GEOTECHNICAL INVESTIGATION WORK PLAN

PUREX-MITCHEL FIELD
650 COMMERCIAL AVENUE
GARDEN CITY, NEW YORK

GANNETT FLEMING PROJECT NO. 72135

Prepared For:
Nassau County Department of Public Works
1194 Prospect Avenue
Westbury, NY 11590

Prepared By:

GANNETT FLEMING
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Submitted To:
New York State Department of Environmental Conservation
50 Circle Road
Stony Brook, NY 11790

November 5, 2024
(Revised December 3, 2025)

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GEOTECHNICAL INVESTIGATION WORK PLAN
PUREX-MITCHELL FIELD
650 COMMERCIAL AVENUE, GARDEN CITY, NEW YORK

1.0 EXECUTIVE SUMMARY

Gannett Fleming Engineers and Architects, P.C. (Gannett Fleming) has prepared this Geotechnical Investigation Work Plan (Work Plan) on behalf of Nassau County Department of Public Works (NCPDW) for New York State Department of Environmental Conservation (NYSDEC) review and approval. This geotechnical workplan precedes a much larger construction effort which will be required to complete the charging station/terminal. Transdev operates and maintains the Nassau Inter-County Express (NICE) fixed route and paratransit bus system on behalf of Nassau County. The NICE Bus operation consists of three (3) facilities located on Long Island including the facility located at 650 Commercial Avenue in Garden City, Long Island, NY (Site).

The Site was formerly known as Purex-Mitchel Field (650 Commercial Avenue) and is bordered by Commercial Avenue to the north, Quentin Roosevelt Boulevard to the east and Oak Street to the west. The Purex-Mitchel Field site is a designated NYSDEC Inactive Hazardous Waste Site (Class 4) and was remediated under the State Superfund Program (Site Code 130014). The former Purex groundwater treatment facility (GWTF) is located immediately adjacent to the Site at 650 Commercial Avenue and is associated with the remedial action at Purex-Mitchel Field. The Purex GWTF was operational for approximately 22 years, from 1990 until shutdown on April 12, 2012, when it was determined that the clean-up criteria of the 1985 Consent Order were achieved. **Section 2.1.2** provides a history on remedial activities at the Site.

2.0 SCOPE OF WORK

The geotechnical investigation is being conducted to collect current geotechnical data in the vicinity of an existing canopy at 650 Commercial Avenue that includes the design of a new canopy which will be addressed in a separate submittal. The proposed scope of work for this investigation includes advancement of two (2) geotechnical soil borings to a depth of approximately 40 to 50 feet bgs. The proposed boring locations B-1 and B-2 are within the containment wall boundary and alternate boring locations B-1A and B-2A are outside the containment wall boundary. A minimum horizontal distance of ten (10) feet will be maintained from the containment wall boundary.

2.1 Site Location, Current Use, and Proposed Work

The NICE Bus Mitchel Field Transit Facility is located at the intersection formed by Commercial Avenue to the north and Oak Street to the west, in Garden City, New York. The area immediately surrounding the Site is occupied by numerous industrial sites as well as several other small businesses and warehouses. **Figure 1** shows the location of the NICE bus garage facility and surrounding area.

The Purex-Mitchel Field site encompasses approximately 15 acres and houses a large building with several paved parking areas for buses. The area immediately surrounding the Site is occupied by numerous industrial sites as well as several other small businesses and warehouses.

2.1.1 Physiological Setting

The Site is located approximately at Latitude 40º 43' 45.71" North and Longitude -73º 36' 31.81" West. The elevation of the Site is approximately 76 feet above mean sea level (ft amsl) (NAVD 88). The nearest body of water to the Site is Hempstead Lake, approximately 3.72 miles southwest of the Site. Historical groundwater data for the area indicates that groundwater flow is towards the southwest and the depth to groundwater is from approximately 18 to 27.6 ft below ground surface (bgs).

Gannett Fleming has summarized the following Site-specific information obtained from historical environmental reports for the Site in the NYSDEC database (CDM, 1984):

The Site is in Nassau County, Long Island, NY. The aquifer system underlying Long Island, NY has been designated as a sole source aquifer by the U.S. Environmental Protection Agency (USEPA). Generalized areas or hydrogeologic zones have been designated to characterize the pattern of groundwater flow in the aquifer system. Four of these zones fall within Nassau County boundaries: Zone I, Zone II, Zone VII, and Zone VIII. The Site lies within Zone I, the Magothy aquifer recharge area.

Three distinct stratigraphic zones exist in the area. The uppermost is very permeable sand and gravel glacial outwash deposit. This "Upper Glacial" zone overlies an "Upper Magothy" layer of silty sands and some clays characterized by an approximately two orders of magnitude drop in hydraulic conductivity from the sand and gravel layer. Underlying the silty/clayey sand interval is a Magothy sand layer that has a hydraulic conductivity approximately one order of magnitude less than the Upper Glacial.

The local stratigraphy within and adjacent to the former Purex-Mitchel field Site is very similar from ground surface to a depth of approximately 60 feet. This material is part of the Upper Glacial zone and consists primarily of medium to coarse sands and fine to medium gravels. Directly beneath the Upper Glacial sands and gravels lie the less permeable deposits of the Upper Magothy formation.

Test well installations in the area indicate that a less permeable layer of silty/clayey fine sands is widespread over the former Purex-Mitchel Field site and the adjacent former Mitchel field area. At some wells a clay component was found. This silty/clayey fine sand layer was encountered at approximately 60 feet below ground level. Variations in thickness of this material suggests that this layer may not be continuous and that its effectiveness in retarding vertical groundwater movement varies from point to point.

2.1.2 History of Remedial Activities

Information provided in this section has been summarized from historical reports available in NYSDEC's database for the Site.

The two-acre Purex-Mitchel Field site was initially referred to as the Purex Corporation site which was part of an airstrip at Mitchel Field (previously Mitchel Air Force Base) that was operated and owned by

the Department of Defense (DOD) from 1917 to 1959. Beginning in 1957, the land was used as a chemical and storage facility by subsidiaries of Purex Corporation. In 1977, the Purex Corporation site was acquired from Purex Corporation by Nassau County to accommodate the construction/expansion of the Metropolitan Suburban Bus Authority (MSBA) Garage.

In 1981, the Nassau County Department of Public Works (NCDPW), Unit of Water Supply conducted groundwater investigations in the vicinity of the MSBA garage to evaluate potential new public water supply sources and discovered soil and groundwater contamination in the area. Further investigations to establish the source of this contamination was carried out by the NCDPW and the Nassau County Department of Health (NCDOH). Soil contamination was found primarily within the area of the former Purex Corporation site (CDM, October 1984). Chlorinated solvents from the former chemical distribution facility formed a contaminant plume in the groundwater. The primary contaminants of concern (COCs) in the groundwater at the Purex-Mitchel Field site included benzene, trichloroethene (TCE), tetrachloroethene (PCE), vinyl chloride, 1,1,1-trichloroethane, toluene, ethylbenzene, and methylene chloride.

Following discovery, Nassau County and the Office of the New York State Attorney General initiated legal action against Purex Corporation. This action resulted in a Consent Order which was issued on August 21, 1985 which required Purex Corporation to design, build and operate a treatment system to restore local soil and groundwater to specified target conditions.

The remediation at Purex-Mitchel Field included the installation of a slurry wall with a soil flushing system in the source area. In 1989, a groundwater treatment system was installed at the Site by Purex Corporation (i.e., the Purex GWTF) to treat the groundwater source and plume from Purex-Mitchel Field.

A cement-bentonite vibratory-beam containment wall was constructed at the Purex-Mitchel Field site as part of an overall remedial action plan to:

- Minimize additional migration of contaminants from the source area; and
- Increase the efficiency of a flushing system in the source area- whose purpose is to flush contaminants from the unsaturated zone by introducing treated groundwater to the surface via a tile drain field, by reducing the inflow of groundwater into the source area during the pumping and flushing of the groundwater from within the containment wall.

The bottom of the containment wall was designed to penetrate 5 feet below the top of the clayey silt layer that is part of the Magothy Formation. The containment wall was constructed a minimum of 4 inches wide by 1,213.85 feet long in accordance with Technical Specifications and Drawings. The completed wall depth ranged from a minimum of 59.6 feet to a maximum of 68.0 feet. The total square footage of the containment wall was 76,651 square feet with an average depth of 63.15 feet.

The Purex GWTF extracted contaminated groundwater from two separate areas (a highly contaminated source area which is surrounded by a slurry wall and a more diffused down gradient plume area) via two source area recovery wells, and three plume area recovery wells. Extracted groundwater was pumped via force mains to the Purex GWTF. The Purex GWTF was designed to treat groundwater flow rates of up to 1,400 gallons per minute (gpm). Once within the treatment facility, recovered water underwent air stripping treatment, and treated water was pumped from the facility's effluent wet well to a County recharge basin under a State Pollutant Discharge Elimination System (SPDES) permit. The Purex GWTF was designed by Canonie Environmental for Purex Corporation and included all process

equipment associated with air stripping, pressure filtration, carbon adsorption and vapor emission treatment necessary for groundwater treatment and discharge of effluent water and air.

Purex Corporation initiated groundwater treatment in 1990 and was required to operate the system for a minimum of 10 years. Upon completion of this operational requirement NCDPW assumed treatment operations on January 1, 2003. The results of a soil sampling program in 1992 indicated that the soil clean-up objectives had been met and further soil flushing was discontinued. In 2002, additional work was performed, including installation of deeper monitoring wells, and upgrading the pumping capacity to further enhance groundwater extraction capability and ultimately decrease the time required to complete the groundwater remediation at Purex-Mitchel field and the plume area. The Purex GWTF was operational for approximately 22 years, from 1990 until shutdown on April 12, 2012 when it was determined that the clean-up criteria of the 1985 Consent Order were achieved.

Groundwater monitoring and sampling in the area continued to be performed by NCDPW. Although some VOCs remain inside the source area (which is surrounded by a slurry wall); VOC groundwater concentrations have been reduced over the years from over 600 parts per million (ppm) to levels below cleanup criteria. NCDPW requested in a September 1, 2021 letter to NYSDEC that the former Purex-Mitchel Field site be de-listed from the NYSDEC database.

2.1.3 Current Use and Controls

The Purex-Mitchel Field area is a designated NYSDEC Inactive Hazardous Waste Site (Class 4) currently under site management. The Purex-Mitchel Field Site was remediated under the State Superfund Program and is identified by Site Code 130014. The treatment facility is currently used for storage purposes and general administration by NCDPW. In 2021, NCDPW was preparing to decommission the groundwater treatment building for additional bus parking.

Institutional and Engineering controls were established as part of the Consent order which included the following:

Institutional Controls:

- Environmental Easement (containment area)
- The Site may be used for industrial use
- The use of Groundwater underlying the Site is prohibited without necessary groundwater treatment.

Engineering Controls:

- Groundwater Containment
  - The completed wall is 4 inches wide by 1,213.85 feet long and the depth ranged from a minimum of 59.6 feet to a maximum of 68.0 feet. The total square footage of the containment wall was 76,651 square feet with an average depth of 63.15 feet.
- Pump & Treat (soil flushing/treatment system)
- Subsurface Barriers
  - Exposure to remaining contamination at the Site is prevented by a cover system placed over the Site. This cover system is comprised of remediated soil, asphalt pavement, concrete-covered sidewalks, and concrete building slabs.

2.1.4 Proposed Work

Based on the requirements of the new charging facility at 650 Commercial Avenue, it is necessary to demolish the Purex GWTF located at the Site before any new construction begins. The Site will be regraded, and construction is anticipated to consist of a 182 feet x 115 feet-8 inches canopy and ancillary equipment pads for the BEB charging stations. The Purex GWTF Decommissioning Work Plan dated February 25, 2022, was approved by NYSDEC in an email correspondence dated April 20, 2022. A draft Site Management Plan (SMP) was submitted to the NYSDEC for review in March 2025. An additional submittal for the redevelopment will need to be submitted and approved prior to any work being conducted at the Site and any work at the Site should be conducted in accordance with the SMP following department approval.

Health and Safety Plan (HASP):
A HASP has been developed for Gannett Fleming's team and is included in **Appendix A**. Subcontractors are responsible for their own HASP.

Geophysical Survey:
A ground penetrating radar (GPR) survey will be performed to clear potential boring locations from utilities and other subsurface obstructions prior to advancing the direct push rig. Before any invasive activities commence, the driller will locate any underground utilities within the investigation area through the New York One-Call system (811 or 1-800-962-7962) in accordance with the New York State Public Utilities Commission Rule 763. In addition, the driller may use additional means and methods to clear utilities at each boring location prior to advancing the direct push rig.

Geotechnical Investigation:
Gannett Fleming will retain the services of a licensed subsurface drilling company to advance two (2) geotechnical soil borings to a depth of approximately 40 to 50 feet bgs. As discussed in Section 2.1.2, the containment wall was constructed a minimum of four (4) inches wide by 1,213.85 feet long in accordance with Technical Specifications and Drawings. The completed wall depth ranged from a minimum of 59.6 feet to a maximum of 68.0 feet below grade. The total square footage of the containment wall was 76,651 square feet with an average depth of 63.15 feet.

The retained drilling company will utilize an ATV tract mounted Geoprobe 7800, 7822DT or similar unit with a 3.5" drive rod split spoon to complete the borings for geotechnical data. **Figure 2** depicts proposed boring locations B-1 and B-2 within the containment wall boundary and alternate boring locations B-1A and B-2A, outside the containment wall boundary. A minimum horizontal distance of ten (10) feet will be maintained from the containment wall boundary.

Based on the findings of the soil sampling program conducted in 1992, gross contamination is not anticipated during the subsurface investigation. However, if grossly contaminated soils are encountered during advancement of geotechnical borings, soil samples will be collected from the depth interval exhibiting the greatest evidence of contamination using a combination of visual, olfactory, and photoionization detector (PID) screening. Samples collected will be submitted to a New York State Department of Health (NYSDOH) Environmental Laboratory Approval Program (ELAP)-certified analytical laboratory for analysis of the following parameters:

- Volatile Organic Compounds (VOCs) by EPA Method 8260
- Semi-Volatile Organic Compounds (SVOCs) by EPA Method 8270
- Pesticides by EPA Method 8081
- Polychlorinated Biphenyls (PCBs) by EPA Method 8082
- Target Analyte List (TAL) Metals and Cyanide by EPA Method 6010

Excavation Work Plan (EWP) Components:
Components of an Excavation Work Plan (EWP) and investigation derived waste are incorporated as ground intrusive work is planned within the Site boundaries during the geotechnical investigations. The EWP will also be performed consistent with the draft SMP was submitted to the NYSDEC for review in March 2025, Appendix L. The following EWP components for this work include:

- Restoration will consist of backfilling the boreholes with drill cuttings that do not exhibit evidence of gross contamination, grouting to just below grade, and applying a cold patch at grade.
- Soil exhibiting gross contamination encountered during drilling activities shall be sampled and drummed in one or more 55-gallon drums, secured, and stored temporarily at the Site pending results of the laboratory analysis.
- Once results are received, transportation of the drums from the Site can be coordinated to an off-site disposal facility. Additional analytical requirements may be required for disposal based on the nature of the contamination and the requirements of the selected disposal facility.
- Off-site disposal to a licensed and permitted disposal facility will be performed for soil exhibiting gross contamination.

Decontamination:
The following procedures will be used for decontaminating downhole drilling equipment and tools that are not disposable and encounter soil and/or groundwater at the Site:

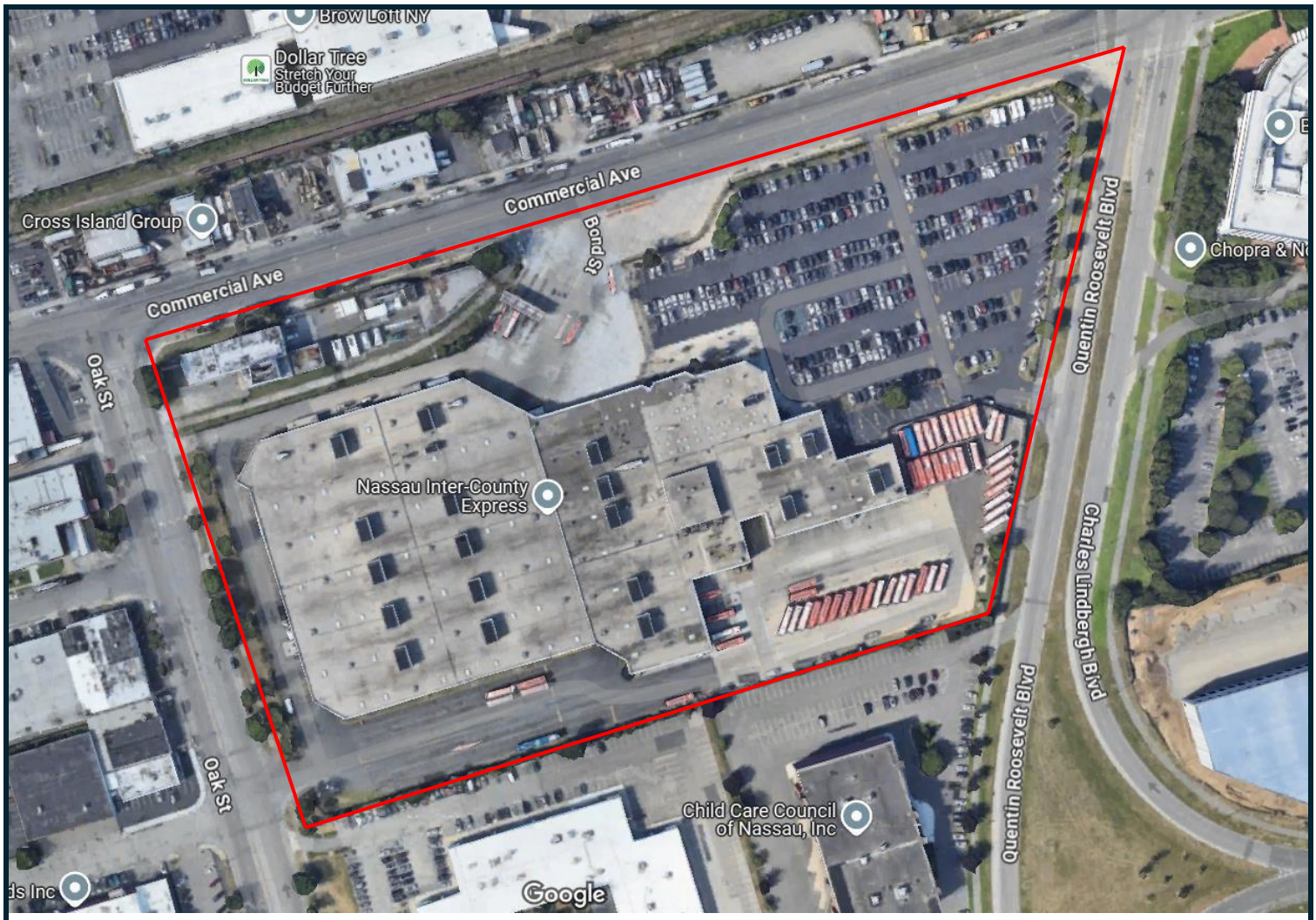
A designated area on Site will be used for decontamination. A 55-gallon drum will be utilized to contain decontamination liquids. Clean with tap water and soap, using a brush, if necessary, to remove particulate matter and surface films. Rinse thoroughly with tap water. Remove from the decontamination area and air dry. The 55-gallon drum will require waste characterization prior to off-site disposal at a licensed waste disposal facility.

Community Air Monitoring Plan (CAMP):
A Community Air Monitoring Plan (CAMP) for real-time monitoring for VOCs and particulates (i.e., dust) at the downwind perimeter of each designated work area will be implemented in accordance with Appendix 1A, NYSDOH Generic Community Air Monitoring Plan and Appendix 1B, Fugitive Dust and Particulate Monitoring (included herein as Appendix B).

3.0 SCHEDULE

Pending departmental approval, the anticipated timeline to begin and perform the investigation is during December 2025 or January 2026.

FIGURES



LEGEND

Approximate Site Boundary

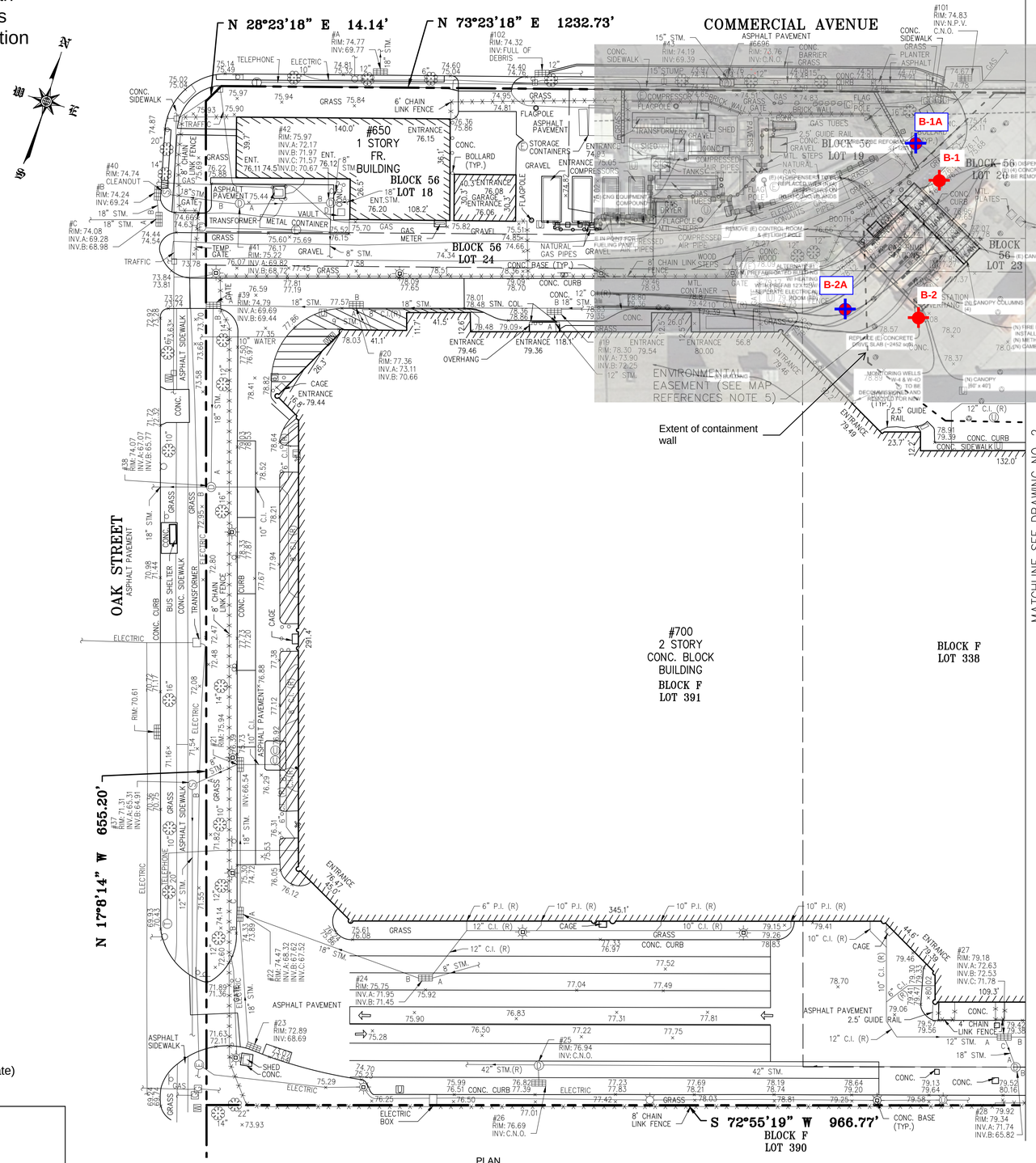
Source: Google Maps

Figure 1
Site Plan
700 Commercial Ave
Garden City, NY 11530

October 2024

GANNETT FLEMING

Proposed Boring Location Plan
Nassau Inter-County Express (NICE) Bus CNG Refueling Station



PLAN

0 40 80 120

SCALE : 1" = 40'

Legend

B-# Proposed Geotechnical Boring

B-# Proposed Geotechnical Boring (Alternate)

Figure 2
Boring Location Plan
700 Commercial Ave
Garden City, NY 11530

October 2024

GANNETT FLEMING

Notes

1. All proposed boring locations are approximate and will be determined in the field based on utility mark-out and site constraints.

SURVEY NOTES

1. ELEVATIONS SHOWN HEREON REFER TO THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88).
2. ELEVATIONS WERE DERIVED FROM G.P.S. OBSERVATIONS.
3. FIELD SURVEY WAS COMPLETED IN OCTOBER 2021.
4. THIS SURVEY WAS PREPARED IN ACCORDANCE WITH THE CURRENT CODE OF PRACTICE FOR LAND SURVEYS ADOPTED BY THE NEW YORK STATE ASSOCIATION OF PROFESSIONAL LAND SURVEYORS.
5. LOCATIONS, EXTENT AND SIZES OF UNDERGROUND UTILITIES AND STRUCTURES HAVE BEEN DETERMINED FROM INFORMATION SUPPLIED BY CONSULTANT, SUPPLEMENTED BY DATA OBTAINED IN THE FIELD. ACCURACY OF THIS UTILITY DATA IS NOT GUARANTEED, NOR IS THERE ANY GUARANTEE THAT ALL EXISTING UTILITIES AND SUBSTRUCTURES, WHETHER FUNCTIONAL OR ABANDONED, ARE SHOWN ON THIS MAP.
6. UNAUTHORIZED ALTERATION OR ADDITION TO THIS SURVEY IS A VIOLATION OF SECTION 7209, SUB-DIVISION 2 OF THE NEW YORK STATE EDUCATION LAW. COPIES OF THIS SURVEY MAP NOT BEARING THE SURVEYOR'S INKED OR EMBOSSED SEAL SHALL NOT BE CONSIDERED TO BE A VALID TRUE COPY.

LEGEND

S	SEWER	6"	TREE (DIAMETER)
E	ELECTRIC		CATCH BASIN
D	DRAINAGE		WOOD UTILITY POLE
T	TELEPHONE		WOOD UTILITY POLE WITH LIGHT
U	UNKNOWN		BOLLARD
W	WATER		METAL LIGHT
W	WATER VALVE		MONITORING WELL
G	GAS VALVE		ELECTRIC BOX
U	UNKNOWN VALVE		TRAFFIC CONTROL BOX
	TRAFFIC SIGN	5.54 / 6.00	TOP/BOT CURB ELEVATION
	HYDRANT	6.87	SPOT ELEVATION
INV.	INVERT ELEVATION	#13 RIM: 77.58 INV: 72.58	DRAINAGE IDENTIFICATION
RIM	RIM ELEVATION	ENTRANCE 7.61	ENTRANCE ELEVATION
STM.	STORM SEWER		SEWER FLOW DIRECTION
SAN.	SANITARY SEWER		
C.N.O.	COULD NOT OPEN		BUILDING
N.P.V.	NO PIPES VISIBLE		CURB
(R)	RECORD INFORMATION		IRON FENCE
			CHAIN LINK FENCE
		N 73°23'18" E 1232.73'	ROW LINE
			TAX LOT LINE
		BLOCK 56 LOT 18	TAX BLOCK AND TAX LOT
			ENVIRONMENTAL EASEMENT LINE

MAP REFERENCES

1. COUNTY OF NASSAU DEPARTMENT OF PUBLIC WORKS THE IMPROVEMENT OF OAK STREET AND COMMERICAL AVENUE PROPERTY CONVEYANCE MAP A. JAMES DE BRUIN CIVIL ENGINEER & LAND SURVEYOR NORTH BELLMORE N.Y. DATE OCT. 1974 SCALE 1"=50' CONTRACT 1267 B-3 SHEET 1 OF 1
2. DEPARTMENT OF PUBLIC WORKS NASSAU COUNTY, NEW YORK MAP SHOWING INTERIOR ROADWAY SYSTEM TO BE INCORPORATED INTO NASSAU COUNTY ROAD SYSTEM AT MITCHEL FIELD UNIONDALE TOWN OF HEMPSTEAD SCALE: 1"= 200' AUGUST, 1979 SHEET 1 OF 1
3. METROPOLITAN SUBURBAN BUS AUTHORITY PROPERTY MITCHEL FIELD NASSAU COUNTY N.Y. PREPARED BY SIDNEY B. BOWNE & SON CONSULTING ENGINEERS SEPTEMBER 15, 1982
4. PLAN SET METROPOLITAN SUBURBAN BUS AUTHORITY DEPARTMENT OF PUBLIC WORKS NASSAU COUNTY LONG ISLAND, NEW YORK PREPARED BY WIEDERSUM ASSOCIATES AND MICHAEL BAKER, JR. OF NEW YORK, INC. PROJECT NO. WA#8214 DATE 5/15/85 CONTRACT NO. B91250G
5. ENVIRONMENTAL EASEMENT SURVEY PART OF 700 COMMERICAL AVENUE, INC. VILLAGE OF GARDEN CITY, TOWN OF HEMPSTEAD COUNTY OF NASSAU STATE OF NEW YORK PREPARED BY B THAYER ASSOCIATES WOODBURY, NEW YORK MARCH 4, 2019

NUMBER	BY	DATE	REVISION DESCRIPTION
1	M.B.	03/15/2022	SURVEY UPDATE & ADDED BOUNDARY

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www.bthayerassociates.com

STATE OF NEW YORK · CHARLES STEINHILPER · LICENSED LAND SURVEYOR · 051125

CHARLES STEINHILPER
NYS PLS #051125

DRAWING TITLE: **TOPOGRAPHIC AND BOUNDARY SURVEY**

PROJECT NAME AND LOCATION: **650 & 700 COMMERCIAL AVENUE, INC. VILLAGE OF GARDEN CITY, TOWN OF HEMPSTEAD COUNTY OF NASSAU STATE OF NEW YORK**

DRAWN BY:	DRAWING DATE:	PROJECT NUMBER:
M. BERNARD	JAN. 27 2017	0044.014.00
CHECKED BY:	SCALE:	CADD FILE NAME / LOCATION:
J. PAGANO	1" = 40'-0"	PL_TOPO.DWG

1

APPENDIX A

HEALTH & SAFETY PLAN (HASP)

GANNETT FLEMING, INC (GF)

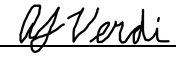
SHORT-FORM HEALTH AND SAFETY PLAN

All Green fields must be completed prior to site use

This short form Health and Safety Plan (HASP) is intended for use only on small-scale, short duration projects with limited complexity. Gannett Fleming, Inc. (GF) developed this HASP for use only by GF employees. The HASP has been developed relative to federal, state, and local guidelines and regulations and GF policies and procedures.

Compliance with this HASP will help reduce but cannot guarantee total elimination of hazards associated with project site activities. This HASP was prepared specifically for this project and should not be used for any other project or site. Gannett Fleming, Inc. cannot guarantee the health and safety of any person in this project area. The drilling contractor is responsible for development of and compliance with their own HASP.

Site Name	700 Commercial Avenue
Project Number	072135
Location	Garden City, New York
Document Date	11/11/2024

	Printed Name	Signature	Date
HASP Prepared by	Ankush Maltesh	X  Ankush Maltesh	11/11/2024
Reviewed by (Corporate Safety Representative)	Ryan McCarthy, CSP		11/11/2024
GF Project Manager	Anthony J. Verdi III, PE		12/3/2025

1.0 ON-SITE ORGANIZATION AND COORDINATION

The following GF personnel are designated to carry out the stated job functions on-site and have received the appropriate training to perform their site duties in accordance with applicable regulations.

Job Function	Name	Phone Number Office/Cell
GF Project Manager:	Anthony J. Verdi III, PE	732.587.8775
GF Corporate Safety Director:	David Albright, MS, CIH, CSP	717.877.7104
Site Safety & Health Supervisor (SSHS):	Anthony Verdi	732.587.8775
Field Operations Leader (FOL):	Daniel Cacciola, PE	516.578.2282
Field Team Members:	Ariel Yugsi	646.837.1019
Contractor Representative:	TBD	

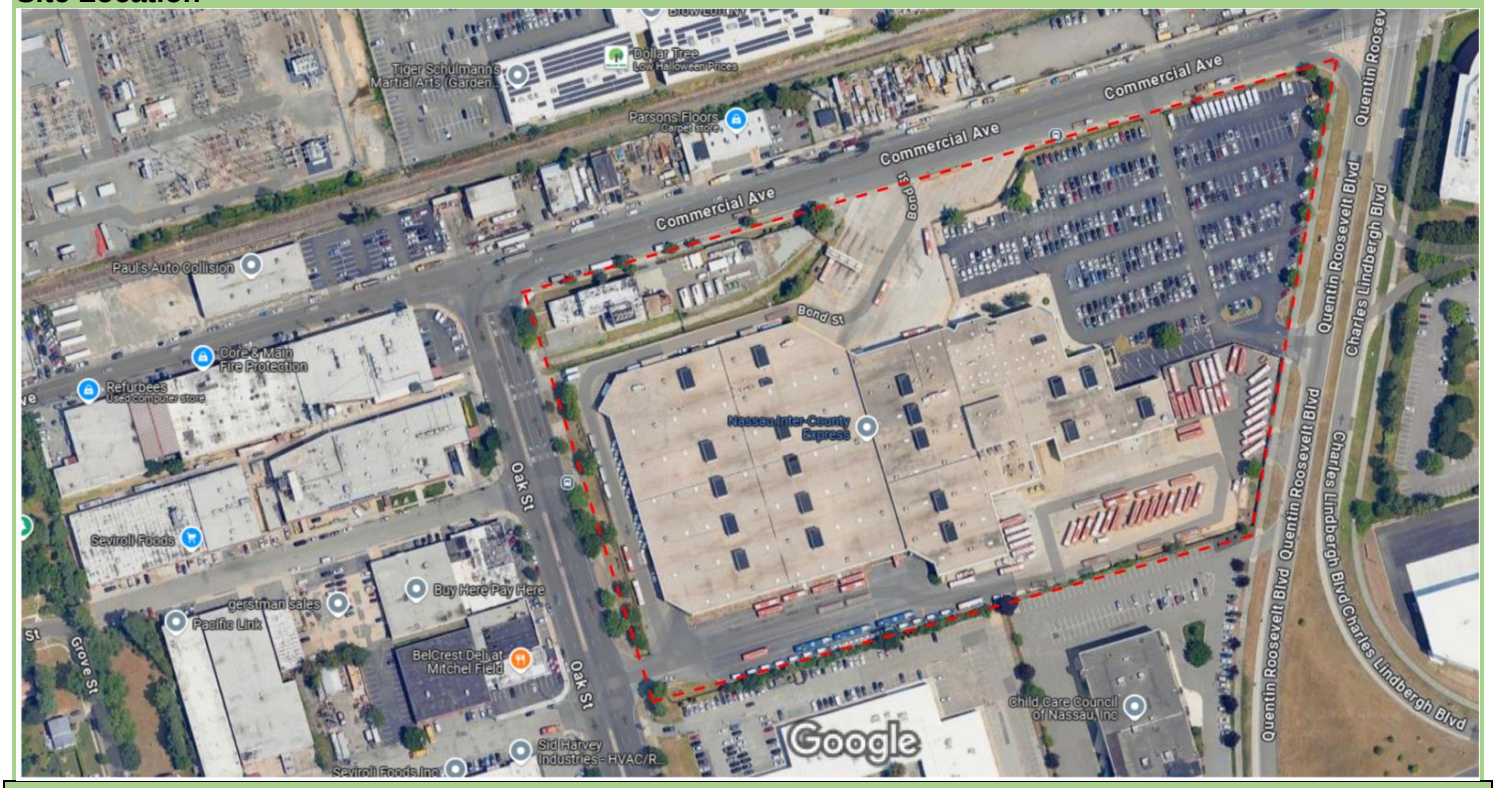
2.0 SITE SETTING AND SCOPE OF WORK

Transdev operates and maintains the Nassau Inter-County Express (NICE) fixed route and paratransit bus system on behalf of Nassau County. The NICE Bus operation consists of three facilities located on Long Island including the facility located at 700 Commercial Avenue in Garden City, Long Island, NY (Site).

The Site was formerly known as Purex-Mitchel Field and is bordered by Commercial Avenue to the north, Quentin Roosevelt Boulevard to the east and Oak Street to the west. The Purex-Mitchel Field site is a designated NYSDEC Inactive Hazardous Waste Site (Class 4) and was remediated under the State Superfund Program (Site Code 130014). The primary contaminants of concern (COCs) in the groundwater at the Purex-Mitchel Field Site included benzene, trichloroethene (TCE), tetrachloroethene (PCE), vinyl chloride, 1,1,1-trichloroethane, toluene, ethylbenzene, and methylene chloride. The former Purex groundwater treatment facility (GWTF) is located immediately adjacent to the Site at 650 Commercial Avenue and is associated with the remedial action at Purex-Mitchel Field. The Purex GWTF was operational for approximately 22 years, from 1990 until shutdown on April 12, 2012, when it was determined that the clean-up criteria of the 1985 Consent Order were achieved.

A geotechnical investigation is being conducted to collect current geotechnical data in the vicinity of an existing canopy at 700 Commercial Avenue that will include the design of a new canopy. Construction is anticipated to begin in 2025 and will include an upgrade to the existing private fast-fill station. The scope of the project includes installing a new canopy, refueling panel, upgrading the fuel management system, relocating and installing new dispenser locations, removing a control room, installing a video surveillance system at the canopy, and installing new methane and fire protection system. A phased approach shall be taken to maintain the station operational at least 50% capacity during construction in 2025.

Site Location



SITE TYPE		
Select One		
☒ Active	☐ Inactive	
Select One		
☒ Secure	☐ Unsecure	

Select All That Apply					
☐	Agricultural	☐	Military	☐	Residential - Urban
☒	Commercial	☐	Natural Area	☐	Unknown
☐	Industrial	☐	Recreational	☐	Other (specify)_____
☐	Landfill	☐	Residential - Rural		

SURROUNDING POPULATION			
☒	Industrial	☒	Suburban – Commercial
☐	Urban	☐	Rural- Farmland
☐	Urban- Inner City	☐	Rural – Industrial
☐	Suburban - Residential	☐	Other-(describe)

3.0 ON-SITE ACTIVITIES

Anticipated Dates of Field Activities 11/11/2024-12/31/2024. Anticipated timeframe is contingent on NYSDEC approval of the work plan and subcontractor availability.

DESCRIPTION OF PROJECT			
☐	Phase I ESA	☐	UST Removal
☐	Phase II ESA	☐	Wetland delineation/Identification
☐	Subsurface Investigation	☐	Ecological Studies
☐	Hazardous Materials Building Assessment	☐	Tunnel and Dam Inspections
☐	Preliminary Assessment	☐	Sewer Inspection/Cleaning
☐	Remedial Investigation	☐	Train Yards/Railroad (Active)
☐	Remedial Action (Limited)	☐	Feasibility Study
☐	Bridge/Roadway Inspections/Activities	☐	Other (trenching for utility installation)
☐	Train Yards/Railroad/ROW (Active)	☒	Other (Geotechnical Investigation)
☐	Train Yards/Railroad (Inactive)	☐	Other (describe)

SPECIFIC WORK TASKS If more than two Work Tasks are selected, STOP. Contact Corporate Safety.			
☐	Site Walkthrough	☐	Soil Gas Sampling
☐	HazMat Building Materials Sampling	☐	Ground Water Monitoring
☐	Groundwater/Soil Sampling	☐	Operations & Maintenance
☒	Drilling/Subsurface	☐	Other (describe)
☐	Surface Water Sampling	☐	Other (describe)
☐	Sediment Sampling	☐	Other (describe)
☐	Excavation	☐	Other (describe)

4.0 HAZARD ASSESSMENT

Hazard Assessment & Control (Check all that apply)	
☒ Physical Hazards ☒ Slip/Trip/Fall ☐ Energized Sources ☒ Overhead Hazard (drill rig boom) ☒ Eye/Noise Hazard ☐ Heat/Cold Stress ☒ Traffic ☐ Confined Space Entry ☒ Contaminant/Hazardous Air Pollutants ☐ Hand Tools (powered/nonpowered) ☒ Mechanical Equipment ☐ Heat Sources (boilers/furnaces, steam pipes, welding/burning) ☒ Heavy Equipment (drill rig) ☐ Elevated Work Areas (scaffolds, ladders) ☐ Other (specify)	☐ Biological Hazard ☐ Poison Vegetation (Poison Ivy/Oak) ☐ Blood Borne Pathogens ☐ Infectious/Medical Waste ☐ Animals/Rodents/Reptiles/Insects ☐ Infectious Disease ☐ ☐ Other (specify) ☐ Other (specify) ☐ Other (specify)
☒ Chemical Hazards ☐ Flammable ☐ Toxic (exceeded TCLP Parameters) ☐ Reactive (cyanide) ☐ Corrosives ☒ Other (Volatile Organic Compounds) ☐ Other (specify)	☐ Radiological Hazards ☐ Ionizing (α, β, γ, x-ray, neutron, etc) ☐ Non-Ionizing (UV, IR, laser, etc.) ☐ Other (specify) ☐ Other (specify)

4.1 The following substance(s) are known or suspected to be on-site. The primary hazards of each are identified.

Substances	Impacted Media	Concentrations Soil/Groundwater (ppm)	OSHA Exposure Limits	Primary Hazards Exposure Route (inhalation, absorption, ingestion, injection)
Benzene	**Groundwater**	**0.0016**	**TWA 1.0 ppm**	**Inhalation, ingestion, skin and/or eye contact**
Ethylbenzene	**Groundwater**	**0.0022**	**TWA 100 ppm**	**Inhalation, ingestion, skin and/or eye contact**
Methylene chloride	**Groundwater**	**Not determined**	**TWA 0.5 mg/m^3**	**Inhalation, skin absorption, ingestion, skin and/or eye contact**
Tetrachloroethene	**Groundwater**	**0.0973**	**TWA 100 ppm**	**Inhalation, skin absorption, ingestion, skin and/or eye contact**
Toluene	**Groundwater**	**0.0118**	**TWA 200 ppm**	**Inhalation, ingestion, skin and/or eye contact**

1,1,1-trichloroethane	**Groundwater**	**0.0076**	**TWA 350 ppm**	**Inhalation, ingestion, skin and/or eye contact**
Trichloroethene	**Groundwater**	**0.0108**	**TWA 100 ppm**	**Inhalation, skin absorption, ingestion, skin and/or eye contact**
Vinyl chloride	**Groundwater**	**0.292**	**TWA 1.0 ppm**	**Inhalation, skin and/or eye contact (liquid)**

Hazard Substances information is provided in the attached NIOSH POCKET GUIDE SHEETS

4.2 Hazard Awareness - Personnel are to eliminate or minimize their exposure to potentially hazardous conditions unless all appropriate hazard controls are in place.

5.0 PERSONAL PROTECTIVE EQUIPMENT (PPE)

5.1 The maximum level of PPE without prior authorization from Gannett Fleming Corporate Safety is Level D.

5.2 At a minimum all Gannett Fleming Personal must don a hard hat, safety glasses and safety footwear when on a project site.

5.3 Any work requiring PPE above a Level D must be approved by Gannett Fleming Corporate Safety.

Hazard Controls and Personal Protective Equipment (PPE) (Check all that apply)	
☒ **Head Protection** ☒ Hard Hat ☐ High Visibility tape on Hard Hat ☐ Other (describe)	☒ Foot Protection ☒ Leather/Safety Toe Boots ☐ Rubber/Safety Toe Boots ☐ Other (describe)
☒ **Eye Protection** ☒ Safety Glasses ☐ Chemical Goggles ☐ Face Shield ☐ Other (describe)	☒ **Body Protection** ☒ Long Pants ☒ Shirt with 4” sleeves (minimum) ☒ High Visibility Vest (ANSI Approved) ☐ Cotton Coveralls ☐ Rain Suit ☒ Cold Weather Clothing ☐ Other (describe)
☒ **Hand Protection** ☐ Leather ☐ Cut Resistant (Kevlar) ☒ Chemical (nitrile) ☐ Other (describe)	☒ **Hearing Protection** ☒ Ear Plugs ☐ Earmuffs ☐ Other (describe)
☒ **Other Equipment** ☒ First Aid Kit ☒ Mobile Phone ☐ 2-Way Radios ☐ Flashlight ☐ Fluids/Drinking Water/Ice ☐ Towels/Towelettes ☒ Hand Cleaner/Disinfectant ☐ Hand/Foot Warmers ☐ Eyewash bottle	☐ **Additional Control/Remarks Please describe)** Minimize skin contact with groundwater contaminated equipment/materials. Use good hygiene practices and wash hands and arms following removal of nitrile gloves.

☐ Fire extinguisher ☐ Other (describe)	

6.0 DECONTAMINATION PROCEDURES

6.1 Limited decontamination will be required for projects where this short-form HASP is applicable.

DECONTAMINATION PROCEDURES		
Type	**Procedure**	**Equipment**
Personnel	Hand/Face Washing	Soap/Water
Sampling/Small Equipment	Follow Project-Specific Sampling Plan	☒ Buckets ☒ Brushes ☐ Water Hoses ☐ Tubs ☒ Disposal Drums ☒ Cleaning Solution (Alconox, etc.)
Heavy Equipment	Follow Project- Specific Work Plan	☐ Decontamination Pad ☐ Steam Cleaner

7.0 AIR MONITORING ☐ *Check box if Air Monitoring Not Required*

Monitoring Instrument	Action Level
Oxygen Meter	<19.5% or >23%
Combustible Gas Indicator/LEL Meter	10% LEL
Carbon Monoxide Meter	35 ppm
Hydrogen Sulfide	10 ppm
Organic Vapor Monitor (PID)	5 ppm (sustained for >5minutes)
Colorimetric Detector Tubes (Benzene)	If PID indicates sustained reading above 5 ppm, a benzene detector tube should be used to make sure benzene is below 0.5 ppm.
Dust Monitor	Project-Specific – minimize visible emissions

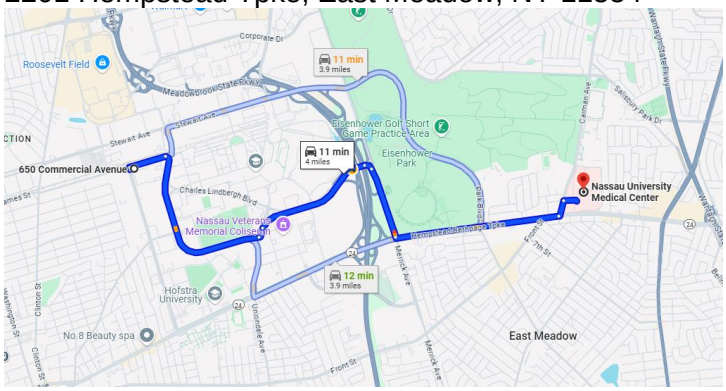
For project-specific action levels, contact Corporate Safety Representative. If action levels (above) are exceeded, contact Project Manager and Corporate Safety Representative.

8.0 COMMUNICATION AND TRAINING

8.1 A tailgate safety meeting must be conducted and documented for all personnel covered by this plan. (See page 7)

SITE CONTROL AND COMMUNICATIONS	
Traffic Control Plans	A traffic control plan is not included as part of this project.
Standard Operating Procedures (SOPs)	The following applicable SOPs are attached: 3,5,7,15,16,18

9.0 EMERGENCY INFORMATION

<table>
<tr><th colspan="2">Emergency Information</th></tr>
<tr><th>Phone Numbers:</th><th>Emergency Contacts:</th></tr>
<tr><td>Local police: 911 / 516.573.7524
Nassau Police Department
1490 Franklin Ave, Mineola, NY 11501</td><td>Project Mgr: Anthony J. Verdi III, PE
732.587.8775</td></tr>
<tr><td>Local Ambulance: 911 / 516.248.0141
Mineola Volunteer Ambulance
170 Elm Pl, Mineola, NY 11501</td><td>Corporate Safety Mgr: David Albright, 717.877.7104
Corporate Insurance Mgr: Steven Kuemmerle, 215.589.3976</td></tr>
<tr><td>Local Fire Department: 911 / 516.481.8411
Van Ness Fire Station UFD
154 Uniondale Ave, Uniondale, NY 11553</td><td>Client Contact: Sudesh De Silva
t. 516.228.4172 | c. 516.510.4105</td></tr>
<tr><td>Local Hospital: 516.572.0123
Nassau University Medical Center
2201 Hempstead Tpke, East Meadow, NY 11554
 
</td><td>650 Commercial Ave
Garden City, NY 11530

Take Quentin Roosevelt Blvd, Charles Lindbergh Blvd and Hempstead-Bethpage Tpke/Hempstead Tpke to your destination in East Meadow
10 min (3.9 mi)
1. Head north on Oak St toward Commercial Ave
82 ft
2. Use the right lane to turn right onto Commercial Ave
0.2 mi
3. Turn right onto Quentin Roosevelt Blvd
1.1 mi
4. Use the middle lane to turn left onto Earle Ovington Blvd
358 ft
5. Use the 2nd from the right lane to turn slightly right onto Charles Lindbergh Blvd
0.8 mi
6. Use the middle lane to take the Merrick Ave S ramp to Meadowbrook Pkwy N
315 ft
7. Use the left lane to take the ramp onto Merrick Ave
0.5 mi
8. Use the left 2 lanes to turn left onto Hempstead-Bethpage Tpke/Hempstead Tpke
Pass by Taco Bell (on the left in 0.7 mi)
1.1 mi
9. Use the 2nd from the left lane to turn left after Mavis Discount Tire (on the left)
0.1 mi
10. Turn right
1 min (466 ft)

Nassau Univ Medical Ctr
2201 Hempstead Tpke, East Meadow, NY 11554</td></tr>
<tr><td>First Aid Trained Individual On-Site: N/A</td><td></td></tr>
</table>

10.0 INCIDENT REPORTING

10.1 An incident is an unplanned event involving a Company employee that results in personal injury/illness, property damage, or environmental release.

A near miss event is an event that could have resulted in an incident, as defined above, if circumstances were different. An event is considered a near miss if only a fortunate break in the chain of events prevented personal injury/illness, property damage, or environmental release.

10.2 Follow GF SOP #5 – Incident/Near Miss Procedures.

Within 24 hours of an incident/near miss, the employee is required to report the incident to his or her Supervisor and submit an Initial Report of Incident or Near Miss ("Initial Report") to IncidentReport@gfnet.com. The Initial Report Form is attached.

11.0 HASP TRAINING LOG

11.1 By signing the training log below, the individual certifies the contents of this Health and Safety Plan (HASP) have been explained to them, they have had the opportunity to read and review the HASP, they understand the information and hazards presented, and will abide by the HASP.

Printed Name	Organization	Signature	Date

Daily Safety Briefing (Tailgate Safety Meeting) Check List
All Topics Must Be Discussed Every Day of Every Project Even If the Same Field Staff Are Present and at any time there is a change is cope of work, or incident on site.
A. "Administrative" Topics
1. Introduce all persons present.
2. Identify Roles & Responsibilities/Chain of Command [e.g., Client Project Manager (PM), Gannett Fleming (GF) and Subcontractor PM/Supervisors, GF and Subcontractor H&S Officers, Field Operations Leader (FOL), etc.].
3. Emphasize the Gannett Fleming Stop Work Authority Policies: **Anyone has the authority and right to Stop Work because of Unsafe Conditions.**
4. Identify and discuss the role of visitors (e.g., client representatives, regulatory representatives, citizens, GF staff).
5. Identify persons who require an initial site briefing and provide the necessary information.
B. General Health and Safety Topics
1. Emphasize that the Health and Safety of Workers, Residents, and Visitors Must Always be Considered First.
2. Weather forecast for the day.
3. Buddy system.
4. Physical, chemical and/or biological hazards anticipated.
5. PPE required.
6. Air monitoring requirements.
7. Site control requirements.
8. Communication requirements.
9. Decontamination requirements (Personal hygiene/decon and sanitary facilities available, not just equipment decon).
10. Material handling requirements (place emphasis on proper lifting techniques).
11. Fire and/or explosion hazards.
12. Emergency procedures including routes to hospital and escape, emergency medical treatment, medical evacuation from the site, and assembly/rally location for site workers to meet.
13 Emergency shut off for all equipment. Drill rig, Air Knife, Geoprobe - all members of a field team must know the location of the kill switches and how to operate them.
C. Specific Work to Be Conducted, and Related Health and Safety Issues and Hazards
1 Other Health and Safety Issues that others need to be aware of shall be discussed.
2. Less all-encompassing health and safety issues shall be addressed during task SPSAs.
D. Closing Activities
1. Set Mid-Day (e.g., Lunchtime) Safety Briefing.
2. Ensure all persons have signed the Initial HASP Training Log and the Initial Site Entry Briefing Log.
3. Document this Tailgate Safety Briefing in a Site Logbook. Include names and affiliations of all persons on-site.

STANDARD OPERATING PROCEDURE NUMBER 3 HAZARD COMMUNICATION STANDARD (HAZCOM)/GLOBALLY HARMONIZED SYSTEM OF CLASSIFICATION AND LABELING OF CHEMICALS (GHS) PROGRAM

3.0 PURPOSE

The purpose of this Standard Operating Procedure (SOP) is to identify the requirements and procedures for the implementation of a Hazard Communication/Globally Harmonized System of Classification and Labeling of Chemicals Program, which complies with Occupational Safety and Health Administration (OSHA) and applicable state standards, by Gannett Fleming, Inc., as well as it's subsidiaries and affiliated companies (hereinafter the Company).

3.1 SCOPE

This program applies to all Company activities where the Company employees could be exposed to hazardous chemicals within their work areas under normal conditions of use or in a foreseeable emergency. Hazardous chemicals in the workplace must have labels and safety data sheets (SDS) for employees. SDS's for all Gannett Fleming Hazardous chemicals are made available on the Safety Site of the Intranet under Chemical Listing. SOP 3 – HAZCOM/GHS training is required for all employees who may be expected to handle such hazardous chemicals within their job responsibility or such training is indicated as a requirement within their practice specific hazard assessment.

3.2 REFERENCES

- 29 CFR 1910.1200 - Hazard Communication/GHS for General Industry
- 29 CFR 1926.59 - Hazard Communication/GHS for Construction Industry
- 40 CFR Parts 350 – 372 - SARA Title III - Emergency Planning and Community Right-to-Know (EPCRA)
- 35 P.S. 7301 - 7320 - Pennsylvania Worker and Community Right-to-Know Act
- Existing state requirements where regional offices are located.

3.3 POLICY

- Furnish the Company employees a place of employment as free as possible from recognized chemical hazards.
- Inform each project manager, supervisor and employee of chemical health and safety requirements and hold them accountable for compliance.

- Recognize the importance of health and safety factors during the planning stage of projects.
- Provide information to employees on hazardous chemicals which they may be exposed to within their workplace and provide training on how to minimize potential hazards. This written SOP shall be implemented at each Company location and will be revised by the corporate safety group and project team personnel to address project site specific requirements.
- Comply with applicable laws and regulations regarding chemical hazard communication and globally harmonized system of classification and labeling of chemicals.

3.4 RESPONSIBILITIES

3.4.1 Employees

- Perform work in accordance with this Hazard Communication/GHS Program.
- In case of emergency involving chemicals, contact IncidentReport@gfnet.com and the Gannett Fleming Corporate Safety Manager.
- Complete SOP 3 – HAZCOM/GHS training that is available on the firm's LMS.

3.4.2 Safety Coordinators

- Identify hazardous chemicals which are utilized within the workplace or work areas for which they are responsible. Update their office's Chemical Listing annually each year by performing an audit of the workplace for hazardous chemicals. SDS's for all Gannett Fleming hazardous chemicals are made available on the Safety Site of the Intranet under Chemical Listing. Inform the Corporate Safety Manager of any additions or deletions to office's Chemical Listing.
- Attempt to replace hazardous chemicals being used with non-hazardous products.
- Identify employees whose duties involve the use or storage of hazardous chemicals and provide their name to the Corporate Safety Manager.
- Consult with the corporate safety group to verify that hazardous chemical containers are appropriately labeled and stored in accordance with 29 CFR 1910.1200.
- Verify that personnel within the assigned work areas who have the potential for exposure to hazardous chemicals understand they can find the Safety Data Sheet (SDS) for hazardous chemicals on the Safety Site of the Intranet under Chemical Listing.

3.4.3. Project Manager

- Assist the office's Safety Coordinator with ensuring all training requirements have been meet for project personnel.
- Consult with the Corporate Safety Manager regarding hazardous chemicals, labeling requirements, Safety Data Sheets, training, use of engineering controls and personal protective equipment for the control of potential hazards associated with his/her project.
- Consult with the Corporate Safety Manager to conduct a thorough hazard assessment of the project to determine the necessary engineering controls, administrative controls, and, if necessary, PPE, in order for the work to be conducted safely.
- If located outside of Pennsylvania, determine if the state has its own HAZCOM/GHS requirements and consult with the Corporate Safety Manager to comply with those requirements.
- Verify that project team personnel within the assigned work areas who have the potential for exposure to hazardous chemicals understand they can find the Safety Data Sheet (SDS) for hazardous chemicals on the Safety Site of the Intranet under Chemical Listing.

3.4.4 Corporate Safety Manager

- Arrange initial HAZCOM/GHS training for each employee who has the potential for exposure to a hazardous chemical by enrolling him/her in SOP 3 – HAZCOM/GHS training administered through the firm's LMS.
- Establish a Chemical Listing of the company's safety data sheets, by office, on the Safety Site of the Intranet. The safety data sheet shall be contained on the Chemical Listing page for each hazardous chemical that is utilized. As appropriate, the Chemical Listing file will be updated.
- Implement and administer the Company HAZCOM/GHS Program.
- Provide assistance to Safety Coordinators and Project Managers in the identification of hazardous chemicals, proper labeling requirements, maintenance of comprehensive Safety Data Sheet files, employee HAZCOM/GHS training, and development of health and safety engineering controls and use of personal protective equipment.
- Provide an annual review of this SOP, revise as required, and maintain a file for inspection by regulatory agencies.
- Provide a copy of this program to vendors and contractors who may work in areas where hazardous chemicals may be present.
- Coordinate with the firm's Safety Coordinators and Project Managers to verify that hazardous chemicals utilized within workplaces or work areas have been identified on the Chemical Listing page found on the Safety Site of the Intranet.
- Promote the replacement of hazardous chemicals with non-hazardous products within the workplace.
- Coordinate with the firm's Safety Coordinators and Project Managers to verify that personnel who have the potential for exposure to hazardous chemicals

know the location of the Chemical Listing page on the Safety Site of the Intranet and the written Hazard Communication/GHS Program.

3.4.5 Regional/Division Director

- Verify with Corporate Safety Group where hazardous chemicals are used and that work is being performed in accordance with this HAZCOM/GHS Program.
- Provide adequate resources to assist the Corporate Safety Group in the performance of their HAZCOM/GHS duties.

3.5 PROGRAM REQUIREMENTS

3.5.1 Hazardous Chemical Inventory

Gannett Fleming's Corporate Safety Group shall develop and maintain a list of all hazardous chemicals present in the workplace to which an employee may be exposed. Each chemical shall be identified by its applicable safety data sheet and compiled for each office/facility as a whole and made available on the Safety Site of the Intranet under Chemical Listing.

An inspection of each Company facility shall be completed annually by the appropriate Safety Coordinator or Project Manager to determine which chemicals in the workplace are hazardous. This list has been initially developed and made available on the Safety Site of the Intranet under Chemical Listing and shall be periodically reviewed by means of a complete physical inventory. The inventory shall list the hazardous chemicals and provide a link to the applicable safety data sheet. The product's safety data sheet shall be in compliance with 29 CFR 1910.1200.

The annual inventory shall be reported to the Corporate Safety Manager.

The Corporate Safety Group shall be contacted with questions pertaining to the identification of a hazardous chemical.

3.5.2 Hazard Determination

The Company will rely on information provided by the product manufacturer to assess potential hazards associated with the storage, handling, and use of the hazardous chemicals manufactured by that company. Primarily, information will be obtained through review of the safety data sheet. If necessary, the manufacturer may be contacted to supply additional information. Locations that are determined to be hazardous, such as lead or ACM containing, will be identified as such by the property owner and through available investigation/documentation.

The Corporate Safety Manager may be contacted to assist in determining potential hazards associated with the use of a hazardous chemical. Employees are encouraged

to contact the Corporate Safety Manager if they have any questions or concerns regarding hazardous chemicals.

3.5.3 Introduction of New Hazardous Chemicals

If new hazardous chemicals are introduced into the workplace, the office's Safety Coordinator and the Corporate Safety Manager shall be notified and the Corporate Safety Group shall add the new hazard chemical to the Chemical Listing page on the Safety Site of the Intranet.

3.6 SAFETY DATA SHEET (SDS)

3.6.1 SDS Procurement and Review

A SDS shall be obtained and sent to the corporate safety group for hazardous chemicals purchased and/or used at Company facilities including field projects. The Safety Coordinator or Project Manager will review incoming SDSs for new or significant health and safety information and arrange for this information to be distributed to the affected employees. When revised SDSs are received, the Project Manager or Safety Coordinator shall ensure that the outdated SDS is reported to the Corporate Safety Group in order for the Chemical Listing page on the Safety Site of the Intranet to be updated.

Chemical manufacturers or importers are required to provide a SDS with their initial shipment of a hazardous chemical. If a SDS for an initial chemical shipment is not received, the Project Manager or Safety Coordinator shall contact the manufacturer and request that a SDS for that chemical be sent immediately. If this were to occur, the Corporate Safety Manager shall be contacted and can assist with this request.

3.6.2 Review

Upon receipt of the SDS, the Corporate Safety Manager shall review the SDS for completeness. The Project Manager or Safety Coordinator is also responsible for reviewing each SDS for completeness. All spaces on the SDS must be completed.

If an SDS supplied is deemed incomplete or inadequate, the Project Manager or Safety Coordinator shall contact the supplier or manufacturer for a corrected SDS. If this were to occur, the Corporate Safety Manager can assist with this request.

3.6.3 Employee Access

The Chemical Listing page on the Safety Site of the Intranet is used to maintain and file all SDS files. The Project Manager or Safety Coordinator must inform all employees who potentially work with hazardous chemicals of the Chemical Listing page location. If employees cannot access the Intranet, the SDS files will be located in a common area for employee access.

3.7 LABELING

3.7.1 Container

Each container maintained in a facility shall be labeled, tagged or legibly marked with the applicable symbol (hazard pictogram), signal word(s), hazard statements, product identifier, and supplier identification. Incoming containers shall be checked by the Project Manager, Safety Coordinator, or Corporate Safety Manager to verify that labels are intact and that the required information is legibly printed on the labels. If supplier labels adequately show the required information, it is not necessary for new labels to be made.

Labels shall not be removed or defaced without immediately relabeling with the required information. Employees shall abide by label precautions and not disturb the hazardous building material (such as lead, asbestos) unless properly trained and certified.

It is important to avoid using secondary containers and to always keep chemicals in original container. If a secondary container is necessary, all labeling information must be transferred to new container. Gannett Fleming employees will utilize OSHA's GHS labeling system for all secondary containers. Appendix F includes a sample label provided by OSHA.

3.8 INFORMATION AND TRAINING

3.8.1 Initial

Employees whose job functions involve the potential for exposure to hazardous chemicals shall receive initial SOP 3 - Hazard Communication/GHS Training. This training will be administered and documented on the firms LMS. Modifications to this training will be made by the corporate safety group.

New employees, whose job functions involve the potential for exposure to hazardous chemicals, shall receive initial SOP 3 – HAZCOM/GHS training.

The LMS training includes, but is not limited to, the following information:

- Basic requirements of the HAZCOM Regulation.
- A summary of the written Company HAZCOM Program.
- Location of the written HAZCOM Program.
- Location of SDS files and how to access them.
- An explanation of the OSHA labeling system used by the Company.
- Identities of personnel to be contacted if more information regarding the HAZCOM/GHS Program is desired.
- An overview of the requirements contained in the Hazard Communication/ GHS Regulation.

- Awareness on the importance of understanding the hazardous substances present in the workplace or work area, understanding the physical and health hazards of hazardous chemicals and measures employees can take to protect themselves from these hazards.

In addition to LMS training, employees may seek information about the Hazardous Communication/GHS Program from the corporate safety group.

3.9 MULTI-EMPLOYER WORKPLACES

3.9.1 Company Facilities

Occasionally, workers for another employer (other employer) may conduct their work within a Company facility (such as repairman or Company subconsultants). In instances where these workers may be exposed to hazardous chemicals used or stored on site by the Company, the Company has an obligation to inform the other employer of the potential exposure and to provide certain information to the other employer. The following methods will be used to inform other employers whose employees may be exposed to hazardous chemicals used by the Company:

- Inform the other employer of the types of hazardous chemicals and the locations or areas of use of those chemicals.
- Provide applicable safety data sheets to the other employers as reasonably necessary (as a precautionary measure) or upon request by the other employer.
- Communicate appropriate precautionary methods to the other employers, as necessary, to enable the other employer to protect its employees during normal operating conditions and in foreseeable emergencies.
- Explain the labeling system being used by the Company to the other employers.

In addition, other employers who may work on Company premises are required to provide Company employees with hazard information concerning hazardous materials which they may bring onsite. Specific information shall be requested by the person sponsoring the other employer, the Safety Coordinator, or the Corporate Safety Manager.

3.9.2 Field Operations

It is the responsibility of the Company onsite supervisor or Project Manager, as applicable, to provide other employers with information about hazardous chemicals (brought onsite by the Company) that their employees may be exposed to on the job site. The supervisor or Project Manager should also inform the other employer of any suggested precautions which could be taken by their employees to minimize the exposure threat.

During multi-contract worksites, Gannett Fleming employees will be protected from hazard exposure by requesting chemical inventories/safety data sheets from other entities on site.

3.10 RECORDKEEPING

Documentation of the SOP 3 – Hazard Communication/GHS training shall be kept on the firm's LMS.

3.11 EMPLOYEE ACCESS TO MEDICAL AND EXPOSURE RECORDS

Employees have the right of access to their exposure records, biological monitoring results, employee medical records, safety data sheets, and any other records identifying hazardous chemicals and their use in the workplace. Safety Data Sheets are available on the Safety Site of the Intranet under Chemical Listings.

Company employees have access to their records by making their request to the Corporate Safety Manager.

Employee exposure and medical records shall be retained by the Company for the duration of employment plus 30 years. Other records, as defined above, must be retained for 30 years and transferred upon cessation of business operations as specified in the standards.

3.12 NON-ROUTINE HAZARDS

Employees should be aware of the potential for exposure to non-routine hazards during performance of their work tasks. Examples of non-routine hazards when performing field investigations and construction site activities are exposure to asbestos, lead, and silica. Immediately after potential contact of non-routine hazards, employees will wash hands and face.

Exposure to airborne asbestos containing dust can occur from building and/or equipment demolition involving asbestos containing materials such as thermal system insulation, fireproofing, floor tile, mastics, roofing, and plaster. Asbestos exposure can also occur during environmental field investigations, sampling, and construction inspection. Exposure to airborne asbestos fibers may cause dyspnea (shortness of breath), interstitial fibrosis of the lungs, clubbing of the fingers, asbestosis, lung cancer, and mesothelioma (cancer of the pleural lining of the abdominal cavity).

Exposure to lead can occur from airborne dusts or fumes from demolition of buildings or equipment and paint by burning, cutting, abrasive blasting, or grinding of lead based paint and from welding or cutting of lead containing metals. Potentially exposure to lead is typically associated with environmental field investigations, sampling, project oversight, and construction inspection. Exposure to airborne lead may cause weakness, insomnia, facial pallor, anorexia, weight loss, constipation, abdominal pain,

anemia, gingival (gum) lead line, tremors, wrist and ankle paralysis kidney disease, central nervous system effects, and reproductive effects.

Occupational exposure to crystalline silica often occurs as part of common workplace operations involving cutting, sawing, drilling, and crushing of concrete, brick, block, rock, and stone products (such as in construction work). Operations using sand products (such as glass manufacturing, foundries, and sand blasting) can result in worker inhalation of small (respirable) crystalline silica particles from the air. These types of exposures can lead to the development of disabling and sometimes fatal lung diseases, including silicosis and lung cancer. Processes historically associated with high rates of silicosis include sandblasting, sand-casting foundry operations, mining, tunneling, cement cutting and demolition, masonry work, and granite cutting.

Treat all suspect materials as if they contain asbestos or lead until the material has been tested by a qualified individual. Treat all dust as silica until it has been tested by a qualified individual. Upon discovery of a potential asbestos or lead containing material or potential exposure to silica, avoid contact, do not disturb the material, stop your work, and contact the Project Manager. The Project Manager should contact the Corporate Safety Manager to arrange for testing of the material by a qualified individual.

Projects that involve asbestos or lead removal or disturbance or silica exposure will be performed under a project specific safety plan that will include the appropriate hazards controls and training requirements. Specifically, project personnel may receive hazard communication/GHS training and asbestos, lead, and/or silica awareness training prior to initiating site work. Specific training as required by Federal, State, and local requirements will also be provided as appropriate for the level of activity. Training requirements when working with asbestos and lead containing materials or working around potential silica exposure are strictly enforced and must be adhered to. Project specific safety plans are not to be developed without completion of a thorough hazard assessment. Contact corporate safety for assistance with completing a thorough hazard assessment and developing a project specific safety plan.

Benzene awareness information is in Appendix B of this SOP for employees that may be potentially exposed to benzene during the performance of their work. Lead awareness information is in Appendix C of this SOP for employees that may be exposed to lead during the performance of their work. Asbestos awareness information is in Appendix D of this SOP for employees that may be exposed to presumed asbestos containing material during the performance of their work. Silica awareness information is in Appendix D of this SOP for employees that may be exposed to silica during the performance of their work.

APPENDIX A
Pennsylvania Right-to-Know Requirements

A1.0 BACKGROUND

The Pennsylvania Right-to-Know Law has requirements similar to the OSHA Hazard Communication Regulation. In fact, many of the requirements overlap. In 1986, the U.S. Court of Appeals made a preemption ruling which essentially says the following:

Provisions of the Federal law which deal with hazard communication for employees preempt the Pennsylvania Right-to-Know Law. However, the Community Right-to-Know provisions of the Pennsylvania Law aimed at protecting the public are not preempted by the OSHA Regulation. As a result, in order to comply with existing right-to-know laws, employers covered by OSHA must comply with both the Federal OSHA Regulation and the Pennsylvania Community Right-to-Know provisions of the Pennsylvania Law.

A2.0 SCOPE AND APPLICATION

This Appendix applies only to those Company facilities located within the Commonwealth of Pennsylvania. Regional offices located in other states must comply with the Federal requirements of OSHA 1910.1200, SARA Title III and their state Right-to-Know Law if one exists.

A3.0 KEY COMPLIANCE PROVISIONS

This section outlines the sections of the Pennsylvania Community Right-to-Know Law which the Company must comply with and the methods to be used to ensure compliance.

A3.1 Product Labeling

The workplace labeling requirements under the Pennsylvania Law are very similar to the OSHA requirements. However, the Pennsylvania Law also requires that identification and warning labels be placed on pipes containing hazardous substances (i.e. process piping, tanks, etc.). Labels must be placed at points where pipes are charged (filled) or discharged. Federal Law states the same requirements under Emergency Planning, not OSHA.

A3.2 Hazardous Substance Inventory

In Pennsylvania, a hazardous substance is one comprised of substances listed on the Pennsylvania and Community Right-to-Know Hazardous Substance List in addition to those under various federally monitored lists. When conducting an inventory, the Hazardous Substance List should be available for reference. As a rule of thumb, any “chemical” material in excess of 1 quart should be placed on the master inventory.

A3.3 Hazardous Substance Survey Form (HSSF)

Each year, under the Pennsylvania Worker and Community Right-to-Know Act, all employers doing business in the Commonwealth of Pennsylvania are required to complete a new Hazardous Substance Survey Form (HSSF). The HSSF must be completed by April 1 of each year. This survey provides information on the hazardous substances present at the workplace during the prior year. The Department of Labor and Industry's Right-to-Know Bureau (the Bureau) mails compliance materials (e.g., forms, chemical lists and instructions) to every employer registered with the Department's Unemployment Compensation Tax System during the first quarter of each calendar year. Additional compliance materials are available by contacting the Bureau of Worker and Community Right-to-Know.

The Company is required to complete a HSSF for each workplace located in Pennsylvania, and each workplace HSSF must list the particular hazardous chemicals which were found in that particular workplace. The form will then be retained on file at the workplace. Upon written request from the Bureau, any employer must furnish a copy of the Survey Form to the Bureau, which will in turn send the form to the original requestor. The requestor can be any person living or working in Pennsylvania. Such forms, as required, shall be completed by the Corporate Safety Manager or HCC.

A3.4 Environmental Hazard Survey Form (EHSF)

The Environmental Hazard Survey Form (EHSF) is a document that provides information about environmental hazards listed on Pennsylvania's Hazardous Substance List. Any employer may be required to complete an Environmental Hazard Survey Form identifying those substances emitted, discharged or disposed of from the workplace. This form only needs to be completed by the employer upon a written request by the Department of Labor and Industry's Right-to-Know Bureau, which would arise from a written request from any person in Pennsylvania to the Bureau. If such a request is made, the Bureau will provide the Form distribution and the employer has thirty (30) days to complete and return the Form to the Bureau. Such forms shall be directed to the Corporate Safety Manager for response.

In lieu of completing the discharge/emission sections of this form, an employer may provide relevant copies of any reports or portions thereof of existing federal, state, county or municipal permits/receipts/manifests law, which contains the information specified in the EHSF. Permits for release of hazardous chemicals through air, land, water or off-site transfer may be substituted in lieu of completing these sections of the form. If the Company intends to use these reports in lieu of completing a form, only items 1 through 14 of the form need be completed.

A3.5 Public Access

Any person in Pennsylvania may make a written request to the Bureau of Worker and Community Right-To-Know to obtain any MSDS, or a Hazardous Substance or

Environmental Hazard Survey Form from any employer. In addition, any local police, fire or emergency response agency which has jurisdiction over an employer may make a direct written request to the employer for the latest Hazardous Substance Survey and copies of all relevant MSDS and to conduct a facility inspection for compliance with EPCRA.

APPENDIX B
BENZENE AWARENESS

B1.0 CHARACTERISTICS OF BENZENE

Benzene is an organic chemical which is toxic, colorless and has an aromatic odor. Benzene is not soluble in water and is highly flammable and appropriate safety procedures (i.e. no smoking, fire extinguishers on site, required PPE, etc.) must be followed. The USEPA has classified benzene as a Class A known/likely human carcinogen.

B2.0 HEALTH HAZARDS FROM EXPOSURE TO BENZENE

Exposure to benzene may cause irritation to the eyes, skin, nose and respiratory system. Benzene exposure may also cause giddiness, headache and irritability. As stated above, exposure to benzene may also cause cancer in the form of leukemia.

B3.0 EXPOSURE TO BENZENE

Work on some site-specific projects (i.e. UST removal projects, petroleum sites, etc.) may expose employees to benzene in contaminated site media. These media include: soil, groundwater, sediments and indoor air (via the vapor intrusion pathway).

Projects where benzene exposure may occur are required to have site specific Health and Safety Plans that specify what personal protective equipment and safety procedures will be used to reduce employee exposure to below the OSHA PEL of 1 ppm. The site specific Health and Safety Plans will include reference to the site owner's contingency plans.

Reference: SOP 1 – Respiratory Protection Program
SOP 7 – Personal Protective Equipment
SOP 15 – Hazardous Waste Operations

APPENDIX C
LEAD AWARENESS

C1.0 PURPOSE

The purpose of this written program is to establish the requirements and procedures for projects which involve the potential for exposing employees to lead at concentrations approaching the OSHA Action Level of 30 micrograms per cubic meter of air averaged over an 8-hour period; and ensure that if an employee is exposed to lead for more than eight hours in any work day, the appropriate medical monitoring is conducted in accordance with the applicable Occupational Safety and Health Administration regulations; and comply with all applicable State regulations.

C2.0 SCOPE

This SOP applies to all Company activities where the Company employees may be potentially exposed to lead during work activities.

C3.0 POLICY

It is the policy of the Company to provide information and training to employees on safe work practices to be followed on projects which may involve the potential for exposure to lead.

C4.0 EXPOSURE ASSESSMENT

The Project Manager is responsible for identifying projects to the Corporate Safety Manager which may involve the potential for exposing employees to lead at concentrations approaching the OSHA Action Level of 30 ug/m3. The OSHA Permissible Exposure Limit for lead is 50 ug/m3 measured over an 8-hour shift.

C4.1 Initial Determination

In accordance with 29 CFR 1910.1025(d) (2), an initial determination of exposure concentrations shall be made to determine if an employee may be exposed to lead at or above the action level. Personal exposure samples shall be collected over a minimum of a seven hour shift during typical work activities. Any previous air sampling data for the project specific site shall be submitted to the Corporate Safety Manager for use in determining the need for initial air monitoring.

C4.2 Periodic Monitoring

If the initial determination indicate that employees are not exposed to concentrations exceeding the action level, written documentation of this shall be included in the project-specific files. No additional monitoring will be required. If the initial determination results indicate that employees are being exposed to concentrations exceeding the

action level, but below the PEL, periodic monitoring shall be conducted at a frequency of one time every 6 months in accordance with 29 CFR 1910.1025(d)(6)(ii).

C4.3 Employee Notification

Within 15 days of receipt of results, affected employees shall be informed of these results in writing or by posting the results in an appropriate site-specific location, such as a work-trailer. Corrective actions will be taken when results indicate exposures are greater than the action level.

C4.4 Site Specific Plans

Any project involving the potential for exposure to lead must develop a written site specific plan which addresses engineering controls, work practices, and, if necessary, personal protective equipment that will be used to reduce the potential for exposure to below the OSHA permissible exposure limit and action level. This plan will provide detail regarding respiratory protection, warning signs, project-specific respiratory protection, and clean areas for changing, showering and hygiene facilities, and lunch rooms/areas for the particular project. No eating, drinking or smoking is permitted at GF project sites for which Health and Safety Plans have been developed.

Reference: SOP 1 – Respiratory Protection Program
SOP 7 – Personal Protective Equipment
SOP 15 – Hazardous Waste Operations

C5.0 TRAINING

A written training program shall be instituted for employees who are exposed to lead above the action level or who may suffer skin or eye irritation from lead. Training will be conducted prior to exposure and annually thereafter. This training program shall include:

- Hazards associated with the work environment (site specific)
- Protective measures which can be taken (site specific)
- Dangers of exposure to lead
- Employee rights under the OSHA standard.

C6.0 MEDICAL MONITORING

Medical monitoring for employees is addressed in SOP 1. The Medical Review Officer shall be informed of the potential for employee exposure to lead prior to the initial or annual physical exam. Blood lead and other biological monitoring shall be made available to employees conducting activities on projects under this SOP.

APPENDIX D
ASBESTOS AWARENESS

These guidelines are required for review prior to the time of initial assignment and, as necessary, annually thereafter. Review of these guidelines is required for employees whose work activities may contact asbestos containing material (ACM) or presumed asbestos containing material (PACM) but do not disturb the ACM or PACM during their work activities. Employees whose work activities include sampling of building containing materials must complete all training as identified below in paragraph 2. Engineering controls, administrative practices and personal protective equipment will be outlined in the project specific health and safety plan if employees have the potential for exposure to an airborne concentration of asbestos excess of 1.0 fiber per cubic centimeter of air in 30 minutes and/or the potential of exposure to an airborne concentration of asbestos excess of 0.1 fiber per cubic centimeter of air as an 8-hour time weighted average. If site conditions change during the course of work, a STOP WORK will be initiated and the site specific health and safety plan will be modified accordingly.

Employees who will be exposed to ACM or PACM for project activities such as sampling, inspecting, etc. shall be medically certified to perform work at hazardous waste sites. Certifications for asbestos inspections, asbestos sampling, etc. must be active and documented in Corporate Safety. Employees are responsible for reviewing Gannett Fleming's SOP 1 – Respiratory Protection prior to initial assignment.

Reference: SOP 1 – Respiratory Protection Program
SOP 7 – Personal Protective Equipment
SOP 15 – Hazardous Waste Operations

How To Avoid Exposure

Asbestos exposure may cause lung cancer, asbestosis, mesothelioma and other cancers. To avoid being exposed to asbestos, you must be aware of the locations that asbestos containing materials are. **If you do not know whether a material is asbestos containing or not, assume that it is until it is verified otherwise.** Remember that you cannot tell a building material contains asbestos just be looking at them. They must be sampled and analyzed.

Never take a sample yourself unless you are trained and certified to do so. Contact the client's asbestos program manager. The material must be sampled by a certified individual and analyzed by a laboratory.

If you have reason to suspect that a material contains asbestos, either because it is labeled, or is a material that is likely to contain asbestos (i.e. floor tile, pipe insulation, sprayed-on insulation in crawl spaces) **do not disturb it.**

Never drill, hammer, cut, saw, break, damage, move, or disturb any asbestos-containing material or suspected asbestos-containing materials.

The client may have surveyed the building for the presence of asbestos-containing materials and developed an Asbestos Management Plan. If you need to do work that might involve a suspect asbestos-containing material, check with the asbestos program manager. Other than certified inspectors, Gannett Fleming employees are not qualified to enter asbestos abatement areas constructed by other contractors. Inspectors working immediately adjacent to asbestos abatement jobs shall be removed from the area if air sampling results indicate a breach in the containment area.

Housekeeping

Housekeepers and custodians should never sand or dry buff asbestos-containing floor tiles, and only wet stripping methods may be used during stripping operations. Low abrasion pads should be used at speeds below 300 rpm. Follow manufacturer's instructions and/or the guidelines established by the Resilient Floor Covering Institute.

By knowing where asbestos is likely to be located and then taking measures not to disturb it, you will protect yourself and others from exposure. Do not disturb materials that have been labeled as ACM.

Health Effects Associated with Exposure to Asbestos

Asbestos exposure may cause lung cancer, asbestosis, mesothelioma and other cancers.

Hazardous asbestos fibers cannot be seen by the naked eye. Breathing hazardous asbestos fibers will be detrimental to lung functions, such as asbestosis, and commonly progressing to disability or death. Asbestos also causes cancer of the lung and other diseases such as mesothelioma of the pleura which is a fatal malignant tumor of the membrane lining the cavity of the lung or stomach. According to the Agency for Toxic Substances & Disease Registry, smoking cigarettes, in addition to inhaling asbestos, increases your chances of developing lung cancer.

APPENDIX E
SILICA AWARENESS

(Based on the proposed OSHA standard update)

E 1.0 PURPOSE

The purpose of this written program is to establish the requirements and procedures for projects which involve the potential for exposing employees to silica at concentrations approaching the OSHA Action Level of 25 ug/m3 for respirable crystalline silica or the TWA PEL of 50 ug/m3 for respirable crystalline silica.

E 2.0 SCOPE

This SOP applies to all Company activities where the Company employees may be potentially exposure to silica during work activities.

E 3.0 POLICY

It is the policy of the Company to provide information and training to employees on safe work practices to be followed on projects which may involve the potential for exposure to silica.

E 4.0 EXPOSURE ASSESSMENT

Ultimately, it is the responsibility of the Project Manager to identify projects to the Corporate Safety Manager which may involve the potential for exposing employees to silica. Corporate safety is used as the Company's internal resource regarding projects that may potentially exposure employees to silica dust.

E 4.1 Initial Determination

Potential exposure to silica is identified during the hazard assessment process and during the pre-project development phases. Corporate Safety can be contacted for assistance with completing a through hazard assessment. If necessary, personal exposure samples shall be collected over a minimum of a seven hour shift during typical work activities. The client/owner should be contacted for any previous air sampling data for the project specific site and this shall be submitted to the Corporate Safety Manager.

E 4.2 Periodic Monitoring

If the initial determination by the firm's corporate safety group indicates that employees are not exposed to concentrations exceeding the action level, written documentation of this shall be included in the project specific files. Unless the job activities change, no additional monitoring will be required.

If the initial determination results indicate that employees are being exposed to concentrations exceeding the action level, but below the PEL, periodic monitoring shall be conducted at a frequency determined by the corporate safety manager in accordance with federal and state regulations for the duration of the project.

E 4.3 Employee Notification

Within 15 days of receipt of results, affected employees shall be informed of these results in writing. Corrective actions will be taken when results indicate exposures are greater than the action level.

E 4.4 Site Specific Plans

Any project involving the potential for exposure to silica must develop a written site specific safety plan which addresses engineering controls, work practices and, if necessary, personal protective equipment that will be used to reduce the potential for exposure to below the OSHA PEL. This plan will provide detail regarding respiratory protection, warning signs, project specific respiratory protection, clean areas for changing and hygiene facilities, and lunch rooms/areas for the particular project.

Reference: SOP 1 – Respiratory Protection Program
SOP 7 – Personal Protective Equipment

E 5.0 TRAINING

If exposure to silica is expected to exceed the action level, employees will be trained on the signs and symptoms of silica exposure, hazards associated at the work environment, protective measures that will be taken at the work environment, dangers of over-exposure to silica, etc. Such training requirements will be detailed in the site specific safety plan.

E 6.0 MEDICAL MONITORING

If there is a potential for exposure to respirable crystalline silica, a medical examination will be provided before the job begins. Medical monitoring for employees is addressed in SOP 1 – Respiratory Protection Program. The Medical Review Officer shall be informed of the potential for employee exposure to silica prior to the initial or annual physical exam.

APPENDIX F

OSHA SAMPLE LABEL

SAMPLE LABEL

PRODUCT IDENTIFIER

CODE _____
Product Name _____

SUPPLIER IDENTIFICATION

Company Name_____
Street Address _____
City _____ State _____
Postal Code _____ Country _____
Emergency Phone Number _____

PRECAUTIONARY STATEMENTS

Keep container tightly closed. Store in cool, well ventilated place that is locked.
Keep away from heat/sparks/open flame. No smoking.
Only use non-sparking tools.
Use explosion-proof electrical equipment.
Take precautionary measure against static discharge.
Ground and bond container and receiving equipment.
Do not breathe vapors.
Wear Protective gloves.
Do not eat, drink or smoke when using this product.
Wash hands thoroughly after handling.
Dispose of in accordance with local, regional, national, international regulations as specified.

In Case of Fire: use dry chemical (BC) or Carbon dioxide (CO_2) fire extinguisher to extinguish.

First Aid
If exposed call Poison Center.
If on skin (on hair): Take off immediately any contaminated clothing. Rinse skin with water.

HAZARD PICTOGRAMS

SIGNAL WORD

Danger

HAZARD STATEMENT

Highly flammable liquid and vapor.
May cause liver and kidney damage.

SUPPLEMENTAL INFORMATION

Directions for use

_____
_____
_____

Fill weight: _____ Lot Number _____
Gross weight: _____ Fill Date: _____
Expiration Date: _____

Gannett Fleming

STANDARD OPERATING PROCEDURE NUMBER 5
INCIDENT/NEAR MISS PROCEDURES

5.0 PURPOSE

The purpose of the Incident/Near Miss Procedures is to provide the employees of Gannett Fleming, Inc., as well as any subsidiary and affiliated companies, (hereafter the Company) with a standardized procedure to:

- Document facts,
- Report the incident/near miss,
- Take appropriate responsive actions following an incident;
- Participate in safety-based investigations; and
- Prevent future incidents/near misses.

And the resources to:

- Determine cause, and
- Identify root cause factors.

The program may be found on the Safety Site on the Corporate Intranet.

5.1 SCOPE

An incident is an unplanned event involving a Company employee that results in personal injury/illness, property damage, or environmental release.

A near miss event is an event that could have resulted in an incident, as defined above, if circumstances were different. An event is considered a near miss if only a fortunate break in the chain of events prevented personal injury/illness, property damage, or environmental release.

Incidents/Near Misses will be classified as either “serious” or “minor” as defined below:

Serious		**Minor**	
1.	Personal injury/illness that results in a fatality, amputation, loss of an eye, hospitalization or major medical treatment.	1.	Personal injury/illness that requires no more than standard first aid treatment.
2.	Property damage over $1,000.	2.	Property damage less than $1,000.
3.	Significant Environmental Release (greater than reportable quantity or greater than client required).	3.	Insignificant spills less than regulatory reportable quantities.
4.	Near miss that could have resulted in any of the above.	4.	Near miss that could not have resulted in a serious incident.

5.2 POLICY

5.2.1 Reporting

Within 24 hours of an incident/near miss, the employee is required to report the incident to his or her Supervisor and submit an Initial Report of Incident or Near Miss ("Initial Report") to IncidentReport@gfnet.com. The Initial Report Form is provided in Appendix A.

After an employee submits the Initial Report, he or she may be contacted by the Corporate Safety Manager for additional information. In addition, the Insurance Manager will provide any appropriate insurance claim forms. Some of the additional forms and steps that may be required in connection with certain types of incidents/near misses are identified in Section B of the Initial Report Form for the employee's information and convenience.

Certain incidents/near misses may be subject to special reporting requirements that are not specifically addressed in this SOP. For example:

- If an incident/near miss occurs in connection with a project for a client that has special reporting requirements, employees should follow those project-specific and/or client-specific requirements in addition to applicable reporting requirements described here.

- Motor Vehicle incident reporting must be in accordance with SOP 4 – Vehicle Fleet Program, section 4.6.

- The Notice of Contractor's Incident Near Miss form (Appendix C) should be completed and submitted for a Contractor and/or Subcontractor incident/near miss on a Gannett Fleming project.

5.2.2 Investigation

All reported incidents, including near miss events, will be reviewed and investigated as appropriate. The extent of an investigation depends on the severity of the incident/near miss. Minor incidents/near misses are not investigated to the same degree as serious incidents/near misses and, therefore, the level of involvement of responsible individuals will vary depending upon the seriousness of the incident/near miss.

An Investigation Team will be identified to handle and participate in the investigation. The specific makeup of the team, determined by the Corporate Safety Manager, will depend on the nature of the incident/near miss and the scope of the relevant issues.

The team will typically include the Corporate Safety Manager or designee, the Project Manager/Supervisor and the employee(s) involved in the incident/near miss, and members of the Company's management who are identified in Section 5.3 below. For incidents involving Company vehicles, the Corporate Fleet Manager will be included on the team. It may also be necessary to include individuals with special technical knowledge or expertise about the subject matter related to the incident/near miss.

In some cases, it may be necessary to include or coordinate with other corporate departments (e.g., a designee from the Legal/Insurance Department, the Human Resources Department, Finance Department, or the Facilities Division, etc.).

The team should include only those persons whose input is needed in order to provide the most appropriate, efficient, and coordinated response to the incident/near miss and to move the investigation forward.

The Investigation Team should identify and address confidentiality, privacy and potential liability concerns related to the investigation. In some cases, it may not be appropriate for all members of the team to be involved in aspects of the investigation that relate to confidential information. The team may consult with the Legal Department for advice on measures that should be used to protect confidentiality and privacy and implement those measures during its investigation,

5.3 RESPONSIBILITIES

5.3.1 Employee

- Document details of the incident/near miss immediately after necessary medical attention is provided and the scene is stabilized.
- Report all incidents/near misses to Supervisor within 24 hours.
- Complete and submit Initial Report Form (Appendix A) to IncidentReport@gfnet.com within 24 hours. Local safety coordinators are available to assist employees and can be consulted for assistance.
- Complete and submit all other appropriate paperwork (automobile claim form, workers compensation form, etc.) as directed after submission of Initial Report. Forms may be required within 48 hours of incident/near miss. All required forms can be submitted to IncidentReport@gfnet.com.
- Cooperate with the incident/near miss investigation process.

5.3.2 Supervisor/Project Manager

- Provide first aid treatment and/or immediate medical treatment as the situation

necessitates. Accompany or designate someone to accompany the injured Employee(s) to a medical provider for initial treatment, as needed.

- If the incident/near miss results in hospitalization, amputation, loss of an eye, and/or a loss of life, the Legal Department, the Corporate Safety Group, the Area/Service Line Manager and/or Regional Business Line Leader and Client (if necessary) must be notified immediately or within four hours of the incident. The incident/near miss must be reported to IncidentReport@gfnet.com as soon as possible or within 24 hours.

- Assist Employee(s) with reporting the incident/near miss to IncidentReport@gfnet.com.

- Assist Employee with completion and submittal of Initial Report Form (Appendix A), and additional forms required, as needed or as requested by Employee.

- Cooperate with investigation of all reported incidents/near misses that involve employees or projects they are responsible for.

- Supervisor/Project Manager may be contacted by Safety Coordinator or Corporate Safety Manager and asked to document facts and/or provide information for use in completing the Incident/Near Miss Investigation Report (Appendix B) within 48 hours of the incident.

5.3.3 Corporate Safety Manager or designee

- Provide technical support to Employee, Supervisor/Project Manager, Area/Service Line Manager, Regional Business Line Leader, Regional Director, and Safety Coordinator during the reporting and investigation phases.

- Contact employees after notification, if necessary to assist in filling out and documenting the Initial Report Form (Appendix A) and to obtain any additional information required.

- Work with Safety Coordinators to verify that investigation is initiated within 48 hours or within shorter timeframe required by specific client or project health and safety plan. Work with Safety Coordinators to facilitate completion of the Incident/Near Miss Investigation Report (Appendix B).

- Promptly inform IncidentReport@gfnet.com upon receipt of notice of an incident/near miss and provide relevant information and copies of any relevant documentation received to other Company departments who may require it for separate investigations (e.g., Legal and Insurance, Human Resources, Facilities, etc.).

- For incidents resulting in Employee(s) hospitalization, amputation, loss of an eye

and/or a loss of life, notify the closest OSHA office to the incident via telephone within 8 hours. For all other incidents resulting in injury/illness requiring medical treatment other than First Aid, record and report in accordance with OSHA requirements.

- Review all Incident/Near Miss Investigation Reports (Appendix B) and take the lead in incident/near miss investigations focused on safety and prevention.

- Determine the level of investigation required based on communications with persons familiar with the incident/near miss and identify Investigation Team.

- Coordinate and cooperate with other members of Investigation Team to identify responsive measures, gather facts, manage documentation, and conduct investigation, as appropriate under the circumstances.

5.3.4 Area/Service Line Manager and/or Regional Business Line Leader

- Verify that incidents/near misses are reported (to the Company and, if applicable, to the Client) and that personnel carry out their incident/near miss investigation responsibilities.

- Review completed Initial Report Forms (Appendix A).

- Upon request by Corporate Safety Manager, review and sign Incident/Near Miss Investigation Report(s) (Appendix B) for completeness, identification of direct causal factors, and the implementation of appropriate corrective actions.

- Participate in Incident/Near Investigation, as necessary.

- Communicate results of investigation findings and corrective actions (Lessons Learned) to employees in a manner that is appropriate under the circumstances and consistent with the efforts of the Investigation Team.

- Provide notification or reports to the State and/or Federal Environmental Agency, as required by applicable regulation, if the incident involves a significant environmental release (greater than the threshold reporting quantity). See Section 5.4.2 below for applicable procedures.

5.3.5 Regional Director

- Review Initial Report Forms (Appendix A) and review Investigation Report(s) (Appendix B) for personnel under their supervision.

5.3.6 Safety Coordinator

- Assist Employee, Supervisor/Project Manager, and Corporate Safety Manager with completion of the Initial Report form (Appendix A).

- Take action to ensure that investigation is initiated within 48 hours or within shorter timeframe required by specific client or project health and safety plan. Coordinate with Project Manager/Supervisor, Employee(s), and persons with relevant facts to complete the Investigation Report (Appendix B).

5.3.7 Insurance Manager or Legal/Insurance Department Representative

- Promptly inform IncidentReport@gfnet.com upon receipt of notice of an incident/near miss and provide copies of any relevant documentation received to Corporate Safety Manager.

- Assist employee with completion of relevant insurance forms.

- Communicate with insurance carriers regarding reporting and management of claims.

- Legal Department can assist with, facilitate, or verify compliance with any special statutory, regulatory, or contractual reporting requirements that may be triggered by a specific incident or near miss. This will typically not be necessary for routine safety-related reporting (e.g., OSHA) or reporting required under project specific health and safety plans, as these are handled by the Corporate Safety Manager and/or Project Managers.

- For serious incidents requiring a legal investigation or response, a Legal/Insurance Department representative will communicate with Corporate Safety Manager/Investigation Team about sharing of information, potential for coordination of legal investigation/response with safety-based incident/near miss investigation, and if appropriate under the circumstances, participation on Investigation Team.

- The Investigation Team should consult or coordinate with the Legal Department on certain aspects of the investigation of incidents that are or may become the subject of legal investigation, including, but not limited to, appropriate methods of documentation and preservation of evidence, the need for witness statements, confidentiality and privacy concerns, and if relevant to the safety investigation, statutory, contractual and other legal rights and obligations related to the incident/near miss.

5.4 PROCEDURES

5.4.1 Standard Reporting Requirement For All Incidents/Near Misses

Unless a stricter reporting requirement is applicable under sections 5.4.2 or 5.4.3 of this SOP, the Employee (or if necessary, someone is acting on the Employee's behalf) must take the following action within 24 hours to report the incident/near miss:

- Notify his or her Supervisor;
- Complete an Initial Report Form (Appendix A) and submit by email to IncidentReport@gfnet.com within 24 hours. This step may be handled by the Supervisor if the Employee is unable to complete the Initial Report Form.
- If the Initial Report Form cannot be accessed or completed within 24 hours, the Employee or his or her Supervisor must still send an email to IncidentReport@gfnet.com within that time frame. The email should include a description of the incident, names of all Company Employee(s) involved, and a telephone number where the Employee or Supervisor making the report can be reached. The Employee may later be required to provide additional information for completion of the Initial Report Form.

Note: If you cannot provide timely notice by email at IncidentReport@gfnet.com, call the Corporate Safety Manager at 717-763-7211 Extension 2846 or by cell phone at 717-884-5137.

5.4.2 Additional Reporting/Pre-investigation Steps for Incidents Involving Personal Injuries

- When an injury is involved, it is encouraged to secure medical treatment for the injured person and/or secure the scene in order to prevent additional injuries, property damage, or environmental release, if it is safe to do so.
    - When out in the field, refer to the project's Health and Safety Plan. The supervisor or the project manager shall accompany or designate someone to accompany the injured employee(s) to a medical provider for initial treatment, as needed.
    - When at the office, refer to your office-specific Emergency Procedure Handbook.
- If the incident involves work-related in-patient hospitalization, amputations, loss of an eye of Employee(s) and/or a loss of life, the Employee's Supervisor/Project Manager must:
    - Immediately contact the Legal Department, the Corporate Safety Group, the Area/Service Line Manager and/or Regional Business Line Leader,

and Client (if necessary) as soon as possible or within four hours of the incident;
- Send an email to IncidentReport@gfnet.com as soon as possible or within 24 hours of the incident providing the name of the Employee(s) injured, a telephone number where you can be reached, and a description of the incident;
- Complete and submit the Initial Report form (Appendix A) within 24 hours or as soon as possible after the incident.
- The Initial Report form includes guidance to help the Employee identify additional documentation that will be required. After submitting the Initial Report, the Employee may be contacted with more detailed instructions and guidance to assist with completion of the additional documentation.
- Participate in the Incident/Near Miss Investigation, as necessary and at the request of the Investigation Team. The investigation is to be initiated within 48 hours of the incident.

- If the incident involves work-related in-patient hospitalization, amputations, loss of an eye of Employee(s) and/or a loss of life, the Corporate Safety Manager will notify the OSHA office nearest to the incident by telephone as soon as possible or within 8-24 hours, as required by 29 CFR 1904.

5.4.3 Additional Reporting for Incidents Involving Environmental Releases

- Environmental Releases, like all other incidents/near misses, must be reported to incidentreport@gfnet.com within 24 hours as outlined in Section 5.4.1. However, there may be stricter reporting deadlines or additional requirements for certain releases.

- If the incident involves a significant environmental release (greater than the threshold reporting quantity or client designated reporting quantity), reporting requirements are dictated by the regulating jurisdiction. The Project Manager, Area/Service Line Manager and/or Regional Business Line Leader must provide notification to the State and/or Federal Environmental Agency, as required by applicable regulation.

- Consult and coordinate with the Investigation Team and the Legal Department to provide legally required notifications and/or reports.

If the required notifications must be provided immediately or, if internal consultation and coordination is otherwise not practicable under the circumstances, inform the Investigation Team and Legal Department of any notifications that have been made and any subsequent communications related to such notifications.

5.4.3 Additional Forms to be Completed by Employee

- After submitting the initial report as described above, the Employee will be contacted with instructions and guidance related to additional documentation required.

- If notification was made by email without submission of the Initial Report Form, the Employee may be asked to complete and submit the Initial Report form (Appendix A) to IncidentReport@gfnet.com within 48 hours of the incident/near miss.

- The Insurance Manager will provide guidance on any insurance forms required and the applicable timeframes for completion and submission of the relevant forms.

- The Corporate Safety Manager will provide guidance on any additional documentation and information required from the employee.

5.4.4 Investigation Team

- The Corporate Safety Manager will assess the level of investigation that is appropriate and determine the composition of the Investigation Team.

- The Investigation Team identified by the Corporate Safety Manager will typically include the Corporate Safety Manager, the Project Manager/Supervisor of employee(s) involved, technical experts, other members of management with a potential interest, and if needed, individuals from other corporate departments or divisions who can contribute to the safety-based investigation (See Section 5.3).

- The Investigation Team should determine the best plan for documenting facts related to the incident/near miss based on an assessment of the circumstances.

- The Investigation Team should identify and address confidentiality and privacy concerns related to the investigation. In some cases, it may not be appropriate for all members of the team to be involved in aspects of the investigation that relate to confidential information. The team should consult with the Legal Department and Human Resources for advice on measures that should be used to protect confidentiality and privacy and implement those measures during its investigation,

- The Investigation Team will use recognized safety-based tools to gather facts and analyze root causes.

- The Investigation Team will tailor its investigation to focus on the facts of the incident as they relate to safety and prevention and not on laying blame. During the course of its investigation, the team will be aware of separate investigations with a different scope (e.g., legal, personnel, etc.) that might be ongoing and, if appropriate, will share information and coordinate with other investigators who

may not be on the safety Investigation Team. The goal of coordination between the Investigation Team and other investigators is to minimize redundancy and to work together to support the Company in the full scope of its interests related to the incident/near miss. Coordination of parallel investigations should not be used to hinder, limit, or compromise the safety investigation or any other investigation of the incident/near miss.

5.4.5 Additional Documentation of Facts

- In addition to the initial reports and forms described in Sections 5.4.1 through 5.4.3, the Investigation Team may take additional steps to document the facts. Examples of such steps are provided below.

- Employees present during the incident/near miss may be asked to document the facts related to the incident/near miss.

- The Supervisor/Project Manager also may be asked to assist with or to complete the Initial Incident Report (Appendix A) within 24 hours of the incident/near miss. Other investigative steps requiring Supervisor/Project Manager input may include, but are not limited to, determining the facts associated with each incident/near miss ascertaining direct casual factors/root causes; and, developing and implementing corrective actions.

- Where appropriate, interviews with the injured/involved party and any witnesses may be completed to determine the facts. Photos, diagrams, measurements, etc., may be required to adequately document pertinent facts.

- The Safety Manager or designee will commence the investigation by documenting available information on the Incident/Near Miss Investigation Report (Appendix B) within 48 hours or within a shorter time frame required by the client or project specific health and safety plan. The Safety Manager or designee will communicate with the Employee, the Supervisor/Project manager and persons with knowledge of the facts to obtain information required in the report.

- The investigation team should use the Incident/Near Miss Investigation Report (Appendix B) and focus on gathering the “facts” and not finding “fault”. Questions that will reveal the WHO-WHAT-WHY-WHEN-WHERE and HOW aspects of the incident/near miss should be answered. Answering these questions will help in determining the facts surrounding the incident/near miss.

5.4.6 Cause Analysis

- After the facts of the incident/near miss are defined, a safety focused investigation of the causes should take place. The timing and nature of this analysis will depend on the circumstances of the incident/near miss.

- The obvious causes of the near miss should be determined first and then the underlying root cause factors (RCF) defined (Appendix B).

- The Five-Why Root Cause technique should be used to identify the incident/near miss root cause(s) and potential contributing factors. The Five-Why technique is an interactive questioning technique designed to identify the true reason “Why” an incident/near miss occurred. The investigator should ask, “Why?” enough times to ensure that they have identified all of the reasons why an incident/near miss occurred. **This may generate several root causes and contributing factors.**

  Complicated incidents/near misses may require more extensive investigation techniques, such as *Why Tree Analysis*, that will be determined by the Corporate Safety Manager in consultation with other members of the Investigation Team.

5.4.7 Corrective Measures

- Once the cause(s) have been identified, appropriate corrective action should be taken. Various alternatives should be evaluated.

- In some situations, corrective action will be required immediately and/or prior to any detailed investigation under this section to prevent further harm and/or to mitigate legal risk.

- In certain situations, the most effective corrective action cannot be implemented immediately. Temporary measures can be put in place while the more-involved alternatives are studied. Actions requiring large capital expenditures or extensive training may require long range plans be implemented. Corrective action should not be restricted to measures that can be completed quickly and easily. If permanent, more effective measures are feasible, management must be made aware of the action needed so that long-range plans can be made

- Proposed corrective action will be documented in the Investigation Report (Appendix B) and will be submitted as appropriate and necessary to Company Management for review and approval.

APPENDIX

INCIDENT/NEAR MISS FORMS

Appendix A:
Initial Report of Incident/Near Miss (Incident Report Form)

Appendix B:
Incident/Near Miss Investigation Report (Investigation Report)

Appendix C:
Notice of Contractor's Incident/Near Miss

APPENDIX A

INITIAL REPORT OF INCIDENT OR NEAR MISS

IMPORTANT: All incidents/near misses must be reported to IncidentReport@gfnet.com within 24 hours.

A. BASIC INFORMATION

Preparer's Name:				**Date of Report:**
Employee's Name:				**Employee #:**
Employee's Office/Worksite Address:				**Employee Phone No.:** *(If you will be unavailable at Co. extension, please provide an alternate telephone no. or email contact)*
Employee's Supervisor:				**Co./Org #**
Employment Status:	❑ Full Time	❑ Part-time	❑ Hourly	❑ Other

Date of incident/near miss:	**Time Employee Started Work:**
Time of incident/near miss:	**Time Employee Ended Work:**
Incident Location: *(e.g., field site, office, client facility, etc.)*	**Incident Location Address:**

B. CLASSIFICATION – INCIDENT TYPE, SEVERITY, AND REQUIRED INFORMATION

Reason for Report (check one):	☐ Incident	**OR**	☐ Near Miss

IMPORTANT: All incidents, regardless of type must be reported to IncidentReport@gfnet.com

See below and check all boxes that apply. You may need to check more than one box in each column.

Incident/Near Miss Type	**Result /Severity**	**Additional Action (After Initial Report)**
❑ Injury/Illness ❑ Injury to self ❑ Injury to others ❍ GF Employee(s): _____ _____ _____ ❍ Non-Employee(s): _____ _____	❑ First Aid	▪ For employee injury, complete Worker's Comp Form
	❑ Physician/ Medical Treatment ❑ Inpatient hospitalization ❑ Fatality	▪ Report to IncidentReport@gfnet.com, Corporate Safety Mgr, and Legal Department immediately. ▪ For employee injury, complete Worker's Comp Form ▪ Complete Section E, OSHA Recordkeeping Info.
❑ Property Damage (including lost or stolen property)	Estimated amount/value ❑ Less than $1,000 ❑ More than $1,000	▪ Consult Insurance Mgr.
❑ Motor Vehicle	❑ Injury to employee(s) or others	▪ See: "Injury/Illness".
	❑ Vehicle Damage	▪ Refer to SOP 4 for additional Requirements/information ▪ Complete Auto Claim Form
❑ Environmental Release	❑ Greater than regulatory or Client reportable quantity	▪ Consult with GF Project Manager and GF Corporate Safety Mgr.
❑ Fire	❑ Injury to employee(s) or others	▪ See: "Injury/Illness".
	❑ Property Damage	▪ Consult Insurance Mgr.
❑ Other; describe: _____ _____	❑ No known harm ❑ Harm not described above, describe: _____	**For questions regarding additional action required, contact** IncidentReport@gfnet.com

C. DETAILED DESCRIPTION

NOTE: If you are completing an insurance claim form, provide detailed description on that form, and check the appropriate box. You do not need to provide the detailed description on multiple forms:

- ❑ See Worker's Comp. form.
- ❑ Detailed description provided below.
- ❑ See Auto Claim form.
- ❑ See other document (explain below).

D. ADDITIONAL QUESTIONS

- **Identify persons who were present in the area, witnesses and others who have knowledge of facts related to the incident or near miss.**

- **For project related incidents/near misses, identify the Client and Project:**

E. OSHA RECORDKEEPING INFORMATION

Required for fatalities and injuries resulting in physician/medical treatment other than first aid.	
Employee's birthdate:	**Employee's hire date:**
Treating Physician/Healthcare Professional:	**Healthcare Facility Name/Address:**

Date(s) of treatment:	Treated in Emergency Room? ❑ Yes ❑ No Inpatient /hospitalized overnight? ❑ Yes ❑ No
What object or substance directly harmed employee?	

- IMPORTANT: Notify your supervisor AND send this completed Initial Report to IncidentReport@gfnet.com within 24 hours of the incident or near miss.
- If you are unable to scan or email this form, send an email with the requested information to IncidentReport@gfnet.com OR ask your supervisor to assist you in making the initial report.
- For additional questions, contact the Corporate Safety Manager at: 717 884 5137.

Outlook users: The Submit Form button below will email this form to IncidentReport@gfnet.com
Google mail users: Save a copy of the completed form to your hard drive using the "Save a Copy of this Form" button below, compose a new email message, attach the saved form, and send it to IncidentReport@gfnet.com.

Corporate Safety Use Only

Received by:

Date:

APPENDIX B
INCIDENT/NEAR MISS INVESTIGATION REPORT

Investigation Date:	
Date of Incident/Near Miss:	
Business Unit:	**Facility Name:**
Investigation Team:	**Position Title:**
	Employee
	Supervisor/Project Manager
	Corporate Safety Representative
	Other Investigator (optional)
	Other Investigator (optional)
Incident/Near Miss Description:	
If necessary, names of witnesses (attach employee witness statements):	
Was health and safety plan developed and/or hazard assessment conducted for this project?	
Was weather a factor?	
Unsafe mechanical, physical, environmental condition(s) at time of incident/near miss:	
Unsafe act by injured and/or others contributing to the incident/near miss:	
What personal protective equipment was being utilized at the time of the incident/near miss?	

FIVE WHY's*
1. Why did "above" happen?
2. Why did "1" happen?
3. Why did "2" happen?

4. Why did "3" happen?
5. Why did "4" happen?
6. Root Cause(s) and Assigned Root Cause Factor (RCF)
**May need several FIVE WHY'S to identify all root causes*

Table 1.	
RCF	Explanation of Root Cause Factor(s) (RCF):
1	Lack of skill or knowledge; lack of training
2	Did not follow procedures
3	Shortcutting procedures or acceptable practices is positively reinforced or tolerated (by Supervisor/Manager or Client Representative)
4	Lack of or inadequate management procedures
5	Inadequate communication
6	Inadequate tools or equipment
7	Natural Phenomenon

Corrective Action(s)			
A. Using **FIVE WHY'S** and Table 1., develop the corrective action(s)			
RCF	**Describe how the incident or near miss will be prevented from reoccurring:**	**Employee responsible for Corrective Action:**	**Due Date:**

Verification of Corrective Action		
RCF#	**Corrective Action:**	**Completion Date:**

Reviewed By:	Position/Title:	Date:
	Supervisor/Project Manager	
	Employee	
	Corporate Safety Manager/Designee	
	Area/Service Line Manager or Regional Business Line Leader	
CC: Area/Service Line Manager Regional Business Line Leader Regional Director Subject Matter Expert (when applicable) Corporate Safety Manager		

APPENDIX C
NOTICE OF CONTRACTOR'S INCIDENT/NEAR MISS

PROJECT #	PROJECT DESCRIPTION			
	NAME AND ADRESS OF OWNER			
CONTRACTOR (INSURED)	NAME			
	ADDRESS			
	NAME AND ADDRESS OF CONTRACTORS INSURANCE CARRIER			
TIME AND PLACE	DATE AND TIME OF INCIDENT/NEAR MISS			
	LOCATION			
INJURED PERSON	NAME	ADDRESS	AGE	
	OCCUPATION	CO. PHONE #	PERSONAL PHONE #	
	EMPLOYED BY			
	WHAT WAS INJURED DOING BEFORE INCIDENT/NEAR MISS?			
INCIDENT/NEAR MISS	NATURE AND EXTENT OF INJURY			
	WHERE WAS INJURED TAKEN AFTER INCIDENT/NEAR MISS		NAME OF DOCTOR	
	FACILITY			
	DID INJURED RESUME WORK?			
PROPERTY DAMAGE	OWNER	ADDRESS	CO. PHONE #	PERSONAL PHONE #
	LIST DAMAGE		EST. COST OF REPAIR	
WITNESSES	NAME	ADDRESS	CO. PHONE #	PERSONAL PHONE #
	NAME	ADDRESS	CO. PHONE #	PERSONAL PHONE #
DESCRIPTION OF INCIDENT/NEAR MISS	DATE, LOCATION, AND NAME OF POLICE AUTHORITY TO WHOM INCIDENT WAS REPORTED (IF APPLICABLE)			
	Signature of Resident Engineer			
	Signature of Witness			
CC: Corporate Safety Manager, Insurance Manager				

STANDARD OPERATING PROCEDURE NUMBER 7
PERSONAL PROTECTIVE EQUIPMENT PROGRAM

7.0 PURPOSE

The purpose of this Standard Operating Procedure (SOP) is to identify the requirements and procedures for the proper use of Personal Protective Equipment (PPE), which comply with the Occupational Safety and Health Administration (OSHA) and applicable state standards, by Gannett Fleming, Inc., as well as any subsidiaries and affiliated companies (hereinafter the Company).

7.1 SCOPE

This SOP applies to all Company activities where the Company employees are required to use personal protective equipment to safely perform their work tasks. Respiratory protection is covered by the Company's Respiratory Protection Program SOP #1. This SOP applies to all other personal protective equipment used by the Company. The selection of appropriate personal protective equipment will be based on an assessment of the project hazards conducted by the Project Manager and field staff, with assistance from Corporate Safety.

7.2 REFERENCES

- 29 CFR 1910.132/1926.96 - General Requirements/Criteria for Personal Protective Equipment
- 29 CFR 1910.133/1926.102 - Eye and Face Protection
- 29 CFR 1910.135/1926.100 - Head Protection
- 29 CFR 1910.136/1926.96 - Occupational Foot Protection
- 29 CFR 1910.138 - Hand Protection
- 29 CFR 1926.104 – Safety Belts, Lifelines, and Lanyards
- SOP 6 – Fall Protection Program
- SOP 8 – Hearing Conservation Program
- Existing state requirements where Company offices are located.
- Appendix A – Safety Footwear Reimbursement Program
- Appendix B – Prescription Eyewear Reimbursement Program

7.3 POLICY

It is the policy of the Company to provide information to employees on the need for, and the correct use of, personal protective equipment and to comply with applicable laws and regulations regarding personal protective equipment. Personal protective equipment shall be of safe design and construction for the work to be performed. The Company provides and pays for the required PPE.. The Company provides partial reimbursement for safety footwear, in accordance with Appendix A, and full

reimbursement for prescription safety eyewear for full-time employees, in accordance with Appendix B. Employees are responsible for inspection of all personal protective equipment they use according to the requirements of Section 7.7. Personal protective equipment provided by the employee must meet the requirements of this SOP and reported to the Corporate Safety Manager to ensure the appropriate PPE is provided.

7.4 RESPONSIBILITIES

The roles and responsibilities of Company employees are described in Section 5 of the Corporate Safety Manual for field operations. Additional responsibilities as they pertain to personal protective equipment are below.

7.4.1 Employee

- Complete the applicable training and/or medial monitoring requirements prior to utilizing the provided PPE
- Utilize the appropriate PPE.
- Participate in the required training sessions.
- Inspect, clean, and maintain the PPE according to manufacturer recommendations prior to use.
- Promptly report any malfunctions of the safety equipment or PPE to the Project Manager and the Corporate Safety Manager.

7.4.2 Project Manager/Supervisor/Project Manager's Assistant

- Implement this SOP in the office area and/or field office
- Perform a project specific hazard assessment and collaborate with the Corporate Safety Group to determine the proper PPE.
- Provide the required PPE that has been ordered by the corporate safety group.
- Make sure defective/damaged PPE is taken out of service and replaced.
- Verify inspections of PPE are completed.
- When job conditions change, perform additional hazard assessments and inform the Corporate Safety Group of the change.

7.4.3 Corporate Safety Group

- Conduct a hazard assessment based on information provided by Project Managers to determine the appropriate PPE.
- Verify the project staff that is identified by the role in section 7.4.2, is compliant with all applicable standards and regulations regarding medical screening and surveillance (medical monitoring requirements, respiratory protection, HAZWOPER, etc.)
- Order the appropriate PPE and provide the appropriate PPE.
- Provide PPE training and keep records of the training.
- Periodically review the effectiveness of the PPE program and revise as necessary.

7.4.4. Safety Coordinator

- Assist the Corporate Safety Group, as necessary, with responsibilities listed in section 7.4.3.

- Coordinate the delivery of appropriate PPE provided by the Corporate Safety Group to field employees, when necessary.

7.5 TYPES OF PERSONAL PROTECTIVE EQUIPMENT

The following is a list of PPE that may be required. Some clients may require specific personal protective equipment, such as high visibility vests. This should be discussed with a client contact and brought to the attention of the corporate safety group. Each project will be evaluated by having a hazard assessment completed.

7.5.1 Head Protection

Employees working in areas where the potential exists for falling or flying objects shall wear protective hard hats. All head protection shall meet the requirements of ANSI Z89.1 – 2009: Type 1, Class E and G. Hard hats will be worn with the brim facing forward.

The need for head protection at other locations may be required by the client and at the discretion of the Project Manager or the Corporate Safety Manager.

7.5.2 Foot Protection

Employees are required to wear foot protection in areas where injury to the foot may occur by falling, rolling, or sharp objects. This safety footwear must consist of leather, ankle high boot with a safety toe that complies with ASTM F-2413-05 and/or ANSI Z41 - 1991. A safety shank is recommended.

The need for additional foot protection may be required by the client and at the discretion of the Project Manager or the Corporate Safety Manager.

7.5.3 Eye and Face Protection

Eye and face protection is required when damage to the eye and/or face may occur due to flying objects, chemical splashes, or other activities. All eye protection must have side shields and comply with ANSI Z87.1-2003. Dress prescription eyewear is not sufficient protection against impact and does not comply with ANSI Z87.1-2003 even if equipped with clip-on side shields. Face shields must be free from scratches that interfere with the wearer's ability to see.

The need for additional eye and face protection may be required by the client and at the discretion of the Project Manager or the Corporate Safety Manager.

7.5.4 Chemical Protection

Chemical protective equipment may be required for projects where dermal (skin) exposure to chemicals may occur. Chemical protective equipment will be selected on a

project specific basis and be based on the tasks to be performed, the contaminants, and the contaminant concentrations.

The following is a partial list of chemical protective equipment that may be used:

- Gloves – Nitrile, neoprene, butyl rubber, viton,
- Protective Coveralls – Tyvek, polytyvek, saranex
- Boots – Chemically protective "outer" boots

If chemical protective equipment is identified as being required by the hazards assessment, additional training is required and the Corporate Safety Manager must be notified.

7.5.5 Hearing Protection

Employees working in high noise areas (greater than 85dBA) may be required to wear hearing protection. Hearing protection is available in the form of reusable and disposable ear plugs and ear muffs. Details related to hearing protection are provided in the Company's Hearing Conservation Program SOP #8.

7.5.6 High Visibility Garments

High visibility reflective garments (i.e. vests) are required when exposed to any vehicle traffic hazard caused by motor vehicles or construction vehicles. The garments must be Class 2 or 3 ANSI ISEA 107-2010 compliant reflective garments and have a label stating they are ANSI compliant. Personnel working in vehicle traffic should make sure that their PPE are sized properly because loose fitting garments can cause additional hazards. The following provides Gannett Fleming's guidelines for the use of Class 2 or 3 reflective garments:

Class 2	Class 3
- Work performed during daytime hours	-Work occurs at night
-Greater visibility needed due to inclement weather conditions	- Greater visibility needed due to inclement weather conditions (blizzards for example)
-Worker's attention is diverted from on-coming traffic and surrounding environment	Worker's attention is diverted from on-coming traffic and surrounding environment
	-Worker must be visible from all angles and identifiable as a person

7.5.7 Fall Protection Equipment

If a Company employee is working where they can fall six feet or greater, they are required to follow the Company's Fall Protection Program SOP #6.

Fall protection equipment is available by contacting the Corporate Safety Manager.

7.5.8 Hand Protection

One type fits all is not applied during the selection of hand protection. Different gloves need to be worn to protect from different hazards, such as skin absorption of harmful substances, chemicals, cuts, lacerations, abrasions, punctures, chemical and thermal burns, biological and harmful temperature extremes are present. During the hazard assessment, factors such as: duration of work activity, frequency of work activity, exposure to weather, handling of glass samples, etc. should be determined.

Corporate Safety will assist in determining the specific type of glove material that should be worn. Hand protection available for use is as follows:

- Nitrile
- Kevlar
- Leather
- Rubber
- Other, depending on the hazard assessment.

7.5.9 Electrical Protective Equipment

If a company employee is working where the potential exists for exposure to electrical hazards, they are required to follow the Company's Electrical Safety Program SOP #12. In accordance with SOP #12, employees are required to follow the protective clothing and personal protective equipment matrix table.

7.6 INFORMATION AND TRAINING

7.6.1 Initial

Employees whose job functions involve the use of personal protective equipment shall receive initial training prior to using PPE. The employee is required to demonstrate an understanding of all elements of the training including the proper use, maintenance and storage of the PPE. No employee shall work on any project that requires the use of PPE for which the employee has not received and demonstrated a thorough understanding. Any questions related to the use of PPE must be directed to the Project Manager or Corporate Safety Manager.

Personal protective equipment training and fall protection training shall be assigned by the Corporate Safety Group and completed by the employee before wearing personal protective equipment and/or wearing fall protection. It is the responsibility of the Project Manager, Supervisor and/or Safety Coordinator to inform the employee (PPE user) about this training prior to assigning PPE for use on projects. It is the responsibility of the Employee to complete this training before wearing the assigned PPE.

7.6.2 Subsequent Training

Additional training may be required when an employee fails to demonstrate proper use and care or inspection of the personal protective equipment. Additional training will also occur when new or different types of PPE are issued or there are changes in the employee's workplace or assignment.

7.7 INSPECTION OF PERSONAL PROTECTIVE EQUIPMENT

It is the responsibility of the individual employee to inspect the personal protective equipment issued to the employee for use on a project-specific basis. Any personal protective equipment with cracks, rips, tears or other damage should be immediately removed from service and a replacement issued by the Corporate Safety Manager. Fall protection equipment must be inspected before use and returned to Corporate Safety if a fall were to occur.

An inspection checklist, attached, can be used for PPE issued to the employee. The Corporate Safety Manager is responsible for conducting inspections on equipment that is maintained by the safety department.

7.8 RECORDKEEPING

All training documentation should be forwarded to the Corporate Safety Manager who will keep a record of the Company personnel who have received training under this program.

PERSONAL PROTECTIVE EQUIPMENT INSPECTION CHECKLIST

INSTRUCTIONS:
This form provides a guide for the inspection of all personal protective equipment that has been issued to the individual employee for use on any Company project. Indicate non-applicable items as "N/A".

Name: _____ Date: _____
(Print)

Item	Problems Noted and Reported to Corporate Safety Manager or Project Manager*
Hard Hat	
Protective Eyewear	
Vests	
Ear Muffs/Plugs	
Fall Protection	
• Lanyard	
• Harness	
• Winch	
• Tripod	
• Other	
Other	

* Any defects or problems with personal protective equipment must be reported to the Project Manager and Corporate Safety Manager immediately. No employee is expected to conduct work on any Company project using equipment that does not meet the requirements set forth in this SOP.

Gannett Fleming

PERSONAL PROTECTIVE EQUIPMENT EXPOSURE ASSESSMENT

Date: _____ Practice:
Assessment Conducted By:
Practice Specific Tasks: _____

Overhead Hazards – Hazards to consider: Suspended loads that could fall, Overhead beams, loads, energized wires or equipment that could be hit against, Workers overhead dropping objects, Sharp objects or corners at head level.
Hazards Identified: _____
_____

Hard Hat: Yes ☐ No ☐

Eye and Face Hazards – Hazards to consider: Splashes, Dust, Smoke and fumes, Bioaerosols, Projectiles, Using hammers, drills, equipment, etc.
Hazards Identified: _____
_____

Eye Protection Safety glasses or goggles Yes | No ☐
Face shield Yes N ☐

Hand Hazards – Hazards to consider: Chemicals, Sharp edges, splinters, Temperature extremes, Material handling.
Hazards Identified: _____
_____

Hand Protection Yes ☐ No ☐ Type _____

Foot Hazards – Hazards to consider: Heavy materials handled by employees, Sharp edges or points, Unusually slippery conditions, Wet conditions.
Hazards Identified: _____
_____

Foot Protection Yes ☐ No ☐ Type _____

Other Identified Hazards:

Hazard	Recommended Protection

I certify that the above assessment was performed to the best of my knowledge and ability, based on the anticipated hazards.

_____
(Signature)

Appendix A
Safety Footwear Reimbursement Program

Gannett Fleming

Gannett Fleming

DATE: January 31, 2011

TO: Gannett Fleming, Inc. Board of Directors
Division Directors
Regional Directors
Regional Office Managers
Practice Managers
Business Unit Managers

CC: Division Administrators
Safety Department

FROM: Robert M. Scaer, President and COO

RE: Revision to Safety Footwear Reimbursement Program

Effective immediately, Gannett Fleming is revising the Safety Footwear Reimbursement Program for employees who are required to purchase and utilize safety footwear in accordance with Section 7.5.2 of SOP 7 – Personal Protective Equipment Program.

The Safety Footwear Reimbursement Program provides reimbursement for employees who work in the field full-time and occasionally as follows:

- Employees who are in the field full-time and are required to wear safety footwear will be eligible to receive either an annual $50 reimbursement or a biennial reimbursement of $100
- Employees who occasionally work in the field and are required to wear safety footwear are eligible to receive a $50 reimbursement once every 5 years
- Prior to purchasing safety footwear, employees should review Section 7.5.2 of SOP 7 – Personal Protective Equipment Program and discuss their eligibility with their supervisor
- An electronic expense report must be completed and submitted along with a receipt for the reimbursement. Category SAFETYEQIP should be used along with the employee's org code
- Employees are encouraged to purchase new safety footwear only when needed.

This revision, as well as the original program, is the result of suggestions submitted to the Safety Committee through the use of the Safety Suggestion Box located in the Safety section of the GF IntraNet. Please continue to urge your staff to use this valuable tool to share their ideas and improve the firm's safety program.

Appendix B
Prescription Eyewear Reimbursement Program

PRESCRIPTION SAFETY EYEWEAR PROGRAM
BY AIRGAS / PROTECTIVE OPTICS

Gannett Fleming would like to introduce a new prescription safety eyewear program. The program will allow full-time field employees to obtain a pair of prescription safety eyewear funded by Gannett Fleming every 24 months. The program includes the cost of single vision or bifocal lenses, a selection of Z87 safety frames and side shields, the fee from the optical office where the orders will be placed, and shipping charges. The program will go into effect May 1, 2013.

The intent of this program is to eliminate the wear and tear on personal dress eyewear by providing employees with a pair of prescription safety glasses that you will wear whenever you are on Gannett Fleming project sites. You will still have the option of wearing a company provided pair of over the glasses safety eyewear over your dress eyewear.

INSTRUCTIONS FOR OBTAINING RX SAFETY EYEWEAR

1. Field employees must complete the application for the prescription eyewear program located on the IntraNet. Once the application has been processed, the employee will receive a Prescription Eyewear Order Form from the corporate safety manager, Paula Loht.

2. Take a copy of your latest prescription to one of the optical offices listed on the attached sheet. If you need an examination, you may set up an appointment with this optical office or another optical office of your choice. (Employees are responsible for all fees related to eye exams or the processing of insurance.)

   The optical office will have a selection of safety frames for you to try on. They will also complete the eyewear order form and process it through Airgas, our safety equipment supplier. You will be called back to the optical office when your glasses are ready for pick up.

3. The eyewear will be free of charge to the full-time field employee unless the employee chooses an optional upgrade to the item. Pricing for those items will be explained at the optical office and must be paid at the time of order with a check or credit card. The options will include trifocals, progressives (no-lines), tints, a scratch coating and an anti-reflection lens coating. Pricing for these items is listed below.
   - Trifocals $15.00
   - Progressives (no lines) $38.00 - $133.00
   - TD2 Scratch coat $28.00
   - Solid Tint $6.00
   - Crizal (anti-reflect & TD2) $75.00
   - Transition tint $52.00

4. Future eyewear adjustments or concerns will be handled at the same optical office where you placed the order.

5. Employees who occasionally work in the field or who work in the office environment and wish to purchase safety eyewear through this program may do so, at their own expense. Employees can inquire by completing the application for prescription eyewear program.

We hope you will find ordering safety eyewear through this program an economical and pleasant experience. If you have any questions regarding this program, contact Paula Loht, corporate safety manager, at 717.763.7212 ext. 2846.

STANDARD OPERATING PROCEDURE NUMBER 15
HAZARDOUS WASTE OPERATIONS

15.0 PURPOSE

The purpose of the Hazardous Waste Operations (HAZWOPER) Standard Operating Procedure (SOP) is to:

Provide guidance for HAZWOPER activities conducted by Gannett Fleming, Inc., as well as its subsidiaries and affiliated companies (hereinafter the Company) that are within the scope of the operations encompassed by 29 Code of Federal Regulations (CFR) 1910.120 or 29 CFR 1926.65 (Hazardous waste operations and emergency response). This SOP does not provide guidance for emergency response, responding to emergencies, or hazardous materials response team activities as defined in 29 CFR 1920.120 or 29 CFR 1926.65.

Identify the Company procedures for the implementation of a HAZWOPER Program, which complies with Occupational Safety and Health Administration (OSHA) and other applicable federal, state, or local standards and regulations.

15.1 SCOPE

This program applies to all Company activities where the Company employees are involved with the following types of operations:

- Clean-up operations required by Federal, state, local or another governmental agency that involve hazardous substances conducted at sites, including, but not limited to, the EPA's National Priority Site List (NPL) (Superfund), state priority site lists, sites recommended for the EPA NPL, and initial investigations of government identified sites which are conducted before the presence or absence of hazardous substances has been ascertained);

- Corrective actions involving clean-up operations at sites covered by the Resource Conservation and Recovery Act (RCRA);

- Voluntary clean-up program operations; and

- Operations involving hazardous wastes that are conducted at treatment, storage, and disposal (TSD) facilities regulated by 40 CFR parts 264 and 265 pursuant to RCRA; or by agencies under agreement with EPA to implement RCRA regulations

This SOP does NOT cover emergency response operations for releases of, or substantial threats of releases of, hazardous substances. Post-emergency response operations are not conducted by Gannett Fleming.

For the purpose of this SOP:

- Hazardous substance means any substance exposure to which results, or may result, in adverse affects on the health or safety of employees; and

- Hazardous waste operation means any operation conducted within the scope of activities of this SOP described above.

Examples of typical Company employee operations within this scope include, but are not limited to, project site investigation activities, materials sampling, remediation activities, and construction oversight/management at project sites that have been identified or are suspected of being impacted by hazardous substances.

This SOP shall be followed unless it can be demonstrated that the operation does not involve employee exposure or the reasonable possibility for employee exposure to safety or health hazards:

15.2 REFERENCES

- 29 CFR 1910.120/1926.65 – Hazardous Waste Operations and Emergency Response
- 29 CFR 1910.1200/1926.59 – Hazard Communication
- Resource Conservation and Recovery Act (RCRA)
- 29 CFR 1910/1926 – Applicable Requirements
- Existing state requirements where projects are located.

15.3 POLICY

- Furnish the Company employees a place of employment as free as possible from recognized chemical hazards;
- Inform each manager, supervisor and employee of HAZWOPER requirements;
- Recognize the importance of health and safety factors during the planning stage of programs and projects;
- Provide information to employees on hazardous substances which they may be exposed to within the workplace and provide training on how to minimize potential hazards; and
- Comply with applicable laws and regulations regarding hazardous waste site operations.

15.4 RESPONSIBILITIES

Roles and responsibilities of Employees, Project Managers, Corporate Safety Manager and other positions are as defined in the Corporate Field Safety Manual and in each project specific health and safety plan.

15.5 CERTIFICATION TO PERFORM HAZARDOUS WASTE OPERATIONS

Project personnel shall not be assigned to a hazardous waste operation until they:

- Are enrolled in a Medical Surveillance Program and have been certified as medically qualified for duty and, as applicable, qualified to wear a respirator;
- Have been fit tested, as appropriate, on the specific type(s) of respiratory protection that may be required during field operations (refer to Standard Operating Procedure Number 1 Respiratory Protection Program);
- Have been certified as completing the training requirements described in Section 15.7 below;
- Have been trained in the provisions of the Site-Specific Health and Safety Plan (HASP); and
- Have been trained in the appropriate policies and procedures for field operations, or demonstrate equivalent experience and training.

15.6 MEDICAL SURVEILLANCE

All employees who are assigned to perform hazardous waste operations will receive and pass a medical examination on a regular basis at no cost to the employee (Company provided). Prior to hiring, potential employees should be advised of specialized job requirements, which make this monitoring program necessary.

15.6.1 Frequency

The frequency of Hazardous Material Medical Monitoring examinations should be no less than twelve (12) months apart or as otherwise deemed necessary by a medical professional. In the event an employee changes positions, in which the new position does not require a physical, or if employment is terminated, the employee will receive an exit physical. In the event that an employee exhibits signs or symptoms which may have resulted from exposure to hazardous substances, the employee shall be provided with medical consultation.

15.6.2 Content

The Hazardous Materials Medical Monitoring Program is required to certify employees as being medically qualified to perform certain job tasks and to wear respiratory protection, as applicable.

The Medical Monitoring Program is also designed to establish baseline data and is required for those employees whose work may bring them into contact with hazardous substances, chemicals or hazardous physical agents. The medical monitoring program must meet the requirements of 29 CFR 1910.120(f)/1926.65(f).

An overview of potential examination protocols and their rationale/interpretation are as follow:

Test Parameter	Rationale/Interpretation
Vital Signs	General state of health.
Screening Audiometry	Hearing acuity.
Pulmonary Function	Ability to wear respirator.
Resting EKG	Baseline cardiac condition.
Chest X-Ray	Evaluate lung disease.
Blood Count	Evaluate blood forming organs.
Urinalysis	Evaluate kidney/bladder.
Urine Heavy Metals	Evaluate baseline/exposure.
Blood Lead	Evaluate baseline/exposure.
SMA-24	Evaluate kidney, liver endocrine and other metabolic functions.

The Resting EKG is performed for screening purposes. Experience has indicated that there is no advantage to a Stress EKG unless the need is indicated by the Resting EKG results or as otherwise recommended by the attending physician. An SMA-24 normally includes the following: Renal function (BUN, Creatinine); Lipid Metabolism (Cholesterol, Triglyceride, LDL Cholesterol, HDL Cholesterol); Electrolyte Balance (Sodium, Potassium, Chloride, Carbon Dioxide); Acid/Base Balance (Calcium, Phosphate); Protein Metabolism (Total, Albumin, Globulin); Liver Function (Total Bilirubin, Alkaline Phosphatase, SGOT, SGPT, LDHO; Iron Metabolism (Serum Iron); and Endocrine/Metabolic (Glucose, Uric Acid). Cholinesterase is not routinely evaluated as it is specific to organiophosphate pesticide exposure and has no real meaning in a baseline scan.

Prior to receiving the physical, information concerning medical and occupational history should be obtained for the personal medical file and for the medical review officer. All information provided for and resulting from the history form and/or physical exam is considered confidential.

15.7 TRAINING

15.7.1 Training Requirements for Field Personnel

HAZWOPER Training Requirements

General site workers engaged in hazardous waste operations shall receive a minimum of 40 hours of instruction off-site and a minimum of three days actual field experience under the direct supervision of a trained, experienced supervisor.

Workers on-site only occasionally for a specific limited task (such as, but not limited to, surveying, groundwater sampling) and who are unlikely to be exposed over the permissible exposure limits or published exposure limits shall receive a minimum 24 hours of instruction off-site and a minimum of one day actual field experience under the direct supervision of a

trained, experienced supervisor.

Workers regularly on-site who work in areas which have been monitored and fully characterized indicating that exposures are under the permissible exposure limits or published exposure limits, where respirators are not necessary, and the characterization indicates that there are no health hazards and that an emergency is unlikely, shall receive a minimum of 24 hours of off-site instruction and a minimum of one day actual field experience under the supervision of a trained, experienced supervisor.

On-site management and supervisors must receive the same initial level of training as those whom they supervise and must then receive an additional 8 hours of hazardous waste site worker supervisor's training. HAZWOPER training includes the general principles of fire extinguisher use and the hazards involved in incipient stage fire fighting. All Company owned fire extinguishers will be maintained by the Corporate Safety Manager or designated representative. This includes a monthly visual inspection and a yearly inspection by a professional manufacturer's representative.

Hazardous waste site worker refresher training will be performed on an annual basis for at least 8 hours.

Other Training Requirements

All site workers shall have been trained in the provisions of the Site Specific Health and Safety Plan (HASP). They shall also have been trained in the appropriate policies and procedures for field operations, or shall demonstrate equivalent experience and training. Training should emphasize material pertinent to employee's duties and function.

15.7.2 HAZWOPER Training Course

The training course content shall, at a minimum, fulfill the training requirements of 29 CFR 1910.120(e) / 29 CFR 1926.65(e).

Trainers shall be fully qualified to instruct in their subject matter and shall possess the necessary academic and instructional experience required.

15.7.3 HAZWOPER Training Certification

The trainer shall provide a written certification to each person that has received and successfully completed the training. The certification must be made prior to the employee performing hazardous waste operations, and a copy of the certification shall be maintained in the project safety file. A copy of each training certificate must also be forwarded to the Corporate Safety Manager for inclusion in the corporate Safety Records.

15.8 HEALTH AND SAFETY PROGRAM / SITE SPECIFIC HEALTH AND SAFETY PLAN

The Company's policy will provide and maintain safe working conditions on projects as well

as to inform employees of potential hazards and required protective measures. Through the development of a Site Specific Health and Safety Plan (HASP), specific protective and preventative procedures are established and communicated to employees. A HASP is required for all work at hazardous waste sites and sites where employees may be exposed to hazardous or toxic substances.

15.8.1 Responsibility

The Project Manager has the ultimate responsibility to ensure that a HASP is prepared and implemented for each project or assignment involving site work involving hazardous wastes, hazardous substances, or toxic substances. The Project Manager or his representative is to discuss with the Corporate Safety Manager, or designated representative, whether or not a HASP is required for the specific project. The Project Manager or his representative shall provide the HASP to the Corporate Safety Manager, or designated representative, with sufficient lead time for review and approval prior to initiating on-site activities.

The Corporate Safety Manager, or designated representative, is responsible for the ultimate review and approval of all HASPs. The Corporate Safety Manager may also conduct a project visit to check compliance with the HASP.

The Site Safety Representative(s) is responsible for ensuring that the contents of the HASP is explained to employees assigned to the work location and for securing their signatures on the HASP indicating their understanding of and agreement with the information contained therein.

The Site Safety Representative will have the authority to immediately halt any activity deemed immediately dangerous to life and health. In accordance with Gannett Fleming's Employee Safety Empowerment document, all employees have the power to stop your work if there are doubts as to whether a task can be performed safely.

15.8.2 Procedures for Preparing Site Specific Health and Safety Plan and Content

HASPs must conform to applicable federal, state, and local health and safety regulations as well as applicable procedures established in this document. Questions in this regard should be referred to the Corporate Safety Manager.

Site specific HASPs shall be prepared as part of the project planning and presented at the project opening meeting. The HASP may need revision or modification during the course of the project as new information becomes available. The Corporate Safety Manager or designated representative is to be notified in the event any revisions or modifications are required.

It is the responsibility of the Site Safety Representative and the Project Manager to react to new information or conditions so as to protect personnel at all times.

At a minimum, the HASP shall include the information required by 29 CFR 1910.120(b) and 29 CFR 1926.65(b) for a hazardous waste operations safety and health program. Each HASP shall contain the following basic information:

- Hazard analysis for each site task and operation;

- Employee training requirements;

  The HAZWOPER training requirements described in this SOP shall be included, or referenced, by the HASP. Additional training needed to address site-specific or activity specific training requirements (such as Department of Transportation hazardous materials training, lock-out tagout, construction safety training, excavation/trenching) shall be included in the HASP.

  Each HASP should also contain a health and safety training program which addresses:

  - Names of personnel responsible for site safety and health;
  - Safety, health and other hazards present on-site;
  - Use of personal protective equipment;
  - Safe work practices;
  - Safe use of engineering controls and equipment on-site; and
  - Medical surveillance requirements including recognition of symptoms and signs of overexposure to hazards.

- Personal protective equipment to be utilized for each task;

- Medical surveillance requirements;

  The medical surveillance requirements described in this SOP shall be included, or referenced, by the HASP. Any additional special medical surveillance requirements needed to address site-specific or activity specific hazards shall be included in the HASP.

- Frequency and types of air monitoring, personnel monitoring, and environmental sampling techniques - including instrumentation to be used, maintenance and calibration. The discussion of monitoring should also address initial entry monitoring, periodic monitoring, and possible immediately dangerous to life and health (IDLH) monitoring, as they are applicable to the work to be performed.

- Site control measures;

- Decontamination procedures;

  The HASP shall include appropriate decontamination procedures to address the site-specific conditions. The decontamination procedures shall be in place, employees briefed, and provisions implemented before any employees or equipment may enter areas on site where potential for

exposure to hazardous substances exists. The procedures shall address decontamination of employees, PPE, equipment, and supplies as they leave contaminated areas. PPE, equipment, and supplies shall be properly disposed of or decontaminated; contaminated non-impermeable clothing and PPE shall be properly disposed if decontamination can not be performed effectively. When appropriate for the site-specific conditions, personnel showering facilities and change rooms located outside of the area of contamination will be provided; these facilities will meet the requirements of 29 CFR 1910.141. The site safety representative must monitor the decontamination activities to evaluate their effectiveness, and shall take appropriate steps to correct inadequacies identified. The HASP must identify where decontamination will be performed, taking into consideration how to minimize the potential exposure to other workers, equipment, and migration of contaminants. Only authorized employees are to be allowed in decontamination areas, including any shower areas and changing areas. Removal of PPE and equipment from any decontamination area (including change rooms) shall only be performed by an individual authorized by the site safety representative.

- Complete emergency response/contingency plan for site emergencies;

  The emergency response plan should include pre-emergency planning and coordination with outside parties; definition of personnel roles, lines of authority, training and communications methods; emergency recognition and prevention; and safe distances and places of refuge. It is noted that the senior official at any emergency response has the responsibility for controlling operations at the site.

- Confined space entry procedures, if confined spaces will be entered;

- Provision for pre-entry briefings prior to initiating any site activity; and

- Provision for site safety and health inspections to evaluate effectiveness of site safety and health plan.

The HASP shall explain how engineering controls, work practices, and/or personal protective equipment will be used to protect employees from exposure to hazardous substances and safety and health hazards.

15.9 APPROVALS

The completed HASP is to contain a section or sections that document HASP review, approval, understanding and agreement of all personnel affected by the plan. This will include:

- Identification of the preparer;

- Review by the Project Manager, Corporate Safety Manager or designated representative , and Site Safety Representative;
- Approval by the Corporate Safety Manager or designated representative.
- Agreement and understanding by the site personnel.

The review and approval documentation shall be on the first page of the Health and Safety Plan. On-site work activities are not permitted without a completed review and approval signature page.

15.10 BRIEFINGS

A health and safety briefing reviewing the HASP for all proposed project personnel shall be held and documented. For field sites, the briefing shall be prior to the commencement of on-site work activities. Daily safety briefings shall be held prior to the start of each day's site activities, and shall be documented in the site log.

15.11 GENERAL SAFETY PRECAUTIONS

- Eating, drinking, chewing gum or tobacco, smoking, or any practice that increases the probability of hand-to-mouth transfer and ingestion of material is prohibited in any areas designated as potentially contaminated.
- Hands and face must be thoroughly washed upon leaving the work area and before eating, drinking, or any other activities.
- Whenever decontamination procedures for outer garments are in effect, the entire body should be thoroughly washed as soon as possible after the protective garments are removed.
- No excessive facial hair, which interferes with a satisfactory fit of a respiratory mask-to-face-seal, is allowed on personnel required to wear respiratory protective equipment.
- Contact with contaminated or suspected contaminated surfaces should be avoided. Whenever possible, do not walk through puddles, mud, and other discolored surfaces; do not kneel on ground; do not lean, sit, or place equipment on drums, containers, vehicles, or the ground.
- Medicine and alcohol can increase the effects from exposure to toxic chemicals and decrease tolerance to heat. Prescribed drugs will not be taken by personnel working on the site where the potential for absorption, inhalation, or ingestion of toxic substances exists, unless specifically approved by a qualified physician. Alcoholic beverage intake is not permitted during project operations.
- Direct verbal or hand signal communication (face-to-face), two-way radios, or cellular phones (where cellular phone reception is reliable) will be maintained at all times.
- Visual contact will be maintained between "pairs" on-site and with safety personnel.

STANDARD OPERATING PROCEDURE NUMBER 16
FIRST AID PROGRAM

16.0 PURPOSE

The purpose of this Standard Operating Procedure (SOP) is to identify first aid procedures for Gannett Fleming, Inc., as well as any subsidiaries and affiliated companies (hereinafter the Company).

16.1 SCOPE

This SOP applies to all Company activities where medical assistance for work related injury/illness is not available within a 3-4 minute response time.

16.2 REFERENCES

- 29 CFR 1910.151 – Medical Services and First Aid
- Existing state requirements where Company offices are located.

16.3 POLICY

It is the policy of the Company to make available medical assistance and first aid to employees when injuries or illnesses occur on the worksite. The Company will make available American Red Cross Standard First Aid training, or equivalent, to Company employees. Each office and project location is provided with first aid and medical assistance supplies suitable for the anticipated emergency situation. Some office locations are also provided with Automated External Defibrillators.

16.4 RESPONSIBILITIES

16.4.1 Employee

- Report work-related injuries and/or illnesses to supervisor immediately.

16.4.2 Supervisor/Project Manager

- Make American Red Cross Standard First Aid training available to employees working on their field projects.
- For remote project locations, identify local medical and emergency services, their location, directions, and contact telephone numbers and include this information in project safety plans.
- Conduct incident investigation and implement corrective measures.

16.4.3 Corporate Safety Manager

- Maintain certification as a American Red Cross Standard First Aid trainer.
- Provide Standard First Aid training to selected Company employees.
- Maintain records of trained individuals.

16.5 OFFICE LOCATIONS

Each Company Division and Regional Office location is required to have an employee assigned as a Safety Coordinator to facilitate safety related functions. In this role, the Safety Coordinators are also responsible for maintaining a record of employees with Standard First Aid training and ensuring that appropriately stocked first aid supplies are available, inspected, and resupplied. A current list of Standard First Aid trained employees will be maintained and posted at each Company office.

16.6 PROJECT LOCATIONS

Prior to the start of any project, provisions shall be made for prompt medical attention in the event of an incident. This entails the development of a project specific safety plan. The safety plan will include individual(s) trained in Standard First Aid and will also include the name, location, contact number(s), and driving directions to the nearest, capable medical services provider. In areas where the 911 emergency telephone service is not available, the telephone numbers of hospitals, physicians and ambulances shall be conspicuously posted.

When emergency services are not readily available in terms of time and distance (approximately 3-4 minutes) to the work site, for the treatment of injured employees, at least one member of the on-site project team shall be trained in American Red Cross Standard First Aid.

16.7 FIRST AID SUPPLIES

First aid supplies are provided by the Company and are readily available for use. Minimally, first aid supplies will meet the requirements of the American National Standards Institute (ANSI) Z308.1 “Minimum Requirements for Workplace First-Aid kits”. First Aid supplies will be stored within office areas, project trailers, or within weather proof containers, as appropriate, with contents being individually sealed. Depending on project activities and work scope, additional first aid equipment and supplies will be provided and maintained.

First aid supplies will be checked by the Corporate Safety Manager or safety coordinator prior to being placed into service in office locations. First aid kits for field projects will be checked by the Project Manager and/or the site safety representative before being made available for use. First aid kits placed into service will be inspected to make sure that expended items are replaced.

Where eyes or body of any employee may be exposed to corrosive materials, a suitable eye wash and/or safety shower or other acceptable (by the Corporate Safety Manager)

means of quick drenching of the eyes or body will be provided.

16.8 EMPLOYEE TRAINING

American Red Cross Standard First Aid training, or equivalent, shall be made available to Company employees at no cost to the employees.

16.9 RECORDKEEPING

Records shall be maintained by the Corporate Safety Manager.

STANDARD OPERATING PROCEDURE NUMBER 18
HEAT AND COLD RELATED EMERGENCIES

18.0 HEAT AND COLD RELATED EMERGENCIES

Temperature extremes pose a hazard for personnel conducting field activities. Early recognition of the signs and symptoms of exposure to temperature extremes is extremely important. Age, weight, physical fitness, acclimatization, personal protective equipment, and personal conditions can impact a person's susceptibility to temperature related problems. Environmental factors other than ambient air temperature, such as radiant heat, air movement, conduction, and relative humidity, affect an individual's response to temperature. For these reasons, it is difficult to predict who will be affected by exposure to temperature extremes.

18.1 Heat Related Emergencies

Heat related emergencies are progressive conditions caused by overexposure to heat. If recognized in the early stages, heat related emergencies can usually be reversed. If not recognized early, they may progress to heat stroke, a life threatened condition. There are three types of heat related emergencies.

18.1.2 Heat Cramps

Heat Cramps are painful muscle spasms that usually occur in the legs and abdomen. Heat cramps are the least severe of the heat related emergencies.

18.1.3 Heat Exhaustion

Heat Exhaustion is an early indicator that the body's cooling system is becoming overwhelmed. Signals of heat exhaustion include:

- Cool, moist, pale, ashen, or flushed skin
- Headache, nausea, dizziness
- Weakness, exhaustion
- Heavy sweating

18.1.4 Heat Stroke

Heat stroke is the most serious of health problems associated with heat related emergencies. It occurs when the body's systems are overwhelmed by heat and stop functioning. Heat stroke is a life threatening condition. Signals of heat stroke include:

- Red, hot, dry (or moist) skin
- Changes in the level of consciousness

- Vomiting

18.1.5 Care for Heat Related Emergencies

The following steps should be taken to care for someone suffering from a heat related emergency:

- Move the person to a cool place
- Loosen any tight clothing
- Remove perspiration soaked clothing
- Apply cool, wet towels to the skin
- Fan the person
- If the person is conscious give small amount of **WATER** to drink

If the victim refuses water, vomits, or starts to lose consciousness:

- Call 911 or the local emergency number
- Place the victim on their side
- Continue to cool the victim by using an ice or cool pack on their wrists, ankles, groin, and neck, and in the armpits
- Continue to monitor the victim for signs of life (movement and breathing)

18.1.6 OTHER HOT ENVIRONMENT SAFETY ISSUES

Certain safety problems are common to hot environments. Heat tends to promote accidents due to the slipperiness of sweaty palms, dizziness, or the fogging of safety glasses. The frequency of accidents appears to be higher in hot environments as heat tends to lower the mental alertness and physical performance of an individual. Increased body temperature and physical discomfort promote irritability, anger, and other emotional states that can cause workers to overlook safety procedures.

18.2 COLD RELATED EMERGENCIES

Prolonged exposure to cold temperatures can result in serious health problems such as frostbite and hypothermia. It does not have to be extremely cold for someone to suffer a cold related emergency, especially if the person is wet or if it is windy. In extreme cases, including cold water immersion, exposure can result in death.

18.2.1 Frostbite

Frostbite is the freezing of body parts exposed to cold. The severity depends on the air temperature, length of exposure, and the wind. Frostbite occurs when there is freezing of the fluids around the cells of the body tissues. It usually affects the fingers, hands, arms, toes, feet, and legs and can result in the loss of these body parts. Signals of frostbite are:

- Lack of feeling in the affected area
- Skin that appears waxy, cold to the touch, and/or discolored(flushed, yellow, or blue)

Care for frostbite includes the following:

- Get the victim out of the cold however, do not rewarm an area if there is a chance it might refreeze or you are close to medical services
- Handle the victim gently; do not rub the frostbitten area
- Gently warm the area in warm, not hot water until normal color returns and it feels warm to the touch
- Place dry, sterile gauze between frostbitten fingers and toes to keep them separated
- Do not break blisters
- Take precaution to avoid hypothermia
- Call 911 or the local emergency number

18.2.2 Hypothermia

Hypothermia occurs when the entire body cools because its ability to keep warm fails. The victim may die if care is not given. Signals of hypothermia include:

- Shivering, numbness, glassy stare
- Apathy, weakness, impaired judgment
- Loss of consciousness

The following steps should be taken to care for a victim of hypothermia:

- Gently move the victim to a warm place
- Monitor airway, breathing and circulation
- Remove any wet clothing and dry the victim
- Warm the victim by wrapping in blankets and/or putting dry clothing on them
- If the victim is alert, give them warm liquids to drink (NO alcohol or caffeine)
- Hot water bottles or chemical heat packs wrapped in towels or blankets may be used
- Call 911 or the local emergency number

Do not warm the victim too rapidly as it may cause dangerous heart rhythms.

18.2.3 OTHER COLD ENVIRONMENT SAFETY ISSUES

Certain safety problems are common to cold environments. Cold temperatures tend to promote accidents and may lead to fatigue, lowered concentration, slowed reflexes, and loss of physical coordination.

NIOSH Chemical Hazard
Fact Sheets

The National Institute for Occupational Safety and Health (NIOSH)

Promoting productive workplaces through safety and health research

Benzene

SYNONYMS & TRADE NAMES

Benzol, Phenyl hydride

CAS NO.

71-43-2

RTECS NO.

CY1400000

DOT ID & GUIDE

1114 130

FORMULA

C_6H_6

CONVERSION

1 ppm = 3.19 mg/m³

IDLH

Ca [500 ppm]
See: 71432

EXPOSURE LIMITS

NIOSH REL
Ca TWA 0.1 ppm ST 1 ppm See Appendix A
OSHA PEL
[1910.1028] TWA 1 ppm ST 5 ppm See Appendix F

MEASUREMENT METHODS

NIOSH 1500 , 1501 , 3700 , 3800;
OSHA 1005 , 5000
See: NMAM or OSHA Methods

PHYSICAL DESCRIPTION

Colorless to light-yellow liquid with an aromatic odor. [Note: A solid below 42°F.]

MOLECULAR WEIGHT

78.1

BOILING POINT

176°F

FREEZING POINT

42°F

SOLUBILITY

0.07%

VAPOR PRESSURE

75 mmHg

IONIZATION POTENTIAL

9.24 eV

SPECIFIC GRAVITY

0.88

FLASH POINT

12°F

UPPER EXPLOSIVE LIMIT

7.8%

LOWER EXPLOSIVE LIMIT

1.2%

Class IB Flammable Liquid: Fl.P. below 73°F and BP at or above 100°F.

INCOMPATIBILITIES & REACTIVITIES

Strong oxidizers, many fluorides & perchlorates, nitric acid

EXPOSURE ROUTES

inhalation, skin absorption, ingestion, skin and/or eye contact

SYMPTOMS

irritation eyes, skin, nose, respiratory system; dizziness; headache, nausea, staggered gait; anorexia, lassitude (weakness, exhaustion); dermatitis; bone marrow depression; [potential occupational carcinogen]

TARGET ORGANS

Eyes, skin, respiratory system, blood, central nervous system, bone marrow

CANCER SITE

[leukemia]

PERSONAL PROTECTION/SANITATION

(See protection codes)
Skin: Prevent skin contact
Eyes: Prevent eye contact
Wash skin: When contaminated
Remove: When wet (flammable)
Change: No recommendation
Provide: Eyewash, Quick drench

FIRST AID

(See procedures)
Eye: Irrigate immediately
Skin: Soap wash immediately
Breathing: Respiratory support
Swallow: Medical attention immediately

RESPIRATOR RECOMMENDATIONS

(See Appendix E)

NIOSH

At concentrations above the NIOSH REL, or where there is no REL, at any detectable concentration:

(APF = 10,000) Any self-contained breathing apparatus that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode
(APF = 10,000) Any supplied-air respirator that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode in combination with an auxiliary self-contained positive-pressure breathing apparatus

Escape:
(APF = 50) Any air-purifying, full-facepiece respirator (gas mask) with a chin-style, front- or back-mounted organic vapor canister
Any appropriate escape-type, self-contained breathing apparatus

Important additional information about respirator selection

SEE ALSO

INTRODUCTION ICSC CARD: 0015 MEDICAL TESTS: 0022

Page last reviewed: October 30, 2019

The National Institute for Occupational Safety and Health (NIOSH)

Promoting productive workplaces through safety and health research

Ethyl benzene

SYNONYMS & TRADE NAMES

Ethylbenzol, Phenylethane

CAS NO.

100-41-4

RTECS NO.

DA0700000

DOT ID & GUIDE

1175 130

FORMULA

$CH_3CH_2C_6H_5$

CONVERSION

1 ppm = 4.34 mg/m^3

IDLH

800 ppm [10%LEL]
See: 100414

EXPOSURE LIMITS

NIOSH REL
TWA 100 ppm (435 mg/m^3) ST 125 ppm (545 mg/m^3)
OSHA PEL
TWA 100 ppm (435 mg/m^3) See Appendix G

MEASUREMENT METHODS

NIOSH 1501;
OSHA 7 , 1002
See: NMAM or OSHA Methods

PHYSICAL DESCRIPTION

Colorless liquid with an aromatic odor.

MOLECULAR WEIGHT

106.2

BOILING POINT

277°F

FREEZING POINT

-139°F

SOLUBILITY

0.01%

VAPOR PRESSURE

7 mmHg

IONIZATION POTENTIAL

8.76 eV

SPECIFIC GRAVITY

0.87

FLASH POINT

55°F

UPPER EXPLOSIVE LIMIT

6.7%

LOWER EXPLOSIVE LIMIT

0.8%

Class IB Flammable Liquid: Fl.P. below 73°F and BP at or above 100°F.

INCOMPATIBILITIES & REACTIVITIES

Strong oxidizers

EXPOSURE ROUTES

inhalation, ingestion, skin and/or eye contact

SYMPTOMS

irritation eyes, skin, mucous membrane; headache; dermatitis; narcosis, coma

TARGET ORGANS

Eyes, skin, respiratory system, central nervous system

PERSONAL PROTECTION/SANITATION

(See protection codes)
Skin: Prevent skin contact
Eyes: Prevent eye contact
Wash skin: When contaminated
Remove: When wet (flammable)
Change: No recommendation

FIRST AID

(See procedures)
Eye: Irrigate immediately
Skin: Water flush promptly
Breathing: Respiratory support
Swallow: Medical attention immediately

RESPIRATOR RECOMMENDATIONS

NIOSH/OSHA

Up to 800 ppm:
(APF = 10) Any chemical cartridge respirator with organic vapor cartridge(s)*
(APF = 50) Any air-purifying, full-facepiece respirator (gas mask) with a chin-style, front- or back-mounted organic vapor canister
(APF = 25) Any powered, air-purifying respirator with organic vapor cartridge(s)*
(APF = 10) Any supplied-air respirator*
(APF = 50) Any self-contained breathing apparatus with a full facepiece

Emergency or planned entry into unknown concentrations or IDLH conditions:
(APF = 10,000) Any self-contained breathing apparatus that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode
(APF = 10,000) Any supplied-air respirator that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode in combination with an auxiliary self-contained positive-pressure breathing apparatus

Escape:
(APF = 50) Any air-purifying, full-facepiece respirator (gas mask) with a chin-style, front- or back-mounted organic vapor canister
Any appropriate escape-type, self-contained breathing apparatus

Important additional information about respirator selection

SEE ALSO

INTRODUCTION ICSC CARD: 0268 MEDICAL TESTS: 0098

Page last reviewed: October 30, 2019

The National Institute for Occupational Safety and Health (NIOSH)

Promoting productive workplaces through safety and health research

Methylene chloride

SYNONYMS & TRADE NAMES

Dichloromethane, Methylene dichloride

CAS NO.

75-09-2

RTECS NO.

PA8050000

DOT ID & GUIDE

1593 160

FORMULA

CH_2Cl_2

CONVERSION

1 ppm = 3.47 mg/m^3

IDLH

Ca [2300 ppm]
See: 75092

EXPOSURE LIMITS

NIOSH REL
Ca See Appendix A
OSHA PEL
[1910.1052] TWA 25 ppm ST 125 ppm

MEASUREMENT METHODS

NIOSH 1005 , 3800;
OSHA 59 , 80
See: NMAM or OSHA Methods

PHYSICAL DESCRIPTION

Colorless liquid with a chloroform-like odor. [Note: A gas above 104°F.]

MOLECULAR WEIGHT

84.9

BOILING POINT

104°F

FREEZING POINT

-139°F

SOLUBILITY

2%

VAPOR PRESSURE

350 mmHg

IONIZATION POTENTIAL

11.32 eV

SPECIFIC GRAVITY

1.33

FLASH POINT

?

UPPER EXPLOSIVE LIMIT

23%

LOWER EXPLOSIVE LIMIT

13%

Combustible Liquid

INCOMPATIBILITIES & REACTIVITIES

Strong oxidizers; caustics; chemically-active metals such as aluminum, magnesium powders, potassium & sodium; concentrated nitric acid

EXPOSURE ROUTES

inhalation, skin absorption, ingestion, skin and/or eye contact

SYMPTOMS

irritation eyes, skin; lassitude (weakness, exhaustion), drowsiness, dizziness; numb, tingle limbs; nausea; [potential occupational carcinogen]

TARGET ORGANS

Eyes, skin, cardiovascular system, central nervous system

CANCER SITE

[in animals: lung, liver, salivary & mammary gland tumors]

PERSONAL PROTECTION/SANITATION

(See protection codes)
Skin: Prevent skin contact
Eyes: Prevent eye contact
Wash skin: When contaminated
Remove: When wet or contaminated
Change: No recommendation
Provide: Eyewash, Quick drench

FIRST AID

(See procedures)
Eye: Irrigate immediately
Skin: Soap wash promptly
Breathing: Respiratory support
Swallow: Medical attention immediately

RESPIRATOR RECOMMENDATIONS

(See Appendix E)

NIOSH

At concentrations above the NIOSH REL, or where there is no REL, at any detectable concentration:
(APF = 10,000) Any self-contained breathing apparatus that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode
(APF = 10,000) Any supplied-air respirator that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode in combination with an auxiliary self-contained positive-pressure breathing apparatus

Escape:
(APF = 50) Any air-purifying, full-facepiece respirator (gas mask) with a chin-style, front- or back-mounted organic vapor canister
Any appropriate escape-type, self-contained breathing apparatus

Important additional information about respirator selection

SEE ALSO

INTRODUCTION ICSC CARD: 0058 MEDICAL TESTS: 0148

Page last reviewed: October 30, 2019

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Tetrachloroethylene

SYNONYMS & TRADE NAMES

Perchlorethylene, Perchloroethylene, Perk, Tetrachlorethylene

CAS NO.

127-18-4

RTECS NO.

KX3850000

DOT ID & GUIDE

1897 160

FORMULA

$Cl_2C=CCl_2$

CONVERSION

1 ppm = 6.78 mg/m^3

IDLH

Ca [150 ppm]
See: 127184

EXPOSURE LIMITS

NIOSH REL
Ca Minimize workplace exposure concentrations. See Appendix A
OSHA PEL

TWA 100 ppm
C 200 ppm (for 5 minutes in any 3-hour period), with a maximum peak of 300 ppm
See Appendix G

MEASUREMENT METHODS

NIOSH 1003;
OSHA 1001
See: NMAM or OSHA Methods

PHYSICAL DESCRIPTION

Colorless liquid with a mild, chloroform-like odor.

MOLECULAR WEIGHT

165.8

BOILING POINT

250°F

FREEZING POINT

-2°F

SOLUBILITY

0.02%

VAPOR PRESSURE

14 mmHg

IONIZATION POTENTIAL

9.32 eV

SPECIFIC GRAVITY

1.62

FLASH POINT

NA

UPPER EXPLOSIVE LIMIT

NA

LOWER EXPLOSIVE LIMIT

NA

Noncombustible Liquid, but decomposes in a fire to hydrogen chloride and phosgene.

INCOMPATIBILITIES & REACTIVITIES

Strong oxidizers; chemically-active metals such as lithium, beryllium & barium; caustic soda; sodium hydroxide; potash

EXPOSURE ROUTES

inhalation, skin absorption, ingestion, skin and/or eye contact

SYMPTOMS

irritation eyes, skin, nose, throat, respiratory system; nausea; flush face, neck; dizziness, incoordination; headache, drowsiness; skin erythema (skin redness); liver damage; [potential occupational carcinogen]

TARGET ORGANS

Eyes, skin, respiratory system, liver, kidneys, central nervous system

CANCER SITE

[in animals: liver tumors]

PERSONAL PROTECTION/SANITATION

(See protection codes)
Skin: Prevent skin contact
Eyes: Prevent eye contact
Wash skin: When contaminated
Remove: When wet or contaminated
Change: No recommendation
Provide: Eyewash, Quick drench

FIRST AID

(See procedures)
Eye: Irrigate immediately
Skin: Soap wash promptly
Breathing: Respiratory support
Swallow: Medical attention immediately

RESPIRATOR RECOMMENDATIONS

NIOSH

At concentrations above the NIOSH REL, or where there is no REL, at any detectable concentration:
(APF = 10,000) Any self-contained breathing apparatus that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode
(APF = 10,000) Any supplied-air respirator that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode in combination with an auxiliary self-contained positive-pressure breathing apparatus

Escape:
(APF = 50) Any air-purifying, full-facepiece respirator (gas mask) with a chin-style, front- or back-mounted organic vapor canister
Any appropriate escape-type, self-contained breathing apparatus

Important additional information about respirator selection

SEE ALSO

INTRODUCTION ICSC CARD: 0076 MEDICAL TESTS: 0179

Page last reviewed: October 30, 2019

Was this page helpful?

Yes Partly No

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Toluene

SYNONYMS & TRADE NAMES

Methyl benzene, Methyl benzol, Phenyl methane, Toluol

CAS NO.

108-88-3

RTECS NO.

XS5250000

DOT ID & GUIDE

1294 130

FORMULA

$C_6H_5CH_3$

CONVERSION

1 ppm = 3.77 mg/m^3

IDLH

500 ppm
See: 108883

EXPOSURE LIMITS

NIOSH REL
TWA 100 ppm (375 mg/m^3) ST 150 ppm (560 mg/m^3)
OSHA PEL
TWA 200 ppm C 300 ppm 500 ppm (10-minute maximum peak) See Appendix G

MEASUREMENT METHODS

NIOSH 1500 , 1501 , 3800 , 4000;
OSHA 111
See: NMAM or OSHA Methods

PHYSICAL DESCRIPTION

Colorless liquid with a sweet, pungent, benzene-like odor.

MOLECULAR WEIGHT

92.1

BOILING POINT

232°F

FREEZING POINT

-139°F

SOLUBILITY

(74°F): 0.07%

VAPOR PRESSURE

21 mmHg

IONIZATION POTENTIAL

8.82 eV

SPECIFIC GRAVITY

0.87

FLASH POINT

40°F

UPPER EXPLOSIVE LIMIT

7.1%

LOWER EXPLOSIVE LIMIT

1.1%

Class IB Flammable Liquid: Fl.P. below 73°F and BP at or above 100°F.

INCOMPATIBILITIES & REACTIVITIES

Strong oxidizers

EXPOSURE ROUTES

inhalation, skin absorption, ingestion, skin and/or eye contact

SYMPTOMS

irritation eyes, nose; lassitude (weakness, exhaustion), confusion, euphoria, dizziness, headache; dilated pupils, lacrimation (discharge of tears); anxiety, muscle fatigue, insomnia; paresthesia; dermatitis; liver, kidney damage

TARGET ORGANS

Eyes, skin, respiratory system, central nervous system, liver, kidneys

PERSONAL PROTECTION/SANITATION

(See protection codes)
Skin: Prevent skin contact
Eyes: Prevent eye contact
Wash skin: When contaminated
Remove: When wet (flammable)
Change: No recommendation

FIRST AID

(See procedures)
Eye: Irrigate immediately
Skin: Soap wash promptly
Breathing: Respiratory support
Swallow: Medical attention immediately

RESPIRATOR RECOMMENDATIONS

NIOSH

Up to 500 ppm:
(APF = 10) Any chemical cartridge respirator with organic vapor cartridge(s)*
(APF = 25) Any powered, air-purifying respirator with organic vapor cartridge(s)*
(APF = 50) Any air-purifying, full-facepiece respirator (gas mask) with a chin-style, front- or back-mounted organic vapor canister
(APF = 10) Any supplied-air respirator*
(APF = 50) Any self-contained breathing apparatus with a full facepiece

Emergency or planned entry into unknown concentrations or IDLH conditions:
(APF = 10,000) Any self-contained breathing apparatus that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode
(APF = 10,000) Any supplied-air respirator that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode in combination with an auxiliary self-contained positive-pressure breathing apparatus

Escape:
(APF = 50) Any air-purifying, full-facepiece respirator (gas mask) with a chin-style, front- or back-mounted organic vapor canister
Any appropriate escape-type, self-contained breathing apparatus

Important additional information about respirator selection

SEE ALSO

INTRODUCTION ICSC CARD: 0078 MEDICAL TESTS: 0232

Page last reviewed: October 30, 2019

How helpful was this page?

Not helpful Very helpful

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Methyl chloroform

SYNONYMS & TRADE NAMES

Chlorothene, 1,1,1-Trichloroethane, 1,1,1-Trichloroethane (stabilized)

CAS NO.

71-55-6

RTECS NO.

KJ2975000

DOT ID & GUIDE

2831 160

FORMULA

CH_3CCl_3

CONVERSION

1 ppm = 5.46 mg/m^3

IDLH

700 ppm
See: 71556

EXPOSURE LIMITS

NIOSH REL
C 350 ppm (1900 mg/m^3) [15-minute] See Appendix C (Chloroethanes)
OSHA PEL
TWA 350 ppm (1900 mg/m^3) See Appendix G

MEASUREMENT METHODS

NIOSH 1003
See: NMAM or OSHA Methods

PHYSICAL DESCRIPTION

Colorless liquid with a mild, chloroform-like odor.

MOLECULAR WEIGHT

133.4

BOILING POINT

165°F

FREEZING POINT

-23°F

SOLUBILITY

0.4%

VAPOR PRESSURE

100 mmHg

IONIZATION POTENTIAL

11.00 eV

SPECIFIC GRAVITY

1.34

FLASH POINT

?

UPPER EXPLOSIVE LIMIT

12.5%

LOWER EXPLOSIVE LIMIT

7.5%

Combustible Liquid, but burns with difficulty.

INCOMPATIBILITIES & REACTIVITIES

Strong caustics; strong oxidizers; chemically-active metals such as zinc, aluminum, magnesium powders, sodium & potassium; water [Note: Reacts slowly with water to form hydrochloric acid.]

EXPOSURE ROUTES

inhalation, ingestion, skin and/or eye contact

SYMPTOMS

irritation eyes, skin; headache, lassitude (weakness, exhaustion), central nervous system depression, poor equilibrium; dermatitis; cardiac arrhythmias; liver damage

TARGET ORGANS

Eyes, skin, central nervous system, cardiovascular system, liver

PERSONAL PROTECTION/SANITATION

(See protection codes)
Skin: Prevent skin contact
Eyes: Prevent eye contact
Wash skin: When contaminated
Remove: When wet or contaminated
Change: No recommendation

FIRST AID

(See procedures)
Eye: Irrigate immediately
Skin: Soap wash promptly
Breathing: Respiratory support
Swallow: Medical attention immediately

RESPIRATOR RECOMMENDATIONS

NIOSH/OSHA

Up to 700 ppm:
(APF = 10) Any supplied-air respirator*
(APF = 50) Any self-contained breathing apparatus with a full facepiece

Emergency or planned entry into unknown concentrations or IDLH conditions:
(APF = 10,000) Any self-contained breathing apparatus that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode
(APF = 10,000) Any supplied-air respirator that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode in combination with an auxiliary self-contained positive-pressure breathing apparatus

Escape:
(APF = 50) Any air-purifying, full-facepiece respirator (gas mask) with a chin-style, front- or back-mounted organic vapor canister
Any appropriate escape-type, self-contained breathing apparatus

Important additional information about respirator selection

SEE ALSO

INTRODUCTION ICSC CARD: 0079 MEDICAL TESTS: 0141

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Trichloroethylene

SYNONYMS & TRADE NAMES

Ethylene trichloride, TCE, Trichloroethene, Trilene

CAS NO.

79-01-6

RTECS NO.

KX4550000

DOT ID & GUIDE

1710 160

FORMULA

$ClCH{=}CCl_2$

CONVERSION

1 ppm = 5.37 mg/m^3

IDLH

Ca [1000 ppm]
See: 79016

EXPOSURE LIMITS

NIOSH REL
Ca See Appendix A See Appendix C
OSHA PEL
TWA 100 ppm C 200 ppm 300 ppm (5-minute maximum peak in any 2 hours) See Appendix G

MEASUREMENT METHODS

NIOSH 1022 , 3800;
OSHA 1001
See: NMAM or OSHA Methods

PHYSICAL DESCRIPTION

Colorless liquid (unless dyed blue) with a chloroform-like odor.

MOLECULAR WEIGHT

131.4

BOILING POINT

189°F

FREEZING POINT

-99°F

SOLUBILITY

0.1%

VAPOR PRESSURE

58 mmHg

IONIZATION POTENTIAL

9.45 eV

SPECIFIC GRAVITY

1.46

FLASH POINT

?

UPPER EXPLOSIVE LIMIT

(77°F): 10.5%

LOWER EXPLOSIVE LIMIT

(77°F): 8%

Combustible Liquid, but burns with difficulty.

INCOMPATIBILITIES & REACTIVITIES

Strong caustics & alkalis; chemically-active metals (such as barium, lithium, sodium, magnesium, titanium & beryllium)

EXPOSURE ROUTES

inhalation, skin absorption, ingestion, skin and/or eye contact

SYMPTOMS

irritation eyes, skin; headache, visual disturbance, lassitude (weakness, exhaustion), dizziness, tremor, drowsiness, nausea, vomiting; dermatitis; cardiac arrhythmias, paresthesia; liver injury; [potential occupational carcinogen]

TARGET ORGANS

Eyes, skin, respiratory system, heart, liver, kidneys, central nervous system

CANCER SITE

[in animals: liver & kidney cancer]

PERSONAL PROTECTION/SANITATION

(See protection codes)
Skin: Prevent skin contact
Eyes: Prevent eye contact
Wash skin: When contaminated
Remove: When wet or contaminated
Change: No recommendation
Provide: Eyewash, Quick drench

FIRST AID

(See procedures)
Eye: Irrigate immediately
Skin: Soap wash promptly
Breathing: Respiratory support
Swallow: Medical attention immediately

RESPIRATOR RECOMMENDATIONS

NIOSH

At concentrations above the NIOSH REL, or where there is no REL, at any detectable concentration:
(APF = 10,000) Any self-contained breathing apparatus that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode
(APF = 10,000) Any supplied-air respirator that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode in combination with an auxiliary self-contained positive-pressure breathing apparatus

Escape:
(APF = 50) Any air-purifying, full-facepiece respirator (gas mask) with a chin-style, front- or back-mounted organic vapor canister
Any appropriate escape-type, self-contained breathing apparatus

Important additional information about respirator selection

SEE ALSO

INTRODUCTION ICSC CARD: 0081 MEDICAL TESTS: 0236

Page last reviewed: October 30, 2019

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Vinyl chloride

SYNONYMS & TRADE NAMES

Chloroethene, Chloroethylene, Ethylene monochloride, Monochloroethene, Monochloroethylene, VC, VCM, Vinyl chloride monomer (VCM)

CAS NO.

75-01-4

RTECS NO.

KU9625000

DOT ID & GUIDE

1086 116P(inhibited)

FORMULA

CH_2=CHCl

CONVERSION

1 ppm = 2.56 mg/m^3

IDLH

Ca [N.D.]
See: IDLH INDEX

EXPOSURE LIMITS

NIOSH REL
Ca See Appendix A
OSHA PEL

[1910.1017] TWA 1 ppm C 5 ppm [15-minute]

MEASUREMENT METHODS

NIOSH 1007;
OSHA 4 , 75
See: NMAM or OSHA Methods

PHYSICAL DESCRIPTION

Colorless gas or liquid (below 7°F) with a pleasant odor at high concentrations. [Note: Shipped as a liquefied compressed gas.]

MOLECULAR WEIGHT

62.5

BOILING POINT

7°F

FREEZING POINT

-256°F

SOLUBILITY

(77°F): 0.1%

VAPOR PRESSURE

3.3 atm

IONIZATION POTENTIAL

9.99 eV

FLASH POINT

NA (Gas)

UPPER EXPLOSIVE LIMIT

33.0%

LOWER EXPLOSIVE LIMIT

3.6%

RELATIVE GAS DENSITY

2.21

Flammable Gas

INCOMPATIBILITIES & REACTIVITIES

Copper, oxidizers, aluminum, peroxides, iron, steel [Note: Polymerizes in air, sunlight, or heat unless stabilized by inhibitors such as phenol. Attacks iron & steel in presence of moisture.]

EXPOSURE ROUTES

inhalation, skin and/or eye contact (liquid)

SYMPTOMS

lassitude (weakness, exhaustion); abdominal pain, gastrointestinal bleeding; enlarged liver; pallor or cyanosis of extremities; liquid: frostbite; [potential occupational carcinogen]

TARGET ORGANS

Liver, central nervous system, blood, respiratory system, lymphatic system

CANCER SITE

[liver cancer]

PERSONAL PROTECTION/SANITATION

(See protection codes)
Skin: Frostbite
Eyes: Frostbite
Wash skin: No recommendation
Remove: When wet (flammable)
Change: No recommendation
Provide: Frostbite wash

FIRST AID

(See procedures)
Eye: Frostbite
Skin: Frostbite
Breathing: Respiratory support

RESPIRATOR RECOMMENDATIONS

(See Appendix E)

NIOSH

At concentrations above the NIOSH REL, or where there is no REL, at any detectable concentration:
(APF = 10,000) Any self-contained breathing apparatus that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode
(APF = 10,000) Any supplied-air respirator that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode in combination with an auxiliary self-contained positive-pressure breathing apparatus

Escape:
(APF = 50) Any air-purifying, full-facepiece respirator (gas mask) with a chin-style, front- or back-mounted canister providing protection against the compound of concern
Any appropriate escape-type, self-contained breathing apparatus

Important additional information about respirator selection

SEE ALSO

INTRODUCTION ICSC CARD: 0082 MEDICAL TESTS: 0241

Page last reviewed: October 30, 2019

APPENDIX B

APPENDIX 1A, NYSDOH GENERIC COMMUNITY AIR MONITORING PLAN &

APPENDIX 1B, FUGITIVE DUST AND PARTICULATE MONITORING

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.