

Supplemental Interim Remedial Measure Work Plan

Operable Unit #1 (South Terminal)

Former AFMC Petroleum Bulk Storage & Distribution Terminal
Ambrose Street
Sackets Harbor, Jefferson County, New York
NYSDEC ERP Site Number E-623014

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SE Project No. 2009-761



June 6, 2014



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NYSDEC ERP Site Number E623014
Former AFMC Petroleum Bulk Storage and Distribution Terminal
Operable Unit #1 (South Terminal)
Ambrose Street
Sackets Harbor, Jefferson County, New York

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1.0 Introduction

The Former AFMC, Inc. Petroleum Bulk Storage Facility is located within the northwestern portion of the Village of Sackets Harbor, Town of Hounsfield, Jefferson County, New York. This facility historically operated as a petroleum bulk storage and distribution facility under several corporate ownerships from the 1920s through the late 1980s. The facility was decommissioned in 1988, and has remained vacant and idle since that time. The Village of Sackets Harbor, in association with its Local Development Corporation, purchased the property in 2000, with the intent of promoting redevelopment of this blighted property. Due to the considerable history of petroleum handling, as well as the presence of some known areas of petroleum contamination and documented historic releases, the Village applied to enter the site into the New York State Environmental Restoration Program ("ERP") in 2006. The site was subsequently deemed eligible for the ERP program, and the Village signed a State Assistance Contract with the New York State Department of Environmental Conservation (NYSDEC) in October 2008, formalizing the framework for implementing a remedial investigation to identify and quantify the extents of petroleum contamination persisting from historic operations.

The former AFMC site consists of a combined land area of 19.55 acres that is distributed across two separate parcels that are divided by Ambrose Street. Based on its geometric configuration and history of operations, the site was divided into two (2) separate operable units (OUs) for purposes of the remedial investigation work. Operable units are generally considered to be portions of a site that can be addressed separately, for technical or administrative reasons, to investigate, eliminate or mitigate a release, threat of a release, or exposure pathway resulting from site contamination. Operable Unit #1 (OU1), also referred to as "South Terminal Area", represents the portion of the site positioned on the south side of Ambrose Street, encompassing 4.75 acres of land area. Operable Unit #2 (OU2), also referred to as "North Terminal Area", represents the remaining 14.80 acres of the facility that is situated north of Ambrose Street. Facility operations began on OU1 in the 1920s. In the mid 1950s, facility operations were expanded to encompass the area corresponding to OU2. Both OUs reportedly operated through the late 1980s. A Site Layout drawing, depicting the relationship of the two parcels to one another, and the relationship of each to existing streets, Lake Ontario, and neighboring development is attached as Figure 1.

Under the ERP Agreement, the objective of the remedial program was to meet Residential Use Soil Cleanup Objectives, as defined in 6NYCRR Part 375. Under 6NYCRR Part 375, "grossly contaminated media" is considered to be soil, sediment, surface water, or groundwater which contains sources or



substantial quantities of mobile contamination in the form of non-aqueous phase liquid (NAPL) that is identifiable either visually, through strong odor, by elevated contaminant vapor levels, or otherwise readily detectable without laboratory analysis. 6NYCRR Part 375 requires that, in addition to achieving the target soil cleanup objectives for individual contaminants established for a particular site, all source areas and grossly-contaminated media must be addressed.

A Remedial Investigation (RI) of both parcels was previously completed by Strategic Environmental, LLC (SE). The methodologies and findings of the remedial investigation were previously detailed in SE's *Remedial Investigation and Interim Remedial Measure Report, NYSDEC ERP Site Number E623014, Former AFMC Petroleum Bulk Storage Facility*, dated June 7, 2012.

The RI identified two limited areas on the North Terminal parcel with petroleum constituents present in soil above NYSDEC Residential Use Soil Cleanup Objectives (SCOs), and two other areas where soil exhibited nuisance characteristics (petroleum-type odors, visible staining, and/or significantly elevated PID headspace screening values). Soil exhibiting such nuisance characteristics is considered to be "grossly contaminated media" under 6NYCRR Part 375. All areas were subsequently addressed through Interim Remedial Measures (IRM), and, as a result, that portion of the facility was issued a "No Further Action" Record of Decision (ROD) by the NYSDEC in March 2013, meeting "residential use" soil cleanup objectives, as defined in 6NYCRR Part 375.

The remedial investigation work performed on the South Terminal parcel identified three (3) source areas of petroleum contamination on that portion of the facility. One of the areas, located along the eastern edge of the site, exhibited petroleum constituent concentrations in soil above "commercial" soil cleanup objectives established in 6 NYCRR Part 375, and was removed through an IRM action (soil excavation and off-site disposal) in 2010.

The remaining two (2) areas of identified soil impact exhibited strong petroleum-type odors and staining characteristic of "grossly" contaminated soil, despite having target petroleum constituent concentrations below "commercial" soil cleanup objectives. As such, further remediation is required to address these areas of "grossly" impacted soil on OU1. The northern area of remaining grossly impacted soil coincides with the location of two (2) former loading racks that were used to transfer product from the on-site storage tanks to over-the-road delivery vehicles. The piping connecting the tanks to the loading racks was located above grade in the vicinity of the tanks, but was buried below grade in the immediate vicinity of the loading racks, to allow vehicle traffic around the racks. The second area of grossly impacted soil is located on the southern portion of OU1, where a valve house was located, and where two aboveground storage tanks and the historic rail access to the facility existed. An estimated 3,600 cubic yards of such material



has been identified in these two areas on OU1. Based on site conditions, it is expected that these areas can be effectively addressed through the implementation of an additional IRM action. The actions proposed to address these areas are detailed below.

1.1 Nature and Extent of Contamination

The contaminants of concern identified in the course of the investigation include volatile and semi-volatile organic compounds typical of petroleum products, as consistent with the past operations of the facility. The overburden geology at the site consists of fine-grained Glaciolacustrine silt and clay deposits, with thin discontinuous beds of glacial till present beneath the silt and clay along the bedrock surface. The bedrock beneath the site is located at depths ranging from 5 to 8 feet below grade, and consists of limestone. The bedrock in these areas is approximately 6-8 feet below grade, and the zone of contamination generally exists in the lower two (2) to three (3) feet of overburden, at the bedrock interface.

Results from analyses performed on groundwater collected at the site indicate only localized minimal groundwater contamination found in overburden groundwater within the southern area of grossly impacted soils. Overburden groundwater beyond this grossly impacted area, as well as bedrock groundwater beneath entire site, was not found to be in contravention of groundwater standards. The following is a list of all compounds reported from laboratory reports as having been identified in groundwater above groundwater standards.

Contaminant	Detected Concentration (ug/L)	GW Standard (ug/L)
Benzene	71	0.7
Toluene	20	5.0
Ethylbenzene	334	5.0
Xylene (total)	394	5.0
Isopropylbenzene	58.8	5.0
n-Propylbenzene	62	5.0
1,3,5-trimethylbenzene	114	5.0
1,2,4-Trimethylbenzene	447	5.0
n-Butylbenzene	18.4	5.0
Sec-Butylbenzene	10	5.0
p-Isopropyltoluene	17.8	5.0
Naphthalene	223	10.0



1.2 Project Goals

The remediation goal targeted for OUI of the former AFMC facility is to select a remedy that is protective of human health and the environment by eliminating or mitigating significant threats posed by contaminants from past operations, based upon an anticipated future "commercial use" of the site. As such, the target soil cleanup objectives for the site are the Residential SCO's established in Section 375-6.8 of 6NYCRR Part 375. An additional component of satisfying the criteria of 6NYCRR Part 375 will be to address the two (2) areas of grossly impacted soil. The approximate boundaries of these grossly contaminated areas are identified on the attached Figure 2. Based on the data compiled in the course of the remedial investigation, it is believed that the implementation of an Interim Remedial Measure (IRM) consisting of excavation and on-site treatment of soil from the two areas of grossly impacted soil will simultaneously result in the attainment of the Residential SCO's.

Results from analyses performed on groundwater collected at the site indicate exceedances of groundwater standards for a limited number of volatile organic compounds in overburden groundwater within one of the areas of grossly impacted soils targeted for further remediation. The groundwater data does not indicate a significant and widespread impact to either overburden or bedrock groundwater. The "protection of groundwater" soil cleanup objectives of 6NYCRR Part 375 are not believed to be applicable to the site, based upon the following factors:

- a) The apparent source material for this minor contravention of overburden groundwater standards is targeted for removal under the remedial program;
- b) Data from sampling of overburden groundwater does not indicate the contaminated groundwater is migrating;
- c) Data from sampling of bedrock groundwater beneath the site does not indicate that the bedrock groundwater regime has been significantly impacted nor is acting as a migratory pathway for the contamination;
- d) The lack of migration of the contaminated groundwater in the duration of time since the cessation of facility operations (some 25 years) suggests that it is unlikely that the contamination will migrate off-site; and
- e) The groundwater quality is expected to improve over time once the source material is addressed.



2.0 Proposed Interim Remedial Measures

The interim remedial measures that are proposed for the South Terminal to address these areas of concern will generally include:

- a) Clearing, grubbing and grading of areas of the site where soil removal is expected to occur, and where excavated soil will be staged and mechanically processed;
- b) Excavation and on-site staging of target impacted soil within each area of concern;
- c) Verification sampling to confirm and document that all soil having VOC concentrations above the Residential SCOs or nuisance characteristics is effectively removed from the subsurface;
- d) Temporary/rough grading and securing the excavations so that open excavations do not remain while the impacted soil is mechanically processed on site;
- e) Mechanical mixing and aeration of excavated impacted soils, using Allu soil screening bucket, to promote biologic breakdown of organic contaminants;
- f) Screening of excavated soil periodically throughout the mechanical mixing and aeration process to gauge progress and effectiveness of the technique;
- g) Verification sampling of the processed soil at such time as field observations (i.e., odors, headspace screening results, visible staining, or obvious petroleum odors) suggest that mixing/aeration has reduced contaminant concentrations below Residential SCOs and removed nuisance characteristics; and
- h) Implementation of a Community Air Monitoring Program (CAMP) to verify that soil excavation and handling activities performed in connection with the work do not migrate from the site and affect the surrounding community.

The specific details of each task are described in the corresponding subsections below.

2.1 Clearing and Grading of Site

Prior to undertaking the soil excavation and mechanical processing tasks, clearing of site vegetation will be conducted to facilitate efficient movement around and between the target excavation areas and designated staging and soil processing areas. Existing vegetation (primarily woody brush and shrubs) will be cut to just above grade, using a "Brush Hog" or similar mowing equipment. A moderate degree of pre-excavation site grading may also be necessary in and around the designated soil staging and processing area to promote efficient handling of soil and diversion/management of precipitation/runoff. The extent of clearing and grading will be field-determined prior to site mobilization.



2.2 Soil Excavation and Staging

Following site clearing and preparation, the initial task of the IRM action will be to excavate impacted soil from its in-situ position within the two (2) areas exhibiting nuisance characteristics, as identified on the attached Figure 2. The areas delineated on the site plan represent an approximation of the anticipated extents of excavation that will be required in each area to remove soil having the noted nuisance characteristics. The final extent of each excavation will be determined in the field as the work is conducted, through visual observations and headspace screening. Verification sampling will be conducted on soil remaining in-situ along the terminal walls and bottom (unless complete soil removal to bedrock contact is necessary) to verify, through laboratory analysis, that concentrations of individual petroleum constituents do not exceed the Residential SCOs established in 6NYCRR Part 375.

In each designated excavation area, soil removal will begin in an area of known or expected soil contamination, near the outer edge of the area delineated on the site plan. Excavation will proceed vertically and laterally in each direction until soil no longer exhibits field-detectable nuisance characteristics (strong odors, visible staining) or headspace VOC readings above 10 parts-per-million (ppm), as measured with the portable PID.

As soil is excavated, overburden, if any, that does not exhibit the identifiable nuisance characteristics or PID headspace screening values above 10 ppm will be segregated for use as backfill, subject to suitable laboratory analysis results. Soil having PID headspace screening values above 10 ppm or exhibiting identifiable nuisance characteristics will be moved to the designated on-site soil staging and processing area for subsequent mechanical mixing and aeration.

2.3 Verification Soil Sampling-Excavation Walls and Floor

Post-excavation verification soil samples will be collected from depths corresponding to the contaminated soil horizon in each area at the limits of the excavation. These verification samples will serve to document concentrations of individual volatile and semi-volatile petroleum constituents remaining in the subsurface environment in these areas.

Soil samples will be collected at a frequency of one sample for every 30 feet of excavation sidewall. Based on the conditions observed in previous soil borings and test pits in these areas, it is anticipated that the impacted soil extends to the bedrock/overburden contact and that related soil excavation will therefore remove all overburden to the bedrock surface. If such is the case, no soil samples will be collected from the excavation floor. If excavation is terminated prior to reaching the bedrock



surface, soil samples from the excavation floor will be collected on a frequency of one sample per 900 square feet of floor area. Sampling on the walls and bottom will be biased toward areas with higher PID readings, if any.

Soil samples will be submitted for laboratory analysis of volatile organic compounds (VOCs) by EPA Method 8260, and semi-volatile organic compounds by EPA Method 8270 (SVOCs). Samples will be submitted to a NYSDOH certified laboratory. NYSDEC ASP Category B deliverables will be provided.

2.4 Mechanical Mixing and Aeration of Excavated Soil

Impacted soil removed from the two (2) target excavation areas and placed in the on-site staging and processing area will be subjected to mechanical mixing and aeration, using an Allu soil screening bucket attached to an hydraulic excavator. The screening will serve to periodically aerate the staged soil to promote growth of naturally-occurring/indigenous aerobic microorganisms that will metabolize organics and hydrocarbons in the soil, and to re-distribute microbe populations and hydrocarbons to promote efficient and effective treatment of soil throughout the piles.

Soil processing will occur at a minimum frequency of once every two (2) weeks. Depending upon the amount of time required to complete a single processing of all soil, as well as an evaluation of costs for remobilization of required equipment between processing events, the soil mixing and aeration may be performed continuously by cycling from one end of the staged material to the other.

Processing will continue until such time as field observations indicate that nuisance characteristics (i.e., strong petroleum odors) no longer persist, and PID headspace screening of soil from representative points throughout the staged material reveals no VOC detections above 25 ppm.

2.5 Verification Sampling of Processed Soil

Once field observations and PID headspace screening results suggest that the conditions described in the foregoing paragraph have been achieved, a verification sampling event will be performed to document concentrations of volatile and semi-volatile petroleum constituents in the processed material. One grab sample for each approximately 1,000 cubic yards of staged material will be collected for laboratory analysis. The sample locations will be evenly distributed throughout the soil piles, and will be accessed using a hydraulic excavator or backhoe with a conventional excavation bucket. The collected samples will be submitted for laboratory analysis of volatile organic compounds (VOCs) by EPA Method 8260, and semi-volatile organic compounds by EPA Method 8270 (SVOCs). Samples will be submitted to a NYSDOH certified laboratory. NYSDEC ASP Category B deliverables will be provided.



In the event that laboratory analysis confirms that concentrations of all volatile and semi-volatile petroleum constituents are below the corresponding Residential SCOs established in 6NYCRR Part 375, the soil treatment program will be deemed complete, and the piles of staged soil will be placed back into the original excavations to bring the elevation back to original grade.

2.6 *Community Air Monitoring Program*

During all excavation, soil handling, and mechanical mixing/aeration operations, air monitoring will be performed on-site and at the downwind perimeter of the site, in accordance with the Community Air Monitoring Plan (CAMP) contained in Appendix A of this work plan.

2.7 *IRM Report*

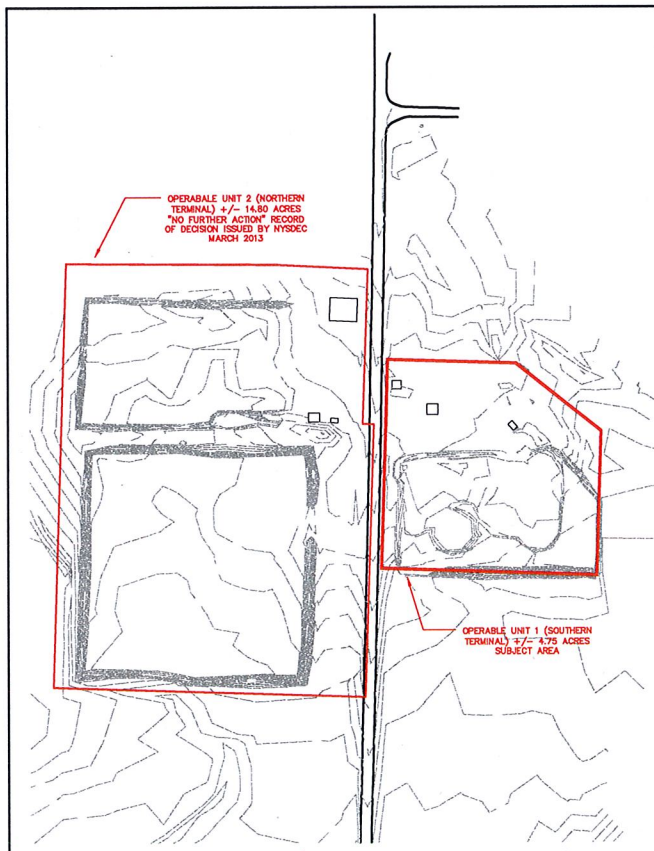
Upon completion of the work, SE will prepare an IRM Report documenting soil excavation activities; post-excavation verification sampling; soil staging, handling and mechanical mixing and aeration; progress monitoring observations and final verification sampling results for the staged soil. This report will include drawings depicting the final excavation limits as well as the soil staging areas utilized for the completion of the work.

Figure 1

Overall Site Layout



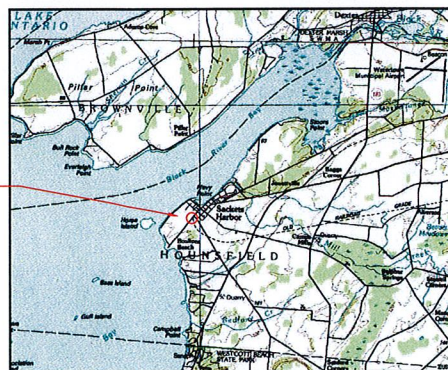
VILLAGE OF SACKETS HARBOR
Supplemental Interim Remedial Measure Work Plan
Operational Unit #1-Former AFMC Petroleum Bulk Storage and Distribution Facility
Ambrose Street, Sackets Harbor, Jefferson Co., New York



TOPOGRAPHIC MAP - SITE



SITE AERIAL



TOPOGRAPHIC MAP - SACKETT HARBOR, NY



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FIGURE 1

DATE	DATE
SCALE	SCALE
PROJECT	PROJECT
REVISION	REVISION

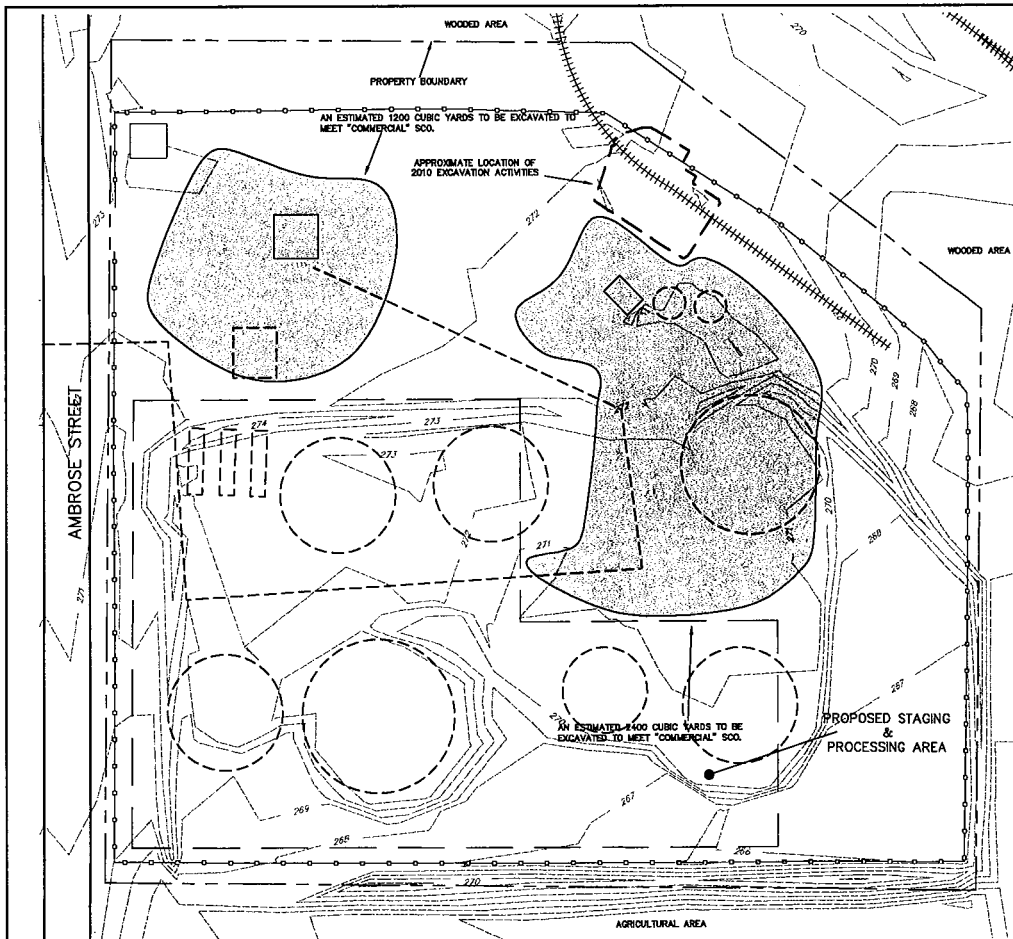
OVERALL SITE LAYOUT
NYSDOCS ALTERNATIVE ANALYSIS
FORWARD PRICING BULK STORAGE FACILITY
OPERABLE UNIT 1 - SOUTH TERMINAL

SE

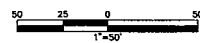
Figure 2

Approximate Excavation and Soil Staging/Processing Areas





- LEGEND
- ANTICIPATED AREAS OF EXCAVATION
 - ~ APPROXIMATE EXTENTS OF 2010 EXCAVATION
 - BOUNDARIES OF HISTORIC FEATURES
 - ELEVATION CONTOURS
 - PROPERTY BOUNDARY
 - CHAIN LINK FENCE
 - ++++ FORMER RAILROAD LINE



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FIGURE	DATE	REVISION
1	10/1/01	1
2	10/1/01	1
3	10/1/01	1
4	10/1/01	1
5	10/1/01	1
6	10/1/01	1
7	10/1/01	1
8	10/1/01	1
9	10/1/01	1
10	10/1/01	1

PROPOSED SOIL REMOVAL TO MEET "COMMERCIAL" USE SCO
2013 REMEDIAL ALTERNATIVES ANALYSIS
FORMER AFMC PETROLEUM BULK STORAGE FACILITY
OPERABLE UNIT 1 - SOUTH TERMINAL

SI

Appendix A

Community Air Monitoring Plan



VILLAGE OF SACKETS HARBOR
Supplemental Interim Remedial Measure Work Plan
Operational Unit #1-Former AFMC Petroleum Bulk Storage and Distribution Facility
Ambrose Street, Sackets Harbor, Jefferson Co., New York

**COMMUNITY AIR MONITORING PLAN
INTERIM REMEDIAL MEASURES
FORMER AFMC, INC. PETROLEUM BULK STORAGE FACILITY
AMBROSE STREET, SACKETS HARBOR, NEW YORK**

**NYSDEC ENVIRONMENTAL RESTORATION PROJECT
SITE NUMBER E-623014**

INTRODUCTION

The following Community Action Monitoring Plan (CAMP) was prepared for use during interim remedial measures to be conducted at the former AFMC Petroleum Bulk Storage Facility, located on Ambrose Street in the Village of Sackets Harbor, Jefferson County, New York, to be performed under NYSDEC Environmental Restoration Project Site Number E-623014.

Both the New York State Department of Health (NYSDOH) and the New York State Department of Environmental Conservation (NYSDEC) have requirements for community air monitoring at remediation sites; these have been adhered to as nearly as possible in this CAMP. This CAMP has been developed to reflect the requirements for volatile organic compound (VOC) and particulate matter monitoring established by the NYSDOH in that agency's *Generic Community Air Monitoring Plan* (included as part of the NYSDEC's *Draft DER-10: Technical Guidance for Site Investigation and Remediation*, dated December 25, 2002 at Appendix 1A).

Protection of the public from air borne contamination originating at the site is the primary objective of the CAMP. Toward that end, real-time monitoring at the upwind and downwind portions of the site will be conducted to ensure that airborne contaminants are not migrating from the site as a direct result of the intrusive work, and to allow appropriate mitigative measures to be implemented in the event that action levels established in this CAMP are exceeded.

This plan is not intended to establish air monitoring that will be performed under the Health and Safety Plan for workers performing the investigation, but for the protection of the surrounding community from potential airborne contaminant release. Provisions for worker exposure monitoring and related action levels and protective measures have been established in the separate *Site-Specific Health and Safety Plan* for the project, dated January 19, 2007.

This CAMP shall supplement and be incorporated into Strategic Environmental's *Supplemental Interim Remedial Measure Work Plan-Operable Unit #1 (South Terminal)*, dated June 6, 2014, by reference.

MONITORING

Real-time air monitoring for total VOC and particulate matter less than 10 microns in size (PM-10) will be conducted continuously at monitoring stations positioned at the downwind and upwind perimeter of each work zone during any ground-intrusive and soil processing or handling activities. The monitoring at each station will consist of the following:

Volatile Organic Compounds

Real time measurement of total volatile organic compound (VOC) concentrations in air will be obtained using portable photo-ionization detectors (PIDs) equipped with 10.6 eV lamps (RAE Systems MiniRae Model 2000 units). Calibration of the PIDs will be performed at the start of each work day, using a 100 part-per-million isobutylene compressed gas. The PIDs will be checked against the isobutylene calibration standard at the mid-point of each day, and the instruments will be re-calibrated if the concentration recorded for the calibration gas mixture varies by more than two (2) parts-per-million from the 100 ppm standard value.

One PID will be placed on a stand situated in an upwind location and another will be located on a similar stand at a downwind location. The stands will serve to elevate the instruments approximately five (5) feet above grade, to represent a typical breathing zone of nearby individuals. Stand locations will be determined daily based on the prevailing wind conditions of that morning, and will be modified as necessary throughout the workday in cases of changes in wind direction.

Once in place, the PIDs will be set to continuously record total VOC readings. Alarms will be programmed to sound if the total PID readings surpass 5 ppm. Data gathered from the PIDs will be downloaded daily to a laptop and the recordings saved.

Particulate Matter

Two real-time respirable dust monitors (TSI DustTRAK Aerosol Monitor) will be used at the site to facilitate particulate monitoring under this CAMP. The TSI DustTRAK is capable of measuring particulate matter less than 10 microns in size, and of integrating the data over a fifteen (15) minute interval. One will be placed at the upwind monitoring station and another at the downwind station. This will be done in an effort to identify background particulates in the area and how it relates to the amount of particulates created by the investigative work.

The DustTRAK units will be set to sound an audible alarm to sound if PM-10 concentrations in excess of 100 micrograms per cubic ($\mu\text{g}/\text{m}^3$) meter are recorded.

ACTION LEVELS AND MITIGATION

The following action levels and resultant mitigative actions will apply for the contaminants included under this CAMP.

Volatile Organic Compounds

If the airborne concentration of VOC at the downwind perimeter monitoring station is recorded to be more than 5 ppm above that recorded at the upwind (background) monitoring station, work will be suspended. Continuous monitoring will subsequently continue, with no excavation or soil handling performed. If the VOC concentrations at the downwind monitoring station decrease below 5 PPM above background, work will resume with continuous air monitoring.

If the VOC at the downwind monitoring station persist at concentrations over 5 ppm, but less than 25 ppm, above the background/upwind concentrations, mitigative measures, such as vapor suppression or modification of work practices, will be reviewed, and implemented. Once these are implemented, continuous monitoring will be performed at both the upwind and downwind stations, as well as at a point that is 200 feet (or one-half the distance to the nearest structure or receptor, if less than 200 feet), downwind of the work area. If the VOC concentrations at the downwind work area perimeter location are below 25 ppm above background/upwind concentrations, and concentrations at the more distant downwind monitoring location are below 5 ppm above background/upwind concentrations, work will resume and will continue provided that these conditions remain.

In the event that VOC concentrations at the downwind work area perimeter are more than 25 ppm above the background/upwind location, or if concentrations at the more distant downwind monitoring location are more than 5 ppm above the background/upwind concentrations, work will remain suspended, and application of additional vapor suppression methods or further alteration of site work practices will be evaluated.

Particulate Matter

If, during any fifteen minute period, the dust monitors record values at the downwind monitoring station of 100 $\mu\text{g}/\text{m}^3$ above background/upwind conditions for PM-10 particles, or, if airborne dust is observed to be leaving the work area, work will be halted and dust suppression techniques will be employed. After the dust suppression techniques have been implemented and are functioning adequately, work may resume at the site, with continuous monitoring. Work will continue provided that no airborne dust is observed leaving the work area, and downwind PM-10 concentrations do not exceed 150 $\mu\text{g}/\text{m}^3$ above background/upwind concentrations.

In the event that the application of the dust suppression techniques are not successful in preventing visible dust migration from the work area and maintaining downwind PM-10 concentration at or below 150 $\mu\text{g}/\text{m}^3$ above background/upwind concentrations, work will be suspended, and alternative/additional dust suppression or work practice modification will be evaluated and implemented.