

Chevron Environmental Management Company

**Community Air Monitoring Plan
Soil Hotspot Removal, AOC 2,
Eastern Parcel Soil Remediation**

Former Tappan Terminal Site
Hastings-on-Hudson, New York
NYSDEC Site 360015

November 2010



William T. McCune
Project Manager

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NYSDEC Site 360015
NYSDEC Site No. 360015

Prepared for:
Chevron Environmental Management
Company

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Our Ref.:
B0046760.0000

Date:
November 2010

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1. Introduction

1.1 General

On behalf of Chevron Environmental Management Company (CEMC), ARCADIS of New York, Inc. (ARCADIS) is submitting this *Community Air Monitoring Plan (CAMP)* to the New York State Department of Environmental Conservation (NYSDEC) in accordance with the Order on Consent and Administrative Settlement for the former Tappan Terminal Site, Village of Hastings-on-Hudson, New York (site). This CAMP fulfills the requirements set forth by the New York State Department of Health (NYSDOH) Generic Community Air Monitoring Plan, dated June 2000 (Attachment A), and the NYSDEC's Technical and Administrative Guidance Memorandum (TAGM) 4031, "Fugitive Dust Suppression and Particulate Monitoring Program at Inactive Hazardous Waste Sites" (Attachment B). The intent of this CAMP is to provide for a measure of protection of the downwind communities from potential airborne releases of constituents of concern during Remedial Design activities. As such, this CAMP specifies the potential air emissions, air monitoring procedures, monitoring schedule and data collection and reporting for the remedial activities to be conducted as described below.

1.2 Site Description

The site is located on 7.7 acres along the Hudson River waterfront (Figure 1). However, the eastern portion of the site (defined as AOC 2), in which the soil hotspot removal will take place, is limited to the Uhlich Color Company Property (Uhlich Property) located on the eastern half of the site and is bounded by the railroad tracks to the east and the former Mobil Terminal Property to the west (Figure 2). Vehicular access to the site was formerly via the Zinsser Bridge that crosses the railroad tracks at the southeast corner of the site. This bridge has fallen into disrepair and is no longer open to vehicular traffic. Both the Former Tappan Terminal Site and Uhlich Property are surrounded by a chain-link fence.

1.3 Summary of Selected Site Remedial Activities

The proposed remedial actions include soil hotspot excavation and site capping. Site capping will not take place until mid 2011 or 2012, thus, this CAMP pertains only to the soil hotspot excavation of an estimated 1,300 cubic yards of soil. A more detailed description of the investigation activities can be found in the Soil Hotspot Removal Work Plan (ARCADIS, September 2010).

1.4 Potential Air Emissions Related to Remedial Action Activities

Certain intrusive remedial activities to be conducted at the site have the potential to generate localized impacts to air quality. Such activities include soil excavation, staging and amending as well as backfilling of the excavation. Non-intrusive activities that may contribute to air quality include loading of soils onto trucks for disposal, equipment decontamination and vehicular traffic on the site.

1.5 Air/Odor Emissions and Control Measures

Air emissions control and fugitive dust suppression techniques will be used during the remedial activities identified above, as necessary, to limit the air/odor emissions from the site. Air monitoring for the specific purpose of protecting the community from site activity impacts (and verification thereof) will take place during both intrusive and non-intrusive site activities.

During intrusive and non-intrusive site activities, odor and dust control measures will be available at the site and used when necessary. The following dust and odor suppression measures may be used during these activities, depending upon specific circumstances and air monitoring results:

- water spray
- polyethylene sheeting (for covering soil stockpiles)

Polyethylene sheeting will be used to control nuisance odors and volatile organic compound (VOC) emissions, as needed. Also, dust emissions at the site will be controlled by spraying water on exposed dry surface soil areas (e.g., on excavation faces, stockpiled soil, etc., as appropriate), through the use of silt fences, and by covering soil stockpiles. Odor and dust control measures will be implemented based on visual or olfactory observations, and the results of airborne particulate and VOC monitoring.

2. Air Monitoring Procedures

2.1 General

Real-time air monitoring will be implemented at the site for VOCs, and particulate matter less than 10 microns in diameter (PM₁₀). A site boundary will be established for the purpose of air monitoring. Upwind and downwind monitoring locations will be determined through visual observation (wind vane, windsock, or similar technique). Monitoring will occur at each of the two proposed excavation locations and will include the use of hand-held direct-reading survey instruments. Baseline air sampling will take place prior to the beginning of work.

2.2 Sampling Location Selection

Sampling activities will be determined daily based on visual observation of a wind direction. A single upwind location will be selected daily where both VOC and PM₁₀ will be recorded. This upwind location will be established at the start of the workday, each day before the start of RI activities. Sampling activities will continue in a downwind direction throughout the day. If wind direction during the workday shifts greater than approximately +/-60 degrees from original upwind, then new upwind and downwind sampling locations will be established. Any location changes will be documented in the field logbook.

Although not a requirement of the NYSDOH, an additional air quality monitoring station will be also be located within the Park along Warburton Avenue to the immediate west of the site, throughout the duration of the hotspot excavation program.

2.3 VOCs Monitoring

As required by the NYSDOH guidance for community air monitoring during intrusive activities, VOCs will be monitored continuously during remedial site activities, with instrumentation that is equipped with electronic data-logging capabilities. A MiniRAE 2000 (or equivalent) will be used to conduct the real-time VOC monitoring. Attachment C provides detailed information on the MiniRAE 2000. All 15-minute readings will be recorded, as well as any instantaneous readings taken to facilitate activity decisions.

2.4 Particulate Matter Monitoring

As required by the NYSDOH guidance, real-time particulate matter will be monitored continuously during site activities using instrumentation equipped with electronic data-logging capabilities. A MIE DataRAM (or equivalent) will be used to conduct the real-time PM₁₀ monitoring. Attachment C provides detailed information on the MIE DataRAM. All 15-minute readings will be recorded, as well as any instantaneous readings taken to facilitate activity decisions.

Fugitive dust migration will be visually assessed during all work activities, and reasonable dust suppression techniques will be used during any site activities that may generate fugitive dust. These activities and their design controls were discussed previously in Section 1.4 of this plan.

2.5 Action Levels

The action levels provided below are to be used to initiate response actions, if necessary, based on real-time monitoring.

2.5.1 Action Levels for VOCs

As outlined in the NYSDOH guidance document for CAMPs, if the ambient air concentration of total VOCs exceeds 5 parts per million (ppm) above the background (upwind location) for the 15-minute average, intrusive site activities will be temporarily halted while monitoring continues. If the total VOC concentration readily decreases (through observation of instantaneous readings) below 5 ppm above background, then intrusive site activities can resume with continuous monitoring.

If the ambient air concentrations of total VOCs persist at levels in excess of 5 ppm above background but less than 25 ppm above background, intrusive site work activities will be halted, the source of the elevated VOC concentrations identified, corrective actions to reduce or abate the emissions undertaken, and air monitoring will be continued. Once these actions have been implemented, intrusive site work activities can resume provided the following two conditions are met:

- The 15-minute average VOC concentrations remain below 5 ppm above background.

- The VOC level 200 feet downwind of the sample location, or half the distance to the nearest potential receptor or residential/commercial structure (whichever is less but in no case less than 20 feet), is below 5 ppm over background for the 15-minute average.

If the ambient air concentrations of total VOCs are above 25 ppm above background, the intrusive site activities must cease, and emissions control measures must be implemented.

Periodic monitoring for VOCs is required during non-intrusive activities such as collection of soil samples, or equipment decontamination. If these activities are undertaken at the site, ambient direct-reading (instantaneous) VOC data will be periodically collected at the location of the non-intrusive activity and recorded in the field activity logbooks.

2.5.2 Action Level for PM₁₀

As required by the NYSDOH guidance, if the ambient air concentration of PM₁₀ at any one (or more) of the sampling locations is noted at levels in excess of 100 micrograms per cubic meter ($\mu\text{g}/\text{m}^3$) above the background (upwind location), or if airborne dust is observed leaving the work area, intrusive site activities will be temporarily halted. The source of the elevated PM₁₀ concentration is to be identified, corrective actions to reduce or abate the emissions will be undertaken, and air monitoring will continue. Work may continue following the implementation of dust suppression techniques provided the PM₁₀ levels do not exceed 150 $\mu\text{g}/\text{m}^3$ above background.

If, after implementation of dust suppression techniques, PM₁₀ levels are greater than 150 $\mu\text{g}/\text{m}^3$ above background, work must be stopped and site activities must be re-evaluated. Work may only resume provided that the dust suppression measures and other controls are successful in reducing PM₁₀ levels less than 150 $\mu\text{g}/\text{m}^3$ above background and in preventing visible dust from leaving the site.

If the ambient air concentration of PM₁₀ is above 150 $\mu\text{g}/\text{m}^3$ above background, the intrusive site activities must cease and emissions control measures must be implemented.

2.6 Meteorological Monitoring

Wind direction is the only meteorological information considered relevant for the remedial activities and CAMP. Meteorological monitoring will be conducted periodically at the site using a windsock, wind vane, or other appropriate equipment. Wind direction will be established at the start of each work day and may be re-established at any time during the work day if a significant shift in wind direction is noted.

2.7 Instrument Calibration

Calibration of the VOC and PM₁₀ instrumentation will occur in accordance with each of the equipment manufacturer's calibration and quality assurance requirements. The VOC and PM₁₀ monitors will be calibrated at least daily, and calibrations will be recorded in the field activity logbook.

3. Monitoring Schedule and Data Collection and Reporting

3.1 General

The proposed monitoring schedule and data collection and reporting requirements are discussed below.

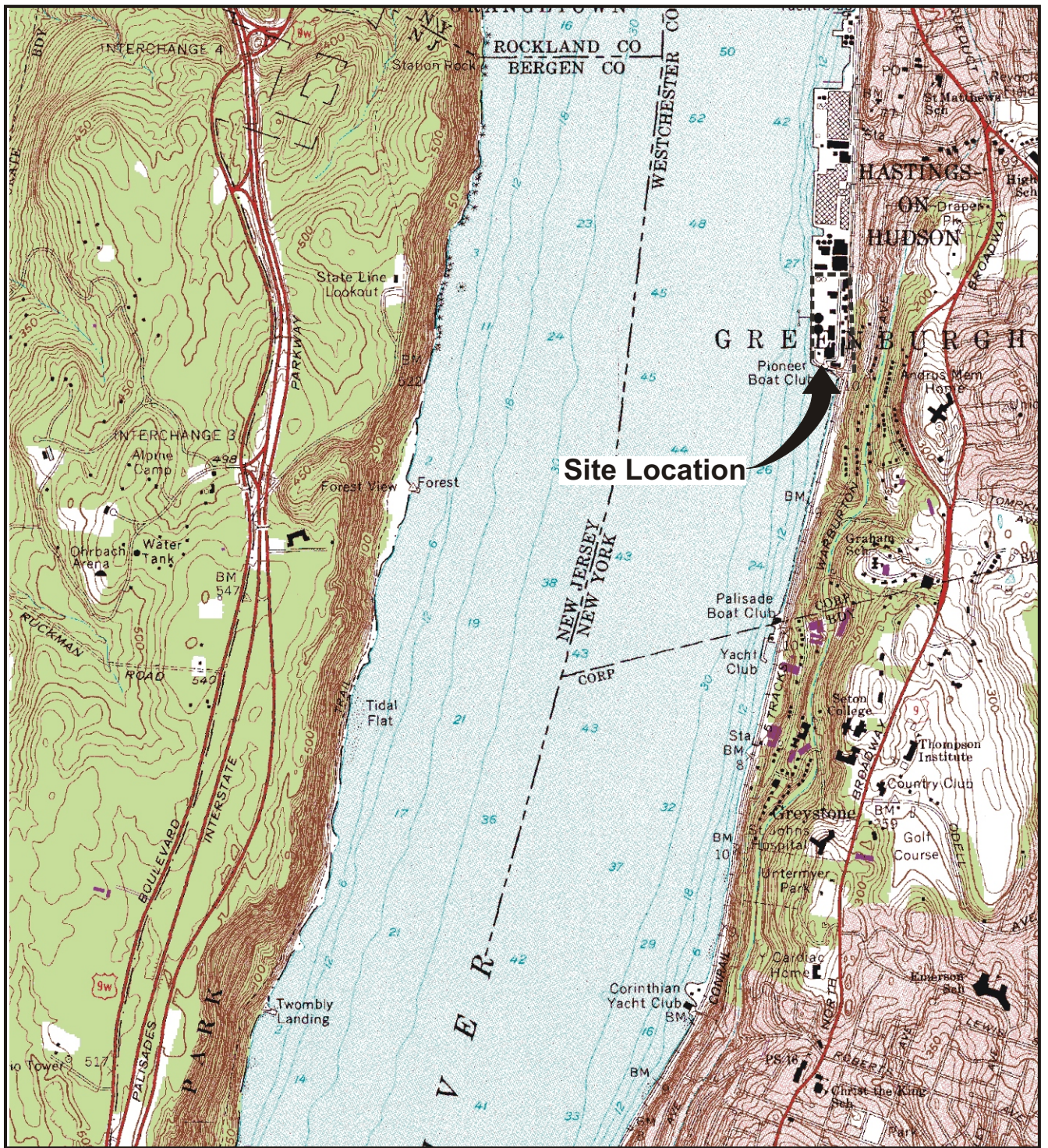
3.2 Monitoring Schedule

Real-time VOC and PM₁₀ monitoring will be performed continuously throughout the remedial action during intrusive site/materials handling activities. VOC monitoring will also be performed during non-intrusive sampling and/or support-type activities. Wind direction will be determined at the start of each day and at any other appropriate time during remedial activities.

3.3 Data Collection and Reporting

Air monitoring data will be collected continuously from VOC and PM₁₀ monitors during intrusive site activities by an electronic data-logging system. The data management software will be set up so that instantaneous observed readings would be recorded by the electronic data acquisition system and averaged over 15-minute time periods. The 15-minute readings and instantaneous readings taken to facilitate activity decisions will be recorded and archived for review by NYSDOH and NYSDEC personnel.

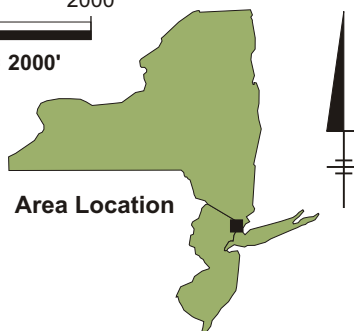
Figures



REFERENCE: BASE MAP USGS 7.5 MIN. QUAD., YONKERS, N.Y. - N.J., 1966, PHOTOREVISED 1979.

2000' 0 2000'

Approximate Scale: 1" = 2000'



Area Location

TAPPAN TERMINAL SITE
HASTINGS-ON-HUDSON, NEW YORK

SITE LOCATION MAP



FIGURE

1

ARCADIS

Attachment A

Generic Community Air Monitoring
Plan

APPENDIX 1A

New York State Department of Health Generic Community Air Monitoring Plan

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

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

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

Community Air Monitoring Plan

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

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

Periodic monitoring for VOCs will be required during non-intrusive activities such as the collection of soil and sediment samples or the collection of groundwater samples from existing monitoring wells. "Periodic" monitoring during sample collection might reasonably consist of taking a reading upon arrival at a sample location, monitoring while opening a well cap or overturning soil, monitoring during well baling/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. The monitoring work should be performed using equipment appropriate to measure the types of contaminants known or suspected to be present. The equipment should be calibrated at least daily for the contaminant(s) of concern or for an appropriate surrogate. The equipment should be capable of calculating 15-minute running average concentrations, which will be compared to the levels specified below.

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

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

Particulate Monitoring, Response Levels, and Actions

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

- If the downwind PM-10 particulate level is 100 micrograms per cubic meter (mcg/m^3) greater than background (upwind perimeter) for the 15-minute period or if airborne dust is observed leaving the work area, then dust suppression techniques must be employed. Work may continue with dust suppression techniques provided that downwind PM-10 particulate levels do not exceed 150 mcg/m^3 above the upwind level and provided that no visible dust is migrating from the work area.
- If, after implementation of dust suppression techniques, downwind PM-10 particulate levels are greater than 150 mcg/m^3 above the upwind level, work must be stopped and a re-evaluation of activities initiated. Work can resume provided that dust suppression measures and other controls are successful in reducing the downwind PM-10 particulate concentration to within 150 mcg/m^3 of the upwind level and in preventing visible dust migration.

All readings must be recorded and be available for State (DEC and DOH) personnel to review.

Attachment B

Fugitive Dust Suppression and
Particulate Monitoring Programs at
Inactive Hazardous Waste Sites

**TECHNICAL AND ADMINISTRATIVE
GUIDANCE MEMORANDUM #4031**

**FUGITIVE DUST SUPPRESSION AND PARTICULATE MONITORING PROGRAM
AT INACTIVE HAZARDOUS WASTE SITES**

TO: Regional Hazardous Waste Remediation Engrs., Bur. Directors & Section Chiefs
FROM: Michael J. O'Toole, Jr., Director, Division of Hazardous Waste Remediation
SUBJECT: DIVISION TECHNICAL AND ADMINISTRATIVE GUIDANCE
MEMORANDUM -- FUGITIVE DUST SUPPRESSION AND
PARTICULATE MONITORING PROGRAM AT INACTIVE
HAZARDOUS WASTE SITES
DATE: Oct 27, 1989

Michael J. O'Toole, Jr. (signed)

1 Introduction

Fugitive dust suppression, particulate monitoring, and subsequent action levels for such must be used and applied consistently during remedial activities at hazardous waste sites. This guidance provides a basis for developing and implementing a fugitive dust suppression and particulate monitoring program as an element of a hazardous waste site's health and safety program.

2. Background

Fugitive dust is particulate matter--a generic term for a broad class of chemically and physically diverse substances that exist as discrete particles, liquid droplets or solids, over a wide range of sizes--which becomes airborne and contributes to air quality as a nuisance and threat to human health and the environment.

On July 1, 1987, the United States Environmental Protection Agency (USEPA) revised the ambient air quality standard for particulates so as to reflect direct impact on human health by setting the standard for particulate matter less than ten microns in diameter (PM₁₀); this involves fugitive dust whether contaminated or not. Based upon an examination of air quality composition, respiratory tract deposition, and health effects, PM₁₀ is considered conservative for the primary standard--that requisite to protect public health with an adequate margin of safety. The primary standards are 150 ug/m³ over a 24-hour averaging time and 50 ug/m³ over an annual averaging time. Both of these standards are to be averaged arithmetically.

There exists real-time monitoring equipment available to measure PM_{10} and capable of integrating over a period of six seconds to ten hours. Combined with an adequate fugitive dust suppression program, such equipment will aid in preventing the off-site migration of contaminated soil. It will also protect both on-site personnel from exposure to high levels of dust and the public around the site from any exposure to any dust. While specifically intended for the protection of on-site personnel as well as the public, this program is not meant to replace long-term monitoring which may be required given the contaminants inherent to the site and its air quality.

3. Guidance

A program for suppressing fugitive dust and monitoring particulate matter at hazardous waste sites can be developed without placing an undue burden on remedial activities while still being protective of health and environment. Since the responsibility for implementing this program ultimately will fall on the party performing the work, these procedures must be incorporated into appropriate work plans. The following fugitive dust suppression and particulate monitoring program will be employed at hazardous waste sites during construction and other activities which warrant its use:

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

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. Such activities shall also include the excavation, grading, or placement of clean fill, and control measures therefore should be considered.

3. Particulate monitoring must be performed using real-time particulate monitors and shall monitor particulate matter less than ten microns (PM_{10}) with the following minimum performance standards:

Object to be measured: Dust, Mists, Aerosols

Size range: <0.1 to 10 microns

Sensitivity: 0.001 mg/m^3

Range: $0.001 \text{ to } 10 \text{ mg/m}^3$

Overall Accuracy: $\pm 10\%$ as compared to gravimetric analysis of stearic acid or reference dust

Operating Conditions:

Temperature: 0 to 40°C

Humidity: 10 to 99% Relative Humidity

Power: Battery operated with a minimum capacity of eight hours continuous operation

Automatic alarms are suggested.

Particulate levels will be monitored immediately downwind at the working site and integrated over a period not to exceed 15 minutes. Consequently, instrumentation

Attachment C

Monitoring Equipment
Specifications

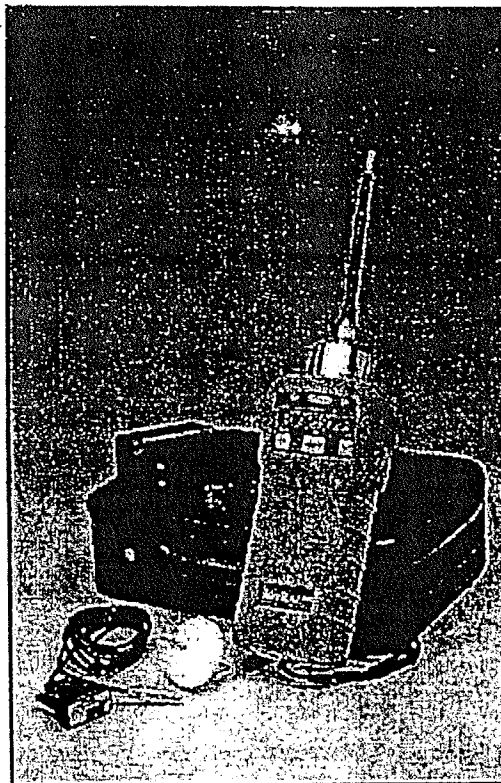
MiniRAE 2000

Handheld VOC Monitor

- Intrinsically safe
- Smallest handheld VOC monitor
- Datalogging workhorse

This VOC monitor with PID (photoionization detector) sensor weighs just over one pound, yet it's a heavyweight for leak detection, fugitive emissions monitoring to EPA Method 21 and inspecting leaking underground storage tanks. The MiniRAE 2000 is also a highly useful tool in industrial hygiene applications, including confined space entry, personnel and work place monitoring and for emergency response to hazardous spills. This rugged instrument comes with a belt clip.

With built-in correction factors for more than 100 chemicals, the MiniRAE 2000 provides excellent all-around sensitivity to most VOCs, down to 0.1 ppm. Selectable survey and hygiene modes permit the user to set appropriate alarm thresholds for STEL, TWA and low/high level peak values. Datalogging and custom software.



SPECIFICATIONS

Range	Resolution	Response Time	Accuracy
0 to 999 ppm	0.1 ppm	< 3 seconds	± 2 ppm or 10% of reading <2000 ppm
100 to 10,000 ppm	1 ppm	< 3 seconds	± 20% of reading > 2000 ppm
			Calibrated to 100 ppm Isobutylene
Sampling Pump	Internal integrated flow rate 400 cc/minute Sample from 100' horizontally or vertically		
Datalogging	15,000 points with time/date, header information		
Approvals	UL and cUL Class I, Division 1, Groups A, B, C and D, EEx ia IIC T4		
Battery	Rechargeable, field changeable NiMH battery pack, 10 hours operation		
Dimensions (HWD)	2" x 3" x 8.2"		
Weight	19.5 oz		

RAE SYSTEMS MiniRAE 2000 PID rents with download cable, zero filter, probe tip, hydrophobic filter, charger, alkaline battery adapter, case and operating manual.

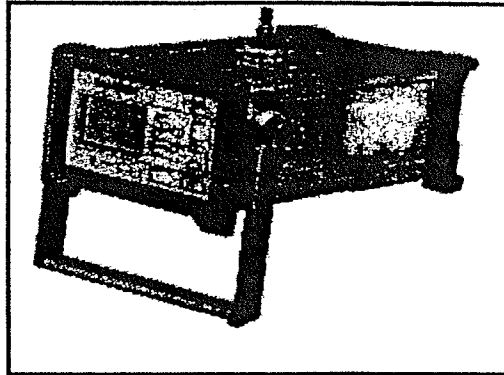
Equipment specifications cannot form any part of a contract to supply equipment.

ASSTEAD
Technology

www.ashtead-technology.com

MIE DataRAM Aerosol Monitor

Portable Real-Time Particulate Monitor



- Real-time measurement of particle concentrations
- Datalogging

The DataRAM aerosol monitor measures concentrations of airborne dust, smoke, mists, haze and fumes with real-time readout. The instrument can be used for exposure sampling of ambient air, continuous unattended monitoring of indoor, duct or process air, as well as environmental and perimeter monitoring. The DataRAM has the widest measurement range of any real-time aerosol monitor — from 0.0001 mg/m³ to 400 mg/m³, or a total span of almost seven decades.

OPTIONAL ACCESSORIES

Respirable Cyclone Precollector, for respirable particle monitoring.

Isokinetic Sampling Probe, for isokinetic sampling within ducts.

Temperature Conditioning Heater, for monitoring above 70 percent RH.

Omnidirectional Sampling Inlet, for ambient monitoring under a variety of wind speeds and directions.

PM-10 Inlet Head, for PM-10 or PM-2.5 ambient particulate monitoring.

SPECIFICATIONS

Concentration Measurement Ranges (autoranging)	0.1 to 999.99 µg/m ³ , with resolution of 0.1 µg/m ³ 1.00 to 39.99 mg/m ³ , with resolution of 0.01 mg/m ³ 40.0 to 399.9 mg/m ³ , with resolution of 0.1 mg/m ³
Accuracy	± 5% of reading ± precision
Particle Size Range of Maximum Response	0.1 to 10 µm
Sample Flow Rate	1.7 to 2.3 lpm
Datalogging	10,000 data points, with average, minimum and maximum concentrations for each point
Output	RS-232 port
Power	Sealed lead-acid battery, 24 hours operation, or AC operation with adapter
Dimensions (HWD)	5.28" x 7.25" x 13.63"
Weight	11.7 lbs

The MIE DataRAM aerosol monitor rents with an AC adapter/charger, serial download cable, software, filter cassette, soft carrying case and operating manual.

Equipment specifications cannot form any part of a contract to supply equipment.
W002

ASSTEAD
Technology
RENTALS

www.ashtead-technology.com