ARCADIS
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ARCADIS
6723 Towpath Road
P.O. Box 66
Syracuse
New York 13214-0066
Tel 315.446.9120
Fax 315.449.4111
www.arcadis-us.com

ENVIRONMENTAL

Mr. Douglas K. MacNeal, P.E.
Environmental Engineer 2
Remedial Action Bureau C, 11th Floor
Division of Environmental Remediation
New York State Department of Environmental Conservation
625 Broadway
Albany, NY 12233-7014

Subject:
Geneva (Wadsworth Street) Former MGP Site
Fence Interim Site Management Plan (ISMP) Work Plan

Date:
February 5, 2010

Contact:
Christopher Engler, P.E.

Phone:
315.671.9331

Email:
Christopher.Engler@arcadis-us.com

Our ref:
B0013057.00001

Dear Mr. MacNeal:

ARCADIS has prepared this Work Plan on behalf of New York State Electric and Gas (NYSEG) based on New York State Department of Environmental Conservation (NYSDEC) comments on the July 2008 Draft FS Report. The New York State Department of Health (NYSDOH) and NYSDEC are requesting the installation of a perimeter fence around the unpaved NYSEG-owned portion of the Former Manufactured Gas Plant (MGP) site located North West of the intersection of Railroad Place and Wadsworth Street in Geneva, New York.

As noted in correspondence between the NYSDEC and NYSEG in June 2009, the presence of elevated semi-volatile organic compounds (SVOCs) and metals concentrations in surface soil in this portion of the site present a potential exposure to trespassers. Interim Site Management Plan (ISMP) activities will be completed to reduce the trespasser foot traffic and potential surface soil exposure at the above-referenced site.

Proposed ISMP activities will consist of the following:

Plan Property Boundary Survey

A local licensed surveyor will identify the existing property boundary lines and easements to be fenced. Following installation of the fence, a post-installation survey will be performed depicting the actual fence and site feature locations.

Clearing and Grubbing

Areas within the unpaved portion of the site will be cleared and grubbed. Clearing and grubbing will include clearing of brush, shrubs and other vegetation up to 4 inches in diameter. Well-established trees will remain. Old sections of damaged

fence along the property line will be removed. Vegetative and former fencing waste material generated, along with any trash/debris located within the site, will be removed and properly disposed.

Installation of Fence

A permanent chain-linked fence will be installed along the property and easement boundary as indicated by the property survey and is presented on Figure 1. The chain-linked fence will be 6-feet tall and will include a 15-feet-wide drive gate to allow for access to a gas regulator building located at the site.

Air Monitoring

Installation of fence posts involves soil augering at each fence post location. During soil handling activities, ARCADIS will conduct air monitoring activities consistent with procedures described in the November 2005 site-specific Community Air Monitoring Plan (included as Attachment 1). Due to the limited amount of soil handling required, ARCADIS proposes to limit air monitoring and dust suppression activities to the immediate excavation area to ensure worker respiratory protection.

Installation of Temporary Surface Cover

A temporary surface cover will be installed along the northern portion of the area to be fenced. This area is used by the neighbors to the north of the site as a parking area. The temporary surface cover will consist of a non-woven geotextile fabric material to serve as a demarcation barrier and a surface cover of typical crush and run stone. The stone used will have a certificate of cleanliness and will be placed to a minimum depth of 6 inches. Additional surface cover will not be provided in areas with an existing driveway or stone surface.

The fence, temporary surface cover, and parking area will be inspected annually and maintained as necessary until the final remedy is installed.

Completion of the field activities and issuing the final project report will be completed within 4 weeks of receiving approval of the Work Plan from the NYSDEC (weather permitting).

If you have any questions or would like to discuss the work proposed herein, please contact me at 315.671.9331.

Sincerely,

ARCADIS

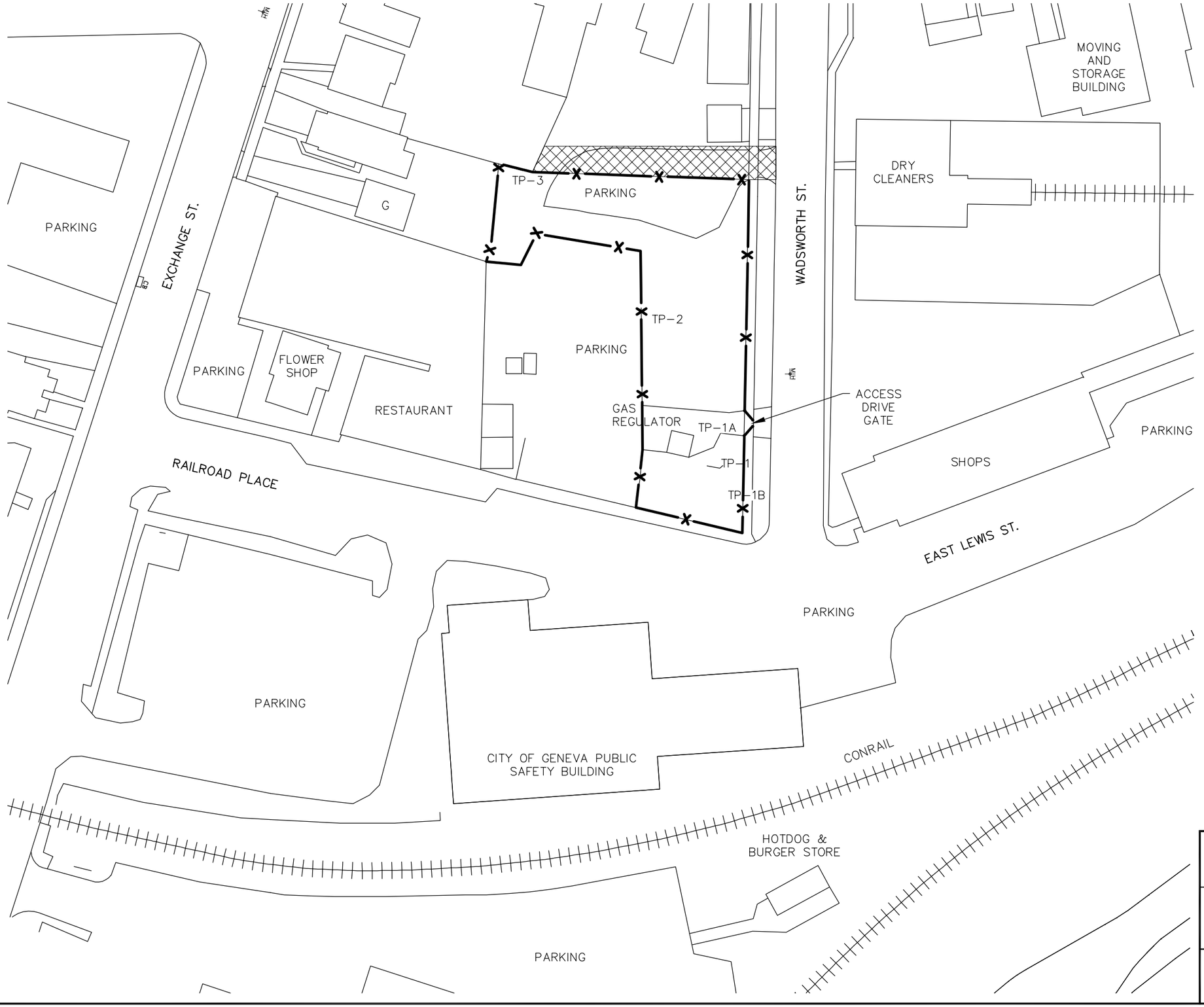
Christopher Engler, P.E.
Associate Vice President

Copies:
John Ruspantini, CHMM, NYSEG
Alexander Ryan, P.E., ARCADIS

ARCADIS

Figure 1

Site Plan



LEGEND:

- FENCE (TYP 6' CHAINLINK) TO BE INSTALLED
- SURFACE COVER
- MANHOLE

NOTES:

1. BASE MAP BASED ON SURVEYS COMPLETED BY NYSEG ON DECEMBER 14, 2005 AND OCTOBER 2006. ELEVATIONS IN REFERENCE TO NGVD 1929, HORIZONTAL DATUM IS NAD 83 STATEPLANE, NEW YORK CENTRAL.

0 60' 120'

GRAPHIC SCALE

NEW YORK STATE ELECTRIC AND GAS
GENEVA (WADSWORTH ST.) FORMER MGP SITE
FENCE ISMP WORK PLAN

SITE PLAN

ARCADIS

FIGURE
1

ARCADIS

Attachment 1

Community Air Monitoring Plan

Community Air Monitoring Plan

Geneva (Wadsworth Street) Former MGP Site
Geneva, New York

New York State Electric & Gas Corporation
Binghamton, New York

November 2005

BBL®
BLASLAND, BOUCK & LEE, INC.
engineers, scientists, economists

Table of Contents

1. Introduction

This *Community Air Monitoring Plan* (CAMP) has been prepared by Blasland, Bouck & Lee, Inc. (BBL) to support the Site Characterization (SC) activities at the Former Manufactured Gas Plant (MGP) Site located on Wadsworth Street, Geneva, New York (the 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 (Appendix A), and the NYSDEC's *Technical and Administrative Guidance Memorandum* (TAGM) 4031, "Fugitive Dust Suppression and Particulate Monitoring Program at Inactive Hazardous Waste Sites" (Appendix 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 SC activities. As such, this CAMP specifies the potential air emissions, air monitoring procedures, monitoring schedule and data collection and reporting for the SC activities to be conducted as described below.

1.1 Site Description

The site is located in the City of Geneva, near the northwestern shore of Seneca Lake in eastern Ontario County, New York (Figure 1 of the SC Work Plan). The site comprises a rectangular piece of land that is now located in a mixed commercial and residential area in the east-central part of Geneva, New York. Seneca Lake is located about 900 feet to the southeast. The site is bordered by Wadsworth Street to the east, a railroad to the south, Nonna's Trattoria (restaurant) to the west, and residential properties to the north. A dry cleaner is located northeast of the site, on the east side of Wadsworth Street. Railroad Place intersects Wadsworth Street and bisects the site. A gas holder and coal shed formerly stood where Railroad Place now runs. The City of Geneva's Public Safety Building is located south of Railroad Place where the several MGP structures previously existed. Figure 2 of the SC Work Plan shows the locations of the former MGP structures as they relate to present-day features.

The area of the former MGP north of Railroad Place (the "northern area") is currently owned by NYSEG, while the area south of Railroad Place (the "southern area") is owned by the City of Geneva. The northern area is grass covered to the east while a fenced in asphalt parking area is located west. Nonna's Trattoria leases the parking area from NYSEG. A gravel parking area located in the extreme northeast of the site is apparently used by residential property owners. A gas regulator shed maintained by NYSEG sits in the northern area near the intersection of Railroad Place and Wadsworth Street. The City of Geneva's Public Safety Building is located in the southern area. The Public Safety Building is comprised of office space in the western portion and an attached pole barn structure in the eastern portion.

The Wadsworth Street Former MGP was established in 1853, and operated continuously until 1903, producing gas by the coal carbonization method (Atlantic 1991). Limited information is available regarding gas production at the Wadsworth MGP; however, a review of the publication "Survey of Town Gas and By-Product Production and Locations in the U.S." indicates that approximately 7 and 16 million cubic feet of gas was produced at the MGP in 1890 and 1900 (Radian Corporation, 1985).

The coal carbonization method consisted of heating bituminous coal in a sealed chamber (i.e., retorts), with destructive distillation of gas from the coal and the formation of coke. The gases were collected, cleaned, and distributed while coke was removed and sold or used. The main byproducts of the coal carbonization method were tars, oils, coke, ammoniacal liquor, ash and clinker, and purifier residuals. The tars were generally viscous (as compared to carbureted water-gas tars) and contained substantial amounts of phenols and base nitrogen organics. Coal carbonization also produced substantial amounts of cyanide in the gas, which was removed during gas cleaning and often appears in wastes such as lime and wood chips. Ammonia was also produced by

coal carbonization. Ammonia was recovered at many coal carbonization plants through the use of ammonia stills (USEPA, 1988).

Based on review of available Sanborn Maps, the gas plant was constructed in 1853 and included a retort and condenser house, a purification building (including lime room, ammonia tank and cistern) a coal shed, and a single gas holder. A second gas holder was constructed around 1900 in the northwest corner of the site. Between 1903 and 1909, the gas plant was demolished; the only remaining structures were the second gas holder, a tool house, and a meter house. The remaining holder was demolished between 1915 and 1925. Between 1925 and 1943, a 500,000 cubic foot gas holder and a regulator house were constructed at the site to serve as a storage/distribution facility. This newer holder could have served as a remote distribution holder for the Border City MGP which was built as the Wadsworth MGP was decommissioned. The 500,000 cubic foot gas holder was demolished sometime after 1946. Railroad Place was constructed through the center of the former MGP site, covering the location of the southernmost former gas holder. The locations of the historic MGP structures and present-day features are shown on Figure 2 of the SC Work Plan.

1.2 Summary of Selected Site Remedial Investigation Activities

The proposed SC activities for the site include test pit excavation, soil sampling, monitoring well installation, and groundwater sampling on the site. A more detailed description of the investigation activities can be found in the Table 1 of the SC Work Plan (BBL, 2005).

1.3 Potential Air Emissions Related to Remedial Action Activities

Certain intrusive SC activities to be conducted at the site have the potential to generate localized impacts to air quality including drilling and test pit excavation. Some non-intrusive SC activities to be conducted may also have the potential to generate impacts to air quality, and include the collection of groundwater samples.

1.4 Air/Odor Emissions and Control Measures

Air emissions control and fugitive dust suppression techniques will be used during the SC 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 SC activities (excluding groundwater sampling), 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; and
- polyethylene sheeting (for covering drill cuttings, soil stockpiles, etc.).

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., temporary access roads, stockpiled drill cuttings, etc.), 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

Real-time air monitoring will be implemented at the site for polycyclic aromatic hydrocarbons (PAHs), VOCs, and particulate matter less than 10 microns in diameter (PM_{10}). 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 sample location and will include the use of hand-held direct-reading survey instruments.

2.1 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 PM_{10} will be recorded. This upwind location will be established at the start of the workday, each day before the start of SC activities. Sampling activities will continue in a downwind direction throughout the day. If wind direction shifts radically during the workday, (greater than approximately +/- 60 degrees from original upwind) new upwind and downwind sampling locations will be established. Any location changes will be documented in the field logbook.

2.2 VOCs and PAHs Monitoring

As required by the NYSDOH guidance for community air monitoring during intrusive activities, VOCs will be monitored continuously during ground intrusive site activities (test pitting and installation of soil borings or monitoring wells) with instrumentation that is equipped with electronic data-logging capabilities. Because real-time monitors for PAHs do not exist, the real-time VOC monitors will also serve as surrogate indicators of PAH emissions at the site. A real-time VOC monitor equipped with either a photoionization detector (PID) or a flame ionization detector (FID) will be used to conduct the monitoring for VOCs and PAHs. A MiniRAE 2000 (or equivalent) will be used to conduct the real-time VOC monitoring. Appendix C provides detailed information on the MiniRAE 2000. All 15-minute readings will be recorded in the field logbook, as well as any instantaneous readings taken to facilitate activity decisions.

During non-intrusive site activities (collection of groundwater samples from monitoring wells), VOCs will be monitored periodically. Periodic monitoring may include monitoring upon arrival at the sample location, monitoring while opening a well cap or overturning surface soil, monitoring during well bailing and/or purging, and/or monitoring prior to leaving a sample location. However, if a sampling location is proximal to potentially exposed individuals (e.g., if recreational areas are occupied), VOCs will be monitored continuously during sampling activities at that location.

2.3 Particulate Matter Monitoring

As required by the NYSDOH guidance, real-time particulate matter will be monitored continuously during intrusive site activities using instrumentation equipped with electronic data-logging capabilities. A MIE DataRAM (or equivalent) will be used to conduct the real-time PM_{10} monitoring. Appendix C provides detailed information on the MIE DataRAM. All 15-minute readings will be recorded in the field logbook, 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 1.3 of this report.

2.4 Action Levels

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

2.4.1 Action Levels for VOCs and PAHs

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; and
- 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 the collection of groundwater samples from monitoring wells. 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.

2.4.2 Action Level for PM_{10}

As required by the NYSDOH guidance, if the ambient air concentration of PM_{10} at any one (or more) of the sampling locations is noted at levels in excess of 100 micrograms per cubic meter ($\mu g/m^3$) 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 PM_{10} 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 PM_{10} levels do not exceed 150 $\mu g/m^3$ above background.

If, after implementation of dust suppression techniques, PM_{10} levels are greater than 150 $\mu g/m^3$ 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 PM_{10} levels less than 150 $\mu g/m^3$ above background and in preventing visible dust from leaving the site.

If the ambient air concentration of PM_{10} is above 150 $\mu g/m^3$ above background, the intrusive site activities must cease and emissions control measures must be implemented.

2.5 Meteorological Monitoring

Wind direction and wind speed are the only meteorological information considered relevant for the SC activities and CAMP. Meteorological monitoring will be conducted periodically at the site using a windsock, wind vane, multi-purpose wind meter, or other appropriate equipment. Wind direction and speed 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 or speed is noted.

2.6 Instrument Calibration

Calibration of the VOC and PM_{10} instrumentation will occur in accordance with each of the equipment manufacturer's calibration and quality assurance requirements. The VOC and PM_{10} 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

The following identifies the monitoring schedule and data collection and reporting requirements.

3.1 Monitoring Schedule

Real-time VOC and PM_{10} 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-type activities. Wind direction will be determined at the start of each day and at any other appropriate time during SC activities.

3.2 Data Collection and Reporting

Air monitoring data will be collected continuously from VOC and PM_{10} 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. All readings will be recorded and archived for review by NYSDOH and NYSDEC personnel.

Appendix A

Generic Community Air Monitoring Plan

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 <u>ground intrusive</u> 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.

June 20, 2000

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Appendix 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 SUPRESSION 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 (PM_{10}); this involves fugitive dust whether contaminated or not. Based upon an examination of air quality composition, respiratory tract deposition, and health effects, PM_{10} 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/m^3 over a 24-hour averaging time and 50 ug/m^3 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.

2. Particulate monitoring must be employed during the handling of waste or contaminated soil or when activities on site may generate fugitive dust from exposed waste or contaminated soil. 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 to 10 mg/m^3
   Overall Accuracy: ±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

shall require necessary averaging hardware to accomplish this task; the P-5 Digital Dust Indicator as manufactured by MDA Scientific, Inc. or similar is appropriate.

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

5. The action level will be established at 150 ug/m^3 over the integrated period not to exceed 15 minutes. While conservative, this short-term interval will provide a real-time assessment of on-site air quality to assure both health and safety. If particulate levels are detected in excess of 150 ug/m^3, the upwind background level must be measured immediately using the same portable monitor. If the working site particulate measurement is greater than 100 ug/m^3 above the background level, additional dust suppression techniques must be implemented to reduce the generation of fugitive dust and corrective action taken to protect site personnel and reduce the potential for contaminant migration. Corrective measures may include increasing the level of personal protection for on-site personnel and implementing additional dust suppression techniques (see Paragraph 7). Should the action level of 150 ug/m^3 be exceeded, the Division of Air Resources must be notified in writing within five working days; the notification shall include a description of the control measures implemented to prevent further exceedences.

6. It must be recognized that the generation of dust from waste or contaminated soil that migrates off-site, has the potential for transporting contaminants off-site. There may be situations when dust is being generated and leaving the site and the monitoring equipment does not measure PM_{10} at or above the action level. Since this situation has the potential to migrate contaminants off-site, it is unacceptable. While it is not practical to quantify total suspended particulates on a real-time basis, it is appropriate to rely on visual observation. If dust is observed leaving the working site, additional dust suppression techniques must be employed. Activities that have a high dusting potential--such as solidification and treatment involving materials like kiln dust and lime--will require the need for special measures to be considered.

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

    1. Applying water on haul roads.
    2. Wetting equipment and excavation faces.
    3. Spraying water on buckets during excavation and dumping.
    4. Hauling materials in properly tarped or watertight containers.
    5. Restricting vehicle speeds to 10 mph.
    6. Covering excavated areas and material after excavation activity ceases.
    7. Reducing the excavation size and/or number of excavations.

    Experience has shown that utilizing the above-mentioned dust suppression techniques, within reason as not to create excess water which would result in unacceptable wet

conditions, the chance of exceeding the 150 ug/m^3 action level at hazardous waste site remediations is remote. Using atomizing sprays will prevent overly wet conditions, conserve water, and provide an effective means of suppressing the fugitive dust.

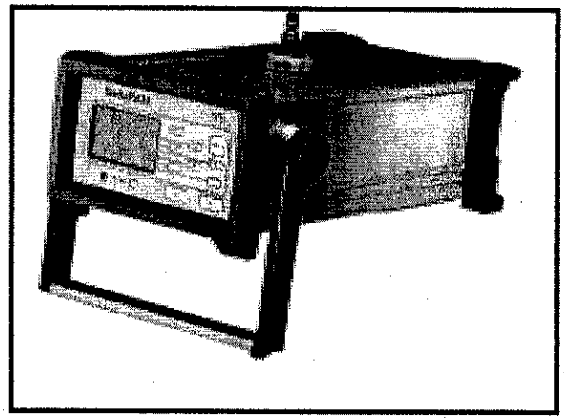
8. If the dust suppression techniques being utilized at the site do not lower particulates to an acceptable level (that is, below 150 ug/m^3 and no visible dust), work must be suspended until appropriate corrective measures are approved to remedy the situation. Also, the evaluation of weather conditions will be necessary for proper fugitive dust control--when extreme wind conditions make dust control ineffective, as a last resort remedial actions may need to be suspended.

There may be situations that require fugitive dust suppression and particulate monitoring requirements with action levels more stringent than those provided above. Under some circumstances, the contaminant concentration and/or toxicity may require appropriate toxics monitoring to protect site personnel and the public. Additional integrated sampling and chemical analysis of the dust may also be in order. This must be evaluated when a health and safety plan is developed and when appropriate suppression and monitoring requirements are established for protection of health and the environment.

Appendix C

Monitoring Equipment Specifications

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/m^3 to 400 mg/m^3, 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

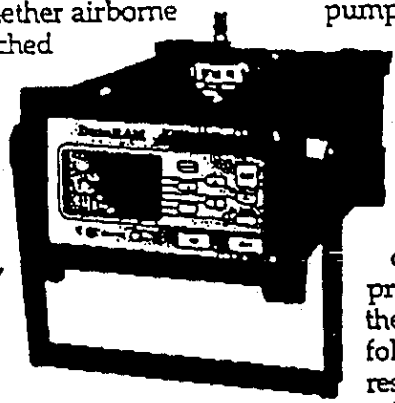
Concentration Measurement Ranges (autoranging)	0.1 to 999.99 µg/m^3, with resolution of 0.1 µg/m^3 1.00 to 39.99 mg/m^3, with resolution of 0.01 mg/m^3 40.0 to 399.9 mg/m^3, with resolution of 0.1 mg/m^3
Accuracy	± 5% of reading ± precision
Particle Size Range of Maximum Response	0.1 to 10 µm
Sample 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

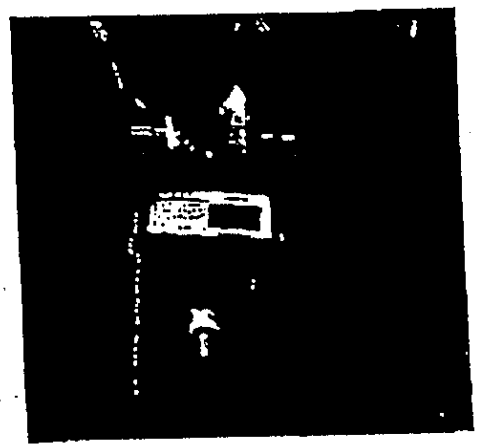
The MIE DataRAM aerosol monitor rents with an AC adapter/charger, serial download cable, software, filter cassette, soft carrying case and operating manual.

The World's Most Precise and Ve

Real-Time Measurement of Airborne Particulate Concentrations

With the DataRAM™, you'll never again have to wait for laboratory results to assess whether airborne pollutants have reached dangerous levels. The DataRAM Real-Time Aerosol Monitor measures mass concentrations of airborne dust, smoke, mists, haze, and fumes and provides continuous real-time readouts. Large-capacity onboard data logging capability lets you save concentration data for future analysis. With optional accessories, the DataRAM can also provide respirable, PM-2.5, or PM-10 correlated measurements.





For exposure sampling or continuous unattended indoor air, ambient, duct, or process monitoring, no other aerosol monitor is as fast, accurate, and easy to use as the DataRAM.

Designed for High Sensitivity

A high-sensitivity nephelometric monitor, the DataRAM samples the air at a constant, regulated flow rate by means of a built-in diaphragm pump. The DataRAM's light scattering configuration is optimized for the measurement of airborne particle concentrations, maximizing the unit's sensitivity. The detected signal is processed by state-of-the-art lock-in circuitry followed by high-resolution digitization, achieving ultimate detectability of atmospheric Rayleigh scattering fluctuations.

The Widest Measurement Range of Any Real-Time Particulate Monitor

In addition to its high sensitivity, the DataRAM has the widest measurement range of any real-time aerosol monitor—from 0.0001 mg/m³ (0.1µg/m³) to 400 mg/m³. With a total span of almost 7 decades, the DataRAM is capable of effectively measuring mass concentrations of airborne particles in industrial and ambient environments ranging from exceptionally pristine to extremely polluted. The instrument can also be used for atmospheric visibility measurements over a wide range of scattering coefficients (0.00015 to 600 km⁻¹). The DataRAM's auto-ranging digital display provides both real-time and time-averaged concentrations.

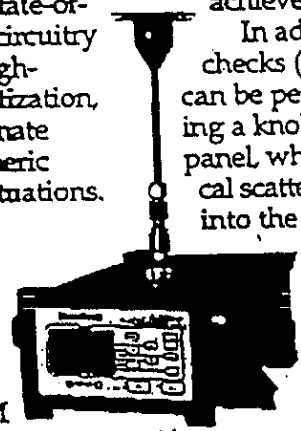
Exceptional Long-Term Stability

The DataRAM incorporates several technological advances which guarantee exceptional long-term stability. Near infrared source output feedback control provides drift-free operation and excellent temperature stability.

For either manual or preprogrammed/automatic zeroing of the monitor, an electronically controlled latching solenoid valve diverts the entire filtered air stream through the optical sensing stage in order to achieve a "zero" air reference.

In addition, instrument span checks (secondary calibration) can be performed simply by turning a knob on the DataRAM's back panel, which inserts a built-in optical scattering/diffusing element into the filtered air stream.

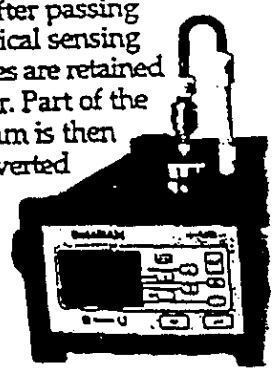
On-screen diagnostic indicators and automatic shut-off for low battery conditions also help ensure the monitor's correct operation and data storage.



DataRAM with Omnidirectional Sampling Inlet for ambient monitoring

Maintenance-Free Operation

After passing through the optical sensing stage, all particles are retained on a HEPA filter. Part of the filtered air stream is then continuously diverted through and

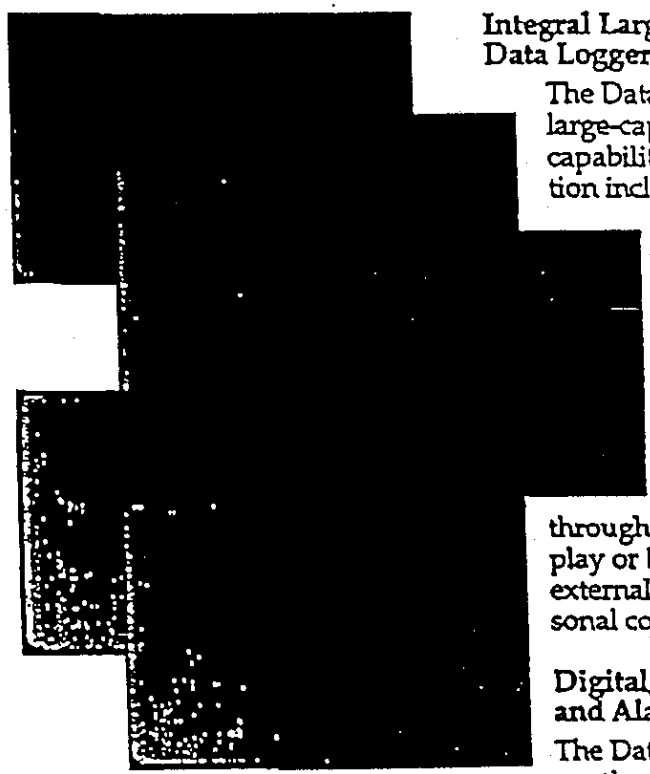


DataRAM with Cyclone Precollector for respirable particle measurements

satile Real-Time Aerosol Monitor

over all optically-sensitive areas (lenses, light traps, etc.) to form a continuous air curtain which protects against particle deposition. This design, in conjunction with a highly reliable diaphragm pump, ensures long-term maintenance-free operation.

A membrane filter (with special holder included) can be substituted for the HEPA cartridge for gravimetric and/or chemical analysis of the particles collected downstream of the sensing stage.



Menu-Driven Information Displays

In addition to the auto-ranging real-time concentration readout, the DataRAM provides users with a variety of informational displays on its 8-line LCD screen. Real-time and date, time-weighted average concentrations, elapsed run times, and other information are easily viewed by selecting the appropriate screen using a scroll-through menu. Operating parameters and diagnostic information displays can also be easily accessed through the menu using only 6 keys on the front of the instrument.

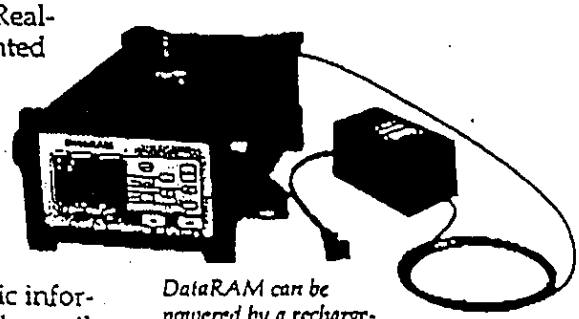
Integral Large-Capacity Data Logger

The DataRAM has built-in large-capacity data logging capabilities. Stored information includes time and date, average concentrations, maximum and minimum values over selected periods, STEL concentration, and tagging codes.

Logged information can be retrieved either by scrolling through the DataRAM's display or by down-loading to an external device such as a personal computer or printer.

Digital, Analog, and Alarm Outputs

The DataRAM provides continuous digital output (by means of an RS232C data port) as well as analog output and a switched output for selectable high-level alarm with a built-in audible signal.

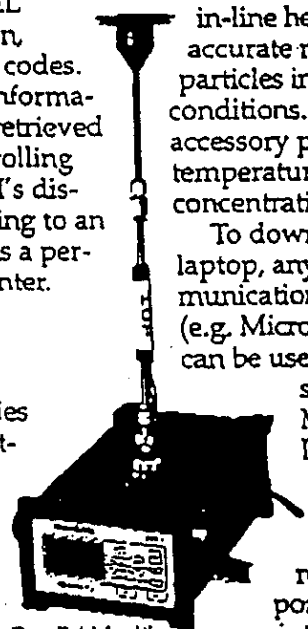


DataRAM can be powered by a rechargeable internal battery or an external power source

Accessories Expand Versatility and Enhance Accuracy

Several optional accessories are available for use with the DataRAM for a wide range of sampling applications. A cyclone precollector allows respirable particle measurements. An omnidirectional air sampling inlet (with or without a PM-10/2.5 head) is available for ambient monitoring. Isokinetic inlet nozzles are available for duct sampling. An in-line heater module allows accurate monitoring of solid particles in high humidity/fog conditions. A sample dilution accessory permits elevated temperature and/or very high concentration monitoring.

To down-load data to a PC or laptop, any standard serial communications software package (e.g. Microsoft Windows™ 3.1) can be used. Standard spreadsheet packages (such as Microsoft Excel™, Lotus™, and others) can easily access and analyze data log files transmitted to a PC for review and archiving. A portable battery-powered printer and cabling accessories are also available.



DataRAM with In-Line Heater for monitoring in high humidity or fog

Specifications

Concentration measurement ranges (auto-ranging)[1]:
0.1 to 999.9 µg/m³ (resolution: 0.1 µg/m³)
1.00 to 39.99 mg/m³ (resolution: 0.01 mg/m³)
40.0 to 399.9 mg/m³ (resolution: 0.1 mg/m³)

Scattering coefficient range: 1.5×10^{-7} to $6 \times 10^{-1} m^{-1}$ (approximate) at $\lambda = 880$ nm

Concentration display averaging/updating interval[2]:
1 or 10 seconds

Precision/repeatability over 1 hour (2-sigma)[3]:
± 0.3 µg/m³ for 10 second averaging
± 1.0 µg/m³ for 1 second averaging

Accuracy[1]: ± 5% of reading ± precision

Particle size range of maximum response: 0.1 to 10 µm

Sampling flow rate[2]: 1.7 to 2.3 liters/minute

Sampling flow rate stability (long term)[4]: ± 5% (up to maximum pump loading)

Purge/clean air filter replacement time (typical):
>5 years (@ constant 1 mg/m³)

Alarm level adjustment range[2]: 0.1 µg/m³ to 399.9 mg/m³

Alarm averaging time[2]: real-time (1 or 10 seconds), or STEL (15 minutes)

Data logging averaging periods[2]: 1 second to 4 hours

Total number of data points in memory: 10,000
(each point: average, minimum, and maximum concentrations)

Logged data:

- For each data point: average, minimum, and maximum concentrations; time/date; and data point number
- Run summary: tag number of logged points; start time/date; total elapsed run time; averaging time; data logging averaging period; calibration factor; STEL concentration; STEL occurrence time after start; overall average concentration; overall maximum and minimum concentrations with data point number

Number of data tags: 10

Real time and date data: seconds; minutes; hours; day of month; month and year (with leap year compensation)

Clock accuracy: ± 1 minute/month, or better

Elapsed time range: 1 second to 99 days

Time keeping and data storage duration: >10 years

Readout display: LCD 120 x 64 dots, 15 characters x 8 lines, 57.6 x 38.4 mm active area

Internal battery: rechargeable sealed lead-acid:
6.5 Ahr; 6 V nominal

Operating time with new battery and initial full battery charge[4]:
>24 hours

Operating time with DataRAM charger: continuous and unlimited

Charging input power: 115/230 VAC, 50/60 Hz, 50 VA

External DC power (optional): 6 V @ 3 A

Analog output (auto-ranging)[5]:
0 to 5 V, for 0 to 4 mg/m³
0.5 to 5 V, for 4 to 40 mg/m³
0.5 to 5 V, for 40 to 400 mg/m³

Digital output: RS232C, 9600 baud; 8 data bits, 1 stop bit; parity: none

Alarm output: switched, 1 A @ 10 V maximum, resistance <0.1 Ω

Alarm sound intensity: 90 dB @ 1 m

Fuse: 1 A, fast

Operating environment: 0° to 40°C (32° to 104°F), 0 to 95% RH, noncondensing

Storage environment: -20° to 60°C (-4° to 140°F)

Dimensions: 134 mm (5.28 in) H x 184 mm (7.25 in) W x 346 mm (13.63 in) D

Weight: 5.3 kg (11.7 lbs)

Standard accessories included: universal voltage battery charger, standard HEPA filter cartridge, analytical filter holder, PC communications software disk, digital output cable, carrying case, and instruction manual

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[1] Referred to gravimetric calibration with AC Fine test dust (mmd = 2 to 3 µm, σg = 2.5)
[2] User selectable
[3] At constant temperature
[4] At 25°C
[5] Range identified on LCD screen

MIE

MIE

DataRAM Accessories

A complete line of accessories designed to extend and complement the capabilities and applications of the MIE DataRAM™, the most advanced and powerful real-time particulate monitor available. These modular accessories permit ambient air monitoring over a wide range of wind, temperature and humidity conditions, dilution sampling of high temperature, high concentration streams, respirable particle monitoring, data printout in the field, PC interfacing, etc.

NAME (MODEL NUMBER)	DESCRIPTION	APPLICATIONS
Omnidirectional Sampling Inlet (DR-OSI)*	Annular type sampling inlet designed, for a flowrate of 2 lpm, to provide a smooth transition between horizontal wind borne particle motion and vertical flow into DataRAM monitor.	Ambient monitoring under a variety of wind speeds and directions to ensure representative sampling especially for particles smaller than 10µm.
Temperature Conditioning Heater (DR-TCH)*	An in-line tubular heater without flow obstructions, designed to raise the temperature and reduce the relative humidity of the sampled air stream.	Ambient monitoring at high humidity conditions (typically above 70% RH) in order to evaporate liquid water from airborne particles and/or eliminate fog droplets. Normally used in combination with DR-OSI and DR-PM10/2.5.
PM-10/PM-2.5 Inlet Head (DR-PM10/2.5)*	A modular impactor for 10µm or 2.5µm cutpoint (at 2 lpm) with easily interchangeable nozzles. The DR-PM10/2.5 is designed to be used in combination with the DR-OSI and/or the DR-TCH.	Specifically intended for PM-10 or PM-2.5 ambient particulate monitoring. Typically used in line with the Omnidirectional Sampling Inlet (DR-OSI) which plugs into the DR-PM10/2.5.
Isokinetic Sampling Nozzle Set (RAM-ISN)	Made of stainless steel, it consists of a two-section sampling probe, four (4) interchangeable nozzles covering the range of 750 and 5000 ft/min., tubing, fittings, and carrying case.	To be used to sample isokinetically within ducts and stacks with the DataRAM monitor. Can be used in combination with the DR-TCH to remove water aerosols.
Respirable Cyclone Precollector (DR-RCP10)	Consists of a Dorr-Oliver 10-mm nylon cyclone and fittings for quick connect to DataRAM inlet.	For respirable particle monitoring. Flowrate on DataRAM can be adjusted to provide either "old" 3.5µm or "new" 4.0µm particle cut points.

*Included in Ambient Sampling Inlet Set (model DR-AVS).

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

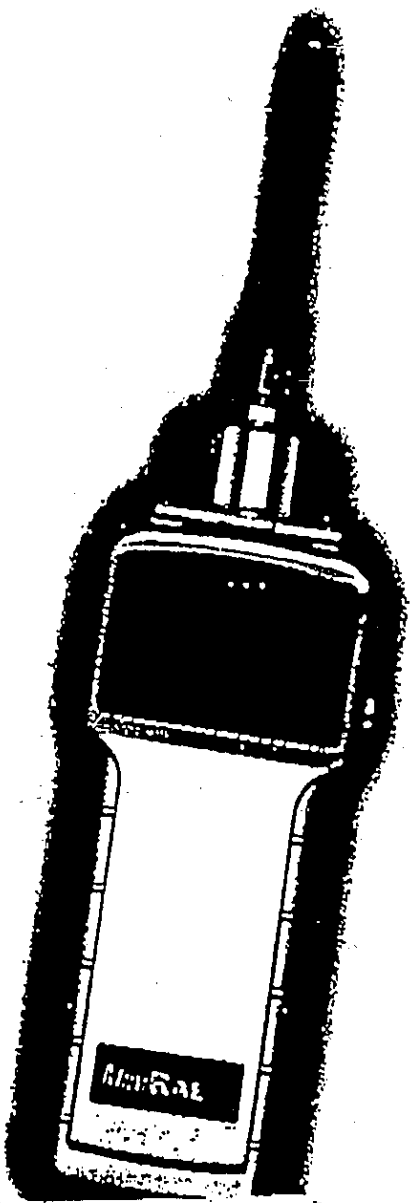
Range	Resolution	Response Time	Accuracy
0 to 999 ppm	0.1 ppm	< 3 seconds	± 2 ppm or 10% of reading <2000 ppm
100 to 10,000 ppm	1 ppm	< 3 seconds	± 20% of reading > 2000 ppm Calibrated to 100 ppm isobutylene

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.

MiniRAE 2000

Portable VOC Monitor



- Still the smallest handheld VOC monitor on the market
- New RAE Photo-Ionization Detector (PID) 3-D sensor
  - Easily accessible lamp and sensor
  - Reduced humidity interference
  - Improved linearity
  - Increased sensitivity
  - Extended range 0-10,000 ppm
- Strong, built-in sample draw pump with pump stall feature
  - Sample up to 100' (30m) horizontally or vertically
  - Prevents liquid flow into the monitor
  - Warns if sample tubing is blocked or crimped
- External, field replaceable NMH rechargeable battery
  - 10 hours of continuous monitoring
  - Smart battery charging
  - Alkaline battery holder supplied
  - Automotive charger available
- Robust inlet probe
- Large keys operable with 3 layers of gloves
- Large easy to read back light display
  - Alarm activated
  - Darkness or manually activated
- Preset alarm thresholds for STEL, TWA, low and high level peak values. Audio buzzer and flashing LED display will be activated when the limits are exceeded
- 15,000 point data logging storage capacity for data download to PC
- Rubber protective boot
- 102 built-in correction factors from a RAE list of 250+ chemicals
- User selectable hygiene and survey modes
- Protected from portable radios
- Ppm or mg/m³ readout

Environmental Applications

- Air pollution — trace, toxic gases
- Leaking underground storage tanks
- Monitoring drums, perimeter fence line
- Leak detection — fugitive emissions (EPA Method 21)
- Soil, well and water head space analysis
- Vapor recovery breakthrough

Industrial Hygiene, Health, Safety and Plant Applications

- Confined space entry — broad band, real time monitoring of low level toxic gases
- Emergency response to hazardous spills
- Indoor air quality in new, sick and mixed usage buildings
- Personnel monitoring — determine levels for personal protective equipment (PPE)
- Survey instrument — prioritization of sample collection
- Work place monitoring — peak, STEL and TWA

800-242-3910 (Toll-Free) / **716-424-2140** (Rochester, NY) / **714-955-3930** (Irvine, CA) / **713-956-283**3 (Houston, TX)

Specifications

Size	8.2" (21.8 cm) L x 3." (7.62 cm) W x 2." (5.08 cm) H
Weight	19.5 oz (553 gm) with battery pack
Sensor	Photo-ionization sensor with standard 10.6 eV or optional 9.8 or 11.7 eV UV lamp
Battery	Rechargeable, external, field replaceable Nickel Metal Hydride battery pack. Alkaline battery holder (for 4 AA) supplied
Operation Life	10 hours continuous
Battery Charging	Up to 10 hours charge through built-in smart charger
Display	Large LCD, manual, darkness and alarm activated
Range, Resolution and Response Time (t90)	Isobutylene (calibration gas) 0-999 ppm 0.1 ppm < 3 sec 100-10,000 ppm 1 ppm < 3 sec
Measurement Accuracy	± 2 ppm or 10% of reading <2000 ppm ± 20% of reading > 2000 ppm Calibrated to 100 ppm isobutylene
PID Detector	Easy access to lamp and sensor for cleaning and replacement
Correction Factors	102 built-in VOC gases
Calibration	Two points field calibration of zero and standard reference gas. Calibration memory of 6 calibration gases, alarm limits, span values and calibration date
Robust Inlet Probe	Flexible 5" (13 cm) tubing
Large Keypads	1 operation and 2 program keys
Direct Readout	Instantaneous, average, STEL and peak value, battery voltage and elapsed time
Intrinsic Safety	UL & cUL Class 1, Division I, Group A,B,C,D (US & Canada), EEx ia IIC T4 (Europe)
Alarm Setting	Separate preset alarm limit for high, low, STEL and TWA alarm
Operating Mode	Survey or Hygiene, user selectable
Audible Alarm	90 db buzzer
Visual Alarm	Flashing red LED
External Alarm	Optional plug in pen size vibration alarm
Alarm Mode	Latching or automatic reset
Data Logging	15,000 points with time/date. Header information includes monitor serial number, user ID, site ID, date and time
Communication	Download data and up load instrument setup from PC through RS-232 link to serial port. Software compatible with Windows™ 95, 98 and NT
Remote Control	Power On/Off and data logging through RS-232 port
Analog Output	Calibrated output, user selectable full-scale range
Sampling Pump	Internal integrated flow rate 400 cc/minute Sample from 100' (30m) horizontally or vertically
Low Flow Alarm	Auto shut off pump at low flow condition
Temperature	14°F to 104°F (-10°C to 40°C)
Humidity	0 % to 95 % relative humidity (non-condensing)
Attachment	Wrist strap

Ordering Information

Model PGM-7600 Monitor

- MiniRAE 2000 unit with 10.6 eV PID detector
- Nickel metal hydride batteries
- Alkaline battery holder
- Rubber boot
- Inlet probe and water trap filter
- Operation and maintenance manual
- Soft carry case
- Pro-RAE Suite software (data logging version)

Model PGM-7600 Kit

Items included with Monitor Plus

- Calibration Gas
- Calibration Regulator with flow controller
- Porous metal filter and O-ring kit
- Gas outlet port and tubing
- Tool kit
- Hard transport case

Accessories

- 9.8 & 11.7 eV lamps
- Lamp cleaning kit
- Automatic charger
- Remote access probe
- External vibration alarm
- Automotive charger adapter

MiniRAE

ISO 9001 CERTIFIED

Environmental Instrument Rentals

ASHTEAD TECHNOLOGY
1057 East Henrietta Road
Rochester, New York 14623
716-424-2140 PHONE ▲ 716-424-2166 FAX