17. Transporter 1 Acknowledgement of Receipt of Materials				Signature <i>[Signature]</i>		Date 8/23/24	
Printed/Typed Name Dennis Lapp				Signature <i>[Signature]</i>		Date 8/23/24	
18. Transporter 2 Acknowledgement of Receipt of Materials				Signature		Date	
Printed/Typed Name				Signature		Date	
19. Discrepancy Indication Space							
20. Facility Owner or Operator: Certification of receipt of the waste materials covered by this manifest, except as noted in item 19.							
Printed/Typed Name Ann Toth				Signature <i>[Signature]</i>		Date 8/26/24	

NON-HAZARDOUS WASTE

Canada Bill of Lading
Bon de connaissance Canada

Generator's Provincial ID No. (If Applicable) /
No. d'identification provincial generateur (Si requis.)

Document No. /
Document No.

Page 1 of /
Page 1 de

CBA 208508

Consignor's Name and Mailing Address / Nom de l'expéditeur et adresse

Tenneco
175 Coanbrook Road
Hershey, PA 17033

Consignor's Phone /

Téléphone de l'expéditeur (517) 558-3200

Carrier Company Name / Nom de la compagnie de transport

Miller Trucking Inc.

Provincial ID Number / Numéro d'identification provincial

Carrier's Phone / Téléphone du transporteur

(517) 558-1120

Receiver's Name and Address / Nom du consignataire et adresse

John Hancock Canada Inc.
1000 Tower Road
Cambridge, ON N1H 1L1

Provincial ID Number / Numéro d'identification provincial

4001330

Receiver's Phone / Téléphone du consignataire

(517) 558-1021

Description in order/Description dans l'ordre:

DG/MD	(UN Number, Shipping Name, Class, Sub Class, Packing Group) (Numéro UN, l'appellation réglementaire, Classe, Sub Classe, Group d'emballage)	Containers / Contenants		Total Quantity / Quantité Totale	Unit Wt/Vol / Poids/ Volume
		No. / No.	Type / Genre		
a.	NON REGULATED MATERIAL (ERM SOILS)	01	CM	27.272	kg
b.					
c.					
d.					

Special Handling and Additional Information / Information additionnelle et manutention spéciale

24-Hour Number : (800) 468-3718
Numéro 24-heures :

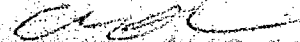
Shipper's Certification: I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, are properly classified and packaged, have dangerous goods safety marks properly affixed or displayed on them, and are in all respects in proper condition for transport according to the Transportation of Dangerous Goods Regulations.

Certificat de l'expéditeur: Je déclare que le contenu de ce chargement est décrit ci-dessus de façon complète et exacte par l'appellation réglementaire adéquate et qu'il est convenablement classifié, emballé et muni d'indications de danger - marchandises dangereuses et à tous égards bien conditionné pour être transporté conformément au Règlement sur le transport des marchandises dangereuses.

Printed/Typed Name / Nom en caractères (lettres)

Christopher L. Garneau

Signature / Signature



Month / Day / Year /

Mois Jour Année 08 27 01

CARRIER / TRANSPORTEUR

Carrier Acknowledgement of Receipt of Materials / Validation du transporteur de la réception des matériaux

Printed/Typed Name / Nom en caractères (lettres)

William L. Goff

Signature / Signature



Month / Day / Year /

Mois Jour Année 08 27 01

CONSIGNEE / CONSIGNATAIRE

Discrepancy Indication Space / Case appropriée pour non-conformité

Facility Owner or Operator: Certification of receipt of materials covered by this form except as noted in the Discrepancy Indication Space

Propriétaire du site ou opérateur: Certificat de réception des matériaux conforme aux conditions du bon de connaissance excepté les déviations notées à l'espace approprié.

Printed/Typed Name / Nom en caractères (lettres)

Ona Toth

Signature



Month / Day / Year /

Mois Jour Année 08 26 01

IN THE EVENT OF EMERGENCY CALL - 24-HOUR NUMBER 1-800-468-1760 or 1-800-468-3718 /
En cas de situation d'urgence, appelez Numéro 24 heures au 1-800-468-1760 ou 1-800-468-3718

TRANSPORTER COPY / COPIE DU TRANSPORTEUR

(24-1309 Rev. 04/1)

Clean Harbors

ENVIRONMENTAL SERVICES®

Work Order # EN2403977934-003

Canadian Manifest # CBA 208508

Tare 37,500

Truck #

20-19 Goulet

Trailer #

T-142

Loaded Container # 1

2

3

4

Driver (print):

Dennis Larp

Date:

Dennis Larp 8/20/24

(Enter Date if not on scale stamped information)

ENTER SCALE
WEIGHTS HERE

Gross Weight:	44420 kg
Tare Weight:	17010 kg PT
Net Weight:	27410 kg
26/Aug/2024	11:56:07

NON-HAZARDOUS WASTE MANIFEST

Please print or type (Form designed for use on elite (12 pitch) typewriter)

FM 2403977934-003

NON-HAZARDOUS WASTE MANIFEST		1. Generator's US EPA ID No. NYD982793937		Manifest Document No. 008		2. Page 1 of 1	
3. Generator's Name and Mailing Address Taconic 136 Coonbrook Road Petersburgh NY 12138				Site Address SAME			
4. Generator's Phone (518) 658-3202				ATTN: Rachel Farnum			
5. Transporter 1 Company Name Goulet Trucking Inc		6. US EPA ID Number MAC300006038		A. State Transporter's ID		B. Transporter 1 Phone (413) 665-1823	
7. Transporter 2 Company Name		8. US EPA ID Number		C. State Transporter's ID		D. Transporter 2 Phone	
9. Designated Facility Name and Site Address Clean Harbors Canada, Inc. 4090 Teller Road Coruna, ON N0N 1G0				10. US EPA ID Number MIR000035204		E. State Facility's ID A031813	
						F. Facility's Phone (519) 864-1021	
11. WASTE DESCRIPTION				Containers No. Type		13. Total Quantity	
a. NON D.O.T. REGULATED				1 CM		30 est	
b.							
c.							
d.							
G. Additional Descriptions for Materials Listed Above 11a CH2765856				H. Handling Codes for Wastes Listed Above			
15. Special Handling Instructions and Additional Information SKSI EPA ID# NYD980503842 IS ACTING AS PRIMARY EXPORTER ON BEHALF OF GENERATOR.				EMERGENCY PHONE #: (800) 483-3718 GENERATOR: Taconic			
16. GENERATOR'S CERTIFICATION: I hereby certify that the contents of this shipment are fully and accurately described and are in all respects in proper condition for transport. The materials described on this manifest are not subject to federal hazardous waste regulations.							
Printed/Typed Name A. Jeff Mirarchi				Signature <i>[Signature]</i>		Date Month Day Year 8 23 24	
17. Transporter 1 Acknowledgement of Receipt of Materials Printed/Typed Name Patrick E. Led				Signature <i>[Signature]</i>		Date Month Day Year 8 23 24	
18. Transporter 2 Acknowledgement of Receipt of Materials Printed/Typed Name				Signature		Date Month Day Year	
19. Discrepancy Indication Space							
20. Facility Owner or Operator: Certification of receipt of the waste materials covered by this manifest, except as noted in item 19.							
Printed/Typed Name Emm Toth				Signature <i>[Signature]</i>		Date Month Day Year 8 26 24	

NON-HAZARDOUS WASTE

GENERATOR

Canada Bill of Lading
Bon de connaissance Canada

Generator's Provincial ID No. (if Applicable) /
No. d'identification provincial generateur (si requis.)

Document No. /
Document No.: EN 2403977934-003
Page 1 of /
Page 1 de

CBA 208510

Consignor's Name and Mailing Address / Nom de l'expéditeur et adresse

Taronic
136 Coonbrook Road
Petersburgh, NY 12138

Consignor's Phone /
Téléphone de l'expéditeur (519) 658-3202

Carrier Company Name / Nom de la compagnie de transport

Goulet Trucking Inc

Provincial ID Number / Numéro d'identification provincial

Carrier's Phone / Téléphone du transporteur

(413) 665-1223

Receiver's Name and Address / Nom du consignataire et adresse

Clean Harbors Canada, Inc.
4090 Telfer Road
Corunna, ON N0H 1G0

Provincial ID Number / Numéro d'identification provincial

AD21813

Receiver's Phone / Téléphone du consignataire

(519) 864-1021

Description in order/Description dans l'ordre:

DG/MD	(UN Number, Shipping Name, Class, Sub Class, Packing Group) (Numéro UN, l'appellation réglementaire, Classe, Sub Classe, Group d'emballage)	Containers / Contenants		Total Quantity / Quantité Totale	Unit Wt/Vol / Poids/ Volume
		No. / No.	Type / Genre		
a.	Non Regulated by TDG, (IRM soils)	01	CM	27272	Kg
b.					
c.					
d.					

Special Handling and Additional Information / Information additionnelle et manutention spéciale

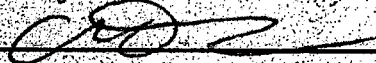
24-Hour Number (800) 483-3718
Numero 24-heures

Shipper's Certification: I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, are properly classified and packaged, have dangerous goods safety marks properly affixed or displayed on them, and are in all respects in proper condition for transport according to the Transportation of Dangerous Goods Regulations.
Certificat de l'expéditeur: Je déclare que le contenu de ce chargement est décrit ci-dessus de façon complète et exacte par l'appellation réglementaire adéquate et qu'il est convenablement classifié, emballé et muni d'indications de danger -- marchandises dangereuses et à tous égards bien conformé pour être transporté conformément au Règlement sur le transport des marchandises dangereuses.

Printed/Typed Name / Nom en caractères (lettres)

Christopher LeBaron

Signature / Signature



Month / Day / Year /
Mois / Jour / Année
08 / 26 / 24

TRANSPORTER / TRANSPORTEUR

Carrier Acknowledgement of Receipt of Materials / Validation du transporteur de la réception des matériaux

Printed/Typed Name / Nom en caractères (lettres)

Patrick E. Rea

Signature / Signature



Month / Day / Year /
Mois / Jour / Année
08 / 26 / 24

CONSIGNEE / CONSIGNATAIRE

Discrepancy Indication Space / Case appropriée pour non-conformité

Facility Owner or Operator: Certification of receipt of materials covered by this form except as noted in the Discrepancy Indication Space
Propriétaire du site ou opérateur: Certificat de réception des matériaux conforme aux conditions du bon de connaissance excepté les déviations notées à l'espace approprié.

Printed/Typed Name / Nom en caractères (lettres)

Matthew

Signature



Month / Day / Year /
Mois / Jour / Année
08 / 26 / 24

IN THE EVENT OF EMERGENCY CALL - 24-HOUR NUMBER 1-800-488-1760 or 1-800-483-3718
En cas de situation d'urgence appelez Numéro 24 heures au 1-800-488-1760 ou 1-800-483-3718

Clean Harbors

ENVIRONMENTAL SERVICES®

Work Order # _____

Canadian Manifest # _____

37240

Truck #

2324

Trailer #

T-139

Loaded Container # 1

2

3

4

Driver (print):

Patrick E Root

Date:

8/26/21

ENTER SCALE
WEIGHTS HERE

Gross Weight:

47060 kg

Tare Weight:

16890 kg PT

Net Weight:

30170 kg

26/AUG/2024

12:39:12

(Enter Date if not on scale stamped information)

NON-HAZARDOUS WASTE MANIFEST

389316

Please print or type (Form designed for use on elite (12 pitch) typewriter)

FN 2403977934-003

NON-HAZARDOUS WASTE MANIFEST		1. Generator's US EPA ID No. NYD982793937		Manifest Document No. 009		2. Page 1 of 1	
3. Generator's Name and Mailing Address Taconic 136 Coonbrook Road Petersburgh NY 12138				Site Address SAME			
4. Generator's Phone (518) 658-3202				ATTN: Rachel Earnum			
5. Transporter 1 Company Name Goudet Trucking Inc.		6. US EPA ID Number MAC300006038		A. State Transporter's ID		B. Transporter 1 Phone (413) 665-1323	
7. Transporter 2 Company Name		8. US EPA ID Number		C. State Transporter's ID		D. Transporter 2 Phone	
9. Designated Facility Name and Site Address Clean Harbors Canada, Inc. 4090 Teffer Road Corunna, ON N0N 1G0				10. US EPA ID Number MIR000035204		E. State Facility's ID A031813	
						F. Facility's Phone (519) 864-1021	
11. WASTE DESCRIPTION				Containers		13. Total Quantity	
				No. Type		14. Unit Wt./Vol.	
a. NON D.O.T. REGULATED				1 CM 30T st		T	
b.							
c.							
d.							
G. Additional Descriptions for Materials Listed Above 115 CH2785856				H. Handling Codes for Wastes Listed Above			
15. Special Handling Instructions and Additional Information SIX EPA ID# NYD980593842 IS ACTING AS PRIMARY EXPORTER ON BEHALF OF GENERATOR				EMERGENCY PHONE #: (800) 483-3718 GENERATOR: Taconic			
16. GENERATOR'S CERTIFICATION: I hereby certify that the contents of this shipment are fully and accurately described and are in all respects in proper condition for transport. The materials described on this manifest are not subject to federal hazardous waste regulations.							
Printed/Typed Name Al-Jah Mirachi				Signature [Signature]		Date 8/23/24	
17. Transporter 1 Acknowledgement of Receipt of Materials				Signature [Signature]		Date 8/23/24	
Printed/Typed Name Mick Tracy				Signature [Signature]		Date 8/23/24	
18. Transporter 2 Acknowledgement of Receipt of Materials				Signature [Signature]		Date 8/23/24	
Printed/Typed Name				Signature		Date	
19. Discrepancy Indication Space							
20. Facility Owner or Operator: Certification of receipt of the waste materials covered by this manifest, except as noted in item 19.							
Printed/Typed Name Enn Toth				Signature [Signature]		Date 8/26/24	

NON-HAZARDOUS WASTE

Canada Bill of Lading
Bon de connaissance Canada

Generator's Provincial ID No. (if Applicable) /
No. d'identification provincial generateur (Si requis.)

Document No. /
Document No.
EN 2403977

Page 1 of /
Page 1 de
34-003

CBA 208509

Consignor's Name and Mailing Address / Nom de l'expéditeur et adresse

Tacoma
136 Coonbrook Road
Petersburgh, NY 12138

329316

Consignor's Phone /
Téléphone de l'expéditeur (518) 658-3202

Carrier Company Name / Nom de la compagnie de transport

Provincial ID Number / Numéro d'identification provincial

Carrier's Phone / Téléphone du transporteur

Receiver's Name and Address / Nom du consignataire et adresse

Clean Harbors Canada, Inc.
4090 Teifer Road
Corunna, ON N0N 1G0

Provincial ID Number / Numéro d'identification provincial

A031819

Receiver's Phone / Téléphone du consignataire

(519) 864-1021

Description in order / Description dans l'ordre:

DG/MD	(UN Number, Shipping Name, Class, Sub Class, Packing Group) (Numéro UN, l'appellation réglementaire, Classe, Sub Classe, Group d'emballage)	Containers / Contenants		Total Quantity / Quantité Totale	Unit Wt/Vol / Poids/ Volume
		No. / No.	Type / Genre		
a	Non Regulated Material (IRM soils)	01	CM	27,272	kg
b					
c					
d					

Special Handling and Additional Information / Information additionnelle et manutention spéciale

24-Hour Number (800) 483-3718
Numéro 24-heures

Shipper's Certification: I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, are properly classified and packaged, have dangerous goods safety marks properly affixed or displayed on them, and are in all respects in proper condition for transport according to the Transportation of Dangerous Goods Regulations.
Certificat de l'expéditeur: Je déclare que le contenu de ce chargement est décrit ci-dessus de façon complète et exacte par l'appellation réglementaire adéquate et qu'il est convenablement classifié, emballé et muni d'indications de danger - marchandises dangereuses et à tous égards bien conditionné pour être transporté conformément au Règlement sur le transport des marchandises dangereuses.

Printed/Typed Name / Nom en caractères (lettres)

Christopher LeBaron

Signature / Signature

[Signature]

Month / Day / Year /
Mois Jour Année

08 / 23 / 27

TRANSPORTER / TRANSPORTEUR

Carrier Acknowledgement of Receipt of Materials / Validation du transporteur de la réception des matériaux

Printed/Typed Name / Nom en caractères (lettres)

Mick Tracy

Signature / Signature

[Signature]

Month / Day / Year /
Mois Jour Année

08 / 23 / 27

CONSIGNEE / CONSIGNATAIRE

Discrepancy Indication Space / Case appropriée pour non-conformité

Facility Owner or Operator: Certification of receipt of materials covered by this form except as noted in the Discrepancy Indication Space

Propriétaire du site ou opérateur: Certificat de réception des matériaux conforme aux conditions du bon de connaissance excepté les déviations notées à l'espace approprié.

Printed/Typed Name / Nom en caractères (lettres)

Tom Toth

Signature

[Signature]

Month / Day / Year /
Mois Jour Année

08 / 26 / 27

Clean Harbors®

ENVIRONMENTAL SERVICES

Work Order # FN 2403977934-003

Canadian Manifest # 208509

Tare 38,700

Truck #

2435

Trailer #

T-200

Loaded Container # 1

2

3

4

Driver (print):

Mark Tracy

Date:

8/26/24

ENTER SCALE
WEIGHTS HERE

Gross Weight:

48350 kg

Tare Weight:

17550 kg PT

Net Weight:

30800 kg

26/AUG/2024

12:01:10

(Enter Date if not on scale stamped information)

APPENDIX G BACKFILL SUBMITTALS AND APPROVALS



**NEW YORK STATE
DEPARTMENT OF ENVIRONMENTAL CONSERVATION**



Request to Import/Reuse Fill or Soil

This form is based on the information required by DER-10, Section 5.4(e) and 6NYCRR Part 360.13. Use of this form is not a substitute for reading the applicable regulations and Technical Guidance document.

SECTION 1 – SITE BACKGROUND

The allowable site use is: Commercial or Industrial Use

Have Ecological Resources been identified? no

Is this soil originating from the site? no

How many cubic yards of soil will be imported/reused? 50-100

If greater than 1000 cubic yards will be imported, enter volume to be imported:

SECTION 2 – MATERIAL OTHER THAN SOIL

Is the material to be imported gravel, rock or stone? yes

Does it contain less than 10%, by weight, material that passes a size 100 sieve? yes

Is this virgin material from a permitted mine or quarry? yes

Is this material recycled concrete or brick from a DEC registered processing facility? no

SECTION 3 - SAMPLING

Provide a brief description of the number and type of samples collected in the space below:

None proposed. Backfill is #2 stone with less than 10% passing the #100 sieve

Example Text: 5 discrete samples were collected and analyzed for VOCs. 2 composite samples were collected and analyzed for SVOCs, Inorganics & PCBs/Pesticides.

If the material meets requirements of DER-10 section 5.4(e)5 (other material), no chemical testing needed.

SECTION 3 CONT'D - SAMPLING

Provide a brief written summary of the sampling results or attach evaluation tables (compare to DER-10, Appendix 5):

Example Text: Arsenic was detected up to 17 ppm in 1 (of 5) samples; the allowable level is 16 ppm.

If Ecological Resources have been identified use the "If Ecological Resources are Present" column in Appendix 5.

SECTION 4 – SOURCE OF FILL

Name of person providing fill and relationship to the source:

RJ Valente-No relationship

Location where fill was obtained:

Grafton Stone Quarry

Identification of any state or local approvals as a fill source:

NYSDOT approved supplier #1-48R. DEC Mine #40693

If no approvals are available, provide a brief history of the use of the property that is the fill source:

Provide a list of supporting documentation included with this request:

Sieve and virgin source letter

The information provided on this form is accurate and complete.

Anthony J. Mirarchi

8/5/2024

Signature

Date

Anthony J. Mirarchi

Print Name

Taconic

Firm



RJ VALENTE GRAVEL Inc
1 MADISON ST SUITE 300
TROY NY 12180
PHONE 518-279-1001
FAX-518-279-1555



TO WHOM IT MAY CONCERN:

***As per your request, please accept this correspondence as follows:
For the Peterburgh NY.project.***

***All imported materials to be delivered to the above referenced
project, do not, to the best of our knowledge contain any known
contamination from prior historical, industrial, commercial
development or agricultural use prior to delivery.***

***The fill material originates from the following virgin quarry:
RJ Valente Gravel Inc Grafton Stone Quarry:***

3349 NYS RT.2 Cropseyville NY, 12059

NYS DOT SOURCE # 1-48R

NYS DEC MINE # 40693



RJ VALENTE GRAVEL Inc
 1 MADISON ST SUITE 300
 TROY NY 12180
 PHONE - 518-271-2200
 FAX - 518-271-2205
 STONE QUARRY
 PHONE - 518-279-1001
 FAX - 518-279-1555



SIEVE ANALYSIS

GRADATION TYPE:
NYSDOT #2

MATERIAL SOURCE # :	1-48R GRAFTON QUARRY

SAMPLE DATE:	3/7/2024
TIME:	10:15:00 AM
QC TECH.:	EG

TEST DATE:	3/7/2024
TIME:	2:45:00 PM
QC TECH.:	EG

WEATHER:	SUNNY
	CLOUDY
	RAIN / SNOW
METHOD:	FLOWING AGG. STREAM
	RANDOM LOCATION
	MINI STOCKPILE
	LOADER DIG
	OTHER
LOCATION:	MAIN STOCKPILE
	CONVEYOR
	OTHER

MOISTURE CONTENT	
INITIAL WEIGHT	0.0
DRY WEIGHT	0.0
MOISTURE WT.	0.0
% MOISTURE	#DIV/0!

WASH TEST	
INITIAL WEIGHT	0.00
DRY WEIGHT	0.00
WEIGHT -200	0.00
% -200	#DIV/0!

SIEVE SIZE	WEIGHT	% RETAINED	%PASSING	SPECIFICATIONS
1-1/2" (37.5mm)	0.0	100.0%	100.0%	100%
1" (25.0mm)	0.0	3.7%	96.3%	90-100%
1/2" (12.5mm)	0.0	89.4%	10.6%	0-15%
(#200) 0.075mm	0.0	99.6%	0.4%	0-1.0%
TOTAL	0.0			

NOTES:	



**NEW YORK STATE
DEPARTMENT OF ENVIRONMENTAL CONSERVATION**



Request to Import/Reuse Fill or Soil

This form is based on the information required by DER-10, Section 5.4(e) and 6NYCRR Part 360.13. Use of this form is not a substitute for reading the applicable regulations and Technical Guidance document.

SECTION 1 – SITE BACKGROUND

The allowable site use is:

Have Ecological Resources been identified?

Is this soil originating from the site?

How many cubic yards of soil will be imported/reused?

If greater than 1000 cubic yards will be imported, enter volume to be imported:

SECTION 2 – MATERIAL OTHER THAN SOIL

Is the material to be imported gravel, rock or stone?

Does it contain less than 10%, by weight, material that passes a size 100 sieve?

Is this virgin material from a permitted mine or quarry?

Is this material recycled concrete or brick from a DEC registered processing facility?

SECTION 3 - SAMPLING

Provide a brief description of the number and type of samples collected in the space below:

None proposed. Backfill is gravel with less than 10% passing the #100 sieve

Example Text: 5 discrete samples were collected and analyzed for VOCs. 2 composite samples were collected and analyzed for SVOCs, Inorganics & PCBs/Pesticides.

If the material meets requirements of DER-10 section 5.4(e)5 (other material), no chemical testing needed.

SECTION 3 CONT'D - SAMPLING

Provide a brief written summary of the sampling results or attach evaluation tables (compare to DER-10, Appendix 5):

Example Text: Arsenic was detected up to 17 ppm in 1 (of 5) samples; the allowable level is 16 ppm.

If Ecological Resources have been identified use the "If Ecological Resources are Present" column in Appendix 5.

SECTION 4 – SOURCE OF FILL

Name of person providing fill and relationship to the source:

RJ Valente-No relationship

Location where fill was obtained:

Luther Forest Mine

Identification of any state or local approvals as a fill source:

NYSDOT approved supplier. DEC Mine -ID# 50049

If no approvals are available, provide a brief history of the use of the property that is the fill source:

Provide a list of supporting documentation included with this request:

Sieve/Proctor and virgin source letter

The information provided on this form is accurate and complete.

Anthony J. Mirarchi

8/5/2024

Signature

Date

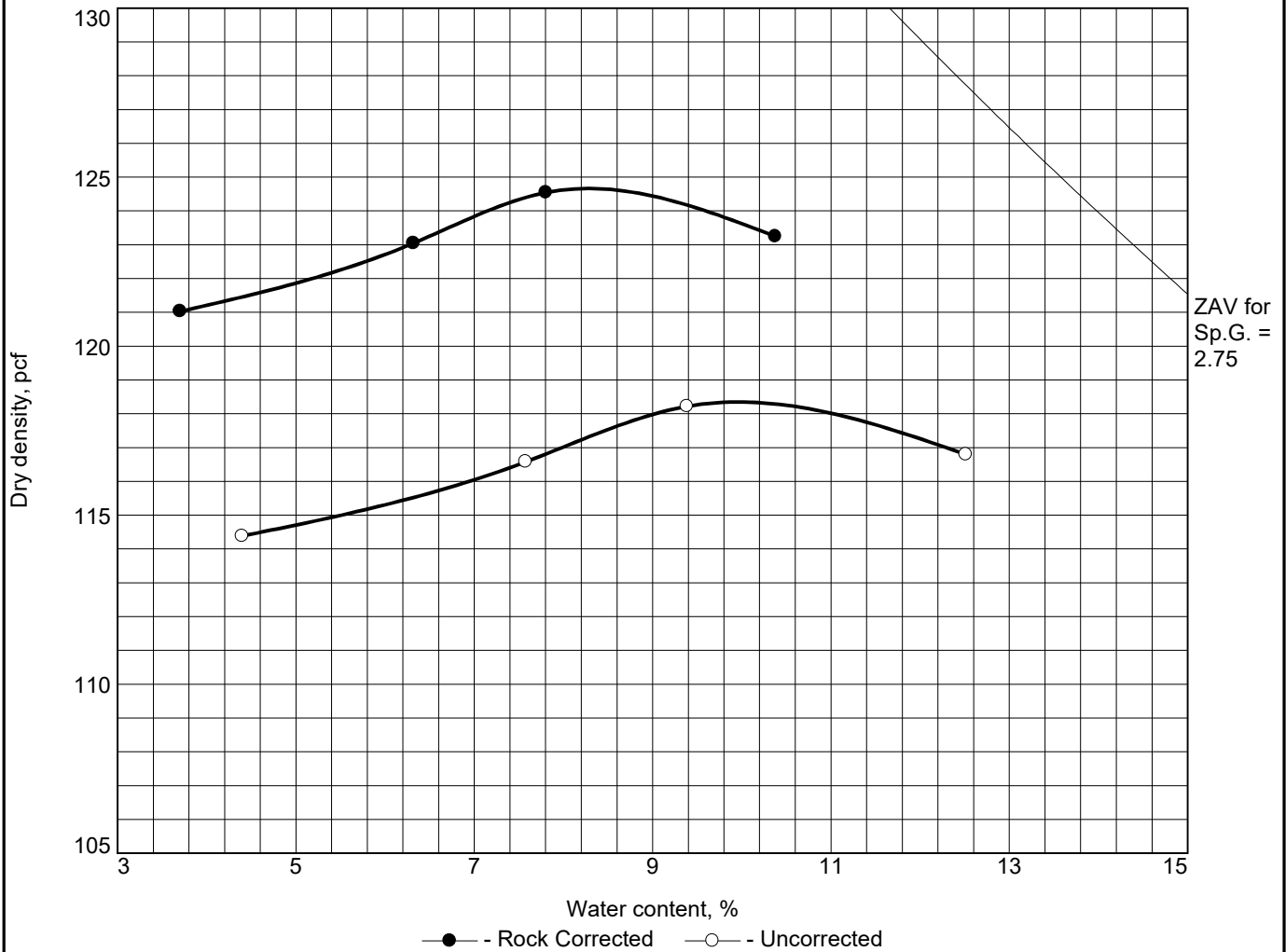
Anthony J. Mirarchi

Print Name

Taconic

Firm

COMPACTION TEST REPORT



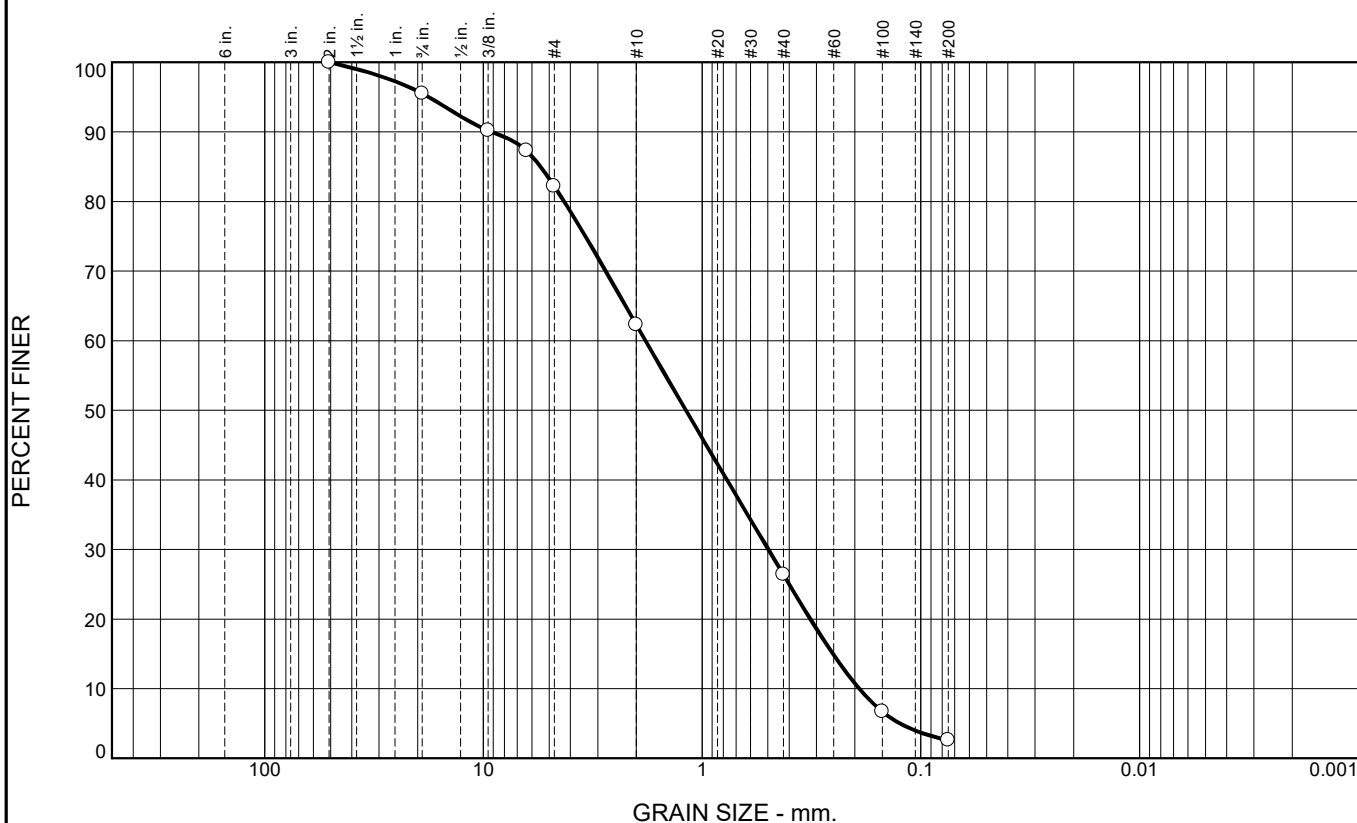
Test specification: ASTM D 698-07 Method A Standard
ASTM D4718-15 Oversize Corr. Applied to Each Test Point

Elev/ Depth	Classification		Nat. Moist.	Sp.G.	LL	PI	% > #4	% < No.200
	USCS	AASHTO						
	SP						17.8	2.6

ROCK CORRECTED TEST RESULTS		UNCORRECTED	MATERIAL DESCRIPTION
Maximum dry density = 124.7 pcf		118.3 pcf	Select Granular Fill
Optimum moisture = 8.3 %		10.0 %	

Project No. Client:		Remarks:
Project:		
○ Location: Valente Pit Sample Number: 22-785		
QCQA Laboratories, Inc.		
Schuylerville, NY		Figure 22-785

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	4.5	13.3	19.9	35.9	23.8	2.6	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
2	100.0		
.75	95.5		
.375	90.2		
.25	87.3		
#4	82.2		
#10	62.3		
#40	26.4		
#100	6.7		
#200	2.6		

* (no specification provided)

Soil Description
 Select Granular Fill

Atterberg Limits
 PL= LL= PI=

Coefficients
 D₉₀= 9.1843 D₈₅= 5.4792 D₆₀= 1.8159
 D₅₀= 1.1867 D₃₀= 0.4976 D₁₅= 0.2522
 D₁₀= 0.1911 C_u= 9.50 C_c= 0.71

Classification
 USCS= SP AASHTO=

Remarks

Location: Valente Pit
Sample Number: 22-785

Date: 1/3/23

QCQA Laboratories, Inc.

Client:
Project:

Schuylerville, NY

Project No:

Figure 22-785



RJ VALENTE GRAVEL Inc
1 MADISON ST SUITE 300
TROY NY 12180
PHONE 518-279-1001
FAX-518-279-1555



TO WHOM IT MAY CONCERN:

***As per your request, please accept this correspondence as follows:
For the Peterburg NY project.***

***All imported materials to be delivered to the above referenced
project, do not, to the best of our knowledge contain any known
contamination from prior historical, industrial, commercial
development or agricultural use prior to delivery.***

***The fill material originates from the following virgin mine:
Luther Forest Mine @ George Thompson Rd. Stillwater NY***

DEC Mine ID# 50049

Rachel Farnum

From: Monaco, Christopher S (DEC) <Christopher.Monaco@dec.ny.gov>
Sent: Tuesday, August 20, 2024 8:43 AM
To: Jeff Mirarchi
Cc: Beilby, Ian A (DEC)
Subject: RE: Taconic 442047-Building 1 Backfill

Jeff,

These materials are acceptable.

Thanks,
Chris

From: Jeff Mirarchi <jeffm@4taconic.com>
Sent: Monday, August 5, 2024 4:23 PM
To: Monaco, Christopher S (DEC) <Christopher.Monaco@dec.ny.gov>
Cc: Beilby, Ian A (DEC) <ian.beilby@dec.ny.gov>
Subject: Taconic 442047-Building 1 Backfill

ATTENTION: This email came from an external source. Do not open attachments or click on links from unknown senders or unexpected emails.

Hello Chris:

As discussed on the call today, attached are the request forms for the backfill sources for the Building 1 IRM.

Backfill materials for the project will be coming from RJ Valente Gravel, Inc, they are a NY DOT approved supplier. Materials will be coming out of their Grafton Quarry.

RJ Valente Gravel, Inc.
Grafton Quarry
3349 Route 2
Cropseyville, NY 12052
(518) 279-1001

RJ Valente Gravel, Inc. (corp address)
1 Madison St, Suite 300
Troy, NY 12180

Materials include estimated 300 cubic yards of ROB Gravel from the Luther Forst Mine and 80 cubic yards of #2 Stone from the Grafton Mine.
Please let me know if these materials are acceptable for the project.

Thank you,

A. Jeff Mirarchi, P.E.
Manager, Environmental Stewardship



136 Coonbrook Rd
Petersburgh, NY 12138
Office: (518) 658-3202, ext. 328
Cell: (518) 858-2965
Toll free: (800) 833-1805
www.4taconic.com

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