Excavation Work Plan

For

Bronx River Tunnel Project

Block 2781, Lot 800

Prepared By:

Consolidated Edison Company of New York Inc.

4 Irving Place

New York, New York 10003

June 2022

ConEdison 42" Gas Main Project No. G-19-913

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Site Description

This Excavation Work Plan (EWP) was developed in order to excavate a 10-foot long trench to expose a portion of the 42-inch cast iron retired gas main for the purposes removing it and installing a new 36-inch main. Approximately 5 feet of the excavation is within the Consolidated Edison of New York, Inc. (Con Edison) property line (Block 2781 Lot 800) with the balance of the excavation within the easement that is located within a parcel that is currently vacant. The parcel in which the easement is located has been accepted into the New York State Brownfield Cleanup Program (BCP) as Site #C203100 and under its current BCP enrollment status is defined as BCP Parcel D. The property is owned by New York City and managed by the New York City Economic Development Corporation (NYC EDC) and GEI Consultants acts as the Owner's Engineer.

Site History

Historically, the HPFDC was part of a Con Edison MGP that was initially constructed between 1924 and 1932, and operated until the early 1960's. The plant was constructed to manufacture both oven gas and carbureted water gas, producing coke, ammonium sulfate, coal tar, water gas tar, and light oil as major by-products. In total, approximately 46 buildings or structures existed in the former Con Edison facility that were actively involved in gas production. There has not been a tenant or active use of the parcel (with the exception of the Con Ed head house building) since the use of the property as part of the MGP.

Proposed Work

The proposed work will consist of an excavation with dimensions of 10-foot wide by 10-foot deep by 10-foot long. The excavation is being completed in order to expose the 42-inch retired cast iron main that runs east to west along the northern boundary of Parcel D. Once the excavation is completed, the main will be removed and replaced with a new 36-inch main. Once the activities associated with main is complete, the excavation will be closed.

Notification

NYCEDC will be notified prior to excavation and earthwork activities subject to this EWP. NYCEDC, through its Brownfield Program will make the appropriate notifications and reports to the NYCDEC project manager.

	Email	Phone Number
NYSDEC		
Ronnie Lee	Ronnie.Lee@dec.ny.gov	518-402-9767
Owner – NYC EDC		
Tracey Bell	tbell@edc.nyc	212-312-3752
Owner's Engineer – GEI		
Kevin McCarty	kmccarty@geiconsultants.com	212-845-9965
Con Edison Representatives		
Shaun Persaud Transmission Construction	persauds@coned.com	929-237-0657
Matt Madsen EH&S Engineering & Construction	madsenm@coned.com	718-839-1861
Melissa Abt EH&S Remediation	abtm@coned.com	718-204-4331

The information in this table will be updated as necessary to provide accurate contact information. The initial notification will include the following:

- A detailed description of the work to be performed, including the location of the test pits
- An estimate schedule for the work, detailing the start and completion of ground intrusive work.
- A statement that the work will be performed in compliance with this EWP and 29 CFR 1910.120.
- A copy of the contractor's health and safety plan provided as Appendix A of this EWP.
- Backfill documentation, if necessary

Excavation Plan

Activities will consist of excavation, stockpiling and backfilling of the excavation at the completion of said work. The excavation described herein will be performed in accordance with applicable federal, state, and city regulations.

The proposed test pit location is shown on Figure 1. A copy of the CHASP is included as Appendix A. NYC EDC will be promptly notified of proposed changes, delays, or deviations to the EWP and schedule.

Screening Methods

Screening at the test pit will take place for both the breathing zone of the workers as well as for determining if the material being excavated is impacted. Visual olfactory and instrumental (PID) screening will be performed by a field engineer, geologist or scientist under the supervision of a qualified environmental professional (QEP) during excavation and earthwork to determine if the

material is impacted. The PID in conjunction with a multi-gas meter and dust monitor will be used to monitor the air quality in the test pit for the workers. The instruments will be calibrated daily and the PID will be equipped with a 10.6eV lamp.

Stockpile Methods

Excavated material with visual and or olfactory impacts will be stockpiled separately and will be segregated from other materials. Stockpiles of material not impacted will be staged near the test pits and on plastic and will be used as backfill.

Waste Characterization

Impacted material will be characterized in a manner required by the receiving facility and in compliance with applicable laws and regulations, before it is transported off site for disposal. NYSDEC will be notified concerning the amount of impacted material as well as the type of impacts observed.

Material Handling

A Con Edison inspector will observe and document that the contractor performs excavation and handling as specified in this EWP. The inspector and contractor are responsible for safe execution of excavation and handling activities under this EWP.

Material Load Out and Disposal

Impacted material will be handled, transported and disposed of by a licensed and placarded hauler in accordance with applicable 6NYCRR Part 360 and Part 364 regulation and other applicable federal, state, and local regulations.

The contractor will identify disposal facilities and provide Owner's Engineer if necessary. The following documentation will be provided for NYSDEC review and approval, for each disposal facility:

- Generator (Con Ed) signed waste profile/application and supporting forms
- Letter from generator to the facility describing the material to be disposed and requesting written acceptance of the material.
- Pre-approval letter from the facility accepting the materials.
- Current and valid operating permits and
- Waste transporter permits

Importing Fill Material

After the new main is installed, the excavation will be backfilled with a minimum of 12" above the top of the main with sand. Properly compacted, suitable 3/8" clean fill, recycled screening backfill or excavated material, shall be installed on top of the 12" minimum sand described above. Backfill will be evaluated before being imported to the site. The process will include submitting a Fill Importation Request Form to NYSDEC, an examination of source location,

current historical uses, and applicable testing documentation. Material from industrial sites, environmental remediation sites, spill sites or other potentially contaminated sites will not be imported to the Site. The contractor will identify source facilities for backfill and provide the Owner's Engineer with copies of the following documents, which will be provided to NYSDEC for review and approval, for each borrow source:

- Facility name, address, site history and current and valid operating permits
- Letter from the originating source or supplier of the material and physical characteristics.
- Tabulated analytical results showing the material meets Commercial SCOs
- Representative photographs of the material

Imported material will be screened for evidence of contamination (visual, olfactory, and instrumental) before it is placed and graded. The imported material shall not contain C&D debris, other than recognizable concrete aggregate as described herein, exhibit observable indicators of contamination (i.e., petroleum-staining and odors), or have been in contact with a spill of petroleum, hazardous waste, or industrial waste.

Contingency Plan

Identification of unknown or unexpected contaminated media identified by screening during invasive site work will be promptly communicated by phone to the Owner's Engineer and NYSDEC Project Manager. Reportable quantities of petroleum product will also be reported to the NYSDEC spills hotline.

Dust, Odor, Vapor and Nuisance Control

Since this work will be taking place in the vicinity of the remedial activities at Parcel D, the contractor performing the remedial activities will position their air monitoring stations so that the test pits will be included in the CAMP area. The CAMP developed by Parsons is provided in Appendix B.

If odors, vapors, or fugitive dust exceeding action levels set forth in this EWP within the test pit area or are identified by the remedial contractor, work will be halted, and the source identified and controlled. Work will not resume until odors, vapors, or fugitive dust are abated.

The Owner's Engineer and the NYSDEC will be notified if odors, vapors, or fugitive dust exceeding action levels are reached.

Construction Health and Safety Plan

The contractor has prepared a site specific health and safety plan (CHASP), included as Appendix A. Work performed under this EWP will be in compliance with applicable health and safety laws and regulations, including site and occupational Safety and Health Administration (OSHA) worker safety requirements.

Reporting

While the anticipated schedule for digging the excavation is approximately one week*, the excavations will remain open to install a new 36" Gas Transmission Main as well as removal of old 42" Main. It will be sheeted and open for approximately 4-6* weeks. At the completion of the work, the Owner's Engineer will receive a summary report that will include a description of the completed excavation, if any material was imported or exported onto the Site and its quantity, a summary of daily CAMP results, including exceedances, and Site photographs including the Site restoration at the completion of the work.

This report is not intended to be the primary mode of communication for notifying the NYSDEC of emergencies, requests for changes to this EWP and/or time critical information; however such information will be included in the summary report. Emergency conditions, changes, and deviations to this EWP will be addressed immediately and directly to the Owner's Engineer and NYSDEC Project Manager.

Fig. 1 Approximate Location of Excavation

APPENDIX A

Site-Specific Health and Safety Plan

WILLIAMS SPECIALTY SERVICES INC.

HASP – Health and Safety Plan

PROJECT TITLE: **BRONX RIVIER**

Work Performed for: **CON EDISON**

Work Performed by: **Williams Specialty Services Group, LLC**

100 Crescent Centre Parkway
Suite 1240
Tucker, Georgia 30084

18-33 42nd Street
Astoria NY 11105
718-204-4885

Approval: **Tom Scaccia** _____ **8/5/2021**
WISG Project Manager *Signature* *Date*

Approval: **Michael Cutro** _____ **8/5/2021**
WISG EHS Manager *Signature* *Date*

Williams Specialty Services
18-33 42nd Street Astoria NY 11105
100 Crescent Centre Parkway - Suite 1240
Tucker Georgia 30084
1-770-879-4000
Health and Safety Plan

Con Edison Acceptance
To be completed by authorized Con Edison Representative

	Yes	No
Accepted	X	

Signature  Date 11/18/2021

Type/Print Name Matt Madsen Title Project Specialist

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1.0 INTRODUCTION

Williams Specialty Services along with various sub-contractors will perform all required work to complete the Bronx River Tunnel 36" gas main installation and head house replacement. This work will take place at 240 food center drive, Bronx NY, and Randall Ave & Metcalf Ave. and is scheduled to complete in 18 months from the start date. In general, the project will include the demolition of the existing head houses that will later be replaced with new at each side of the tunnel. Also included is the removal of the 2 existing 42" abandoned gas mains along with the concrete support saddles. Other work shall include, but is not limited to, the maintenance and protection of pedestrians, excavation, installation of all gas pipe, fittings and valves. All welding, cleaning, pigging and pressure testing, dewatering, and filling gas main with nitrogen blanket. All workers performing gas work will be Operator Qualified. Job specific work plans for rigging, removals of ACM and any other hazardous materials associated with this project will be submitted for review and CE approval prior to commencement.

SITE PERSONNEL

Williams Specialty Services

Name:	*Title*	*E-Mail*	*Cell Phone*
Tom Scaccia	*Operations Manager*	*tscaccia@wisgrp.com*	*(315) 520-6188*
Fred Fisher	*Project Manager*	*ffisher@wisgrp.com*	*347-804-8464*
David Swindall	*Supt. / Safety backup*	*deswindall@wisgrp.com*	*423-605-4255*
Joe Ramos	*Site Safety*	*Jramos@wisgrp.com*	*917-445-5266*

Subcontractors

Company:	*Trade:*	*Name:*	*Cell Phone*
Delta Environmental	*Asbestos Abatement*	*Henry*	*917-682-6554*
Verde	*Electrical*	*TBD*	
Cutting Technologies	*Specialty Cutting*	*TBD*	

Con Edison Contacts:

Name:	*Title*	*E- mail*	*Cell Phone*
Rick Simonetti	*Const. Manager*	*simonettir@coned.com*	*646-772-3218*
Mike Walsh	*Sr. Specialist*	*walshmicha@coned.com*	*917-642-9044*
Shaun Persaud	*Chief Const. Ins.*	*persauds@coned.com*	*929-237-0657*

Con Edison Emergency Contacts/Emergency Procedures/ Accident Reporting

Matt Madsen Con Edison EH&S, Engineering and Construction
madsenm@coned.com **917-301-0270**

EMERGENCY EVACUATION ASSEMBLY AREA:
"To the Chef's Warehouse parking lot"

EMERGENCY RESPONSE:

In the event of an emergency, contractor's personnel are required to follow this Emergency Response Plan. WSS will familiarize its employees with these procedures, station exits, and designated assembly areas during New Hire Orientation.

EMERGENCY ACTION PLAN

WSS will always have the above-named document on site and available. This Emergency Action Plan will be reviewed by all WSS employees and sub-contractors prior to any work commencement

ACCIDENT REPORTING PROCEDURE:

In case of an accident, spill, fire, explosion or any incident, to the EH&S control desk 212-580-8383 and Con Edison Construction Inspector will be notified immediately and a written report will be submitted along with a C-2 form with in 24 hrs of occurrence if there was an injury.

WSS will submit an Accident Investigation Report with Root Cause Analysis and Corrective Actions within 24 hours.

Any oil or chemical spill must be reported **IMMEDIATELY** the Con Edison site representative. If the site representative is not or cannot be reached, notify Matt Madsen Con Ed EH&S 917-301-0270

No chemicals, water, oil or other material shall be poured or otherwise allowed to enter the Station's trench and sump system. If any material enters the trenches or sumps, the source of the material must be immediately controlled, and the Control Room must be immediately notified. A spill of any substance or other impact to the station's roadways, outfalls or surrounding water ways must be reported to the Control Room and site representative immediately. Preventative measures will be implemented, and care will be taken to prevent oil and chemical spills.

- **Police Info:**
  Precinct 43rd - 900 Farley Avenue Bronx NY 10473
  Precinct Phone # (718) 542-0888

- **Fire Dept Info:**
  FDNY Engine 73, Ladder 42 , 655 Prospect Avenue Bronx NY 10455
  Phone # (718) 999-2000

- **Hospital:**
  NY Lincoln Hospital 234 East 149th Street Bronx NY 10451
  Phone # (718) 579-5548

SITE CONTROL:

To control access to and from the Con Edison facility, all personnel upon arrival shall sign-in on the designated log book (located within the Williams trailer). Upon leaving the facility, all personnel shall sign-out on the designated log book (located within the Williams trailer).

To control access to and from the tunnel, Con Edison requires Williams to utilize the existing entry/exit log book located within the headhouses. This log will be controlled by Con Edison and shall be inspected by Williams site safety representative daily to confirm use.

conEdison
a conEdison, Inc. company

Corporate Security

September 2011

Security Access and Egress Policy for Contractors

Con Edison is committed to provide a secure work environment for its' employees, contractors and visitors. The Company has a comprehensive security program to protect people, assets and operations against the threats of injury, loss or damage. Our security measures (card access systems, ID cards, sign-in logs, etc.) are intended to restrict access only to those authorized to perform business with Con Edison.

As a contractor for Con Edison, you may have authorization to enter Con Ed facilities, either by possessing a Con Edison Contractor ID card or by providing personal identification and being authorized by an active Con Edison employee. In order to maintain our commitment to security, we ask that:

- **When entering a facility, please display proper identification and follow the instructions of the contract guard and/or Con Ed employee admitting you.**
- **No other Con Ed employees, contractors or others are allowed to "piggyback" on your entry into a facility without signing in.**
- **When entering or existing a facility with an automated gate, make sure that the gate is completely closed and no one enters the facility behind you.**

If any of the above exceptions occur, immediately notify your Con Edison sponsor. If unavailable, please contact Con Edison Corporate Security at 212-460-2444.

Michele Campanella
Corporate Security Director

All contractor employees will follow the direction of their site representative in the case of an emergency. All contractors must check in and out with their site representative upon arrival to and departure from the work site. Contract personnel are to be in the work area only and are not permitted to wander about the station, leave exterior doors opens or otherwise compromise the

security of the facility. Station security, badging, and station sign in policies must be adhered to. Contractors must, in their job briefings, identify the hazards present at the site and on the job and be familiar with site emergency evacuation procedures. Review of/knowledge of hasp for all personnel working on project is required. Contact David Swindall (Supt.) for more information.

All Williams Specialty Services employees and subcontractors shall possess an OSHA 30-hour Construction Safety Training card dated within the past five (5) years and a valid Supported Scaffold User Training Certificate (NYC DOB). All welding procedures and welders shall be qualified in accordance with ASME Section 9 and NYFD codes.

All Williams Specialty Services subcontractors shall follow Safety Requirement Guidelines as specified in the WSS~HASP, all WSS personnel and subcontractors shall, at a minimum, wear hard hats, long sleeved natural fiber shirts, safety glasses, work boots, and hearing protection as required.

All workers shall participate in a safety orientation addressing site and client safety concerns specific to the work at hand. Workers shall also have awareness training for hazards that are identified onsite (asbestos, lead, etc.). These and other Safety Data Sheets specific to the project are found in Williams Specialty Services On-Site Hazard Communication Program for this project. Any and all other hazardous materials brought on site by WSS and our subcontractors shall be accompanied by an SDS and kept on site.

2.0 AIR RESOURCES

Williams Specialty Services shall identify all sources and control measures of air contaminants which may be found on site as a result of our work. Williams will retain the services of a certified Industrial Hygienist to design and exhaust system based on the size of the tunnel to adequately provide required air changes to control smoke from welding activities. Hygienist information will be provided prior to the commencement of welding activities. Air permits and approvals necessary for construction and operation shall be secured, as well. Additionally, WSS shall be responsible for the following:

1. Document monitoring, recordkeeping, and reporting requirements.
2. Architectural coatings shall meet applicable volatile organic compounds (VOC) content limitations.
3. Surface coatings containing asbestos are not permitted unless authorized Con Edison.
4. Equipment shall be designed and operated to ensure that exhaust has opacity less than any applicable regulation or permit limit.
5. Motor vehicles exhaust shall meet all applicable emission limits
6. Verify use of solvent or other materials comply with applicable VOC limits. (Including storage, emissions and equipment specifications.)
7. Fuels transported, stored, or burned shall meet applicable limitations on sulfur content, waste content, gasoline volatility and oxygen content, particulate matter (PM), nitrogen oxides (NOx), and VOC emission limitations, exhaust opacity, equipment requirements and testing, monitoring, recordkeeping, and reporting.
8. Procedures for storage and transfer of petroleum or volatile organic liquids shall meet specific emission control equipment requirements and performance requirements.

9. Facilities storing and dispensing gasoline may be required to comply with specific equipment and vapor recovery emission control requirements.
10. Commercial and consumer products supplied to or used on Con Edison property as part of the project shall comply with any applicable VOC content limitations.
11. Ozone depleting chemicals shall be controlled and disposed of in accordance with the United States Environmental Protection Agency (USEPA) regulations.
12. If required, an electrical Air Compressor will be utilized to supplement existing plant compressed air.

3.0 ASBESTOS AWARENESS

See attached job specific work plan for ACM removals

Asbestos awareness training shall be provided for all personnel working in areas that may contain ACM. All WSS workers shall be aware of surrounding areas which may contain asbestos. All WSS personnel and subcontractors shall be trained in hazard awareness associated with the presence of ACM. No WSS and/or subcontractor personnel shall be engaged in any handling/ abatement of any ACM. WSS project supervision is required to ensure that ACM is not inadvertently contacted or disturbed. WSS shall notify Con Ed site representative immediately if suspected ACM is unexpectedly encountered or disturbed.

Suspect materials shall be assumed to be ACM until results of sampling by a certified individual and analysis by a certified lab proves the material to be non-ACM, or historical documentation shows the material to be non-asbestos containing.

When WSS or its subcontractor personnel contacts or disturbs ACM; WSS shall develop an Asbestos Abatement Work Plan that outlines the procedures for planning and completing the project/activity and shall submit the Work Plan to the Con Edison Asbestos Project Coordinator for approval. Proper filing of all required federal, state and local Asbestos Project Notifications and fees for projects that shall disturb ACM shall be filed by Corp EH&S Asbestos Group unless it is designated that contractor shall do so.
It has been determined that the North 42" pipe contains ACM (LIRO Report) Williams has developed a plan to abate approximately 72 stripes around the pipe

4.0 BLOODBORNE PATHOGEN EXPOSURE PLAN (BBP) / FIRST AID/ CPR

WSS shall report all injuries/illnesses immediately to the Con Edison representative, regardless of the severity. For any serious injury, WSS shall call the local emergency contact number or 911 as appropriate. All Williams Specialty Services employees with reasonable risk of exposure shall be trained in OSHA's BBP Standard. Williams Specialty Services shall provide a well-stocked First Aid Kit suitable for the manpower on site. An OSHA approved BBP Control Kit shall be furnished to accommodate any injury causing potential blood exposure. Universal precautions (i.e. treat all potentially infectious material as if it were infected) shall be used at all times. Proper PPE shall be used at all times when there is a chance for exposure to infectious materials. Hand-washing facilities or products shall be made readily available to employees (at no cost to the employee). All infectious material shall be placed in appropriate, labeled containers and disposed of properly.

Any BBP generated by WSS will be disposed of by WSS. All infected equipment and surfaces shall be decontaminated with an appropriate disinfecting solution prior to re-use.

5.0 CHEMICAL SAFETY & HANDLING

Williams is currently working on a detailed list of materials and chemicals that will be used for this project Williams understands that only Con Edison approved products will be allowed on site. Williams will provide Con Edison with product data sheets along with SDS sheets for any chemical or product that they intend to use. Only CE approved products will be used**.**

All chemicals will be stored in flammable storage cabinets. Oxygen and acetylene bottles will be stored in steel cages Oxygen and acetylene will be used for cutting new pipe sections and will be performed outside of the tunnel. No torch use is anticipated in the tunnel. This activity is scheduled to start in May of 2022. Williams will provide Con Edison with the FDNY/ DEP permit if required prior to bringing and bottles on site.

Workers shall have knowledge of the physical properties, hazards and PPE required when exposed to or handling any materials or chemicals used on this Con Ed site. All workers shall follow all requirements for chemical safety and handling as prescribed by the SDS supplied by the manufacturer. Work area control measures shall be employed to isolate any potential exposures to other workers in the surrounding areas. Proper PPE shall be provided with any necessary training pertaining to the equipment in use. PPE shall be provided to all WSS workers at no cost to the employee.

All chemical spills at the Bronx River Site facility shall be reported to a Con Edison authorized representative immediately upon discovery.

WSS shall provide to Con Edison a complete inventory of chemicals brought on site. WSS shall have all SDS for the material at the Bronx River Job Site. All chemicals must be approved by Con Edison before being brought on site.

Chemicals and containers shall be properly stored and maintained while on site.

At the end of the project, WSS shall remove any chemicals that were not used.

6.0 CLOSE CALL AND TIME OUT PROGRAM

A “Close Call” event is defined as a work activity that has a reasonable potential to result in an imminent or eventual accident and or environmental release. Close calls provide a timely recognition of methodology, equipment or material deficiencies associated with a given work task. Upon recognition of a “Close Call” event; a local work area time out shall be implemented immediately. Immediate notification shall be made to the respective Con Edison representative and WSS Project Superintendent. Prior to re-authorization of the local work activity; an assessment of the “Close Call” circumstances shall be made. Preventative measures shall be unanimously agreed upon prior to restart with a Job Safety Briefing conducted by the respective Con Ed representative, WSS Supervision and respective project participants. Additional briefings, if applicable, shall be given to all project participants in a timely manner.

All project participants are empowered to declare a work activity "Time Out" upon recognition of an impending safety or environmental hazard (i.e. spill or exposure). An individual declaring a "Time Out" shall under no circumstance be the recipient of employer to employee retribution. A "Time Out" shall result in an immediate cessation of the respective work activity and a prompt notification to both the WSS Superintendent and the Con Edison Field Representative. *Project personnel shall be made aware that non-emergency situations shall be discussed with WSS Supervision FIRST.*

"Time Outs" are intended for emergency situations where there is an Immediate Danger to Life and Health (IDLH).

Prior to re-authorization of the respective work activity, a "Time Out" investigation shall be conducted with corrective and preventative actions discussed and implemented.

7.0 CONFINED SPACE PROGRAM

Not Applicable to this Project See project specific EH&S checklist. (Not required)

8.0 DRUG AND ALCOHOL PROGRAM

Williams Specialty Services maintains a Zero Tolerance concerning the use of drugs and alcohol. All personnel shall be required to consent to a pre-employment drug screening prior to access on site. Williams Specialty Services employs the services of a third party provider to administer this program. Drug and Alcohol screening shall be performed at random, as well.

Any worker who does not successfully meet the requirements of the Drug and Alcohol Program shall be prohibited from working on this or any other Con Edison projects.

9.0 ELECTRICAL ENCLOSED SPACES

Not Applicable to this Project

10.0 ELECTRICAL SAFETY

- All electrical hazards on this project shall be identified and corrected and only properly licensed electricians may perform any electrical work on Con Edison projects.
- In order to perform work at this facility, WSS and its subcontractors shall, at least, meet the following requirements:
- No electrical equipment shall be used on or around live gas lines.
- All workers who perform work on energized equipment shall be trained in the requirements of 1910.269.
- Workspaces, walkways, and similar locations shall be kept free of electric cords and tools.
- Equipment shall not be stored around electrical cabinets in such a manner that it might prevent or impede access.
- Workers shall inspect all electrical equipment, including extension cords, for the following hazards:

    a) Missing ground pins on plugs (except double-insulated);
    b) Insulation pulled free from plugs or support connections;
    c) Damaged insulation;
    d) Exposed wires;

e) Evidence of arcing, sparking, or smoking;
f) Proper rating of extension cords; and
g) Splices and/or taps, both of which are prohibited on extension cords.

- When any conditions are identified on equipment that makes it unsafe to operate, the equipment shall be removed from the site until repaired by a qualified person.
- Temporary work site lighting shall be protected from damage.
- Flexible cords shall be suitable for the condition and location of use and shall be used as appropriate.
- Three-wire extension cords shall be used and shall be rated for hard or extra-hard use.

- Power tools shall be inspected prior to use. Any equipment showing cords with cuts or frays shall be immediately tagged out of service and repaired or discarded.
- Extension cords shall not be fastened with staples, hung on nails, or suspended on wires.
- Workers shall be trained in the safety-related work practices that pertain to their job and cannot work near electrical hazards without training to recognize and avoid the hazard.
- Electrical workers shall test all equipment to verify if energy is present.
- Only qualified, trained workers may test electrical equipment.
- When working on energized equipment, a lockout/tagout program shall be specified to verify that the equipment is de-energized.
- Personal protective equipment used by electrical workers shall be appropriate and in good condition.
- Portable metal ladders and ladders with metal reinforcement are prohibited near energized electrical equipment.
- **ALL** electrical equipment used on the project (hand tools, etc.) shall be protected with a ground-fault circuit interrupter (GFCI).
- Materials shall not be stored in transformer vaults.
- AC and DC wiring systems shall be properly grounded.

11.0 EXCAVATION AND TRENCHING

The purpose of this procedure is to protect WSS employees from serious excavation and trenching hazards and to provide specific requirements for the installation of proper cave-in protection.
All sheeting and shoring designs must be PE stamped and approved by Con Edison prior to use.

Without warning, an unsupported, improperly shored trench or excavation can collapse, potentially trapping, injuring, or killing workers. Vibrations or shocks from vehicles, blasting, trains, pile drivers, heavy trucks, and some tools can contribute to cave-ins by loosening the soil. Excavations in sandy or wet soil or areas that have been backfilled are typically unstable and can cause an excavation or trench to collapse if these unstable conditions are not properly addressed. Loads such as materials, equipment, and people on ground edges around an excavation or trench can significantly increase the pressure on the walls, causing the excavation or trench to collapse. Changing weather conditions affect soils in excavations and trenches. Water from rain and melting snow loosens soil and can increase pressure on shoring systems. Excessively dry weather conditions can reduce the cohesiveness of soils.

This summarizes requirements for excavating and trenching associated with the operation and maintenance of electric power generation, control, transformation, transmission, and distribution lines and equipment. The specific requirements that must be met at each site differ depending on the soil classification, the type of work required to be done, and other site-specific considerations.

See attached WSS Procedure # 2500

12.0 FIRE PROTECTION AND PREVENTION

Workers shall employ every precaution necessary to eliminate potential fires. Combustible materials within 25 feet of hot work shall be removed from the area. Work areas shall also be guarded by fire blanket and welding screens to prevent any slag or spark from falling to levels below. Caution tape or other such barricade means shall be used to secure the drop zone immediately below any lower level. An WSS employed Fire Watch possessing a valid FDNY (F-60) Certificate of Fitness shall be employed to monitor any hot work performed, with an area inspection performed 30 minutes following the completion of hot work and a subsequent final area inspection performed 30 minutes later. Materials shall be properly handled and stored with disposal of combustible debris conducted at reasonable intervals so as to minimize any fire hazards. Portable ABC fire extinguishers shall be kept on site in the work area with user training provided to all workers. No Con Ed facility fire extinguishers shall be used in any fashion related to Williams Specialty Services work. Fire extinguisher inventory shall be provided and maintained by Williams Specialty Services. All workers shall be protected by non-synthetic, FR (fire rated) clothing when performing hot work. Each of the fire extinguishers shall be tagged for monthly and annual inspection. Williams will provide and continually update all employee Certificate of fitness cards

13.0 FISH, WILDLIFE AND WETLANDS

The purpose of this procedure is to ensure that all Con Edison activities involving construction, maintenance and operations of facilities, potentially impacting natural resources comply with governing regulations. This includes activities potentially impacting wetlands or other water resources, including dredging, wildlife, and city-owned trees. It is also the policy of WSS not to "take" or impact any wildlife that does not pose a significant health or safety threat to Con Edison employees or the public or does not pose a threat of damage to Con Edison facilities or equipment.

In an Effort to protect waterways and wetlands, Williams will deploy straw bales along with sediment fence around the perimeter of the work site per drawing 606004 at Hunts point and Patterson ave. locations. General housekeeping of the work site will be maintained daily. Should any additional protection be required from Con Edison, details of such protection must be provided by Con Edison

Examples of such activities include, but are not limited to the following:

- Excavation.
- Dredging or dewatering;
- Installation and maintenance of power line rights-of-way, gas pipelines, electric distribution lines, intake pipes, bulkheads, docking facilities, road crossings, culverts, dams, or impoundments; or
- Vegetation management activities along transmission and distribution lines.

14.0 GAS ENCLOSED SPACES

Not Applicable to this Project

15.0 HEARING CONSERVATION

Hearing protection shall be provided at no cost to WSS workers and shall be worn on site in areas exceeding 90dBAs (over an 8-hour period) or where signage posted requires such protection. Williams Specialty Services shall conduct noise monitoring to determine the proper control methods to apply in each given situation.

The following table is a guide to common noise levels:

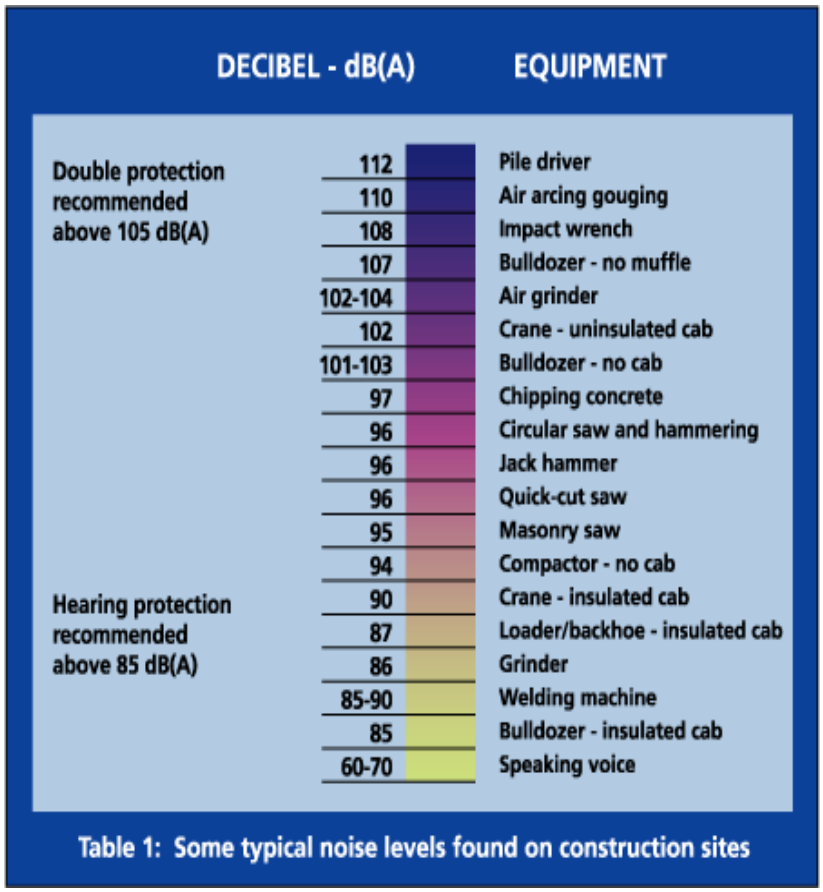


Table 1: Some typical noise levels found on construction sites

A standard rule-of-thumb for noise states that when standing face-to-face at a distance of 1 to 2 feet, if it is necessary to raise your voice to be heard, the background noise exceeds 85 dBA.

16.0 HEAT STRESS

Proper training and preventive measures shall help avert serious illness and loss of work productivity. Preventing heat stress is particularly important because suffering from heat stroke or heat exhaustion causes a person to be predisposed to additional heat injuries. To avoid heat stress, the following steps shall be used to adjust work schedules:

1. Modify work/rest schedules according to monitoring requirements.
2. Mandate work slowdowns as needed.
3. Rotate personnel.
4. Alternate job functions to minimize overstress or overexertion at one task.

5. Add additional personnel to work teams.

Potable water shall be provided to all personnel to maintain proper hydration.

Key factors that can bring about or aggravate heat stress: Temperature, Humidity, Air Movement, Physical Activity, Clothing Worn, and the Radiant Temperature of the surroundings. Temperature alone seldom causes heat stress.

Signs of heat stress:

Heat Rash: Skin irritation caused by excessive sweating in hot, humid environments

Fainting: Can occur if a person is not used to the hot heat

Heat Cramps: Painful muscle spasms that are caused by lack of salt in the body.

Heat Exhaustion: Illness caused by continued loss of fluid and salt from sweating

Heat Stroke: Medical emergency that occurs when sweating no longer helps the body regulate its internal temperature.

Responses to illnesses due to heat stress:

Heat Rash: Relief comes from bathing affected areas, then drying the skin.

Fainting: Lie down or sit down and put your head between your legs

Heat Cramps: Ease up the work pace before the problem advances to the more dangerous areas of heat exhaustion and stroke.

Heat Exhaustion: Move the victim into a cooler, shaded area. Recline the victim with the feet elevated. Loosen clothing. A conscious person can replenish lost body fluids by drinking cool beverages, slowly but steadily.

Heat Stroke: Contact 911 and do whatever you can to cool the victim off immediately.

Methods of preventing heat stress:

Engineering controls:

- Ventilation, Insulation, Shielding.

Administrative controls can be taken to reduce heat stress:

- Fluid replacement
- Planning jobs for cooler parts of the day
- Frequent breaks and rotating shifts

Acclimation: allowing the body to adjust and tolerate high temperatures better.

17.0 INSULATION MATERIALS (NON-ASBESTOS)

Non-asbestos thermal insulation materials shall be handled by methods that minimize airborne dust and the spread of contamination (e.g., wet methods or HEPA vacuuming). Non-asbestos thermal insulation debris shall be cleaned up using a vacuum equipped with a HEPA filter (Non-Asbestos HEPA Filter Vacuum). Dry sweeping of non-asbestos thermal insulation is prohibited. Compressed air shall not be used for cleaning clothes, machinery, or other surfaces. Wiping surfaces with a damp cloth is recommended as a final decontamination measure. WSS will adhere to Con Edison's Asbestos Management Manual Section 6.31 on Non-Asbestos Thermal Insulation (attached).

18.0 DOCUMENTED JOB BRIEFING

All WSS personnel shall participate in a daily, documented job briefing held at the start of each shift. All existing and predictable hazards associated with the task at hand shall be discussed with control measures and/or PPE identified. All findings shall be in place prior to engaging in any work activity. Daily Job Briefings shall be conducted by the craft foreman on behalf of his crew.

CONTRACTOR VERIFICATION OF WORK PERMIT / JOB BRIEFING FORM

Station: _____ Permit Number: _____

Con Edison Authorized Permit Holder: _____ Emp #: _____

I have reviewed the requirements of the Work Permit and I fully understand the requirements and can explain the scope off work and limitation to my workers.

Contractor Supervisor:

Contractor: _____ Date: _____ Time: _____

Print Name _____ Signature _____

Description of Work Being Performed: _____

Contractor Worker's Signature

Your signature is an acknowledgement that you received a *Daily Job Briefing* that included the daily scope of Work, Work Permit requirements including a field walk indentifying protection and area hazards, work procedures, hazard associated with the task(s), and PPE requirements and that you understand all safety requirements when working in the station.

Company	Badge #	Print Name	Signature	Date

19.0 LEAD MANAGEMENT PROGRAM

Due to the incidental work activities involving the disturbance of paint; Lead Awareness training shall be provided to personnel whose jobs do not involve the handling or abatement of Lead containing materials. This training shall identify the locations and quantities of Lead containing materials and the procedures to follow to minimize contact with and exposures to lead. Appropriate PPE shall be provided to each affected worker at no cost to the employee. Any disturbance of Lead containing material (Paint) shall be contained (via plasticization). When vacuuming is necessary to clean-up lead or debris, only High-Efficiency Particulate Air (HEPA) –equipped vacuums shall be used.

ALL PAINTED OR COATED SURFACES MUST BE ASSUMED TO CONTAIN LEAD, UNLESS DOCUMENTED LABORATORY OR MANUFACTURER DATA PROVES OTHERWISE.

CONTRACTOR PERSONNEL SHALL NOT CONDUCT LEAD ABATEMENT ACTIVITIES, UNLESS THIS IS THE STATED INTENT OF THE REQUIRED WORK AND ALL OF THE REQUIRED LEAD REQUIREMENTS INCLUDING LICENSES, PERMITS, AND TRAINING HAVE BEEN MET TO THE SATISFACTION OF THE CON EDISON REPRESENTATIVE.

For any activity identified as potentially causing airborne concentrations of lead, an initial exposure assessment shall be performed by a Lead Competent Person (LCP) to determine the exposures of personnel to lead.

Appropriate personal protective equipment (PPE) that prevents contamination of employees and their garments shall be provided to employees exposed to lead.

When planned work may result in the disturbance of lead-containing material, a controlled area shall be established around the worksite that is demarcated by barricades or barrier tape and restricts access to only authorized individuals.

Personnel crossing into the controlled area shall wear the required PPE and all PPE shall be removed before personnel exit the controlled area.

Lead warning signs shall be posted at the boundary of the work area.

Polyethylene sheeting shall be placed beneath and directly adjacent to the work area prior to commencing work that may disturb paint or similar materials.

For the duration of work, all surfaces in the work area, including floors and other surfaces, shall be maintained as free as practicable of accumulations of lead-containing paint chips, dust, and debris.

Affected surfaces shall be wetted down, and plastic or a similar material shall be placed around the work area to contain paint chips and debris.

This area shall not be cleaned by sweeping or using compressed air.

When vacuuming is necessary to clean up lead or debris, only High-Efficiency Particulate Air (HEPA)-equipped vacuums shall be used. Shop vacuums are unacceptable for this purpose.

Incidental lead-based paint disturbance may result from the use of the following tools:

- Pipe wrench or other wrenches (excluding impact guns)
- Drills.
- Slugging hammer.
- Hydraulic bolting equipment.
- Equipment removal tools (i.e., pry bar, chain hoist, pipe clamps, jacks).
- Wheel pipe cutter or threader.

The primary engineering controls to reduce employee exposure are enclosures, wet methods, local exhaust ventilation, shrouded local exhaust on power tools attached to HEPA filters and HEPA vacuums.

When welding, torch cutting, or burning is conducted, lead-based paint shall be removed a minimum of 4 inches on either side of the heat application area prior to the start of work.

Eating, drinking, smoking, or chewing gum in the work area is strictly prohibited.

Personnel shall wash their face and hands prior to eating, drinking, or smoking.

All handling, storage, and disposal of lead-containing waste shall be conducted as required by local, state and federal regulations.

Employees who may be exposed to lead shall be offered an annual medical evaluation.

20.0 MANAGEMENT of CHANGE

Williams Specialty Services shall notify the Con Edison Authorized Representative of any change in working conditions that could affect compliance with environmental or health and safety requirements as soon as the changed conditions are identified. Williams Specialty Services shall identify the contingencies they have prepared for managed change. All personnel shall be appropriately trained to perform their job function under the changed conditions prior to being allowed to work under the changed conditions. Subcontractors shall be held to the management of change procedures outlined by Williams Specialty Services. Project changes may require conducting additional job safety briefings or submitting an eHASP addendum for approval of new work methods, procedures, or materials.

21.0 MATERIALS HANDLING

Williams will provide Con Edison with P.E. approved engineering shop drawings/calculation sheets. as well as rigging plans as required throughout the project. They must be in accordance with OSHA. and Con Edison Specifications. Changes to the system will warrant revised calculations, drawings, and inspections. The master rigger will need to be on site for additional inspection. When the master rigger is not on site, they will have a qualified Rigging Foreman and follow the CE rigging specification 3400-13794.
Williams will also include a PE Designed Basket as part of their rigging plan to lower equipment & materials into the shafts.
Most material handling activities for this project will be performed using a 50-ton crane. Williams will utilize the services of Bay Crane and a certified master rigger when required. Signaling of the crane will be performed using line of sight hand signals as well as radio communication. Pre job meetings will be performed by all crafts involved with the lift and details will be provided in the rigging plan as well as the pre job briefings.

All rigging devices including slings, chain falls, and coma longs shall be inspected by a trained and qualified individual, additionally this equipment will possess current rating and inspection tags. Whenever possible, materials shall be lifted, hoisted and positioned mechanically (chain falls, fork trucks) rather than by manual effort. Lifting devices shall be inspected, certified and labeled to confirm their weight capacities. All equipment shall be inspected prior to use by the operator and operated within the manufacturers' specifications. Defective equipment shall be taken out of service immediately and repaired or destroyed. Personnel shall not pass under a raised load, nor shall a suspended load be left unattended.

- Personnel shall not be carried on lifting or hoisting equipment, unless it is specifically designed to carry passengers.
- The wheels of the trucks or vehicles that are being loaded or unloaded shall be chocked to prevent inadvertent movement.
- The lift and swing path of a crane shall be watched and maintained clear of obstructions.
- Accessible areas within the swing radius of a crane shall be guarded or barricaded.
- All reciprocating, rotating, or other moving parts shall be guarded at all times.
- Accessible fire extinguishers shall be available in the immediate proximity of all mechanical lifting devices.
- Lifting devices shall never be left near the edge of excavations or unstable areas.
- Mobile lifting equipment, equipped with outriggers shall be positioned and the outriggers deployed and secured before any lifting or hoisting work is begun.
- Operations near overhead power lines are prohibited unless the power source has been shut off and locked out/tagged out or the appropriate clearance distances are maintained.
- Cranes may only be moved when directed by a qualified signal person.
- Wire ropes shall be removed from service when any abrasion, scrubbing, evidences of corrosion, kinking, crushing, bird caging, or other damage exists.
- Only trained, authorized individuals shall be permitted to operate fork trucks.
- Unsafe behavior while driving a fork truck is not permitted.
- Each fork truck shall be provided with an overhead guard.

- All mobile lifting devices shall be equipped with an audible backup warning device.
- All traffic regulations shall be observed when a lifting device is in operation.
- Only authorized personnel shall refill liquefied petroleum gas (LPG) tanks on fork trucks.
- Employees involved in heavy lifting shall be properly trained in lifting procedures and should be physically qualified to protect the person and the material.
- Tiered or stacked material shall be stored within acceptable height limits to avoid tripping, falling or collapse.
- Only material that shall be immediately used may be stored on scaffolds or runways.
- Personnel shall be trained in the procedures used for material handling. This training shall address the requirements of applicable regulations, for example the training of personnel who operate powered industrial trucks.

22.0 MECHANICAL EQUIPMENT

All power tools and hand tools shall be visually inspected prior to use. Any piece of equipment provided with a manufacturer supplied guard shall be operated in accordance with manufacturers specifications. At no time shall a machine guard be defeated or altered. All chain hoists shall be operated within the safe rated load stated by the manufacturer.

- Only workers who have been trained in the use of a particular tool may operate that tool.

- All hand and power tools shall be inspected prior to use to ensure proper operation and satisfactory condition. This includes:
- Wrenches of any kind shall be removed from the project site when the jaws are worn to the point where slippage may occur.
- Mushroomed heads on impact tools (chisels, etc.) shall be repaired or the tools removed from the site.
- Wooden tool handles shall be free of splinters and cracks and be tightly secured in the tool.
- All hand and power tools that are damaged shall be immediately removed from the job site until they are repaired.
- Removing any guards attached to a power tool and using a power tool without its guards shall be prohibited.
- Moving parts of equipment (belts, pulleys, shafts, etc.) shall have guards that comply with the appropriate American National Standards Institute (ANSI) standards.
- Workers who are exposed to flying objects, dust, fumes, vapors, etc. when using hand or power tools shall wear the appropriate personal protective equipment (PPE).
- All hand and power tools shall be used for their intended purpose only.
- Electric hand tools shall be double insulated or grounded and protected by a ground-fault circuit interrupter (GFCI).

- All fixed electric tools shall have a disconnect switch that can be locked or tagged in the off position.
- The use of compressed air for personal cleaning is prohibited.
- All pneumatic hand tools shall be equipped with a safety device on the muzzle to prevent accidental discharge and be secured to the air line with a safety chain or other means to prevent accidental disconnect.
- Fuel-powered hand tools shall be turned off and allowed to cool prior to being refueled or serviced. Fuel-powered tools are not permitted for use indoors.
- Grinding machines shall be guarded in accordance with applicable ANSI standards.
- Work rests on stationary grinders shall be within inch of the grinding wheel surface and the tongue guard shall be within ¼ inch of the grinding wheel surface.
- The manufacturer's capacity rating shall be marked on all jacks and shall never be exceeded.
- As soon as a load has been raised by a jack, the load shall be cribbed, blocked, or otherwise secured.

23.0 MERCURY MANAGEMENT PROGRAM

Not Applicable to this Project

24.0 SILICA - Overview

This section applies to all occupational exposures to respirable crystalline silica in construction work, except where employee exposure will remain below 25 micrograms per cubic meter of air (25 μg/m3) as an 8-hour time-weighted average (TWA) under any foreseeable conditions.

Crystalline silica is an important industrial material found abundantly in the earth's crust. Quartz, the most common form of silica, is a component of sand, stone, rock, concrete, brick, block, and mortar. Materials containing quartz are found in a wide variety of workplaces.

Silica dust is hazardous when very small (respirable) particles are inhaled. These respirable dust particles can penetrate deep into the lungs and cause disabling and sometimes fatal lung diseases, including silicosis and lung cancer, as well as kidney disease.

The most severe exposures to crystalline silica result from sandblasting to remove paint and rust from stone buildings, metal bridges, tanks, and other surfaces. Other activities that may produce crystalline silica dust include jack hammering, rock/well drilling, concrete mixing, concrete drilling, and brick, ceramic tile, rock, stone, and concrete block cutting and sawing. Tunneling operations; repair or replacement of linings of rotary kilns and cupola furnaces are also potential sources of crystalline silica exposure.

Minimum Respirable Crystalline Silica Requirements

Written Exposure Control Plan

Williams has established and implemented a written exposure control plan that contains at least the following elements:

- A description of the tasks in the workplace that involve exposure to respirable crystalline silica;
- A description of the engineering controls, work practices, and respiratory protection used to limit employee exposure to respirable crystalline silica for each task;

- A description of the housekeeping measures used to limit employee exposure to respirable crystalline silica; and
- A description of the procedures used to restrict access to work areas, when necessary, to minimize the number of employees exposed to respirable crystalline silica and their level of exposure, including exposures generated by other employers or sole proprietors.

Williams reviews and evaluates the effectiveness of the written exposure control plan at least annually and updates it as necessary.
Williams makes the written exposure control plan readily available for examination and copying, upon request, to each employee covered by this section and their designated representatives.
Williams has designated a competent person to make frequent and regular inspections of job sites, materials, and equipment to implement the written exposure control plan.
Where respirators are is required by this section, Williams has instituted a respiratory protection program in accordance with 29 CFR 1910.134.

Competent Person
Williams has designated Michael Cutro as the Competent Person for implementation of the company's written exposure control plan. The Competent Person must be capable of identifying existing and foreseeable respirable crystalline silica hazards in the workplace and has authorization to take prompt corrective measures to eliminate or minimize them. The competent person has the knowledge and ability necessary to fulfill the responsibilities set forth in written exposure control plan. This plan must be kept on site during all project work.
Housekeeping
Williams shall not allow dry sweeping or dry brushing where such activity could contribute to employee exposure to respirable crystalline silica unless wet sweeping, HEPA- filtered vacuuming or other methods that minimize the likelihood of exposure are not feasible.
Williams shall not allow compressed air to be used to clean clothing or surfaces where such activity could contribute to employee exposure to respirable crystalline silica unless:
- The compressed air is used in conjunction with a ventilation system that effectively captures the dust cloud created by the compressed air; or
- No alternative method is feasible. Table 1 Tasks

For each employee engaged in a task identified on Table 1, Williams shall fully and properly implement the engineering controls, work practices, and respiratory protection specified for the task on Table 1, unless Williams assesses and limits the exposure of the employee to respirable crystalline silica in accordance with paragraph (d) of 1926.1153.

See attached WSS procedure # 1550

25.0 Oil and Dielectric Fluid

To prevent the potential for spills, all gas-powered equipment will have a spill containment dyke in place when equipment is not in use (forklift, welder, ETC.). Welding machine and compressor

will always have containment in place. All spills will be reported to Con Edison site representation immediately

26.0 Operator Qualifications

NGA Operator Qualification

27.0 PCB MANAGEMENT

All paint contains PCBs. All workers shall have Lead / PCB Awareness Training. This will be the extent to which WSS has any involvement with PCBs.

28.0 PERSONAL PROTECTIVE EQUIPMENT

The results of a hazard assessment shall be communicated to all Williams Specialty Services personnel prior to the start of work or if conditions should change. All workers shall be trained in the proper selection, use and care of PPE. PPE is as follows: Workers are required to always wear hard hats and safety glasses during working hours. The North gate will be considered entry point of the job site. All Williams employees, sub-contractors and vendors are required to meet this requirement. A sign will be posted on the north gate that states PPE is required beyond this point.

1. ANSI approved eye and head protection is required.
2. Hand protection (as needed).
3. Hearing Protection (as required or posted).
4. Proper work shoes or boots. (ANSI approved above ankle height)
5. Fire Retardant (FR rated) protective clothing (as per NFPA)
6. Respiratory protection as required, at a minimum shall be a “dust and mist” type respirator similar to 3M’s 8710.
7. No white or Con Ed blue hardhats are allowed to be worn.
8. Natural fiber clothing and long sleeve shirts will be worn at all times while working in the plant.
9. Include PPE required for welding/burning/hotwork.
10. Fall Protection harnesses and lanyards (as needed).

“Con Edison maintains a “zero” tolerance for individuals who fail to wear the proper PPE at their sites. “Zero Tolerance Failure to Wear PPE” – If an employee is found not complying with any one of the stipulated PPE requirements, the on-site Con Edison representative will inform the superintendent or foreman of the violation. The Con Edison representative will record the employee name and the offender will be sent off-site for the remainder of the work shift on a first offense. A second noncompliance PPE violation by the same employee will result in that employee being removed from the project permanently, and an infraction report will be issued to WSS. Multiple PPE violations will be subject to further disciplinary actions, including but not limited to an action line, requiring WSS to submit a written corrective action plan to Con Edison.”

29.0 PESTICIDE USE, STORAGE, DISPOSAL

Not Applicable to this Project

30.0 RESPIRATORY PROTECTION PROGRAM

All workers shall have valid training on the proper selection, use and care of respiratory equipment. Workers shall also be aware of the respiratory hazards associated with the scope of work being performed. In addition, workers shall possess current fit test credentials, current within the past twelve months. All respiratory protective equipment shall be inspected, maintained, cleaned, disinfected, and stored according to the manufacturers' directions and applicable OSHA standards.
- All medical and fit test documentation shall be made available on site for inspection at any time.
See attached RPP 1620

31.0 SAMPLING

See attached LIRO report SPO5488114 asbestos survey report

32.0 CLOSE CALL AND TIME OUT PROGRAM

A "Close Call" event is defined as a work activity that has a reasonable potential to result in an imminent or eventual accident and or environmental release. Close calls provide a timely recognition of methodology, equipment or material deficiencies associated with a given work task. Upon recognition of a "Close Call" event; a local work area time out shall be implemented immediately. Immediate notification shall be made to the respective Con Edison representative and WSS Project Superintendent. Prior to re-authorization of the local work activity; an assessment of the "Close Call" circumstances shall be made. Preventative measures shall be unanimously agreed upon prior to restart with a Job Safety Briefing conducted by the respective Con Ed representative, WSS Supervision and respective project participants. Additional briefings, if applicable, shall be given to all project participants in a timely manner.

All project participants are empowered to declare a work activity "Time Out" upon recognition of an impending safety or environmental hazard (i.e. spill or exposure). An individual declaring a "Time Out" shall under no circumstance be the recipient of employer to employee retribution. A "Time Out" shall result in an immediate cessation of the respective work activity and a prompt notification to both the WSS Superintendent and the Con Edison Field Representative. *Project personnel shall be made aware that non-emergency situations shall be discussed with WSS Supervision FIRST.*

"Time Outs" are intended for emergency situations where there is an Immediate Danger to Life and Health (IDLH).

Prior to re-authorization of the respective work activity, a "Time Out" investigation shall be conducted with corrective and preventative actions discussed and implemented.

33.0 VEHICLE MANAGEMENT

All applicable personnel shall possess valid Commercial Driver Licenses. Only trained and qualified workers shall operate any piece of motorized equipment. Personnel shall operate only the equipment for which they are trained. When transporting a loaded forklift; a flagman shall

escort the truck ensuring safe operation. Any Powered Industrial Truck (PIT) brought on site shall be inspected prior to its use. Vehicles shall be inspected prior to use and removed from service if deficiencies exist. All vehicles shall be free of leaks. Contact the Con Edison site representative immediately if any leaks occur.

34.0 WASTE MANAGEMENT

The 42" South pipe that is being removed has levels of PCB's & Lead within the exterior pipe coatings. Refer to document LiRo dated October 26, 2016 and CE sample report dated 8/20/20 for sample results. The contractor will dispose the pipe at an approved Con Edison recycling facility. The contractor will provide the recycling facility these reports to ensure they can accept the waste based on the samples. Prior to cutting of this pipe, contractor shall tape the cut point with 6" wide strip around entire circumference and any area on pipe that might get disturbed by cutting operation. Contractor shall place poly beneath each cut point to collect any debris that may fall. All waste that is collected shall be placed into a drum and disposed per regulatory requirements based on samples.

The following facility will be utilized for the South pipe

Allocco Recycling
540 Kingsland avenue
Brooklyn, NY 11222

The 42" North pipe that is being removed has levels of Asbestos
Asbestos report identified ACM Material on the exterior of piping. Williams / DELTA will abate cut locations and remove piping. Pipe will be disposed of at a Con Edison approved facility (see below)

After pipe is cut and prior to moving the pipe from its current position, the contractor shall fully wrap each section of pipe with poly. The contractor shall arrange for disposal of this pipe thru a CE approved recycling facility

The following facility will be utilized for the North pipe.

Waste Management
Fairless landfill
1000 New Ford Mill Road
Morrisville, PA 19067

Con Edison reserves the right to take title to all wastes and recyclables generated by the contractor's activities at Con Edison facilities and work sites.

Williams Specialty Services shall comply with all applicable requirements for hazardous wastes generated, which may be with the assistance of Con Edison representatives, including:

- Characterizing the waste, managing accumulated and stored waste.
- Labeling of containers, storing the waste, inspecting the storage areas.
- Filling out manifests and Land Disposal Restriction (LDR) forms.
- Contractor employees shall be trained in hazardous waste requirements and emergency response.
- Ensuring that waste is disposed of and transported using Con Edison approved treatment, storage, and disposal facilities and transporters.
- Ensuring that reports and records are maintained.

Wastes shall be segregated when stored to prevent mixing of waste types. Any Hazardous Waste generated on the project must be disposed of through 60th Street Station EH&S.
Dumpsters / roll off containers used for storing waste will be properly maintained, sized for the expected waste generation, and covered (with lids, doors, and/or tarps).
Security measures shall be implemented to prevent non-authorized personnel from tampering with wastes.
Department of Transportation (DOT) requirements regarding waste packaging, shipping and transport, including container selection and vehicle placards shall be followed when shipping waste off-site.
WSS shall provide copies of all shipping papers and certificates of disposal that are obtained and prepared for waste.

35.0 WATER RESOURCES

Water resources, including oceans, estuaries, rivers, lakes, reservoirs, ponds (ephemeral and permanent), streams, and freshwater wetlands and tidal wetlands, are regulated by federal, state, and, in many cases, local laws. New York State and certain municipalities also regulate activities in areas adjacent to wetlands (buffers or adjacent areas) and other water resources. These regulations often overlap, so that an understanding of jurisdiction is important to ensuring compliance. Permit requirements are project-specific and obtaining necessary permits is often a lengthy process, therefore, the facility or project manager responsible for compliance must coordinate with Environment, Health and Safety (EH&S) well before engaging in activities in or adjacent to any wetland or waterway. The permitting requirements governing these activities are summarized in below.

Note: This CEHSP focuses primarily on federal and New York State laws regulating activities in and adjacent to wetlands. As noted above, however, various local governments in Con Edison's service area also have adopted laws regulating these activities. These local laws can be accessed at EH&S Natural Resource Page - Wetlands or contact EHS directly.

36.0 WELDING and BURNING

All hot work shall be performed by trained and qualified workers carrying valid FDNY Certificates of Fitness/Torch Operators (F-60/G-60). All appropriate controls shall be employed to minimize workers exposure to hazards related to hot work (i.e. welding screens, PPE/ FR rated protective clothing, welding leathers or jackets, machine guards, etc.). All work performed shall be supervised by certified Fire Guards conducting a post inspection (30) minutes following hot work completion. A Fire Guard checklist shall be completed documenting the inspection. Compressed gas cylinders shall be utilized and stored properly in approved carts secured by chain when in use with flashback arrestors in place at the gauge side of the outfit. Cylinders shall be capped and stored in approved cages separating oxygen from acetylene by a distance of at least 20 ft.

Prior to hot work operation, permission is required from the Con Edison Bronx River project supervisor and the required work permits shall be secured from appropriate Con Edison

FIRE GUARD CHECKLIST

NAME: _____ (Print Name) FDNY CERTIFICATE #: _____ (IF APPLICABLE)

DATE: _____ LOCATION: _____

	Yes	No
1 Are sufficient fire extinguishers on hand (at least one for each torch)?	☐	☐
2 Are all cylinders with regulators secured by chain?	☐	☐
3 Combustible material such as wood, paper cardboard, trash containers, drums of oil,etc. must be kept at least 35 feet away from burning operations or install protective covers such as fire blanket or other non-combustible shields.	☐	☐
4 Only those cylinders in use are permitted at the work site	☐	☐
5 Are all oxygen and fuel gas cylinders, hose and torches in your visual site at all times?	☐	☐
6 At the end of the shift, did you conduct an initial inspection of exposed areas 30 minutes after completion of torch operations?	☐	☐

COMPLETED FIRST INSPECTION? _____ (initials)

COMMENTS: _____

_____

	Yes	No
7 Did you conduct a final inspection 30 minutes after the first initial inspection (if not relieved by a second shift Fire Guard?) (applicable to FDNY)	☐	☐

COMPLETED SECOND INSPECTION? _____ (initials)

COMMENTS: _____

_____

SIGNATURE OF FIRE GUARD: _____

NOTE: Completed form must be returned to the Superintendent

Employees shall use appropriate PPE and proper ventilation systems for protection against hazards of hot work. Portable Fume Extractors will be utilized as required when welding in confined spaces.

Employees shall inspect all welding and cutting equipment prior to use. Equipment shall be inspected during work, as required.

If the object to be cut or welded cannot readily be moved, all movable fire hazards within 35 feet of the welding or cutting shall be taken to a safe place and made fire safe using welding blankets and shields. Welding shields will be set up in any area where unprotected workers could be exposed to dangerous light.

Cutting or welding shall not be permitted in the presence of explosive atmospheres or in an area where combustible gases, liquids, or dusts could accumulate.

Approved ground leads shall be used when arc welding.

Cables with splices within 10 feet of the holder shall not be used.

When arc welding is performed in wet conditions or under conditions of high humidity, special protection against electric shock shall be provided.

A Fire Guard Checklist shall be maintained at all times while conducting Hot Work operations and is attached below.

37.0 WORK AREA PROTECTION

Prior to the headhouse demolition, Williams provide a sketch of our proposed means of erecting a hard wall structure around both shafts. The design at a minimum will consist of 8'x2"x4" 16"OC walls with exterior plywood walls. There will be one lockable door to prevent unauthorized entry. The contractor will design a roofing system that will be pitched to allow for rain runoff and should also be fabricated to allow for easy access for lowering of material/equipment. At no time can the roofing system be open to the elements at the end of work shift. Contractor may use a tarp for their roof system, however, there will need to be cross members installed to ensure tarp is supported. The placement and size of these structures will be designed for easy access and workable clearances. Williams will submit an engineered detailed sketch of the structure for approval prior

Site work zones shall be established at each work area before work is conducted. The work zone sites shall consist of a designated area marked off by, barrier tape with proper signage. The areas surrounding the perimeter of the work area shall be covered to prevent any debris, spark or other material from falling to lower levels.

38.0 WORKING at ELEVATIONS

All workers shall be trained in fall protection in compliance with OSHA 29CFR 1926 Subpart M. Unless enclosed by an approved guardrail system AT ANY HEIGHT ABOVE 6 FEET; workers shall be outfitted with a PFAS utilizing a double shock-absorbing lanyard maintaining 100% TIE-OFF. Anchorage points shall be approved by Con Edison. Ladders in use shall be set-up properly, tied-off at the top with 36" above upper elevations at a minimum. Scaffolds shall be furnished and erected in accordance with applicable standards for persons engaged in work that cannot be done safely from the ground or from solid construction. Except that ladders used for such work shall conform to ladder safety standards. Williams Specialty Services and its scaffolding sub will follow all procedures as outlined in *Con Ed Specifications.* Scaffold competent individuals will inspect the scaffold prior to each shift and it will be documented via an appropriate tag. All workers shall be trained in proper use of scaffolds, including review of inspection tags before mounting.
See attached Fall Protection Guideline GEHSI S18.00

39.0 RULES WE LIVE BY

Williams Specialty Services shall comply with and support the Con Edison RWLB Program as set forth in the following pages:

CORPORATE ENVIRONMENTAL, HEALTH AND SAFETY PROCEDURE
CEHSP A32.00 – Rules We Live By
Revision Date: 03/18/2021 Effective Date: 5/20/2021
CONTENTS

RULES WE LIVE BY:

1.0 PURPOSE

This procedure establishes a consistent approach to communicating and reinforcing the importance of following critical safety work practices designed to protect employees, contractors, and the public.

2.O Applicability

This Environmental, Health and Safety Procedure (CEHSP) applies to all Con Edison employees (management and union) and contractor employees working for Con Edison.

3.0 INTRODUCTION

There are safety and operational procedures specifically designed to protect against the potential for significant injury due to energy (e.g., electricity, gas, steam, or falling from

elevation) that must be controlled. Operating groups that work with such sources of energy have identified Rules We Live By. These rules are defined as a work procedure or safety requirement that, if not followed, could result in a severe injury or fatality, or place other individuals (employees or members of the public) at significant risk. At The Learning Center, the RWLB associated with a given activity of an operating department apply.

4.0 COMPLIANCE REQUIREMENTS

4.1 RULES WE LIVE BY IDENTIFICATION, TRAINING, AND REPORTING

4.1.1 IDENTIFICATION

Where work tasks require the safe control of energy sources such as electricity, gas, steam, or work at elevation, the operating organization must identify key procedures required to control or mitigate the effect or impact to the employee, fellow employees, contractor employees or the public. Lessons learned from previous incidents must be considered in the identification process. An organization must notify EH&S, Health and Safety, of any change to a Rule.

4.1.2 TRAINING AND COMMUNICATION

- An organization's Rules We Live By and associated procedures must be reinforced in applicable skills training.
- Each employee in the organization must receive OJT training on the Rules We Live By identified by the organization.
- Rules We Live By must be reinforced, as applicable, in job briefings.
- Rules We Live By must be incorporated into the scope of safety field observations and inspections.
- Where contractor work practices involve Rules We Live By, contractor employees will be trained on the applicable Rules We Live By, reporting procedure, and consequences. The operating organization must communicate the applicable Rules to contractor management and ensure the Rules are incorporated in the eHASP. The contractor supervisor will be required to train their affected employees and subcontractor employees before they begin work.

4.1.3 REPORTING AND INVESTIGATION

If a supervisor observes a Rule We Live By being violated, or is notified of a potential violation, the work must be stopped immediately.

If an employee, not a supervisor, believes a Rule We Live By may have been violated, he/she must stop the work immediately and report the situation to the supervisor of the employee who committed the alleged violation.

Resolution of the alleged violation must follow the Time Out process as defined in CEHSP A28.00 – Calling a Time Out, which includes immediate notification of EH&S.

4.2 VIOLATION OF A RULE WE LIVE BY

A violation of a Rule We Live By will result in significant consequences.

Any employee who witnesses a violation of a Rule We Live By and does not stop the work and report the violation will also be considered to have violated the Rule.

A violation by a contractor company or by a sub-contractor must be reported via an action line by the operating organization with contractor oversight.

The organization must notify EH&S after action has been taken as a result of the violation.

4.3 DEFINITIONS

Con Edison employee: This includes all management and union employees.

Contractor employee: This includes all per-diem contractor employees and those employees working for a contractor company hired by Con Edison.

REVISION HISTORY

Revision Date	Revision #	Summary of Change	Author
1/21/14	2013 Annual Review	*CEHSP A32.00.01 RWLB - Table*: Permits, Electric Ops – Added language to clarify that entry for work in structures containing d-faulted feeders is permissible after associated source equipment has been de-energized.	G. Slintak
4/23/14	2013, Revision 1	*CEHSP A32.00.01 RWLB - Table*: Adjusted high hazard PPE rule as applied to Gas Operations in response to 4/22 request. Change clarifies the attachment point for use of PPE (previously associated with "blowing gas," a subjective term).	G. Slintak
5/16/14	2	Combined 'CEHSP A32.00 – Rules We Live By' and 'CEHSP A32.00.01 – Rules We Live By Table' into one document. The table will be an attachment to the procedure.	S. Ng
12/31/14	2014 Annual Review Rev. 3	Edits to reflect organization changes. Minor changes to clarify rules.	W. Capune
12/21/15	2015 Annual Review Rev. 4	Edits to reflect organizational changes in Shared Services. Customer Operations adopted the same language as Electric Operations for High Hazard PPE.	W. Capune
04/06/18	Annual Review Rev. 5	No changes requested. Removed the year (2016) from the RWLB Table. Additional editorial comments added by G.Slintak.	W. Capune

Hazard	Electric Operations	Central Operations	Gas Operations	Customer Operations	Utility Shared Services
Verify Dead/Lockout-Tag Out	Properly test or spear to ensure that electric equipment, cable, or wire is "dead" as required regardless of voltage, before beginning dead work activities.	Properly test or verify that equipment is de-energized, isolated and protected prior to initiating dead work activities.			Properly lock out/tag out equipment before beginning work on the equipment. (when not intentionally live and PPE is required)
Permits (Operating, D-faults)	Enter D-Fault tagged structures only when authorized by the operating authority to perform feeder processing, or to perform work after all D-faults have been identified and de-energized.	• Only perform work that is within the authorized scope of work as listed on the work permit. • Do not change the status of a piece of equipment that has a Stop Tag applied to it. • Follow the sequence of an operating order.		Do not enter a structure that has been classified and tagged as a D-fault.	Only perform work that is within the authorized scope of work as listed on the work permit
Atmospheric Testing	• Perform air monitoring and ventilate as required for entry and work in an enclosed space or a permit-required confined space. • For excavations greater than 4 feet in depth the atmosphere shall be tested prior to entry or when the excavation is not already occupied.	• Perform air monitoring and ventilate as required for entry and work in an enclosed space or a permit-required confined space. • For excavations greater than 4 feet in depth the atmosphere shall be tested prior to entry or when the excavation is not already occupied.	• Perform air monitoring and ventilate as required for entry and work in an enclosed space or a permit-required confined space. • For excavations greater than 4 feet in depth the atmosphere shall be tested prior to entry or when the excavation is not already occupied.	Perform air monitoring and ventilate as required for entry and work in an enclosed space or a permit-required confined space.	Perform air monitoring and ventilate as required for entry and work in an enclosed space or a permit-required confined space.
Rescue/Retrieval	Entrant and attendant are required to wear rescue harness when working in enclosed spaces.	Entrant and attendant are required to wear rescue harness when working in enclosed spaces.	Entrant and attendant working in enclosed spaces shall wear rescue harnesses, when required.	Entrant and attendant are required to wear rescue harness when working in enclosed spaces.	Entrant and attendant are required to wear rescue harness when working in enclosed spaces
High Hazard Energy PPE	• Use fall protection equipment as required. • Use appropriate rubber gloves with protective gauntlets, rubber sleeves, fire retardant clothing and eye/protection face shield as required for the electrical hazard.	• Use fall protection equipment as required. • Use appropriate rubber gloves, rubber sleeves, fire retardant clothing, and eye protection/face shield as required for the electrical hazard. • In Steam Distribution, use appropriate water resistant coveralls and face shields before disconnecting any piping from the dead side of the trap valve up to and including the trap inlet valves and trap bypass valve. These coveralls and face shields must be worn until all piping is reconnected.	• Use fall protection equipment as required. • Wear airline respirator, FR coveralls, Fr hood & FR gloves or liners as required by IP-42	• Use fall protection equipment as required. • Use appropriate rubber gloves with protective gauntlets, rubber sleeves, fire retardant clothing, and eye protection/face shield as required for electrical hazard. • Do not come into contact or move a downed or low hanging utility wire while performing Site Safety or Damage Assessment work.	• Use fall protection equipment as required • Use the appropriate rubber gloves, rubber sleeves, fire retardant clothing, and eye protection/face shield as required for the electrical hazard
Sheeting/Shoring		Ensure that excavations five feet or deeper are properly sheeted and shored before anyone enters.	Ensure that excavations five feet or deeper are properly sheeted and shored before anyone enters.		
Gas Piping Integrity Test			Perform an integrity test before a customer turn-on.	Perform an integrity test before a customer turn-on.	
Securing Loads					Reels over 5,000lbs (individually or when bundled together) are secured per NYS Metal Coil requirements

40.0 EMERGENCY ACTION PLAN

See attached Evacuation plan.

EMERGENCY CONTACT INFORMATION

- **Police Info:**
  Precinct 43rd - 900 Farley Avenue Bronx NY 10473
  Precinct Phone # (718) 542-0888

- **Fire Dept Info:**
  FDNY Engine 73, Ladder 42 , 655 Prospect Avenue Bronx NY 10455
  Phone # (718) 999-2000

- **Hospital:**
  NY Lincoln Hospital 234 East 149th Street Bronx NY 10451
  Phone # (718) 579-5548

EMERGENCEY ASSEMBLY AREA LOCATION:

Primary Location : Outside Con Edison Facility Gate in Chef's Warehouse parking Lot

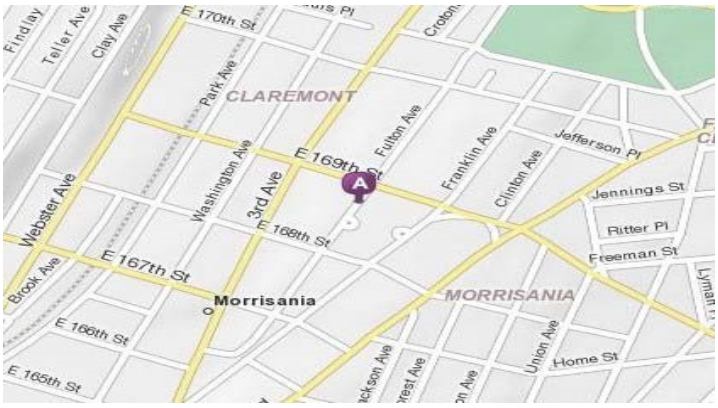
Secondary Location : Outside Chef's Warehouse entry way guard booth.

Nearest Hospital, and MapQuest Directions

Hunts Point Tunnel Head House: Hunts Point Terminal Market & East Bay Ave Bronx NY

EMERGENCEY ASSEMBLY AREA LOCATION: Head House Parking Lot

Emergency Telephone Numbers : 911



Hospital :

Bronx Lebanon Hospital

1276 Fulton Ave Bronx NY

Hunts Point Tunnel Head House: Hunts Point Terminal Market & East Bay Ave Bronx NY

v

Patterson Ave Head House-Sound View Park (Below Patterson Ave) Accessible from Randall Ave or O'Brien Ave Bronx NY

EMERGENCEY ASSEMBLY AREA LOCATION: Bike Path Adjacent to Head House

Hospital : **911**
Jacobi Medical Center
1400 Pelham Parkway South
Bronx New York

ATTACHMENTS

Attachment A 1500 Hazard Communication
Attachment B 1630 Occupational Noise Exposure
Attachment C 1600 PPE
Attachment D 1620 Respiratory Protection
Attachment # 1550 Silica
Attachment #2500 Excavation & Trenching

Con Ed “Rules We Live By”
Covid Plan

F1100 B Incident Investigation
F1100C Employee Incident Statement
F1100 E Near Miss report
WSS – TSE – Task Safety Evaluation
Evacuation Plan
Tunnel Accountability Plan


1500 HazCom R11.pdf


1550 Silica R2.pdf


1600 PPE R3.pdf


1620 PPE-Respiratory Prot


1630 PPE-Noise Exposure R6.pdf


2500 Excavation and Trenching R8.pd


F1100B - Incident Investigation Report


F1100C Employee Incident Statement F


F1100D Witness Incident Statement F


F1100E Near Miss Incident Report R1.p


NY TSE blank.pdf


1520 Lead R13.pdf


Bronx River Tunnel 36 Gas Main Evacua


Bronx River Tunnel 36 Gas Main Tunnel


GEHSI S18.00 - Contractor Fall Prote


SPO 5488114 Bronx River Tunnel Asbest


WRS NF Pipe Approval draft.doc


Emergency Action Plan. REV 1pdf.pdf


HASP COVID-19 Amendment. pdf.rtf

EXCAVATION, TRENCHING AND SHORING

EHS PROCEDURE #2500

REV. 8

REVISION HISTORY

REVISION	DATE	COMMENTS
1	04-01-91	General Revision
2	10-28-94	General Revision
3	12-26-96	General Revision
4	10-26-00	General Revision
5	03-27-03	General Revision
6	08-01-09	General Revision, Changed procedure #
7	10-04-10	ISN Review
8	04-28-14	General Rivision

1.0 PURPOSE

The purpose of this procedure is to provide written instructions for the general protection requirements associated with excavation, trenching and shoring.

2.0 RESPONSIBILITY

Site Manager

The Site Manager is responsible for implementing the provisions of this procedure.

Superintendent and/or Production Supervisor

The Superintendent and/or Production Supervisor are responsible for assuring compliance with this procedure and for functioning (if qualified) as the excavation competent person or securing the services of a qualified excavation competent person.

3.0 REQUIREMENTS

Each work area involving or in the vicinity of excavations, trenching or shoring shall be evaluated by the Excavation Competent Person to assure worker, equipment, property, and public safety.

4.0 REFERENCES

29 CFR 1926.650
29 CFR 1926.651
29 CFR 1926.652

5.0 DEFINITIONS: For purpose of this procedure.

5.1 Excavation: Any man-made cavity or depression in the earth's surface, including its sides, walls or faces, formed by earth removal and producing unsupported earth conditions by reasons of the excavation.

5.2 Angle of Repose: The greatest angle above the horizontal plane at which a material will remain stable without sliding.

5.3 Bank: A mass of soil rising above a digging level.

5.4 Belled Excavation: A part of a shaft or footing excavation, usually near the bottom and bell shaped.

5.5 Benching: A method of protecting employees from cave-ins by excavating the sides of an excavation to form one or a series of horizontal levels or steps, usually with vertical or near-vertical surfaces between levels.

5.6 Braces: The horizontal members of the shoring system whose ends bear against the uprights or stringers.

5.7 Competent Person for Excavation: One who is capable of identifying existing and predictable hazards in the surroundings, or working conditions which are unsanitary, hazardous, or dangerous to employees, has the authority to take prompt corrective measures to eliminate them, and has the appropriate training.

5.8 Faces or Sides: The vertical or inclined earth surfaces formed as a result of excavation work.

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

5.10 Hazardous Atmosphere: An atmosphere which by reason of being explosive, flammable, poisonous, corrosive, irritating, oxygen deficient, toxic, or otherwise harmful, may cause death, illness, or injury.

5.11 Kickouts: Accidental release or failure of a shore or brace.

5.12 Layered Systems: Two or more distinctly different soil or rock types arranged in layers.

5.13 Protective System: A method of protecting employees from cave-ins, from material that could fall or roll from an excavation face or into an excavation, or from the collapse of adjacent structures.

5.14 Sheet pile: A pile, or sheeting, that may form one of a continuous interlocking line, or a row of timber, concrete, or steel piles, driven in close contact to provide a tight wall to resist the lateral pressure of water, adjacent earth, or other material.

5.15 Slope: The angle with the horizontal at which a particular earth material will stand indefinitely without movement.

5.16 Stringers: The horizontal members of a shoring system whose sides bear against the uprights or earth.

5.17 Trench: A narrow excavation made below the surface of the ground. In general, the depth is greater than the width, but the width of a trench is no greater than 15 feet.

5.18 Trench Shield: A shoring system composed of steel plates and bracing, welded or bolted together, which support the walls of a trench from the ground level to the trench bottom and which can be moved along as work progresses.

5.19 Unconfined Compressive Strength: The load per unit area at which a soil will fail in compression. It can be determined by laboratory testing, or in the field using a pocket penetrometer, or by thumb penetration.

5.20 Uprights: The vertical members of a shoring system.

5.21 Trench Jack: Screw or hydraulic type jacks used as a cross-bracing in a trench shoring system.

6.0 REQUIREMENTS

Evaluation

6.1 An initial evaluation of the proposed excavation shall be conducted by the competent person using the criteria set forth below and document on the Trenching and Excavation Initial Evaluation Form.

6.2 Prior to the start of actual excavation, utility companies or owners shall be contacted within established or customary local response times, advised of the proposed work, and asked to establish the location of the utility underground installations. When utility companies or owners cannot respond within 24 hours (unless a longer period is required by state or local law), or cannot establish the exact location of these installations, the excavation may proceed, provided the excavator does so with caution, and is provided detection equipment or other acceptable means to locate utility installations. When excavation operations approach the estimated location of the underground installations, the exact location of the installation shall be determined by safe and acceptable means. While the excavation is open, utility installations shall be protected, supported or removed as necessary to safe guard installations, workers and the public.

Worker Protection

6.3 The walls and faces of trenches five (5) feet or more deep, and all excavations in which workers may be exposed to danger from moving ground or cave-in shall be guarded by a shoring system, sloping of the ground, or some other equivalent means.

6.4 As a minimum, all excavations, trenches, ditches, etc. shall be properly barricaded and have posted warning signs.

6.5 Workers in or around excavations or trenches shall be required to wear personal protective equipment for the head, eyes, respiratory organs, hands, feet and other parts of the body as deemed necessary by the hazards present.

6.6 Workers exposed to heavy equipment vehicular traffic shall be required to wear a reflector type warning vest.

6.7 Workers shall be protected from falling soil loads from digging and excavation equipment and shall never be allowed to work under suspended loads.

Access

6.7 Where workers may be required to enter an excavation, excavated or other material shall be effectively stored and retained at least two (2) feet or more from the edge of the excavation.

6.8 Ladders or steps shall be used to enter and exit trenches four (4) feet or more in depth. Ladders or steps shall be located at a distance not greater than twenty five (25) feet laterally. When ladders are being used they shall extend a minimum of three (3) feet above the top of the trench.

6.9 Structural ramps that are used solely by employees as a means of access or egress from excavations shall be designed by a competent person. Structural ramps used for access or egress of equipment shall be designed by a competent person qualified in structural design, and shall be constructed in accordance with the design.

6.9.1 Ramps and runways constructed of two or more structural members shall have the structural members connected together to prevent displacement.

6.9.2 Structural members used for ramps and runways shall be of uniform thickness.

6.9.3 Cleats or other appropriate means used to connect runway structural members shall be attached to the bottom of the runway or shall be attached in a manner to prevent tripping.

6.9.4 Structural ramps used in lieu of steps shall be provided with cleats or other surface treatments on the top surface to prevent slipping.

6.9.5 Walkways shall be provided where employees or equipment are required or permitted to cross over excavations. Guardrails that comply with 1926.502(b) shall be provided where walkways are six (6) feet (1.8m) or more above lower levels.

Inspections

6.10 Daily inspections of excavations shall be made by the excavation competent person and documented on the Trenching and Excavation Daily Inspection form. If evidence of possible cave-ins or slides is apparent, all work in the excavation shall cease until the necessary precautions have been taken to safeguard the employees.

Atmospheric Conditions

6.11 When possible, dust conditions should be kept to a minimum by the use of water, salt, calcium chloride or other acceptable means.

6.12 In locations where undesirable atmospheric conditions may exist, the excavation or trench shall be tested. If necessary, controls as set forth in sub-parts D and E of 29 CFR 1926 (occupational health, environmental controls, PPE, and lifesaving equipment) shall be established to assure employee safety. When controls are used that are intended to reduce the level of atmospheric contaminants to acceptable levels, testing shall be conducted as often as necessary to ensure that the atmosphere remains safe.

6.13 Where adverse conditions may exist or develop in an excavation, emergency rescue equipment such as breathing apparatus, a safety harness and line, basket stretcher, etc. shall be readily available.

Hazardous Conditions

6.14 Employees shall not be allowed to work in excavations in which water has accumulated or is accumulating, unless adequate precautions have been taken to protect employees against the hazards posed by the water accumulation. Specific precautions may vary with each situation, but may include special support or shield systems to protect against cave-ins, water removal to control the accumulating water, or the use of a safety harness and lifeline. If the water is controlled by water removal equipment, this equipment and operation shall be monitored by a competent person to ensure proper operation.

6.15 Excavations below the level of the base or footing of any foundation or retaining wall shall not be permitted except when:

6.15.1 A support system, such as underpinning, is provided to ensure the safety of employees and the stability of the structure.

6.15.2 The excavation is in stable rock.

6.15.3 A registered professional engineer has approved the determination that the structure is sufficiently removed from the excavation so as to be unaffected.

6.15.4 A registered professional engineer has approved the determination that such excavation work will not pose a hazard to employees.

6.16 Work in or around excavations or trenches should never be performed alone.

6.17 In addition to the requirements of this procedure, all safety requirements of the customer or host facility shall be followed.

7.0 SOIL CLASSIFICATION

7.1 Each soil and rock deposit at an excavation site must be classified by the excavation competent person as stable rock, Type A, Type B, or Type C soil.

7.1.1 **Stable rock** refers to natural solid mineral matter which can be excavated with vertical sides and remain intact while exposed.

7.1.2 **Type A** soil is cohesive with an unconfined compressive strength of 1.5 tons per square foot (tsf). Type A soils include clay, silty clay, sandy clay, clay loam, caliche, hardpan, and sometimes silty clay loam and sandy clay loam. No soil should be classified as Type A if it is fissured; subject to vibration from traffic, pile driving, or similar effects; previously disturbed; or part of a sloped, layered system where the slope is four horizontal to one vertical or greater.

7.1.3 **Type B** soil is cohesive soil with an unconfined compressive strength greater than .5 tsf but less than 1.5 tsf. Type B soils include granular cohesionless soils like angular gravel, silt, silt loam, sandy loam, and sometimes silty clay loam and sandy clay loam; previously disturbed soils that are not Type C; fissured soils and soils subject to vibration that would otherwise be classified as Type A; dry rock that is not stable; and material that is part of a sloped layered system where the layers dip on a slope less steep than four horizontal to one vertical.

7.1.4 **Type C** soil is cohesive soil with an unconfined compressive strength of .5 tsf or less. Type C soils include granular soils such as gravel, sand, and loamy sand; submerged soil; soil from which water is freely seeping; submerged rock that is not stable; or material in a sloped, layered system where the layers dip into the excavation at a slope of four horizontal to one vertical or steeper.

7.1.5 Soil classification is to be based on at least one visual analysis and one manual analysis of the soil.

7.1.6 **Visual Test**:

7.1.6.1 Observe samples of soil that are excavated and soil in the sides of the excavation. Estimate the range of particle sizes and the relative amounts of the particle sizes. Soil that is primarily composed of fine-grained material is cohesive material. Soil composed primarily of coarse-grained sand or gravel is granular material.

7.1.6.2 Observe the soil as it is excavated. Soil that remains in clumps when excavated is cohesive. Soil that breaks up easily and does not stay in clumps is granular.

7.1.6.3 Observe the sides of the opened excavation and the surface area adjacent to the excavation. Crack-like openings such as tension cracks could indicate fissured material. If chunks of soil spall of a vertical side, the soil could be fissured. Small spalls are evidence of moving ground and are indications of potentially hazardous situations.

7.1.6.4 Observe the open side of the excavation to identify layered systems. Examine layered systems to identify if the layers slope toward the excavation and estimate the degree of slope of the layers.

7.1.6.5 Observe the sides of the excavation and adjacent areas for evidence of surface water or water seeping from the sides of the excavation.

7.1.6.6 Observe the area adjacent to the excavation and the area within the excavation for sources of vibration that may affect the stability of the excavation face.

7.1.7 **Manual Test:**

7.1.7.1 The thumb test (ASTM D2488) can be used to determine the unconfined compressive strength of cohesive soil. Type A soils with an unconfined compressive strength of 1.5 tsf can be readily identified by the thumb. They can be penetrated by the thumb but only with great effort. Type C soils with an unconfined compressive strength of .5 tsf can be easily penetrated several inches by the thumb, and can be molded by light finger pressure.

7.1.7.2 Determine the unconfined compressive strength by the use of a pocket penetrometer.

8.0 FORMS AND TEMPLATES

- F2500A-Trenching and Excavation Initial Evaluation Form
- F2500B-Trenching and Excavation Daily Inspection Form
- F2500C-Trenching and Excavation Competent Person
- Excavation Tool

APPENDIX B

Community Air Monitoring Program

COMMUNITY AIR MONITORING PLAN

HUNTS POINT PARCEL D

CAST IRON MAIN EXCAVATION

Bronx, New York

Prepared For:

Consolidated Edison Company of New York, Inc.
31-01 20th Avenue
Long Island City, NY 11105

Prepared By:

PARSONS
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Phone: (732) 537-3500
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OCTOBER 2021

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SECTION 1 - INTRODUCTION

Consolidated Edison Company of New York, Inc. (Con Edison) will be performing excavation activities for the replacement of a gas main at the Hunts Point Parcel D Site (the Site) located in Bronx, New York, a parcel located within the former Hunts Point Gas Works, a former Manufactured Gas Plant (MGP). The Site is a 7.23-acre vacant area with the exception of a 40-foot by 50-foot area in the northeast corner of the Site, which is utilized by Con Edison as a gas pump house and metering building. A portion of the excavation is within Con Edison property (Block 2781 Lot 800), with the remainder of the excavation within the easement that is located in the adjacent vacant parcel.

The Site is bound to the west by Food Center Drive and a railroad spur, to the north and south by commercial properties, and to the east by the confluence of the Bronx and East Rivers. Historic Site and topographic maps show no evidence of MGP structures, however MGP structures such as water and oil holding tanks, buildings, and a large gas holder were located adjacent to the Site to the south and west.

The scope of work will consist of an excavation with dimensions of 10-foot wide by 10-foot long by 10-foot deep. The excavation is being completed to expose a portion of an existing 42-inch diameter cast iron retired gas main that runs east to west along the northern boundary of the Site. Once the excavation is completed, the retired gas main will be removed and replaced with a new 36-inch diameter gas main. Excavation of Site soils will be conducted during this scope of work. Excavated material with visual or olfactory impacts will be stockpiled separately and will be segregated from other excavated materials. Additionally, the sources of off-site backfill materials will be evaluated and approved by NYSDEC before any backfill is imported to the Site.

Given that the scope of work includes the excavation of a 10-foot trench and earthwork activities, a Community Air Monitoring Plan (CAMP) is required for these specific intrusive activities at the Site. This CAMP is not intended for use in establishing action levels for worker respiratory protection; rather, it is intended to provide a measure of protection from potential airborne contaminants for the downwind community including on-site workers not directly involved with the intrusive field activities, abutting commercial businesses and their customers, and the public in general. The action levels and procedures specified herein require continued and increased monitoring, corrective actions to better control emissions, and/or temporary work activity shutdown. Implementation of this CAMP also serves to document that field activities did not expose the public to airborne contamination emanating from the intrusive field activities performed at the Site.

SECTION 2 - BASIS FOR CAMP

2.1 Purpose and Objectives

The New York State Department of Health (NYSDOH) Generic Community Air Monitoring Plan requires real-time monitoring for volatile organic compounds (VOCs) and particulates (dust) at the upwind and downwind perimeter of work areas when intrusive field activities are conducted at contaminated sites. Additionally, based on Site history, monitoring for hydrogen sulfide (H_2S) and hydrogen cyanide (HCN) at the upwind and downwind Site perimeter is also necessary when intrusive field activities are conducted at the Site. In general, the purpose of this CAMP is to comply with the NYSDOH Generic CAMP to ensure that the community and public are not exposed to hazardous constituents at levels above accepted guidance and reference limits during the intrusive field activities being conducted at the Site.

Specific objectives of the Site CAMP are as follows:

- Provide an early warning system to alert Con Edison's field team that concentrations of target compounds in ambient air are approaching action levels due to intrusive field activities;

- Assess and monitor whether vapor and dust emission control measures are effective in maintaining or reducing ambient air levels of target compounds below action levels, allowing appropriate adjustments to be made (if necessary); and

- Develop a comprehensive and permanent record of all air monitoring and sampling results, equipment calibration and maintenance records, daily Site log notes and other pertinent information related to the CAMP.

2.2 Target Compounds

The target compounds for this CAMP are those contaminants known or suspected to be present in MGP source materials generated during former MGP operations in the vicinity of the Site and have the potential to be released into the ambient air during intrusive field activities. Also included are contaminants generated by the intrusive field activities that have the potential to be released to the air and to migrate beyond the Site perimeter (i.e., dust). The target compounds will consist of total VOCs, H_2S, HCN, and dust (PM_{10}).

2.3 Action Levels

The following action levels have been established for the CAMP.

Target Compound	Action Level
Total VOCs	5 ppm (primary) 25 ppm (secondary)
H_2S	5 ppm (primary) 25 ppm (secondary
HCN	3 ppm (primary) 25 ppm (secondary)
PM_{10}	100 ug/m^3 (primary) or visible dust migration 150 ug/m^3(secondary) or visible dust migration

Action levels are further detailed in Table 1. Action levels for total VOCs and PM_{10} are based on those presented in NYSDOH's generic CAMP, included in Appendix A. Action levels for H_2S and HCN are based on Permissible Exposure Limits (PELs) or Threshold Limit Values (TLVs) specified by the Occupational Safety and Health Administration (OSHA) and the American Conference of Government Industrial Hygienists (ACGIH).

SECTION 3 - SCOPE OF WORK

3.1 Overview and Schedule

The key elements proposed to meet the objectives of this CAMP consist of the following:

- Data collection at two (2) location stations in a configuration that accounts for upwind/downwind prevailing wind direction patterns relative to the primary areas of intrusive field activities. The proposed locations will be configured such that for each major prevailing wind sector, one measurement point will be in an upwind location and one measurement point will be in a downwind location;

- Data collection during the full duration of intrusive field activities. Data collection during the intrusive work will allow monitoring for action levels and will document air quality during the intrusive field activities at the perimeter of the Site, and

- Primary monitoring by real-time methods of the target compounds. Real-time monitoring data will be made available to Con Edison's field team, the NYSDEC, and the NYSDOH.

Excavation activities are expected to occur in January 2022 and are expected to be completed within approximately one (1) week. The excavations will remain open for a period of approximately 4 to 6weeks to remove the 42-inch diameter retired cast iron main and install a new 36-inch gas main, prior to backfilling and completion. Implementation of the CAMP will be performed during intrusive activities (e.g., active excavations), and will be implemented as needed while the excavation is open and the gas main is being worked on. Continuous implementation of the CAMP while the excavations are shored and the gas main is being worked on may not be necessary provided that no Site soils are exposed and open excavations are covered by shoring, plastic sheeting, gravel, etc. During those times where continuous CAMP monitoring is not needed, periodic inspections of the Site will be conducted to confirm that no Site soils are exposed. Excavated materials will be stockpiled on plastic sheeting, covered with plastic sheeting when not in use, and inspected periodically. The CAMP will be approved and implemented before intrusive field activities begin, and once monitoring commences, it will be continuous for the full duration of active intrusive work as indicated above. Works hours shall normally be 7:00 AM to 3:30 PM from Monday through Friday.

3.2 Monitoring Locations

Two (2) portable monitoring station locations are being proposed for the Site. The number and location of these stations were selected based on several factors summarized as follows:

- The overall size of the Site and lateral extent of the intrusive work area; and

- The location of the commercial businesses adjacent to the Site.

The intrusive work area is estimated to be 10-foot wide by 10-foot long by 10-foot deep area and will expose the 42-inch diameter retired cast iron main that runs east to west along the northern boundary of the Site. Due to the limited nature of the intrusive activities, adequate coverage can be maintained by utilizing two (2) air monitoring stations. This coverage is accomplished by placing one monitoring station directly upwind, and one monitoring station directly downwind of the prevailing wind direction. The locations of the monitoring stations will be adjusted as necessary to account for upwind/downwind prevailing wind direction patterns relative to the areas of intrusive activities.

3.3 Real-Time Monitoring

Real-time monitoring utilizing a conventional air monitoring system is the primary measurement for this CAMP. Real-time monitoring will be performed for total VOC, H_2S, HCN, and PM_{10} at both locations for the entire duration of intrusive work activities.

Each air monitoring station will be equipped with a MultiRAE Plus to monitor total VOCs, H_2S, and HCN, and a dust meter configured for PM_{10} (DustTrak). Each meter will be equipped with data logging capabilities. Air monitoring equipment will be contained in a "case like" enclosure mounted on a tripod. The data collection will consist of total VOCs, H_2S, and HCN, and dust (PM_{10}) at the two monitoring stations.

Each monitoring station will be equipped with visual alarms. Visual alarms will consist of flashing lights mounted on top of the air monitoring stations. The visual alarms will be triggered when a primary action level is exceeded for any of the target compounds.

3.4 Monitoring Personnel

Monitoring activities will be performed by appropriately trained and experienced individuals. Training shall include completion of a 40-hour hazardous waste activities training course in compliance with OSHA Standard 29 CFR 1910, as well as an 8-hour refresher course within the last year. Monitoring personnel will also be experienced or trained in the calibration, operation, and routine maintenance of the specific monitoring equipment being utilized for the CAMP.

SECTION 4 - DATA COLLECTION METHODOLOGIES

For this CAMP, data collection methodologies for the target compounds consist of real-time monitoring methods. The real-time monitoring system will be equipped with data logging capabilities capable of calculating 15-minute running average concentrations and storing of a minimum of 24 hours of data.

4.1 VOCs, H_2S, and HCN

A MultiRAE Plus will be utilized for the real-time total VOC, H_2S, and HCN measurement portion of the CAMP. MultiRAE technology allows dependable, linear, part-per-million range readings for VOCs, H_2S, and HCN. MultiRAE-based measurements are easy to perform, accurate, and a proven monitoring approach. Appendix B includes a data sheet for the MultiRAE.

4.2 Particulate Matter (PM_{10})

A DustTrak Aerosol Monitor 8530 (or equivalent) will be employed for the real-time total PM_{10} measurement portion of the CAMP. This instrument is capable of measuring PM_{10} in a range including the action levels (100 – 150 ug/m^3) and with appropriate resolution (1 ug/m^3 or better). The DustTrak is a light-scattering photometer that uses optical measurement techniques, a commonly used, widely available, and versatile monitoring approach. Photometer-based PM_{10} measurements are easy to perform, accurate, and a time-proven monitoring approach. Appendix B includes a data sheet for the DustTrak Aerosol Monitor 8530.

SECTION 5 - ACTION LEVELS AND PROCEDURES

Action levels for the target compounds are defined in Section 2.3. How the action levels are triggered and their associated procedures are described below and summarized in Table 1. There are two types of action levels, and action levels for VOCs, H_2S, HCN, and PM_{10} are assessed on a relative basis (i.e., a downwind concentration is compared to an upwind concentration to see if the action level is triggered).

5.1 VOCs, H_2S, and HCN

The primary action level for total VOCs and H_2S is 5 ppm, and 3 ppm for HCN, based on a 15-minute averaging period and is assessed on a relative basis between downwind and upwind measurements. This action level will be reached if a 15-minute average total VOC, H_2S, and HCN level measured at the downwind stations exceeds the action level for the same 15-minute period at the designated upwind station by 5 ppm for VOCs, and H_2S, and 3 ppm for HCN. If the action level is triggered, then work activities must be temporarily halted and monitoring continued. However, once triggered, if downwind total measured concentrations rapidly decrease to below action levels relative of the upwind concentrations, then work activities can resume with continued monitoring.

If downwind total VOC or H_2S levels persist at concentrations between 5 – 25 ppm above the upwind level, or HCN levels persist at concentrations between 3 – 25 ppm above the upwind level, then:

- Work activities must be halted;
- The source of vapors identified;
- Corrective actions implemented to abate emissions; and
- Monitoring continued.

Following completion of these steps, work activities will resume provided that total concentrations of target compounds 200 feet downwind of the work area, or half the distance to the nearest potential receptor, whichever is less, are below specified action levels over the background for the 15-minute average.

After the implementation of vapor control measures or at any time, if downwind total VOC, H_2S, or HCN levels exceed the secondary action level of 25 ppm over the upwind level, then work must be stopped and a meeting will be held with Con Edison's field team to re-evaluate work activities, vapor control measures, and recommend further corrective actions.

Work can only resume if vapor control measures are successful in reducing downwind total VOC or H_2S concentration levels to less than 5 ppm above the upwind level, or less than 3 ppm above the upwind level for HCN.

5.2 Particulate Matter (PM_{10})

The primary action level for PM_{10} is 100 ug/m^3 based on a 15-minute averaging period and it is assessed on a relative basis between downwind and upwind measurements. This action level will be reached if a 15-minute average PM_{10} level measured at the downwind station exceeds the PM_{10} level for the same 15-minute period at the upwind station by 100 ug/m^3. Additionally, the action level will also be reached if visible emissions of airborne dust are observed migrating beyond the Site perimeter. If the PM_{10} action level is triggered by either of these events, then dust suppression techniques must be employed and monitoring continued.

If downwind PM_{10} levels persist at readings between 100 – 150 ug/m^3 above the upwind level for 45 minutes (three measurement cycles), work activities may resume with dust suppression techniques in place, but only if no visible emissions of dust are observed migrating beyond the Site perimeter.

After the implementation of dust control measures, if downwind PM_{10} levels continue to persist above the secondary action level of 150 ug/m^3 over the upwind level or 100 ug/m^3 over the upwind level with visible emissions present, then work must be stopped and a meeting will be held with Con Edison's field team to re-evaluate work activities, dust suppression measures, and recommend further corrective actions.

Work can resume once dust control measures are successful in reducing downwind PM_{10} levels to less than 150 ug/m^3 above the upwind level and there is no visible dust migration beyond the perimeter of the Site.

SECTION 6 - QUALITY ASSURANCE

6.1 Equipment Calibration

Field analytical equipment will be calibrated immediately prior to each day's use. The calibration procedures will conform to manufacturer's standard instructions. This calibration will ensure that the equipment is functioning within the allowable tolerances established by the manufacturer and required by the CAMP. Records of all instrument calibration and instrument manuals will be maintained on-site.

6.2 Preventive Maintenance Procedures

Equipment, instruments, tools, gauges, and other items requiring preventive maintenance will be serviced in accordance with the manufacturer's specified recommendations and written procedures developed by the CAMP operator. A list of critical spare parts will be established and these spare parts will be available for use in order to avoid downtime. A service contract for rapid instrument repair or backup instruments may be substituted for the spare part inventory.

All maintenance records will be documented and traceable to the specific equipment, instruments, tools, and gauges. Records produced shall be reviewed and maintained at the Site.

TABLES

Table 1
Action Levels and Procedures

Contaminant	Action Level	Action Taken
VOCs	< 5 ppm above background	None
	5 - 25 ppm above background	Temporarily halt work and continue monitoring. If levels decrease to < 5 ppm above background, resume work. If levels persist for 30 minutes, hold Site meeting with field personnel to review work activities. If levels persist for 45 minutes, stop work, identify source, implement corrective action, and continue monitoring.
	> 25 ppm above background	Stop work and hold meeting. Resume work only if levels are reduced to < 5 ppm above background.
H_2S	< 5 ppm above background	None
	5 - 25 ppm above background	Temporarily halt work and continue monitoring. If levels decrease to < 5 ppm above background, resume work. If levels persist for 30 minutes, hold Site meeting with field personnel to review work activities. If levels persist for 45 minutes, stop work, identify source, implement corrective action, and continue monitoring.
	> 25 ppm above background	Stop work and hold meeting. Resume work only if levels are reduced to < 5 ppm above background.
HCN	< 3 ppm above background	None
	3 - 25 ppm above background	Temporarily halt work and continue monitoring. If levels decrease to < 3 ppm above background, resume work. If levels persist for 30 minutes, hold Site meeting with field personnel to review work activities. If levels persist for 45 minutes, stop work, identify source, implement corrective action, and continue monitoring.
	> 25 ppm above background	Stop work and hold meeting. Resume work only if levels are reduced to < 3 ppm above background.
Particulate Matter (PM_{10})	<100 ug/m^3 above background and no visible off-site dust migration	None
	100–150 ug/m^3 above background or visible off-site dust migration	Employ dust suppression techniques and continue monitoring. If levels persist for 45 minutes, continue work with dust suppression only if no visible off-site dust migration. If visible off-site dust migration persists for 45 minutes, stop work, identify source, implement corrective action, and continue monitoring. Resume work only if no visible off-site dust migration.
	>150 ug/m^3 above background	Stop work and hold site meeting. Resume work only if levels are reduced to < 150 ug/m^3 above background and no visible off-site dust migration.

APPENDIX A

NYSDOH GENERIC COMMUNITY AIR MONITORING PLAN

Appendix 1A
New York State Department of Health
Generic Community Air Monitoring Plan

Overview

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

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

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

Community Air Monitoring Plan

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

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

Periodic monitoring for VOCs will be required during non-intrusive activities such as the collection of soil and sediment samples or the collection of groundwater samples from existing monitoring wells. “Periodic” monitoring during sample collection might reasonably consist of taking a reading upon arrival at a sample location, monitoring while opening a well cap or

overturning soil, monitoring during well baling/purging, and taking a reading prior to leaving a sample location. In some instances, depending upon the proximity of potentially exposed individuals, continuous monitoring may be required during sampling activities. Examples of such situations include groundwater sampling at wells on the curb of a busy urban street, in the midst of a public park, or adjacent to a school or residence.

VOC Monitoring, Response Levels, and Actions

Volatile organic compounds (VOCs) must be monitored at the downwind perimeter of the immediate work area (i.e., the exclusion zone) on a continuous basis or as otherwise specified. Upwind concentrations should be measured at the start of each workday and periodically thereafter to establish background conditions, particularly if wind direction changes. The monitoring work should be performed using equipment appropriate to measure the types of contaminants known or suspected to be present. The equipment should be calibrated at least daily for the contaminant(s) of concern or for an appropriate surrogate. The equipment should be capable of calculating 15-minute running average concentrations, which will be compared to the levels specified below.

1. If the ambient air concentration of total organic vapors at the downwind perimeter of the work area or exclusion zone exceeds 5 parts per million (ppm) above background for the 15-minute average, work activities must be temporarily halted and monitoring continued. If the total organic vapor level readily decreases (per instantaneous readings) below 5 ppm over background, work activities can resume with continued monitoring.

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

3. If the organic vapor level is above 25 ppm at the perimeter of the work area, activities must be shutdown.

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

Particulate Monitoring, Response Levels, and Actions

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

1. If the downwind PM-10 particulate level is 100 micrograms per cubic meter (mcg/m^3) greater than background (upwind perimeter) for the 15-minute period or if airborne dust is observed leaving the work area, then dust suppression techniques must be employed. Work may continue with dust suppression techniques provided that downwind PM-10 particulate levels do not exceed 150 mcg/m^3 above the upwind level and provided that no visible dust is migrating from the work area.

2. If, after implementation of dust suppression techniques, downwind PM-10 particulate levels are greater than 150 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.

3. All readings must be recorded and be available for State (DEC and NYSDOH) and County Health personnel to review.

December 2009

Appendix 1B
Fugitive Dust and Particulate Monitoring

A program for suppressing fugitive dust and particulate matter monitoring at hazardous waste sites is a responsibility on the remedial party performing the work. These procedures must be incorporated into appropriate intrusive work plans. The following fugitive dust suppression and particulate monitoring program should be employed at sites during construction and other intrusive activities which warrant its use:

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

2. Particulate monitoring must be employed during the handling of waste or contaminated soil or when activities on site may generate fugitive dust from exposed waste or contaminated soil. Remedial activities may also include the excavation, grading, or placement of clean fill. These control measures should not be considered necessary for these activities.

3. Particulate monitoring must be performed using real-time particulate monitors and shall monitor particulate matter less than ten microns (PM10) with the following minimum performance standards:

(a) Objects to be measured: Dust, mists or aerosols;
(b) Measurement Ranges: 0.001 to 400 mg/m3 (1 to 400,000 :ug/m3);
(c) Precision (2-sigma) at constant temperature: +/- 10 :g/m3 for one second averaging; and +/- 1.5 g/m3 for sixty second averaging;
(d) Accuracy: +/- 5% of reading +/- precision (Referred to gravimetric calibration with SAE fine test dust (mmd= 2 to 3 :m, g= 2.5, as aerosolized);
(e) Resolution: 0.1% of reading or 1g/m3, whichever is larger;
(f) Particle Size Range of Maximum Response: 0.1-10;
(g) Total Number of Data Points in Memory: 10,000;
(h) Logged Data: Each data point with average concentration, time/date and data point number
(i) Run Summary: overall average, maximum concentrations, time/date of maximum, total number of logged points, start time/date, total elapsed time (run duration), STEL concentration and time/date occurrence, averaging (logging) period, calibration factor, and tag number;
(j) Alarm Averaging Time (user selectable): real-time (1-60 seconds) or STEL (15 minutes), alarms required;
(k) Operating Time: 48 hours (fully charged NiCd battery); continuously with charger;
(l) Operating Temperature: -10 to 50^{o} C (14 to 122^{o} F);
(m) Particulate levels will be monitored upwind and immediately downwind at the working site and integrated over a period not to exceed 15 minutes.

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

5. The action level will be established at 150 ug/m3 (15 minutes average). While conservative,

this short-term interval will provide a real-time assessment of on-site air quality to assure both health and safety. If particulate levels are detected in excess of 150 ug/m3, the upwind background level must be confirmed immediately. If the working site particulate measurement is greater than 100 ug/m3 above the background level, additional dust suppression techniques must be implemented to reduce the generation of fugitive dust and corrective action taken to protect site personnel and reduce the potential for contaminant migration. Corrective measures may include increasing the level of personal protection for on-site personnel and implementing additional dust suppression techniques (see paragraph 7). Should the action level of 150 ug/m3 continue to be exceeded work must stop and DER must be notified as provided in the site design or remedial work plan. The notification shall include a description of the control measures implemented to prevent further exceedances.

6. It must be recognized that the generation of dust from waste or contaminated soil that migrates off-site, has the potential for transporting contaminants off-site. There may be situations when dust is being generated and leaving the site and the monitoring equipment does not measure PM10 at or above the action level. Since this situation has the potential to allow for the migration of contaminants off-site, it is unacceptable. While it is not practical to quantify total suspended particulates on a real-time basis, it is appropriate to rely on visual observation. If dust is observed leaving the working site, additional dust suppression techniques must be employed. Activities that have a high dusting potential--such as solidification and treatment involving materials like kiln dust and lime--will require the need for special measures to be considered.

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

(a) Applying water on haul roads;
(b) Wetting equipment and excavation faces;
(c) Spraying water on buckets during excavation and dumping;
(d) Hauling materials in properly tarped or watertight containers;
(e) Restricting vehicle speeds to 10 mph;
(f) Covering excavated areas and material after excavation activity ceases; and
(g) Reducing the excavation size and/or number of excavations.

Experience has shown that the chance of exceeding the 150ug/m3 action level is remote when the above-mentioned techniques are used. When techniques involving water application are used, care must be taken not to use excess water, which can result in unacceptably wet conditions. Using atomizing sprays will prevent overly wet conditions, conserve water, and provide an effective means of suppressing the fugitive dust.

8. The evaluation of weather conditions is necessary for proper fugitive dust control. When extreme wind conditions make dust control ineffective, as a last resort remedial actions may need to be suspended. There may be situations that require fugitive dust suppression and particulate monitoring requirements with action levels more stringent than those provided above. Under some circumstances, the contaminant concentration and/or toxicity may require additional monitoring to protect site personnel and the public. Additional integrated sampling and chemical analysis of the dust may also be in order. This must be evaluated when a health and safety plan is developed and when appropriate suppression and monitoring requirements are established for protection of health and the environment.

APPENDIX B

FIELD EQUIPMENT DATA SHEETS

RAE SYSTEMS by Honeywell

MiniRAE 3000

Portable Handheld VOC Monitor

The MiniRAE 3000 is a comprehensive handheld VOC (Volatile Organic Compound) monitor that uses a third-generation patented PID technology to accurately measure more ionizable chemicals than any other device on the market. It provides full-range measurement from 0 to 15,000 ppm of VOCs.

The MiniRAE 3000 has a built-in wireless modem that allows real-time data connectivity with the ProRAE Guardian command center located up to 2 miles (3 km) away through a Bluetooth connection to a RAELink 3* portable modem or optionally via Mesh Network.

- **Highly accurate VOC maeasurements**
- **Patented PID sensor**
- **Low maintenance—easy access to lamp and sensor**
- **Low cost of ownership**
- **3-year 10.6eV lamp warranty**

KEY FEATURES

- Third-generation patented PID technology
- VOC detection range from 0 to 15,000 ppm
- 3-second response time
- Humidity compensation with built-in humidity and temperature sensors
- Six-month datalogging
- Real-time wireless built-in – Bluetooth (and optional RAELink3 portable modem) or Mesh Network support
- Large graphic display with integrated flashlight
- Multi-language support with 10 languages encoded
- IP- 67 waterproof design

APPLICATIONS

- Oil and Gas
- HazMat
- Industrial Safety
- Civil Defense
- Environmental and Indoor Air Quality

Workers can quickly measure VOCs and wirelessly transmit data via Bluetooth or optional Mesh radio.

*RAELink 3 modem is sold separately.

Wireless AutoRAE 2 Compatible ATEX ISO 9001 CERTIFIED

MiniRAE 3000

Portable Handheld VOC Monitor

SPECIFICATIONS

Instrument Specifications

Size	10" L x 3.0" W x 2.5" H (25.5 cm x 7.6 cm x 6.4 cm)
Weight	26 oz (738 g)
Sensors	Photoionization sensor with standard 10.6 eV or optional 9.8 eV or 11.7 eV lamp
Battery	• Rechargeable, external field-replaceable Lithium-Ion battery pack • Alkaline battery adapter
Running time	16 hours of operation (12 hours with alkaline battery adapter)
Display Graphic	4 lines, 28 x 43 mm, with LED backlight for enhanced display readability
Keypad	1 operation and 2 programming keys, 1 flashlight on/off
Direct Readout	Instantaneous reading • VOCs as ppm by volume (mg/m3) • High values • STEL and TWA • Battery and shutdown voltage • Date, time, temperature
Alarms	95dB at 12" (30 cm) buzzer and flashing red LED to indicate exceeded preset limits • High: 3 beeps and flashes per second • Low: 2 beeps and flashes per second • STEL and TWA: 1 beep and flash per second • Alarms latching with manual override or automatic reset • Additional diagnostic alarm and display message for low battery and pump stall
EMC/RFI	Compliant with EMC directive (2004/108/EC) EMI and ESD test: 100MHz to 1GHz 30V/m, no alarm Contact: ±4kV Air: ±8kV, no alarm
IP Rating	• IP-67 unit off and without flexible probe • IP-65 unit running
Datalogging	Standard 6 months at one-minute intervals
Calibration	Two-point or three-point calibration for zero and span. Calibration memory for 8 calibration gases, alarm limits, span values and calibration dates
Sampling Pump	• Internal, integrated flow rate at 500 cc/mn • Sample from 100' (30m) horizontally or vertically
Low Flow Alarm	Auto pump shutoff at low-flow condition
Communication & Data Download	• Download data and upload instrument set-up from PC through charging cradle or optional Bluetooth™ • Wireless data transmission through built-in RF modem
Wireless Network	Mesh RAE Systems Dedicated Wireless Network
Wireless Range (Typical)	EchoView Host: LOS > 660 ft (200 m) ProRAE Guardian & RAEMesh Reader: LOS > 660 ft (200 m) ProRAE Guardian & RAELink3 Mesh: LOS > 330 ft (100 m)
Safety Certifications	**US and Canada**: CSA, Classified as Intrinsically Safe for use in Class I, Division 1 Groups A, B, C, D **Europe**: ATEX II 2G EEx ia IIC T4
Temperature	-4° to 122° F (-20° to 50° C)
Humidity	0% to 95% relative humidity (non-condensing)

[1] Contact RAE Systems for country-specific wireless approvals and certificates.

Specifications are subject to change.

Attachments	Durable bright yellow rubber boot
Warranty	3 years for 10.6 eV lamp, 1 year for pump, battery, sensor and instrument
Wireless Frequency	ISM license-free band. IEEE 802.15.4 Sub 1GHz
Wireless Approvals	FCC Part 15, CE R&TTE, Others[1]
Radio Module	Supports Bluetooth or RM900

Sensor Specifications

Gas Monitor	Range	Resolution	Response Time T90
VOCs	0 to 999.9 ppm 1,000 to 15,000 ppm	0.1 ppm 1 ppm	< 3 s < 3 s

MONITOR ONLY INCLUDES:

- MiniRAE 3000 Monitor, Model PGM-7320
- Wireless communication module built in, as specified
- Datalogging with ProRAE Studio II Package
- Charging/download adapter
- RAE UV lamp, as specified
- Flex-I-Probe™
- External filter
- Rubber boot
- Alkaline battery adapter
- Lamp-cleaning kit
- Tool kit
- Operation CD-ROM
- Operation and Maintenance manual
- Soft leather case

OPTIONAL CALIBRATION KIT ADDS:

- 100 ppm isobutylene calibration gas, 34L
- Calibration regulator and flow controller

OPTIONAL GUARANTEED COST-OF-OWNERSHIP PROGRAM:

- 4-year repair and replacement guarantee
- Annual maintenance service

CORPORATE HEADQUARTERS

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Asia Pacific +852.2669.0828

DS-1018-05 02/16

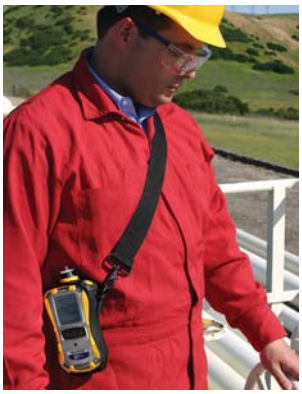
Honeywell
RAE SYSTEMS

MultiRAE

Wireless portable six-gas monitor with advanced VOC detection capability

The MultiRAE is the most advanced portable chemical detector on the market. The MultiRAE delivers the broadest PID sensor range in its class and the versatility to support 25 intelligent interchangeable sensor options (such as PID, NDIR for combustibles and CO_2, ammonia, chlorine, formaldehyde, and phosphine) to fully meet the monitoring needs in a variety of applications, including industrial hygiene, personal protection, leak detection, and HazMat response.

The MultiRAE's optional wireless capability improves safety by providing commanders and safety of cers real-time access to instrument readings and alarm status from any location[1] for better situational awareness and faster incident response.



MultiRAE used for worker exposure monitoring at an oil refinery

Applications

- Industrial hygiene, personal protection, and leak detection in industries such as:
  - Aviation (wingtankentry)
  - Chemical
  - Environmental
  - Oil and gas
  - Pharmaceutical
  - Shipping/marine
- HazMat response
- Clandestine drug labs

- *Highly versatile and customizable*
- *Best PID in its class (0 to 5,000 ppm range, 0.1 ppm resolution)*
- *Man Down Alarm with real-time remote wireless notifcation*
- *Compliant with MIL-SPEC-810G performance standard*
- *Fully automatic bump testing and calibration with AutoRAE 2*

FEATURES & BENEFITS

- Wireless access to real-time instrument readings and alarm status from any location[1]
- Unmistakable five-way local and remote wireless notification of alarm conditions, including Man Down Alarm[1]
- Intelligent sensors store calibration data, so they can be swapped in the field[2]
- Extensive on-board gas libraries (190 VOCs and 55 combustible gases)
- Largest display in its class
- Continuous datalogging (6 months for 5 sensors, 24x7)
- Device Management with Honeywell SafetySuite

MultiRAE Specifications

INSTRUMENT SPECIFICATIONS[4]	
SIZE	7.6" H x 3.8" W x 2.6" D (193 x 96.5 x 66 mm)
WEIGHT	31 oz (880 g)
SENSORS	25 intelligent interchangeable field-replaceable sensors including PID for VOCs, electrochemical sensors for toxic gases and oxygen, combustible LEL and NDIR sensors, and CO_2 NDIR sensor
BATTERY OPTIONS, RUNTIME[5] AND RECHARGE TIME	- Rechargeable Li-ion (~12-hr. runtime, < 6-hr. recharge time) - Extended duration Li-ion (~18-hr. runtime, < 9-hr. recharge time) - Alkaline adapter with 4 x AA batteries (~6-hr. runtime)
DISPLAY	Monochrome graphical LCD display (128 x 160) with backlighting. Automatic screen "flip" feature.
DISPLAY READOUT	- Real-time reading of gas concentrations; PID measurement gas and correction factor; Man Down Alarm on/off; visual compliance indicator; battery status; datalogging on/off; wireless on/off and reception quality. - STEL, TWA, peak, and minimum values
KEYPAD BUTTONS	3 operation and programming keys (Mode, Y/+, and N/-)
SAMPLING	Built-in pump. Average flow rate: 250 cc/min. Auto shutoff in low-flow conditions
CALIBRATION	Automatic with AutoRAE 2 Test and Calibration System or manual
ALARMS	Wireless remote alarm notification; audible (95 dB @ 30 cm), vibration, visible (flashing bright red LEDs), and on-screen indication of alarm conditions - Man Down Alarm with pre-alarm and real-time remote wireless notification[1]
DATALOGGING	Continuous datalogging (6 months for 5 sensors at 1-minute intervals, 24/7) - User-configurable datalogging intervals (from 1 to 3,600 seconds)
COMMUNICATION AND DATA DOWNLOAD	- Data download and instrument set-up and upgrades on PC via desktop charging and PC comm. cradle, travel charger, or AutoRAE 2 Automatic Test and Calibration System - Wireless data and alarm status transmission via built-in RF modem (optional)
WIRELESS NETWORK	ProRAE Guardian Real-Time Wireless Safety System or EchoView Host-based Closed-Loop System
WIRELESS RANGE (TYPICAL)	MultiRAE to RAELink3 [Z1] Mesh modem ~330 feet (100 meters) MultiRAE to EchoView Host, RAEMesh Reader or RAEPoint ~660 feet (200 meters) MultiRAE to Wi-Fi Access Point ~330 feet (100 meters)
OPERATING TEMPERATURE	-4° to 122°F (-20° to 50°C)
HUMIDITY	0% to 95% relative humidity (non-condensing)
DUST AND WATER RESISTANCE	IP-65 ingress protection rating (dust-tight and waterproof against hosing jets coming from all directions)
SAFETY CERTIFICATIONS	CSA: Class I, Division 1, Groups A, B, C and D, T4 Class II, Division 1; Groups E, F, G; T85°C ATEX: 0575 II 1G Ex ia IIC T4 Ga 2G Ex ia d IIC T4 Gb with IR Sensor installed I M1 Ex ia I Ma IECEx: Ex ia IIC T4 Ga Ex ia d IIC T4 Gb with IR Sensor installed I M1 Ex ia I Ma IECEx/ANZEx: Ex ia IIC T4 Ga Ex ia d IIC T4 Gb with IR Sensor installed Ex ia I Ma
EMC/RFI	EMC directive: 2004/108/EC
PERFORMANCE TESTS	MIL-STD-810G and 461F compliant. LEL CSA C22.2 No. 152; ISA-12.13.01
LANGUAGES	Arabic, Chinese, Czech, Danish, Dutch, English, French, German, Indonesian, Italian, Japanese, Korean, Norwegian, Polish, Portuguese, Russian, Spanish, Swedish, and Turkish
WARRANTY	- Four years on Liq O_2 sensors - Three years on CO and H_2S sensors - Two years on non-consumable components and catalytic LEL sensors - One year on all other sensors, pump, battery, and other consumable parts
WIRELESS FREQUENCY	ISM license free band. IEEE 802.15.4 Sub 1GHz, Wi-Fi 802.11 b/g
WIRELESS APPROVALS	FCC Part 15, CE R&TTE, Others[6]
RADIO MODULE	Supports RM900A

SENSOR SPECIFICATIONS[4]	RANGE	RESOLUTION
PID SENSORS		
VOC 10.6 EV (EXT. RANGE)	0 to 5,000 ppm	0.1 ppm
COMBUSTIBLE SENSORS		
CATALYTIC LEL	0 to 100% LEL	1% LEL
NDIR (0-100% LEL METHANE)	0 to 100% LEL	1% LEL
NDIR (0-100% VOL. METHANE)	0 to 100% Vol.	0.1% Vol.
CARBON DIOXIDE SENSOR		
CARBON DIOXIDE (CO_2) NDIR	0 to 50,000 ppm	100 ppm
ELECTROCHEMICAL SENSORS		
AMMONIA (NH_3)	0 to 100 ppm	1 ppm
CARBON MONOXIDE (CO)	0 to 500 ppm	1 ppm
CARBON MONOXIDE (CO), EXT. RANGE	0 to 2,000 ppm	10 ppm
CARBON MONOXIDE (CO), H_2-COMP.	0 to 2,000 ppm	10 ppm
CARBON MONOXIDE (CO) + HYDROGEN SULFIDE (H_2S) COMBO	0 to 500 ppm 0 to 200 ppm	1 ppm 0.1 ppm
CHLORINE (CL_2)	0 to 50 ppm	0.1 ppm
CHLORINE DIOXIDE (CLO_2)	0 to 1 ppm	0.03 ppm
ETHYLENE OXIDE (ETO-A)	0 to 100 ppm	0.5 ppm
ETHYLENE OXIDE (ETO-B)	0 to 10 ppm	0.1 ppm
FORMALDEHYDE (HCHO)	0 to 10 ppm	0.05 ppm
HYDROGEN CYANIDE (HCN)	0 to 50 ppm	0.5 ppm
HYDROGEN SULFIDE (H_2S)	0 to 100 ppm	0.1 ppm
METHYL MERCAPTAN (CH_3-SH)	0 to 10 ppm	0.1 ppm
NITRIC OXIDE (NO)	0 to 250 ppm	0.5 ppm
NITROGEN DIOXIDE (NO_2)	0 to 20 ppm	0.1 ppm
OXYGEN (O_2) OXYGEN (LIQ O_2)	0 to 30% Vol. 0 to 30% Vol.	0.1% Vol. 0.1% Vol.
PHOSPHINE (PH_3)	0 to 20 ppm	0.1 ppm
PHOSPHINE (PH_3 H)	0 to 20 ppm	0.1 ppm
SULFUR DIOXIDE (SO_2)	0 to 20 ppm	0.1 ppm

[1] *Additional equipment and/or software licenses may be required to enable remote wireless monitoring and alarm transmission.*
[2] RAE Systems recommends calibrating sensors on installation.
[3] *A two-gas combination sensor is required for a 6-gas configuration.*
[4] *Specifications are subject to change.*
[5] *Specification for non-wireless monitors.*
[6] *Contact RAE Systems for country specific wireless approvals and certificates.*

Ordering Information (MODEL: PGM-6228)

- Wireless[1] and non-wireless configurations are available
- Refer to the Portables Pricing Guide for part numbers for monitors, accessories, sampling and calibration kits, gas, sensors, and replacement parts

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Datasheet_MultiRAE_DS-1070-11_US-EN
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Honeywell

DUSTTRAK™ II AEROSOL MONITORS MODELS 8530, 8530EP AND 8532

DESKTOP OR HANDHELD UNITS FOR ANY ENVIRONMENT, ANY APPLICATION

DustTrak™ II Aerosol Monitors are battery-operated, data-logging, light-scattering laser photometers that give you real-time aerosol mass readings. They use a sheath air system that isolates the aerosol in the optics chamber to keep the optics clean for improved reliability and low maintenance. From desktop and desktop with external pump models to a handheld model, the DustTrak II offers a suitable solution for harsh industrial workplaces, construction and environmental sites and other outdoor applications, as well as clean office settings. The DustTrak II monitors measure aerosol contaminants such as dust, smoke, fumes and mists.

Features and Benefits

All Models

+ Real-time mass concentration readings and data-logging allow for data analysis during and after sampling
+ Measure aerosol concentrations corresponding to PM1, PM2.5, Respirable, and PM10 size fractions, using a variety of inlet conditioners
+ Easy-to-use graphical user interface with color touch-screen for effortless operation

Handheld Model (8532)

+ Long life internal pump for continuous sampling
+ Single-point data collection for walk through surveys
+ Lightweight design with ergonomic handle for portable applications

Desktop Models (8530 and 8530EP)

+ Energy-efficient, long lasting external pump for continuous, unattended, 24/7, outdoor monitoring applications (Model 8530EP only)
+ Long life internal pump for shorter work-shift or IAQ sampling applications (Model 8530)
+ Gravimetric reference sampling capability for custom reference calibrations
+ Automatic zeroing (with optional zero module) to minimize the effect of zero drift
+ STEL alarm setpoint for tracking 15-minute average mass concentrations
+ Environmental protected and tamper-proof secure (with an optional environmental enclosure)
+ Inlet sample conditioning (with optional heated inlet sample conditioner) to reduce the effect of humidity on photometric mass measurements (for use with an environmental enclosure)
+ Cloud Data Management System as hosted by Netronix™

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Desktop Models: Ideal for Long-Term Surveys and Remote Monitoring Applications

The DustTrak II is offered as a standard desktop (Model 8530), as well as a desktop with external pump (Model 8530EP.) Both models have manual and programmable data logging functions, making them ideal for unattended applications. The standard desktop model is most suitable for indoor, continuous monitoring, while the desktop with external pump is designed for 24/7 unattended, remote monitoring outdoors.

The DustTrak II desktop models come with USB (device and host), Ethernet, and analog and alarm outputs allowing remote access to data. User adjustable alarm setpoints for instantaneous or 15-minute short-term excursion limit (STEL) are also available on desktop models. The alarm output with user-defined setpoint alerts you when upset or changing conditions occur.

The DustTrak II desktop monitors have several unique features:

+ Measure aerosols in high concentrations up to 400 mg/m3.
+ External pump (Model 8530EP) with low power consumption for continuous, unattended monitoring in remote outdoor locations.
+ Gravimetric sampling capability using a 37-mm filter cassette which can be inserted in-line with the aerosol stream allowing you to perform an integral gravimetric analysis for custom reference calibrations.
+ Zeros automatically using the external zeroing module. This optional accessory is used when sampling over extended periods of time. By zeroing the monitor during sampling, the effect of zero drift is minimized.
+ STEL alarm feature for tracking 15-minute average mass concentrations when alarm setpoint has been reached for applications like monitoring fugitive emissions at hazardous waste sites.
+ Provide for environmental protection and tamper-proof security using an environmental enclosure. This optional accessory encloses the instrument within a waterproof, lockable, custom-designed case.
+ Condition the sample air stream before entering the instrument optics using a heated inlet sample conditioner (designed for use with an environmental enclosure.) This optional accessory is used in humid environments. By conditioning the sample, the humidity and water vapor are minimized, reducing elevated measurements.

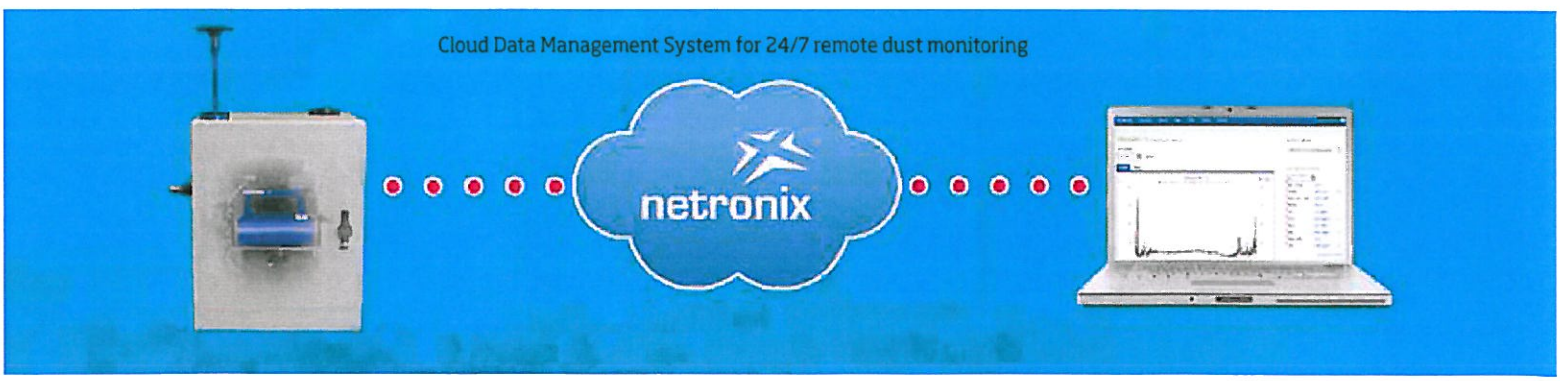
Handheld Models: Perfect for Walk-Through Surveys and Single-Point Data Collection Applications

The DustTrak II Handheld Model 8532 is lightweight and portable. It is perfect for industrial hygiene surveys, point source location monitoring, indoor air quality investigations, engineering control evaluations/validation, and for baseline trending and screening. Like the desktop models, it has manual and programmable data logging functions. In addition, the handheld model also has a single-point data logging capability. Single-point data collection is used for walk-through industrial hygiene surveys and indoor air quality investigations.

Applications	Desktop	Handheld
Aerosol research studies	+	+
Baseline trending and screening	+	+
Engineering control evaluations		+
Engineering studies		+
Epidemiology studies	+	+
Indoor air quality investigations	+	+
Industrial/occupational hygiene surveys	+	+
Point source monitoring		+
Outdoor environmental monitoring	+	
Process monitoring	+	+
Remote monitoring	+	
Battery Performance		
Models 8530 and 8530EP (Typical) 6600 mAH Li-Ion Battery Pack (P/N 801680)	1 Battery	2 Batteries
Battery runtime (hours)	Up to 6	Up to 12
Charge time* (hours) in DustTrak	4	8
Charge time* (hours) in external battery charger (P/N 801685)	4	8

Model 8532 (Typical) 3600 mAH Li-Ion Battery Pack (P/N 801681)	Battery
Battery runtime (hours)	Up to 6
Charge time* (hours) in DustTrak	4
Charge time* (hours) in external battery charger (P/N 801686)	4

* Of a fully depleted battery



DustTrak II Aerosol Monitor Features

All Models

+ Li-Ion rechargeable batteries
+ Internal and external battery charging capabilities
+ Outlet port for isokinetic sampling applications
+ User serviceable sheath flow and pump filters
+ Logged test pause and restart feature
+ Logged test programming
  + Color touch screen–either manual mode or program mode
  + TrakPro™ Data Analysis Software via a PC
+ User adjustable custom calibration settings
+ Instantaneous alarm settings with visual and audible warnings
+ Real-time graph display
+ View statistical information during and after sampling
+ On-screen instrument status indicators: FLOW, LASER and FILTER
+ Filter service indicator for user preventative maintenance

Desktop Models (8530 and 8530EP)

+ Long life external pump (8530EP)
+ Internal pump (8530)
+ Hot swappable batteries
+ Gravimetric reference sample capability
+ STEL alarm setpoint

Optional Accessories

+ Auto zeroing module
+ Protective environmental enclosure (8535 and 8537)
+ Heated inlet sample conditioner (for use with an environmental enclosure)
+ Cloud Data Management System as hosted by Netronix™

Handheld Model (8532)

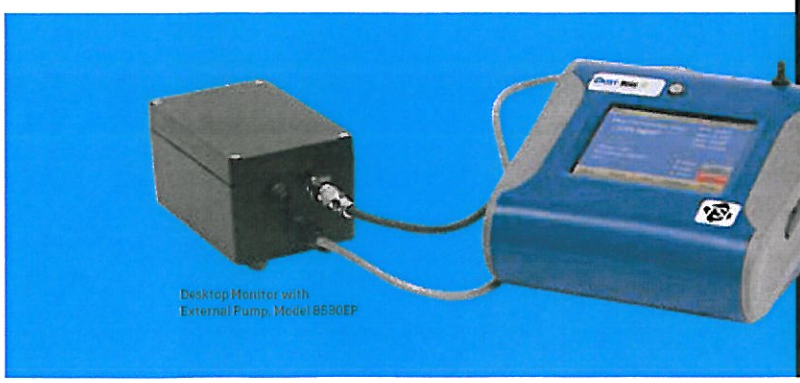
+ Long life internal pump
+ Single-point data collection for walk through surveys

Easy to Program and Operate

The graphical user interface with color touch-screen puts everything at your fingertips. The easy-to-read display shows real-time mass concentration and graphical data, as well as other statistical information along with instrument pump, laser and flow status, and much more. Perform quick walk-through surveys or program the instrument's advanced logging modes for long-term sampling investigations. Program start times, total sampling times, logging intervals, alarm setpoints and many other parameters. You can even set up the instrument for continuous unattended operation.

TrakPro™ Software Makes Monitoring Easier than Ever

TrakPro™ Data Analysis Software allows you to set up and program directly from a PC. It even features the ability for remote programming and data acquisition from your PC via wireless communication options or over an Ethernet network. As always, you can print graphs, raw data tables, and statistical and comprehensive reports for record keeping purposes.



Desktop Monitor with External Pump, Model 8530EP

SPECIFICATIONS

DUSTTRAK™ II AEROSOL MONITORS MODELS 8530, 8530EP AND 8532

Sensor Type
90° light scattering

Particle Size Range
0.1 to 10 µm

Aerosol Concentration Range

8530 Desktop	0.001 to 400 mg/m³
8530EP Desktop with External Pump	0.001 to 400 mg/m³
8532 Handheld	0.001 to 150 mg/m³

Resolution
±0.1% of reading or 0.001 mg/m³, whichever is greater

Zero Stability
±0.002 mg/m³ per 24 hours at 10 sec time constant

Flow Rate
3.0 L/min set at factory, 1.40 to 3.0 L/min, user adjustable

Flow Accuracy
±5% of factory set point, internal flow controlled

Temperature Coefficient
+0.001 mg/m³ per °C

Operational Temp
32 to 120°F (0 to 50°C)

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

Operational Humidity
0 to 95% RH, non-condensing

Time Constant
User adjustable, 1 to 60 seconds

Data Logging
5 MB of on-board memory (>60,000 data points)
45 days at 1 minute logging interval

Log Interval
User adjustable, 1 second to 1 hour

Physical Size (H x W x D)

Handheld	4.9 x 4.8 x 12.5 in. (12.5 x 12.1 x 31.6 cm)
Desktop	5.3 x 8.5 x 8.8 in. (13.5 x 21.6 x 22.4 cm)
External Pump	4.0 x 7.0 x 3.5 in. (10.0 x 18.0 x 9.0 cm)

Weight

Handheld	2.9 lb (1.3 kg), 3.3 lb (1.5 kg) with battery
Desktop	3.5 lb (1.6 kg), 4.5 lb (2.0 kg)-1 battery, 5.5 lb (2.5 kg)-2 batteries
External Pump	3.0 lb (1.4 kg)

Communications

8530	USB (host and device) and Ethernet. Stored data accessible using flash memory drive
8530EP	USB (host and device) and Ethernet. Stored data accessible using flash memory drive plus, cable assembly for external pump
8532	USB (Hose and device). Stored data accessible using flash memory drive

Power-AC
Switching AC power adapter with universal line cord included, 115-240 VAC

Analog Out

8530/8530EP	User selectable output, 0 to 5 V or 4 to 20 mA. User selectable scaling range

Alarm Out

8530/8530EP	Relay or audible buzzer Relay Non-latching MOSFET switch + User selectable set point + -5% deadband + Connector 4-pin, Mini-DIN connectors
8532	Audible buzzer

Screen

8530	5.7 in. VGA color touchscreen
8532	3.5 in. VGA color touchscreen

Gravimetric Sampling

8530/8530EP	Removable 37 mm cartridge (user supplied)

CE Rating

Immunity	EN61236-1:2006
Emissions	EN61236-1:2006

Specifications are subject to change without notice.

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P/N 6001986 Rev J Printed in U.S.A.