PERIMETER AIR MONITORING PLAN

Former Harrison Gas Plant Site
In-Situ Soil Stabilization

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Revision 1 – January 27, 2021
Revision 2 – December 3, 2021
Revision 3 – March 3, 2022

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TABLE OF CONTENTS

TABLES

FIGURES

APPENDICES

REVISIONS

1. **Revision 1 – January 27, 2021:** Revision 1 of the PAMP was prepared to address the following changes that have occurred since the project began:
    - Revise the confirmatory air sampling metals analyses to only include lead;
    - Clarify requirement for confirmatory sampling once every work week;
    - Update Site Personnel;
    - Update the PAMP text and PAM Station Location Plan (Figure 2) to include the addition of three PAM Stations;
    - Update the Alarm Condition Response Plan (Section 5.5) to clarify sampling requirements for alarm conditions caused by intrusive site activities and "interference conditions".
2. **Revision 2 – December 3, 2021:** Revision 2 of the PAMP was prepared to address the following changes that have occurred since Revision 1.
    - Update Site Personnel;
    - Update the PAMP text and PAM Station Location Plan (Figure 2) to include the reduction to six total PAM Stations; and
    - Update the Real-Time Air Monitoring During Intrusive Activities (Section 5.3) to specify only PM-10 concentrations and meteorological data will be measured during non-Intrusive Activities.
3. **Revision 3 – March 3, 2022:** Revision 3 of the PAMP was prepared to address the following changes that have occurred since Revision 2.
    - Update the PAMP text and PAM Station Location Plan (Figure 2) to include the reduction of total PAM stations to two (2) once restoration has begun and all open areas are no larger than 50' by 50' combined.

1.0 INTRODUCTION

On behalf of Public Service Electric and Gas Company (PSE&G), this Perimeter Air Monitoring Plan (PAMP) was prepared by Paulus, Sokolowski and Sartor, LLC (PS&S) and Emilcott Associates, Inc. (Emilcott) for use during the In-Situ Soil Stabilization (ISS) for the entire facility. This PAMP establishes guidelines and requirements for the perimeter air monitoring activities in support of the proposed ISS activities (a.k.a., the Site RA activities) at the former Harrison Gas Plant Site (Site) in the Town of Harrison, Hudson County, New Jersey. This PAMP was prepared to support the ISS presented in the Remedial Action Workplan Addendum for the Former PSE&G Harrison Gas Plant –March 2019 (RAWP).

This PAMP has been prepared in accordance with PSE&G Project Management Directives (PMD's). The PAMP action levels identified herein were determined using the current United States Environmental Protection Agency (USEPA) Risk Based Screening Levels: "*Regional Screening Levels for Chemical Contaminants at Superfund Sites*", Calculator for Site-specific Residential Risk-Based Screening Levels for Ambient Air[1].

1.1 Site Location, History and Current Conditions

1.1.1 Site Location

The Site is a contiguous triangular-shaped parcel of land encompassing approximately 32 acres. The Site is bounded on the east by Frank E. Rodgers Boulevard, on the south-southwest by the Passaic River, and on the west- northwest by rail lines operated by The National Railroad Passenger Corporation (AMTRAK) and Port Authority Trans-Hudson (PATH). The Site contains approximately 1,600- feet of shoreline with the Passaic River located along the southerly Site boundary.

1.1.2 Site History

The Site was acquired through several separate transactions by PSE&G and its predecessors from 1884 through 1924. In 1902, PSE&G first started using the Site as a large oil and manufactured gas (MGP) storage facility for PSE&G's former Market Street Gas Works, located on the southern and opposite side of the Passaic River in Newark, New Jersey. The MGP plant at the Site was constructed between 1924 and 1926 and brought on line in 1926. The MGP plant operated as a base load plant until approximately 1963 when it was converted to peak shaving status. The primary MGP process utilized at the Site was the carbureted water gas process. It was retired from service after the winter of 1986 - 1987. Approximately 0.67 acres located in the northeasterly portion of the Site was recently sold by PSE&G to PATH.

[1] Refer to the USEPA calculator website at https://epa-prgs.ornl.gov/cgi-bin/chemicals/csl_search.

The Site is presently used as headquarters facilities for the following 4 PSE&G units and operations:

1. PSE&G Harrison Gas Distribution headquarters;
2. PSE&G Harrison Appliance Service headquarters;
3. PSE&G Resource recovery and construction groups;
4. PSE&G natural gas Metering and Regulating (M&R) station; and

Since the former MGP plant was removed only to the grade surface, former MGP foundations, pipes and other remnants remain.

In accordance with the NJDEP Land Use mapping database, Land Use/Land Cover layer (NJDEP 2002b), the land use at the Site is classified as Industrial. Land use at the Site has not changed since the MGP facility was decommissioned.

For purposes of evaluating potential health effects on nearby receptors, the Full-Time Resident receptor category was utilized, due to residential units to the east of the remediation area, immediately across Frank E. Rodgers Boulevard. There is also an outdoor workforce on the PSE&G premises, working in close proximity to the remediation area. The Residential category was selected as the critical sensitive receptor because its action levels are more constraining.

1.2 Proposed Remedial Activities

Based on an evaluation of the Site history, the contaminants of concern include MGP products or coal tar, volatile organic compounds, certain metals, and poly-aromatic hydrocarbons (PAHs). As documented in the RAWP, to address soils impacted with coal tar, the planned remedial actions involve the removal, by excavation, of soil within the upper 7-10 feet. After the excavation is complete, the selected remedial contractor will install a working platform on the excavation bottom/subgrade. The remedial contractor will then use the working platform to treat coal tar-impacted soil using ISS methods.

1.3 Key Personnel

The following are the key personnel for the Site sediment remediation activities. Paulus, Sokolowski & Sartor, LLC (PS&S) is the construction oversight engineer (COE) and PAMP implementation consultant for PSE&G. The Remedial Action (RA) Contractor is Sevenson Environmental Services, Inc. (SES). Emilcott Associates, Inc. (Emilcott) is PS&S's PAMP Program consultant.

PSE&G Personnel

Jacques Benaroch, P.E., Senior Project Manager

Cilien Hanna, Project Manager

PS&S Personnel

Janos Szeman, P.E., Program Manager

James Boyer, P.E., Project Manager

Collin Boylan, Construction Oversight Engineer (COE)

Rich Andes, Assistant Construction Oversight Engineer (ACOE)

Ed Brim, Perimeter Air Monitoring Technician (PAMT)

David Tomsey, Emilcott PAM Program Operations Manager

RA Contractor Personnel

Mike Muth, Project Manager (PM)

Joe Casper, Quality Control Engineer

Chester Adams, Project Superintendent

Wyatt Beougher, Site Safety and Health Officer (SHSO)

1.3.1 Responsibilities

The PSE&G Project Manager has the overall responsibility for the implementation of the PAMP.

PS&S, on behalf of PSE&G, has prepared this PAMP and will be responsible for the day-to-day perimeter air monitoring activities. The PAMT will be responsible for the operation of the air monitoring equipment, collection of air samples and submission of the samples to the laboratory, and compiling the results of the air monitoring data. The COE is responsible for immediately notifying the RA Contractor of any exceedances of the action levels so that the appropriate control measures can be taken.

The RA Contractor has the responsibility for the implementation of the odor, emission, and dust control measures to reduce levels of organic vapors and dusts below the action levels specified herein. The RA Contractor's SHSO will work with the PAMT, ACOE, and COE throughout the Site remediation activities to monitor worker exposure and manage the RA Contractor operations in compliance with this PAMP.

The RA Contractor, and two of the PAMT, ACOE, or the COE will be members of the Odor Assessment Team (OAT).

2.0 PROJECT OBJECTIVES

2.1 Perimeter Air Monitoring Objectives

The purpose of this PAMP is to provide that members of the general public, including the PSE&G workforce located at the Site but not involved with this remediation project, are not exposed to hazardous airborne contaminants originating from the Site RA as determined by measured concentrations above the action levels provided in this PAMP.

This PAMP was designed to accomplish the following objectives:

1. Protect human health from exposure to unacceptable risk levels of contaminants resulting from fugitive emissions of former MGP process residuals, based on application of the USEPA risk-based calculator (cited above);
2. Minimize risk of community exposure to contaminants resulting from remediation work performed at the Site;
3. Determine the need for, and evaluate the effectiveness of, vapor and/or dust emission controls;
4. Monitor and document ambient air quality at project perimeter locations during remediation activities to prevent elevated off-Site exposures;
5. Establish/foster community confidence;
6. Evaluate the monitoring data to evaluate exposure risks at the project perimeter;
7. Verify real-time air monitoring data through the collection of confirmatory samples; and,
8. Complete a summary of the PAM Program for inclusion into a Remedial Action Report (RAR) to document the results and evaluate the exposure risk.

The following assumptions and variables were used as input parameters into the USEPA calculator:

Sensitive Receptor:	Full-Time Resident
Project Duration:	550 work-days
Work Shifts:	5 days/week, 8 hours/day of intrusive work

The calculator was run for all analytes having detected values of soil samples.

2.2 Data Quality Objectives

The Data Quality Objectives (DQOs) for this PAMP are established to define the data gathered in relation to the methods used to collect the data and the data's anticipated end use. The DQOs apply to the equipment that are being used, their calibration and maintenance, and other factors that may impact sample integrity and the quality of the data collected.

Both real-time screening level and confirmatory data will be collected to evaluate contaminant levels in the air at the perimeter of the Site RA (refer to Figure 2). The DQOs are directed at confirming the integrity of the PAMP procedures for real-time monitoring and for collection, custody, transportation, and analysis of confirmatory samples. The following

DQO levels will be utilized during the performance of Site RAs.

1. **Real-time screening data**: Field screening will be performed using PAMP field stations equipped with a photo-ionization detector (PID) and an aerosol dust monitor. The quality assurance/quality control (QA/QC) for this equipment includes routine calibration in accordance with the manufacturer's specifications. The data collection QA/QC control is limited to basic calibration checks. The real-time data will be used to document airborne concentrations measured during Site RA activities and assist Site personnel with determining the need for additional vapor and/or dust suppression activities or alteration of work activities. The real-time data will be used to show compliance with the acute action levels for perimeter air quality.

2. **Confirmatory data**: This DQO level applies to analyses performed off-site at an analytical laboratory. The analyses will be conducted in accordance with the appropriate USEPA, Occupational Safety and Health Administration (OSHA), and/or National Institute of Occupational Safety and Health (NIOSH) air sampling methods. The data will include QA/QC elements specified by the appropriate analytical method. The data will be used to show compliance with the chronic action levels for specific target compounds. Periodic confirmatory samples will be collected once every work week while work activities are ongoing or impacted soils are exposed to monitor average perimeter air concentrations over the duration of the Site RAs. Action level exceedance confirmatory samples will be collected whenever there is an action level trigger condition on the real-time PAMP Program equipment, that is associated with remediation activities, to provide definitive data for evaluation of the alarm condition (refer to Section 4.0).

3.0 TARGET PAMP PARAMETERS AND ACTION LEVELS

The following PAMP Action Levels will be tracked and implemented:

A. Acute Air Monitoring Action Levels

B. One Hour Short-Term Air Monitoring Action Levels

C. Chronic Air Monitoring Action Levels

3.1 Development of PAMP Action Levels

The PAMP Program presented herein is based on a review of the waste classification sampling conducted over the entire remedial action area. From the standpoint of the PAMP, the four BTEX constituents of concern (COCs) are benzene, toluene, xylene, and ethylbenzene which are reportedly present in significant proportions, as would be expected at a former MGP site. Based on the reported soil concentrations, the amount of benzene that could be released into the air is approximately 2.7 percent (%) of the total VOCs, and the 4 BTEX constituents comprise approximately 21% of the TVOC concentration. Detectable VOCs, SVOCs, and metals indicated in soil sample results and evaluated in action level calculations are included in Appendix A.

The chronic action levels for VOCs, SVOCs, and metals included in Appendix A were derived using the USEPA "*Regional Screening Levels for Chemical Contaminants at Superfund Sites*" which is a calculator that produces risk-based screening levels based on human inhalation factors. The NJDEP Benchmark Concentrations calculated from Unit Risk Factors for Inhalation was the basis for the lead chronic action level.

Calculations for deriving these action levels are provided in Appendix A in two tables, one for particulates (PM-10) and the other for VOCs. All constituents that had detected samples in the waste class data are listed, although not all these constituents were available in the USEPA calculator database. Constituents without an EPA screening level are included in Appendix A's Action Level Calculation Tables and indicated with Not Applicable (NA).

3.1.1 Acute Air Monitoring Action Levels

Among the VOC constituents, the most restrictive is benzene, with a site-specific screening level of 46.7 parts per billion (ppb) based on the EPA's Risk Based Screening Levels used to determine the acute VOC action level.

The acute PM-10 action level criteria were determined based on evaluating calculated screening levels for the various metals and SVOCs found in the soil results. For these parameters, the calculated real-time chronic action levels are much greater than any particulate levels that would realistically be encountered in typical field operations (refer to Appendix A). By comparison, the acute action level for PM-10 from the National Ambient Air Quality Standard (NAAQS) for PM-10 is 0.150 mg/m^3 as specified in

USEPA 40 CFR Part 50. This value will be used as the PM-10 action level for this PAMP.

3.1.2 One Hour Short-Term Air Monitoring Action Levels

The One Hour Short-Term Air Monitoring Action Levels will be utilized for the VOC Site primary COC, benzene, is 373.6 ppb. This is derived from the ratio of the 8-hour intrusive work shift to a 1-hour duration for comparison with a SUMMA canister for analytical exceedance sampling.

3.1.3 Chronic Air Monitoring Action Levels

Among the VOC constituents, the most restrictive is benzene, with a site-specific screening level of 46.7 ppb and a calculated 15-minute time weighted average real-time TVOC action level of 28.5 ppm (refer to Appendix A). As a safety factor, a percentage of the calculated 15-minute time weighted average real-time TVOC action level of 28.5 ppm will be used. 1.4 ppm, or five percent of the calculated action level will be used as the acute action level.

The exposure parameters used in the calculation of the chronic action levels were selected to match the Site RA plans for the ISS program. Soil disturbance or intrusion is projected to take place over a period of approximately 550 working days (5 days per week, over a nominal 10-hour work day with anticipated 8 hours of intrusive activities). During these periods, it is assumed that the Site RA soil excavation, ISS and other Site RA disturbance activities could lead to fugitive airborne vapors and/or particulates that could be transported off-site. As such, the chronic action levels are tailored to be protective and reflective of the Site RA and the RAWP. The critical receptor category used in the calculations is a Full-Time Resident, based on the proximity of nearby residences. In addition, PSE&G outdoor workforce is present on the extended Site but not involved with the proposed Site RA efforts. The PSE&G outdoor workforce is also a sensitive receptor.

In summary, the real-time PAMP action levels are summarized in the following Table 1.

Table 1 – PAMP Action Levels

Action Level	PM-10	VOC
Acute Air Monitoring Action Level	0.150 mg/m^3	1.4 ppm (TVOC)[2]
One Hour Short-Term Air Monitoring Action Level	N/A	373.6 ppb[1]
Chronic Air Monitoring Action Level	0.150 mg/m^3	46.7 ppb[1]

1) Values are specific to benzene, additional chronic air monitoring action levels can be observed in Appendix A.
2) TVOC – total volatile organic compounds as measured by a PID.

3.2 Analytical Sampling

A program of analytical sampling is recommended both for confirmatory purposes and exceedance oversight. For this PAMP, the sampling program will include VOCs, PAHs and metals. The following table summarizes the sampling methods to be used.

Table 2 – Analytical Sampling		
Constituent	**Method**	**Sampling Media**
Benzene	EPA Method TO-15	Summa Canister
Naphthalene	TO-13A	PUF/XAD
Lead	EPA Method 6020B	Mixed Cellulose Ester (MCE)

4.0 INSTRUMENTATION

The following monitoring and sampling instruments will be utilized by PAMT to implement the PAMP.

PIDs with data-logging capabilities will be used to monitor the levels of Total VOC (TVOC).

A. PIDs can measure the concentration of TVOC within the ambient air, but are unable to distinguish specific compounds. The PID to be used will be a RAE Systems MiniRAE- 3000 or equivalent.
B. Particulate monitors with data-logging capabilities will be used to detect concentrations of PM-10. The monitor to be used will be a TSI model DustTrak-II, 8530, or equivalent.
C. An automated weather station will be used to monitor wind direction, wind speed, temperature, relative humidity, and barometric pressure.
D. These instruments will be part of an integrated air-monitoring system transmitting data from the instruments to a secure off-site database server through cellular telemetry. The server will maintain the master database and will generate alerts and alarms, which will be communicated to the PAMT at the base-station console and by cell phone or another web enabled device. Each PAMP station will contain a PID and PM-10 and will also maintain a local database of environmental measurements for redundancy. The PAMT will upload data from the PAMP stations on a weekly basis. The PAMP server will correlate wind-speed and direction to the environmental measurements in real-time.

Confirmatory air sampling equipment (CSE)

A. 6-liter Summa canisters with air intake regulators will be used for confirmatory and exceedance sampling of benzene. One and eight-hour regulators will be available onsite to account for varying sampling needs.
B. A high-volume Polyurethane Foam (PUF) Sampler will be used for confirmatory and exceedance sampling of Naphthalene.
C. A 4 liter per minute (lpm) sampling pump will collect confirmatory and exceedance samples of lead through an MCE filter for laboratory analysis.

5.0 PERIMETER AIR MONITORING PLAN

5.1 Number and Placement of PAMP Station Locations

Six (6) PAMP stations (AMS-1, AMS-3, AMS-5, AMS-6, AMS-7, AMS-9) will be in use for real-time monitoring during remedial action. Four of the PAMP stations will be located at cardinal locations around the active RA operations and will remain operational throughout the duration of RA operations. The remaining two stations will be dedicated to buildings in use by sensitive on site receptors to provide them with air monitoring coverage. Of these two remaining PAMP stations, one mobile PAMP station will be positioned adjacent to the onsite PSE&G M&R station and will move daily based on evaluation of wind direction, on site receptors, and daily activities to be performed. One PAMP station will be located at the Appliance Service. The number and specific location of necessary PAMP stations are subject to change, and will be interpreted by the CIH (Emilcott) based on the location of soil excavation activities and ISS Site RA operations, wind direction, and location of sensitive receptors. Nonetheless, PSE&G may opt to increase the number of proposed stations due to the location and separation of onsite activities. Figure 2 provides the proposed PAMP station locations for the initial scope of RA activities. Additional PAMP Stations will be documented in a PAMP Addendum to be distributed to the PSE&G Project Team.

Each PAMP station will be configured with air intake ports at a height of 4 feet to 5 feet above grade surface to represent the breathing zone. The PAMP stations will be housed in a tripod mounted weatherproof enclosure to allow for movement based onsite RA activities. The PAMT will have an extra set of real-time monitoring equipment available as a backup and to verify the proper operation of the instruments at the PAMP stations. Should more than one instrument of the same type fail, Site RA operations may continue for up to 24 hours with only 3 of the 4 PAMP stations at cardinal locations in service. The station located adjacent to the PSE&G M&R station, and the station dedicated to the PSE&G Appliance Service Building, will remain in service continuously while the buildings are occupied and in use. In this instance the PAMT, in consultation with the COE, will modify the established perimeter air monitoring configuration until the system can be restored to the predetermined necessary amount of PAMP stations. The implementation of the modified configuration will be recorded on the Site map, and the reasons for the equipment outage will be noted in the perimeter air monitoring field report.

PAM stations will be reduced to two (2) once restoration has begun and all open areas are no larger than 50’ by 50’ combined. AMS-6 will be dedicated to the upwind position whereas AMS-10 will be dedicated to the downwind position. These air monitoring stations will be moved daily based on evaluation of wind direction, on site receptors, and daily activities to be performed.

5.2 Baseline Air Monitoring

Prior to the disturbance of soil at the Site, air monitoring will be conducted at the project perimeter to establish baseline air quality levels for the primary COCs. Real-time air monitoring will be performed for a period of 5 days for approximately 8 hours a day to

establish baseline conditions prior to the start of the intrusive Site RA activities. In addition, one set of confirmatory air samples for benzene, naphthalene, and lead will be collected each day from the prevailing downwind location.

The results of the baseline monitoring will be used for comparison to the perimeter air quality readings obtained during intrusive activities, and specifically to establish background threshold levels of TVOC and PM-10 for application in triggering alarm and action-level notifications.

5.3 Real-Time Air Monitoring During Intrusive Activities

TVOC and PM-10 concentrations and meteorological measurements will be recorded by the FSME along the Site RA perimeter during major intrusive activities (as defined above). These data measurements will be transmitted continuously in real-time to the PS&S database server. The PS&S server will maintain the master database and will generate notification of alarm and action levels, which will be communicated to the PAMT by any internet-enabled device such as a PC, tablet, or smartphone. The FSME system will also correlate wind-speed and direction to the environmental measurements in real- time, so that the PAMT will be aware of airflow patterns across the Site RA footprint when responding to alarms or other incidents of interest. The FSME system will also present real-time information about its own performance and status, eliminating the need for the PAMT to traverse the jobsite to verify operation of the FSME instruments. The PAMT will have a dedicated set of hand-held FSME (PID and dust monitor, such as a personal data ram) to confirm the readings of the PAMP stations in the event of an alarm condition.

The PAMT, in conjunction with the COE and SHSO, will review the daily weather conditions and if adverse weather conditions are present, the necessity of daily PAMP operations will be determined.

During non-Intrusive activities only PM-10 concentrations and meteorological data will be measured by the FSME along the Site RA perimeter (as defined above).

5.4 Confirmatory Air Sampling

Periodic confirmatory air samples for benzene, naphthalene, and lead will be collected during baseline air monitoring and then once every work week during intrusive activities, at a minimum. The baseline survey program and the sampling methods are described above. The day of the week the confirmatory sample is collected will vary each week. The confirmatory sample will be collected from the downwind location or the location that is likely to have the highest concentration of airborne contaminants. The confirmatory samples will be collected for a duration of 8 hours, to approximate the length of the typical work shift.

5.5 Alarm Condition Response Plan

For action level exceedances, the notification of an alarm condition will be based on actual real-time measured values. The Procedure for Notification of an Exceedance of an Action

Level is enclosed as Appendix C.

If an alarm condition occurs, and the resulting alarm can be attributed to activities not associated with soil excavation and Site RA activities no alarm sampling or response will occur. The PAMP alarm levels are calculated based on site-specific constituents of concern related to the former MGP site use as described in Appendix A. Exceedances from sources that are not related to the MGP contamination will be documented as "interference conditions" and actions should be taken to reduce those dust (PM-10) and/or TVOC levels as would occur on any construction operation, to the extent practical. Alarm conditions documented as interferences do not require exceedance sampling. This would apply to interference exceedances that may occur when handling Portland Cement at the ISS batch plant and other materials not associated with MGP contamination; when wind blows dust from areas outside of the remediation boundary; when trucks idle nearby air monitoring stations; when atmospheric conditions create exceedances; etc.

Action level exceedance air samples will be collected if an alarm condition occurs as described in the alarm condition response plan (refer to sub-sections 5.5.1 and 5.5.2). For TVOC alarms, a sample using a 1-hour SUMMA canister will be collected following the alarm condition. For PM-10 alarms, samples for PAHs and lead will be collected for the remainder of the workday using the methods listed in Table 2.

5.5.1 VOC Emission Response Plan for Acute Air Monitoring Action Levels

The real-time PAMP monitoring acute action level of 1.4 ppm was calculated for TVOC, as cited above.

1. If the instantaneous TVOC concentration exceeds 1.4 ppm at any of the PAMP stations along the project perimeter, the PAMT will attempt to identify the source of the VOC emissions. If the source is found to be caused by Site intrusive activities, the PAMT will notify the COE and SHSO so the SHSO can prepare to address the source. If the source is determined to be caused by activities not related to Site intrusive activities, no further action is needed.

2. If the time weighted average (TWA) perimeter TVOC concentration is sustained above 1.4 ppm for 5 minutes, the PAMT or SHSO will use an instantaneous Draeger tube to determine if benzene is present. If benzene is not present, no action is required by the COE or PAMT. If benzene is present between 0.2 to 1 ppm, the PAMT will notify the SHSO to implement the use of emission control measures (i.e., foam, water) and will prepare to collect an exceedance sample. The PAMT will continue to observe TVOC concentrations on the real-time monitoring equipment at that location for 15 minutes.

3. If the perimeter TWA TVOC concentration is sustained above 1.4 ppm for an additional 10 minutes (15 minutes total), intrusive activities will cease. Real-time monitoring and VOC emissions control will continue

until the alarm condition is no longer present, per Item 5, below. The PAMT will collect an action level exceedance confirmatory sample at the location of the exceedance for analysis of VOCs. Work procedures will later be re-evaluated to lessen emissions, and if applicable, Site RA activities will be updated.

4. When the perimeter TWA TVOC concentration falls below 1.4 ppm over 15 minutes TWA, the alarm condition will be deemed to be no longer present, and Site RA intrusive work may resume.

5.5.2 Particulate Monitoring Response Plan for Acute Risk

1. If the instantaneous PM concentration exceeds 0.150 mg/m^3 at any of the PAMP stations along the project perimeter, the PAMT will attempt to identify the source of the PM emissions. If the source is found to be caused by Site intrusive activities, the PAMT will notify the COE and SHSO so the SHSO can prepare to address the source. If the source is determined to be caused by activities not related to Site intrusive activities, no further action is needed.
2. Sustained TWA readings over the action level of 0.150 mg/m^3 for 5 minutes at a PAMP Station requires the RA Contractor to implement measures to control the emissions (i.e. application of water, tarps, plastic sheeting, and clean fill cover). PAMT will monitor the real-time readings and prepare to collect an exceedance sample.
3. Sustained TWA readings over the action level for an additional 10 minutes at a perimeter monitoring station (15 minutes total) requires the emission-generating activity to cease. Sustained readings over the action level for an additional 10 minutes at a perimeter monitoring station (15 minutes total) will trigger collection of an exceedance sample for PAHs and metals. The project team will confirm that all applicable dust best management practices (BMPs) are being employed. Work activity should focus on lessening fugitive dust emissions being generated.
4. When the perimeter TWA PM concentration falls below 0.150 mg/m^3 over a 15 minutes TWA, the alarm condition will be deemed to be no longer present, and Site RA intrusive work may resume.

5.5.3 VOC Emissions Monitoring for Chronic Risk

Individual VOCs will be monitored for chronic risk by collection of one confirmatory sample in a SUMMA canister over one workday (i.e., 8 hours) each work week and analyzed by USEPA Method TO-15. The sample will be collected from a downwind perimeter location. The results will be compared to the individual BTEX chronic action levels. Should the respective chronic action levels be exceeded by the running average of the weekly confirmatory sample results, the Site RA activities will be re- evaluated to lessen VOC emissions to the project perimeter. Actions taken to maintain the TVOC levels below the respective chronic action levels may include use of vapor-controlling foam or the use of wind screens.

The goal is to have average concentrations for these parameters over the course of the Site RA implementation, based on the confirmatory samples, less than the chronic action levels for the individual VOCs.

5.5.4 PAH and Lead Monitoring for Chronic Risk

Individual PAHs and lead will be monitored for chronic risk through collection of confirmatory samples during the workday (i.e., 8 hours) each work week and analyzed by USEPA method TO-13A for PAHs and USEPA SW846 Method 6020 for lead. The sample will be collected from a downwind perimeter location. The results will be compared to the lead and PAH chronic action levels (Appendix A). Should the respective chronic action levels be exceeded by the running average of the weekly confirmatory sample results, the Site RA activities will be re-evaluated to lessen particulate emissions to the project perimeter. Actions taken to maintain the particulate levels below the respective chronic action levels may include use of water mists or the use of wind screens. The goal is to have average concentrations for these parameters over the course of the Site RA implementation, based on the confirmatory samples, less than the chronic action levels for lead and PAHs.

5.6 Odor Evaluation

Control of odors and odor suppression is a key issue during the soil excavation and Site ISS operations with the handling of contaminated material at MGP remediation sites. Although several methods are available to help control and suppress odors, it is difficult to completely prevent odors from leaving the Site RA perimeter and potentially inconveniencing the surrounding community. The community at this location consists of residential, commercial and industrial areas and heavy urban traffic.

The RA Contractor performing the soil excavation activities and the ISS operations has been directed to aggressively control odors. Odor suppression measures may include the use of foam suppressant, drip neutralizer, misting, plastic or tarps, or applying a clean fill cover. The RA Contractor has been directed by PSE&G to utilize any or all of these measures when odors are present, being more aware when excavating at or near the Site perimeter. In the event that these measures fail to adequately control odors, Site RA activities will be terminated and the situation will be re-evaluated.

5.6.1 Odor Assessment Team

Three individuals, the OAT, will be responsible for assessing the effectiveness of odor control measures being implemented at the Site – the PAMT, the ACOE or the COE, and the RA Contractor's representative. Odor assessments will be performed by these individuals or their designees. Odor assessments will be performed by a minimum of three personnel and documented on the Odor Assessment Form provided in Appendix B.

5.6.2 Odor Assessment Locations

The odor assessments will be conducted, along the perimeter of the Site footprint as further discussed in Section 5.6.5.

Should odors be detected at these locations, the odor assessment area may be expanded, at the discretion of the odor assessment team. Any additional locations surveyed by the team will be noted on the Odor Assessment Form provided in Appendix B.

5.6.3 Odor Assessment Classifications

Odors will be classified by the OAT using the following classifications during Site odor assessments.

a. "0" – There are odor-generating activities on the Site, but there is no impact to the community. Odor is not detectable off-site, or very minimal and very infrequent.

b. "1" – Off-site odors are present, but the odors are not strong, not steady, and there is minimal impact to the community, or the odors are not noticed by the community. This is an indication that odor control measures at the Site are adequate and activities may proceed.

c. "2" – Odors are stronger than a "1" and relatively steady. The community is not necessarily aware of the odors, but it is agreed by the odor assessment team that community recognition is inevitable and additional odor control measures must be implemented. A follow-up tour must be conducted after implementation of additional odor control measures.

d. "3" – A "2" condition still exists after increased odor control measures, odors are very strong and the community is aware of and reacting to the odors. Odor-generating activities must cease and full odor control measures implemented. The situation must be re-evaluated prior to re- initiating odor-generating activities.

5.6.4 Baseline Odor Assessment

A baseline odor assessment will be performed by the OAT to familiarize themselves with the odor assessment locations and protocol, and to generate an agreed upon odor profile. The baseline assessment will consist of a tour of the perimeter of the RA area, and completion of the Odor Assessment Form. Several baseline assessments may be performed, both prior to and during odor-generating activities on the Site, for the OAT to create an agreed upon odor profile.

5.6.5 Ongoing Odor Assessments

The PAMT will be responsible for determining if an odor assessment is necessary during odor-generating activities, in addition, odor assessments will be conducted daily at the beginning of remedial work, and the frequency may be altered based on

observations. If site-related odors are detected at the Site RA perimeter by the PAMT, an odor assessment will immediately be conducted by the odor assessment team. The odor assessment will be documented on the Odor Assessment Form provided in Appendix B. If the odor classification is a “0” or “1”, activities will continue. If the odor classification is a “2”, odor control measures will be implemented and a follow-up odor assessment performed. If the odor classification is a “3”, activities will cease immediately and full odor control measures implemented.

Additional odor assessments may be conducted at the discretion of any member of the OAT.

6.0 QUALITY ASSURANCE

6.1 Calibration

Field instruments will be factory calibrated yearly in accordance with manufacturer's specifications. Yearly factory calibration records will be kept onsite. For the PID, calibration measures onsite may consist of a zero calibration, a span calibration, or a bump test. The zero calibration involves exposing the PID to ambient air (if no VOCs present) or a zero calibration gas to establish the zero point of the sensor calibration curve. A span calibration is performed by exposing the PID to a standard reference gas of known concentration, usually 100 ppm isobutylene, to establish a second point on the sensor calibration curve. A bump test involves exposing the PID to a standard reference gas of known concentration to verify the PID sensor is accurately measuring the known quantity of VOCs. All zero calibration, span calibration, and bump testing should be within +/- 2% of the target concentration. Dust monitors do not have a span calibration or bump test option and only require zero calibration before use. Field span calibration and zero calibration will be performed and documented by the PAMT. PIDs and dust monitors will be zero calibrated before each shift. The PAMT will perform a span calibration for each PID at least once every 30 days in accordance with the manufacturer's specifications. The PAMT will also perform a bump test biweekly to ensure the PIDs are measuring accurately. If the PID fails a bump test at any time, the PID will be span and zero calibrated before returned for use.

6.2 Operations

PAMP instruments will be operated in accordance with the manufacturer's specifications. The PAMT will maintain manufacturer's literature, including an operations manual, for each piece of monitoring equipment onsite.

6.3 Laboratory Quality Control

Laboratory QA/QC will be in accordance with the method requirements. Sample collection, holding times, calibration procedures, and handling times will be in accordance with "The Compendium of Methods for the Determination of Toxic Organic Compounds in the Ambient Air," USEPA Document No. EPA/600/4-89/017 and the requirements of the appropriate method.

6.4 Documentation

Each real-time monitoring PAMP station will be inspected by the PAMT at the beginning and end of each work shift at a minimum, and when and if the integrated air monitoring system reports any problems with, or lack of data transmission from, the PAMP stations. In addition, alarms and subsequent source evaluations and corrective measures will be documented. In addition to the above, the PAMT will maintain a daily air monitoring log that will include a general description of the Site activities, a detailed description of Site RA activities during an alarm condition, and potential sources of emissions causing such alarms. The environmental and meteorological data will be

downloaded from the database server by the PAMT at the end of each work week. The laboratory reports for confirmatory samples from the analytical laboratory will be maintained onsite by the PAMT and COE. Following completion of the PAMP Program, a Final Perimeter Air Monitoring Report will be prepared to document the monitoring and sampling activities, results, and field and laboratory QA/QC procedures that were implemented during the Site RA.

FIGURE 1

Site Location Plan

FIGURE 2

PAM Station Location Plan

APPENDIX A

Perimeter Air Monitoring Action Level Calculations

APPENDIX B

Odor Assessment Form

PSE&G Odor Assessment Form

	Observer Location	Wind			Time	Rating	Odor Description/Comments
Parameter	Description of location (Use streets landmarks, addresses, etc.)	Direction (wind blows from)	Orientation (Downwind/ Upwind)	Approx. Wind Speed		(0-3 Rating)	Description of odors (e.g. strength & persistence), other source(s) of odors, variable weather, etc.
Field Observations							

Additional Notes:	**Sketch/Map**
Relevant work activities occurring on-site during odor assessment:	
Odor Assessment Team Members:	

APPENDIX C

Procedure for Notification of an Exceedance of an Action Level

VOC Emission Response Plan for Acute Air Monitoring Action Levels	
1	If the instantaneous TVOC concentration exceeds 1.4 ppm at any of the PAMP stations along the project perimeter, the PAMT will attempt to identify the source of the VOC emissions. If the source is found to be caused by Site intrusive activities, the PAMT will notify the COE and SHSO so the SHSO can prepare to address the source. If the source is determined to be caused by activities not related to Site intrusive activities, no further action is needed.
2	If the time weighted average (TWA) perimeter TVOC concentration is sustained above 1.4 ppm for 5 minutes, the PAMT or SHSO will use an instantaneous Draeger tube to determine if benzene is present. If benzene is not present, no action is required by the COE or PAMT. If benzene is present, the PAMT will notify the SHSO to implement the use of emission control measures (i.e., foam, water) and prepare to collect an exceedance sample. The PAMT will continue to observe TVOC concentrations on the real-time monitoring equipment at that location for 15 minutes.
3	If the perimeter TWA TVOC concentration is sustained above 1.4 ppm for an additional 10 minutes (15 minutes total), intrusive activities will cease. Real-time monitoring and VOC emissions control will continue until the alarm condition is no longer present, per Item 5, below. The PAMT will collect an action level exceedance confirmatory sample at the location of the exceedance for analysis of VOCs. Work procedures will later be re-evaluated to lessen emissions, and if applicable, Site RA activities will be updated.
4	When the perimeter TWA TVOC concentration falls below 1.4 ppm over 15 minutes TWA, the alarm condition will be deemed to be no longer present, and Site RA intrusive work may resume.

Particulate Monitoring Response Plan for Acute Air Monitoring Action Levels	
1	If the instantaneous PM concentration exceeds 0.150 mg/m3 at any of the PAMP stations along the project perimeter, the PAMT will attempt to identify the source of the PM emissions. If the source is found to be caused by Site intrusive activities, the PAMT will notify the COE and SHSO so the SHSO can prepare to address the source. If the source is determined to be caused by activities not related to Site intrusive activities, no further action is needed.
2	Sustained TWA readings over the action level of 0.150 mg/m3 for 5 minutes at a PAMP Station requires the RA Contractor to implement measures to control the emissions (i.e. application of water, tarps, plastic sheeting, and clean fill cover). PAMT will monitor the real-time readings and prepare to collect an exceedance sample.
3	Sustained TWA readings over the action level for an additional 10 minutes at a perimeter monitoring station (15 minutes total) requires the emission- generating activity to cease. Sustained readings over the action level for an additional 10 minutes at a perimeter monitoring station (15 minutes total) will trigger collection of an exceedance sample for PAHs and metals. The project team will confirm that all applicable dust best management practices (BMPs) are being employed. Work activity should focus on lessening fugitive dust emissions being generated.
4	When the perimeter TWA PM concentration falls below 0.150 mg/m3 over a 15 minutes TWA, the alarm condition will be deemed to be no longer present, and Site RA intrusive work may resume.

APPENDIX D

PAMP Telemetry Failure SOP