APPENDIX B HEALTH AND SAFETY PLAN

Site Name: PPG Industries Sites 016, 063 and 065	**Site Contact:** Francis Ronquillo	**Telephone:** Cell: 619-602-1745
Location: Jersey City, NJ	**Client Contact**: Dave Claassen, PPG Industries	**Telephone:** Cell: 724-448-7631
EPA ID No.	**Prepared By:** Doug Sullivan	**Date Prepared:** 6/20/11
Project No. 112C03562	**Dates of Activities:** June 27, 2011 – August 2011 (HASP is not valid for periods longer than 12 months)	**Emergency Response** ☐ Yes ☒ No

Objectives:

Tetra Tech will be performing Remedial Investigation (RI) activities at the above noted sites. These activities will include site surveys, utility mapping, soil and concrete investigation (soil borings, concrete cores), and groundwater investigation (sampling of existing ells, installation of new wells). Dust monitoring and dust control will be performed during all activities as required. This HASP was prepared using information contained in the HASP prepared by AECOM entitled "*Health and Safety Plan, Environmental Site Investigations, PPG Sites, Hudson County, New Jersey, December 2010*"

Site Type: *Check as many as applicable.*

☒ Active	☐ Landfill	☒ Inner-City
☒ Inactive (site 063/065)	☐ Railroad	☐ Rural
☒ Secured	☐ Residential	☐ Remote
☐ Unsecured	☒ Industrial	☐ Other (*specify*)

Project Scope of Work and Site Background

The PPG Industries Non-Residential Chromium Remediation Project consists of twenty (20) chromium contaminated properties located in Hudson County, New Jersey. Under the terms of an ACO between PPG and the NJDEP, these properties are to be investigated for soil and groundwater impacts due to the potential presence of chromate ore processing residue (COPR) or other chromium-related wastes. Tetra Tech work activities will involve the following three sites: Site 16: 45 Linden Avenue East; Site 63: 1 Burma Road; and Site 065: Burma road (east of 1 Burma Road).

At Non-Residential Chromium Chromate Chemical Production Waste Sites other than Garfield Avenue Site 114, the primary contaminant of concern is chromium and hexavalent chromium which is present at varying levels. There may be other parameters encountered at these sites, including but not limited to metals, such as antimony, arsenic, beryllium, lead, nickel, thallium, vanadium, and zinc. Metals and other polycyclic aromatic carbons (PAHs) are typical parameters of concern attributed to historic industrial operations and/or historic fill. Sites may also have additional contaminants of concern such as VOCs, SVOCs, PCBs, petroleum hydrocarbons and/or other parameters associated with contamination detected at each individual site.

Site 16: An Interim Remedial Measure (IRM) [asphalt cover] was installed on north side of commercial warehouse building on Site 16 (Linden East) between 1990 and 1992. A Remedial Investigation Report was submitted in 1994. An Interim Remedial Action (approximately 3,000 cubic yards of soil removed) was performed in 2008 and 2009 to facilitate construction of new loading docks. Soil samples from areas outside of the warehouse contain up to 300 mg/kg hexavalent chromium. Hexavalent chromium has not been detected in soil samples taken from beneath the building. Samples from one groundwater monitoring well have occasionally been above GWQS for total chromium; all other sample results have been below GWQS.
Site 63: On Site 63 (Baldwin Oil), a vacant lot at 1 Burma Road in Jersey City, an IRM [gravel and plastic cover on the north side of property] was installed between 1990 and 1992. The building was demolished by PPG in 1998. An Interim Remedial Action was performed in 1999 [approximately 10,000 cubic yards of soil with the building footprint was removed and disposed of]. A High Density Polyethylene Liner with a gravel cover was installed over building footprint. An engineering control, consisting of a perimeter fence and a guiderail, was installed. Soil samples collected on Site 63 exhibited up to 8,500 mg/kg of hexavalent chromium. Total chromium was detected in Site 63 groundwater at levels up to 16,500 ppb for total chromium.
Site 65: On Site 65, Burma Road right-of-way between Morris Pesin Drive and Theodore Conrad Drive, an IRM was installed between 1990 and 1992 [concrete cover on shoulder of road]. No sampling has been conducted on Site 65; therefore, further investigation is needed to determine the levels of total and hexavalent chromium in site soils and groundwater.

Health and Safety Approver Comments or Additional Instructions:

Health and Safety Plan Approver Signature: **Date:**

Note: A minimum of two persons with appropriate training and medical surveillance must be on site for any fieldwork subject to Level 2 HASP requirements.
Note: A detailed site sketch or figure may be included on Page 10 of 12.

Initial Isolation and Protective Action Distances (for emergency response operations only): NA

Initial Isolation Distance: This zone should extend in all directions; 660 feet for unknown hazards and 0.5 mile for tanker truck or rail car incidents.
NOTE: Keep a maximum distance away for unknown sites until the identity of the materials is determined.

Subsequent Isolation and Protection Action Zones Based on Air Monitoring Results:
NOTE: Distance at sites with unknown hazards should be increased, if necessary, based on air monitoring results.

Wind Speed and Direction (Approach from upwind)		Temperature (°F)	Relative Humidity (%)	Probability of Precipitation (%)	Weather Forecast (such as partly cloudy, snow, etc.)
Speed (mph):	**From Direction:**	A current weather forecast shall be maintained with this HASP during all field operations			

On-Site Supplies: ☒ First Aid Kit ☐ Fire Extinguisher ☐ Air Horn ☐ Oral Thermometer ☐ Noise Dosimeter

Known or Anticipated Site Hazards or Concerns: (Hazards covered by existing Safe Work Practices are listed on the next page)

☒ Work on active roadway	☐ Overhead utilities	☐ Energized electrical systems
☐ Onsite laboratory	☒ Buried Utilities	☐ Portable hand tool use
☐ Explosion or fire hazard	☐ Surface or underground storage tanks	☐ Portable electrical tool use
☐ Oxygen deficiency	☒ General slips, trips, falls	☐ Machine guarding
☐ Unknown or poorly characterized chemical hazards	☐ Uneven, muddy, rugged terrain	☐ Portable fire extinguisher use
☒ Inorganic chemicals	☐ Lift (man lift, cherry picker) use	☐ Driving commercial vehicles
☒ Organic chemicals	☐ Industrial truck (forklift) use	☐ Driving personal vehicles
☐ Chemical warfare materiel	☐ Wood or metal ladder use	☐ Scientific diving operations
☐ Compressed Gas Cylinders	☐ Dangerous goods shipped by air	☐ Injury and Illness Prevention Program (California only)
☐ Asbestos	☐ Elevated work (over 6' high)	☐ Ergonomics (California only)
☒ Respirable particulates	☒ Heavy equipment use or operation	☐ Work in strip or shaft mines
☐ Respirable silica	☐ Construction work	☐ Client-specific safety requirements (attach to HASP)
☐ Blasting and explosives	☐ Excavation or trenching	☐ ATV use
☐ Non-ionizing radiation (lasers, radiofrequencies, UV)	☐ Benching, shoring, bracing	☐ Methamphetamine lab
☐ Ionizing radiation (alpha, beta, gamma, etc.)	☐ Scaffold use	☐ Working over or near water
☒ Heat stress	☒ High noise	☐ Mold
☐ Cold stress	☐ Grinding operations	☐ *Other (insert)*

Explosion or Fire Potential: ☐ High ☐ Medium ☒ Low ☐ Unknown

Chemical Products Tetra Tech EM Inc. Will Use or Store On Site: (Attach a Material Safety Data Sheet [MSDS] for each item.)

☒ Alconox or Liquinox	☐ Calibration gas (Methane)	☐ Hydrogen gas	☐ Isopropyl alcohol
☐ Hydrochloric acid (HCl)	☒ Calibration gas (Isobutylene)	☐ Household bleach (NaOCl)	☐ HazCat Kit
☒ Nitric acid (HNO_3)	☐ Calibration gas (Pentane)	☐ Sulfuric acid (H_2SO_4)	☐ Mark I Kits (*number?*) _____
☐ Sodium hydroxide (NaOH)	☐ Calibration gas (4-gas mixture)	☐ Hexane	☐ Other (*specify*) _____

WARNING: Eyewash solution shall be readily available on ALL projects where corrosives (acids or bases) are used, including sample preservatives

Applicable Safety Programs and Safe Work Practices (SWP). Attach to HASP:

- ☐ DCN 4-03 Demolition and Decontamination
- ☐ DCN 4-05 Trenching and Excavation Safety
- ☐ DCN 4-08 Asbestos Protection Program
- ☐ DCN 4-09 Haulage and Earth Moving
- ☐ DCN 4-10 Lead Protection Program
- ☒ SWP DCN 5-01 General Safe Work Practices
- ☒ SWP DCN 5-02 General Safe Work Practices HAZWOPER
- ☐ SWP DCN 5-03 Safe Work Practices for Office Employees
- ☒ SWP DCN 5-04 Safe Drilling Practices
- ☒ SWP DCN 5-05 Safe Direct Push (GeoProbe) Practices
- ☐ SWP DCN 5-06 Working Over or Near Water
- ☒ SWP DCN 5-07 Use of Heavy Equipment
- ☐ SWP DCN 5-08 Special Site Hazards (Firearms, Remote Sites, Mines, aircraft, etc.)
- ☐ SWP DCN 5-09 Safe Electrical Work Practices
- ☐ SWP DCN 5-10 Fall Protection Practices
- ☐ SWP DCN 5-11 Portable Ladder Safety
- ☐ SWP DCN 5-12 Drum and Container Handling Practices
- ☐ SWP DCN 5-13 Flammable Hazards and Ignition Sources
- ☐ SWP DCN 5-14 Spill and Discharge Control Practices
- ☒ SWP DCN 5-15 Heat Stress
- ☐ SWP DCN 5-16 Cold Stress
- ☐ SWP DCN 5-17 Biohazards
- ☐ SWP DCN 5-18 Underground Storage Tank Removal Practices
- ☒ SWP DCN 5-19 Safe Lifting Procedures
- ☐ SWP DCN 5-22 Hydrographic Data Collection
- ☐ SWP DCN 5-23 Permit-Required Confined Space Entry Practices
- ☐ SWP DCN 5-24 Non-Permit-Required Confined Space Entry Practices
- ☐ SWP DCN 5-26 Prevention of Sun Exposure
- ☐ SWP DCN 5-27 Respirator Cleaning Practices
- ☐ SWP DCN 5-28 Safe Use Practices for Use of Respirators
- ☐ SWP DCN 5-29 Respirator Qualitative Fit Testing Procedures
- ☐ SWP DCN 5-30 Laboratory Soil Testing Safe Work Practices

Tasks Performed At Job Site that are NOT Covered by SWPs

NOTE: Many AHA's can be found on the Health & Safety intranet site at: http://home.ttemi.com/C18/Activity%20Hazard%20Analysis%20Document/default.aspx

Attach Activity Hazard Analysis (AHA) for each non-covered task

- ☒ Soil Sampling
- ☒ Direct Push Technology Sampling
- ☒ Monitoring Well Sampling
- ☒ Observation Near Drill Rigs
- ☐ (non-covered task)

Tetra Tech Employee Training and Medical Requirements:

Basic Training and Medical

- ☒ Initial 40 Hour Training
- ☒ 8-Hour Supervisor Training (one-time)
- ☒ Current 8-Hour Refresher Training
- ☒ Current Medical Clearance (including respirator use)
- ☒ Current First Aid Training
- ☒ Current CPR Training
- ☒ Current Respirator Fit-Test

Other Specific Training and Medical Surveillance Requirements

- ☐ Level A Training
- ☐ Radiation Training
- ☐ OSHA 10-hour Construction Safety Training
- ☐ OSHA 30-hour Construction Safety Training
- ☐ Asbestos Awareness Training
- ☐ Asbestos B-Reader X-Ray
- ☐ Blood Lead Level and ZPP Pre, during and Post-Project
- ☐ Urinary Arsenic Level Pre and Post-Project
- ☒ Chromium (VI) awareness
- ☒ Specific medical surveillance shall be made available for employees exposed to Chromium (VI) at or above the action level for 30 or more days a year, or experiencing signs or symptoms of adverse health effects associated with chromium (VI) exposure. _____

Materials Present or Suspected at Site	Highest Observed Concentration (specify units and sample medium)	Exposure Limit (specify ppm or mg/m^3)	IDLH Level (specify ppm or mg/m^3)	Primary Hazards of the Material (explosive, flammable, corrosive, toxic, volatile, radioactive, biohazard, oxidizer, or other)	Symptoms and Effects of Acute Exposure	Photoionization Potential (eV)
Chromium VI	Soil: 8,500 mg/kg GW: 16,500 ppb (total Cr)	PEL = 0.005 mg/m3 REL = TLV = 0.001 mg/m3 [Skin] Hazard ☒		Oxidizer, toxic	Irritation eyes, skin; lung fibrosis	None
Benzene	None cited in historical documents provided	PEL = 1 ppm TWA REL = o.1 ppm TWA TLV = 0.5 TWA [Skin] Hazard ☐	Ca (500 ppm)	Flammable liquid	Irritation eyes, skin, nose, respiratory system; dizziness; headache, nausea, staggered gait; anorexia, lassitude (weakness, exhaustion); dermatitis; bone marrow depression; [potential occupational carcinogen]	9.24
PCBs	None cited in historical documents provided	PEL = 0.5 mg/m3 REL = 0.001 mg/m3 TWA TLV = 1 mg/m3 TWA [Skin] Hazard ☐	5 mg/m3, Ca	Non-flammable liquid	Irritation eyes, chloracne; liver damage; reproductive effects; [potential occupational carcinogen]	None
		PEL = REL = TLV = [Skin] Hazard ☐				
		PEL = REL = TLV = [Skin] Hazard ☐				
		PEL = REL = TLV = [Skin] Hazard ☐				

Specify Information Sources:Tetra Tech EM Inc. Health & Safety website

Note: In the Exposure Limit column, include Ceiling (C) and Short-Term Exposure Limits (STEL) if they are available. Also, use the following short forms and abbreviations to complete the table above.

A = Air
CARC = Carcinogenic
eV = Electron volt
U = Unknown

IDLH = Immediately dangerous to life or health
mg/m^3 = Milligram per cubic meter
NA = Not available
NE = None established

PEL = Permissible exposure limit
ppm = Part per million
REL = Recommended exposure limit
S = Soil

TLV = Threshold limit value

Note: If no contingency level of protection is selected, all employees covered under this plan must evacuate the immediate site area if air contaminant levels require upgrading PPE. Level A field work requires a Level 3 HASP. This information is available on the chemical hazards page of this HASP.

Field Activities Covered Under this HASP:

Task Description	Level of Protection[1] Primary	Level of Protection[1] Contingency	Date of Activities
1 Site Survey/Utility mapping/Well survey	☐ A ☐ B ☐ C ☒ D	☐ A ☐ B ☐ C ☐ D	6/27/11
2 Concrete coring, soil boring and monitoring well installation	☐ A ☐ B ☐ C ☒ D	☐ A ☐ B ☐ C ☐ D	7/5/11 – 7/29/11
3 Monitoring well sampling	☐ A ☐ B ☐ C ☒ D	☐ A ☐ B ☐ C ☐ D	August 2011
4 Site visits	☐ A ☐ B ☐ C ☒ D	☐ A ☐ B ☐ C ☐ D	June 2011
5	☐ A ☐ B ☐ C ☐ D	☐ A ☐ B ☐ C ☐ D	

Site Personnel and Responsibilities (include subcontractors):

Employee Name and Office Code / Location	Task(s)	Responsibilities
Robert Davis, Project Manager	1, 2, 3, 4	• Project Manager: Manages the overall project, makes site safety coordinator (SSC) aware of pertinent project developments and plans, and maintains communications with client as necessary. Additionally, For projects lasting longer than one consecutive week on-site, the PM is responsible for conducting one field audit using Form AF-1.
Ray Orloski, Project Geologist	1, 2, 3, 4	
Francis Ronquillo, SSC, Field Team Leader	1, 2, 3, 4,	• Field Team Leader: Directs field activities, makes site safety coordinator (SSC) aware of pertinent project developments and plans, and maintains communications with the Project Manager and the client as necessary
TBD, Field Staff		
Environmental Probing Inc. – Arthur Benjamin		• Site Safety Coordinator (SSC): Ensures that appropriate personal protective equipment (PPE) is available, enforces proper use of PPE by on-site personnel and subcontractors; suspends investigative work if personnel are or may be exposed to an immediate health hazard; implements and enforces the HASP; identifies and controls site hazards when possible; communicates site hazards to all personnel; and reports any deviations observed from anticipated conditions described in the health and safety plan to the health and safety representative.
DPK Surveyors – TBD	2, 4	
Extreme Plastics – TBD	1, 2, 4	
(Extreme Plastics will assist with sealing the HDPE liner after advancement of borings at Site 063/065)	2	
		• Alternate Site Safety Coordinator (if any)
		• Field Personnel: Completes tasks as directed by the project manager, field team leader, and SSC, and follows the HASP and all SWPs and guidelines established in the Tetra Tech, Inc., Health and Safety Manual.
		• Tetra Tech-hired subcontractor personnel on site (a subcontract SSC MUST be identified by name): Completes tasks as outlined in the project scope of work in accordance with the contract. Participates in all Tetra Tech on-site safety meetings and follows all procedures and guidelines established in this HASP, as well as the company health and safety plan and program.

Note:
1. See next page for details on levels of protection

NOTE: Contingency level of protection section should be completed only if the upgraded level of protection is immediately available at the job site. If no contingency level of protection is denoted, all employees covered under this HASP must evacuate the immediate site area if air contaminant levels would require an upgrade of PPE.

Protective Equipment: (Indicate type or material as necessary for each task.)

Task	Primary Level of Protection (A,B,C,D)	PPE Component Description (Primary)	Contingency Level of Protection (A, B, C, D)	PPE Component Description (Contingency)
1	D	Respirator type: NA Cartridge type (if applicable): CPC material: Glove material(s): Boot material: Other: Shirt w/sleeves and long trousers, approved hard hats, safety spectacles w/side shields, steel toe protection and high visibility vest when in construction areas or non-office work areas.	NA	Respirator type: Cartridge type (if applicable): CPC material: Glove material(s): Boot material: Other:
2	D	Respirator type: Cartridge type (if applicable): CPC material: Glove material(s): Boot material: Other: Shirt w/sleeves and long trousers, approved hard hats, safety spectacles w/side shields, steel toe protection and high visibility vest when in construction areas or non-office work areas	Modified Level D (if potential skin exposure)	Respirator type: Half-mask or full face respirator w/combo organic vapor cartridge/P-100 dust filter Cartridge type (if applicable): CPC material: chemical resistant overalls Glove material(s): nitrile gloves Boot material: protective outer boots Other:
3	D	Respirator type: Cartridge type (if applicable): CPC material: Glove material(s): Boot material: Other: Shirt w/sleeves and long trousers, approved hard hats, safety spectacles w/side shields, steel toe protection and high visibility vest when in construction areas or non-office work areas	Modified Level D (if potential skin exposure)	Respirator type: Half-mask or full face respirator w/combo organic vapor cartridge/P-100 dust filter Cartridge type (if applicable): CPC material: chemical resistant overalls Glove material(s): nitrile gloves Boot material: protective outer boots Other:
4	D	Respirator type: NA Cartridge type (if applicable): CPC material: Glove material(s): Boot material: Other:		Respirator type: Cartridge type (if applicable): CPC material: Glove material(s): Boot material: Other:

Respirator Notes:
Respirator cartridges may only be used for a maximum time of 8 hours or one work shift, whichever is less, and must be discarded at that time. For job sites with organic vapors, respirator cartridges may be used as described in this note as long as the concentration is less than 200 parts per million (ppm), the boiling point is greater than 70 °Celsius, and the relative humidity is less than 85 percent. If any of these levels are exceeded, a site-specific respirator cartridge change-out schedule must be developed and included in the HASP using Tetra Tech Form RP-2 (Respiratory Hazard Assessment Form)

Notes:
All levels of protection must include eye, head, and foot protection.
CPC = Chemical protective clothing
Thermoluminescent Dosimeter (TLD) Badges must be worn during all field activities on sites with radiation hazards. TLDs must be worn under CPC.

Monitoring Equipment: All monitoring equipment on site must be calibrated before and after each use and results recorded in the site logbook				
Instrument (Check all required)	**Task**	**Instrument Reading**	**Action Guideline**	**Comments**
☐ Combustible gas indicator model:	☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5	0 to 10% LEL	Monitor; evacuate if confined space	
		10 to 25% LEL	Potential explosion hazard; notify SSC	
		>25% LEL	Explosion hazard; interrupt task; evacuate site; notify SSC	
☐ Oxygen meter model:	☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5	>23.5% Oxygen	Potential fire hazard; evacuate site	
		23.5 to 19.5% Oxygen	Oxygen level normal	
		<19.5% Oxygen	Oxygen deficiency; interrupt task; evacuate site; notify SSC	
☐ Radiation survey meter model:	☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5	Normal background	Proceed	Annual exposure not to exceed 1,250 mrem per quarter Background reading must be taken in an area known to be free of radiation sources.
		Two to three times background	Notify SSC	
		>Three times background	Radiological hazard; interrupt task; evacuate site; notify RSO	
☒ Photoionization detector model: ☐ 11.7 eV ☒ 10.6 eV ☐ 10.2 eV ☐ 9.8 eV ☐ Other (specify): _____	☐ 1 ☒ 2 ☒ 3 ☐ 4 ☐ 5	Any response above background to 5 ppm above background	Level B is recommended Level C[a] may be acceptable	During intrusive site activities, the air in work areas will be monitored periodically for the potential presence of volatile organic vapors (VOCs). A Photoionization Detector (PID) with a 10.6 eV lamp will be used to monitor the breathing zone of personnel during the proposed activities. If the PID indicates sustained (15 minute) breathing zone vapor concentrations in excess of 5 ppm above background respiratory protection should be donned. Preliminary evaluation of the risks expected at the site indicates that the most toxic volatiles that are expected to be present are VOCs (particularly Benzene, Toluene, Ethylbenzene, Xylene [BTEX]).
		> 5 to 500 ppm above background	Level B	
		> 500 ppm above background	Level A	
☐ Flame ionization detector model:	☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5	Any response above background to 5 ppm above background	Level B is recommended Level C[a] may be acceptable	These action levels are for unknown gases or vapors. After the contaminants are identified, action levels should be based on the specific contaminants involved.
		>5 to 500 ppm above background	Level B	
		>500 above background	Level A	
☒ Other (specify): Dust monitoring	☐ 1 ☒ 2 ☐ 3 ☐ 4 ☐ 5	Specify: Action level = 0.167 mg/m3 for Cr VI for total dust (PM10) It is recognized that respirable dust particles are generally not visible to the naked eye, but a total airborne dust clouds is often visible at concentrations of 2 mg/m3.	Specify: Since visible dust is not acceptable a dust action of 0.167 mg/m3 above background as sustained for 15 minutes in the workers breathing zone will be used as the dust action level for upgrading to Level C.	Therefore, for worker's in the exclusion zone, 0.167 mg/m3 (above background) will be set as the Action Level for total dust (PM10) (based on Cr6) during intrusive work during IRM and any other site activities. A Data RAM 1000 or Mini RAM will be used in the work (exclusion) zone; and a Data RAM 4000 will be placed 50 feet downwind of sampling investigations.

Notes:
eV= electron volt LEL=Lower explosive limit mrem=Millirem PEL=Permissible exposure limit ppm=Part per million
a. Level B is required when chemical hazards are present, but are uncharacterized. Level C may be acceptable for certain tasks in some situations. If you are uncertain, consult your RSO.

Project-Specific Industrial Hygiene Requirements

OSHA-Regulated Chemicals*:

Check any present on the job site in any medium (air, water, soil)

- ☐ No chemicals below are located on the job site
- ☐ Friable Asbestos
- ☐ Silica, crystalline
- ☐ alpha-Napthylamine
- ☐ Methyl chloromethyl ether
- ☐ 3,3'-Dichlorobenzidine (and its salts)
- ☐ bis-Chloromethyl ether
- ☐ beta-Napthylamine
- ☐ Benzidine
- ☐ 4-Aminodiphenyl
- ☐ Ethyleneimine
- ☐ beta-Propiolactone
- ☐ 2-Acetylaminoflourene
- ☐ 4-Dimethylaminoazobenzene
- ☐ N-nitrosomethylamine
- ☐ Vinyl chloride
- ☒ Inorganic arsenic
- ☐ Lead
- ☒ Chromium (VI)
- ☐ Cadmium
- ☒ Benzene
- ☐ Coke oven emissions
- ☐ 1,2-Dibromo-3-chloropropane
- ☐ Acrylonitrile
- ☐ Ethylene oxide
- ☐ Formaldehyde
- ☐ Methylenedianiline
- ☐ 1,3-Butadiene
- ☐ Methylene chloride

* NOTE: Many states, including California and New Jersey, have chemical-specific worker protection requirements and standards for many chemicals and known or suspected carcinogens.

Emergency Contacts:	**Telephone No.**
WorkCare and Incident Intervention	888.449.7787, or 800.455.6155
Tetra Tech EMI 24-hour Anonymous Hazard Reporting Line	866.383.8070
U.S. Coast Guard National Response Center	800.424.8802
InfoTrac	800.535.5053
Poison Control	800.222.1222
Fire department	911
Police department	911

Personnel Call-Down List:

Job Title or Position:	**Name**	**Cell Phone:**
Regional Safety Officer	Chris Draper	615-969-1334
Project Manager:	Robert Davis	412-417-8106
Field Team Leader:	Francis Ronquillo	619-602-1745
Site Safety Coordinator (SSC):	Francis Ronquillo	619-602-1745
Subcontractor SSC:		

Medical and Site Emergencies:

Signal a site or medical emergency with three blasts of a loud horn (car horn, fog horn, or similar device). Site personnel should evacuate to the area of safe refuge designated on the site map.

Hospital Name: Jersey City Medical Center
Address: 101 Jersey Avenue, Jersey City, NJ

General Phone: 201-324-5000
Emergency Phone: 911
Ambulance Phone: 911

Hospital called to verify emergency services are offered? YES ☒ NO ☐

Step-by-step Route to Hospital: (see Page 11 of 12 for route map)
Site 016

Start out going NORTHWEST on LINDEN AVE E / E LINDEN AVE toward PRINCETON AVE.

Take the 1st RIGHT onto PRINCETON AVE

Take the 2nd LEFT onto CATOR AVE

Take the 1st RIGHT onto GARFIELD AVE

Keep RIGHT at the fork to continue on GARFIELD AVE.

Turn SLIGHT RIGHT onto GRAND ST

Turn RIGHT onto JERSEY AVE; 101 JERSEY AVE is on the LEFT.

Note: This page must be posted on site.

Decontamination Procedures

The site safety coordinator overseas implementation of project decontamination procedures and is responsible for ensuring they are effective.

Personnel Decontamination

Level D Decon - ☒ Wet ☒ Dry

Level C Decon - ☐ Wet ☐ Dry

Level B Decon – Briefly outline the level B decontamination methods to be used on a separate page attached to this HASP.

Level A Decon – A Level 3 HASP is required. Notify your regional health and safety representative and health and safety director.

Equipment Decontamination

All tools, equipment, and machinery from the Exclusion Zone (hot) or Contamination Reduction Zone (warm) are decontaminated in the CRZ before they are removed to the Support Zone (cold). Equipment decontamination procedures are designed to minimize the potential for hazardous skin or inhalation exposure, cross-contamination, and chemical incompatibilities.

Respirator Decontamination

Respirators are decontaminated in compliance with SWP 5-27 and should be included with this HASP.

Waste Handling for Decontamination

Procedures for decontamination waste disposal meet all applicable local, state, and federal regulations.

Decontamination Equipment

- ☐ Washtubs
- ☒ Buckets
- ☒ Scrub brushes
- ☐ Pressurized sprayer
- ☒ Detergent [low phosphate]
- ☐ Solvent [Type]
- ☐ Household bleach solution

  Concentration/Dilution: _____
- ☐ Deionized water
- ☒ Disposable sanitizer wipes
- ☐ Facemask sanitizer powder
- ☐ Wire brush
- ☒ Spray bottle
- ☐ Tubs / pools
- ☐ Banner/barrier tape
- ☒ Plastic sheeting
- ☐ Tarps and poles
- ☒ Trash bags
- ☐ Trash cans
- ☐ Duct tape
- ☒ Paper towels
- ☐ Folding chairs
- ☐ Other

Emergency Response Planning

During the pre-work briefing and daily tailgate safety meetings, all on-site employees will be trained in the provisions of emergency response planning, site communication systems, and site evacuation routes.

In the event of an emergency that necessitates evacuation of a work task area or the site, the following procedures will take place.

- The Tetra Tech SSC will contact all nearby personnel using the on-site communications to advise the personnel of the emergency.
- The personnel will proceed along site roads to a safe distance upwind from the hazard source.
- The personnel will remain in that area until the SSC or an authorized individual provides further instructions.

In the event of a severe spill or a leak, site personnel will follow the procedures listed below.

- Evacuate the affected area and relocate personnel to an upwind location.
- Inform the Tetra Tech SSC, a Tetra Tech office, and a site representative immediately.
- Locate the source of the spill or leak, and stop the flow if it is safe to do so.
- Begin containment and recovery of spilled or leaked materials.
- Notify appropriate local, state, and federal agencies.

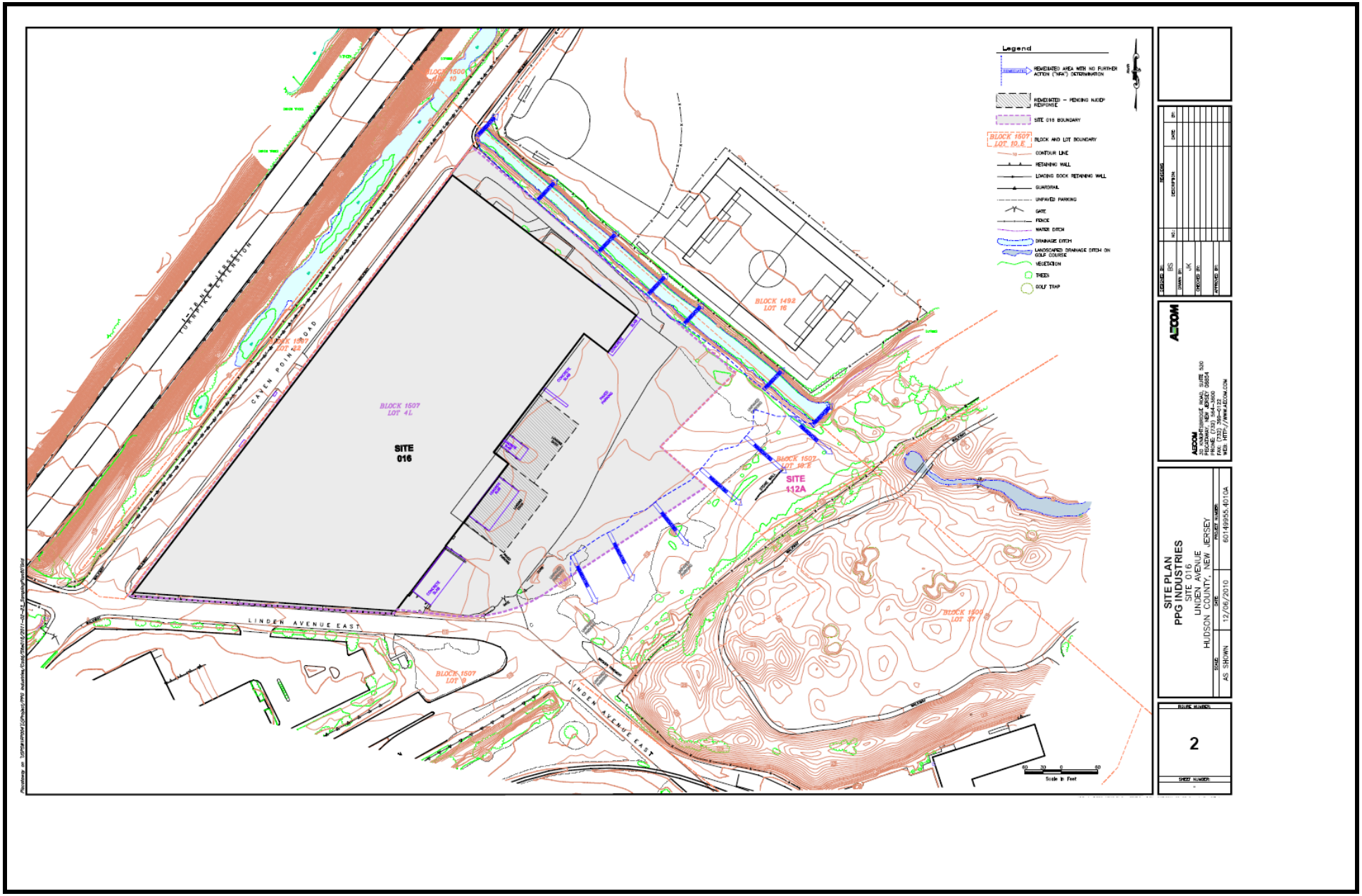
In the event of severe weather, site personnel will follow the procedures listed below.

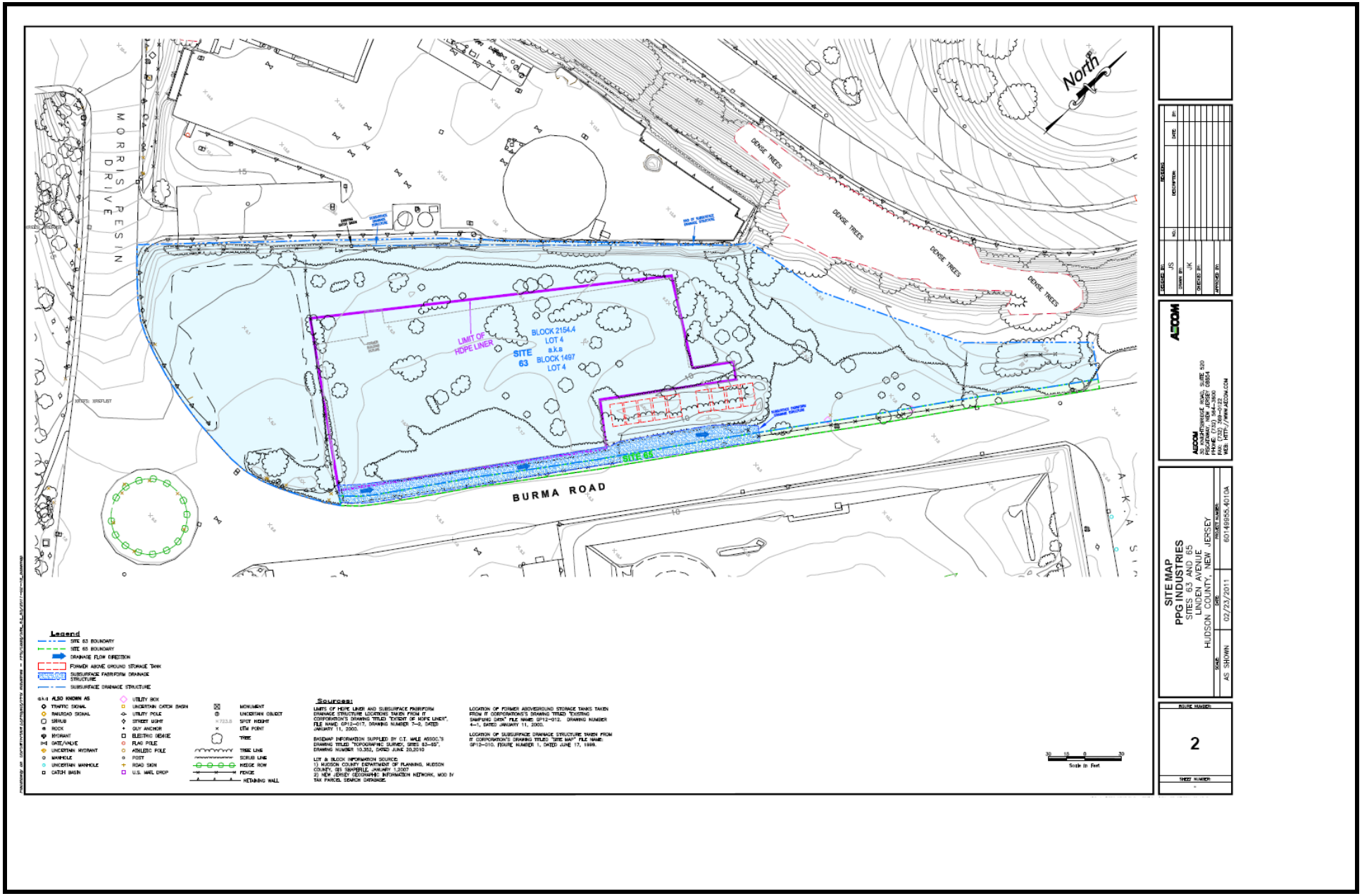
- Site work shall not be conducted during severe weather, including high winds and lightning.
- In the event of severe weather, stop work, lower any equipment (drill rigs) and evacuate the affected area.
- Severe weather may cause heat or cold stress. Refer to SWPs 5-15 and 5-16 for information on both.

All work-related incidents must be reported. According to TtEMI's reporting procedures, for non-emergency incidents you should:

- Notify WorkCare and Incident Intervention at 888.449.7787, or 800.455.6155
- Notify your Project Manager or Regional Safety Officer (RSO) via phone immediately.
- Complete a "Tetra Tech Incident Report" (Form IR) within 24 hours and send it to your RSO. If an injury or illness has occurred, the Form IR-A and the WorkCare HIPAA form must be completed at the same time the Form IR is completed.

Site Map (May be drawn after crews arrive onsite or inserted using aerial photographs, site figures, etc.):


Legend
REMEDIATED AREA WITH NO FURTHER ACTION ("NFA") DETERMINATION
REMEDIATED – PENDING NJDEP RESPONSE
SITE 016 BOUNDARY
BLOCK 1507 LOT 10.E
BLOCK AND LOT BOUNDARY
CONTOUR LINE
RETAINING WALL
LOADING DOCK RETAINING WALL
GUARDRAIL
UNPAVED PARKING
GATE
FENCE
WATER DITCH
DRAINAGE DITCH
LANDSCAPED DRAINAGE DITCH ON GOLF COURSE
VEGETATION
TREES
GOLF TRAP
SITE 016
SITE 112A
BLOCK 1507 LOT 4L
BLOCK 1492 LOT 16
BLOCK 1507 LOT 42
BLOCK 1507 LOT 10.E
BLOCK 1507 LOT 17
BLOCK 1507 LOT 9
CAVEN POINT ROAD
LINDEN AVENUE EAST
LINDEN AVENUE EAST
Scale in Feet
SITE PLAN
PPG INDUSTRIES
SITE 016
UNION AVENUE
HUDSON COUNTY, NEW JERSEY
AS SHOWN
12/06/2010
60149955.A010A
AECOM
2


North
MORRIS PESIN DRIVE
BURMA ROAD
LIMIT OF HDPE LINER
SITE 63
BLOCK 2154.4
LOT 4
a.k.a
BLOCK 1497
LOT 4
DENSE TREES
SITE 65
A.K.A SITE 65
Legend
SITE 63 BOUNDARY
SITE 65 BOUNDARY
DRAINAGE FLOW DIRECTION
FORMER ABOVE GROUND STORAGE TANK
SUBSURFACE FABRIFORM DRAINAGE STRUCTURE
SUBSURFACE DRAINAGE STRUCTURE
Sources:
Scale in Feet
SITE MAP
PPG INDUSTRIES
SITES 63 AND 65
LINDEN AVENUE
HUDSON COUNTY, NEW JERSEY
AS SHOWN
02/23/2011
60149955.4010A
AECOM
2

Hospital Route Map (attach or insert):

Route to the Hospital from Site 016 Address = 45 Linden Avenue East, Jersey City, NJ

45 Linden Ave
Jersey City, NJ 07305

1. Head **southeast** on **Linden Ave** toward **Garfield Ave**

10 ft

2. Take the 1st left onto **Garfield Ave**

2.0 mi

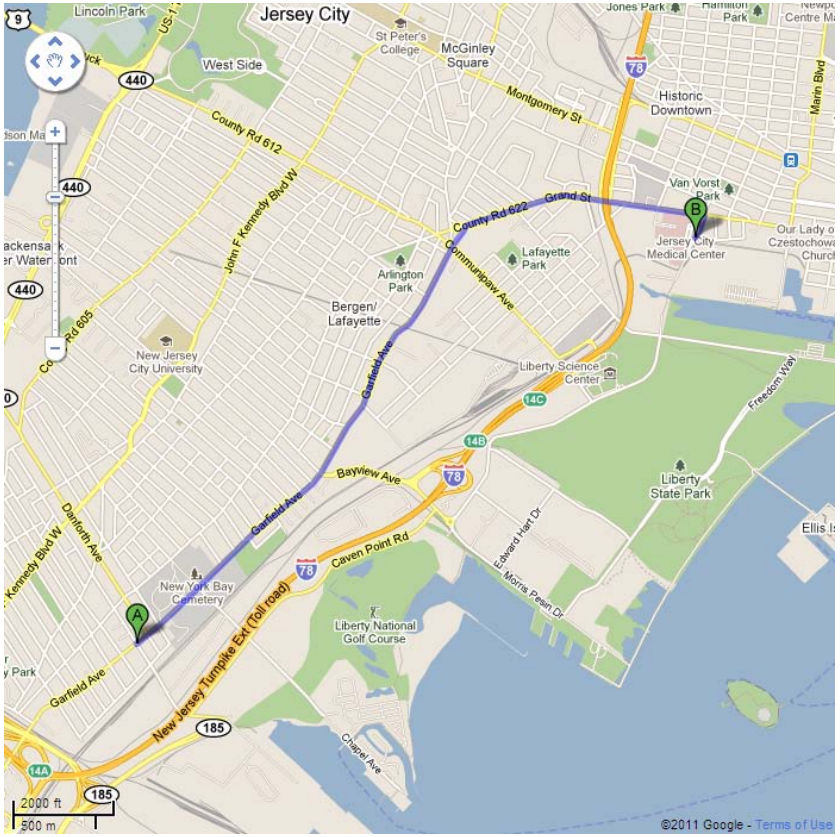
3. Slight right onto **County Rd 622/Grand St**
Continue to follow Grand St

0.9 mi

4. Turn right onto **Jersey Ave**
Destination will be on the right

486 ft

101 Jersey Ave
Jersey City, NJ 07302



Note: A dry-run should be conducted to establish a physical location associated with the map included in the HASP. Verbal verification from the hospital emergency room should also be obtained to ensure that the hospital will accept chemically contaminated patients.

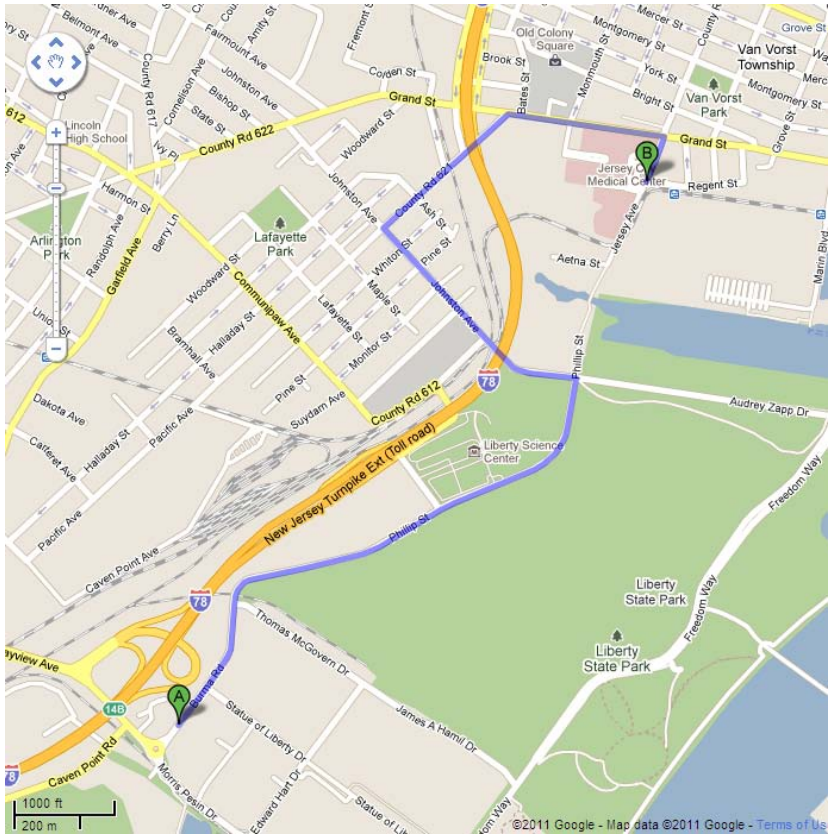
Hospital Route Map (attach or insert):

Route to the Hospital from Site 063/065 Address = 1 Burma Road Jersey City, NJ

A 1 Burma Rd
Jersey City, NJ 07305

1. Head **northeast** on **Burma Rd** toward **Statue of Liberty Dr/Theodore Conrad Dr** — 0.3 mi
2. Continue onto **Phillip St** — 0.8 mi
3. Turn left onto **Johnston Ave** — 0.5 mi
4. Turn right onto **County Rd 621/Pacific Ave** — 0.3 mi
5. Turn right onto **County Rd 622/Grand St**
Continue to follow Grand St — 0.3 mi
6. Turn right onto **Jersey Ave**
Destination will be on the right — 486 ft

B 101 Jersey Ave
Jersey City, NJ 07302



Note: A dry-run should be conducted to establish a physical location associated with the map included in the HASP. Verbal verification from the hospital emergency room should also be obtained to ensure that the hospital will accept chemically contaminated patients.

APPROVAL AND SIGN-OFF FORM

Project No.: 112C03562

I have read, understood, and agree with the information set forth in this Health and Safety Plan and will follow the direction of the Site Safety Coordinator (SSC) as well as procedures and guidelines established in the Tetra Tech, Inc., Health and Safety Manual. I understand the training and medical requirements for conducting field work and have met these requirements.

Tetra Tech has prepared this plan solely for the purpose of the health and safety protection of Tetra Tech employees. Subcontractors, visitors, and others at the site, while required to read and follow the provisions outlined in this plan at a minimum, should refer to their safety program for specific information related to their health and safety protection.

Name	Company / Agency / Organization	Signature	Date

I have read, understood, and agree with the information set forth in this Health and Safety Plan and comply with and will enforce this HASP, as well as procedures and guidelines established in the Tetra Tech, Inc., Health and Safety Manual.

Name	Project-Specific Position	Signature	Date
Robert Davis	Project Manager		
Francis Ronquillo	Field Team Leader		
Francis Ronquillo	Site Safety Coordinator		
TBD	Subcontractor SSC		

Tetra Tech has prepared this plan solely for the purpose of the health and safety protection of Tetra Tech employees. Subcontractors, visitors, and others at the site, while required to read, acknowledge and follow the provisions outlined in this plan at a minimum, should refer to their safety program for specific information related to health and safety.

Note: Use Additional sheets as necessary to ensure that all personnel sign and affirm this document.

DEFINITIONS AND NOTES

Emergency Contacts

WorkCare - For issues requiring an Occupational Health Physician; assistance is available 24 hours per day, 7 days per week.

InfoTrac - For issues related to incidents involving the transportation of hazardous chemicals; this hotline provides accident assistance 24 hours per day, 7 days per week

U.S. Coast Guard National Response Center - For issues related to spill containment, cleanup, and damage assessment; this hotline will direct spill information to the appropriate state or region

Poison Control Center – For known or suspected poisoning.

Limitations:

The Level-Two HASP is not appropriate in some cases:

- Projects involving unexploded ordnance (UXO), radiation sources as the primary hazard, or known chemical/biological weapons site must employ the Level 3 HASP
- Projects of duration longer than 90 days may need a Level 3 HASP (consult your RSO)

Decontamination:

Decontamination Solutions for Chemical and Biological Warfare Agents[a]: PPE and equipment can be decontaminated using 0.5 percent bleach (1 gallon laundry bleach to 9 gallons water) for biological agents (15 minutes of contact time for anthrax spores; 3 minutes for others) followed by water rinse for chemical and biological agents. In the absence of bleach, dry powders such as soap detergents, earth, and flour can be used. The powders should be applied and then wiped off using wet tissue paper. Finally, water and water/soap solutions can be used to physically remove or dilute chemical and biological agents. Do not use bleach solution on bare skin; use soap and water instead. Protect decontamination workers from exposure to bleach.

Decontamination for Radiological and Other Chemicals: Primary decontamination should use Alconox and water unless otherwise specified in chemical specific information resources. The effectiveness of radiation decontamination should be checked using a radiation survey instrument. Decontamination procedures should be repeated until the radiation meter reads less than 100 counts per minute over a 100-square-centimeter area when the probe is held 1 centimeter from the surface and moving slower than 2.5 centimeters per second.

Decontamination Corridor: The decontamination setup can be adjusted to meet the needs of the situation. The decontamination procedures can be altered to meet the needs of the specific situation when compound- and site-specific information is available.

Decontamination Waste: All disposable equipment, clothing, and decontamination solutions will be double-bagged or containerized in an acceptable manner and disposed of with investigation-derived waste.

Decontamination Personnel: Decontamination personnel should dress in the same level of PPE or one level below the entry team PPE level.

All investigation-derived waste should be left on site with the permission of the property owner and the EPA on-scene coordinator. In some instances, another contractor will dispose of decontamination waste and investigation-derived waste. DO NOT place waste in regular trash. DO NOT dispose of waste until proper procedures are established.

Notes:

[a] Source: Jane's Information Group. 2002. *Jane's Chem-Bio Handbook*. Page 39.

TETRA TECH, INC.

DAILY TAILGATE SAFETY MEETING FORM

Date:_____ Time: _____ Project No.: _____

Client: _____ Site Location: _____

Site Activities Planned for Today: _____

Weather Conditions: _____

Safety Topics Discussed
Protective clothing and equipment:
Chemical and physical hazards:
Emergency procedures:
Equipment hazards:
Other:
Attendees

Printed Name	Signature

Meeting Conducted by:

_____ _____

Name Signature

TETRA TECH EM INC.

HEALTH AND SAFETY PLAN AMENDMENT

Site Name: _____

Amendment Date: _____

Purpose or Reason for Amendment: _____

_____

_____

Required Additional Safe Work Practices or Activity Hazard Analyses: _____

_____

Required Changes in PPE: _____

_____

_____

Action Level Changes: _____

_____

_____

_____

_____

AMENDMENT APPROVAL

RSO or Designee	_____	_____	_____
	Name	Signature	Date
Site Safety Coordinator	_____	_____	_____
	Name	Signature	Date

Date presented during daily site safety meeting: _____

TETRA TECH, INC.

FIELD AUDIT CHECKLIST

Project Name: _____ Project No.: _____

Field Location: _____ Completed by: _____

Project Manager: _____ Site Safety Coordinator: _____

General Items		In Compliance?		
Health and Safety Plan Requirements		Yes	No	NA
1	Approved health and safety plan (HASP) on site or available			
2	Names of on-site personnel recorded in field logbook or daily log			
3	HASP compliance agreement form signed by all on-site personnel			
4	Material Safety Data Sheets on site or available			
5	Designated site safety coordinator physically present on jobsite			
6	Daily tailgate safety meetings conducted and documented on Form HST-2			
7	Documentation available proving compliance with HASP requirements for medical examinations, fit testing, and training (including subcontractors)			
8	HASP onsite matches scope of work being conducted			
9	Emergency evacuation plan in place and hospital located			
10	Exclusion, decontamination, and support zones delineated and enforced			
11	HASP attachments present onsite (VPP sheet, audit checklist, AHA, etc.)			
12	Illness and injury prevention program reports completed (California only)			
Emergency Planning				
13	Emergency telephone numbers posted			

14	Emergency route to hospital posted			
15	Local emergency providers notified of site activities			
16	Adequate safety equipment inventory available			
17	First aid provider and supplies available			
18	Eyewash solution available when corrosive chemicals are present			
Air Monitoring				
19	Monitoring equipment specified in HASP available and in working order			
20	Monitoring equipment calibrated and calibration records available			
21	Personnel know how to operate monitoring equipment and equipment manuals available on site			
22	Environmental and personnel monitoring performed as specified in HASP			

Safety Items		In Compliance?		
Personal Protection		Yes	No	NA
23	Splash suit, if required			
24	Chemical protective clothing, if required			
25	Safety glasses or goggles (always required)			
26	Gloves, if required			
27	Overboots, if required			
28	Hard hat (always required)			
29	High visibility vest, if required			
30	Hearing protection, if required			
31	Full-face respirator, if required			
Instrumentation				
32	Combustible gas meter and calibration notes			
33	Oxygen meter and calibration notes			
34	Organic vapor analyzer and calibration notes			
Supplies				
35	Decontamination equipment and supplies			
35	Fire extinguishers			
37	Spill cleanup supplies			
Corrective Action Taken During Audit:				

Note: NA = Not applicable

_____ _____

Auditor's Signature Site Safety Coordinator's Signature

_____

Date

Tetra Tech, Inc.	**ACTIVITY HAZARD ANALYSIS (AHA)**
	Tetra Tech EM Inc.
	1.0 Soil Sampling

Task Description

This Activity Hazard Analysis (AHA) applies to collection of grab soil samples. It has been developed and approved by the Director of Health and Safety for Tetra Tech EMI. The AHA contains potential hazards posed by each major step in this task, lists procedures to control hazards, and presents required safety equipment, inspections, and training.

Hazards		Actions
Task Steps	**Potential Hazards**	**Critical Safety Procedures and Controls**
Set up equipment at sampling location	SLIP/TRIP/FALL BACK STRAIN/SPRAIN	• Visually inspect the area for slippery spots or debris and correct if found • Wear steel-toed, non-skid boots in accordance with Tetra Tech EMI policy • Use proper lifting techniques (lift with legs not back)
Dig to appropriate depth with appropriate tools	SLIP/TRIP/FALL BACK STRAIN/SPRAIN	• Wear steel-toed, non-skid boots in accordance with Tetra Tech EMI policy • Use proper digging techniques • Wear gloves
Extract Soil	EMPLOYEE EXPOSURE	• Wear safety glasses and nitrile gloves
Fill sample bottles with sample material, load coolers and IDW (if appropriate) into vehicle	LACERATION	• Handle all glass containers carefully • Have a first aid kit on-site available for small cuts • Dispose of all broken shards immediately
Store sample containers in coolers and load onto vehicles	SLIP/TRIP/FALL BACK STRAIN/SPRAIN	• Ensure all debris has been removed from the path of travel • Use proper lifting techniques, including obtaining help with heavy coolers

Equipment to be Used	**Inspection Requirements**	**Training Requirements**
• Level D PPE (steel-toed boots, safety glasses, nitrile gloves) • Reflective safety vest if in areas of vehicle traffic • First Aid Kit • Disposable scoop • Hand Auger • Shovel	• None	• Safe Lifting Procedures • Personal Protective Equipment • Hazardous Waste Operations and Emergency Response (40-hour and current 8-hour update) • CPR/First Aid (one employee on-site must have current CPR/First Aid training)

Tetra Tech, Inc.	ACTIVITY HAZARD ANALYSIS (AHA) Tetra Tech EM Inc.

2.0 Direct-Push Apparatus Sampling

Task Description

This Activity Hazard Analysis (AHA) applies to collection of grab groundwater samples. It has been developed and approved by the Director of Health and Safety for Tetra Tech EMI. The AHA contains potential hazards posed by each major step in this task, lists procedures to control hazards, and presents required safety equipment, inspections, and training.

Hazards		Actions
Task Steps	**Potential Hazards**	**Critical Safety Procedures and Controls**
Site preparation	SLIP/TRIP/FALL BACK STRAIN/SPRAIN	• Visually inspect the area for slippery spots or debris and correct if found • Wear steel-toed, non-skid boots in accordance with Tetra Tech EMI policy • Use proper lifting techniques (lift with legs not back)
Soil Sampling Activities	NOISE HAZARD EMPLOYEE EXPOSURE LACERATION	• Wear hearing protection • Wear hard hat, safety glasses, and nitrile gloves • Use double-bladed cutting tool to open acetate sleeve – USE EXTREME CAUTION • Handle glass containers carefully; dispose of any broken glass shards
Groundwater Sampling Activities	NOISE HAZARD EMPLOYEE EXPOSURE LACERATION	• Wear hearing protection • Wear hard hat, safety glasses, and nitrile gloves • Handle all glass containers carefully
Sampling and sample handling	EMPLOYEE EXPOSURE LACERATION SLIP/TRIP/FALL BACK STRAIN/SPRAIN	• Wear safety glasses and nitrile gloves • Handle all glass containers carefully • Carefully dispose of any broken shards in the event of container breakage • Use proper lifting techniques, including obtaining help with heavy coolers
		•
		•
Equipment to be Used • Level D PPE • Reflective safety vest if in areas of vehicle traffic • First aid kit & eye wash	**Inspection Requirements** • None	**Training Requirements** • See HASP; no extra training requirements.

•		

Tetra Tech, Inc.	**ACTIVITY HAZARD ANALYSIS (AHA)**
	Tetra Tech EM Inc.
	2.0 Monitoring Well Sampling (Pumping)

Task Description

This Activity Hazard Analysis (AHA) applies to collection of grab groundwater samples. It has been developed and approved by the Director of Health and Safety for Tetra Tech EMI. The AHA contains potential hazards posed by each major step in this task, lists procedures to control hazards, and presents required safety equipment, inspections, and training.

Hazards		**Actions**
Task Steps	**Potential Hazards**	**Critical Safety Procedures and Controls**
Site preparation	SLIP/TRIP/FALL BACK STRAIN/SPRAIN	• Visually inspect the area for slippery spots or debris and correct if found • Wear steel-toed, non-skid boots in accordance with Tetra Tech EMI policy • Use proper lifting techniques (lift with legs not back)
Open well and measure depth to water and/or bottom	EMPLOYEE EXPOSURE	• Use PID or FID to monitor well for vapors in well head and breathing zone. • Wear safety glasses and nitrile gloves to protect against splash
Connecting and disconnecting pump to tubing and power source	LACERATION ELECTRICAL SHOCK	• Use retractable safety blade or tubing cutter to cut tubing • Cut tubing away from self or other personnel • Use caution when connecting to vehicle battery or portable generator and when adding fuel to generator tank.
Purging and sampling and sample handling	EMPLOYEE EXPOSURE LACERATION SLIP/TRIP/FALL BACK STRAIN/SPRAIN	• Use PID or FID to monitor breathing zone • Wear safety glasses and nitrile gloves • Handle all glass containers carefully • Carefully dispose of any broken shards in the event of container breakage • Use proper lifting techniques, including obtaining help with heavy coolers
		•
Equipment to be Used • Level D PPE • Reflective safety vest if in areas of vehicle traffic • First aid kit & eye wash • Sampling equipment (pump	**Inspection Requirements** • None	**Training Requirements** • See HASP; no extra training requirements.

and generator) • PID or FID		

Tetra Tech, Inc.	**ACTIVITY HAZARD ANALYSIS (AHA)**
	Tetra Tech EM Inc.
	Observation Near Drill Rigs

Task Description

This Activity Hazard Analysis (AHA) applies to collection of grab groundwater samples. It has been developed and approved by the Director of Health and Safety for Tetra Tech EMI. The AHA contains potential hazards posed by each major step in this task, lists procedures to control hazards, and presents required safety equipment, inspections, and training.

Hazards		Actions
Task Steps	**Potential Hazards**	**Critical Safety Procedures and Controls**
Observe Near Drill Rigs	SLIP/TRIP/FALL BACK STRAIN/SPRAIN	• Visually inspect the area for slippery spots or debris and correct if found • Wear steel-toed, non-skid boots in accordance with Tetra Tech EMI policy • Use proper lifting techniques (lift with legs not back)
	NOISE HAZARD EMPLOYEE EXPOSURE	• Wear hearing protection • Wear hard hat, safety glasses, and nitrile gloves
	STRUCK BY DRILL RIG	• Stay out of way. Wear orange safety vest, hard hat, other PPE. Make eye contact with operator to ensure he knows where you are and where you're going.
		•
		•
		•
Equipment to be Used • Level D PPE • Reflective safety vest • First aid kit & eye wash	**Inspection Requirements** • None	**Training Requirements** • See HASP; no extra training requirements.

Assessed By

Name	Signature	Date

Approved By

Name	Signature	Date